

Genie®



Service Manual

Refer to inside cover for additional serial number information

Part No. 72136

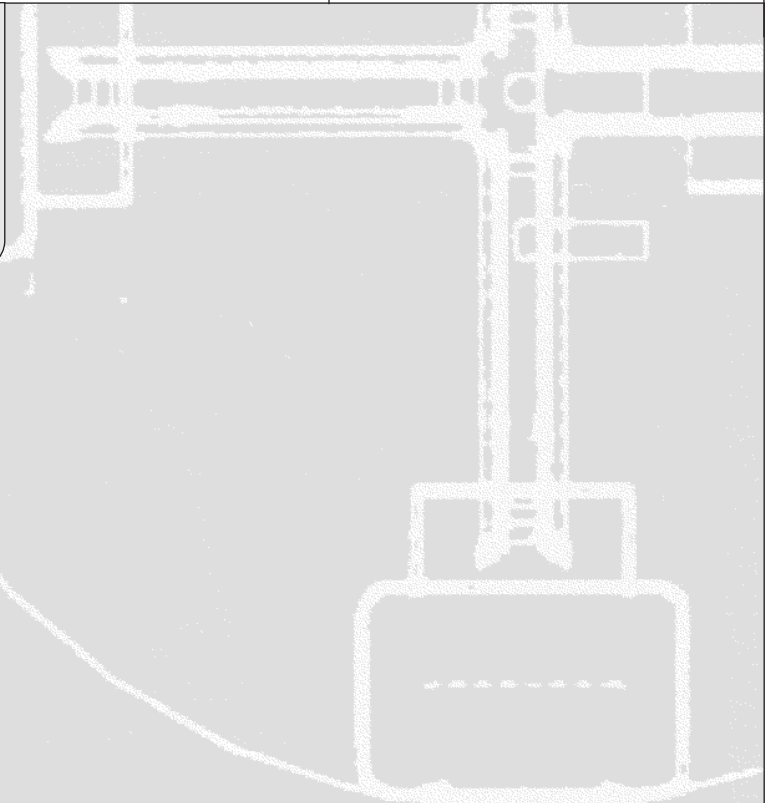
Rev B

March 2008

STM-40

STM-45

(from serial number 1790 to 7000)



Genie S-40

Genie S-45

Important

Read, understand and obey the safety rules and operating instructions in the *Genie S-40 and S-45 Operator's Manual* before attempting any maintenance or repair procedure.

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

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

Technical Publications

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

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

Contact Us:

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

Serial Number Information

Genie Industries offers the following Service Manuals for these models:

Title	Part No.
S-40 and S-45 Service Manual (before serial number 832)	32222
S-40 and S-45 Service Manual (from serial number 832 to 1789)	52271
S-40 and S-45 Service Manual (from serial number 1790 to 7000)	72136

Genie Industries

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72136 Rev B December 2007
Third Edition, Second Printing

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Printed in U.S.A.

Serial Number Legend


INTRODUCTION

Genie
A TEREX COMPANY

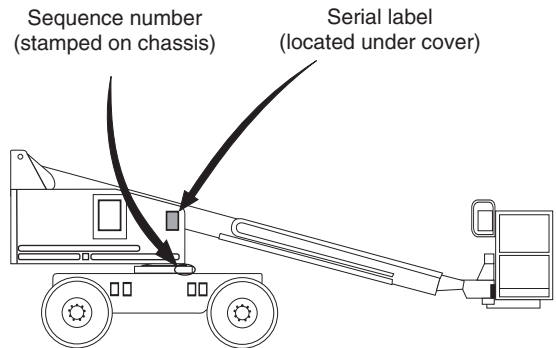
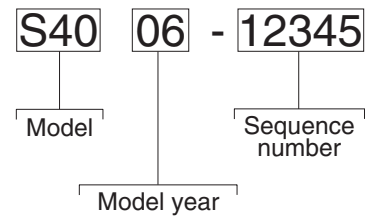
Model: S-40
Serial number: S4006-12345
Model year: 2006 **Manufacture date:** 01/05/06
Electrical schematic number: ES0274
Machine unladen weight:

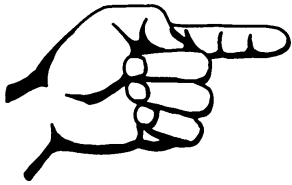
Rated work load (including occupants): 500 lb / 227 kg
Maximum number of platform occupants: 2
Maximum allowable side force : 150 lb / 670 N
Maximum allowable inclination of the chassis:
 0 deg
Maximum wind speed : 28 mph/ 12.5 m/s
Maximum platform height : 60 ft 6 in/ 18.3 m
Maximum platform reach : 34 ft 3 in/ 10.4 m
Gradeability: N/A
Country of manufacture: USA
This machine complies with:
 ANSI A92.5
 CAN B.354.4

Genie Industries
 18340 NE 76th Street
 Redmond, WA 98052
 USA



PN - 77055





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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie S-40 & Genie S-45 Operator's Manual* will result in death or serious injury.

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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

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

▲ DANGER

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

▲ WARNING

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

▲ CAUTION

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

CAUTION

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

NOTICE

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



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



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



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

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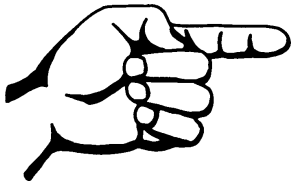
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Specifications

REV B

Machine Specifications S-40 Models

Stowed dimensions	2WD/RT	4WD/RT
Length	23 ft 11 in 7.3 m	23 ft 11 in 7.3 m
Width	7 ft 6 in 2.3 m	7 ft 6 in 2.3 m
Height	8 ft 2 in 2.5 m	8 ft 2 in 2.5 m
Weight	11,650 lbs 5284 kg	11,650 lbs 5284 kg
Ground clearance	12 1/2 in 31.8 cm	12 1/2 in 31.8 cm
Operational dimensions		
Maximum platform height	40 ft 12.2 m	40 ft 12.2 m
Maximum horizontal reach	31 ft 8 in 9.7 m	31 ft 8 in 9.7 m
Maximum turntable tailswing	34 in 86.4 cm	34 in 86.4 cm
Wheelbase	7 ft 3 in 2.2 m	7 ft 3 in 2.2 m
Minimum turning radius, outside	15 ft 8 in 4.8 m	15 ft 8 in 4.8 m
Minimum turning radius, inside	6 ft 8 in 2 m	6 ft 8 in 2 m
Turntable rotation	continuous	continuous
Platform rotation	160°	160°
Platform dimensions		
	6 ft (Standard) 8 ft (Optional)	6 ft (Standard) 8 ft (Optional)
Length x width, 6 ft	72 in x 30 in 1.8m x 76 cm	72 in x 30 in 1.8m x 76 cm
Length x width, 8 ft	96 in x 36 in 2.4m x 91 cm	96 in x 36 in 2.4m x 91 cm
Maximum capacity	500 lbs 227 kg	500 lbs 227 kg

	2WD/RT	4WD/RT
Maximum allowable side force		
ANSI and CSA	150 lbs 667 N	150 lbs 667 N
CE	90 lbs 400 N	90 lbs 400 N
Tires and wheels		
	2WD Front Tires Only	2WD Rear, 4WD Front and Rear
Tire size	12.5L-16SL	12-16.5 NHS
Tire ply rating	12	8
Tire contact area	88 sq in 568 sq cm	57 sq in 368 sq cm
Overall tire diameter	33.7 in 85.6 cm	33.2 in 84.3 cm
Tire pressure	45 psi 3.1 bar	45 psi 3.1 bar
Wheel diameter	16 in 40.6 cm	16 1/2 in 41.9 cm
Wheel width	10 in 25.4 cm	9 3/4 in 24.8 cm
Wheel lugs	8 @ 5/8 -18	9 @ 5/8 -18
Lug nut torque, dry	170 ft-lbs	230 Nm
Lug nut torque, lubricated	130 ft-lbs	176 Nm
Fluid capacities		
Fuel tank		30 gallons 114 liters
LPG tank		33.5 pounds 15.2 kg
Hydraulic tank		45 gallons 170 liters
Hydraulic system (including tank)		50 gallons 189 liters
Drive hubs		17 fl oz 0.5 liters
Turntable rotation drive hub		8 fl oz 0.24 liters
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SPECIFICATIONS

REV B

Machine Specifications S-45 Models

Stowed dimensions	2WD/RT	4WD/RT
Length	27 ft 10 in 8.5 m	27 ft 10 in 8.5 m
Width	7 ft 6 in 2.3 m	7 ft 6 in 2.3 m
Height	8 ft 2 in 2.5 m	8 ft 2 in 2.5 m
Weight	14,970 lbs 6,790 kg	14,970 lbs 6,790 kg
Ground clearance	12 1/2 in 31.8 cm	12 1/2 in 31.8 cm
Operational dimensions		
Maximum platform height	45 ft 13.7 m	45 ft 13.7 m
Maximum horizontal reach	36 ft 8 in 11.2 m	36 ft 8 in 11.2 m
Maximum turntable tailswing	34 in 86.4 cm	34 in 86.4 cm
Wheelbase	7 ft 3 in 2.2 m	7 ft 3 in 2.2 m
Minimum turning radius, outside	15 ft 8 in 4.8 m	15 ft 8 in 4.8 m
Minimum turning radius, inside	6 ft 8 in 2 m	6 ft 8 in 2 m
Turntable rotation	continuous	continuous
Platform rotation	160°	160°
Platform dimensions		
Length x width, 6 ft	72 in x 30 in 1.8m x 76 cm	72 in x 30 in 1.8m x 76 cm
Length x width, 8 ft	96 in x 36 in 2.4m x 91 cm	96 in x 36 in 2.4m x 91 cm
Maximum capacity	500 lbs 227 kg	500 lbs 227 kg

	2WD/RT	4WD/RT
Maximum allowable side force ANSI and CSA	150 lbs 667 N	150 lbs 667 N
CE	90 lbs 400 N	90 lbs 400 N
Tires and wheels		
	2WD Front Tires Only	2WD Rear, 4WD Front and Rear
Tire size	12.5L-16SL	12-16.5 NHS
Tire ply rating	12	8
Tire contact area	88 sq in 568 sq cm	57 sq in 368 sq cm
Overall tire diameter	33.7 in 85.6 cm	33.2 in 84.3 cm
Tire pressure	45 psi 3.1 bar	45 psi 3.1 bar
Wheel diameter	16 in 40.6 cm	16 1/2 in 41.9 cm
Wheel width	10 in 25.4 cm	9 3/4 in 24.8 cm
Wheel lugs	8 @ 5/8 -18	9 @ 5/8 -18
Lug nut torque, dry	170 ft-lbs	230 Nm
Lug nut torque, lubricated	130 ft-lbs	176 Nm
Fluid capacities		
Fuel tank		30 gallons 114 liters
LPG tank		33.5 pounds 15.2 kg
Hydraulic tank		45 gallons 170 liters
Hydraulic system (including tank)		50 gallons 189 liters
Drive hubs		17 fl oz 0.5 liters
Turntable rotation drive hub		8 fl oz 0.24 liters

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REV A

SPECIFICATIONS

Performance Specifications All Models

Drive speeds, maximum	2WD	4WD
Drive speed, stowed	4 mph	3.5 mph
Gasoline/LPG models	6.4 km/h	5.6 km/h
	40 ft/6.8 sec	40 ft/7.8 sec
	12.2 m/6.8 sec	12.2 m/7.8 sec
Drive speed, stowed	3.5 mph	3 mph
Deutz Diesel models	5.6 km/h	4.8 km/h
	40 ft/7.8 sec	40 ft/9.1 sec
	12.2 m/7.8 sec	12.2 m/9.1 sec
Drive speed, raised or extended - all models	0.6 mph	0.6 mph
	1 km/h	1 km/h
	40 ft/40 sec	40 ft/40 sec
	12.2 m/40 sec	12.2 m/40 sec
Gradeability	See Operator's Manual	

Boom function speeds, maximum from platform controls

Boom up	40 to 60 seconds
Boom down	50 to 80 seconds
Boom extend	30 to 60 seconds
Boom retract	25 to 55 seconds
Turntable rotate, 360° boom fully stowed	70 to 110 seconds
Platform rotate, 160°	6 to 12 seconds
Platform level up	25 to 50 seconds
Platform level down	15 to 35 seconds
Jib boom up, S-45 models	35 to 45 seconds
Jib boom down, S-45 models	20 to 30 seconds

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SPECIFICATIONS

REV B

Hydraulic Specifications**Drive pump**

Type: bi-directional variable displacement piston pump

Displacement @ 2500 rpm 0 to 31.6 gallons per minute
0 to 119.6 liters per minuteMaximum drive pressure 3500 psi
241.3 barCharge pressure
neutral position 290 psi 20 bar
drive position 250 psi 17 bar

Medium pressure filter 3 micron

Medium pressure filter
bypass pressure 50 psi
3.4 bar**Drive manifold**Brake relief pressure 250 psi
17.2 bar**Steer end drive motors 4WD models**4WD front motor 2.5 to 8 gallons per minute
flow regulators 9.4 to 30.2 liters per minute4WD rear motor 5 to 15 gallons per minute
flow regulators 18.9 to 56.7 liters per minute2WD rear motor 8 to 22 gallons per minute
flow regulators 30.2 to 83.2 liters per minute**Front drive motors 4WD models**Displacement
per revolution 1.52 cu in 25 cc**Non-steer end drive motors**Displacement
per revolution 2.13 cu in 35 cc**Function pump**

Type: pressure balanced gear

Displacement - static 1.03 cu in
17 ccDisplacement @ 2500 rpm 0 to 12.3 gallons per minute
0 to 46.6 liters per minuteHydraulic tank circuit
return line filter 10 micron with 25 psi
(1.7 bar) bypass**Function manifold**Function relief valve pressure
S-40 2600 psi 179 bar
S-45 2900 psi 200 barBoom down
relief valve pressure 2200 psi
152 barBoom extend 1950 psi
134 barOscillate axle 950 psi
66 barSteer regulator,
2WD non-oscillating models 2 gallons per minute
7.6 liters per minute2WD oscillating models
and 4WD models 1.5 gallons per minute
5.7 liters per minute**Auxiliary pump**

Type: fixed displacement gear pump

Displacement - static 0.152 cu in
2.5 ccDisplacement 1.4 gallons per minute
5.3 liters per minuteAuxiliary pump
relief pressure 2000 psi
138 bar**Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.**

REV B

Hydraulic Oil Specifications

Hydraulic Oil Specifications

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

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.

Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids

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

CAUTION

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

NOTICE

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

NOTICE

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

NOTICE

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

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



SPECIFICATIONS

REV A

Ford LRG-425 EFI Engine

Displacement	153 cu in 2.5 liters
Number of cylinders	4
Bore & stroke	3.78 x 3.4 inches 96.01 x 86.36 mm
Horsepower, gross intermittent	97
continuous	82
horsepower @ 2500 rpm	70
Firing order	1 - 3 - 4 - 2
Low idle	1600 rpm 396.8 Hz
High idle	2500 rpm 620 Hz
Compression ratio	9.4:1
Compression pressure (approx.) Pressure (psi) of lowest cylinder must be at least 75% of highest cylinder	
Valve clearances - collapsed tappet	0.035 to 0.055 inches 0.889 to 1.397 mm
Lubrication system	
Oil pressure (operating temperature @ 2000 rpm)	40 to 60 psi 2.75 to 4.1 bar
Oil capacity (including filter)	5 quarts 4.7 liters
Oil viscosity requirements	
Temperature below 60°F / 15.5°C	5W-30
-10°F to 90°F / -23°C to 32°C	10W-30
Temperature above -10°F / -23°C	10W-40 to 10W-50
Temperature above 20°F / -6.6°C	20W-40 or 20W-50
Use oils meeting API classification SG (labeled SG/CC or SG/CD) as they offer improved wear protection.	

Starter motor

Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Current draw, minimum	60-80A
Maximum circuit voltage drop while starting (normal temperature)	0.5V DC
Brush length, new	0.66 in 16.8 mm
Brush length wear limit	0.25 in 6.35 mm
Maximum commutator run-out	0.005 inches 0.127 mm

Battery

Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes

Electronic fuel pump

Fuel pressure, static	64 psi 4.4 bar
Fuel flow rate	0.58 gpm 2.18 liters per minute

Ignition System

Spark plug type	Motorcraft AWSF-52-C
Spark plug gap	0.042 to 0.046 inches 1.07 to 1.18 mm

Engine coolant

Capacity	11½ quarts 10.9 liters
----------	---------------------------

Alternator

Output	95A, 14.5V
--------	------------

REV A

SPECIFICATIONS

Deutz F3L 1011F Engine

Displacement	125 cu in 2.05 liters
Number of cylinders	3
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	36 @ 3000 rpm
Firing order	1 - 2 - 3
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle	1500 rpm
Frequency	313 Hz
High idle	2500 rpm
Frequency	521.7 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure	26 to 87 psi 1.8 to 6.0 bar
Oil capacity (including filter)	8.5 quarts 8 liters
Oil viscosity requirements	
Temperature below 60°F / 15.5°C (synthetic)	5W-30
-10°F to 90°F / -23°C to 32°C	10W-40
Temperature above -4°F / -34°C	15W-40
Engine oil should have properties of API classification SG/CC or CD/SG grades.	

Injection system

Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D

Alternator output

55A, 14V

Starter motor

Current draw, no load	90A
Brush length, new	0.7480 in 19 mm
Brush length, minimum	0.5 in 12.7 mm

Battery

Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	³ / ₈ to ¹ / ₂ inch 9 to 12 mm

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



SPECIFICATIONS

REV A

Perkins 704-30 Engine

Displacement	183 cu in 2.9 liters
Number of cylinders	4
Bore and stroke	3.82 x 3.94 inches 97 x 100 mm
Horsepower	63 @ 2600 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	17.5:1
Compression pressure	300 to 500 psi 20.7 to 34.5 bar
Pressure (psi) of lowest cylinder must be within 50 psi (3.45 bar) of highest cylinder	
Low idle	1600 rpm
Frequency	246.7 Hz
High idle	2200 rpm
Frequency	339.2 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.014 in 0.35 mm
Exhaust	0.014 in 0.35 mm
Lubrication system	
Oil pressure (at 2600 rpm)	41 psi 2.8 bar
Oil capacity (including filter)	9.6 quarts 9 liters

Oil viscosity requirements

below 68°F / 20°C (synthetic)	5W-20
5°F to 104°F / -15°C to 40°C	10W-30
above 14°F / -10°C	15W-40

Engine oil should have properties of API classification CC/SE. API classification CD/SE or CCMC D4 can be used, but is not recommended during the first 50 hours nor for light load applications.

Injection system

Injection pump make	Zexel PFR-KX	
Injection pump pressure (stage one)	2755 psi	190 bar
(stage two)	3336 psi	230 bar
Injector opening pressure	3626 psi	250 bar
Fuel requirement	diesel number 2-D	

Engine coolant

Capacity	11½ quarts 10.9 liters
----------	---------------------------

Alternator output	65A, 12V
--------------------------	----------

Battery

Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes

Fan belt deflection	³ / ₈ in 10 mm
----------------------------	---

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



REV B

SPECIFICATIONS

Machine Torque Specifications

Platform rotator

1-8 center bolt, GR 5, dry	640 ft-lbs 868 Nm
----------------------------	----------------------

1-8 center bolt, GR 5, lubricated	480 ft-lbs 651 Nm
-----------------------------------	----------------------

$\frac{3}{8}$ -16 bolts, GR 8, lubricated	35 ft-lbs*
*use blue thread-locking compound	47.5 Nm

Turntable rotator

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated*	160 ft-lbs
*use blue thread-locking compound	217 Nm

Drive motor and hubs

Before serial number 5370

Drive hub mounting bolts, dry	150 ft-lbs 203 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	110 ft-lbs 149 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
---------------------------------	---------------------

Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm
--	--------------------

After serial number 5369

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	160 ft-lbs 217 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
---------------------------------	----------------------

Drive motor mounting bolts, lubricated	80 ft-lbs 109 Nm
--	---------------------

Turntable bearing

Turntable bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
--	----------------------

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



SPECIFICATIONS

REV B

Hydraulic Hose and Fitting Torque Specifications

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

SAE O-ring Boss Port

(tube fitting - installed into Aluminum)

SAE Dash size	Torque
-4	14 ft-lbs / 18.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	36 ft-lbs / 48.8 Nm
-10	62 ft-lbs / 84.1 Nm
-12	84 ft-lbs / 113.9 Nm
-16	125 ft-lbs / 169.5 Nm
-20	151 ft-lbs / 204.7 Nm
-24	184 ft-lbs / 250 Nm

SAE O-ring Boss Port

(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	15 ft-lbs / 20.3 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	100 ft-lbs / 135.6 Nm
-12	135 ft-lbs / 183 Nm
-16	200 ft-lbs / 271 Nm
-20	250 ft-lbs / 334 Nm
-24	305 ft-lbs / 414 Nm

Seal-Lok® fittings

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

NOTICE

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

- 2 Lubricate the O-ring before installation.
- 3 Be sure that the face seal O-ring is seated and retained properly.
- 4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.
- 5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table.
- 6 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.



Seal-Lok® Fittings (ORFS)





(hose end)

SAE Dash size	Torque
-4	18 ft-lbs / 24.4 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 149 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 244 Nm

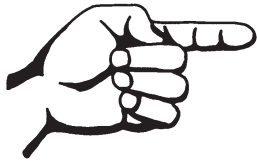
REV A

SPECIFICATIONS

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

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





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Theory Of Operation

REV A

Power Source

The Genie S-40 and Genie S-45 are powered by either a gasoline/LPG engine or one of two diesel engines. The gasoline/LPG option uses a Ford LRG-425 EFI rated at 70 horsepower @ 2500 rpm. The diesel options include a Deutz F3L 1011F rated at 36 horsepower @ 3000 rpm, and a Perkins 704-30 rated at 63 horsepower @ 2600 rpm.

Hydraulic System

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

Boom/Steer functions are powered by a single-section gear pump, rated at 10 gpm / 37.9 L/min. When the engine is running, this pump supplies hydraulic fluid under pressure to the function manifold, where the directional and flow control valves are located. To protect from over-pressurization of the Boom/Steer system, the pump is provided with a pressure relief valve, set at 2900 psi / 200 bar for the S-45 and 2600 psi / 180 bar for the S-40.

Drive functions are powered by a bi-directional, variable output piston pump rated at 0 to 31.6 gpm / 0 to 119.6 L/min @ 2500 rpm. Two internal 3500 psi / 241 bar relief valves are used to prevent over-pressurization of the closed loop drive system.

The boom lift cylinder, boom extend cylinder, platform leveling slave cylinder, platform rotator and jib boom cylinder (S-45 only) incorporate counterbalance valves to prevent movement in the event of a hydraulic line failure.

Electrical System

Boom/Steer functions are accomplished by moving a toggle switch or a controller, which sends voltage to the appropriate directional control valve. These directional valves determine which direction the hydraulic fluid will travel. The amount of hydraulic fluid volume is determined by a proportional valve or flow regulator valve. A proportional valve receives a variable voltage signal and delivers more hydraulic fluid as the voltage increases. A flow regulator valve is a mechanical valve and delivers a predetermined amount of hydraulic fluid.

Drive forward or reverse is accomplished by pressing down the foot switch in the platform and moving the drive controller (joystick) in the appropriate direction. When activated, the drive controller completes a circuit to the electronic displacement controller (EDC). The EDC regulates drive pump displacement in direct relation to the drive controller position. A horsepower limiter printed circuit board (located in the platform control box) is provided to maintain engine RPM as drive system loads become greater. This is done by sensing engine RPM (via an AC tap on the alternator) and limiting the amount of current supplied to the drive controller/EDC, which destrokes the pump, reducing pump output.

THEORY OF OPERATION

REV A

Limit switches

There are two types of limit switches which are found in various locations on the machine: drive speed limit switches and a drive enable limit switch. The function of a drive speed limit switch is to limit the raised or extended drive speed to 0.6 miles per hour / 1 km/h when the primary boom is raised more than 2 feet / 0.6 m OR when the primary boom is extended more than 18 inches / 45.7 cm. The function of the drive enable limit switch is to limit the ability of the machine to drive when the boom is rotated beyond the non-steer wheels.

Machine Controls

The Genie S-40 and Genie S-45 machines are equipped with operational controls which are found in two locations: the ground controls, located on the tank side of the machine, and the platform controls, located in the platform. All lift and drive functions are available at the platform controls. Only boom functions are available at the ground controls.

Ground controls are activated by holding the function enable toggle switch to either side, then moving a boom function toggle switch in the direction indicated on the control panel decal. This will determine which boom function will operate and its direction of travel.

Platform controls use toggle switches and boom function controllers (joysticks) to operate the boom functions. The drive controller (joystick) regulates the drive pump displacement through the EDC in direct relation to the drive controller position. A thumb rocker switch on the top of the drive controller is used for steering.

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

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*.

AWARNING Failure to perform each procedure as presented and scheduled 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.
- ☑ Use only Genie approved replacement parts.
- ☑ Machines that have been out of service for a period longer than three months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
 - Machine parked on a flat, level surface
 - Boom in the stowed position
 - Turntable rotated with the boom between the non-steering wheels
 - Turntable secured with the turntable rotation lock pin
 - Key switch in the off position with the key removed
 - Wheels chocked

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend



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

DANGER

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

AWARNING

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

CAUTION

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

CAUTION

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

NOTICE

Green—used to indicate operation or maintenance information.

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

NOTICE

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



Indicates that tools will be required to perform this procedure.



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



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



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



Indicates that dealer service is required to perform this procedure.

Maintenance Schedule

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

Inspection	Table or Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Six months or every 500 hours	A + B + C
Annual or every 1000 hours	A + B + C + D
Two year or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

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

Make copies of the *Maintenance Inspection Report* to use for each inspection. Maintain completed forms for a minimum of 4 years or in compliance with employer, jobsite and governmental regulations and requirements.

Maintenance Inspection Report

Model _____

Serial number _____

Date _____

Hour meter _____

Machine owner _____

Inspected by (print) _____

Inspector signature _____

Inspector title _____

Inspector company _____

Instructions

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

<input type="checkbox"/>	Daily or 8 hour Inspection:	A
<input type="checkbox"/>	Quarterly or 250 hour Inspection:	A+B
<input type="checkbox"/>	Six Month or 500 hour Inspection:	A+B+C
<input type="checkbox"/>	Annual or 1000 hours Inspection:	A+B+C+D
<input type="checkbox"/>	2 Year or 2000 hour Inspection:	A+B+C+D+E

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in 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

Checklist A - Rev B	Y	N	R
A-1 Manuals			
A-2 Decals and placards			
A-3 Damage and loose or missing parts			
A-4 Engine oil level			
A-5 Engine coolant- Ford/Perkins Models			
A-6 Fuel leaks			
A-7 Hydraulic oil level			
A-8 Hydraulic leaks			
A-9 Tire pressure			
A-10 Oscillate axle			
A-11 Platform and ground controls			
A-12 Auxiliary power			
A-13 Tilt sensor			
A-14 Limit switches			
A-15 Drain filter/separator Deutz/Perkins Models			
A-16 30 Day Service			
Perform every 100 hours:			
A-17 Replace engine oil and filter-Ford Models			
Perform every 200 hours:			
A-18 Engine belt - Ford/Perkins Models			
A-19 Fuel filter-Ford Models			

Checklist B - Rev B	Y	N	R
B-1 Exhaust system			
B-2 Air Filter			
B-3 Radiator			
B-4 Battery			
B-5 Electrical Wiring			
B-6 Oil Cooler Fins- Deutz			
B-7 Hydraulic tank condition			
B-8 Tires and wheels			
B-9 Brake configuration			
B-10 Drive hub oil level			
B-11 Engine RPM			
B-12 Key switch			
B-13 Emergency Stop			
B-14 Ground control override			
B-15 Directional valve			
B-16 Platform leveling			
B-17 Foot switch			
B-18 Horn			
B-19 Engine idle select			
B-20 Fuel select-Gas/LPG			
B-21 Drive enable system			
B-22 Drive brakes			
B-23 Drive speed-stowed			
B-24 Drive speed-raised			
B-25 Alarm package			
B-26 Hydraulic oil analysis			
B-27 Replace hydraulic tank return filter			
Perform every 400 hours:			
B-28 Replace engine air filter			
B-29 Replace spark plugs- Ford Models			

Comments _____

MAINTENANCE INSPECTION REPORT

Instructions

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

<input type="checkbox"/>	Daily or 8 hour Inspection:	A
<input type="checkbox"/>	Quarterly or 250 hour Inspection:	A+B
<input type="checkbox"/>	Six Month or 500 hour Inspection:	A+B+C
<input type="checkbox"/>	Annual or 1000 hours Inspection:	A+B+C+D
<input type="checkbox"/>	2 Year or 2000 hour Inspection:	A+B+C+D+E

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in 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 C- Rev A		Y	N	R
C-1	Engine belt-Deutz Models			
C-2	Valves-Deutz Models			
C-3	Fuel filter/water separator-Perkins Models			
C-4	Fuel filter-Perkins Models			
C-5	Replace engine oil and filter-Perkins Models			
C-6	Check the coolant-Ford/Perkins Models			
C-7	Glow plugs-Perkins			
C-8	PCV valve-Ford Models			

Checklist D - Rev B		Y	N	R
D-1	Boom wear pads			
D-2	Free-wheel configuration			
D-3	Turntable bearing bolts			
D-4	Grease rotation bearing			
D-5	Drive hub oil			
D-6	Drive loop hydraulic filter			
D-7	Replace engine oil and filter-Deutz Models			
D-8	Fuel strainer-Deutz			
D-9	Fuel filter/water separator-Deutz Models			
D-10	Change fuel lines-Duetz			
D-11	Valves-Deutz Models			
D-12	Clean engine breather-Perkins Models			

Checklist E - Rev B		Y	N	R
E-1	Hydraulic oil			
E-2	Engine coolant-Ford/Perkins Models			
E-3	Fuel hoses-Ford Models			
E-4	Replace engine breather-Perkins Models			
E-5	Wheel bearings			
Perform every 3000 hours:				
E-6	Fuel injectors-Perkins Models			

Checklist A Procedures

REV B

A-1 Inspect the Manuals

NOTICE Genie specifications require that this procedure be performed daily.

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

- 1 Check to be sure that 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

NOTICE Genie specifications require that this procedure be performed daily.

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

- 1 Refer to the *Decals* section in the *Genie S-40 & Genie S-45 Operator's Manual* and use the decal list and illustrations to determine that all decals and placards are in place.
- 2 Inspect all decals for legibility and damage. Replace any damaged or illegible decal immediately.

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

A-3

Inspect for Damage and Loose or Missing Parts



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

- 1 Inspect the entire machine for damage and improperly installed or missing parts including:
 - Electrical components, wiring and electrical cables
 - Hydraulic hoses, power units, fittings, cylinders and manifolds
 - Fuel and hydraulic tanks
 - Drive and turntable motors and drive hubs
 - Boom wear pads
 - Tires and wheels
 - Engine and related components
 - Limit switches, alarms, horn and beacon
 - Nuts, bolts and other fasteners
 - Platform entry mid-rail or gate

Check entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine
- Battery and connections
- Compartment covers and latches

Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.

After you complete each inspection, be sure that all compartment covers are in place and secured.

REV B

CHECKLIST A PROCEDURES

A-4 Check the Engine Oil Level



NOTICE Genie specifications require that this procedure be performed daily.

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 dipstick.

Gasoline/LPG Engine: located above the bellhousing on the bulkhead side of the engine.

Diesel Engine: located on the engine block near the engine oil filter.

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

Ford LRG-425 EFI Engine
Oil capacity (including filter) 5 quarts / 4.7 liters

Oil viscosity requirements

below 60°F / 15.5°C	5W-30
-10° to 90°F / -23° to 32°C	5W-30
above -10°F / -23°C	5W-30
above 25°F / -4°C	10W-30

Use oils meeting API classification SH or SG grade.

Deutz F3L 1011F Engine
Oil capacity (including filter) 8.5 quarts / 8 liters

Oil viscosity requirements

below 60°F / 15.5°C (synthetic)	5W-30
-10°F to 90°F / -23°C to 32°C	10W-40
above -4°F / -34°C	15W-40

Engine oil should have properties of API classification CC/SE or CC/SF grades.

Perkins 704-30 Engine
Oil capacity (including filter) 9.5 quarts / 8.9 liters

Oil viscosity requirements

below 60°F / 15.5°C	15W-40
-10°F to 90°F / -23°C to 32°C	10W-30
above -4°F / -34°C	15W-40

Engine oil should have properties of API classification CF4 grade.

A-5 Check the Engine Coolant Level - Liquid Cooled Models



NOTICE Genie specifications require that this procedure be performed daily.

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.

CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

- 1 Check the fluid level in the coolant recovery tank. Add fluid as needed.
- ⦿ Result: The fluid level should be at the FULL mark.

NOTICE Do not remove the radiator cap.

A-6 Check for Fuel Leaks



NOTICE Genie specifications require that this procedure be performed daily.

Failure to detect and correct 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 (if equipped).
- 2 Perform a visual inspection around the following areas.

REV B

CHECKLIST A PROCEDURES

Gasoline/LPG models:

- LPG tank, hoses and fittings, solenoid shutoff valve, LPG regulator and throttle body.

NOTICE An LPG detector may be necessary to locate LPG leaks.

- Gasoline tank, manual shutoff valve, fuel pump, fuel filters, fuel rail and fuel injectors, hoses and fittings and throttle body.

Diesel models:

- Fuel tank, shutoff valve, hoses and fittings, fuel pump, fuel filter, fuel injection pumps and fuel injectors (atomizers).

⚠ 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.

A-7**Check the Hydraulic Oil Level**

NOTICE Genie specifications require that this procedure be performed daily.

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 oil tank. Add oil as needed.
- ⦿ Result: The hydraulic oil level should be within the top 2 inches / 5 cm of the sight gauge.

A-8 Check for Hydraulic Leaks



NOTICE Genie specifications require that this procedure be performed daily.

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.

⚠ 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.

- 1 Inspect for hydraulic oil puddles, dripping or residue on or around the following areas:
 - Hydraulic tank—filter, fittings, hoses, auxiliary power unit, filters, and component tray
 - Engine compartment—hydraulic filters, fittings, hoses, pumps, and component tray
 - All hydraulic cylinders
 - All hydraulic manifolds
 - Primary, and jib booms
 - The underside of the turntable
 - The underside of the drive chassis
 - Ground area under the machine

A-9 Check the Tire Pressure



NOTICE Genie specifications require that this procedure be performed daily.

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

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

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

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. Add air as needed.

Tire specifications

Tire size	
2WD (front tires only)	12.5-16 SL
2WD and 4WD (front and rear tires)	12-16.5 NHS
<hr/>	
Pressure	45 psi 3.1 bar
<hr/>	

REV B

CHECKLIST A PROCEDURES

A-10 Test the Oscillate Axle (if equipped)

**NOTICE**

Genie specifications require that this procedure be performed daily.

Proper axle oscillation is essential to safe machine operation. If the axle oscillation system is not operating correctly, the stability of the machine is compromised and it may tip over.

- 1 Start the engine from the platform controls.
- 2 Drive the right steer tire up onto a 6 inch / 15 cm block or curb.
 - ⦿ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.
- 3 Drive the left steer tire up onto a 6 inch / 15 cm block or curb.
 - ⦿ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.
- 4 Drive both steer tires up onto a 6 inch / 15 cm block or curb.
 - ⦿ Result: The non-steer tires should stay in firm contact with the ground.

NOTICE

If the chassis does not remain level during test, see Repair Procedure 11-6, *How to Set Up the Directional Valve Linkage* OR see Repair Procedure 11-5, *How to Adjust the Oscillate Sequencing Valve Pressure*.

A-11 Test the Platform and Ground Controls

NOTICE Genie specifications require that this procedure be performed daily.

Testing the machine functions and the red 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 and shut off the engine. Each function should activate, operate smoothly and be free of hesitation, jerking and unusual noise.

- 1 Pull out the red Emergency Stop button at the ground controls to the on position.
 - 2 Start the engine from the ground controls.
 - 3 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.
- 4 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 the boom is lowering.

- 5 Push in the red Emergency Stop button to the off position.
- ⊙ Result: No function should operate, the engine should stop.

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

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

- 6 Start the engine from the platform controls.
 - 7 Do not press down on the footswitch.
 - 8 Attempt to operate all machine functions.
- ⊙ Result: All machine functions should **not** operate.
- 9 Press down the footswitch and activate each machine function.
- ⊙ Result: All machine functions should operate through a full cycle.
- 10 Push in the red Emergency Stop button to the off position at the platform controls.
- ⊙ Result: No function should operate, the engine should stop.

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

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

REV B

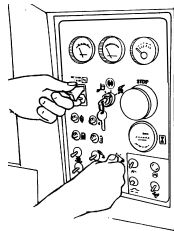
CHECKLIST A PROCEDURES

A-12 Test the Auxiliary Power Operation

NOTICE Genie specifications require that this procedure be performed daily.

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

- 1 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.
- 2 Lift the red auxiliary power toggle switch cover.
- 3 Simultaneously hold the auxiliary power toggle switch ON and activate each boom function toggle switch.

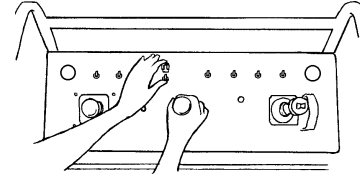


- ⦿ Result: All boom functions should operate.

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

- 4 Turn the key switch to platform control.
- 5 Pull out the red Emergency Stop button to the on position at the platform controls, then press down the foot switch.

- 6 Lift the red auxiliary power toggle switch cover.
- 7 Simultaneously hold the auxiliary power toggle switch on and activate each function control handle or toggle switch



- ⦿ Result: All boom and steer functions should operate. Drive functions should not operate with auxiliary power.

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

A-13 Test the Tilt Sensor

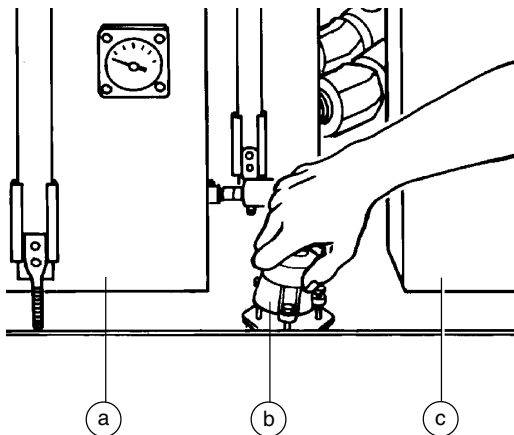
NOTICE Genie specifications require that this procedure be performed daily.

The tilt sensor sounds an alarm located in the platform only when the machine is on a slope.

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

- 1 Start the engine from the platform controls.
 - 2 Open the tank side turntable 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.

AWARNING Tip-over hazard. The alarm should be audible at the ground controls. If the alarm is not audible at the ground controls, replace the alarm in the platform.



- a fuel tank
b tilt sensor
c ground control box

A-14 Test the Limit Switches

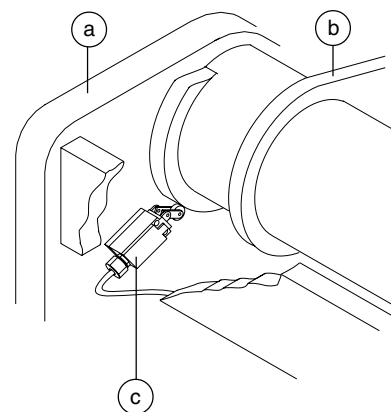


NOTICE Genie specifications require that this procedure be performed daily.

Drive Limit Switches

Detecting limit switch malfunctions is essential to safe machine operation. The drive limit switches are used to restrict drive speed when the boom is raised or extended. An improperly functioning drive limit switch will allow the machine to operate in an unsafe position.

- 1 Remove the cover from the rear of the turntable to access the drive limit switch.
- 2 Visually inspect the boom up drive limit switch mounted to the turntable riser at the pivot end of the boom. Inspect for the following:
 - Broken or missing roller or arm
 - Missing fasteners
 - Loose wiring

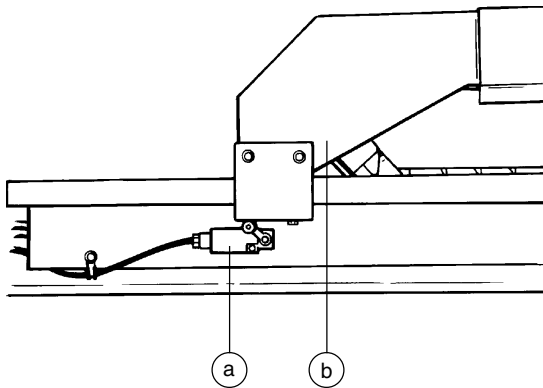


- a turntable riser
b boom
c boom up drive limit switch (LS2)

REV B

CHECKLIST A PROCEDURES

- 3 Manually activate the boom up drive limit switch.
- ⊙ Result: The boom up drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.
- 4 Visually inspect the boom extend drive limit switch located at the end of the cable track on the boom. Inspect for the following:
 - Broken or missing roller or arm
 - Missing fasteners
 - Loose wiring



a boom extend drive limit switch (LS1)
b cable track

- 5 Start the engine from the ground controls.
- 6 Extend the boom approximately 3 feet / 0.9 m.
- 7 Manually activate the boom extend drive limit switch.
- ⊙ Result: The boom extend drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

- 8 Turn the key switch to platform controls and fully retract the boom.
- 9 Move the lift/drive selector switch to the drive position, if equipped.
- 10 Press down the foot switch and slowly move the drive control handle off center.
- ⊙ Result: The machine should move at normal drive speeds.
- 11 Move the lift/drive selector switch to the lift position, if equipped.
- 12 Raise the boom to just above horizontal.
- 13 Move the lift/drive selector switch to the drive position, if equipped.
- 14 Slowly move the drive control handle off center.
- ⊙ Result: The machine should move at a reduced drive speed.
- 15 Move the lift/drive selector switch to the lift position (if equipped).
- 16 Lower the boom to the stowed position, then extend the boom 3 feet / 0.9 m.
- 17 Move the lift/drive selector switch to the drive position, if equipped.
- 18 Slowly move the drive control handle off center.
- ⊙ Result: The machine should move at a reduced drive speed.

Drive speed, maximum, raised or extended position

All models	1 foot per second 0.3 meter per second	0.6 mph 0.97 km/h
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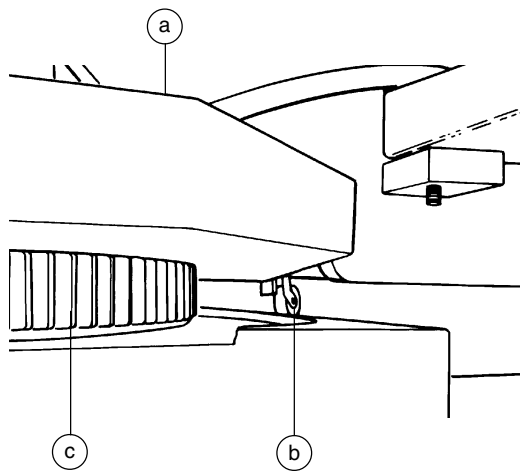
CHECKLIST A PROCEDURES

REV B

Drive Enable Limit Switch

A properly functioning drive enable limit switch is essential for safe machine operation and workplace safety. The drive enable limit switch stops the drive function when the boom is rotated past a non-steer tire and alerts the operator that the machine may drive in the opposite direction that the drive and steer control handle is moved.

- 1 Start the engine from the platform controls and rotate the turntable to the left until the boom is past the left non-steer wheel. Turn the engine off.
- 2 Visually inspect the drive enable limit switch for the following:
 - Broken or missing roller or arm
 - Missing fasteners
 - Loose wiring



- a turntable
 b drive enable limit switch (LS3)
 c turntable rotation bearing

- 3 Manually activate the drive enable limit switch.
 - ⊙ Result: The drive enable 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 platform controls, and press down the foot switch.
 - ⊙ Result: The drive enable indicator light should be on.
- 5 Rotate the turntable so the boom is between the non-steer tires.
 - ⊙ Result: The drive enable indicator light should be off and drive function should operate.
- 6 Rotate the turntable to the left until the 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 override toggle switch is activated.
- 7 Rotate the turntable to the right until the 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 override toggle switch is activated.

REV B

CHECKLIST A PROCEDURES

A-15 Drain the Fuel Filter/ Water Separator - Diesel Models



NOTICE

Genie specifications require that this procedure be performed every 100 hours or monthly, whichever comes first.

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.

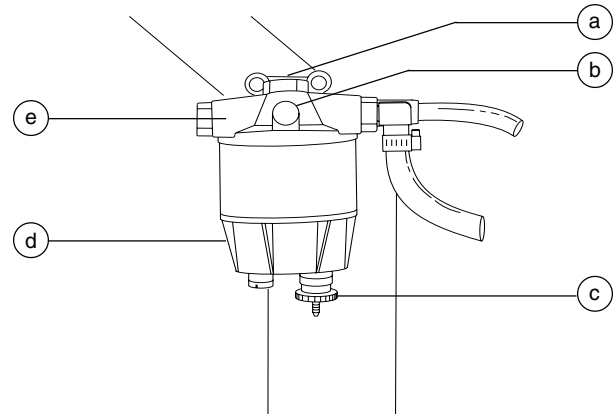
NOTICE

Perform this procedure with the engine off.

Perkins Models:

- 1 Open the engine side cover and locate the fuel filter/water separator.

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



Fuel filter/water separator

- a head bolt
- b vent plug
- c drain plug
- d filter bowl
- e separator head

- 3 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.

- 4 Tighten the vent plug.

NOTICE

If the fuel filter/water separator is completely drained, you must prime the fuel filter/water separator before starting the engine. Refer to C-4 in this section, *Replace The Fuel Filter Element - Perkins Diesel Models*, for instructions on how to prime the fuel filter/water separator.

CHECKLIST A PROCEDURES

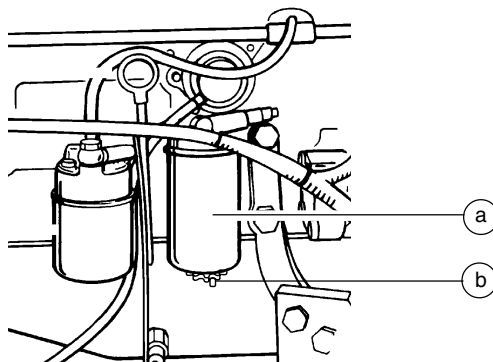
REV B

- 5 Clean up any fuel that may have spilled.
- 6 Start the engine from the ground controls and check the fuel filter/water separator and vent plug 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.

Deutz Models:

- 1 Open the engine side cover and locate the fuel filter/water separator.
- 2 Loosen the drain plug located at the bottom of the filter. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.



a fuel filter
b drain plug

- 3 Clean up any fuel that may have spilled.

NOTICE If the fuel filter is completely drained, you must prime the fuel filter/water separator before starting the engine. Refer to D-9 in this section, *Replace The Diesel Fuel Filter/Water Separator - Deutz Diesel Models*, 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.

▲ 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.

REV B

CHECKLIST A PROCEDURES

A-16 Perform 30 Day Service



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

- 1 Perform the following maintenance procedures:
 - A-17 Replace the Engine Oil and Filter - Gasoline/LPG Models (if applicable) OR
 - C-5 Replace the Engine Oil and Filter - Perkins Models (if applicable) OR
 - D-7 Replace the Engine Oil Filter - Deutz Models (if applicable)
 - B-8 Inspect the Tires, Wheels and Lug Nut Torque
 - B-27 Replace the Hydraulic Tank Return Filter
 - D-3 Check the Turnable Rotation Bearing Bolts

A-17 Replace the Engine Oil and Filter - Gasoline/LPG Models



NOTICE Ford engine specifications require that this procedure be performed every 100 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 machine hours against the hours noted on the oil filter will allow the inspector to anticipate and perform oil and filter changes at the 100 hour interval.

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

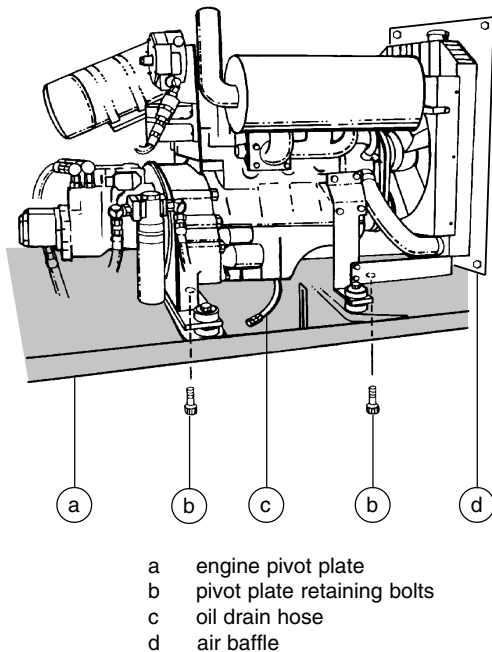
CAUTION Bodily injury hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may cause severe burns.

- 1 Open the engine side cover and remove the oil filler cap located on the valve cover.
- 2 Pull the oil drain hose out from underneath the engine.

CHECKLIST A PROCEDURES

REV B

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



- 4 Close the engine oil drain valve.
- 5 Remove the air baffle retaining fasteners. Remove the air baffle.
- 6 Remove the 2 engine pivot plate retaining bolts. Pull the engine pivot plate away from the machine to access the oil filter.
- 7 Place a container under the oil filter.
- 8 Use an oil filter wrench and remove the filter.
- 9 Apply a thin layer of fresh oil on the gasket of the new oil filter. Install the filter and tighten it securely by hand.

- 10 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.
- 11 Fill the engine with new oil per specifications and install the filler cap. See capacity specifications.
- 12 Start the engine from the ground controls. Allow the engine to run for 30 seconds, then turn the engine off.
- 13 Check the oil filter, oil pan drain hose and drain valve for leaks.
- 14 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 15 Install the air baffle and the air baffle retaining fasteners.
- 16 Check the engine oil level dipstick. Add oil if needed.
- 17 Clean up any oil that may have spilled. Properly dispose of the oil and filter.

Ford LRG-425 EFI Engine	5 quarts
Oil capacity (including filter)	4.7 liters

Oil viscosity requirements

below 60°F / 15.5°C	5W-30
-10° to 90°F / -23° to 32°C	5W-30
above -10°F / -23°C	5W-30
above 25°F / -4°C	10W-30

Use oils meeting API classification SH or SG grade.

Oil filter - Genie part number	52581
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REV B

CHECKLIST A PROCEDURES

A-18 Check the Engine Belt - Gasoline/LPG and Perkins Diesel Models



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

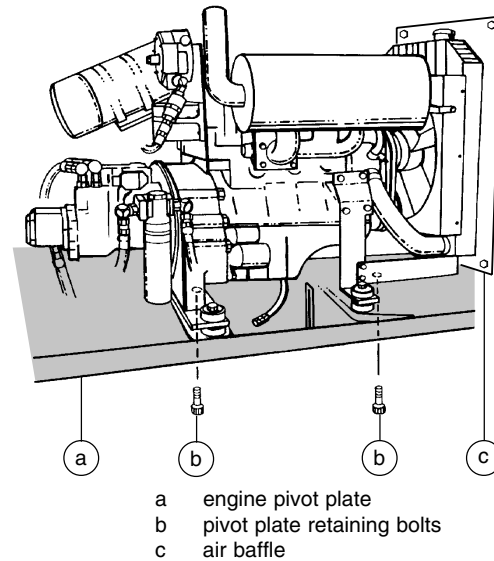
Maintaining the engine belt is essential to good engine performance and service life. The machine will not operate properly with a loose or defective belt and continued use may cause component damage.

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 Remove the air baffle retaining fasteners.
Remove the air baffle.

- 2 Remove the 2 engine pivot plate retaining bolts.
Swing the engine pivot plate away from the machine to access the front engine access cover mounting fasteners.



- 3 Remove the front engine access cover mounting fasteners.

All models:

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

CHECKLIST A PROCEDURES

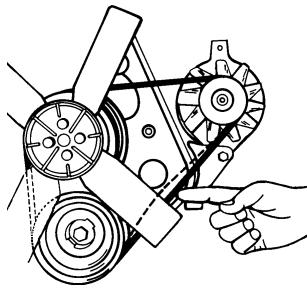
REV B

- 5 Replace belt if any damage is found.

NOTICE Ford LRG-425 EFI engines are equipped with a serpentine belt and incorporate a self adjusting belt tensioner. No adjustment is required.

Perkins Diesel models:

- 6 Check the engine belt for proper tension.



Perkins Diesel engine

- 7 Install the front engine access cover.
- 8 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 9 Replace the air baffle and install the air baffle retaining fasteners.

Belt deflection - Diesel models $\frac{3}{8}$ inch to $\frac{1}{2}$ inch
9 mm to 12 mm

Engine belts - Genie part numbers

Gasoline/LPG models 52580
Perkins Diesel models 62423

A-19

Replace the Gasoline Fuel Filter - 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 Locate the fuel pre-filter to the left of the ground control box.
- 2 Turn the manual shutoff valve, located at the fuel tank to the closed position.
- 3 At the pre-filter, disconnect the fuel hose that goes to the fuel tank.
- 4 Disconnect and plug the fuel hose from the fuel pre-filter to the fuel pump, then remove the pre-filter.

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CHECKLIST A PROCEDURES

- 5 Install the new fuel pre-filter (Genie part number 52179) and connect the fuel hoses to the filter.
- 6 Clean up any fuel that may have spilled during the installation procedure.
- 7 Remove the air baffle retaining fasteners. Remove the air baffle.
- 8 Remove the 2 engine pivot plate retaining bolts. Swing the engine pivot plate away from the machine to access the fuel pressure regulator/filter.
- 9 Locate the fuel pressure regulator/filter installed on the engine mounting leg.
- 10 Disconnect and plug the hoses from the fuel pressure regulator/filter.

⚠ DANGER

Explosion and fire hazard. Electronic Fuel Injection (EFI) systems operate at a very high pressure. Fuel may be expelled under pressure if the hoses are removed too quickly. Loosen the fuel hoses very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.

- 11 Remove the fuel pressure regulator/filter mounting fasteners. Then remove the regulator/filter from the engine mounting leg.

- 12 Install the new fuel pressure regulator/filter (Genie part number 58967) onto the engine mounting leg and connect the hoses to the regulator/filter.

CAUTION

Component damage hazard. Be sure the correct regulator/filter is installed or component damage may occur.

- 13 Turn the manual shutoff valve, located at the fuel tank, to the open position.
- 14 Start the machine from the ground controls, then inspect the fuel filters 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.

- 15 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 16 Install the air baffle and the air baffle retaining fasteners.

Checklist B Procedures

REV B

B-1 Check the Exhaust System



NOTICE

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

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

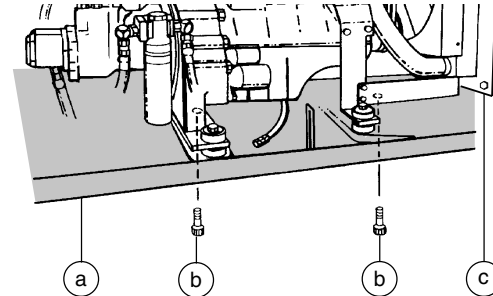
⚠ WARNING

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

⚠ CAUTION

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

- 1 **Diesel models:** Remove the air baffle retaining fasteners. Remove the air baffle.
- 2 **Diesel models:** Remove the 2 bolts from under the engine pivot plate. Swing the engine pivot plate away from the machine to access the exhaust system.



- a engine pivot plate
- b pivot plate retaining bolts
- c air baffle

- 3 **All models:** Be sure that all nuts and bolts are tight.
- 4 Inspect all welds for cracks.
- 5 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.
- 6 **Diesel models:** Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 7 **Diesel models:** Replace the air baffle and install the air baffle retaining fasteners.

REV B

CHECKLIST B PROCEDURES

B-2 Inspect the Engine Air Filter



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

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

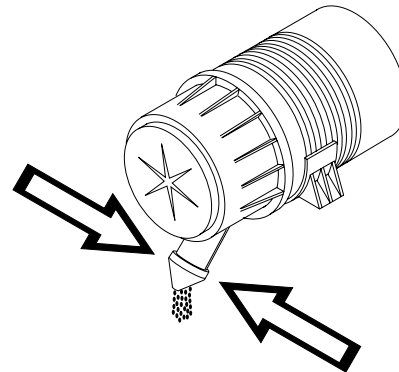
NOTICE Perform this procedure with the engine off.

Gasoline/LPG and Deutz Diesel Models:

- 1 Open the engine side cover and remove the retaining ring from the end cap of the air filter canister.
- 2 Remove the end cap from the air cleaner canister.
- 3 Remove the air filter retaining fastener. Remove the filter element.
- 4 Clean the inside of the canister and the gasket with a damp cloth.
- 5 Inspect the filter element. If needed, blow out from inside out using low pressure dry compressed air, or tap out dust taking care not to damage the element.
- 6 Install the air filter element and install the mounting fastener.
- 7 Install the end cap onto the canister. Install and tighten the retaining ring.

Perkins Diesel models:

- 1 Open the engine side cover and disconnect the retaining fasteners from the end cap of the air filter canister. Remove the end cap.
- 2 Remove the filter element.
- 3 Empty the dust discharge valve by pressing together the sides of the discharge slot. Clean discharge slot as needed.



a air filter
b dust discharge valve

- 4 Clean the inside of the canister and the canister end cap with a damp cloth.
- 5 Inspect the filter element. If needed, blow out from inside out using low pressure dry compressed air, or tap out dust taking care not to damage the element.
- 6 Install the filter element
- 7 Install the end cap onto the canister. Secure the retaining fasteners.

Air filters - Genie part numbers

Ford LRG-425 EFI Engine	27916
Deutz F3L 1011F Engine	27916
Perkins 704-30 Engine	62420

CHECKLIST B PROCEDURES

REV B

B-3 Inspect the Radiator - Liquid Cooled Models



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

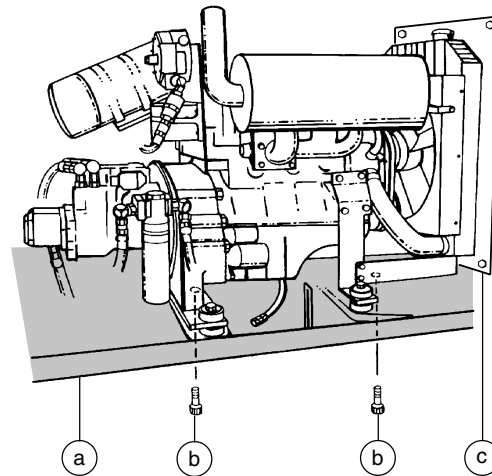
Maintaining the radiator in good condition is essential for good engine performance. Operating a machine with a damaged or leaking radiator may result in engine damage. Also, restricting air flow through the radiator (i.e., dirt or debris) will affect the performance of the cooling system. A frequent 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 parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

- 1 Remove the air baffle retaining fasteners.
Remove the air baffle.

- 2 Remove the 2 engine pivot plate retaining bolts.
Swing the engine pivot plate away from the machine to access the radiator.



a engine pivot plate
b pivot plate retaining bolts
c air baffle

- 3 Inspect the radiator for leaks and physical damage.
- 4 Clean the radiator fins of debris and foreign materials.
- 5 Inspect all radiator hoses and connections.
- 6 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 7 Replace the air baffle and install the air baffle retaining fasteners.

REV B

CHECKLIST B PROCEDURES

B-4 Inspect the Battery



NOTICE

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

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

AWARNING

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

AWARNING

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

- 1 Put on protective clothing and eye wear.
 - 2 Be sure that the battery cable connections are free of corrosion.
- Note: Adding terminal protectors and a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.
- 3 Be sure that the battery hold downs and cable connections are tight.
 - 4 Be sure that the battery separator wire connections are tight.
 - 5 Fully charge the batteries and allow the batteries to rest at least 6 hours.
 - 6 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.

- 7 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:
 - Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
 - Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.
- ⊙ Result: All battery cells display an adjusted specific gravity of 1.277 or higher. The battery is fully charged. Proceed to step 11.
- ✗ Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 8.
- 8 Perform an equalizing charge, OR fully charge the batteries and allow the batteries to rest at least 6 hours.
- 9 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.
- 10 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:
 - Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
 - Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.
- ⊙ Result: All battery cells display a specific gravity of 1.277 or greater. The battery is fully charged. Proceed to step 11.
- ✗ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is less than 1.217. Replace the battery.
- 11 Check the battery acid level. If needed, replenish with distilled water to $\frac{1}{8}$ inch / 3 mm below the bottom of the battery fill tube. Do not overfill.
- 12 Install the vent caps and neutralize any electrolyte that may have spilled with baking soda.

CHECKLIST B PROCEDURES

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B-5 Inspect the Electrical Wiring

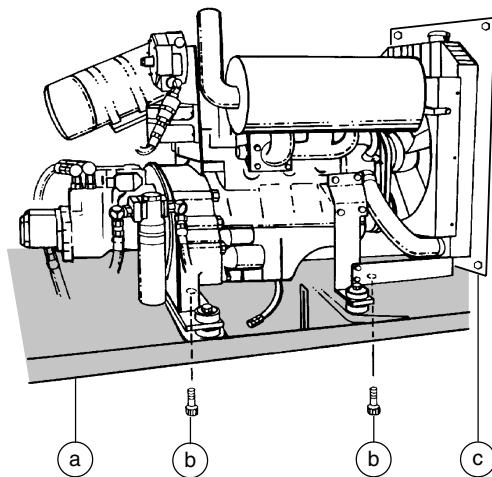


NOTICE Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

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

- 1 Open the engine side turntable cover.
- 2 Remove the air baffle retaining fasteners. Remove the air baffle.
- 3 Remove the 2 engine pivot plate retaining bolts and swing the engine out away from the machine to access the wiring.



- a engine pivot plate
b pivot plate retaining bolts
c air baffle

- 4 Inspect the following areas for burnt, chafed, corroded and loose wires:
 - Engine wiring harness
 - Hydraulic manifold wiring
- 5 Open the ground controls side turntable cover.
- 6 Inspect the following areas for burnt, chafed, corroded and loose wires:
 - Inside of the ground control box
 - Hydraulic manifold wiring
- 7 Start the engine from the ground controls and raise the boom above the turntable covers.
- 8 Inspect the turntable area for burnt, chafed and pinched cables.
- 9 Lower the boom to the stowed position and turn the engine off.
- 10 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
 - Cable track on the primary boom
 - Cables on the primary, and jib booms
 - Jib/rotate manifold
 - Inside of the platform control box
- 11 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 12 Replace the air baffle and install the air baffle retaining fasteners.

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CHECKLIST B PROCEDURES

B-6 Check the Oil Cooler and Cooling Fins - Deutz Diesel Models



NOTICE

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

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

WARNING

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

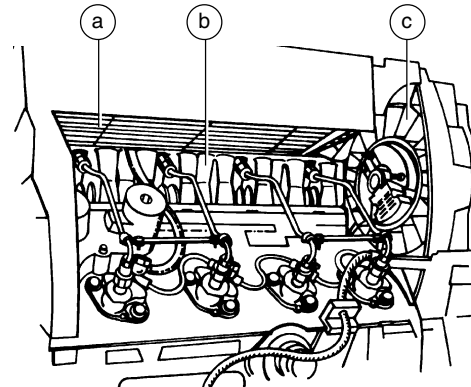
CAUTION

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

Oil Cooler

- 1 Remove the engine side cover mounting fasteners. Remove the engine side cover.

- 2 Inspect the oil cooler for leaks and physical damage.

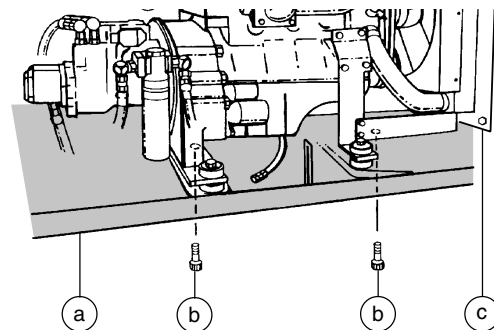


- a oil cooler
- b cylinder head cooling fins
- c fan blower fins

- 3 Clean the oil cooler of debris and foreign material.

Cooling and Fan Blower Fins

- 4 Remove the air baffle retaining fasteners. Remove the air baffle.
- 5 Remove the 2 bolts from under the engine pivot plate. Swing the engine pivot plate away from the machine to access the fan blower.



- a engine pivot plate
- b pivot plate retaining bolts
- c air baffle

CHECKLIST B PROCEDURES

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- 6 Inspect the fan blower fins for physical damage.
- 7 Clean the fan blower fins of debris and foreign material.
- 8 Inspect the head cooling passages and fins for physical damage or foreign material, using a flashlight.
- 9 Clean the cylinder head cooling passages and fins of debris and foreign material.
- 10 Install the engine side cover.
- 11 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 12 Replace the air baffle and install the air baffle retaining fasteners.

B-7**Check the Hydraulic Tank Return Filter Condition Indicator****NOTICE**

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

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

NOTICE

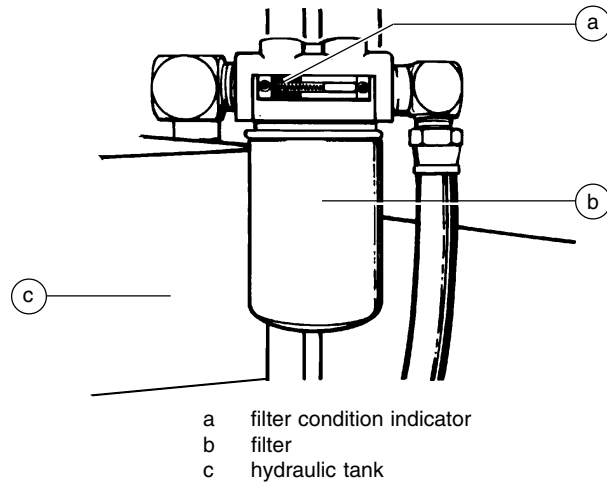
Perform this procedure with the engine running.

- 1 Start the engine from the platform controls.
- 2 Move the engine idle speed select switch to high idle (rabbit symbol).

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CHECKLIST B PROCEDURES

3 Inspect the filter condition indicator.



⦿ Result: The filter should be operating with the plunger in the green area. If the display shows the plunger in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See B-27, *Replace the Hydraulic Tank Return Filter*.

B-8 Inspect the Tires, Wheels and Lug Nut Torque



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

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.

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

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

- 1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.
- 2 Check each wheel for damage, bends and cracked welds.

CHECKLIST B PROCEDURES

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- 3 Check each lug nut for proper torque.
- 4 Check the pressure in each air-filled tire. Add air as necessary.

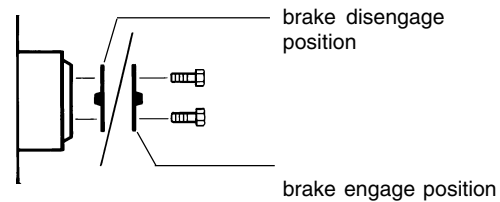
Tires and wheels	2WD Front	2WD Rear 4WD Front and Rear
Tire size	12.5-16 SL	12-16.5 NHS
Pressure	45 psi 3.1 bar	45 psi 3.1 bar
Tire ply rating	12	8
Wheel lugs	8 @ $\frac{5}{8}$ -18	9 @ $\frac{5}{8}$ -18
Lug nut torque, dry	170 ft-lbs 230 Nm	170 ft-lbs 230 Nm
Lug nut torque, lubricated	130 ft-lbs 176 Nm	130 ft-lbs 176 Nm

B-9**Confirm the Proper Brake Configuration****NOTICE**

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

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

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

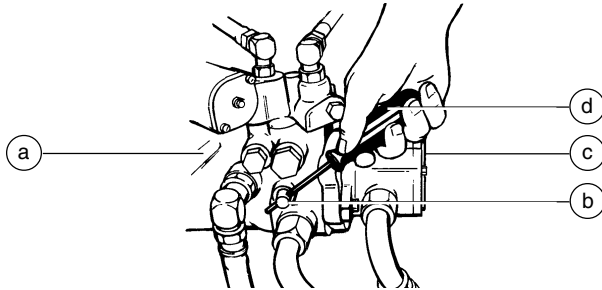


REV B

CHECKLIST B PROCEDURES

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

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



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

NOTICE The free-wheel valve should always remain closed.

B-10 Check the Oil Level in the Drive Hubs

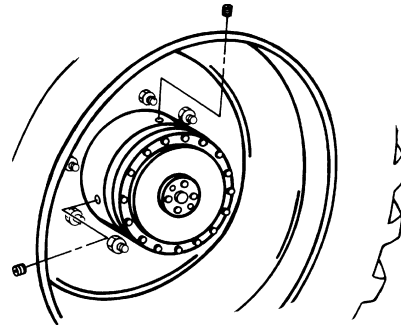


NOTICE Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

Drive Hubs

- 1 Drive the machine to rotate the hub until the plugs are located one 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.

CHECKLIST B PROCEDURES

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- 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 plug(s), and then install the plug(s) in the drive hub.
- 5 Repeat this procedure for each drive hub.

- 2 If necessary, add oil until the oil level is even with the bottom of the side plug hole.
- 3 Apply pipe thread sealant to the plug, and install the plug in the drive hub.

Drive hub oil

Capacity 17 fl oz
0.5 liters

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

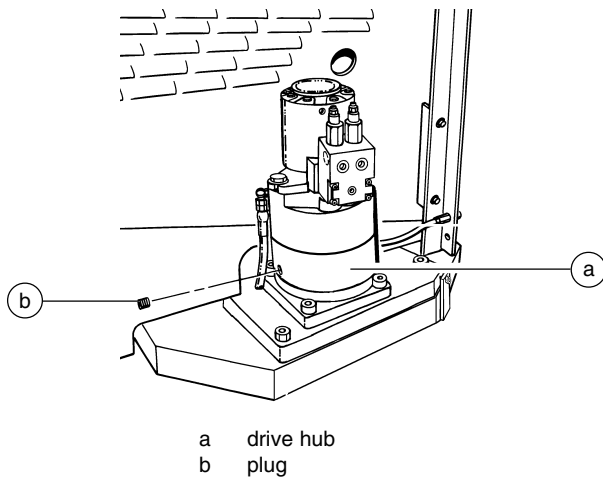
Turntable rotate drive hub oil

Capacity 8 fluid ounces
0.24 liters

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

Turntable Rotate Drive Hub

- 1 Remove the plug located on the side of the hub and check the oil level.
- ⊙ Result: The oil level should be even with the bottom of the plug hole.



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CHECKLIST B PROCEDURES

B-11 Check and Adjust the Engine RPM



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

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

Gasoline/LPG Models:

NOTICE The engine rpm is controlled by the ECM and can only be adjusted by re-programming the ECM. If rpm adjustment or service is required, please contact the Genie Industries Service Department OR your local Ford dealer.

Gasoline/LPG models

Low idle	1600 rpm
High idle	2500 rpm

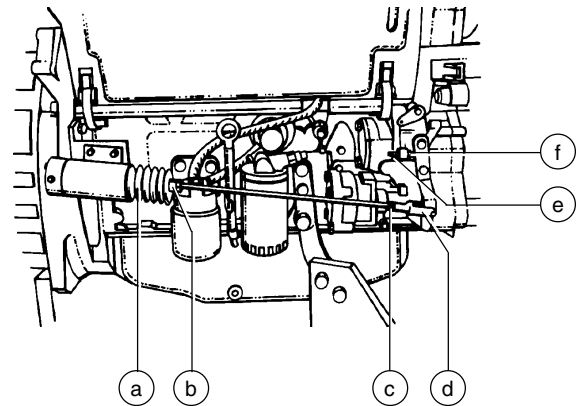
Diesel models:

NOTICE This procedure will require two people.

- 1 Connect a tachometer to the engine. Start the engine from the ground controls.
- ⦿ Result: Low idle should be 1500 rpm for Deutz models, 1600 rpm for Perkins models.

Skip to step 4 if the low idle rpm is correct.

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



- a solenoid boot
- b high idle adjustment nut
- c yoke lock nut
- d yoke
- e low idle adjustment screw
- f low idle lock nut

- 3 Move the function enable toggle switch to the high idle (rabbit symbol) position.
- ⦿ Result: High idle should be 2500 rpm for Deutz models, 2200 rpm for Perkins models.

CHECKLIST B PROCEDURES

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

- 4 Loosen the yoke lock nut, then turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

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

Deutz Diesel models

Low idle	1500 rpm
High idle	2300 rpm

Perkins Diesel models

Low idle	1600 rpm
High idle	2200 rpm

B-12 Test the Key Switch

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

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

- 1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 2 Turn the key switch to ground control, start the engine and then turn the key switch to **platform control**.
- 3 Check any machine function from the **ground controls**.
 - ⦿ Result: The machine functions should **not** operate.
- 4 Turn the key switch to ground control.
- 5 Check any machine function from the **platform controls**.
 - ⦿ Result: The machine functions should **not** operate.
- 6 Turn the key switch to the off position.
 - ⦿ Result: The engine should stop and no functions should operate.

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

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CHECKLIST B PROCEDURES

B-13 Test the Emergency Stop Buttons

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

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

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

- 1 Start the engine from ground controls.
- 2 Push down the red Emergency Stop button to the OFF position.
- ⦿ Result: The engine should shut off and no machine functions should operate.

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

- 3 Start the engine from platform controls.
- 4 Push down the red Emergency Stop button to the OFF position.
- ⦿ Result: The engine should shut off and no machine functions should operate.

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

B-14 Test the Ground Control Override

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

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

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

CHECKLIST B PROCEDURES

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B-15 Check the Directional Valve Linkage

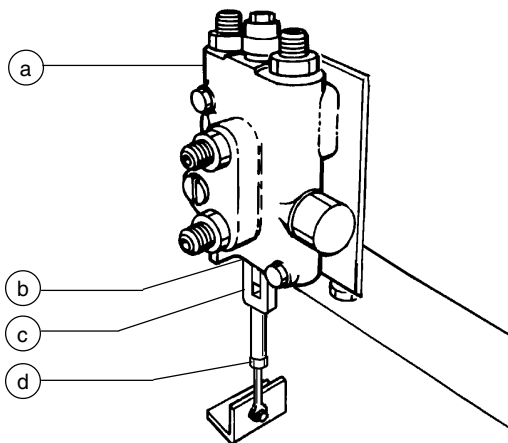


NOTICE Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

NOTICE Perform this test only on models equipped with a oscillating axle.

Proper axle oscillation is essential to safe machine operation. If the directional valve linkage is not operating correctly, the stability of the machine is compromised and it may tip over.

- 1 Remove the drive chassis cover from the non-steer end.
- 2 Inspect the linkage for the following:
 - Lock nut is tight against yoke
 - Yoke clevis pins are installed
 - Cotter pins are installed through clevis pins
 - Linkage is properly attached to directional valve



- a directional valve
 b clevis pin with cotter pin (hidden)
 c yoke
 d lock nut

B-16 Test the Platform Self-leveling

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

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which operates in a closed loop hydraulic circuit with the master cylinder located at the base of the boom.

A platform self-leveling failure creates an unsafe working condition for platform and ground personnel.

- 1 Start the engine from the ground controls and lower the boom to the stowed position.
 - 2 Hold the function enable toggle switch to either side and adjust the platform to a level position using the platform level toggle switch.
 - 3 Raise and lower the boom through a full cycle.
- ⊙ **Result:** The platform should remain level at all times to within ± 5 degrees.

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CHECKLIST B PROCEDURES

B-17 Test the Foot Switch

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

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. The foot switch will also shift the engine into high idle if the idle select is switched to the rabbit and foot switch symbol. An improperly functioning foot switch can cause an unsafe working condition and endanger platform and ground personnel.

NOTICE The engine should not start if the foot switch is pressed down.

- 1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 2 Press down the foot switch and attempt to start the engine by moving the start toggle switch to either side.
- ⦿ Result: The engine should **not** start.
- 3 Do not press down the foot switch and attempt to start the engine.
- ⦿ Result: The engine should start.
- 4 Do not press down the foot switch and operate the machine functions.
- ⦿ Result: The machine functions should **not** operate.
- 5 Press down the foot switch and operate the machine functions.
- ⦿ Result: The machine functions should operate.

B-18 Test the Horn

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

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

- 1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 2 Push down the horn button at the platform controls.
- ⦿ Result: The horn should sound.

NOTICE If necessary, the horn can be adjusted to obtain the loudest volume by turning the adjustment screw near the wire terminals on the horn.

B-19 Test the Engine Idle Select Operation

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

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

Low idle (turtle symbol) allows the operator to control individual boom functions only. Drive functions do not operate at low idle.

High idle (rabbit symbol) allows the operator to control multiple boom and/or drive functions simultaneously. This setting maintains a consistent high idle and is usually selected only when the generator option is being used.

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 red Emergency Stop button to the on position at both the ground and platform controls.
 - 2 Start the engine from the ground controls. Move and hold the function enable toggle switch in the high idle (rabbit symbol) position.
- ⦿ Result: The engine RPM should change to high idle.

- 3 Release the function enable toggle switch.
- ⦿ Result: The engine RPM should change to low idle.
- 4 Turn the key switch to platform controls.
 - 5 At the platform controls, move the engine idle select toggle switch to high idle (rabbit symbol). Do not press down the foot switch.
- ⦿ Result: The engine RPM should change to high idle.
- 6 Move the engine idle select switch to low idle (turtle symbol).
- ⦿ Result: The engine RPM should change to low idle.
- 7 Move the engine idle select toggle switch to foot switch activated high idle (rabbit and foot switch symbol).
- ⦿ Result: The engine RPM should **not** change to high idle.
- 8 Press down the foot switch.
- ⦿ Result: The engine RPM should change to high idle.

REV B

CHECKLIST B PROCEDURES

B-20

Test the Fuel Select Operation - Gasoline/LPG Models



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

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 while 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 toggle switch to gasoline and then move the engine idle select 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 shut the engine off by pushing the red Emergency Stop button in to the off position.
- 5 Move the fuel select switch to LPG.
- 6 Start 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.


CHECKLIST B PROCEDURES

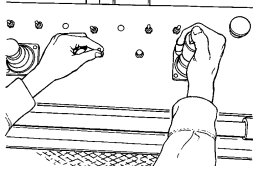
REV B

B-21 Test the Drive Enable System


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

Proper drive enable system operation is essential to safe machine operation. When the boom is past the non-steering wheels, drive movement is stopped and the indicator light turns on. The drive enable switch must be held to either side to reactivate the drive function and should alert 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 Move the lift/drive selector toggle switch to the lift position (if equipped).
- 3 Press down the foot switch.
- 4 Rotate the turntable to the right until the boom moves past the right non-steering wheel. 
- ⦿ Result: The drive enable indicator light should turn on and remain on while the boom is anywhere in the range shown.

- 5 Move the lift/drive select toggle switch to the drive position (if equipped).
- 6 Slowly move the drive control handle off center.
 - ⦿ Result: The drive function should **not** operate.
- 7 Hold the drive enable toggle switch to either side and slowly move the drive control handle off center. 

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.

- ⦿ Result: The drive function should operate.
- 8 Rotate the turntable to the left until the boom moves past the left non-steering wheel.
 - ⦿ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown. 
- 9 Repeat steps 6 and 7.

REV B

CHECKLIST B PROCEDURES

B-22 Test the Drive Brakes



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

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

WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-9 in this section, *Confirm the Proper Brake Configuration*.

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

NOTICE Be sure the boom is fully retracted and lowered to the stowed position.

1 Mark a test line on the ground for reference.

- 2 Start the engine from the platform controls.
- 3 Move the lift/drive select switch to the drive position (if equipped).
- 4 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the test line.
- 5 Bring the machine to top drive speed before reaching the test line. Release the drive controller when your reference point on the machine crosses the test line.
- 6 Measure the distance between the test line and your machine reference point.

**Braking:
paved surface**

Stopping distance	2 to 4 ft
	0.6 to 1.2 m

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

CHECKLIST B PROCEDURES

REV B

B-23**Test the Drive Speed -
Stowed Position**

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

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

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

NOTICE Be sure the boom is fully retracted and lowered to the stowed position.

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

- 2 Start the engine from the platform controls.
- 3 Move the lift/drive select switch to the drive position (if equipped).
- 4 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.
- 5 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 6 Continue at full speed and note the time when the machine reference point crosses the finish line.

Drive speed:		
stowed position	2WD	4WD
Gasoline/LPG models	40 ft/6.8 sec 12.2 m/6.8 sec	40 ft/7.8 sec 12.2 m/7.8 sec
Diesel models	40 ft/7.8 sec 12.2 m/7.8 sec	40 ft/9.1 sec 12.2 m/9.1 sec

REV B

CHECKLIST B PROCEDURES

B-24 Test the Drive Speed - Raised or Extended Position



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

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

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

- 1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
- 2 Start the engine from the platform controls.
- 3 Move the lift/drive select switch to the lift position, if equipped.
- 4 Move the engine idle select switch to foot switch activated high idle (rabbit and foot switch). Press down the foot switch and raise the boom above horizontal.
- 5 Move the lift/drive select switch to the drive position, if equipped.

- 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 crosses the finish line.
- 9 Move the lift/drive select switch to the lift position, if equipped.
- 10 Press down the foot switch and lower the boom to the stowed position.
- 11 Extend the boom 1 foot / 30 cm.
- 12 Move the lift/drive select switch to the drive position, if equipped.
- 13 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.
- 14 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.
- 15 Continue at top speed and note the time when the machine reference point crosses the finish line.

**Drive speed, maximum.
raised or extended position**

All models	1 foot per second (0.6 mph) 0.13 meter per second (0.97 km/h)
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B-25 Test the Alarm Package (if equipped)

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

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

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

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

- 1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.
 - ⦿ Result: The flashing beacon should be on and flashing.
- 2 Hold the function enable switch to either side and activate the boom toggle switch in the down position, hold for a moment and then release it.
 - ⦿ Result: The descent alarm should sound when the toggle switch is held down.

- 3 Turn the key switch to platform controls.
 - ⦿ Result: The flashing beacon should be on and flashing.
- 4 Move the lift/drive selector switch to the lift position, if equipped.
- 5 Press down the foot switch. Move the boom controller to the down position, hold for a moment and then release it.
 - ⦿ Result: The descent alarm should sound when the control handle is held down.
- 6 Move the lift/drive selector switch to the drive position, if equipped.
- 7 Press down the foot switch. Move the drive controller off center, hold for a moment and then release it. Move the drive controller off center in the opposite direction, hold for a moment and then release it.
 - ⦿ Result: The travel alarm should sound when the drive controller is moved off center in either direction.

B-26 Perform Hydraulic Oil Analysis



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

REV B

CHECKLIST B PROCEDURES

B-27 Replace the Hydraulic Tank Return Filter



NOTICE

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

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

CAUTION

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

NOTICE

Perform this procedure with the engine off.

- 1 Place a suitable container under the hydraulic tank return filter.

- 2 Remove the filter with an oil filter wrench.
- 3 Apply a thin layer of fresh 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 installation procedure.
- 5 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.
- 6 Start the engine from the ground controls.
- 7 Inspect the filter and related components to be sure that there are no leaks.

Hydraulic tank return filter

Genie part number	46014
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CHECKLIST B PROCEDURES

REV B

B-28 Replace the Engine Air Filter Element



NOTICE Engine specifications requires that this procedure be performed every 400 hours or annually, whichever comes first. 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.

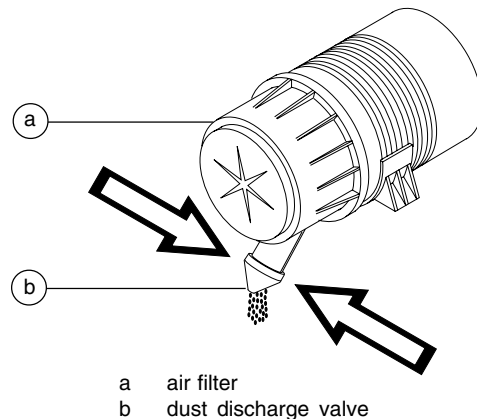
Gasoline/LPG and Deutz Diesel Models:

- 1 Open the engine side cover and remove the retaining ring from the end cap of the air filter canister.
- 2 Remove the end cap from the air cleaner canister.
- 3 Remove the air filter retaining fastener. Remove the filter element.
- 4 Clean the inside of the canister and the gasket with a damp cloth.
- 5 Install the new air filter element and install the mounting fastener.

- 6 Install the end cap onto the canister. Install and tighten the retaining ring.

Perkins Diesel models:

- 1 Open the engine side cover and disconnect the retaining fasteners from the end cap of the air filter canister. Remove the end cap.
- 2 Remove the filter element.
- 3 Empty the dust discharge valve by pressing apart the lips of the discharge slot. Clean discharge slot as needed.



- 4 Clean the inside of the canister and the canister end cap with a damp cloth.
- 5 Install the new filter element.
- 6 Install the end cap onto the canister. Secure the retaining fasteners.

Air filters - Genie part numbers

Ford LRG-425 EFI Engine	27916
Deutz F3L 1011F Engine	27916
Perkins 704-30 Engine	62420

REV B

CHECKLIST B PROCEDURES

B-29 Replace the Spark Plugs - Gasoline/LPG Models



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

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.

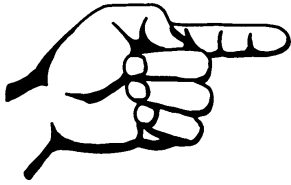
NOTICE Perform this procedure with the engine off.

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.
- 2 Remove the 2 engine pivot plate retaining bolts. Swing the engine pivot plate away from the machine to access the spark plugs.
- 3 Label, then disconnect the plug wires from the spark plugs by grasping the handle on the spark plug boot. Do not pull on the plug wire.
- 4 Blow out any debris around spark plugs.
- 5 Remove all the spark plugs from the engine.
- 6 Adjust the gap on each new spark plug.

- 7 Install the new spark plugs, then connect the wires. Be sure that each spark plug wire is attached to the correct spark plug.
- 8 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 9 Install the air baffle and the air baffle retaining fasteners.

Ford LRG-425 EFI Engine Spark plug specifications

Spark plug type	Motorcraft AWSF-52C
Spark plug gap	0.042 to 0.046 inches 1.07 to 1.18 mm
Spark plug torque	5 - 10 ft-lbs 7 - 14 Nm



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Checklist C Procedures

REV A

C-1 Check the Engine Belt - Deutz Diesel Models



NOTICE

Engine specifications require that this procedure be performed every 500 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

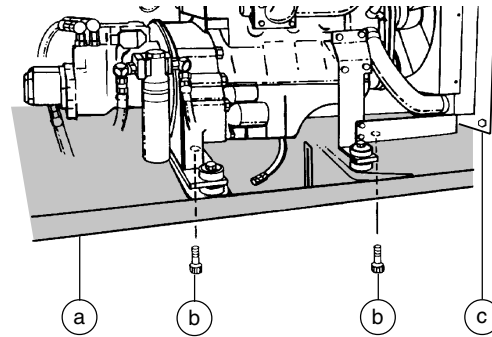
Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

CAUTION

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

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.

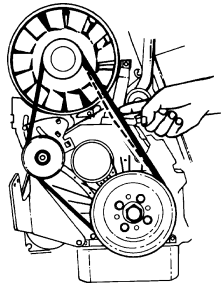
- 2 Remove the 2 engine pivot plate retaining bolts. Swing the engine pivot plate away from the machine to access the engine belt.



- a engine pivot plate
b pivot plate retaining bolts
c air baffle

- 3 Remove the front engine access cover mounting fasteners.
- 4 Inspect the engine belt for:
 - Cracking
 - Glazing
 - Separation
 - Breaks
- 5 Replace belt if any damage is found.

- 6 Check the engine belt for proper tension. Adjust as necessary.



Deutz Diesel engine

- 7 Install the front engine access cover.
- 8 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 9 Replace the air baffle and install the air baffle retaining fasteners.

Belt deflection - 3/8 inch to 1/2 inch
Deutz Diesel models 9 mm to 12 mm

Deutz Diesel models
 Engine Belt - Genie part number 32698

C-2 Check the Engine Valve Clearances - Deutz Diesel Models



NOTICE

Engine specifications require that this procedure be performed initially at 500 hours, at 1000 hours and every 1000 hours thereafter.

Complete information to perform this procedure is available in the *Deutz F3L 1011F Operation Manual*, Deutz part number 0297 7343 (Genie part number 52883).

REV A

CHECKLIST C PROCEDURES

C-3 Replace the Fuel Filter/ Water Separator Element - Perkins Diesel Models



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

Replacing the diesel fuel filter/water separator element is essential for 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.

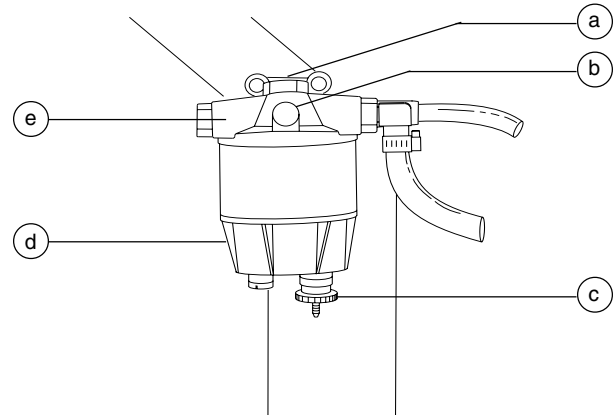
⚠ DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

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

1 Turn the manual fuel shutoff valve, located at the fuel tank, to the closed position.

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



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

3 Place a suitable container under the filter bowl. Loosen the drain plug located at the bottom of the bowl. Completely drain the fuel. Tighten the drain plug.

4 Loosen the head bolt. Rotate the filter bowl counterclockwise and remove it from the element.

5 Rotate the filter element counterclockwise and remove it from the filter head.

6 Install the bowl onto the new filter element (Genie part number 22942).

CHECKLIST C PROCEDURES

REV A

- 7 Fill the filter/bowl assembly with clean diesel fuel. Apply a thin layer of diesel fuel onto the element gasket. Install the filter/bowl assembly onto the filter head.
- 8 Tighten the head bolt to 65 inch-pounds / 7 Nm.
- 9 Clean up any diesel fuel that may have spilled during the installation procedure.
- 10 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.
- 11 Turn the manual fuel shutoff valve, located at the fuel tank, to the open position.

Bleed the fuel system:

NOTICE Before bleeding the system, fill the fuel tank.

- 12 Loosen the vent plug located on the fuel filter/water separator head.
- 13 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the vent point. Tighten the vent plug.
- 14 Loosen the air vent screw, located on top of the fuel injection pump.
- 15 Tighten the air vent screw when air stops coming through the air vent.
- 16 Clean up any diesel fuel that may have spilled during the bleeding procedure and dispose of properly.
- 17 Start the engine from ground controls and check for leaks.

C-4**Replace the Fuel Filter Element - Perkins Diesel Models**

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

Replacing the diesel fuel filter element is essential for 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. 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.

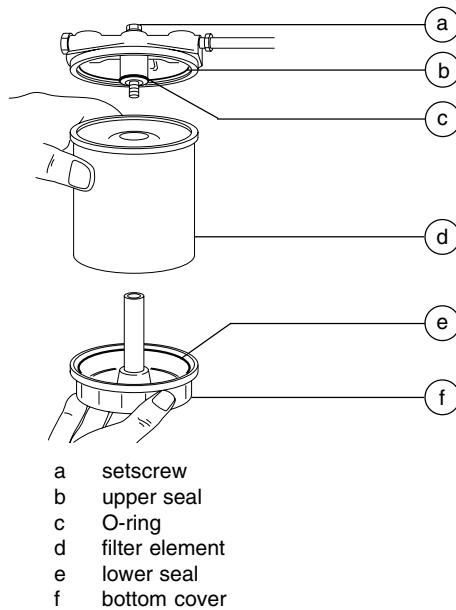
NOTICE Immediately clean up any fuel that may have spilled during this procedure.

- 1 Open the engine side cover and locate the fuel filter.
- 2 Thoroughly clean the outside surfaces of the fuel filter assembly.

REV A

CHECKLIST C PROCEDURES

- 3 Hold the bottom cover of the filter element and release the setscrew which is fitted through the filter head above the center of the element.



- 4 Lower the bottom cover of the filter.
- 5 Remove the element and dispose of properly.
- 6 Clean the inside surfaces of the filter head and the cover.
- 7 Lightly lubricate the upper seal and the O-ring with clean fuel and install them into the filter head.
- 8 Lightly lubricate the lower seal with clean fuel and install it into the bottom cover.

- 9 Put the bottom cover under the new element and hold the element squarely to the filter head. Ensure that the element is fitted in the center against the O-ring in the filter head. With the assembly in this position, engage and tighten the setscrew.

Bleed the system:

- 10 Loosen the vent plug on the side of the fuel injection pump.
- 11 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the vent point. Tighten the vent plug.
- 12 Clean up any fuel that may have spilled during this procedure.
- 13 Operate the starter motor for intervals of 15 seconds until the engine starts.

NOTICE It is important to allow the starter motor to cool for 30 seconds between each 15 second interval of operation.

NOTICE If the engine runs correctly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, there is probably a leak in the low pressure side of the system.

C-5 Replace the Engine Oil and Filter- Perkins Diesel Models



NOTICE

Engine specifications require that this procedure be performed every 500 hours or 12 months, whichever comes first. Perform this procedure more often if dusty conditions exist.

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 frequent 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 500 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 next to the dipstick.
- 2 Pull the end of the engine oil drain hose out from under the engine.
- 3 Remove the plug from the end of the drain hose and allow all of the oil from the engine to drain into a suitable container. See capacity specifications.

NOTICE

Do not remove the drain plug located on the side of the oil pan.

- 4 Install and tighten the plug in the drain hose.
- 5 Use an oil filter wrench and remove the oil filter, located below the fuel filter. Clean inside the filter head.
- 6 Apply a thin layer of fresh oil to the new filter gasket. Install the filter and tighten it securely by hand.
- 7 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.
- 8 Fill the engine with new oil per specifications and install the oil filler cap.
- 9 Start the engine from the ground controls and allow the engine to run for 30 seconds. Stop the engine.
- 10 Check the oil filter and drain hose for leaks.

REV A

CHECKLIST C PROCEDURES

11 Wait 15 minutes after stopping the engine and check the engine oil level on the dipstick. Add oil if needed.

12 Dispose of the used oil and filter properly.

Perkins 704-30 Engine
Oil capacity (including filter) 9.6 quarts / 8.9 liters

Oil viscosity requirements

below 60°F / 15.5°C 15W-40

-10°F to 90°F / -23°C to 32°C 10W-30

above -4°F / -34°C 15W-40

Engine oil should have properties of API classification CF4 grade.

Oil filter - Genie part number 62422

C-6 Check the Specific Gravity of the Coolant - Liquid Cooled Models



NOTICE Engine specifications require that this procedure be performed every 500 hours or 12 months, whichever comes first. Perform this procedure more often if dusty conditions exist.

The quality of the coolant which is used can have a great effect on the efficiency and life of the cooling system. Old or dirty coolant may cause the engine to perform poorly and continued use may cause engine damage.

CAUTION Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may cause severe burns.

NOTICE Perform this procedure with the machine on level ground.

NOTICE Perform this procedure with the engine off.

- 1 Put on protective clothing and eyewear.
- 2 Operate the engine until it is warm enough to open the thermostat. Continue to run the engine until the coolant has circulated the cooling system.

CHECKLIST C PROCEDURES

REV A

- 3 Stop the engine.
- 4 Allow the engine to cool until the temperature of the coolant is below 140° F / 60° C.

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

- 5 Remove the radiator filler cap. Inspect the cap for wear. Replace as necessary.

CAUTION Burn hazard. Allow any pressure to dissipate gradually before removing the radiator cap.

- 6 Drain some coolant from the cooling system into a suitable container.
- 7 Use a special coolant hydrometer to check the temperature and the specific gravity of the coolant.
- 8 Adjust the strength of the coolant as necessary for your climate.
- 9 Install the radiator filler cap.

C-7 Check the Glow Plugs - Perkins Diesel Models

**NOTICE**

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

Complete information to perform this procedure is available in the *Perkins 700 Series Workshop Manual*, Perkins part number TPD 1359E (Genie part number 62424).

REV A

CHECKLIST C PROCEDURES

C-8 Replace the PCV Valve - Gasoline/LPG Models

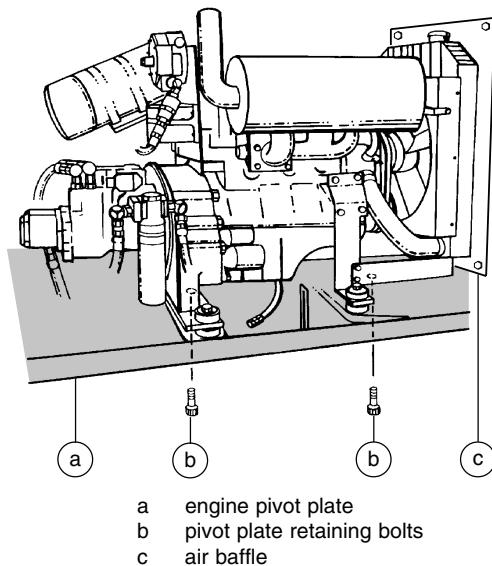


NOTICE Engine specifications require that this procedure be performed every 800 hours.

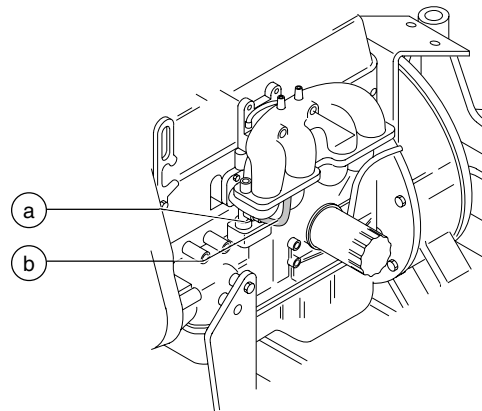
Yearly replacement of the PCV valve is essential to good engine performance. A malfunctioning PCV valve can impair crankcase ventilation and may cause engine damage.

NOTICE Perform this procedure with the engine off.

- 1 Open the engine side turntable cover.
- 2 Remove the air baffle retaining fasteners. Remove the air baffle.
- 3 Remove the 2 engine pivot plate retaining bolts and swing the engine out away from the machine to access the PCV valve.



- 4 Locate the PCV valve on the engine under the intake manifold. Detach the hose from the PCV valve.



a PCV valve
b PCV valve hose

- 5 Remove the PCV valve from the valve cover. Discard the valve.
- 6 Thoroughly clean the inside and outside of the hose, tubes and fittings
- 7 Install the new PCV valve and connect the hose.
- 8 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 9 Install the air baffle and the air baffle retaining fasteners.

PCV Valve - Genie part number 33957

Checklist D Procedures

REV B

D-1

Check the Boom Wear Pads



NOTICE

Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

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

NOTICE

If the wear pads are still within specification, see Repair Procedure 4-2, *How to Shim the Boom*.

- 1 Start the engine from the ground controls.
- 2 Raise the end of the boom to a comfortable working height (chest high), then extend the boom 1 foot / 30 cm.
- 3 Measure each wear pad. Replace the wear pad if it is less than specification. If the wear pad is still within specification, shim as necessary to obtain zero clearance and zero drag.
- 4 Extend and retract the boom through the entire range of motion to check for tight spots that may cause binding or scraping of the boom.

NOTICE

Always maintain squareness between the outer and inner boom tubes.

Wear pad specifications

Upper and side wear pads	9/16 inch	14.3 mm
Bottom wear pads, S-40	11/16 inch	17.5 mm
Bottom wear pads, S-45	9/16 inch	14.3 mm

D-2

Check the Free-wheel Configuration



NOTICE

Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

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

⚠ WARNING

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

CAUTION

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

Non-steering wheels: All models

- 1 Chock the steer wheels to prevent the machine from rolling.
- 2 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the non-steer wheels.
- 3 Lift the wheels off the ground and then place blocks under the drive chassis for support.
- 4 Disengage the drive hubs by turning over the drive hub disconnect caps on each non-steering wheel hub.

REV B

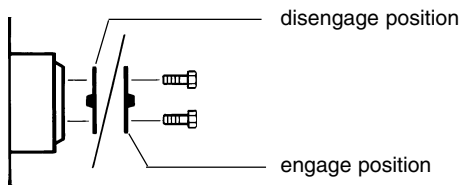
CHECKLIST D PROCEDURES

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

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

Steer wheels: 4WD models

- 7 Chock the non-steering wheels to prevent the machine from rolling.
- 8 Center a lifting jack of ample capacity (20,000 lbs/10,000 kg) under the drive chassis between the steer wheels.
- 9 Lift the wheels off the ground and then place blocks under the drive chassis for support.
- 10 Disengage the drive hubs by turning over the drive hub disconnect caps on each steer wheel hub.



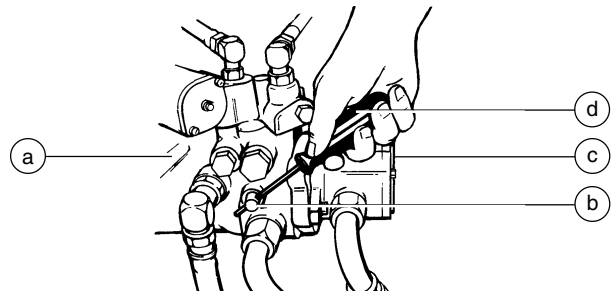
- 11 Manually rotate each steer wheel.
- ⦿ Result: Each steer wheel should rotate with minimum effort.
- 12 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks.

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

All models:

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

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



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

CHECKLIST D PROCEDURES

REV B

D-3

Check the Turntable Rotation Bearing Bolts



NOTICE Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

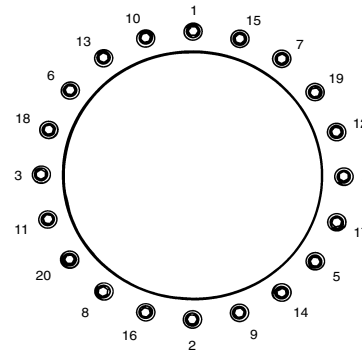
Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

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

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

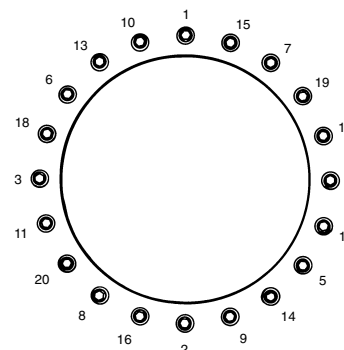
NOTICE The lift cylinder safety chock is available through Genie (part number 33484).

- 2 Be sure that each turntable mounting bolt is torqued in sequence to 180 ft-lbs / 244 Nm.



Bolt torque sequence

- 3 Lower the boom to the stowed position.
- 4 Check to ensure that each bearing mounting bolt under the drive chassis is torqued in sequence to 180 ft-lbs / 244 Nm.



Bolt torque sequence

REV B

CHECKLIST D PROCEDURES

D-4 Grease the Turntable Rotation Bearing and Rotate Gear



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

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

Grease type

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

D-5 Replace the Drive Hub Oil

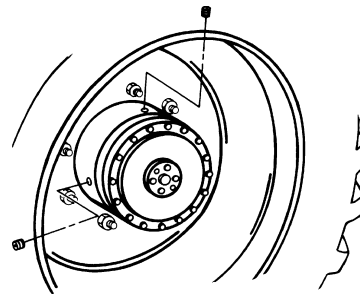


NOTICE Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

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

Drive Hubs:

- 1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.
- 2 Remove both plugs and drain the oil into a suitable container.
- 3 Drive the machine until one plug is at the top and the other is at 90 degrees.



CHECKLIST D PROCEDURES

REV B

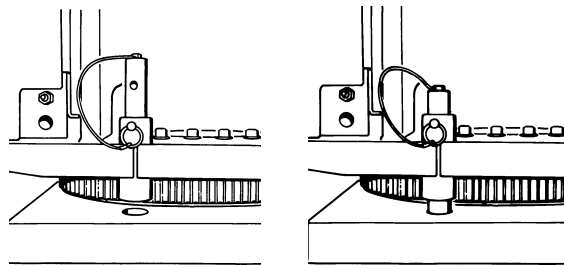
- 4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole.
Apply pipe thread sealant to the plugs, and then install the plugs.
- 5 Repeat steps 1 through 4 for all the other drive hubs.

Oil capacity per hub 17 fl oz
0.5 liters

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

Turntable Rotate Drive Hub:

- 1 Secure the turntable from rotating with the turntable rotation lock pin.

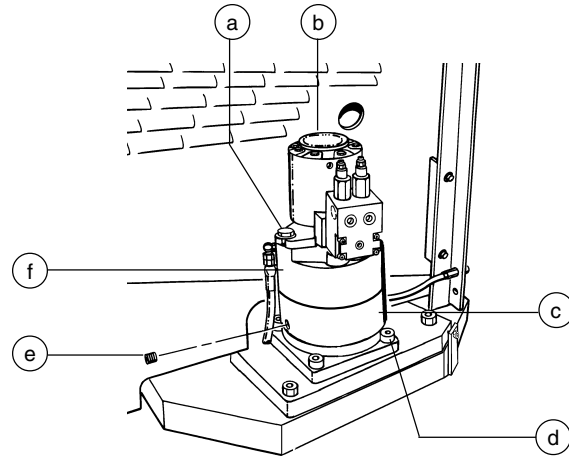


unlocked

locked

- 2 Remove the motor/brake mounting bolts, and then remove the motor and brake from the drive hub and set them to the side.

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



- a motor/brake mounting bolt
- b motor
- c drive hub
- d drive hub mounting bolt
- e plug
- f brake

- 3 Remove the drive hub mounting bolts, and use a lifting device to remove the drive hub from the machine.

REV B

CHECKLIST D PROCEDURES

- 4 Remove the plug from the side of the drive hub. Then drain the oil from the hub.
- 5 Install the drive hub. Torque the hub mounting bolts to 180 ft-lbs / 244 Nm.
- 6 Install the brake and motor onto the drive hub.
- 7 Fill the hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plug, and then install the plug.

Turntable rotate drive hub

Oil capacity	8 fluid ounces 0.24 liters
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Type: SAE 90 multipurpose hypoid gear oil - API service classification GL5

D-6 Replace the Drive Loop Hydraulic Filter



NOTICE Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

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

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

NOTICE Perform this procedure with the engine off.

- 1 Locate the drive loop hydraulic filter mounted on the engine near the pump.
- 2 Remove the filter housing by using a wrench on the nut provided on the bottom of the housing.

CHECKLIST D PROCEDURES

REV B

- 3 Remove the filter element from the housing.
- 4 Inspect the housing seal and replace if necessary.
- 5 Install the new filter and hand tighten the housing onto the filter head. Clean up any oil that may have spilled during the installation procedure.
- 6 Start the engine from the ground controls.
- 7 Inspect the filter assembly to be sure that there are no leaks.
- 8 Clean up any oil that may have spilled.

Drive loop hydraulic filter

Genie part number	20880
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D-7**Replace the Engine Oil and Filter- Deutz Diesel Models****NOTICE**

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

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 frequent 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 1000 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 next to the dipstick.

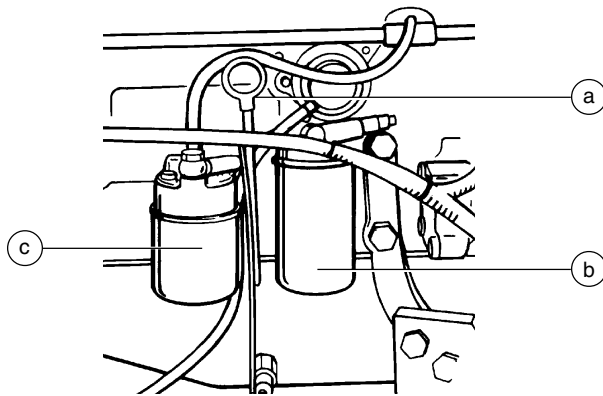
REV B

CHECKLIST D PROCEDURES

- 2 Pull the end of the engine oil drain hose out from under the engine.
- 3 Remove the plug from the end of the drain hose and allow all of the oil from the engine to drain into a suitable container. See capacity specifications.

NOTICE Do not remove the drain plug located on the side of the oil pan.

- 4 Install and tighten the plug in the drain hose.
- 5 Use an oil filter wrench and remove the oil filter.



Deutz Diesel engine
 a engine oil level dipstick
 b fuel filter
 c oil filter

- 6 Apply a thin layer of fresh oil to the new filter gasket. Install the filter and tighten it securely by hand.
- 7 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.

- 8 Fill the engine with new oil per specifications and install the oil filler cap.
- 9 Start the engine from the ground controls. Allow the engine to run for 30 seconds then turn the engine off.
- 10 Check the oil filter and drain hose for leaks.
- 11 Check the engine oil level dipstick. Add oil if needed.

Deutz F3L 1011F Engine
Oil capacity (including filter) 8.5 quarts 8 liters

Oil viscosity requirements

below 60°F / 15.5°C (synthetic)	5W-30
-10°F to 90°F / -23°C to 32°C	10W-40
above -4°F / -34°C	15W-40

Engine oil should have properties of API classification CC/SE or CC/SF grades.

Oil filter - Genie part number 49924

CHECKLIST D PROCEDURES

REV B

D-8 Clean the Fuel Pump Strainer - Deutz Diesel Models



NOTICE Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

Cleaning the fuel pump strainer is essential for good engine performance and service life. A dirty or clogged strainer may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions or not operating the machine for extended periods of time may require that the strainer be cleaned more often.

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

NOTICE Perform this procedure with the engine off.

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

- 1 Open the engine side cover and locate the fuel pump, located next to the engine oil dip stick.
- 2 Close the fuel shut off valve.

- 3 Remove the fuel pump cover retaining fastener. Remove the cover.
- 4 Gently clean the fuel strainer with diesel fuel or a mild solvent.
- 5 Install the fuel strainer/pump cover onto the fuel pump. Install and tighten the fuel pump cover retaining fastener.
- 6 Turn the manual fuel shutoff valve, located at the fuel tank, to the OPEN position.
- 7 Start the engine from the ground controls and inspect the fuel filter 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 Be sure the fuel filter is full of fuel before attempting to start the engine.

REV B

CHECKLIST D PROCEDURES

D-9 Replace the Diesel Fuel Filter/Water Separator - Deutz Diesel Models



NOTICE Engine specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

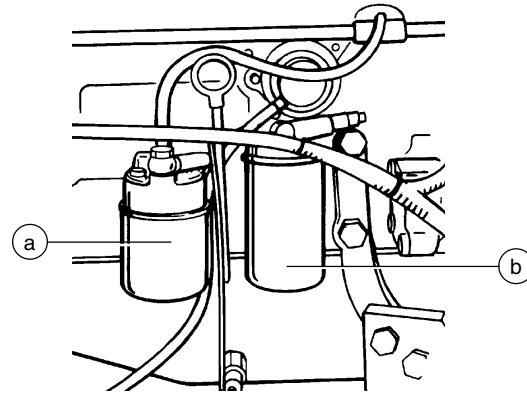
Replacing the diesel fuel filter is essential to good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠ DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel filter/water separator 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 Turn the manual fuel shutoff valve located at the fuel tank to the closed position.

- 2 Remove the fuel filter/water separator with a filter wrench.



a oil filter
b fuel filter/water separator

- 3 Fill the new filter with clean diesel fuel and apply a thin layer of clean diesel fuel to the new fuel filter gasket.
- 4 Install the new filter and tighten it securely by hand. Clean up any diesel fuel that might have spilled during the procedure.
- 5 Turn the manual fuel shutoff valve, located at the fuel tank, to the open position.
- 6 Start the engine from the ground controls and inspect the fuel filter 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.

CHECKLIST D PROCEDURES

REV B

D-10 Change the Fuel Hoses - Deutz Diesel Models



NOTICE Genie specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

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

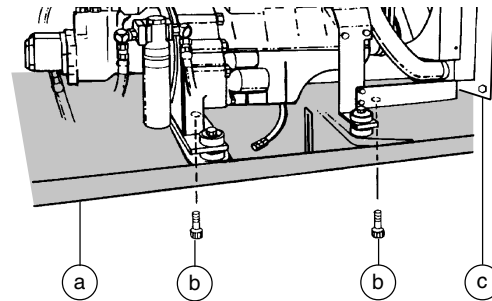
▲ DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel lines in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

CAUTION Component damage hazard. Be sure the fuel hoses are routed the same way the original hoses were.

NOTICE Perform this procedure with the engine off and cooled.

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.

- 2 Remove the 2 engine pivot plate retaining bolts and swing the engine out away from the machine to access the fuel hoses.



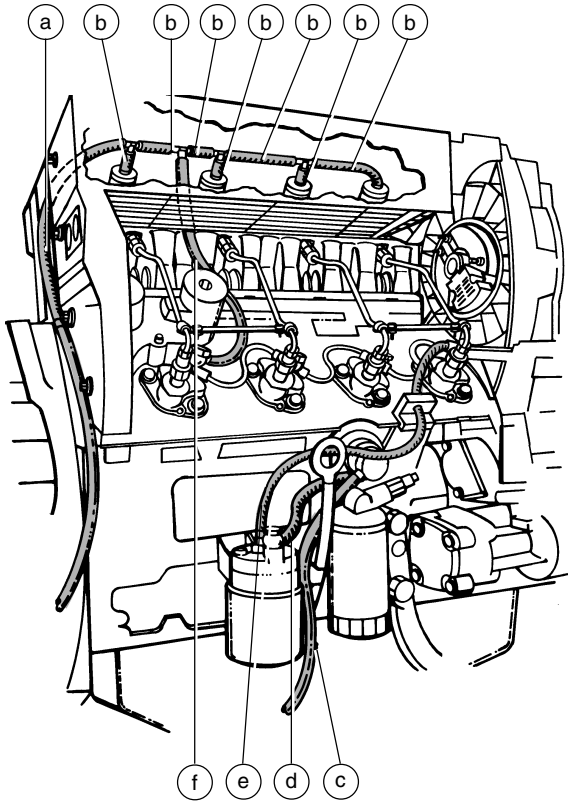
a engine pivot plate
b pivot plate retaining bolts
c air baffle

- 3 Place a suitable container under the engine pivot plate.
- 4 At the fuel pump, disconnect the fuel hose to the fuel tank and drain the fuel tank into the container.
- 5 Remove and replace all of the fuel hoses and clamps according to the following illustration:

▲ DANGER Explosion and fire hazard. Fuel Injection systems operate at a very high pressure. Fuel may be expelled under pressure if the hoses are removed too quickly. Loosen the fuel lines very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.

REV B

CHECKLIST D PROCEDURES



- a hose from the injector to the fuel tank
- b hoses connecting injectors
- c hose from the fuel shutoff valve to the fuel pump
- d hose from the fuel pump to the fuel filter
- e hose from the fuel filter to the injection pump
- f hose from the injection pump to the injectors

D-11 Check the Engine Valve Clearances - Perkins Diesel Models



NOTICE

Engine specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

Complete information to perform this procedure is available in the *Perkins User's Handbook*, Perkins part number TPD 1359E (Genie part number 62424).

D-12

Clean the Engine Breather Assembly - Perkins Diesel Models



NOTICE Engine specifications require that this procedure be performed every 1000 hours or every 12 months, whichever comes first.

Cleaning the engine breather assembly is essential for good engine performance and service life. A dirty or clogged breather may cause the engine to perform poorly and continued use may cause component damage.

- 1 Remove the rocker cover from the engine.
- 2 Release the four retaining fasteners securing the breather cover to the rocker cover.
- 3 Remove the diaphragm and location ring assembly. Remove the spring.
- 4 Release the clips that retain the breather pipe and remove the breather pipe.
- 5 Using a mild solvent, clean the breather cavity in the rocker cover, the passage through the rocker cover, the breather pipe and the vent hole.
- 6 Install the spring into the breather cavity in the rocker cover.
- 7 Install the location ring onto the diaphragm. Install this assembly onto the spring.

NOTICE Be sure that the location ring is on the spring.

- 8 Install the breather cover. Install and secure the breather cover retaining fasteners.
- 9 Install the breather pipe and secure the retaining clips.
- 10 Install the rocker cover and tighten the cap nuts to 8 ft-lbs / 11 Nm.

Checklist E Procedures

REV B

E-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 frequently.

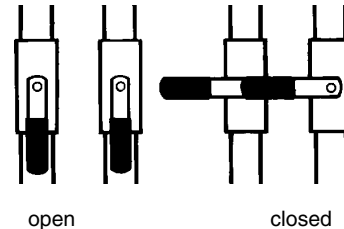
NOTICE The machine uses Dexron equivalent hydraulic oil. Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly.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

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

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

1 Remove the fuel tank. See Repair Section 12-1, *How to Remove the Fuel Tank*.

2 Close the two hydraulic shutoff valves located at the hydraulic tank.



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

- 3 Remove the drain plug from the hydraulic tank.
- 4 Completely drain the tank into a suitable container. See capacity specifications.
- 5 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.
- 6 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter housing.
- 7 Disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.

CHECKLIST E PROCEDURES

REV B

8 Remove the retaining fasteners from the hydraulic tank hold down straps. Remove the hold down straps from the hydraulic tank.

9 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.

10 Remove the hydraulic tank from the machine.

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

11 Remove the suction strainers from the tank and clean them using a mild solvent.

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

13 Install the suction strainers using pipe thread sealant on the threads.

14 Install the drain plug using pipe thread sealant on the threads.

15 Install the hydraulic tank onto the machine.

16 Install the two suction hoses and the supply hose for the auxiliary power unit.

17 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill.

18 Clean up any oil that may have spilled.

19 Open the hydraulic tank shutoff valves.

▲CAUTION Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank. Refer to Repair Section 12-2, *How to Prime the Pump*.

NOTICE Always use pipe thread sealant when installing the drain plug and strainers.

NOTICE Use only Rykon MV equivalent hydraulic fluid.

REV B

CHECKLIST E PROCEDURES

E-2 Change or Recondition the Engine Coolant - Liquid Cooled Models



NOTICE

Engine specifications require that this procedure be performed every 2000 hours or 24 months, whichever comes first.

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

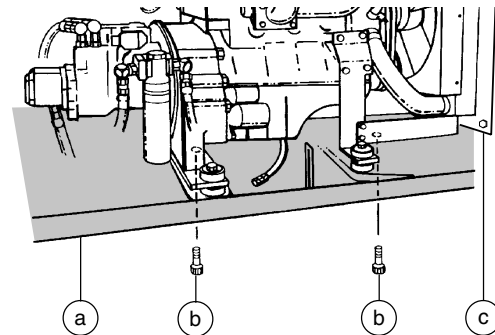
Bodily injury hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant will cause severe burns.

NOTICE

Perform this procedure with the engine off and cooled.

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.

- 2 Remove the 2 engine pivot plate retaining bolts. Swing the engine pivot plate away from the machine to access the cooling system.



- a engine pivot plate
- b pivot plate retaining bolts
- c air baffle

- 3 Put on protective clothing and eye wear.
- 4 Disconnect the coolant return hose at the radiator and drain the coolant return tank into a suitable container.
- 5 Slowly remove the radiator cap from the radiator.

CAUTION

Bodily injury hazard. Allow any pressure to dissipate gradually before removing the radiator cap.

- 6 Open the drain valve on the radiator and allow all the coolant to drain into a suitable container.
- 7 After all the coolant has drained, close the drain valve. Connect the coolant return hose to the radiator.

CHECKLIST E PROCEDURES

REV B

- 8 Open the drain valve on the engine block and allow the coolant to drain into a container. After the fluid is drained, close the drain valve.
- 9 Replace all coolant hoses and clamps.
- 10 Fill the radiator with the proper coolant mixture (coolant and water) for your climate until it is full.
- 11 Fill the coolant recovery tank to the **NORMAL** range.
- 12 Clean up any coolant that may have spilled during this procedure.
- 13 Start the engine from the ground controls and let it run for 30 seconds. Turn the engine off and inspect for leaks.
- 14 Check the coolant level in the coolant recovery tank. Add coolant if needed.
- 15 Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- 16 Install the air baffle and the air baffle retaining fasteners.
- 17 Start the engine from the ground controls and let it run until it reaches normal operating temperature.
- 18 Turn the engine off. Allow the engine to cool.
- 19 Check the coolant level in the coolant recovery tank. Add coolant if needed.

Coolant capacity

Ford LRG-425 EFI Engine	11.5 quarts	10.9 liters
Perkins 704-30 Engine	10 quarts	9.5 liters

E-3**Change the Fuel Hoses - Gasoline/LPG Models****NOTICE**

Engine specifications require that this procedure be performed every 2000 hours or 24 months, whichever comes first.

Maintaining the fuel hoses in good condition is essential to safe operation and good engine performance. Failure to detect a worn, cracked or leaking fuel hose 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.

CAUTION

Component damage hazard. Be sure the fuel hoses are routed the same way the original hoses were.

NOTICE

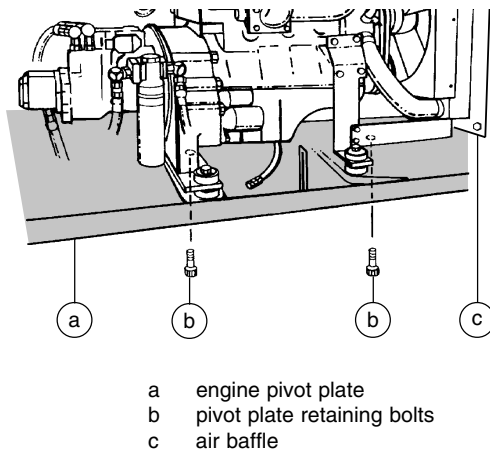
Perform this procedure with the engine off and cooled.

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.

REV B

CHECKLIST E PROCEDURES

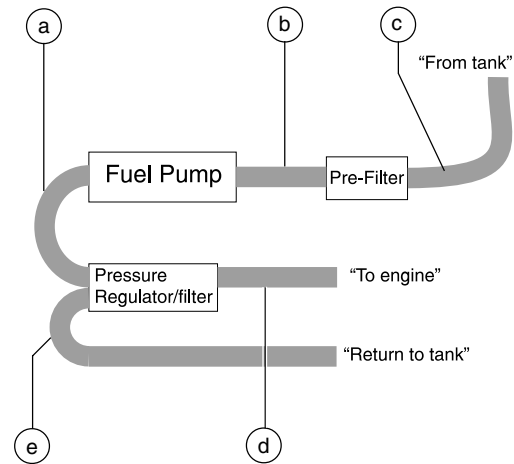
- Remove the 2 engine pivot plate retaining bolts and swing the engine out away from the machine to access the fuel hoses.



- Place a suitable container under the engine pivot plate. See capacity specifications.
- Locate the fuel pressure regulator/filter and the fuel pump on the engine pivot plate behind the engine.
- At the fuel pressure regulator/filter, disconnect the fuel hose to the fuel tank. Drain the fuel tank into a suitable container.

▲ DANGER Explosion and fire hazard. Electronic Fuel Injection (EFI) systems operate at a very high pressure. Fuel may be expelled under pressure if the hoses are removed too quickly. Loosen the fuel hoses very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.

- Remove and replace all of the fuel hoses and clamps according to the following hose routing diagram:



- Clean up any fuel that may have spilled during this procedure.
- Start the engine from the ground controls. 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.

- Swing the engine pivot plate back to its original position and install the two engine pivot plate retaining bolts.
- Install the air baffle and the air baffle retaining fasteners.

E-4 Replace the Engine Air Breather - Perkins Diesel Models



NOTICE

Engine specifications require that this procedure be performed every 2000 hours or 24 months, whichever comes first.

Complete information to perform this procedure is available in the *Perkins 700 Series Workshop Manual*, Perkins part number TPD 1359E (Genie part number 62424).

E-5 Grease the Steer Axle Wheel Bearings - 2WD Models



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

- 1 Loosen the wheel lug nuts. Do not remove them.
 - 2 Block the non-steering wheels. Center a lifting jack under the steer axle.
 - 3 Raise the machine approximately 6 inches / 15 cm. Place blocks under the drive chassis for support.
 - 4 Remove the lug nuts. Remove the tire and wheel assembly.
 - 5 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.
- ⦿ Result: There should be no side to side or up and down movement.

Skip to step 10 if there is no movement.

REV B

CHECKLIST E PROCEDURES

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

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

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

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

- 8 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.
- 9 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.
- ⊕ Result: If there is no side to side or up and down movement, continue to step 11 and grease the wheel bearings.
- ⊗ Result: If there is side to side or up and down movement, continue to step 11 and replace the wheel bearings with new ones.

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

- 10 Remove the dust cap from the hub. Remove the cotter pin from the castle nut.
- 11 Remove the castle nut.
- 12 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.
- 13 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.
- 14 Pack both bearings with clean, fresh grease.

- 15 Place the large inner bearing into the rear of the hub.

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

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

- 17 Slide the hub onto the yoke spindle.

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

- 18 Place the outer bearing into the hub.
- 19 Install the washer and castle nut.
- 20 Tighten the slotted nut to 158 ft-lbs / 214 Nm to seat the bearings.
- 21 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.
- 22 Install a new cotter pin. Bend the cotter pin to lock it in place.

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

- 23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications*.
- 24 Center a lifting jack under the steer axle.
- 25 Raise the machine approximately 6 inches (15 cm). Remove the blocks from under the drive chassis.
- 26 Lower the machine.

E-6 Check the Fuel Injectors - Perkins Diesel Models



NOTICE Engine specifications require that this procedure be performed every 3000 hours or 18 months, whichever comes first.

A dirty or clogged injector may cause the engine to perform poorly and continued use may cause component damage. Replacing a faulty injector is essential for good engine performance and service life.

Checking the Injectors:

- 1 After warming the engine, operate the engine at a fast idle speed.
 - 2 Loosen and tighten the union nut of the high-pressure fuel pipe at each injector.
- ⊙ **Result:** When the union nut of the defective injector is loosened, it has little or no effect on the engine speed.

CAUTION Component damage hazard. Use a separate wrench to prevent movement of the outlets of the fuel injection pump when the high-pressure pipes are released or tightened.

Replacing an Injector:

- 1 Thoroughly clean the area around the injector to be removed.
- 2 Remove the fuel leak-off line.

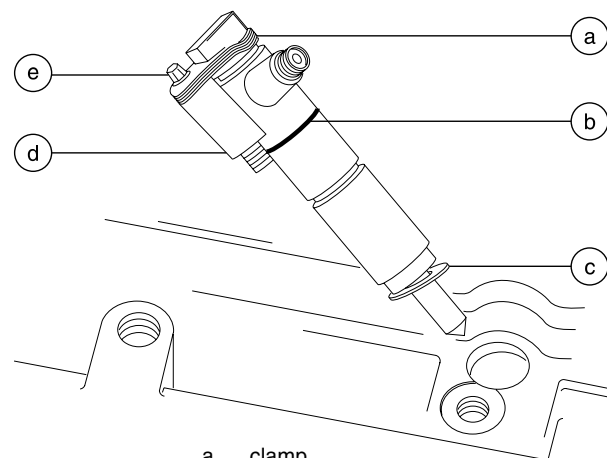
NOTICE Do not allow dirt to enter the fuel system. Before a connection is disconnected, thoroughly clean the area around the connection. After a component has been disconnected, fit a suitable cover to all open connections.

- 3 Remove the union nuts of the high-pressure line from the injector and from the fuel injection pump. If necessary, remove the pipe clamps.

CAUTION Component damage hazard. Use a separate wrench to prevent movement of the outlets of the fuel injection pump when the high-pressure pipes are released or tightened.

NOTICE Do not bend the fuel line.

- 4 Remove the setscrew of the injector clamp and remove the clamp, the spacer, the injector and its seat washer.



- a clamp
- b 'O' ring
- c seat washer
- d spacer
- e setscrew

REV B

CHECKLIST E PROCEDURES

- 5 Put the injector in position together with a new seat washer and a new O-ring.
- 6 Install the injector into the cylinder head with a new clamp, the spacer, and engage the setscrew.

CAUTION Component damage hazard. When an injector is installed into the cylinder head, ensure that any sharp edges on the cylinder head do not damage the O-ring.

NOTICE A new clamp must be used every time an injector is fitted to the engine.

NOTICE Be sure the injector is not tilted when it is fitted to the cylinder head.

- 7 Tighten the setscrew to 16 ft-lbs / 22 Nm.
- 8 Fit the high pressure fuel pipe and tighten the union nuts to 16 ft-lbs / 22 Nm. If necessary, fit the pipe clamps.
- 9 Clean and replace the sealing washers and fit the leak off line. Tighten the banjo bolts to 7 ft-lbs / 9 Nm.

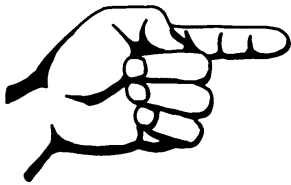
Bleed the system:

- 10 Loosen the vent plug on the side of the fuel injection pump.
- 11 Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the vent point. Tighten the vent plug.
- 12 Clean up any fuel that may have spilled during this procedure.
- 13 Operate the starter motor for intervals of 15 seconds until the engine starts. Check 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 It is important to allow the starter motor to cool for 30 seconds between each 15 second interval of operation.

NOTICE If the engine runs correctly for a short time and then stops or runs roughly, check for air in the fuel system. If there is air in the fuel system, there is probably a leak in the low pressure side of the system.



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Troubleshooting Flow Charts



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the appropriate *Genie S-40 & Genie S-45 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

TROUBLESHOOTING FLOWCHARTS

REV B

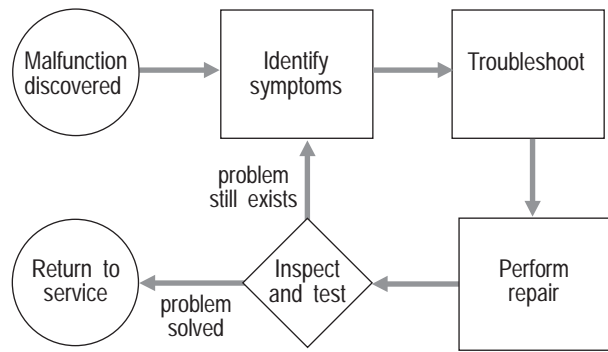
About This Section

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

The location of terminals mentioned in this section can be found on the appropriate electrical or hydraulic schematics provided in Section 6, *Schematics*.

Since various degrees of a particular function loss may occur, selecting the appropriate flow chart may be troublesome. When a function will not operate with the same speed or power as a machine in good working condition, refer to the flow chart which most closely describes the problem.

General Repair Process



Fault Code Chart

REV B

Fault Code	Problem	Cause	Solution
11	--	--	Normal operation
12	Throttle Position (TP) sensor low voltage.	Faulty TP sensor OR sensor wires shorted to ground OR poor terminal connection.	Check for poor terminal connections OR shorted wires from the TP sensor to the ECM OR replace the TP sensor.
14	Manifold Absolute Pressure (MAP) sensor low voltage.	Faulty MAP sensor OR sensor wires shorted to ground OR poor terminal connection.	Check for poor terminal connections OR wires shorted to ground OR replace MAP sensor.
21	Engine speed exceeded 4000 RPM.	Obstruction in throttle body OR faulty ECM.	Check for obstructions in the throttle body that could cause binding of the throttle assembly OR replace ECM.
22	Throttle Position (TP) sensor high voltage.	The ECM senses a signal from the TP sensor that is greater than 4.9V DC OR the TP sensor wiring is shorted to ground OR there is a poor terminal connection OR the TP sensor is faulty.	Check for poor terminal connections OR shorted wires from the TP sensor to the ECM OR replace the TP sensor.
24	Manifold Absolute Pressure (MAP) sensor high voltage.	Faulty MAP sensor OR sensor wires shorted to ground OR poor terminal connection.	Check for poor terminal connections OR shorted wires from the MAP sensor to the ECM to ground OR replace MAP sensor.

FAULT CODE CHART

REV B

Fault Code	Problem	Cause	Solution
31	Fuel pump low voltage.	Voltage to fuel pump is greater than or equal to 2V DC below ignition voltage.	Test the fuel pump relay, see the Repair Section OR check for poor terminal connection from the fuel pump relay to fuel pump OR replace the fuel pump.
32	Heated Oxygen (HO2) sensor low voltage.	Water in the fuel, misfiring cylinder, plugged fuel filter OR the HO2 sensor wiring is shorted to ground OR there is a poor terminal connection OR the HO2 sensor is faulty.	Check for water in the fuel, misfiring cylinder or plugged fuel filter OR check for poor terminal connections or shorted wires from the HO2 sensor to the ECM to ground OR replace HO2 sensor.
33	Engine Coolant Temperature (ECT) sensor high voltage.	Engine is overheating OR sensor wires shorted to ground or poor terminal connections OR ECT sensor is faulty.	Check engine coolant level OR check for shorted wires or poor terminal connections from the ECT sensor to the ECM OR replace the ECT sensor.
35	Intake Air Temperature (IAT) sensor high voltage.	Engine is overheating OR sensor wires shorted to ground or poor terminal connections OR ECT sensor is faulty.	Check for poor terminal connections or shorted wires from the IAT sensor to the ECM to ground OR replace IAT sensor.
41	Fuel pump high voltage.	Fuel pump is receiving voltage when the ECM is not sending the signal to the fuel pump to turn ON.	Test the fuel pump relay, see the Repair Section OR check for poor terminal connection from the fuel pump relay to fuel pump OR replace the ECM.

REV B

FAULT CODE CHART

Fault Code	Problem	Cause	Solution
42	Heated Oxygen (HO ₂) sensor high voltage.	A leaking or malfunctioning fuel injector, misfiring cylinder, faulty TP sensor or contamination of fuel OR use of improper thread sealant on sensor threads OR sensor wires shorted to ground or poor terminal connections OR HO ₂ sensor is faulty.	Test for a leaking or malfunctioning fuel injector, misfiring cylinder or bad TP sensor. Remove HO ₂ sensor and check condition of sensor for contamination OR check for poor terminal connections or shorted wires from the HO ₂ sensor to the ECM to ground OR replace HO ₂ sensor.
43	Engine Coolant Temperature (ECT) sensor low voltage.	ECM detects excessively low signal voltage from the ECT sensor.	Check engine coolant level OR check for shorted wires or poor terminal connections from the ECT sensor to the ECM OR replace the ECT sensor.
45	Intake Air Temperature (IAT) sensor low voltage.	ECM detects an excessively low signal voltage from the IAT sensor.	The IAT sensor shares the same ground wire as the ECT and MAP sensors. Check for shorted wires or poor terminal connections from the IAT sensor to the ECT and MAP sensors to the ECM OR replace the IAT sensor.
51	Low oil pressure.	Faulty oil pressure switch, wires shorted to ground or not enough engine oil.	Check engine oil level OR check for shorted wires or poor terminal connections from the oil pressure switch to the ECM OR replace the oil pressure switch

FAULT CODE CHART

REV B

Fault Code	Problem	Cause	Solution
52	Crankshaft Position (CKP) sensor senses extra or missing pulses.	The CKP and CMP sensors work together; if one is bad, the other one won't work correctly and causes the ECM to detect a fault. The ECM uses the signal pulses from the CKP and CMP sensors to initiate sequential fuel injection.	Check for shorted wires or poor terminal connections from the CKP and CMP sensors to the ECM OR replace the CKP or CMP sensor.
53	Camshaft Position (CMP) sensor senses unknown pattern.	The CMP and CKP sensors work together; if one is bad, the other one won't work correctly and causes the ECM to detect a fault. The ECM uses the signal pulses from the CKP and CMP sensors to initiate sequential fuel injection.	Check for shorted wires or poor terminal connections from the CKP and CMP sensors to the ECM OR replace the CKP or CMP sensor.
54	ECM Fault - Illegal Operation.	The ECM received an illegal instruction signal from one or more of the sensors and has gone into a default program and then return to normal operation	Replace the ECM.

REV B

FAULT CODE CHART

Fault Code	Problem	Cause	Solution
55	ECM - Illegal Interruption	The ECM received an illegal interruption signal from one or more engine sensors and has gone into a default program and then return to normal operation.	Replace the ECM.
56	ECM - Computer Operating Properly (COP) failure	Under normal operation the ECM will store numbers into memory. If this does not happen, it will reset itself and set fault code 56.	Replace the ECM.
61	System voltage low.	Battery supply voltage to the ECM is 8V DC or less.	Check battery and/or alternator condition OR check for shorted wires or poor terminal connections from the battery to the ECM.
62	System voltage high.	Battery supply voltage to the ECM is 18V DC or more.	Check battery and/or alternator condition OR check for shorted wires or poor terminal connections from the battery to the ECM.

Chart 1

REV B

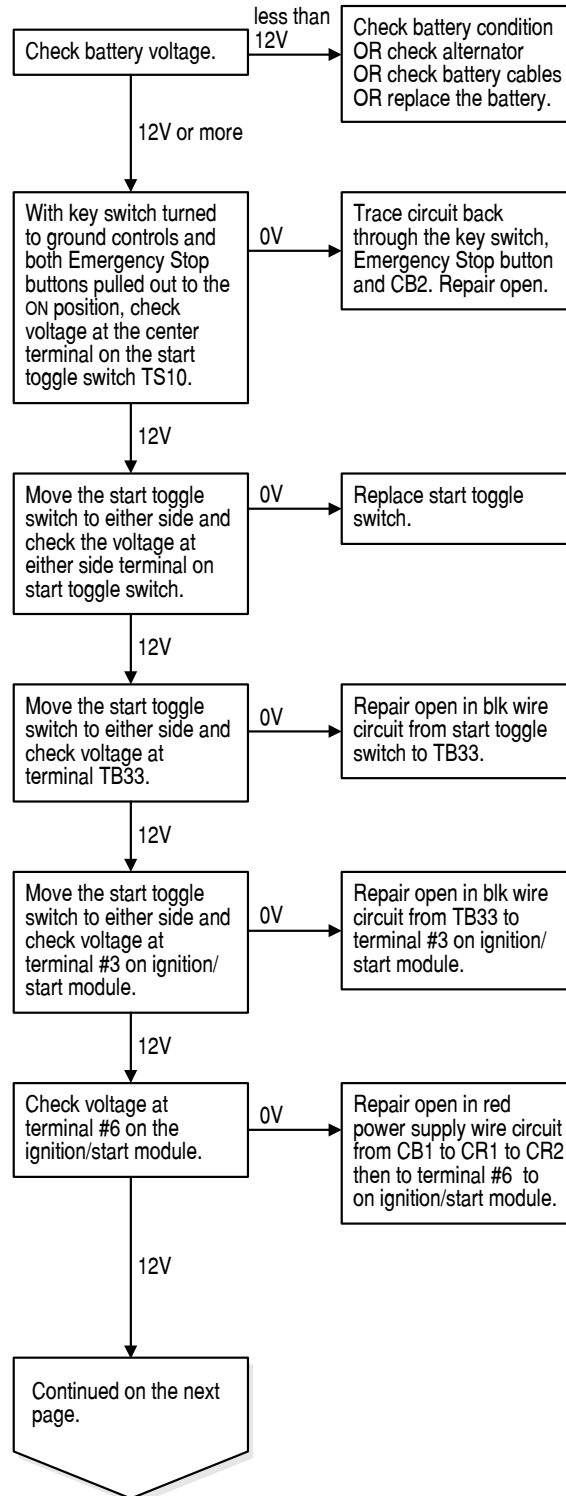
Engine Will Not Crank Over

Be sure the key switch is in the appropriate position.

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

Be sure the circuit breakers are not tripped.

Be sure the battery is fully charged.



REV B

CHART 1

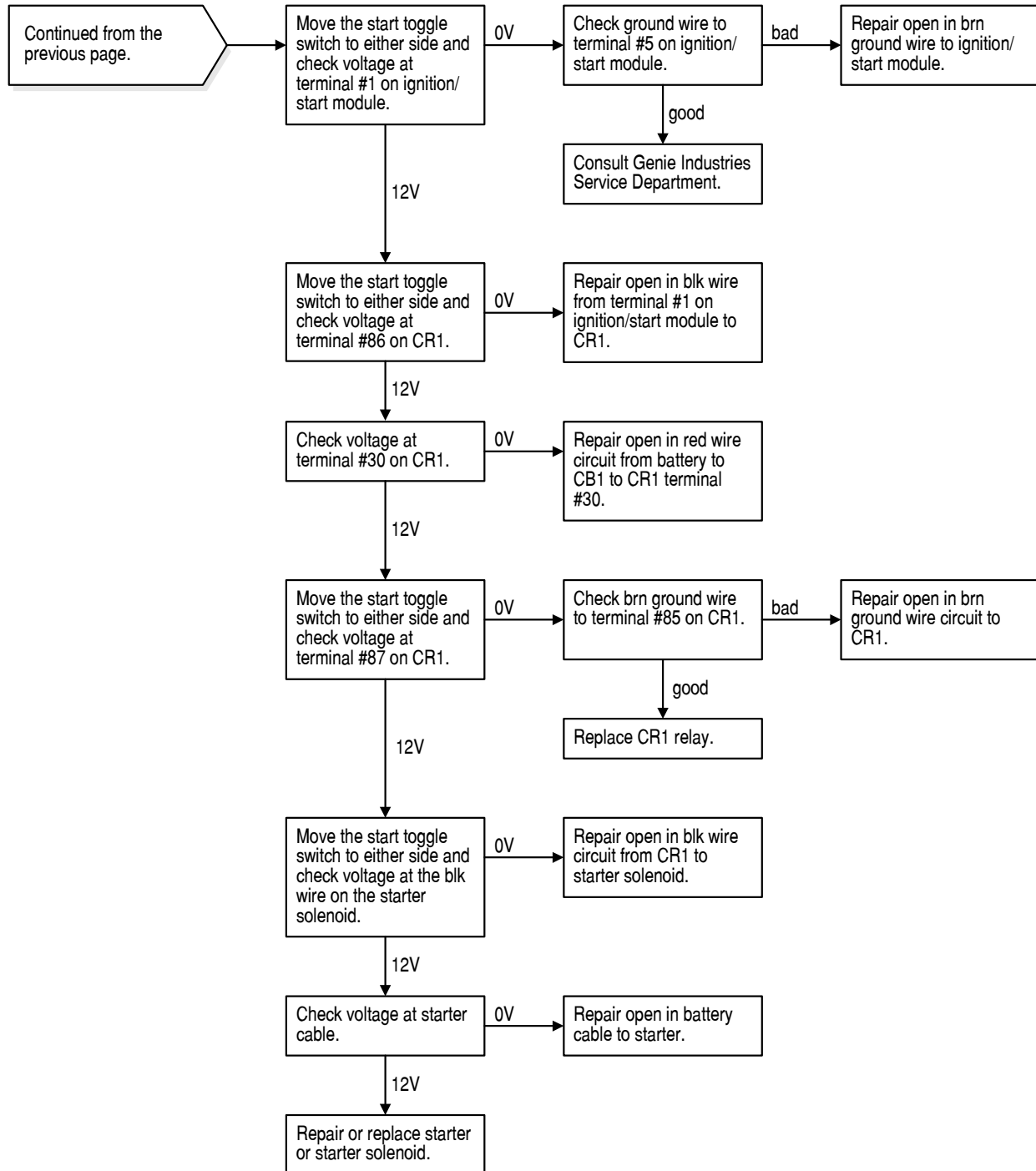


Chart 2

REV B

Engine Cranks Over But Will Not Start - Gasoline/LPG Models

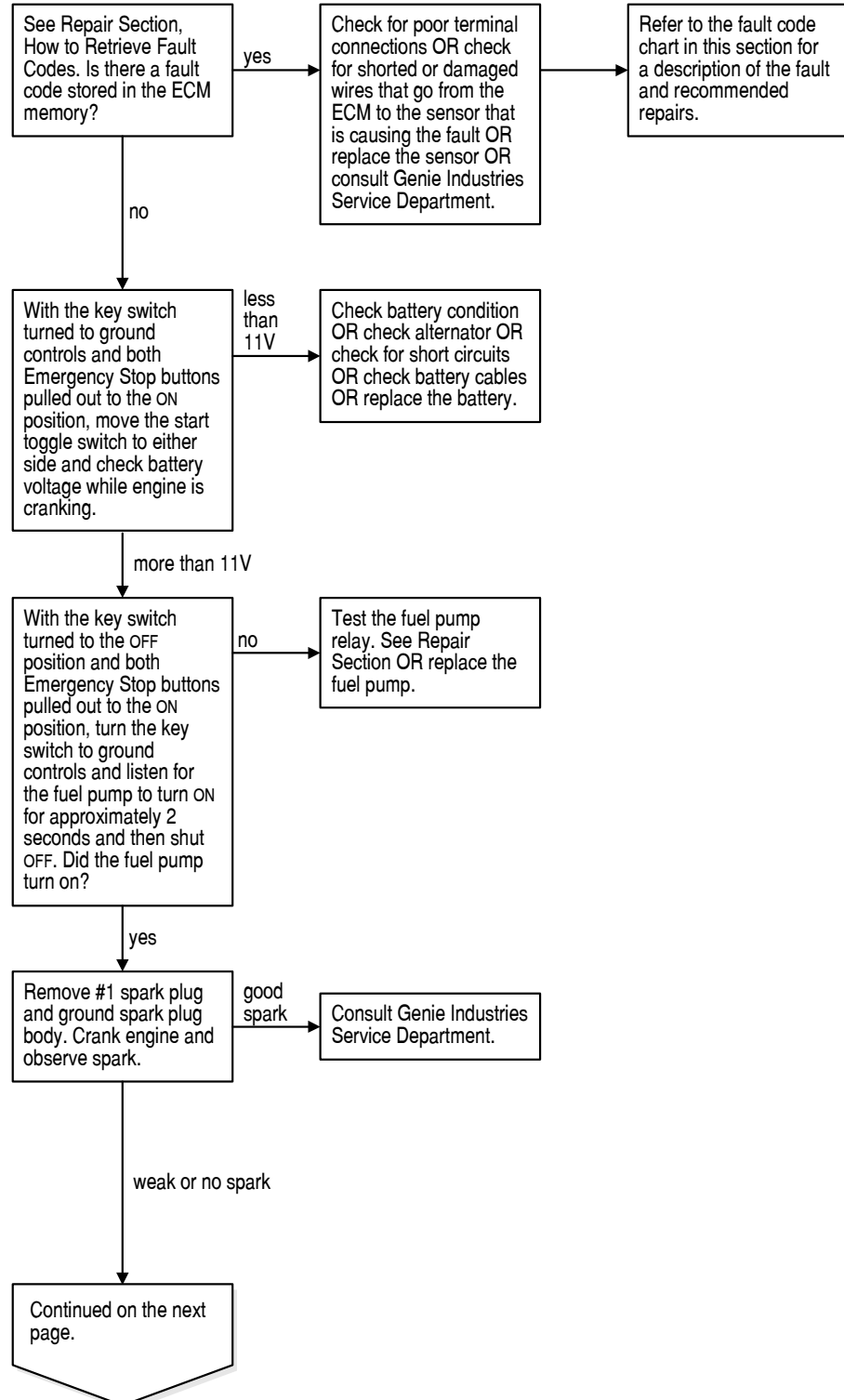
Be sure to check the engine oil level and fill as needed.

Be sure to check fuel levels and engine coolant level.

Be sure the gasoline shut-off valve is in the ON or OPEN position.

Perform following tests in gasoline mode only.

Be sure that the water temperature gauge does not show an overheated condition.



REV B

CHART 2

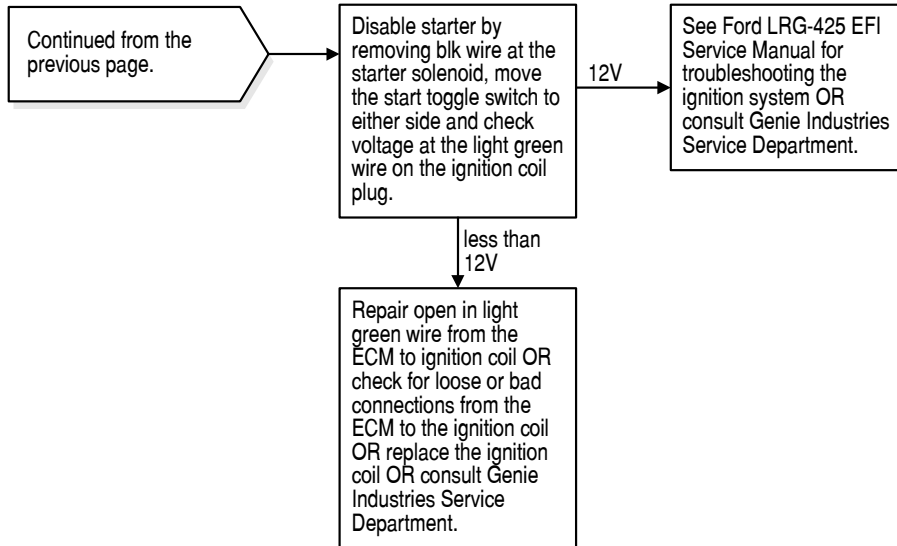


Chart 2A

REV B

Engine Cranks Over But Will Not Start or Engine Runs While Cranking Then Dies- Gasoline/ LPG Models

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

Be sure to check fuel levels and the engine coolant level.

Be sure that the radiator overflow tank is at the FULL mark.

Be sure that all vacuum hoses are connected and show no signs of gamage.

Perform these tests in gasoline mode only.

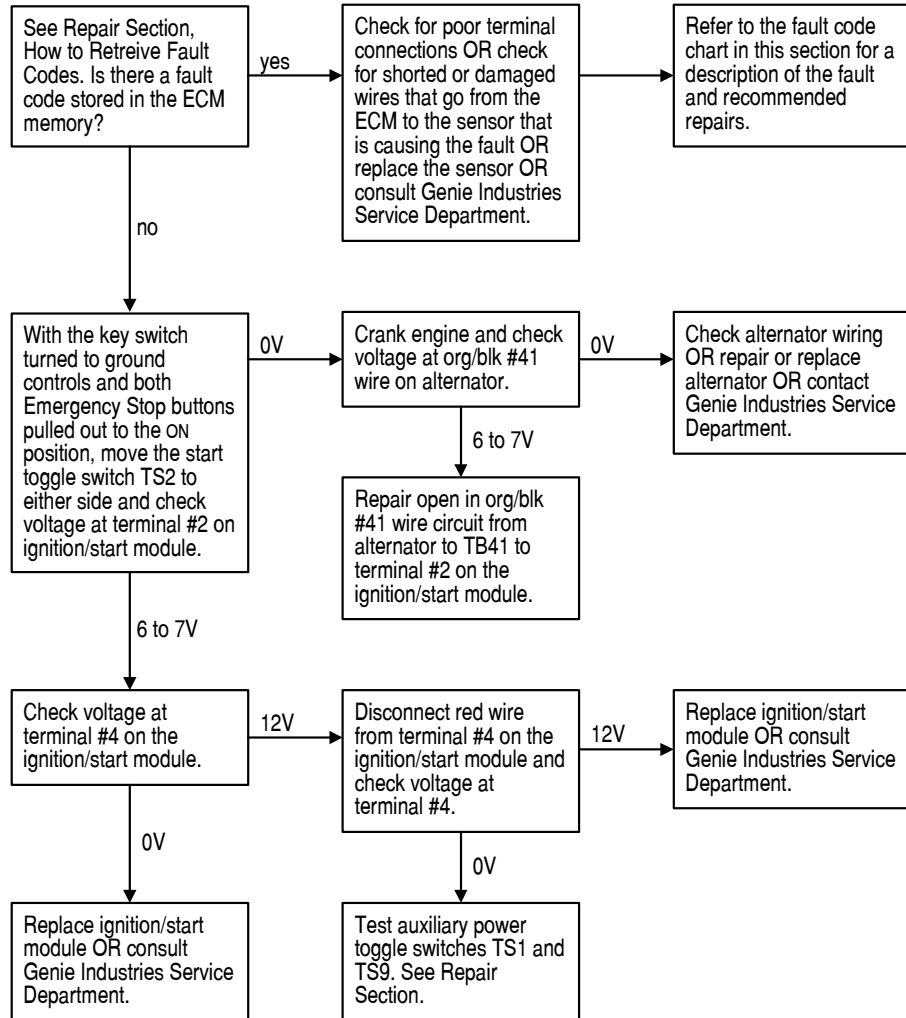


Chart 3

REV B

Engine Cranks Over But Will Not Start - Diesel Models

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

Be sure to check fuel level.

Be sure the fuel shut-off valve is in the ON position.

Be sure that the battery is fully charged.

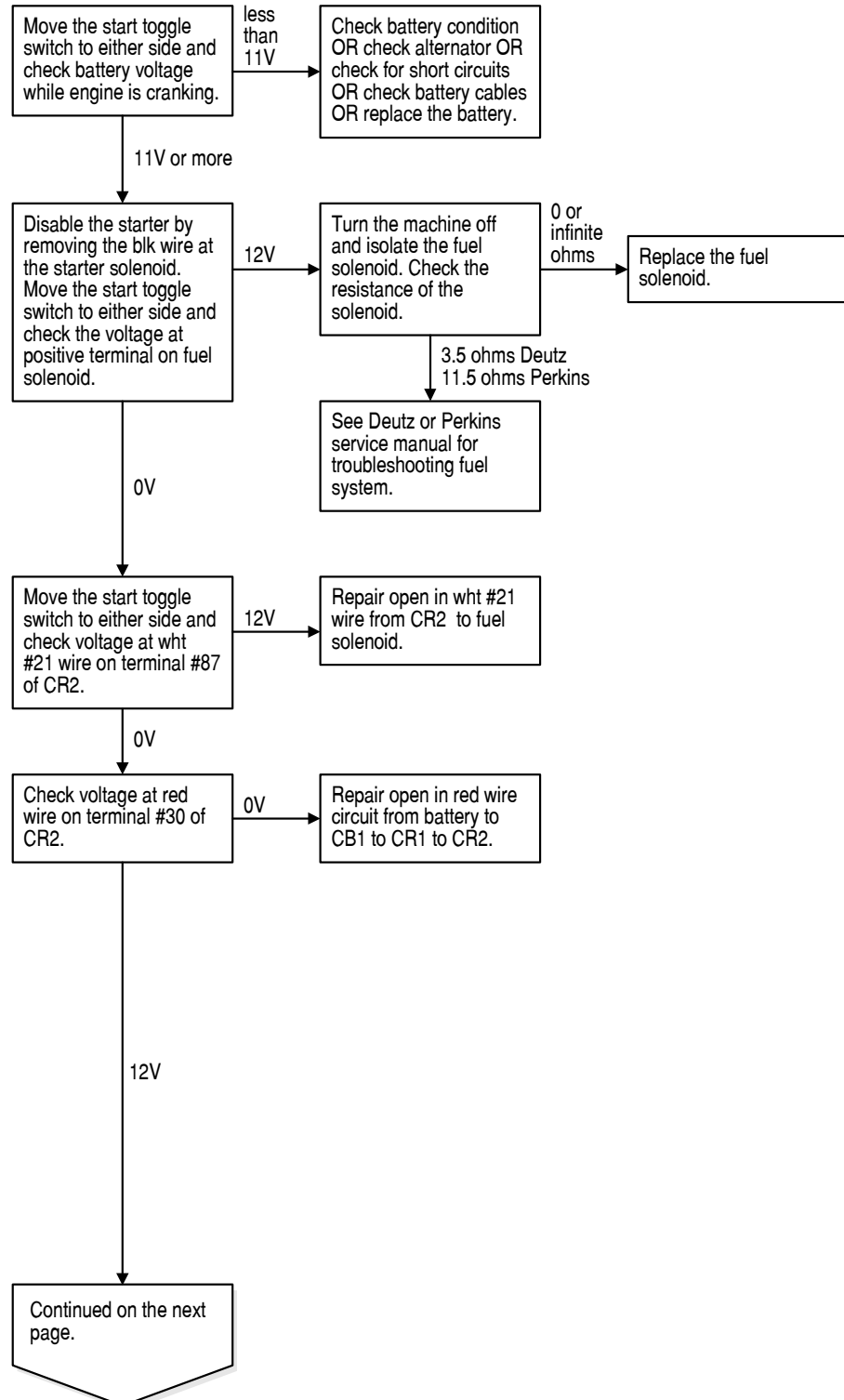
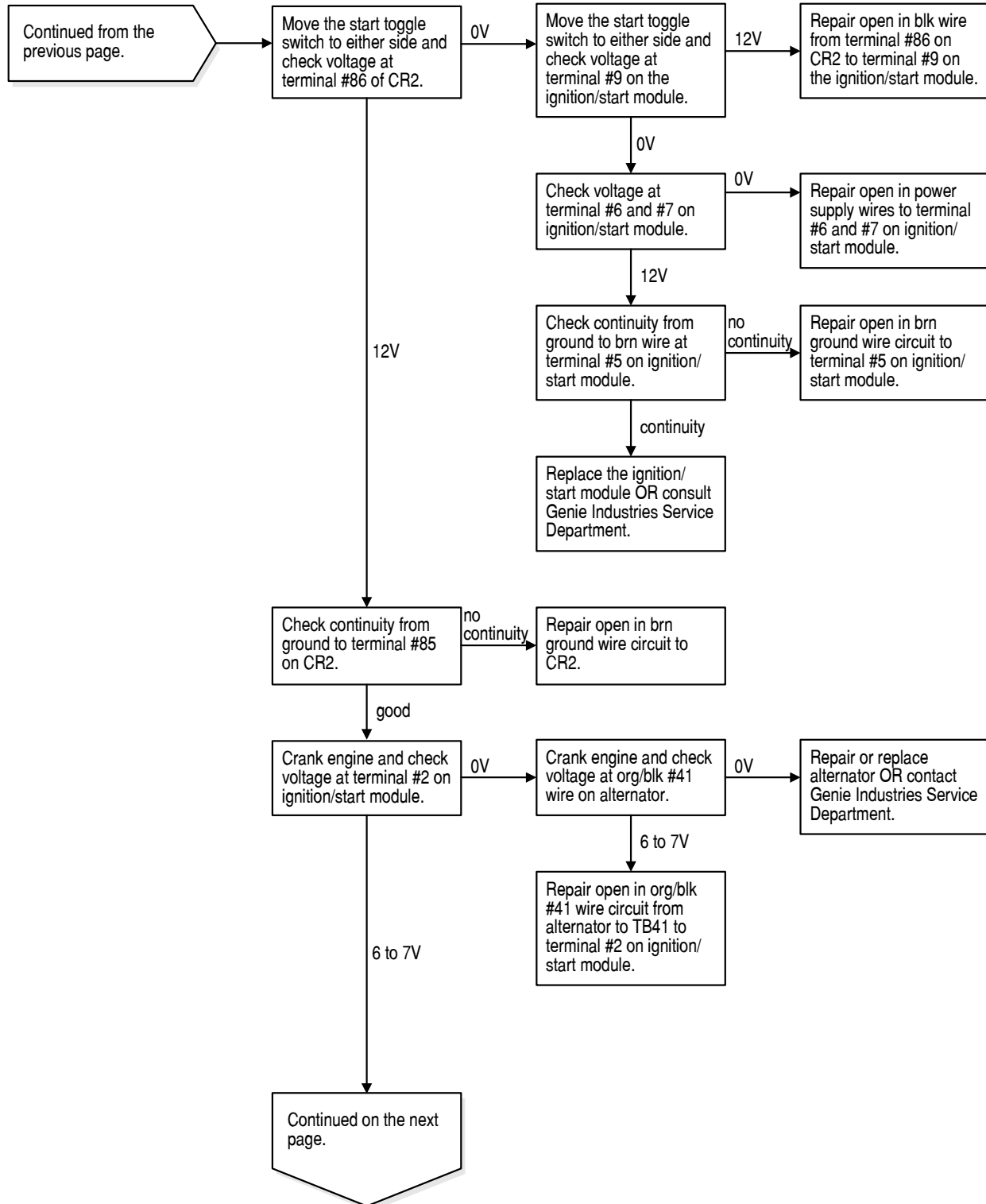


CHART 3

REV B



REV B

CHART 3

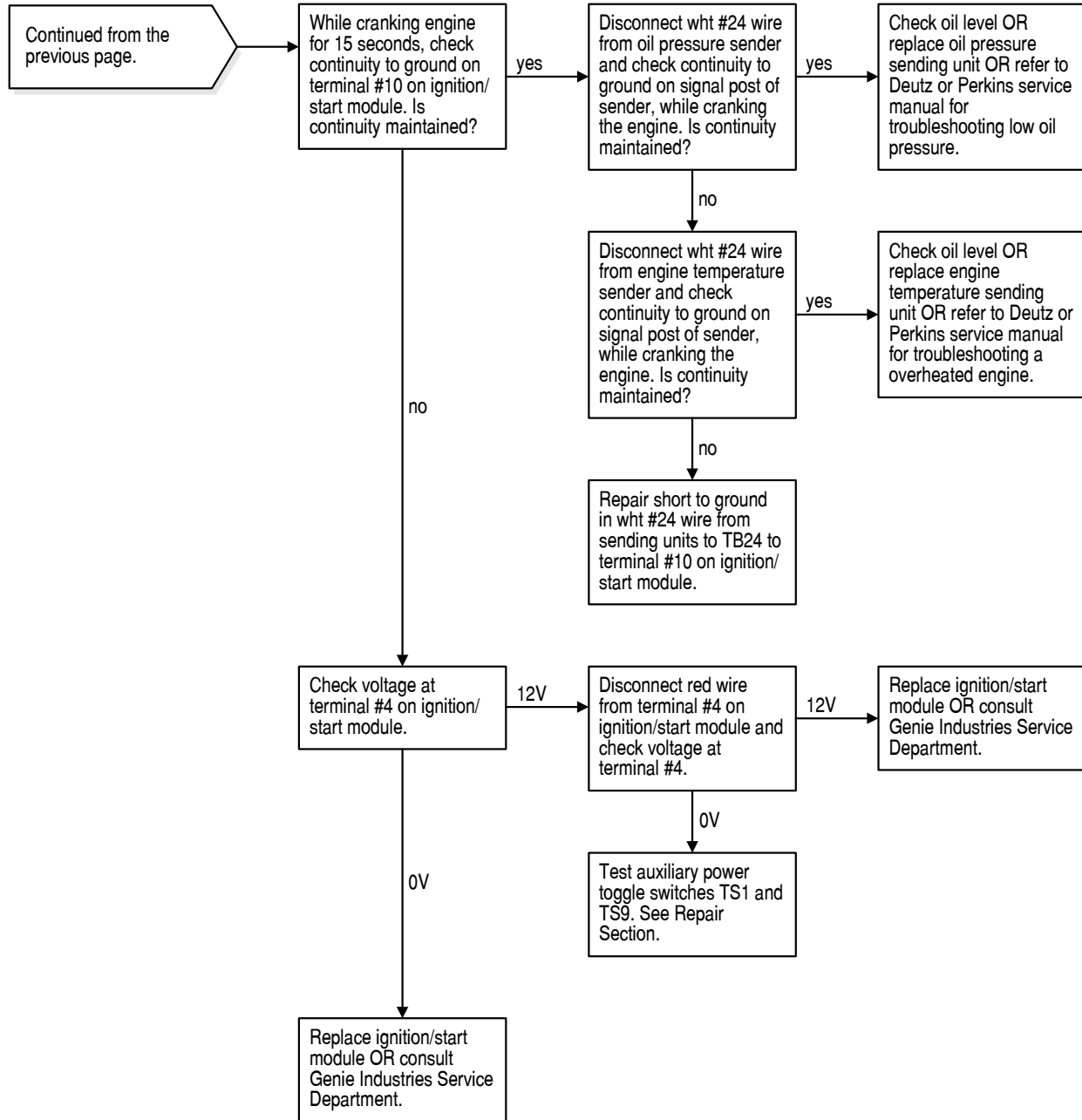


Chart 4

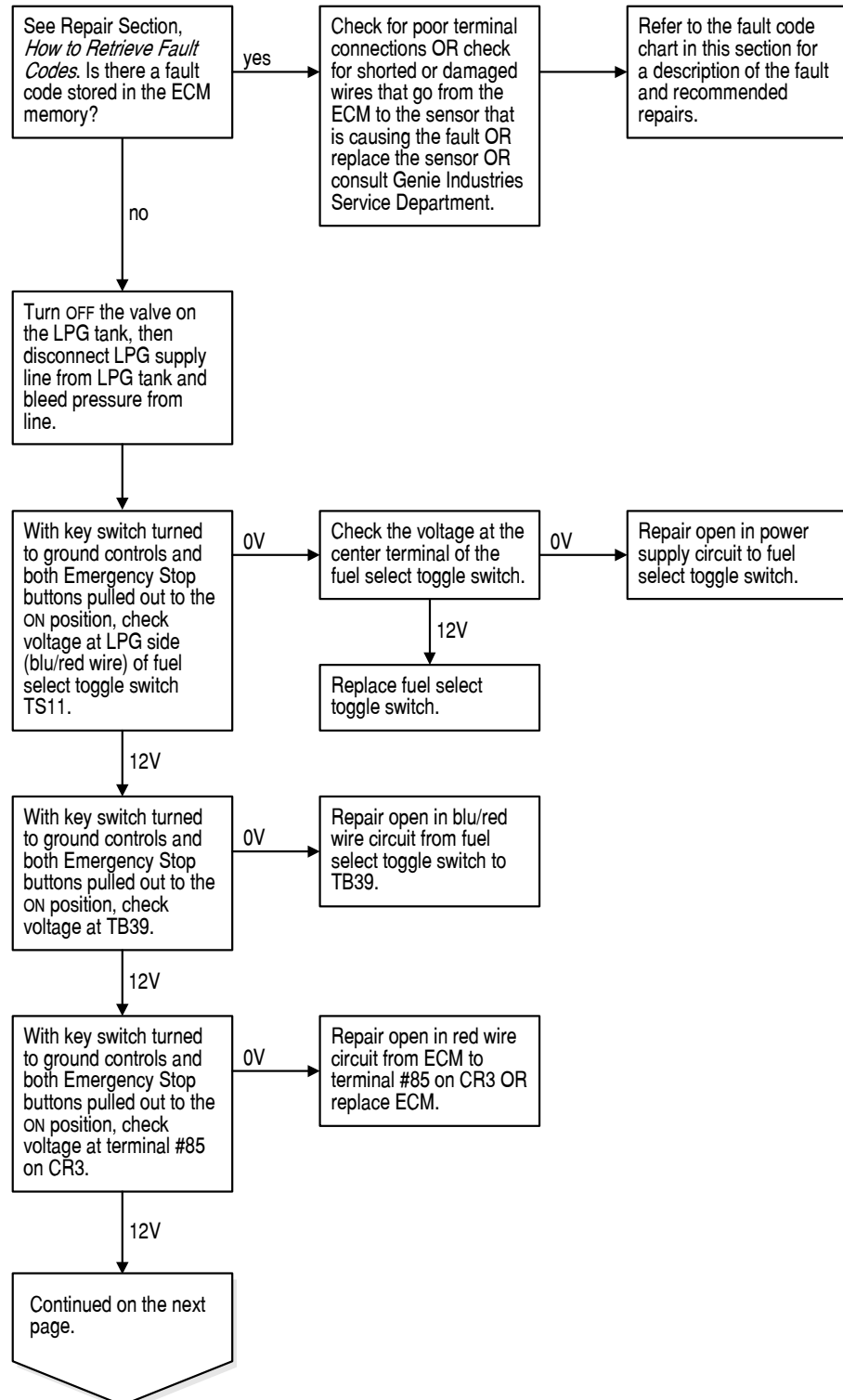
REV B

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

Be sure fuel select switch is switched to LPG.

Be sure the valve on the LPG tank is fully opened.

Be sure to check LPG fuel level.



REV B

CHART 4

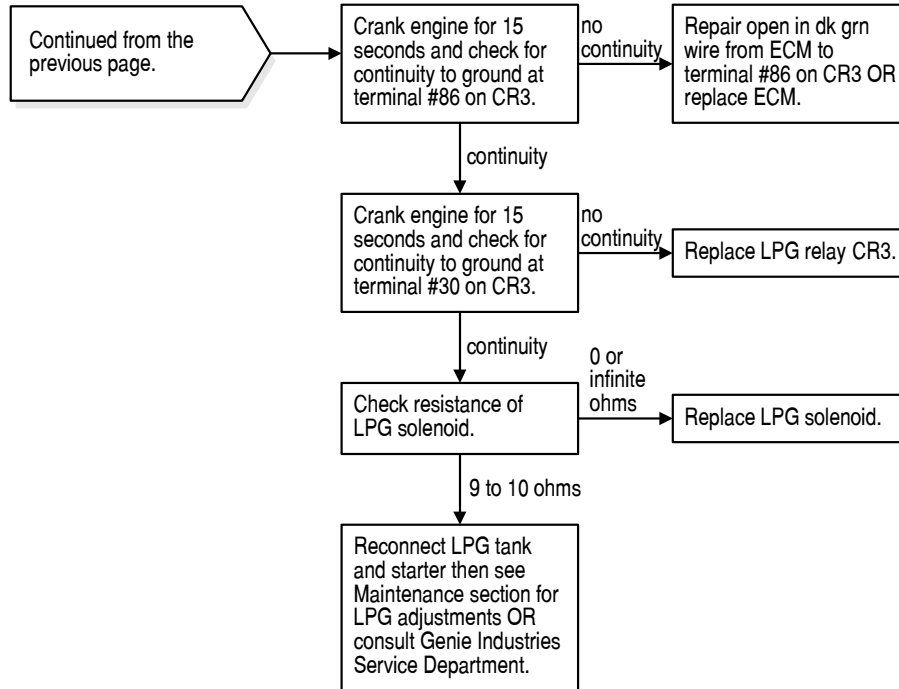


Chart 5

REV B

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

Be sure fuel select switch is switched to gasoline.

Be sure to check gasoline fuel level.

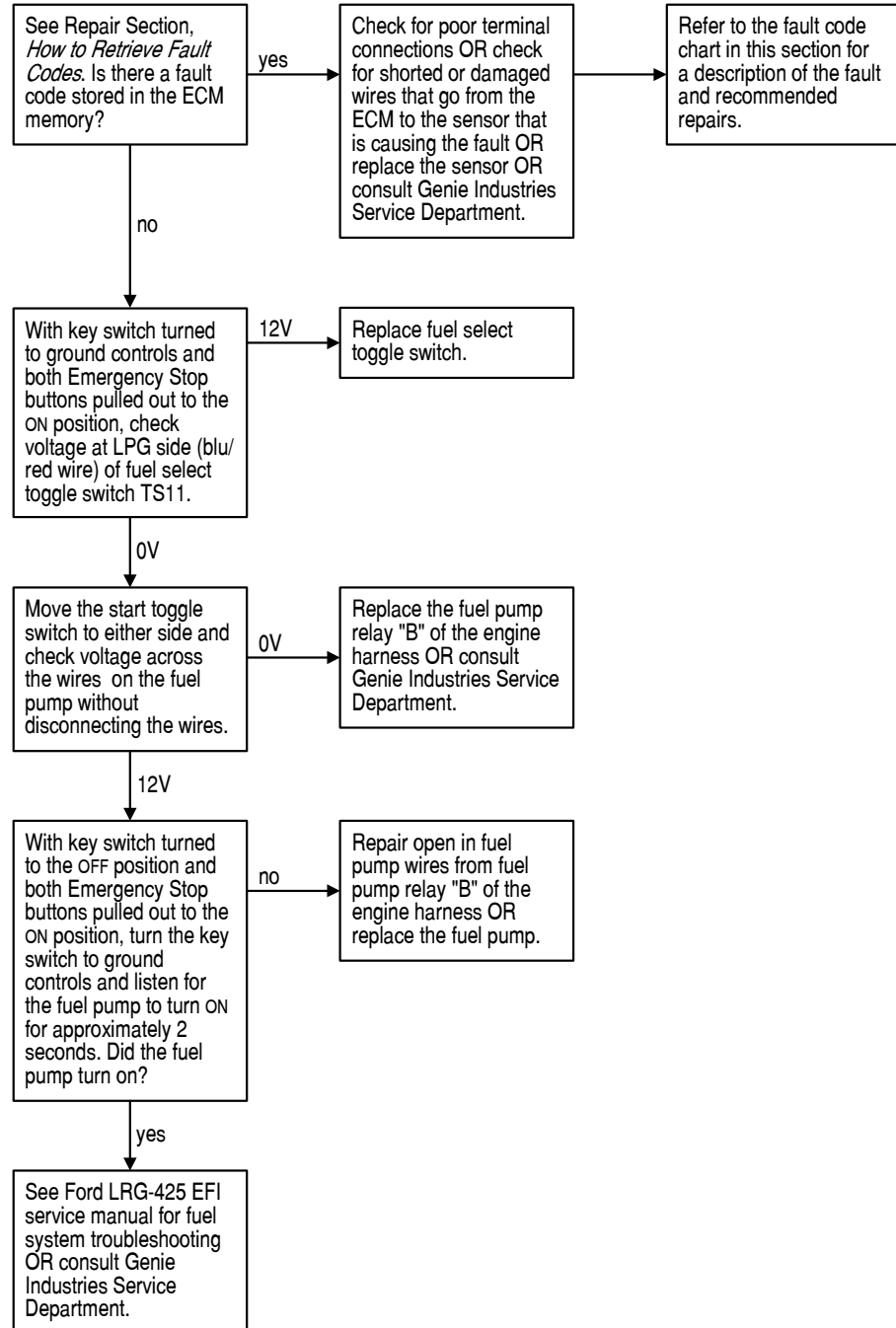


Chart 6

REV B

Engine High Idle Inoperative - Gasoline/LPG Models

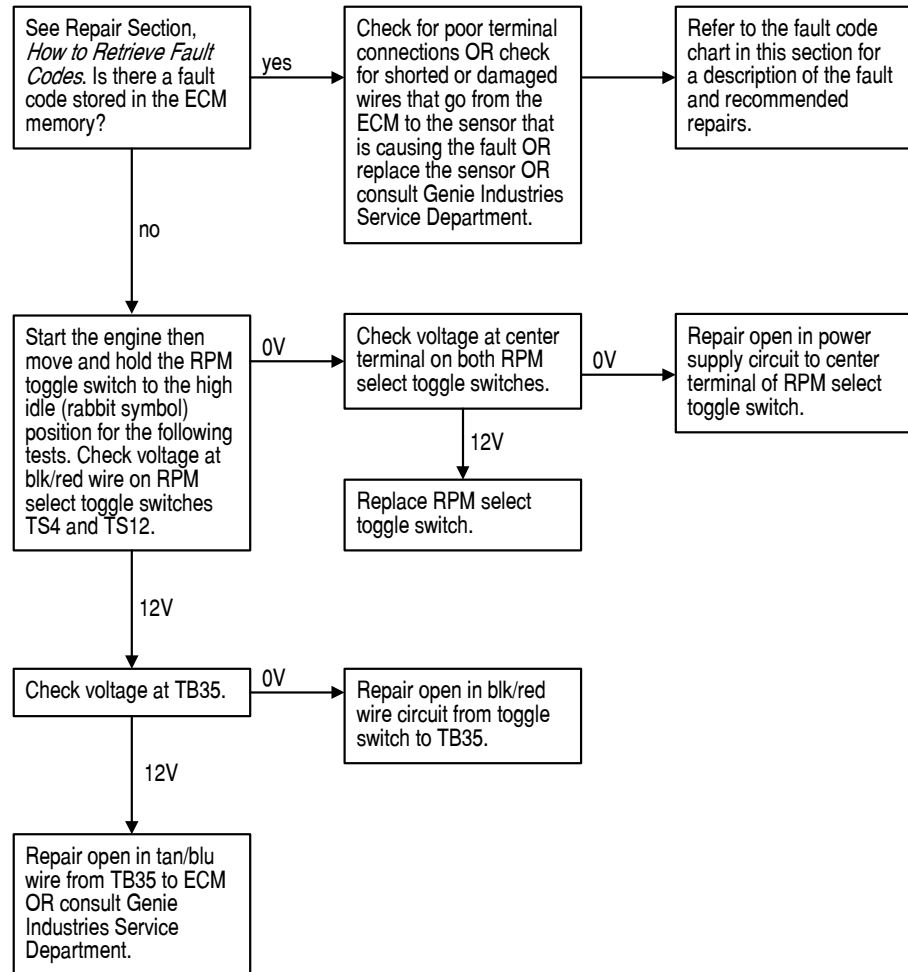


Chart 7

REV B

Engine Low Idle Inoperative - Gasoline/LPG Models

If low idle operates on LPG but not on gasoline, see Ford service manual for carburetor troubleshooting.

If low idle operates on gasoline but not on LPG, see Repair section for LPG regulator adjustments.

Be sure throttle linkage from governor to carburetor is not binding, see Repair section.

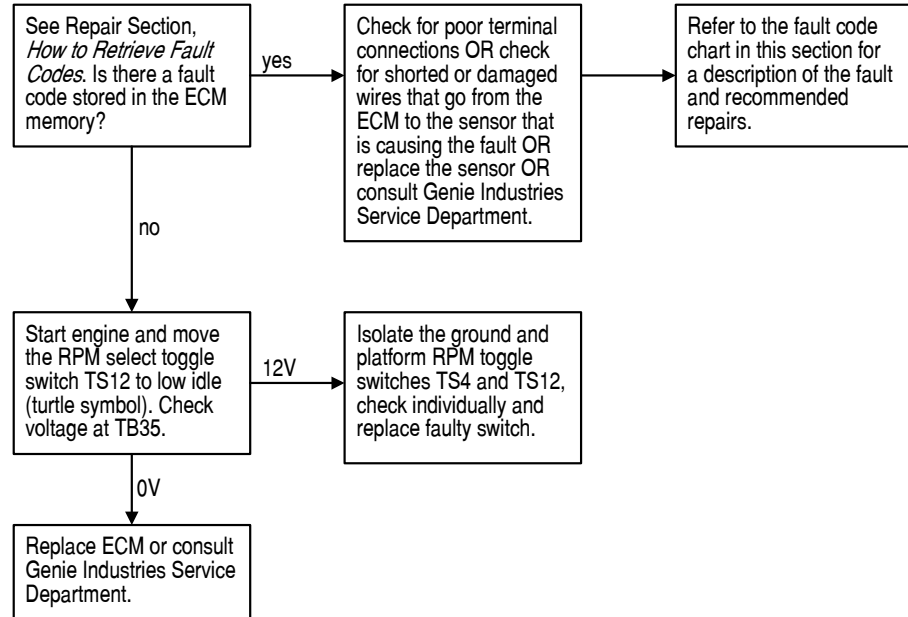


Chart 8

REV B

Engine High Idle Inoperative - 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.

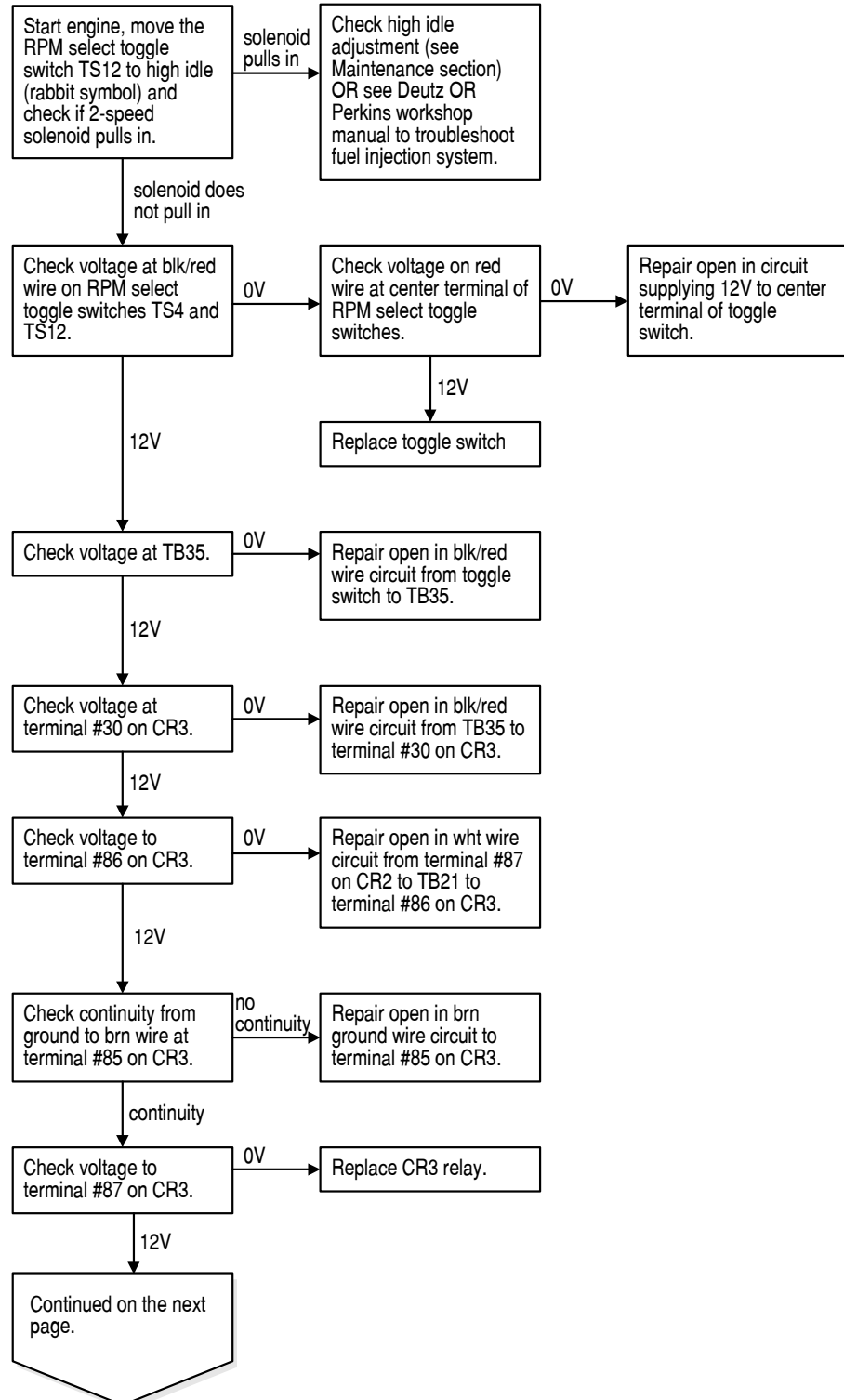


CHART 8

REV B

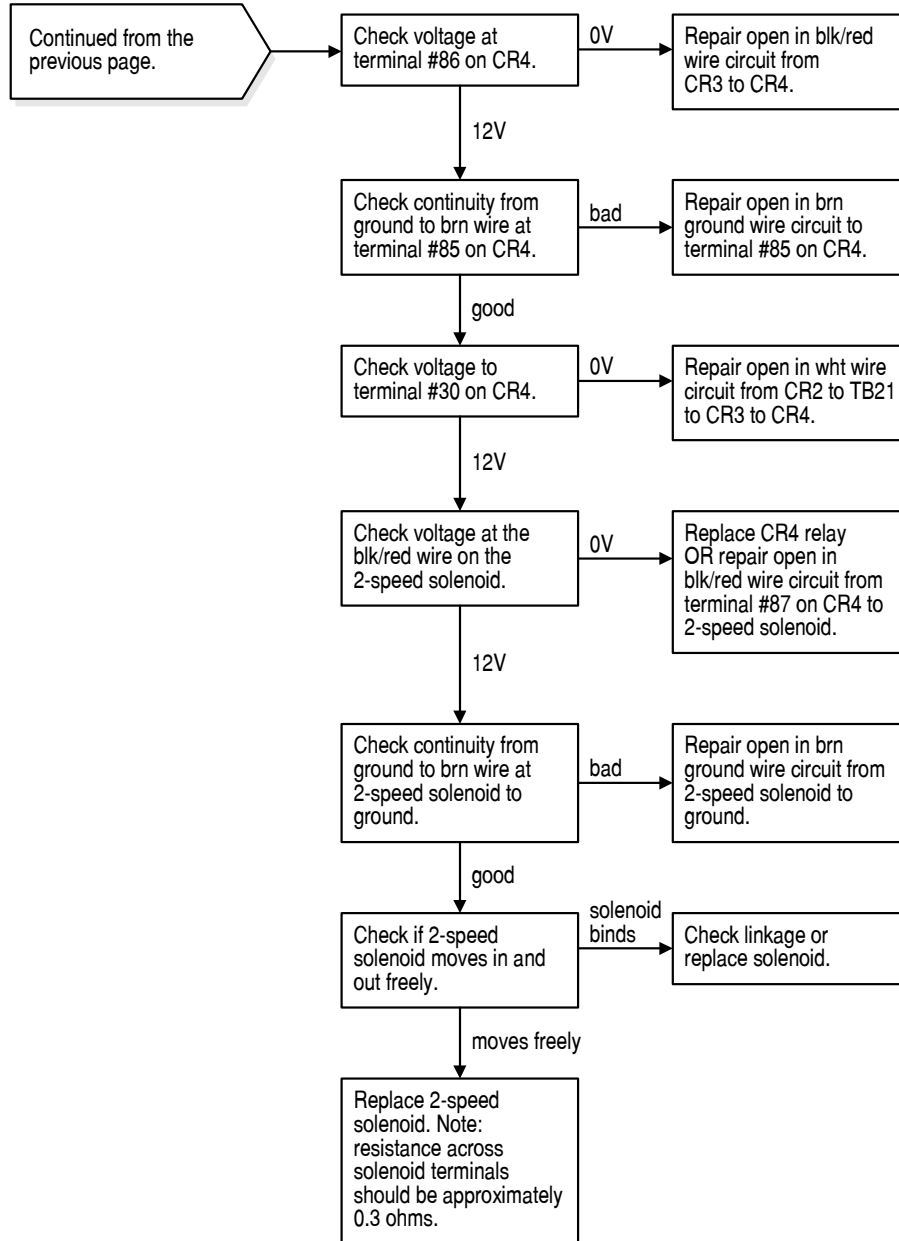


Chart 9

REV B

Engine Low Idle Inoperative - Diesel Models

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

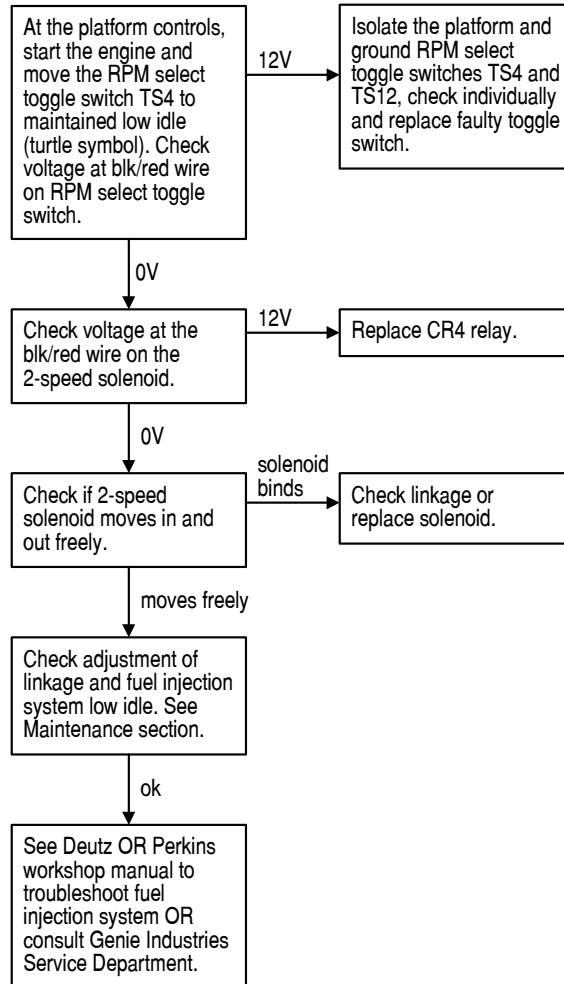


Chart 10

REV B

All Functions Inoperative, Engine Starts and Runs

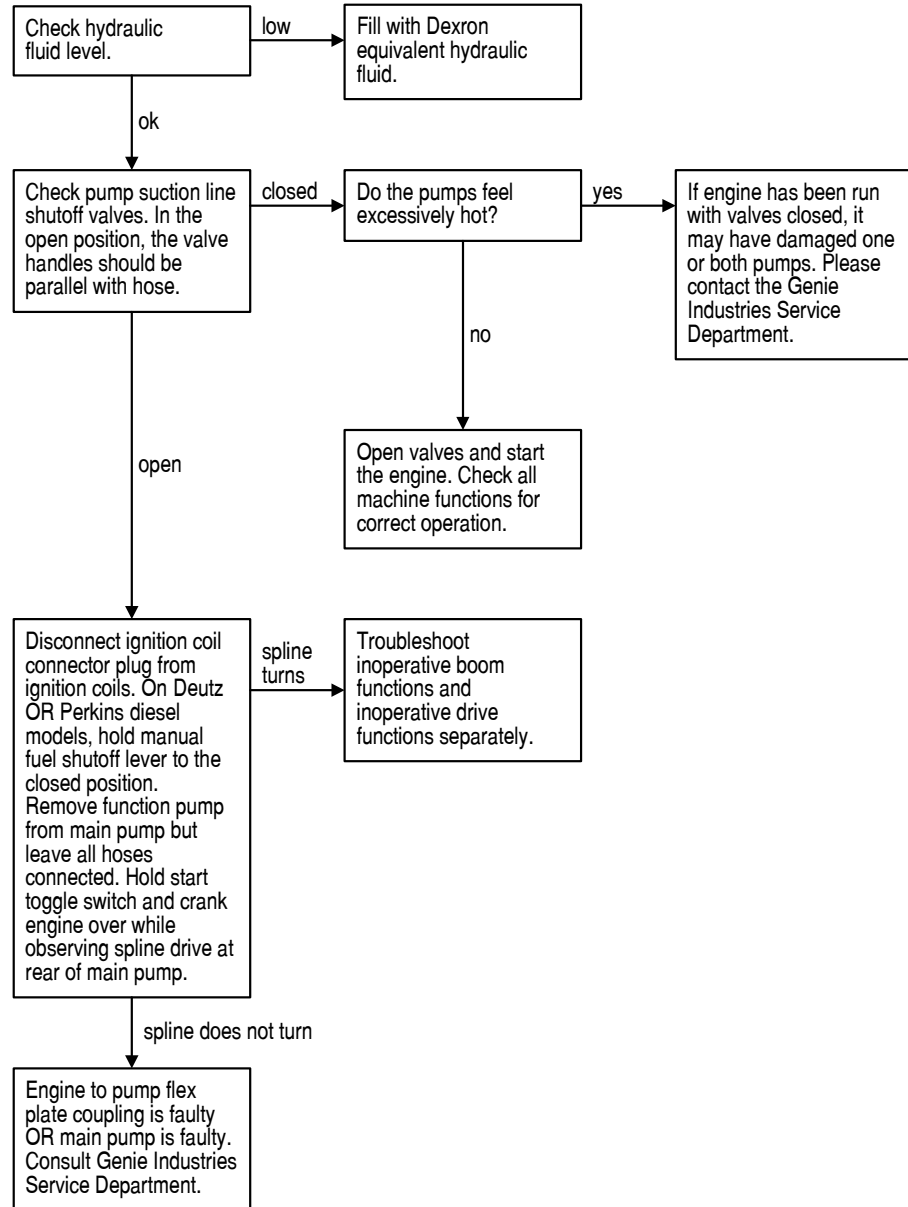


Chart 11

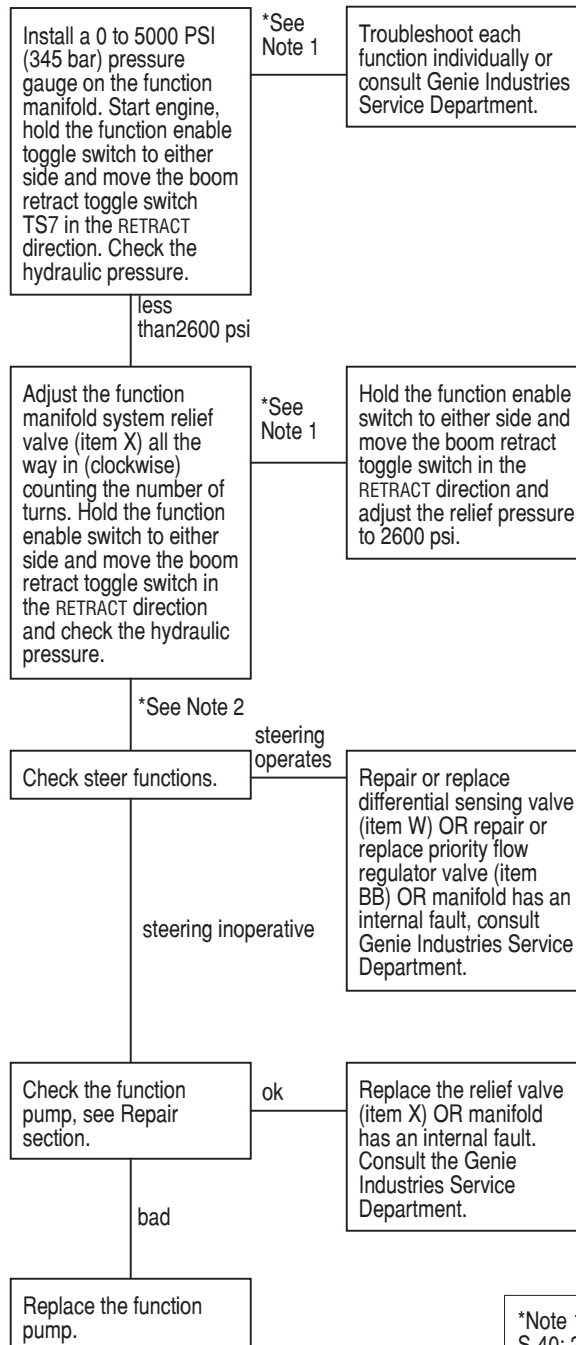
REV B

All Lift and Steer Functions Inoperative, Drive Functions Operational

Be sure the generator on/off toggle switch (if equipped) is in the OFF position.

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

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



*Note 1
S-40: 2600 psi or more
S-45: 2900 psi or more

*Note 2
S-40: less than 2600 psi
S-45: less than 2900 psi



Chart 12

REV B

Ground Controls Inoperative, Platform Controls Operate Normally

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

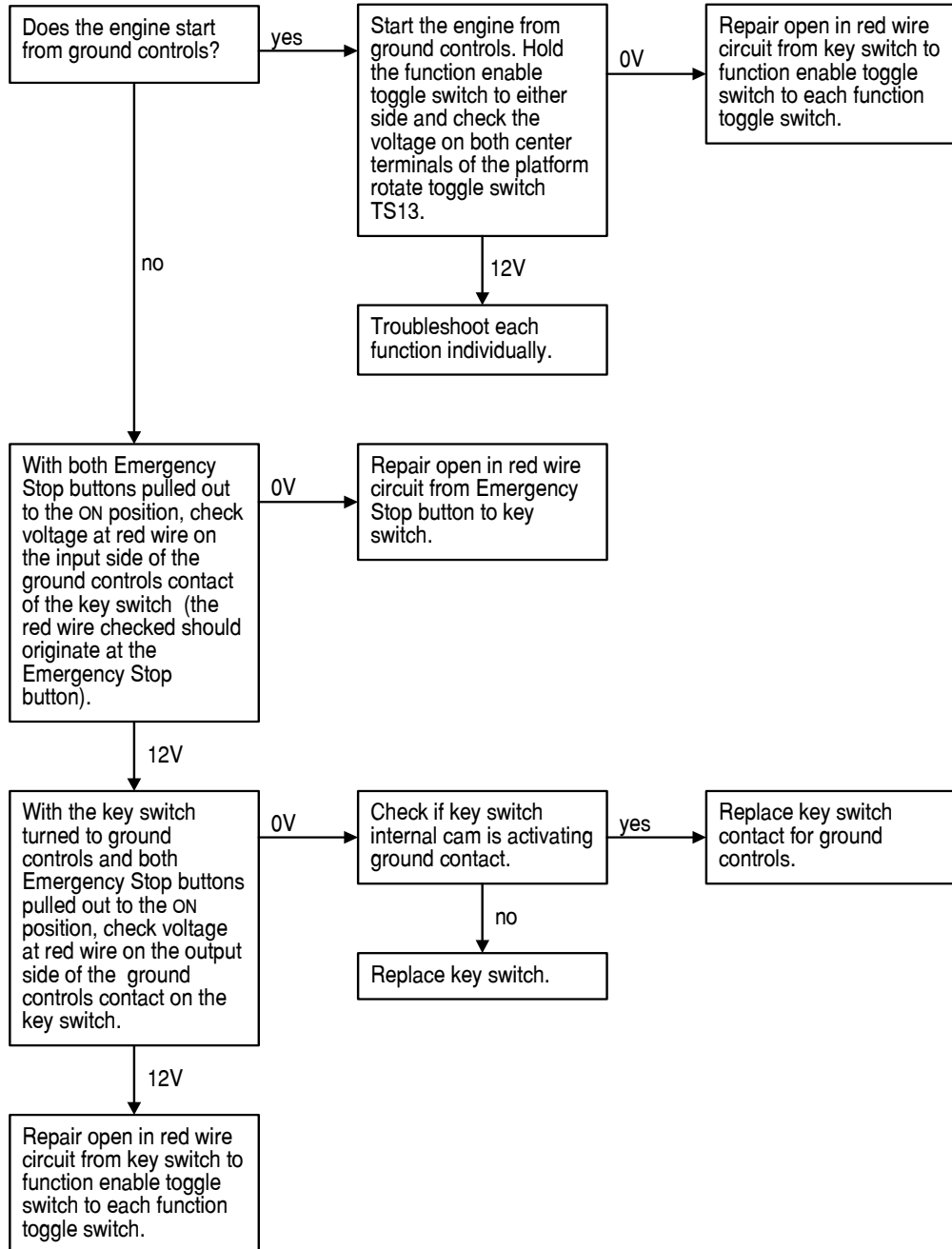


Chart 13

REV B

Platform Controls Inoperative, Ground Controls Operate Normally

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

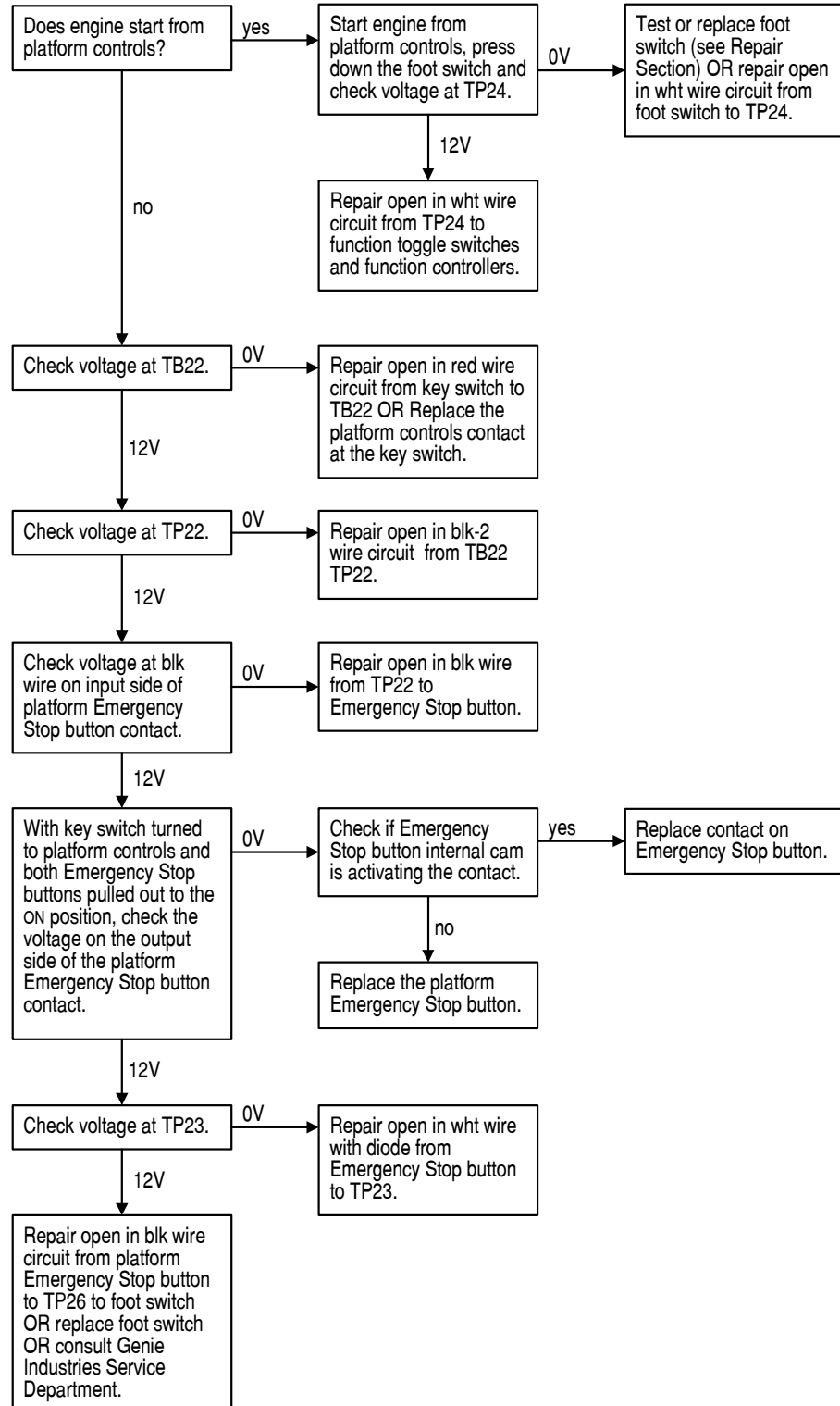
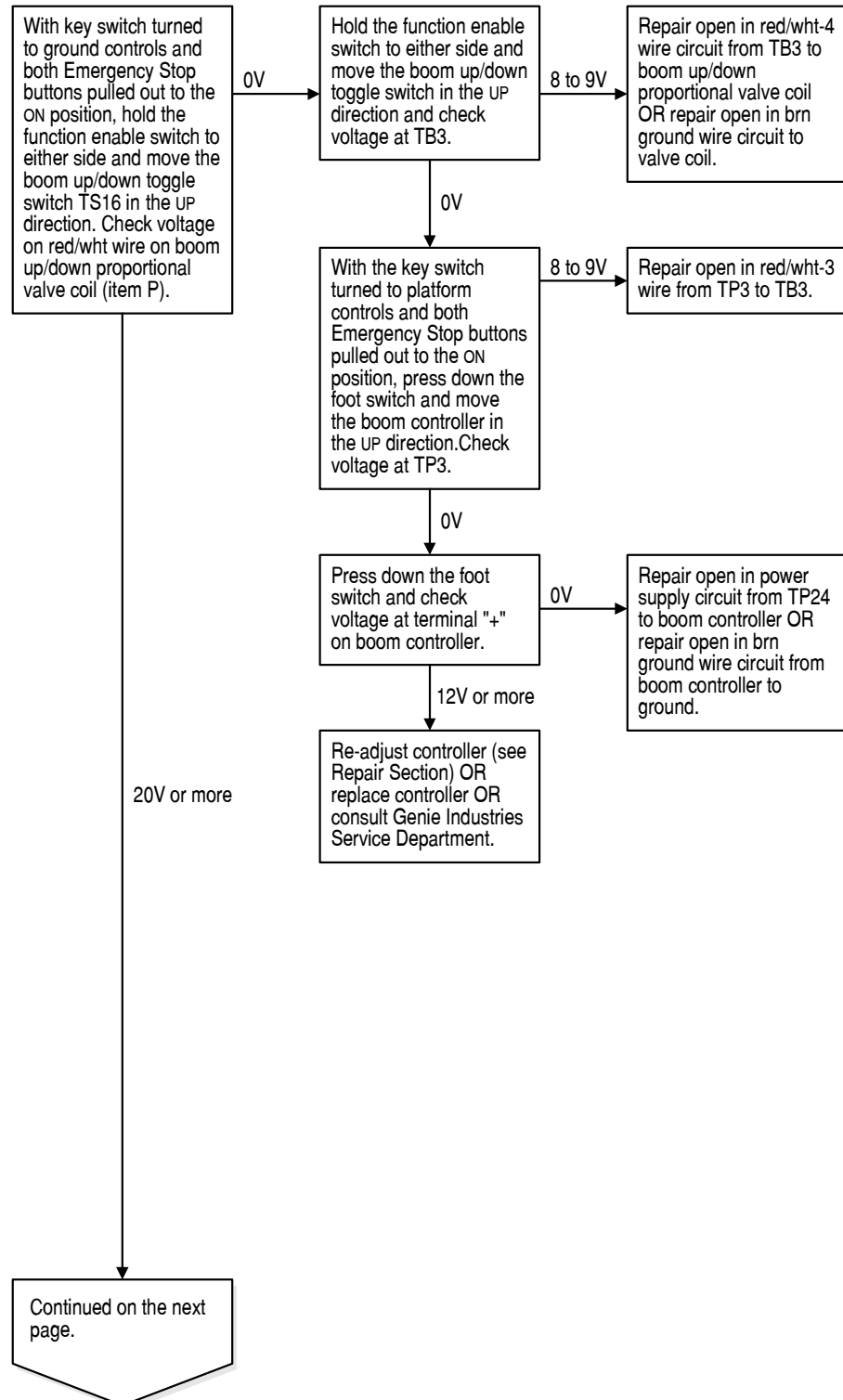


Chart 14

REV B

Boom Up Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 14

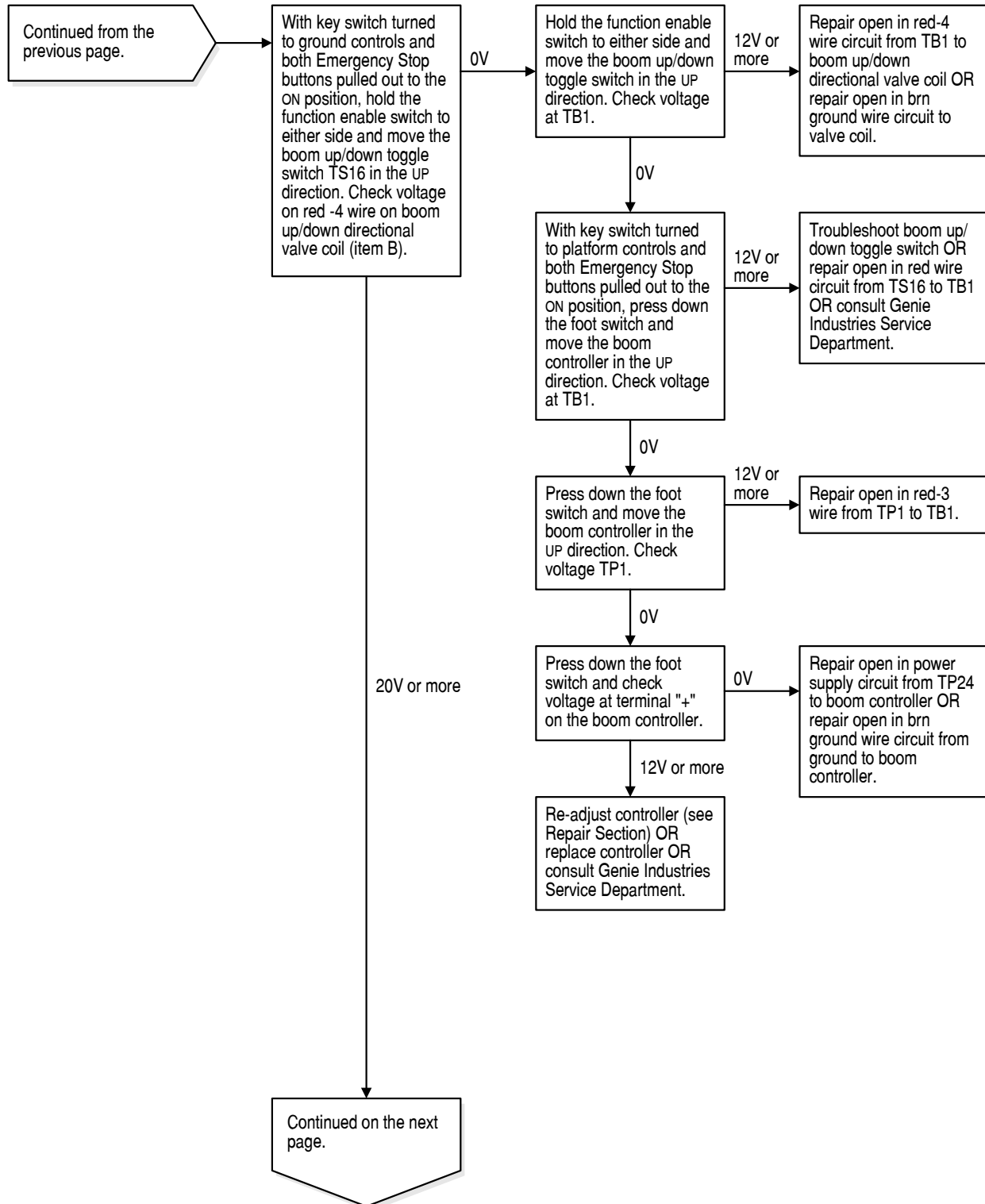


CHART 14

REV B

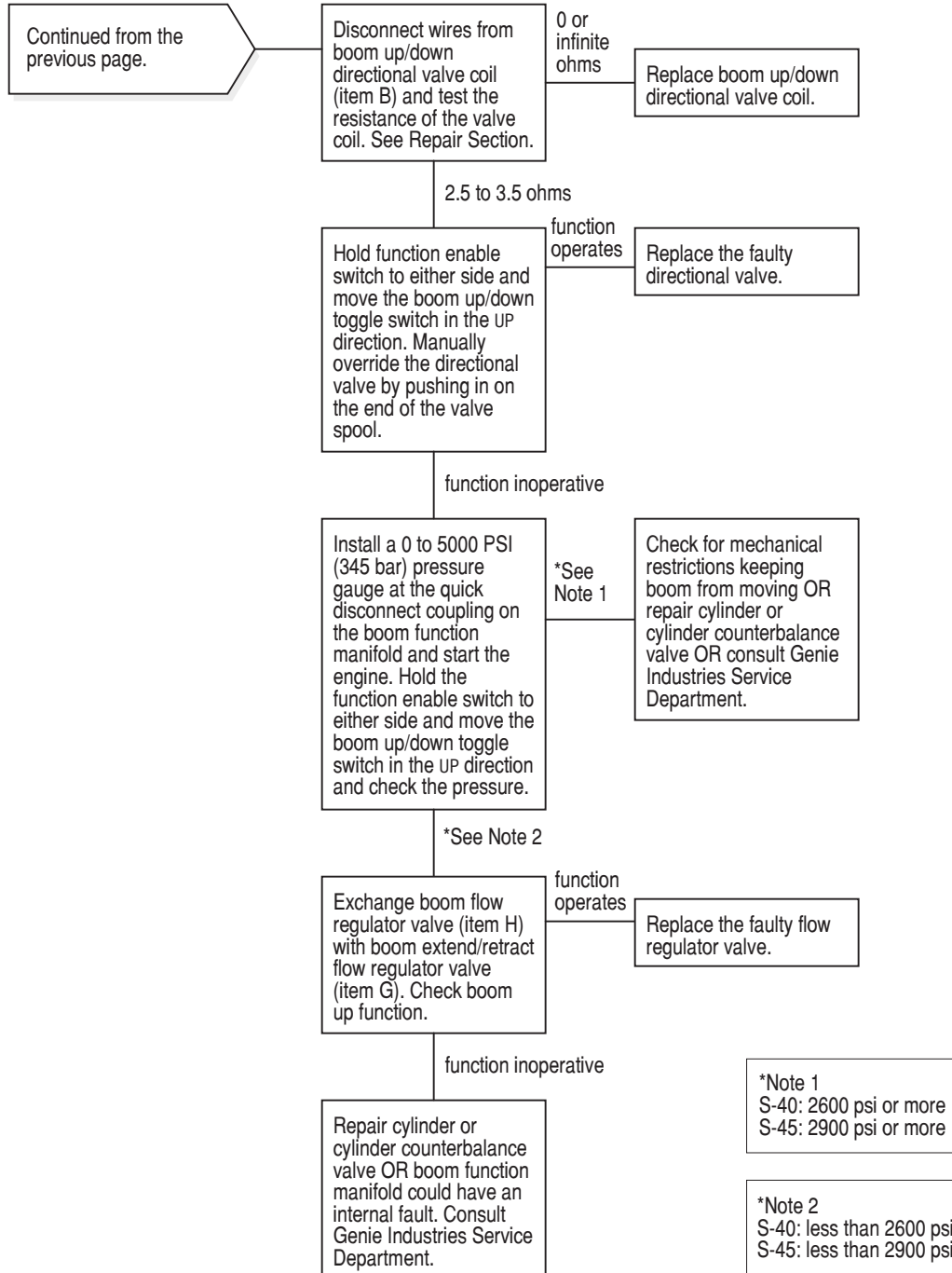


Chart 15

REV B

Boom Down Function Inoperative

Be sure all other functions operate normally.

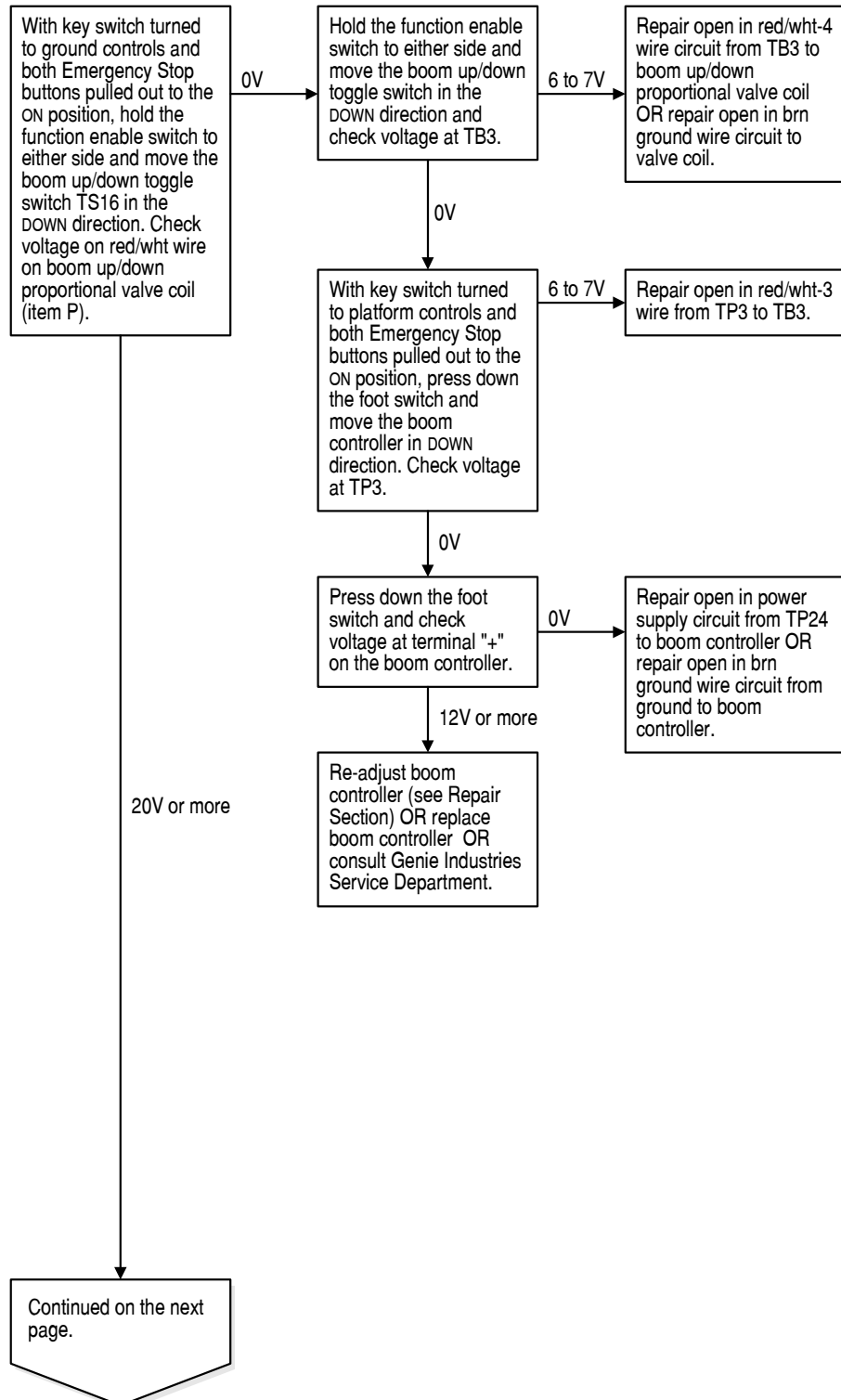
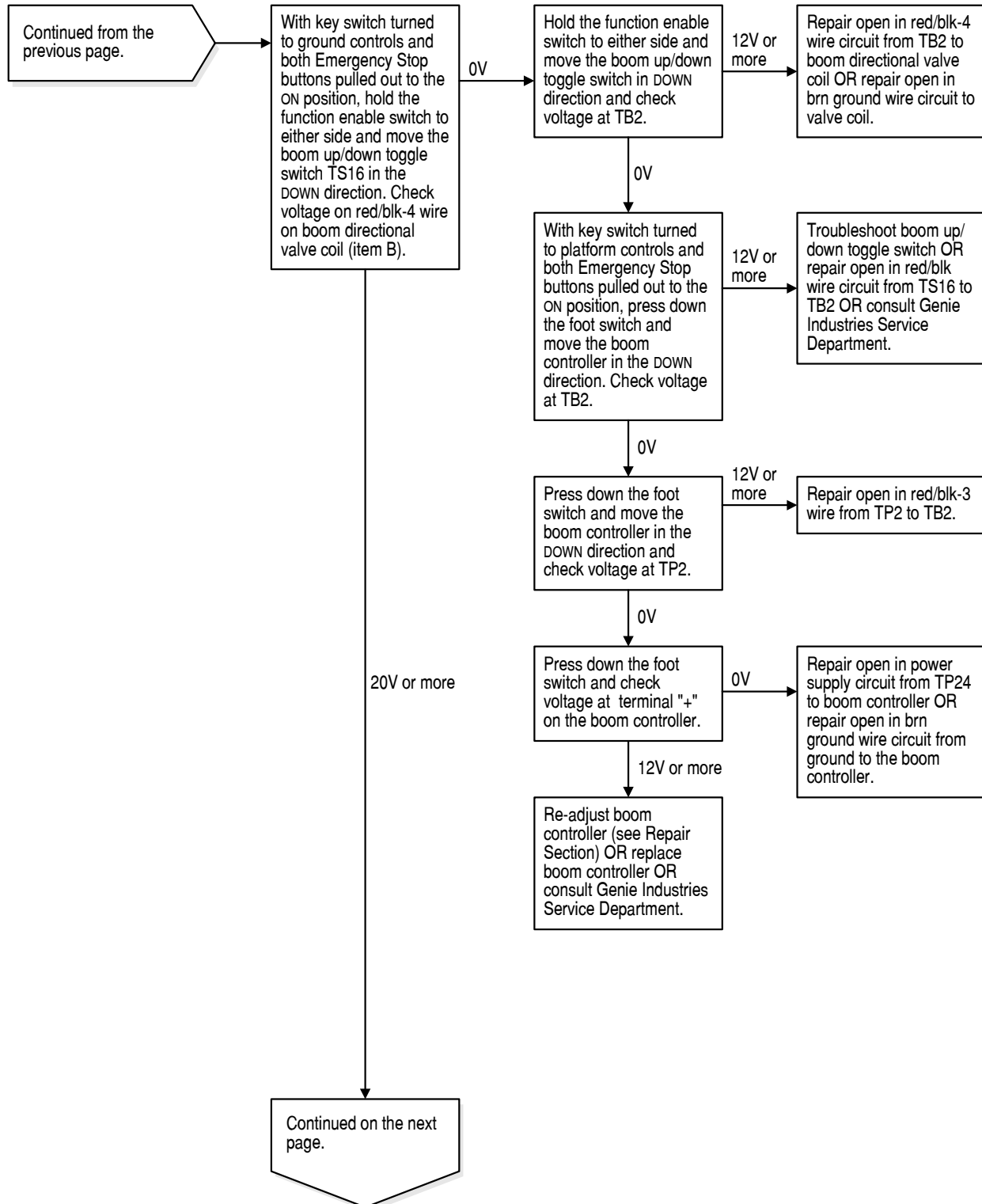


CHART 15

REV B



REV B

CHART 15

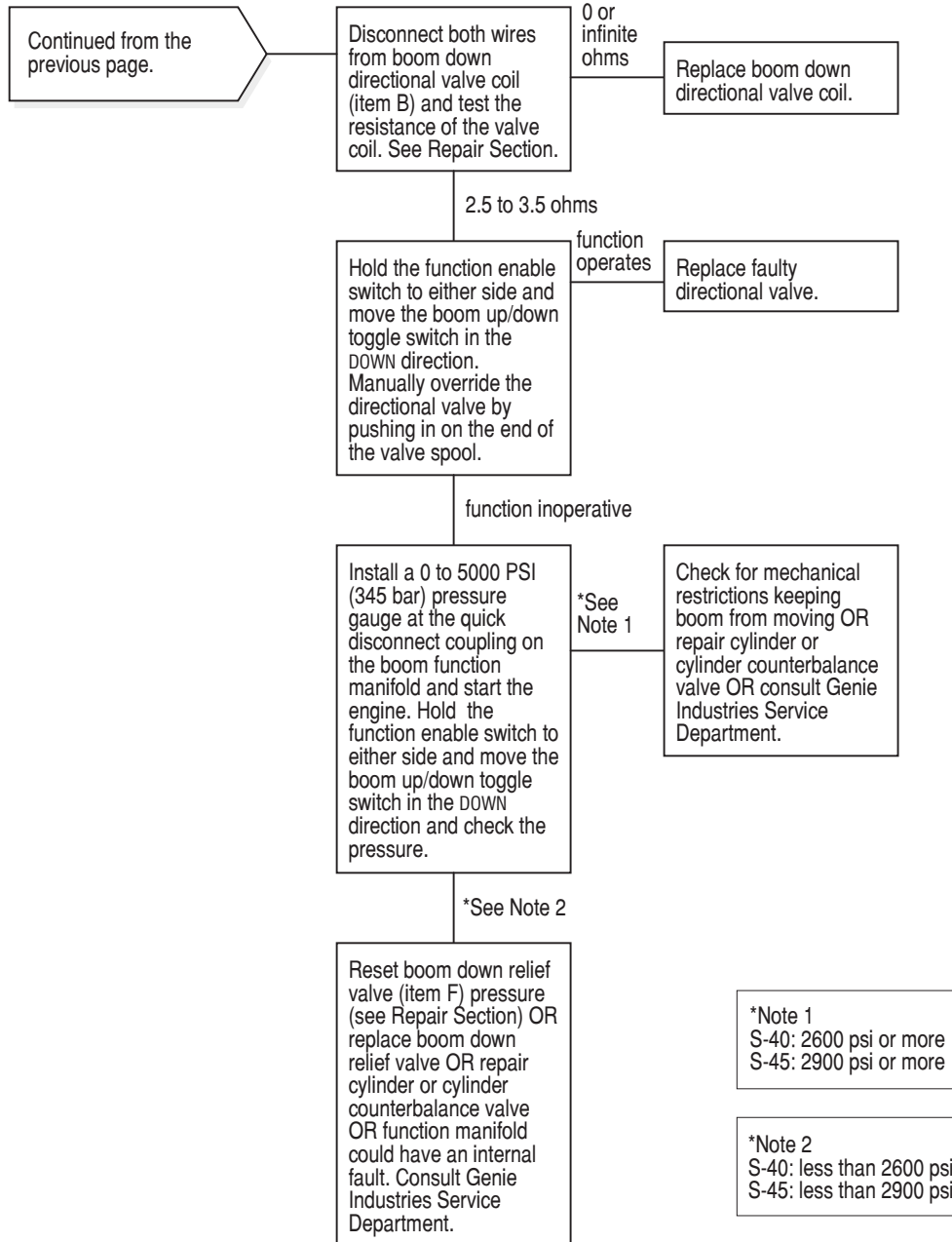
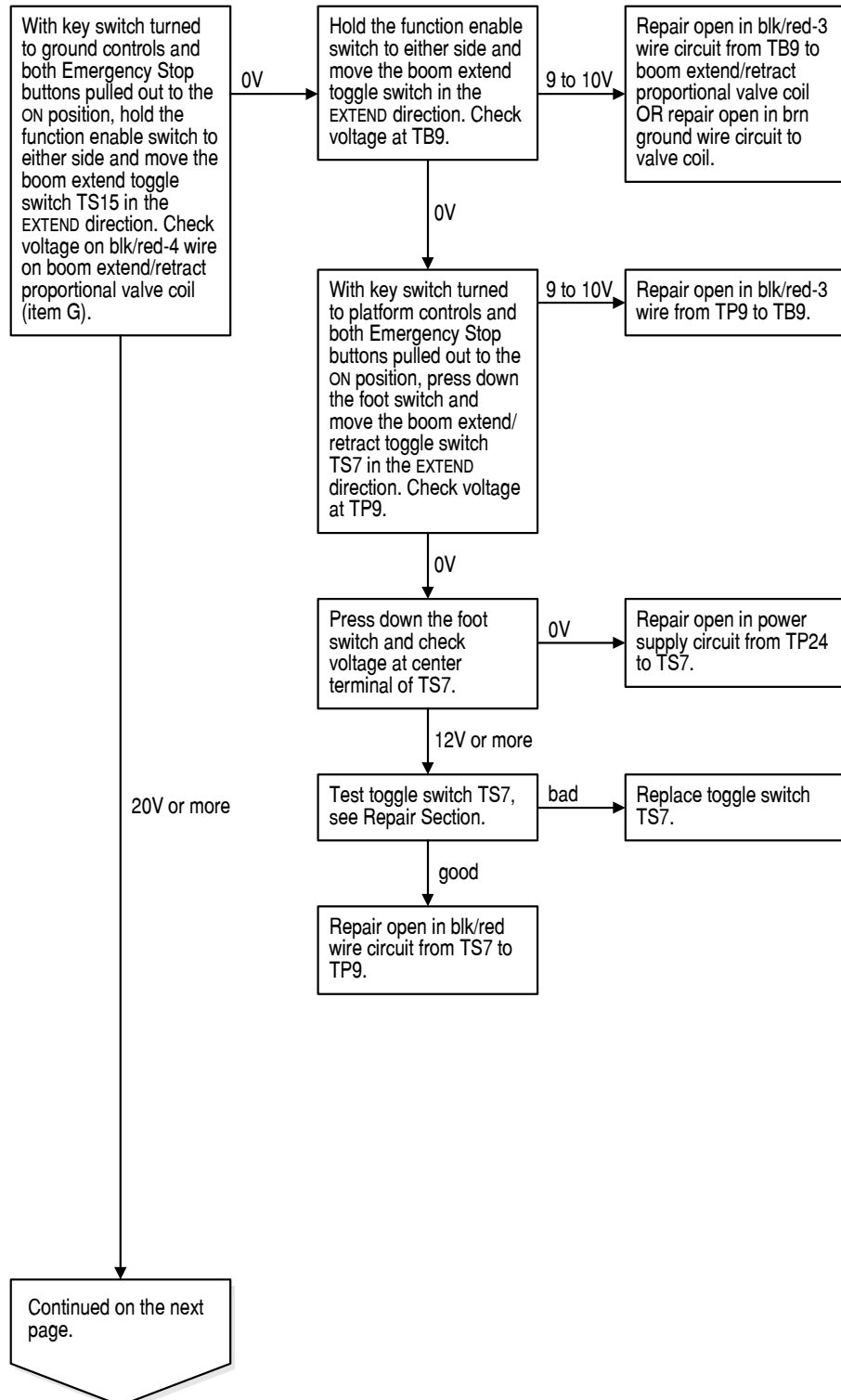


Chart 16

REV B

Boom Extend Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 16

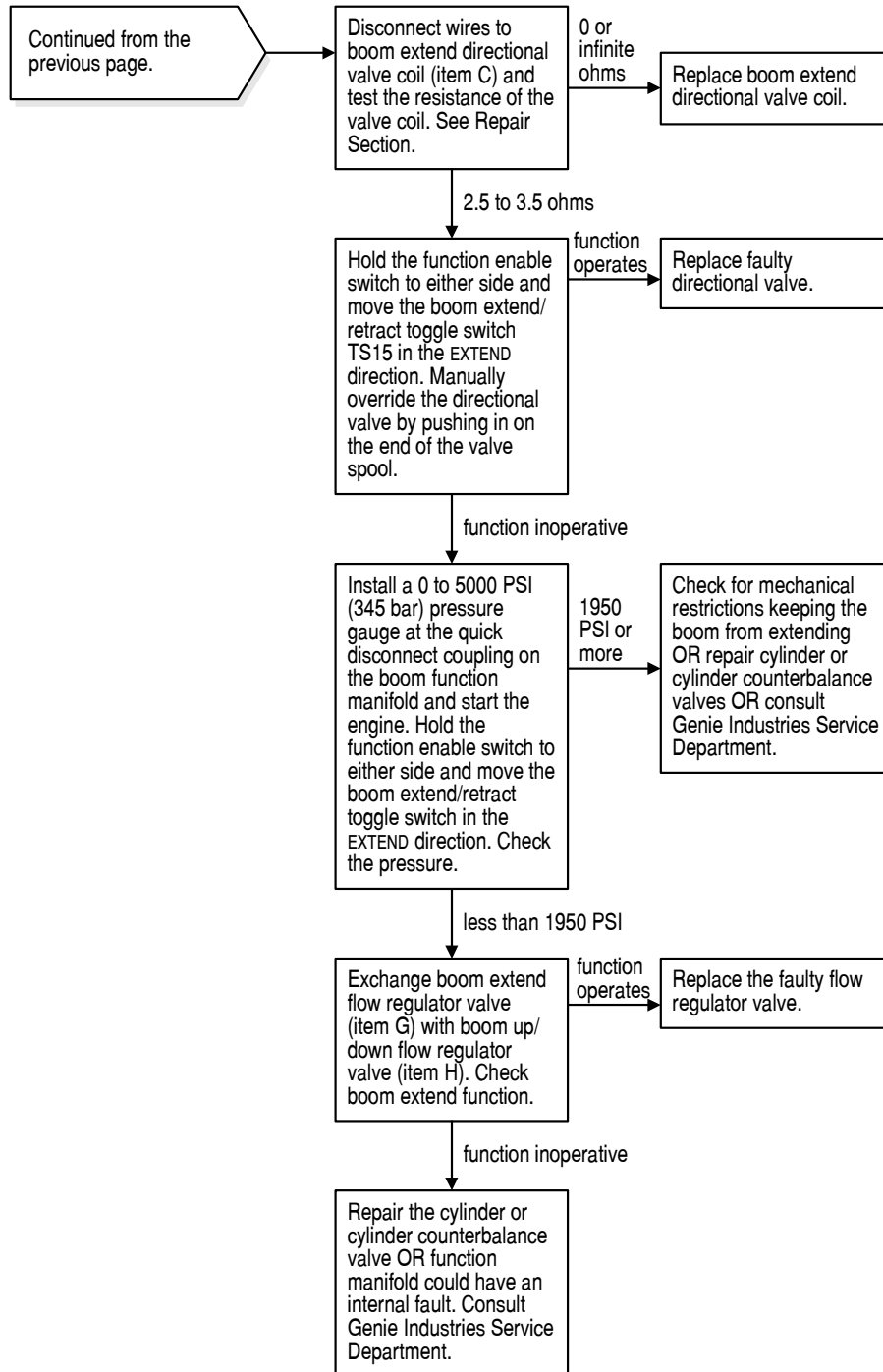
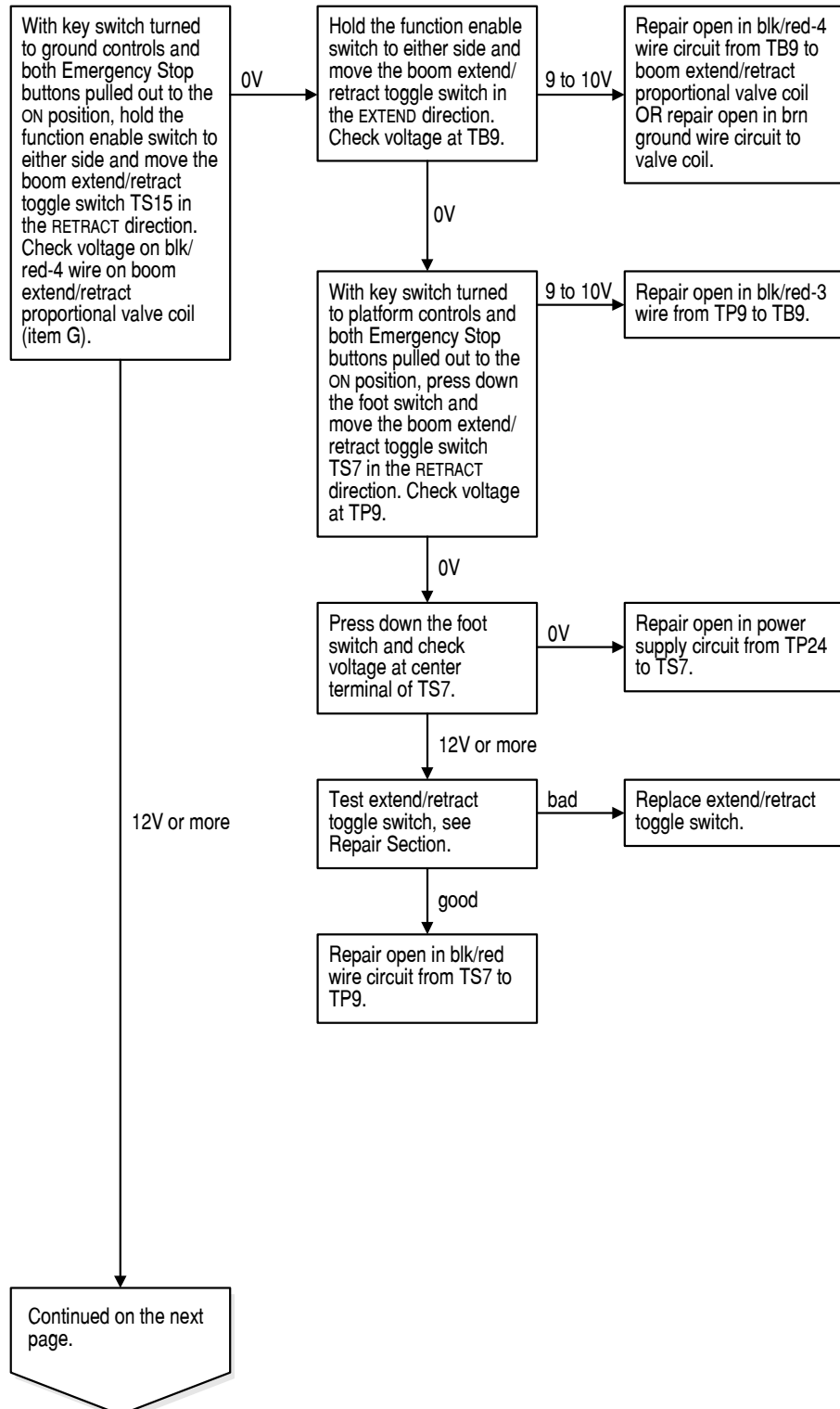


Chart 17

REV B

Boom Retract Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 17

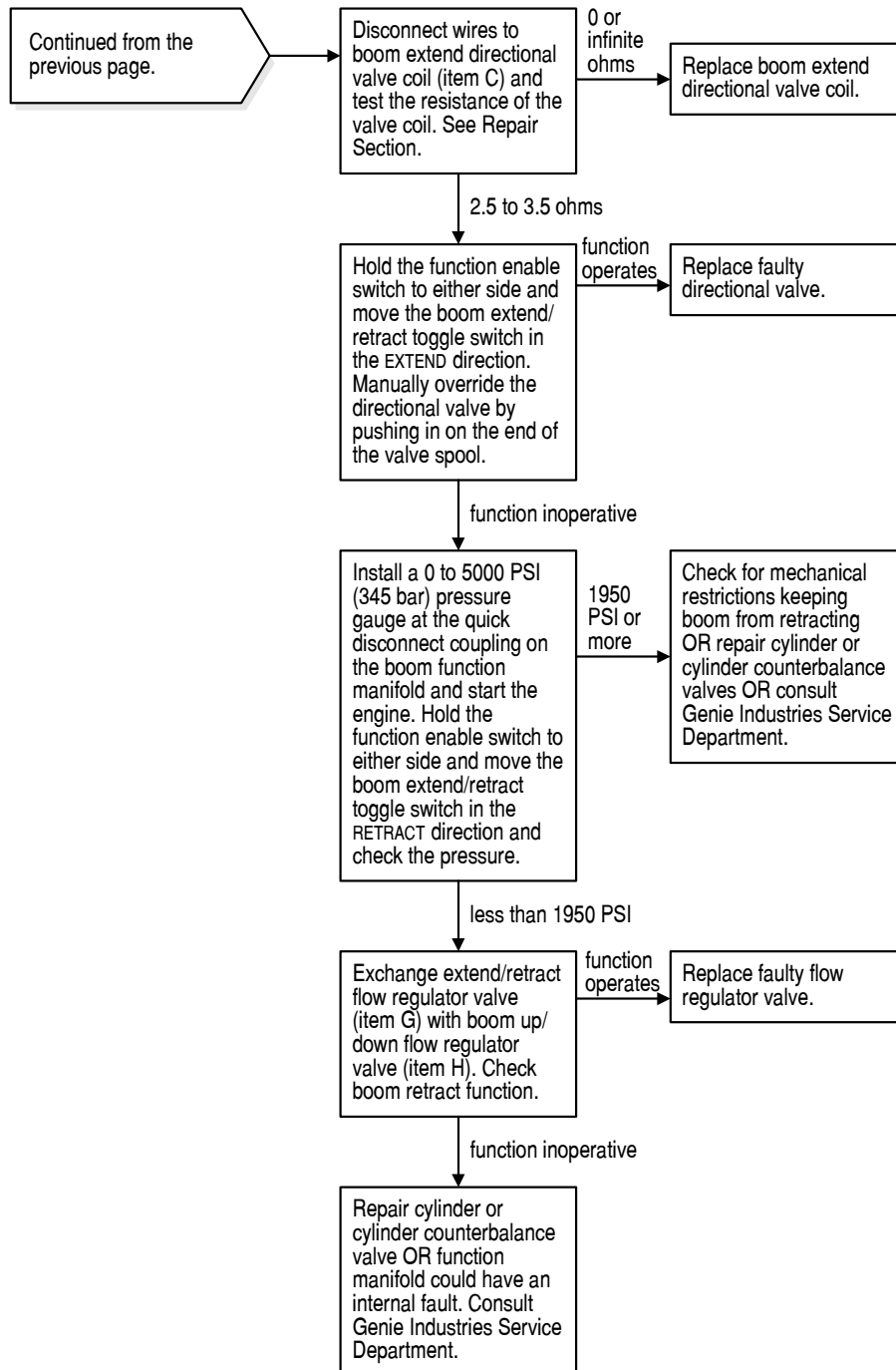
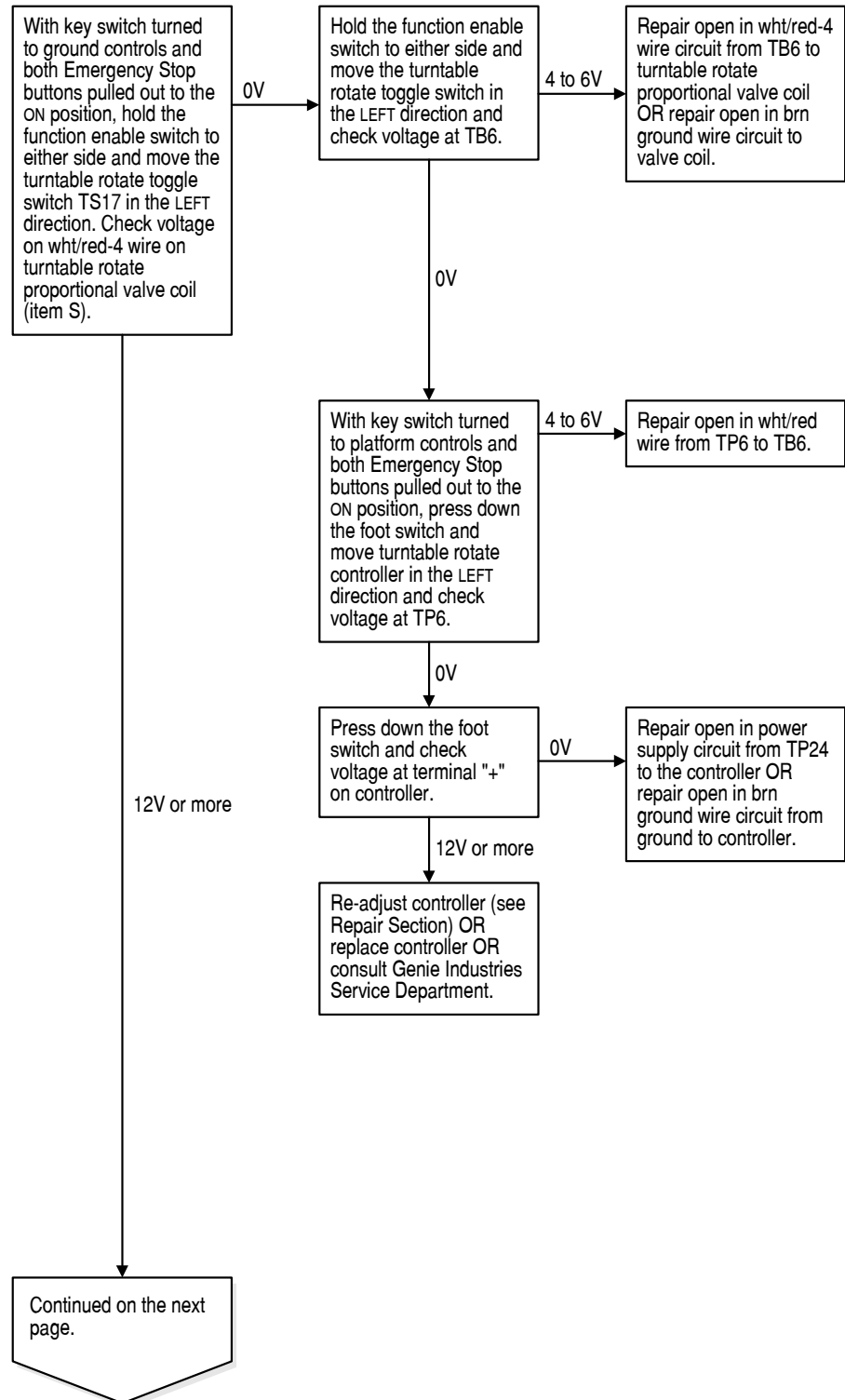


Chart 18

REV B

Turntable Rotate Left Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 18

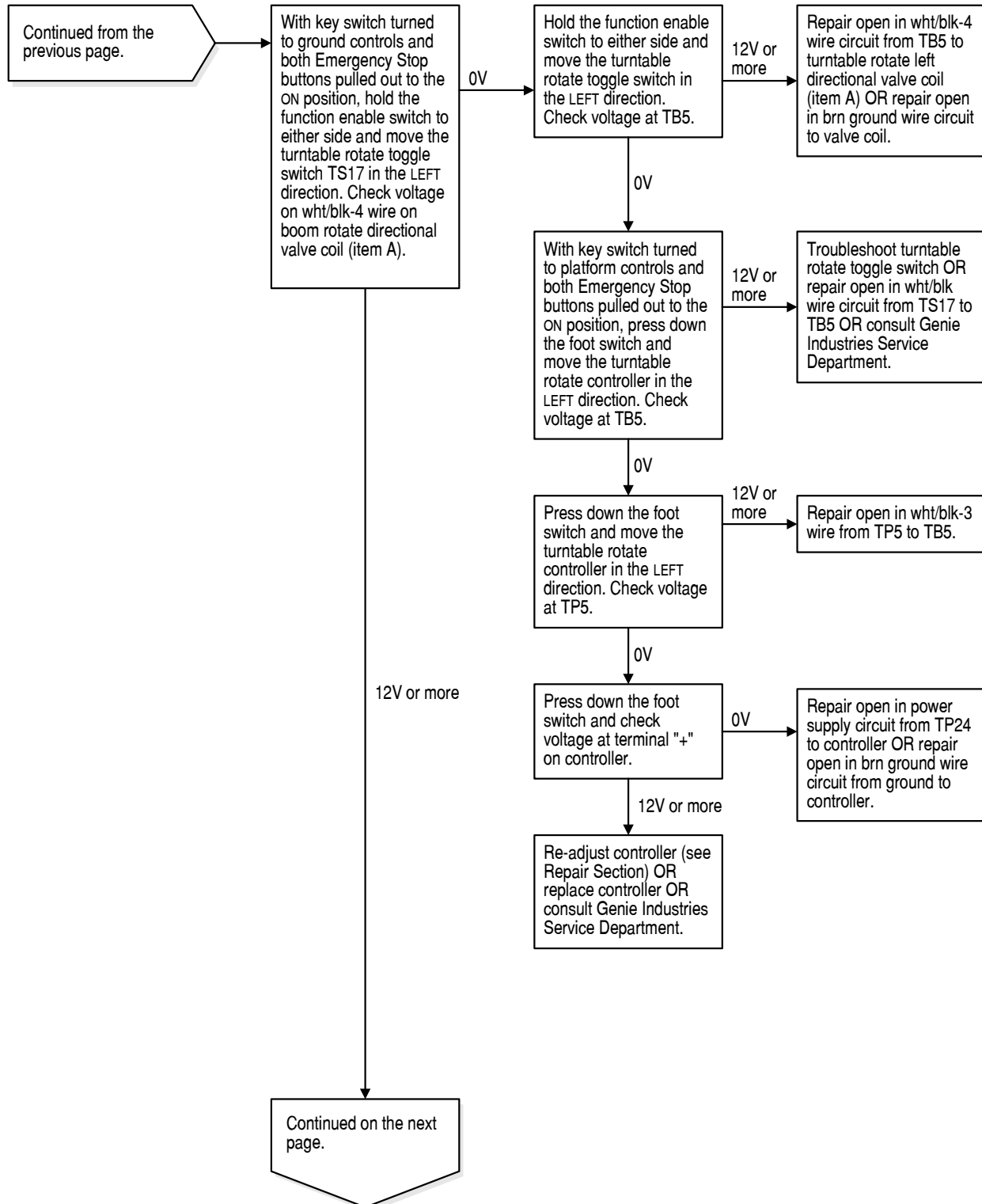
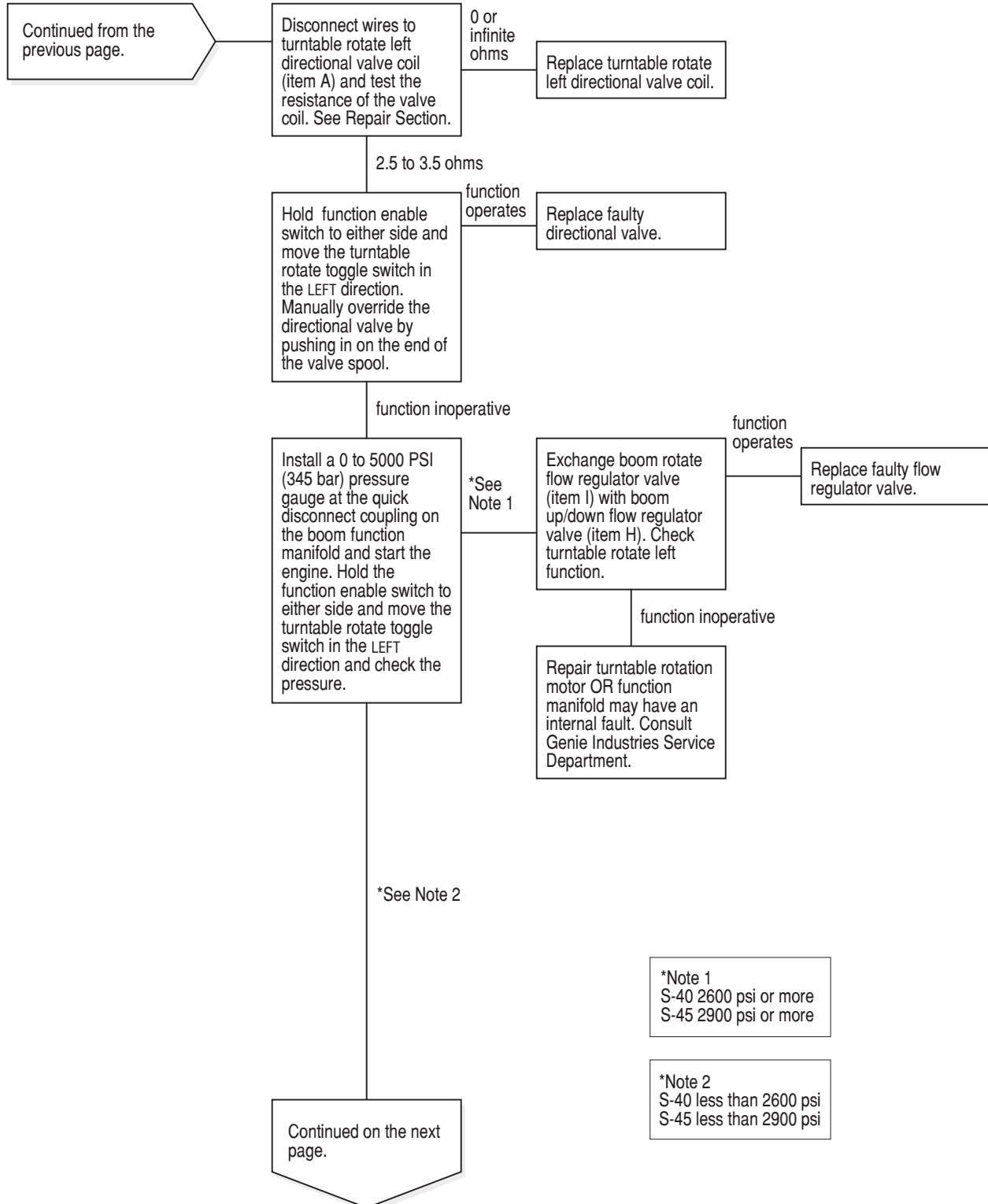


CHART 18

REV B



REV B

CHART 18

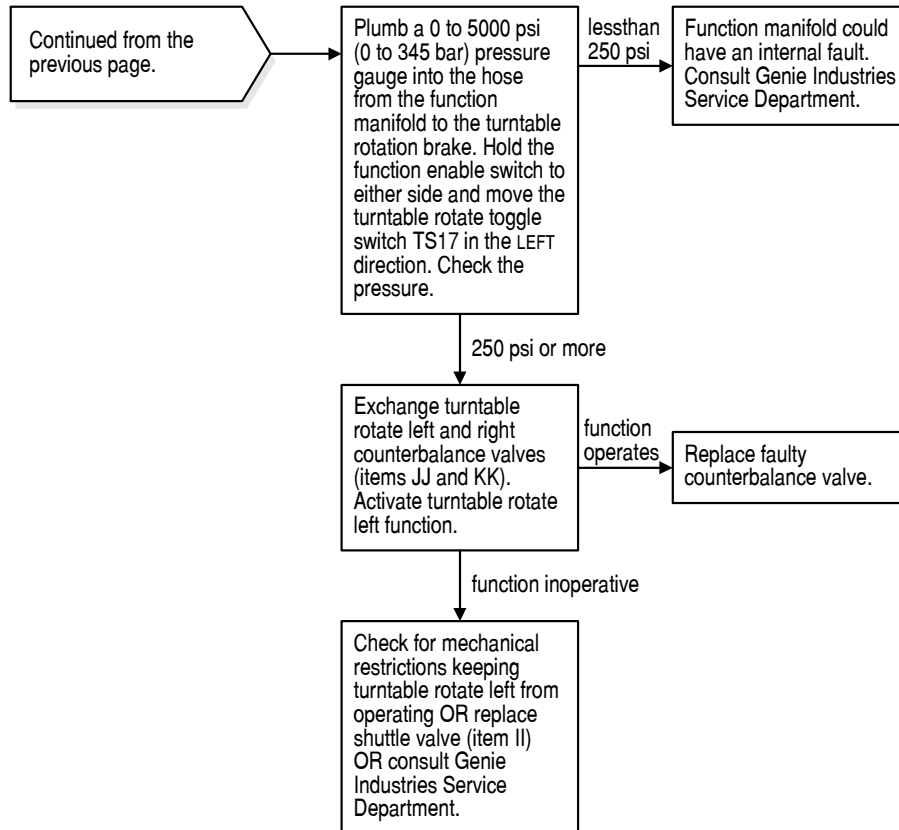
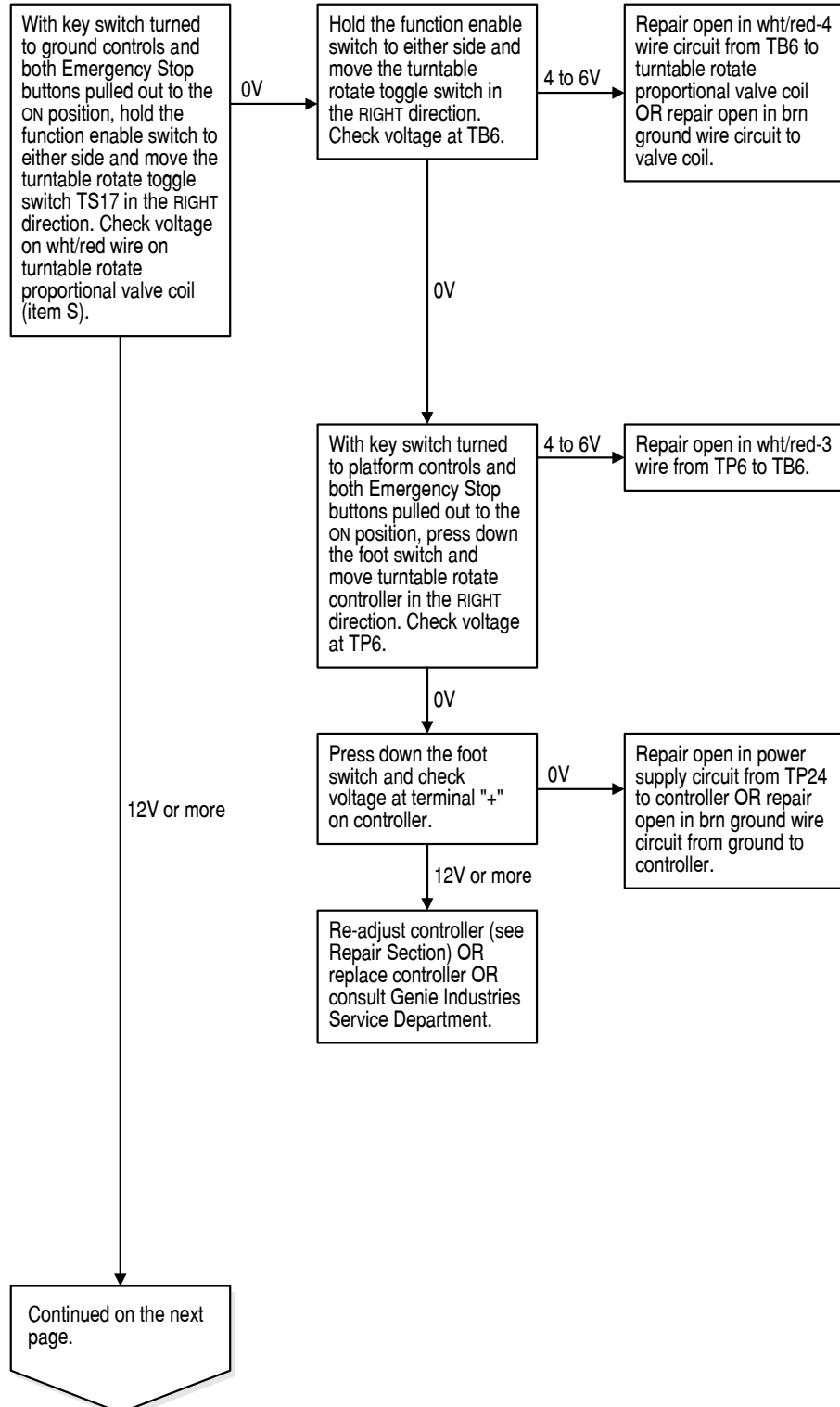


Chart 19

REV B

Turntable Rotate Right Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 19

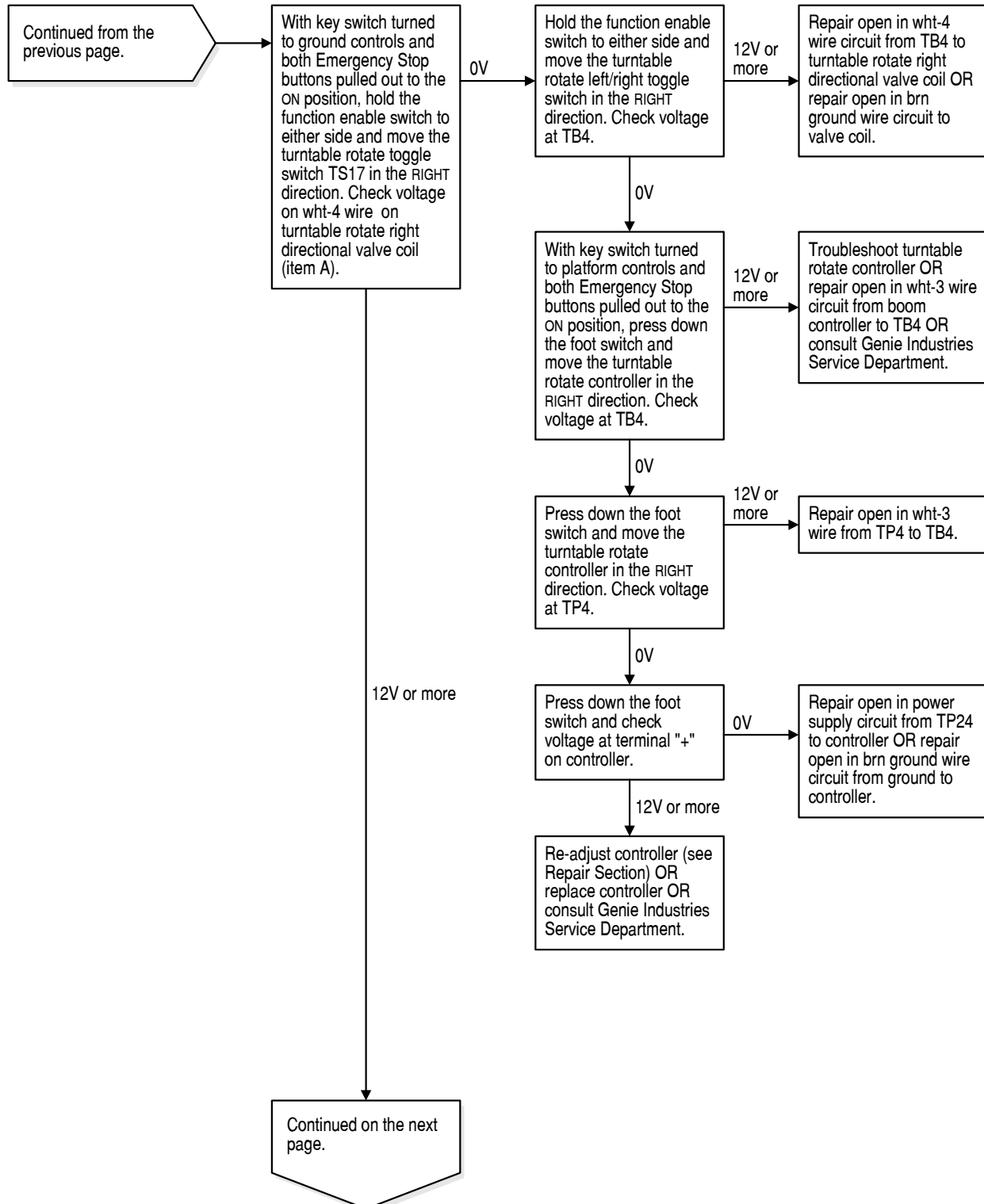
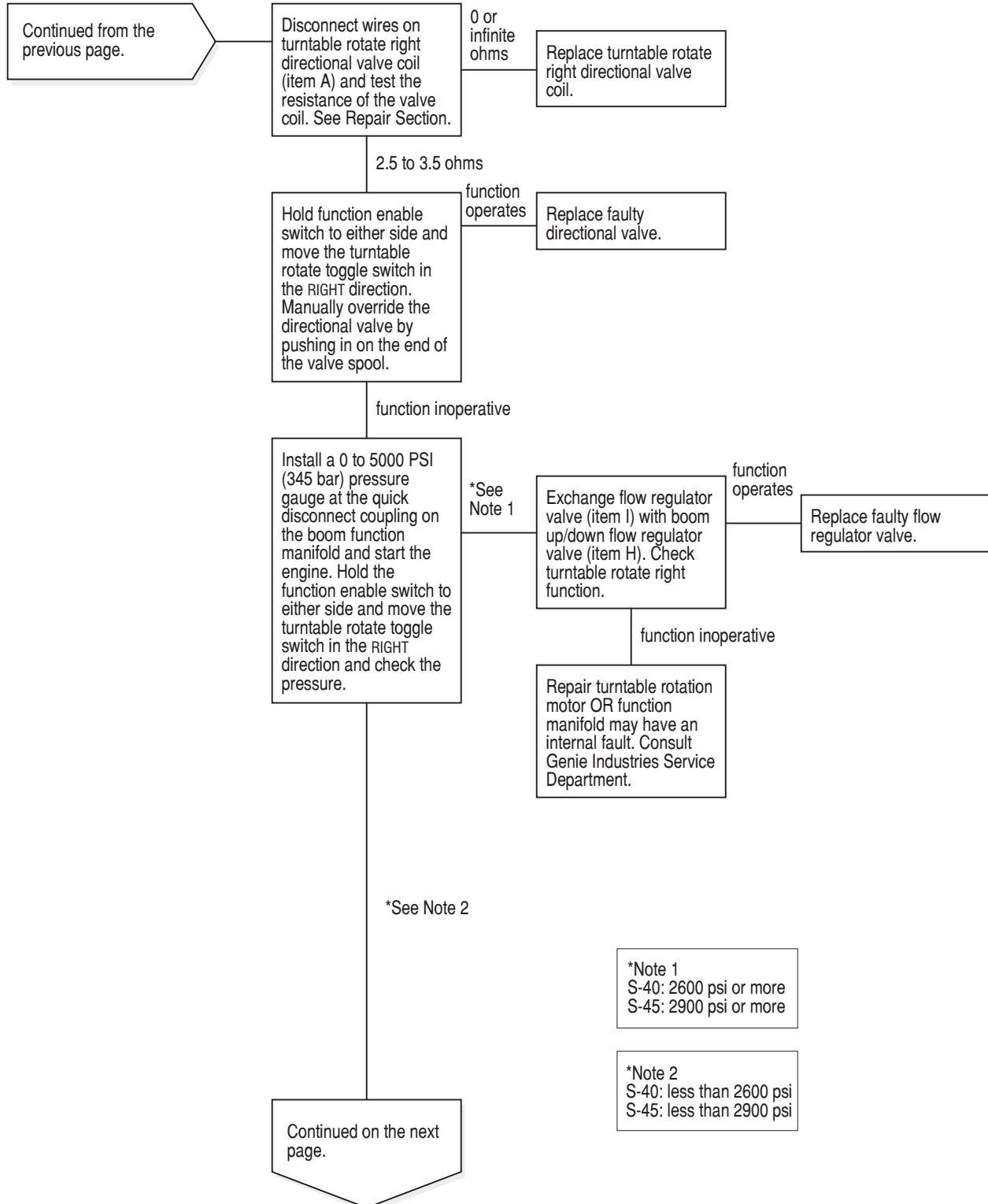


CHART 19

REV B



REV B

CHART 19

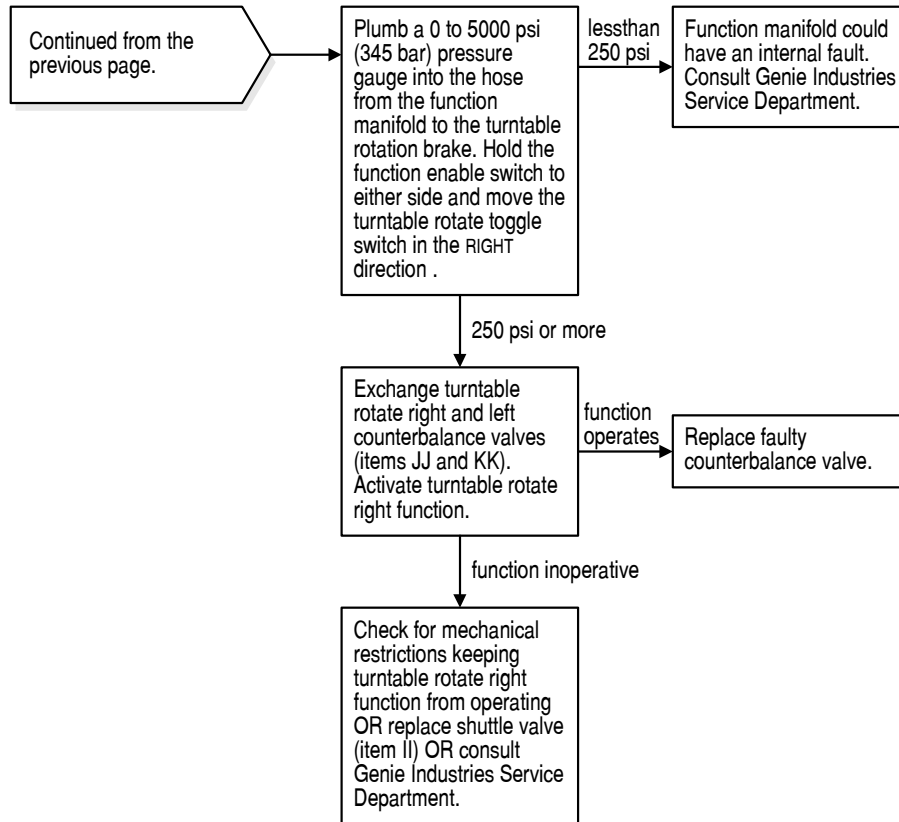


Chart 20

REV B

All Platform Leveling Functions Inoperative

Be sure all other functions operate normally.

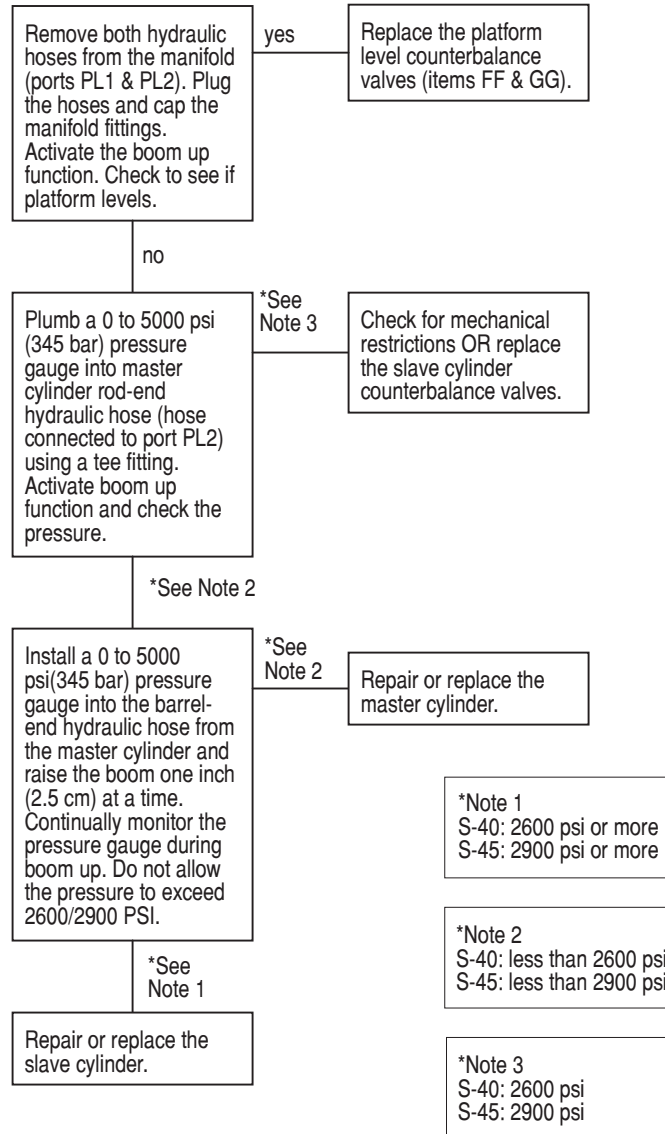


Chart 21

REV B

Platform Level Up Function Inoperative

Be sure all other functions operate normally.

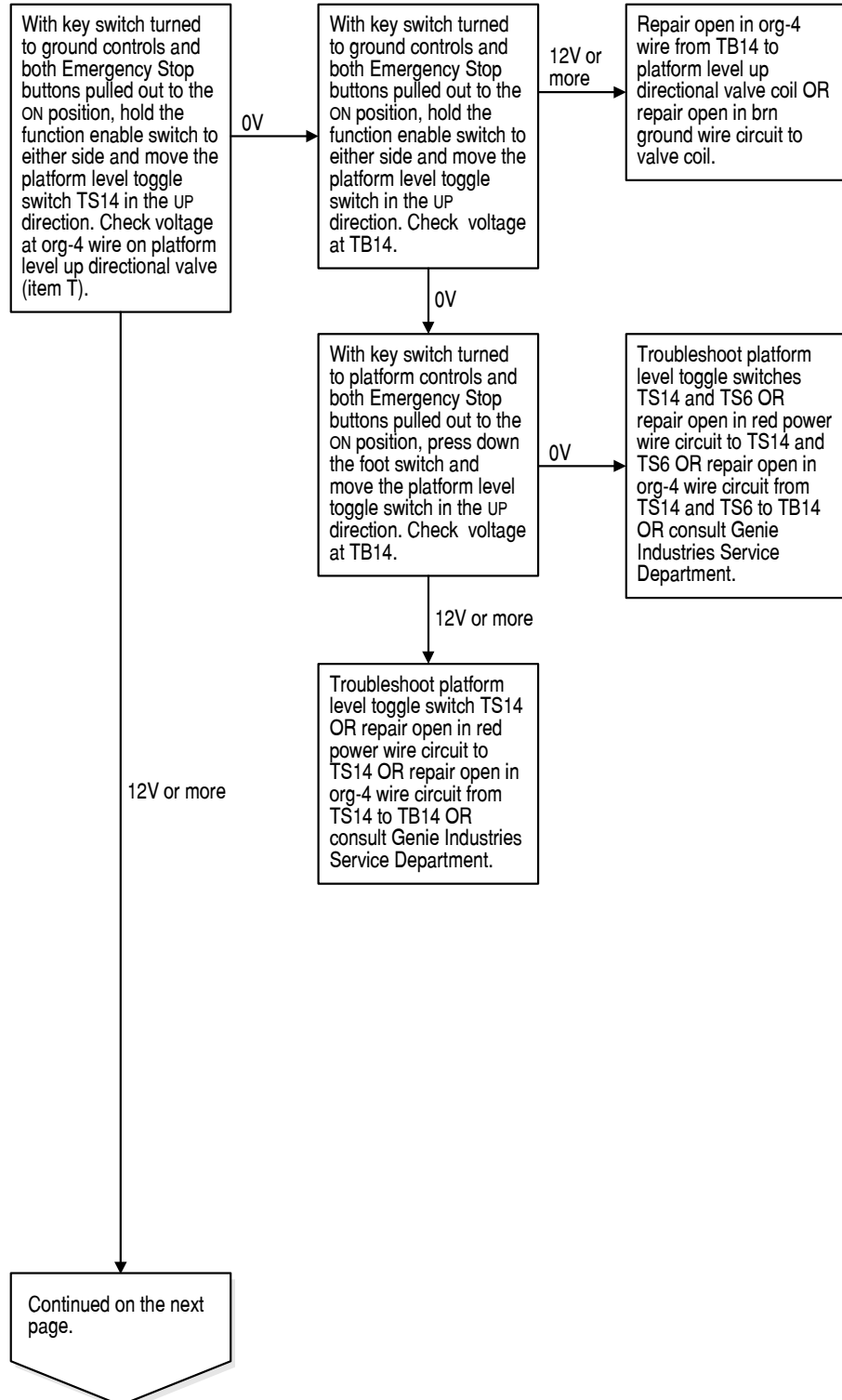


CHART 21

REV B

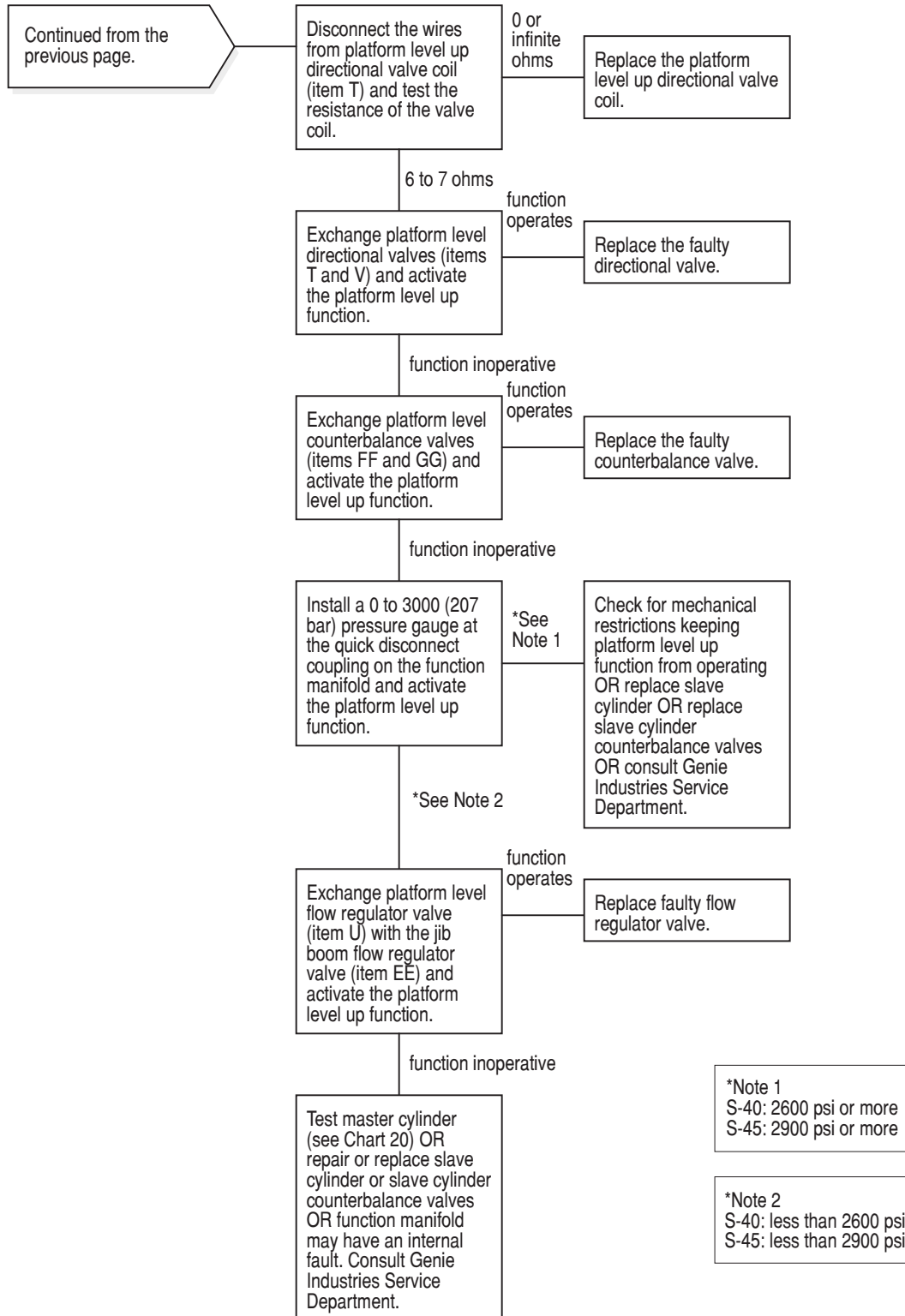


Chart 22

REV B

Platform Level Down Function Inoperative

Be sure all other functions operate normally.

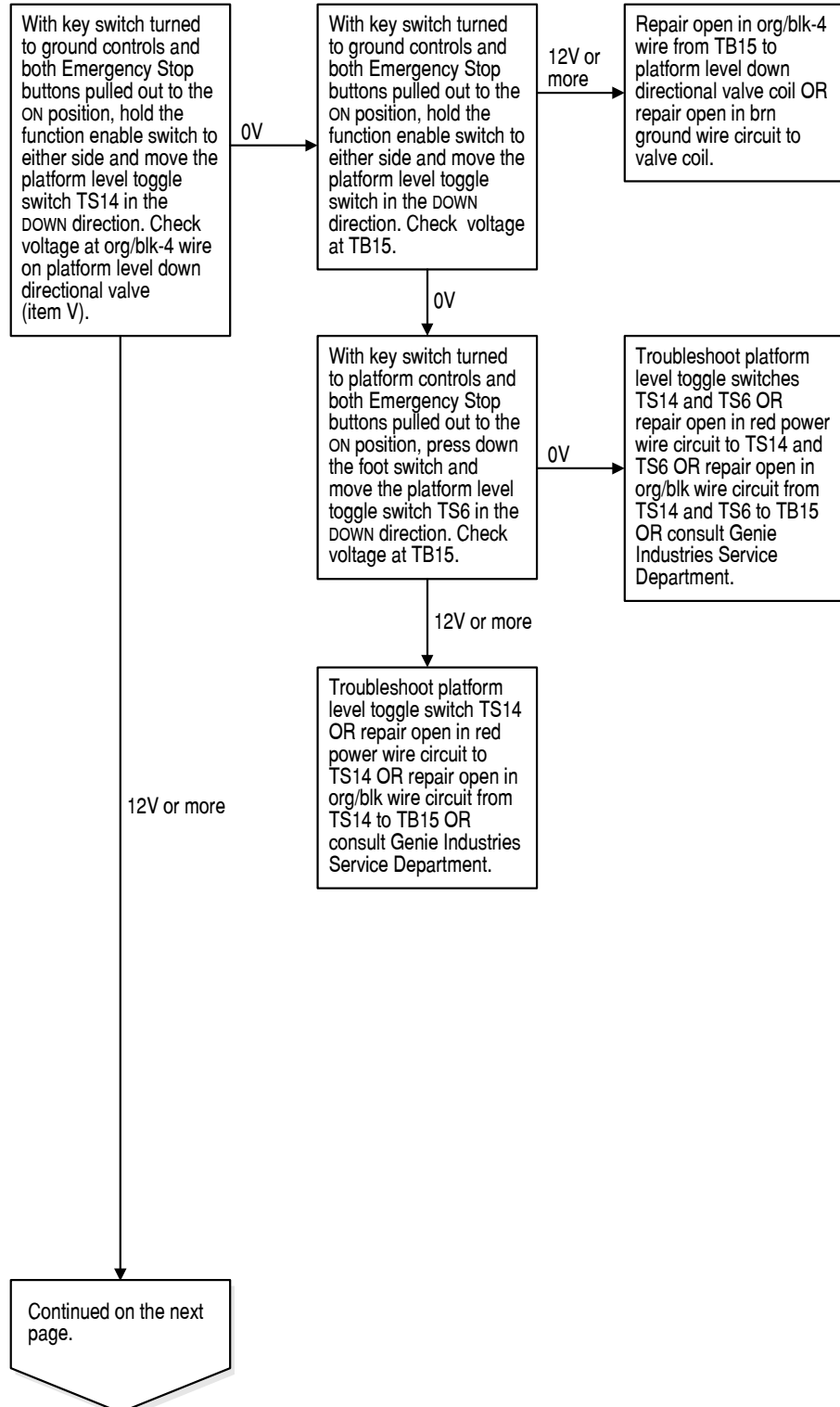


CHART 22

REV B

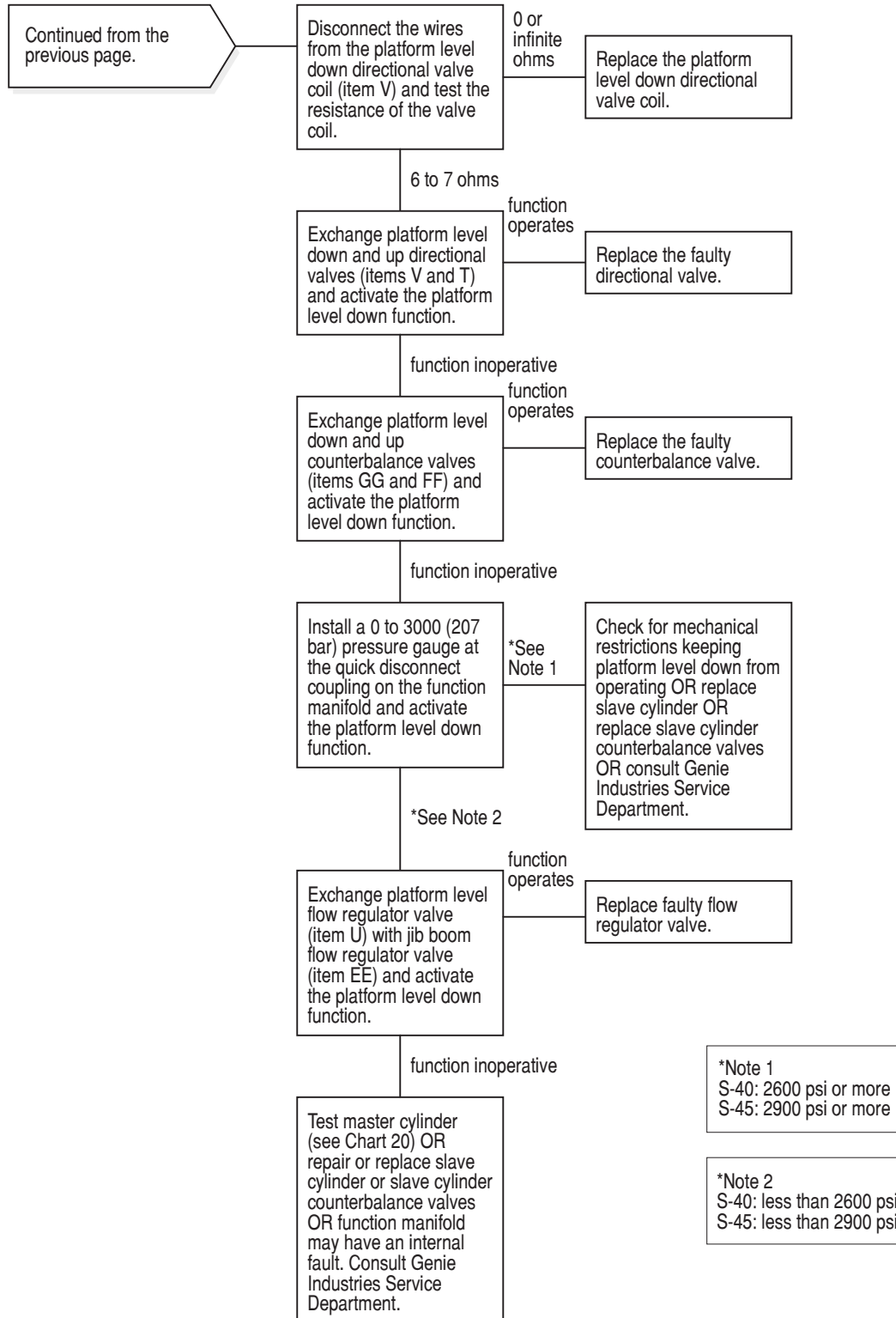


Chart 23

REV B

Platform Rotate Left Function Inoperative

Be sure all other functions operate normally.

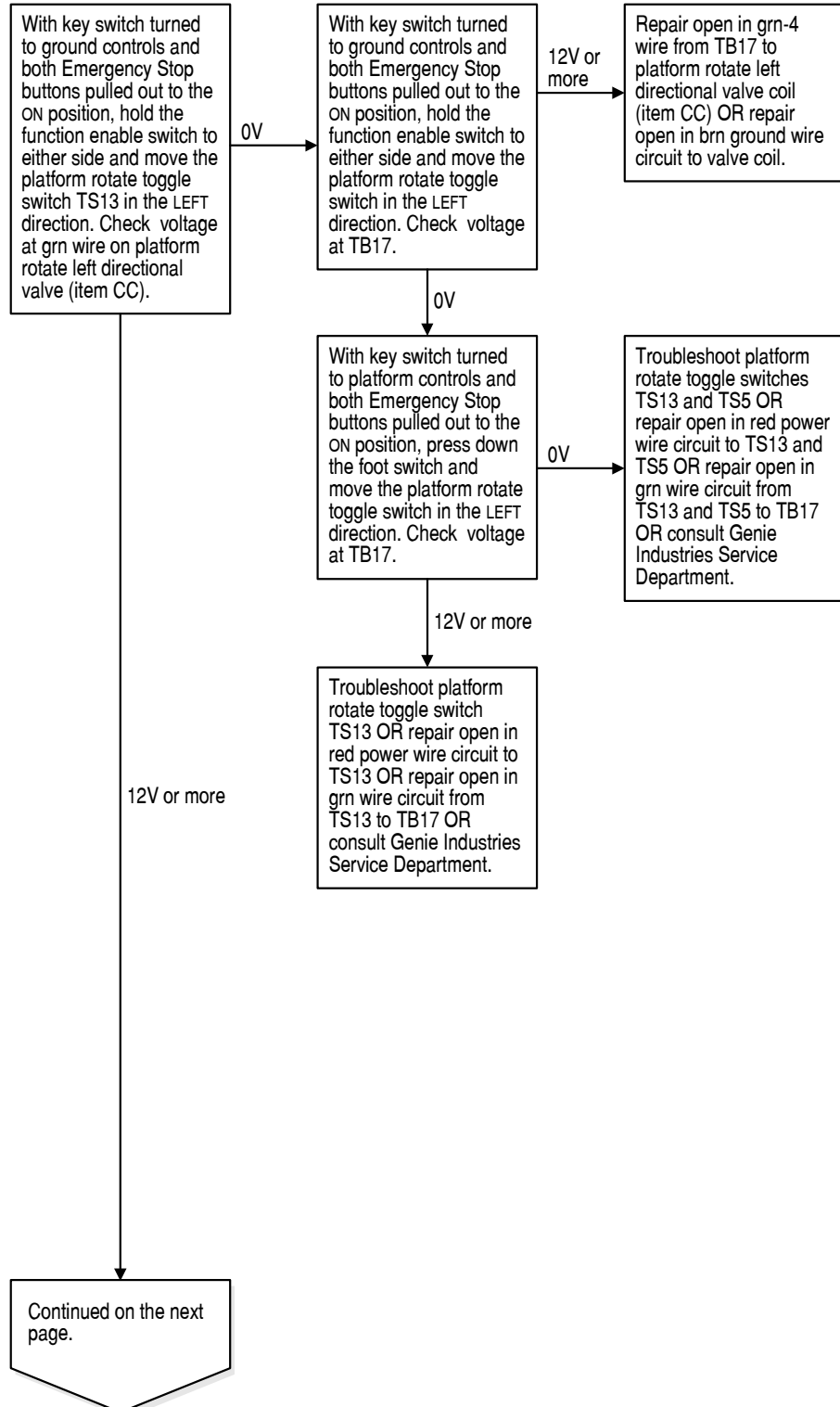


CHART 23

REV B

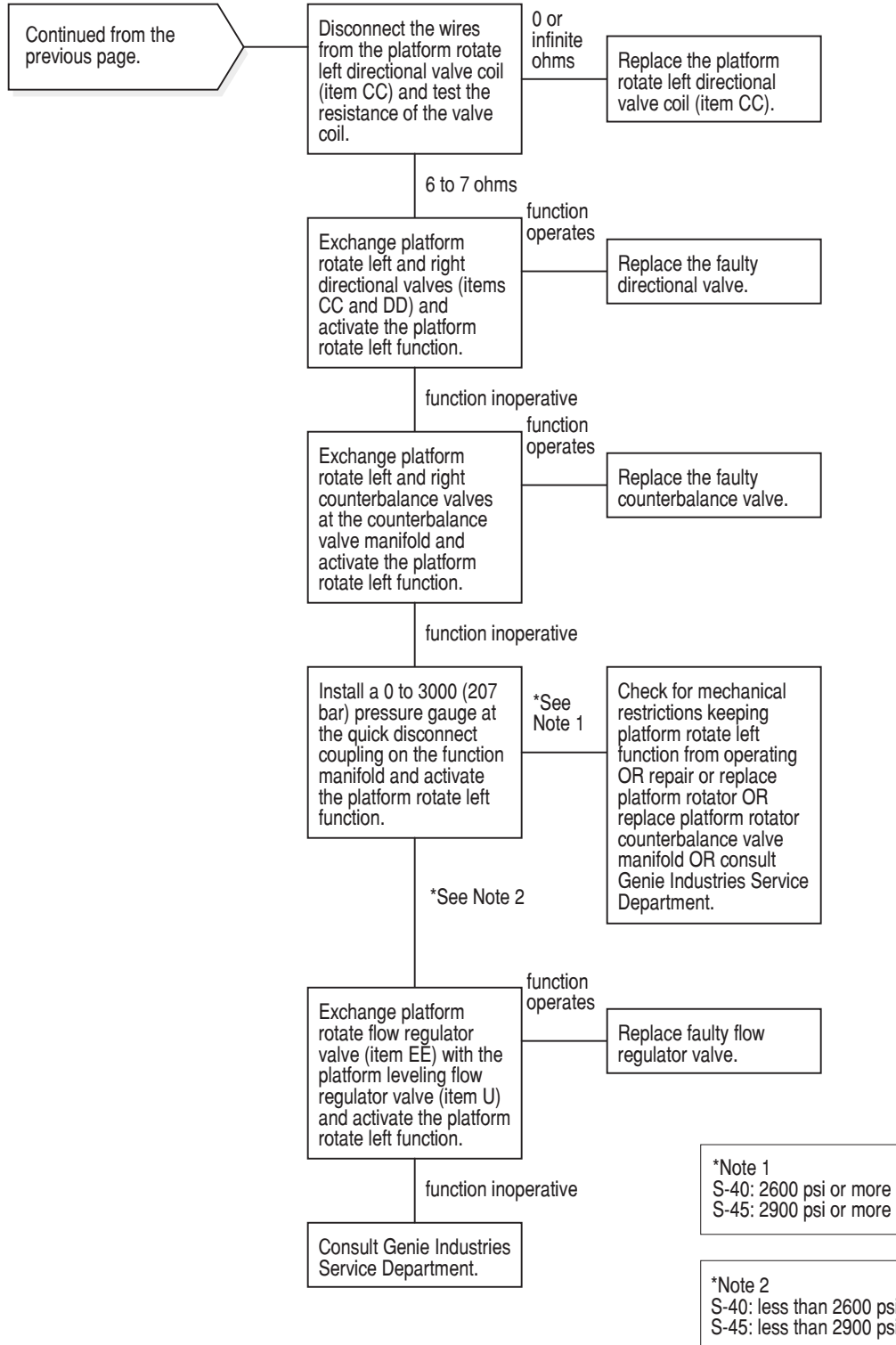


Chart 24

REV B

Platform Rotate Right Function Inoperative

Be sure all other functions operate normally.

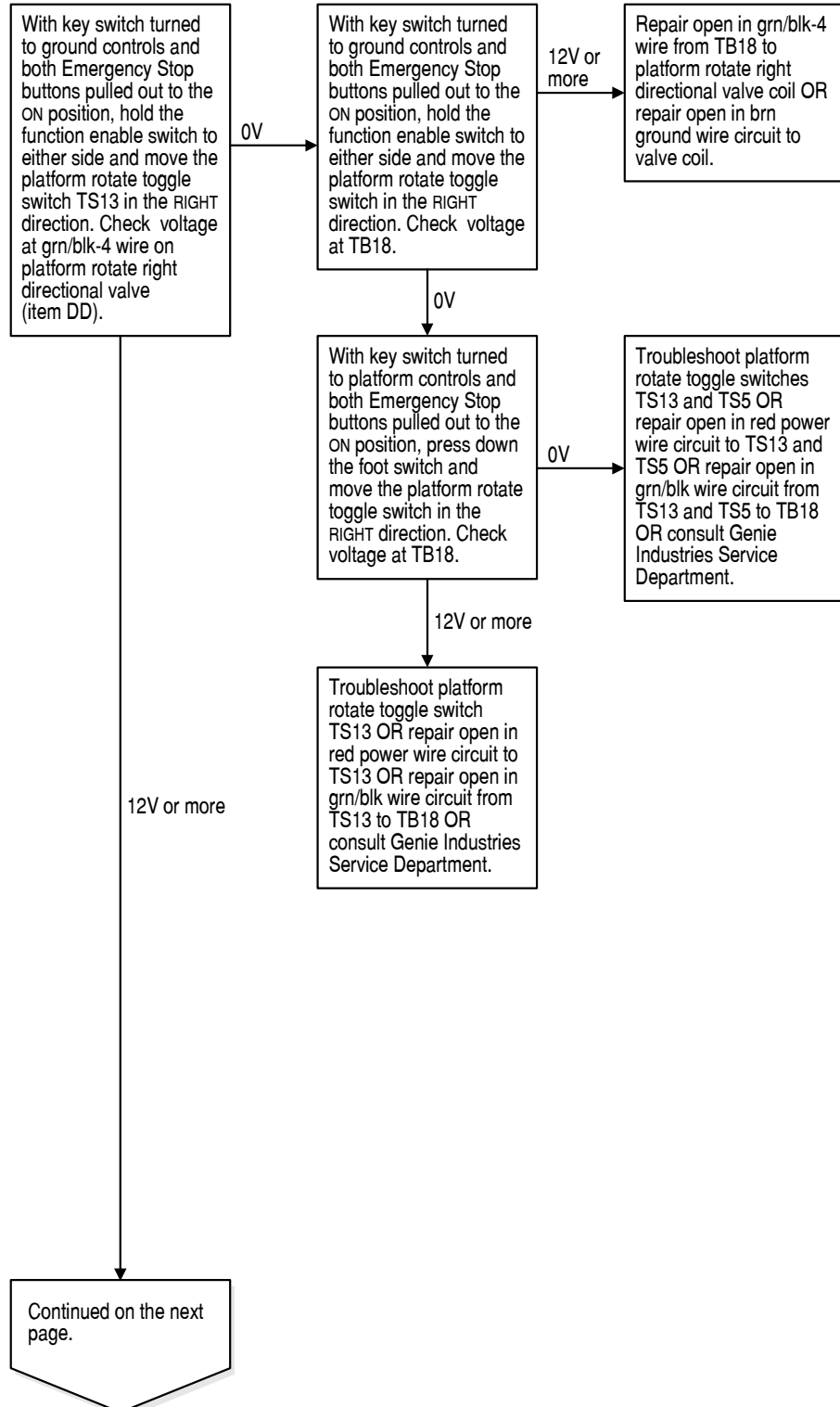


CHART 24

REV B

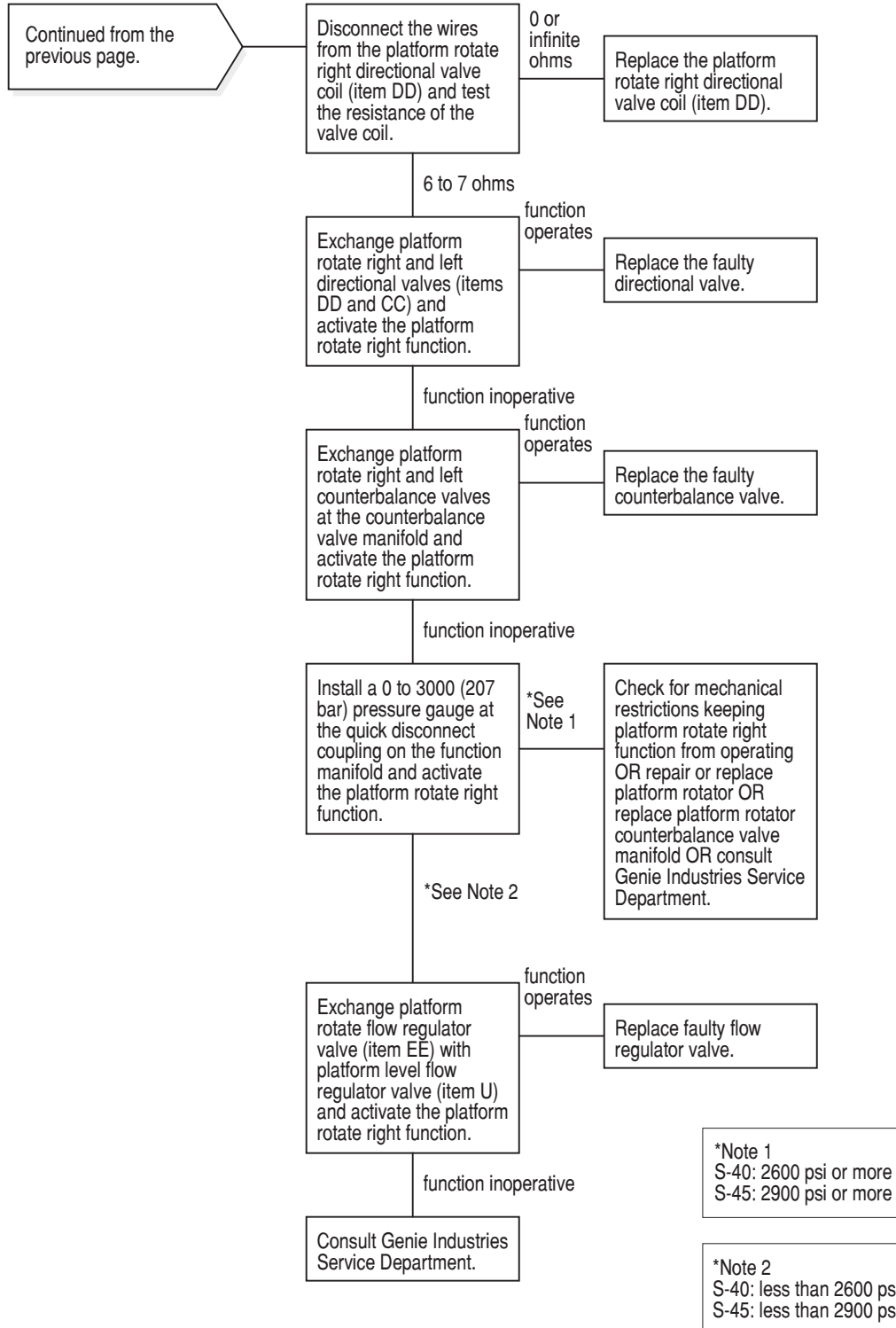


Chart 25

REV B

Oscillate Function Inoperative

Be sure all other function operate normally.

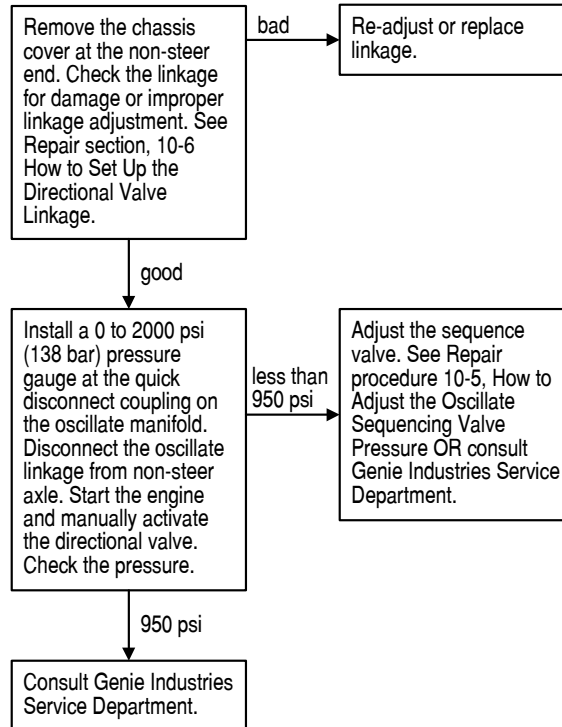
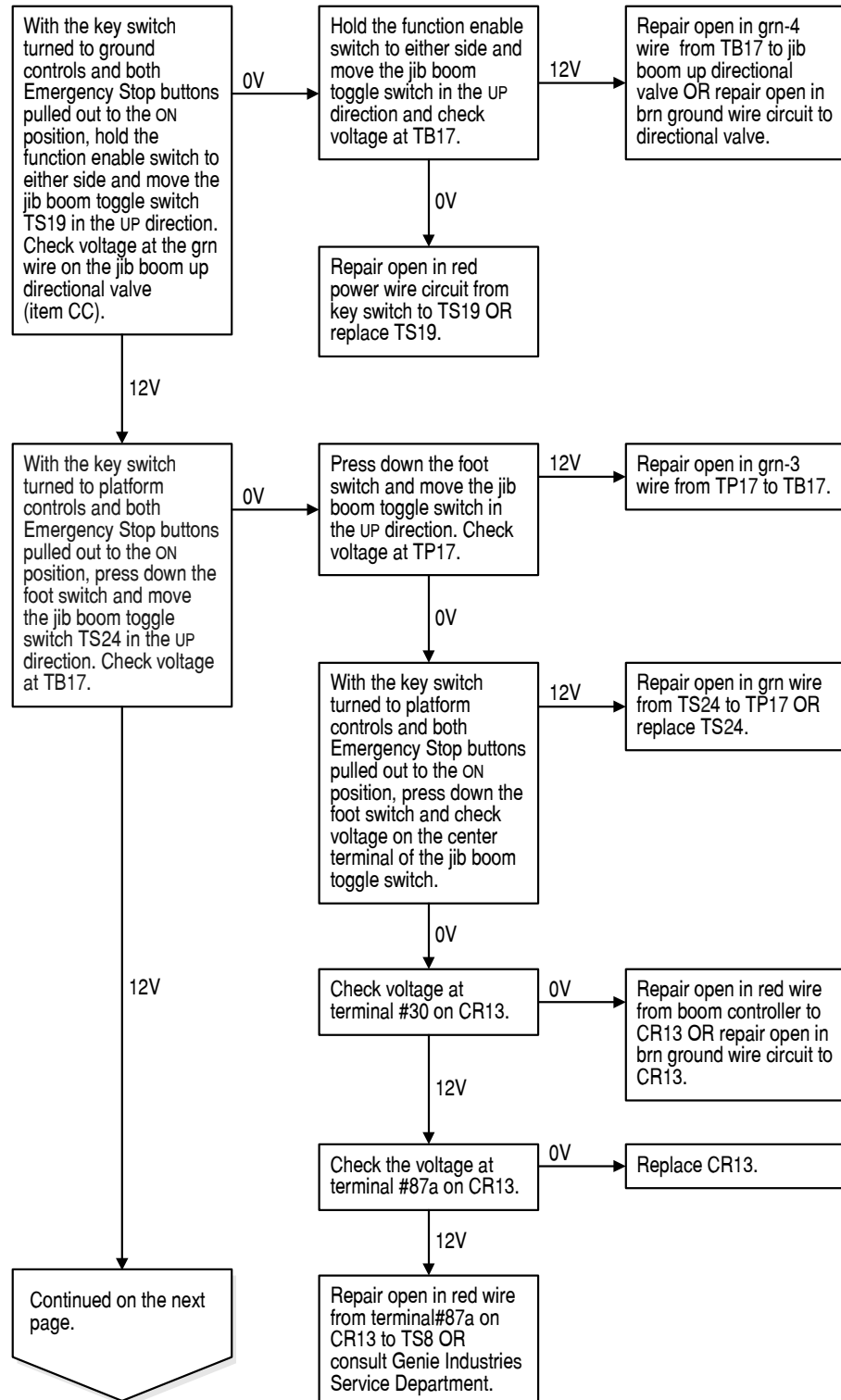


Chart 26

REV B

Jib Boom Up Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 26

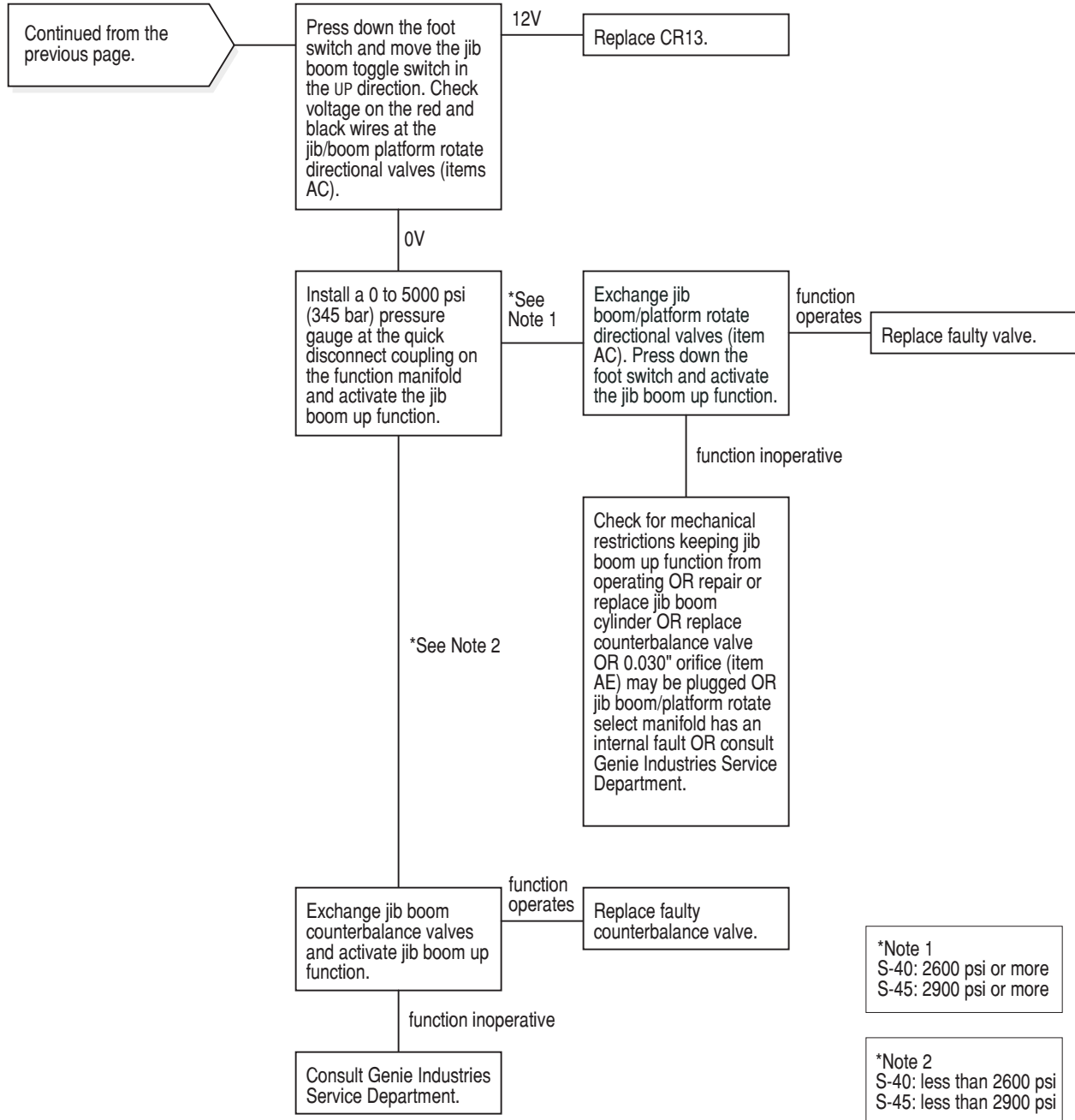
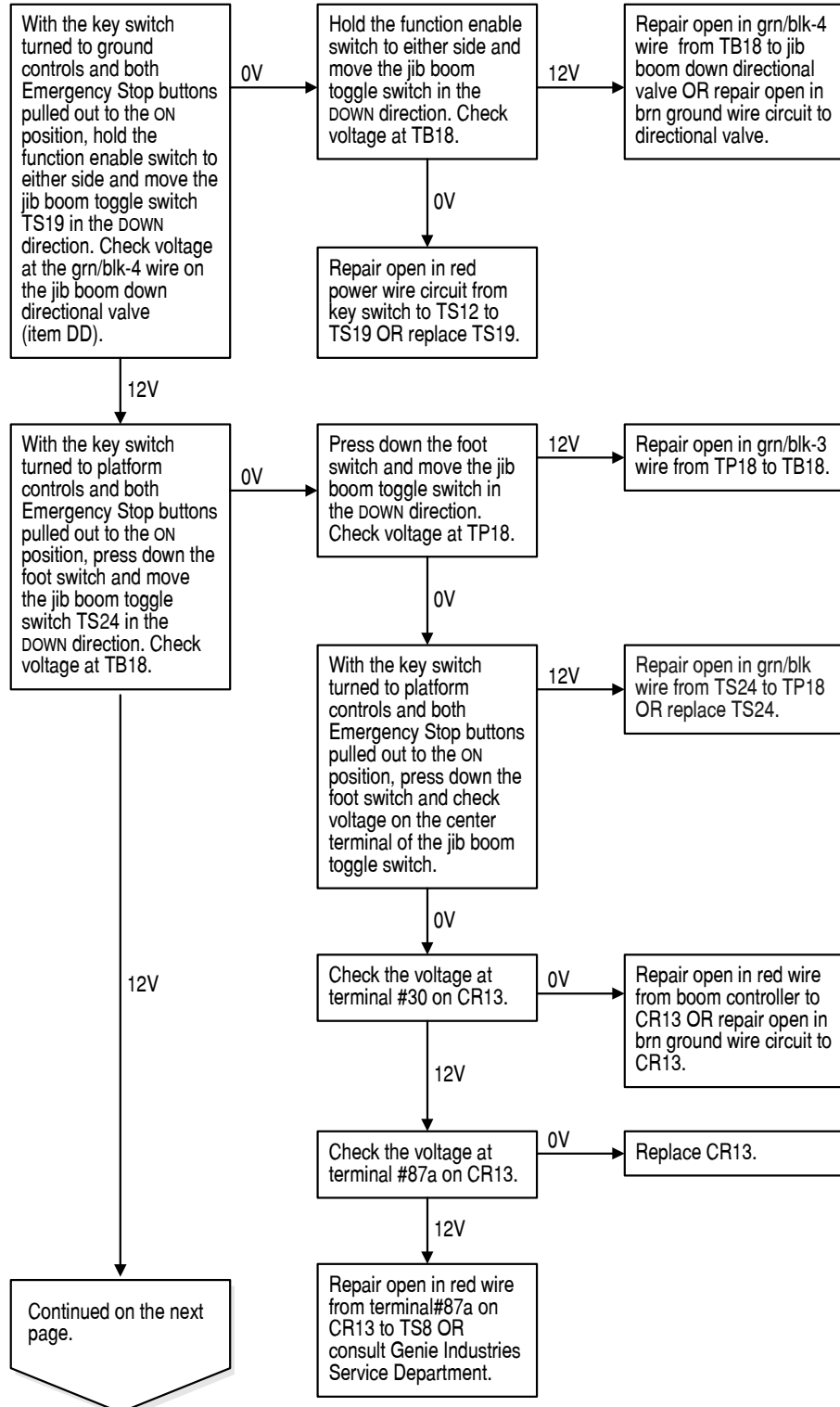


Chart 27

REV B

Jib Boom Down Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 27

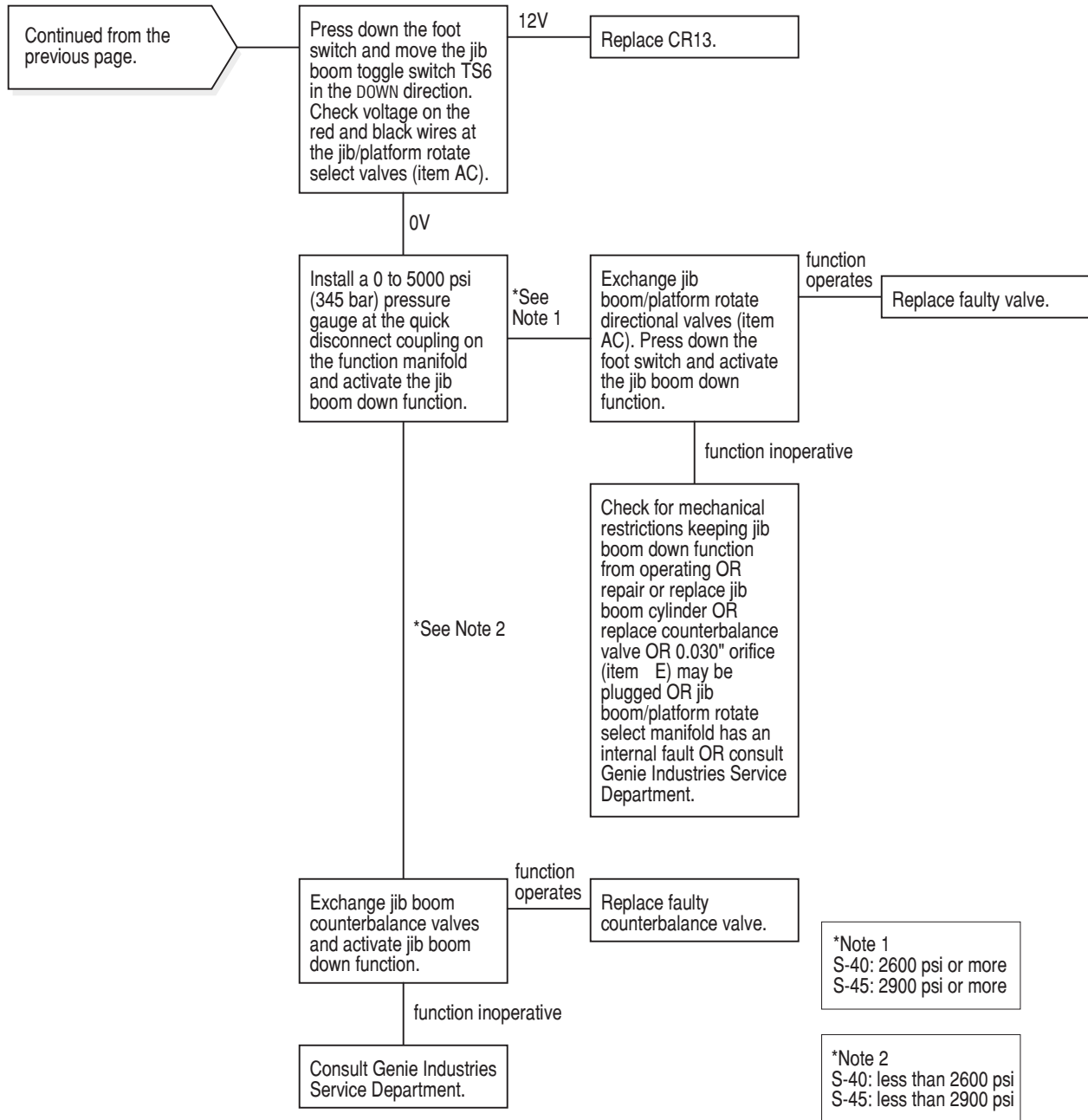
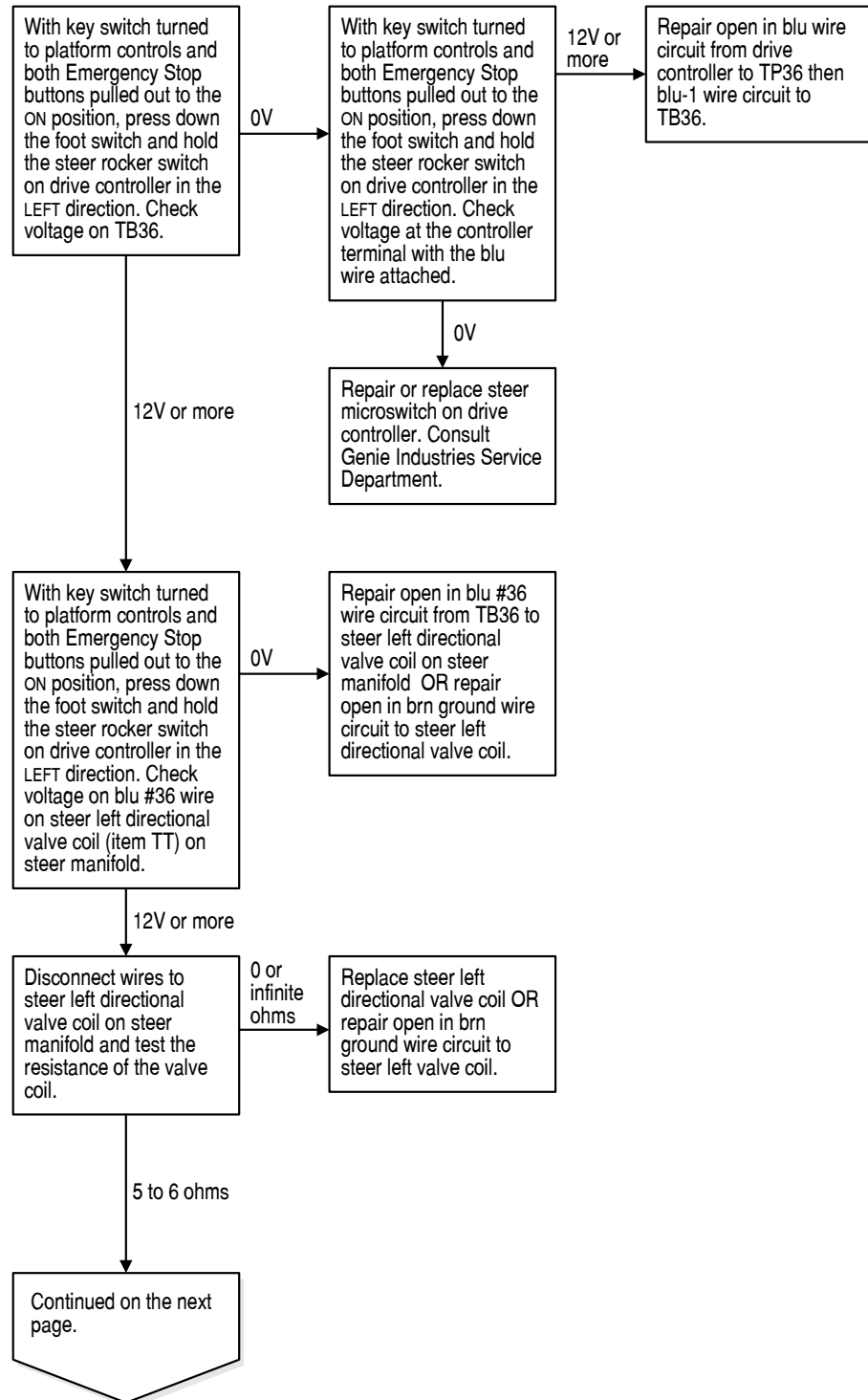


Chart 28

REV B

Steer Left Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 28

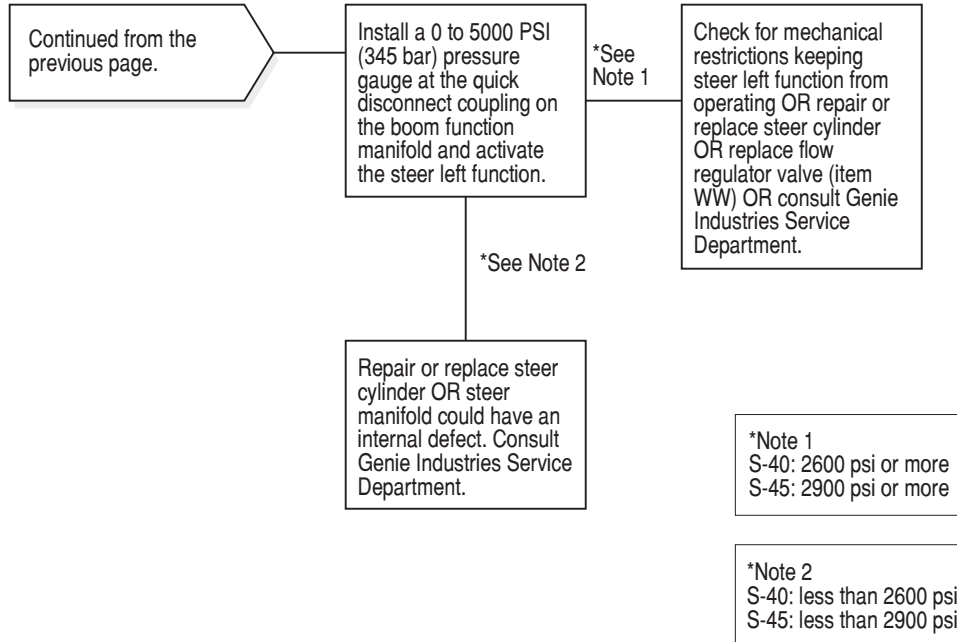
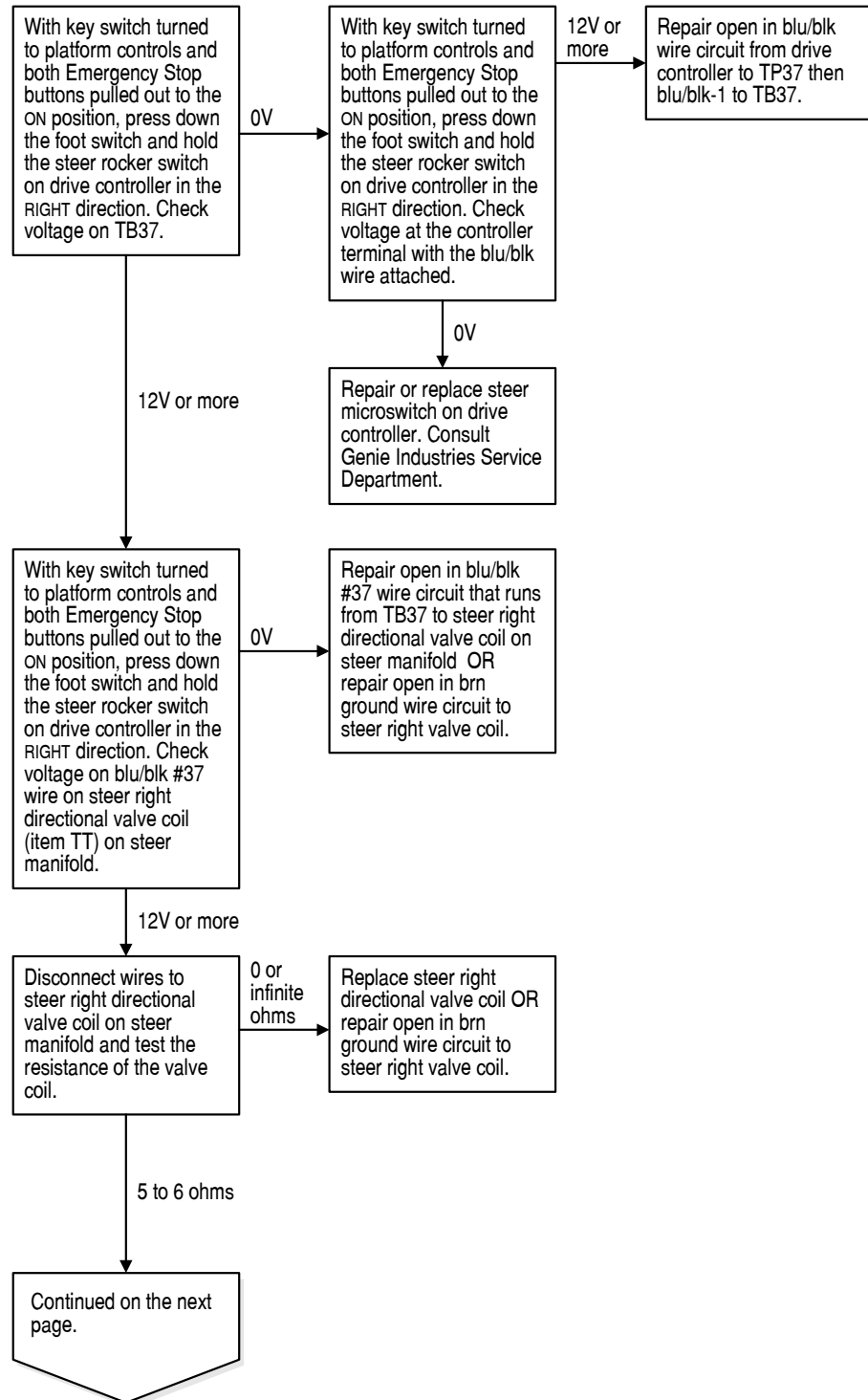


Chart 29

REV B

Steer Right Function Inoperative

Be sure all other functions operate normally.



REV B

CHART 29

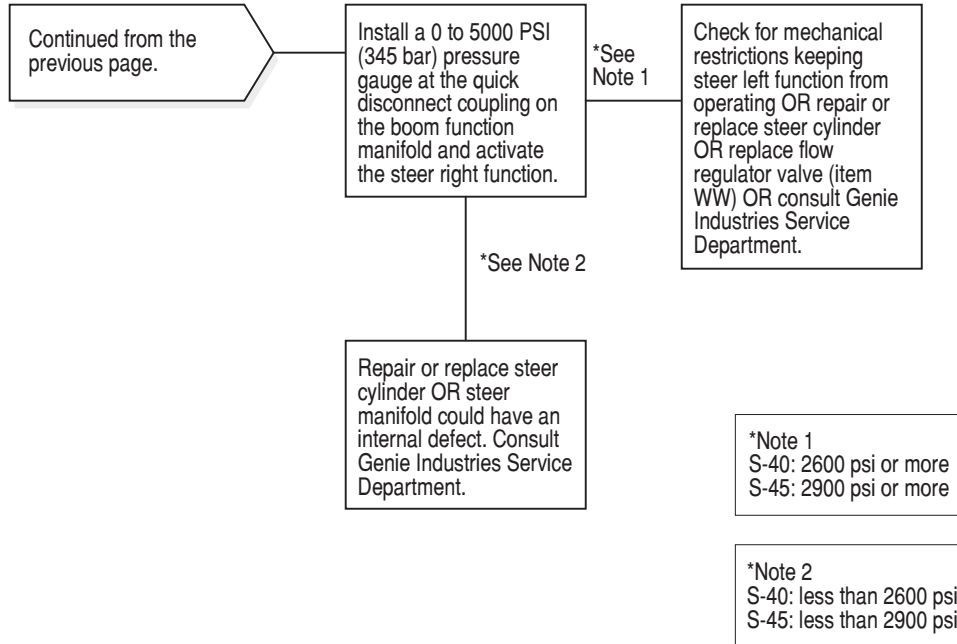


Chart 30

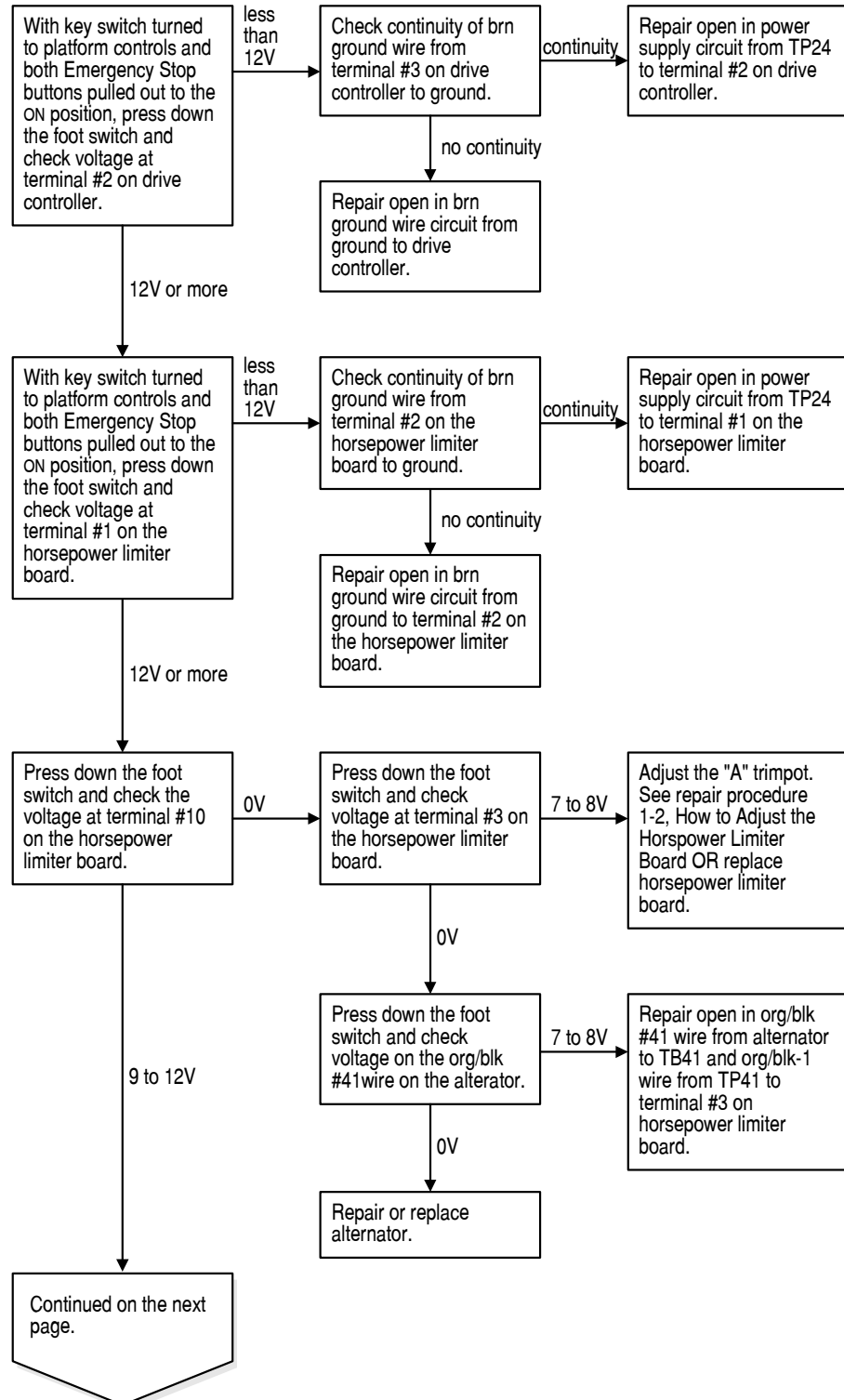
REV B

All Drive Functions Inoperative, All Other Functions Operate Normally

Be sure the rpm select switch is in the foot switch activated high idle position.

Be sure the hydraulic tank shut off valves are in the OPEN position.

Be sure machine is not in the free wheel configuration.



REV B

CHART 30

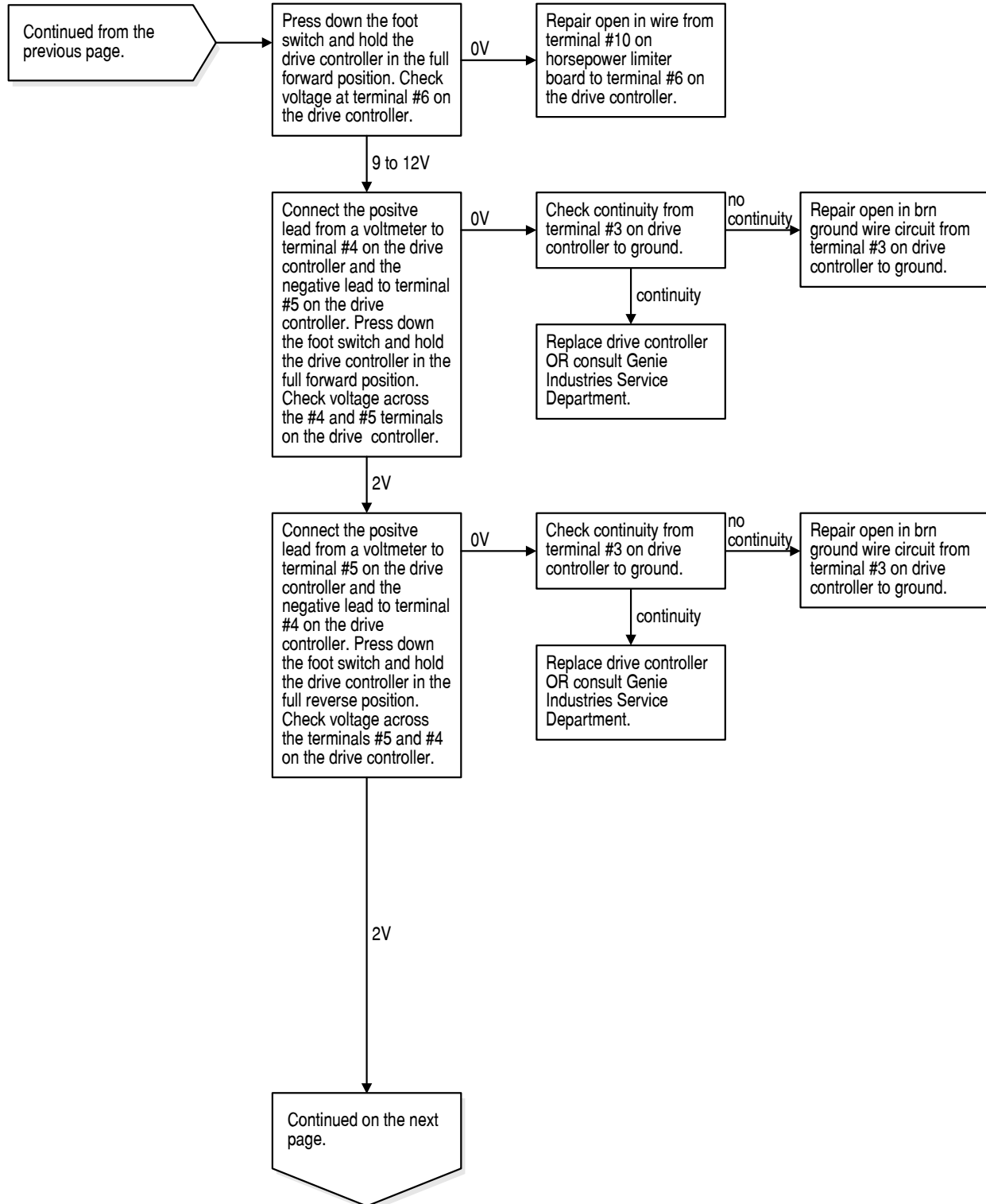


CHART 30

REV B

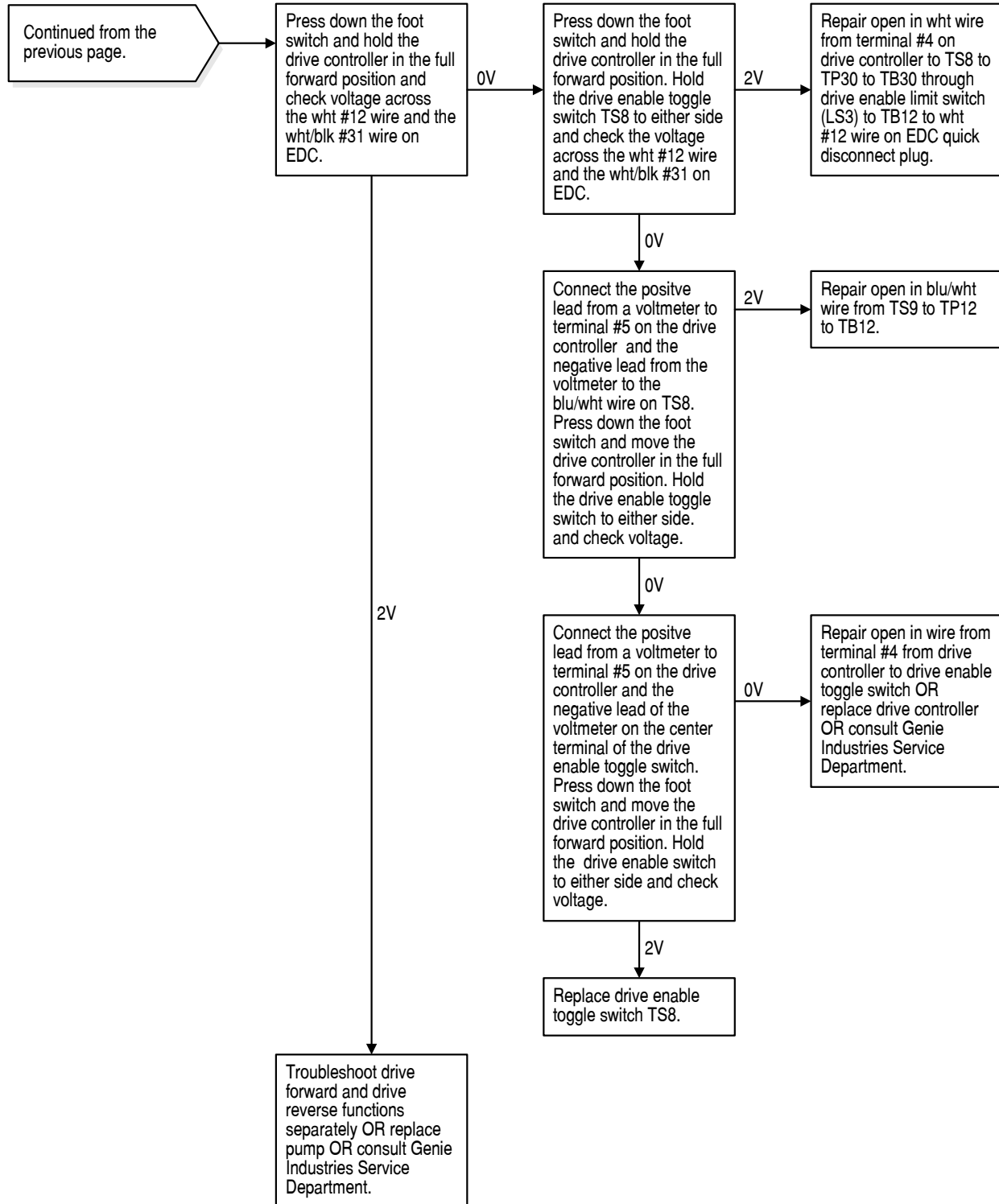


Chart 31

REV B

Drive Forward or Reverse Function Inoperative

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

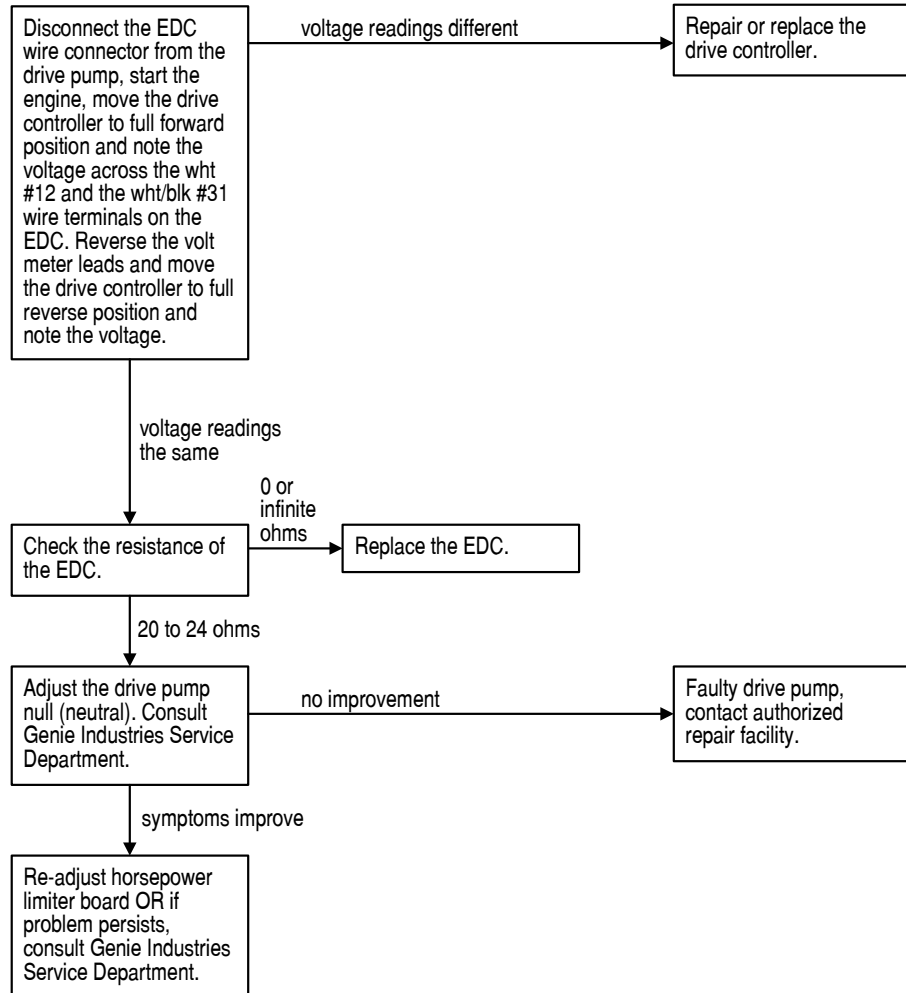


Chart 32

REV B

Traction Function Inoperative

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

Be sure that all other
functions operate
normally.

Chart 33

REV B

Machine Will Not Drive At Full Speed

Be sure all other functions operate normally.

Be sure the machine is not raised above or extended beyond the drive limit switches.

Be sure the drive limit switches are clear of any debris and are not activated when the boom is in the stowed position.

Be sure the wiring to limit switches is intact and show no signs of damage or corrosion.

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

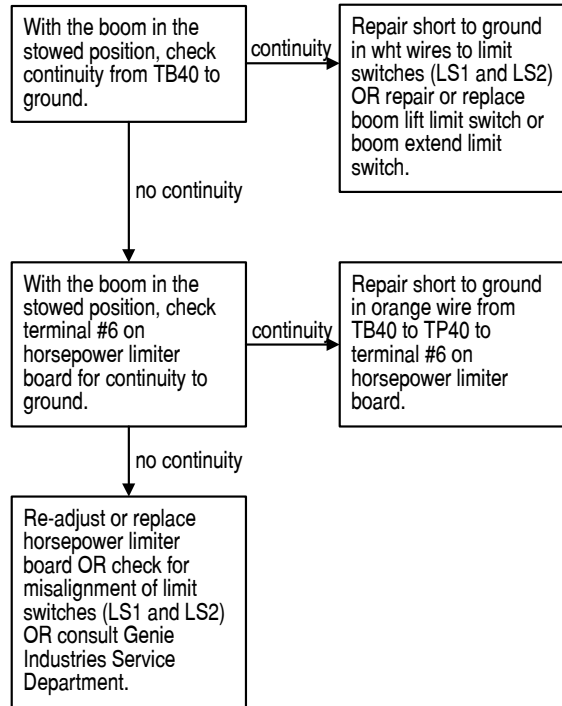


Chart 34

REV B

Machine Drives At Full Speed With Platform Raised or Extended

Be sure boom up drive limit switch is being activated by the cam on the boom when the boom is raised.

Be sure that the boom extend drive limit switch is not being held down or being activated when the boom is extended.

Be sure the wiring to limit switches is intact and show no signs of damage or corrosion.

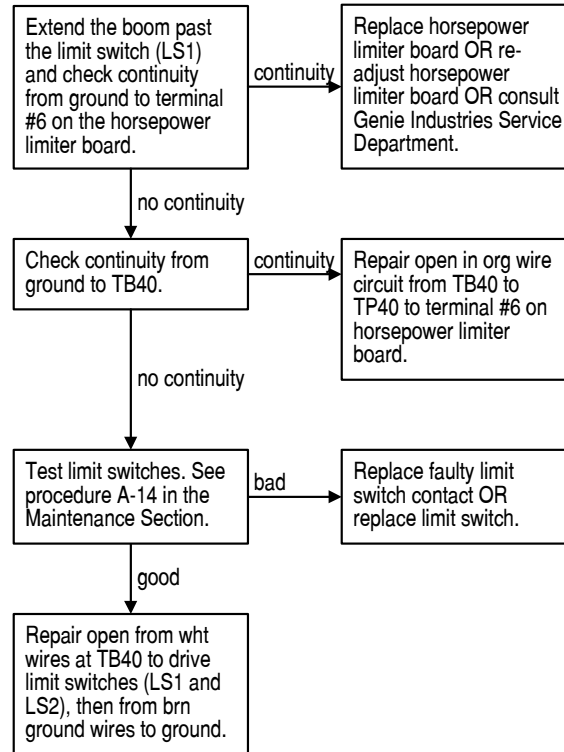


Chart 35

REV B

Drive Enable System Is Malfunctioning

Be sure the boom is in the stowed position.

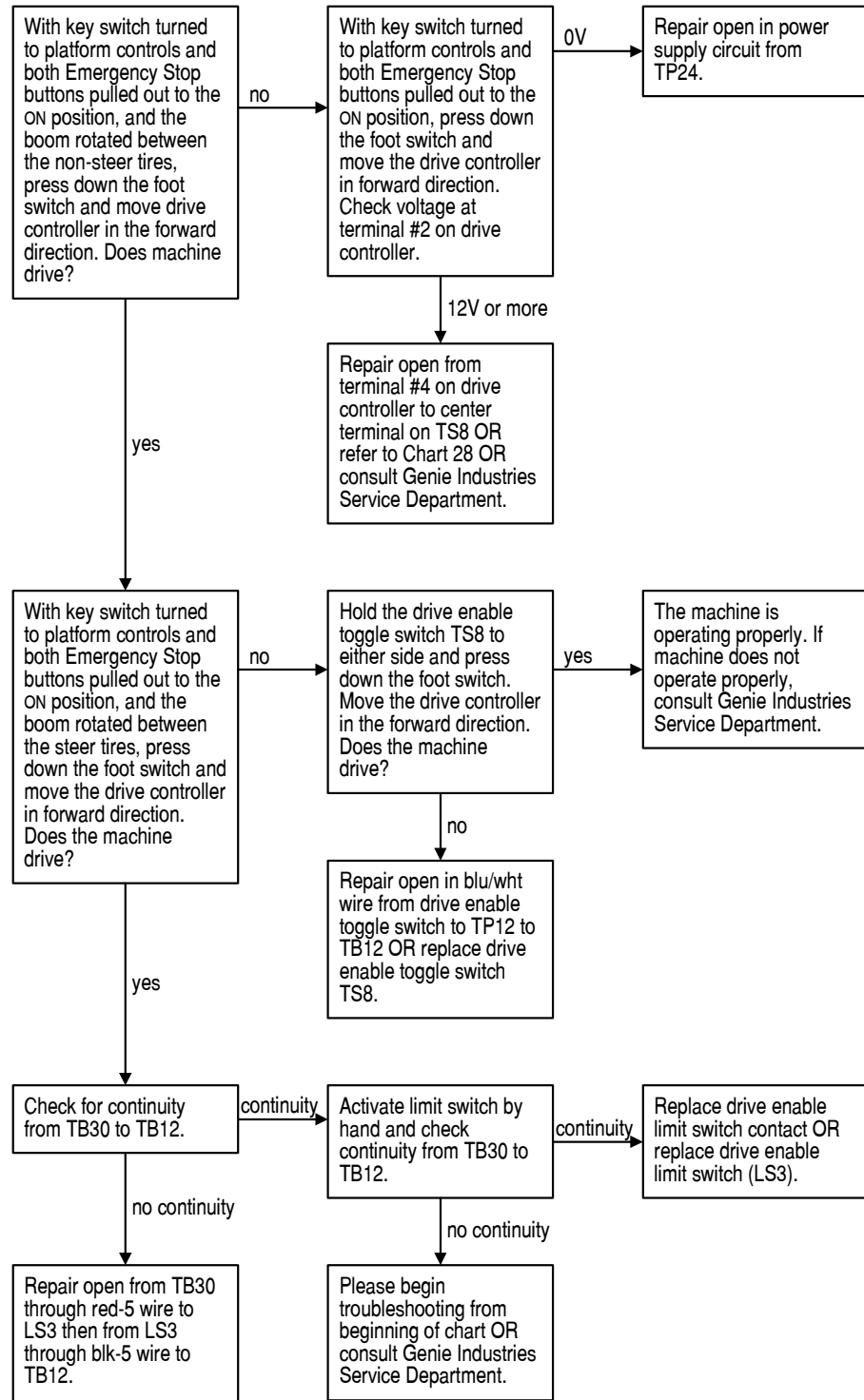


Chart 36

REV B

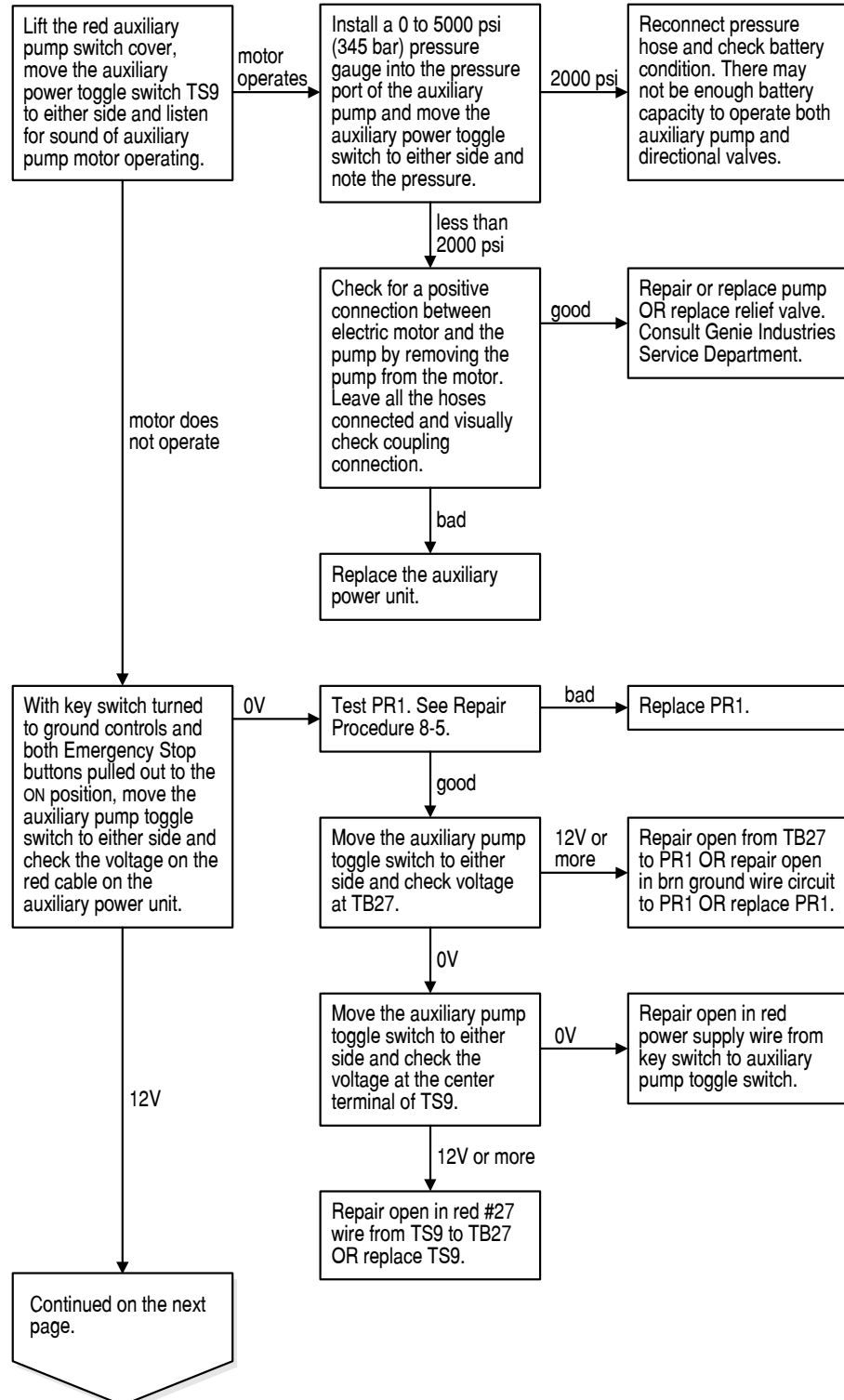
Auxiliary Functions Inoperative

Be sure all other functions operate normally.

Be sure key switch is in the appropriate position and both Emergency Stop buttons are pulled out to the ON position.

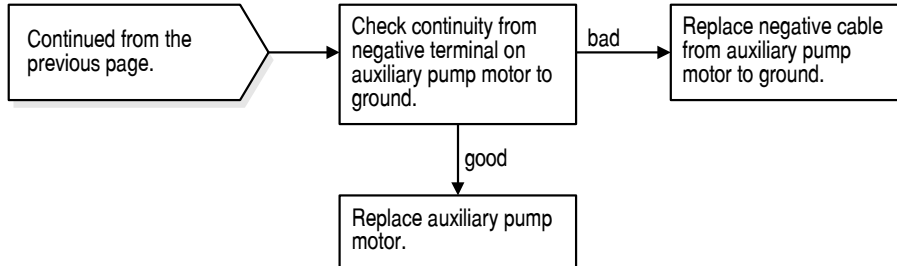
Be sure engine is not running when using auxiliary power.

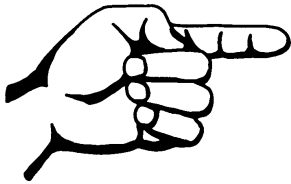
Note: Operating auxiliary power with the engine running should immediately stop the engine.



REV B

CHART 36





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Schematics



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie S-40 and S-45 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.

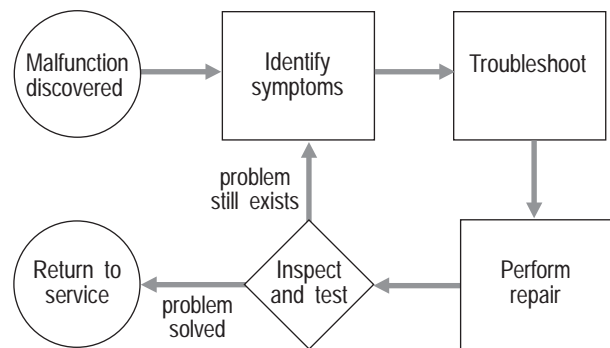
Electrical Schematics

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

Hydraulic Schematics

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

General Repair Process



Electrical Components

Item	Description	Genie Part Part Number	Manufacturer	Manufacturer Part Number	Qty
BAT	Battery, 1000 CCA, 12V DC ..	30143	Trojan	C31XH-2	1
BP1	Joystick controller, Dual axis .	53073	OEM Controls	EJS5M1197	1
CB1, CB2	Circuit breaker	24018	ETA	45-700-IG1-P10	2
CR1through CR7, 17, 18, 19	Relay, SPDT, 12V DC	34052	Potter-Brumfield	VF4-15F11-CO5	10
Diode	Diode, 6 amp, 200 PIV	45782	Motorola	MOTMR752	36
DP1	Joystick controller-Drive	20424	OEM Controls	EMS4M11664	1
FB	Flashing beacon	20189	ECCO Electronic Controls ..	6400A-GEN	2
FS1	Footswitch	13482	Linemaster Switch Corp.	632-S	1
G1	Gauge - Voltage	53761	VDO	332-030001C	1
G2	Gauge - Oil Pressure	53758	VDO	350-030021C	1
G3	Gauge - Water Temp.	53759	VDO	310-030023C	1
H1	Alarm, Warble tone	45383	Floyd Bell Inc.	MW09-530-Q	1
H2	Horn, 12V DC	81578	Wesco.	HELLA 95346	1
H3	Alarm, intermittent	18963	Floyd Bell Inc.	XB-09-630-Q(S)	1
H4	Alarm, chime tone	45462	Floyd Bell Inc.	CH-09-525-Q	1
HM	Hourmeter	19506	ENM Corporation	T40A4508	1
KS1	Contact - Key switch, N.O.	128497	Laughlin	ZB5AGO	2
L1	LED - Red, 12V DC	56298	Laughlin	30XX-4-11-37610.0001	1
LS1, 2, 3	Contact - Limit switch, N.C.H.O.	19491	Telemecanique	XESP2151	3
Level sensor ..	Level sensor, 4.5°	44586	Power Comp. of Midwest	LS36-04.5L1-501	1
P1, P2	Contact, N.C.	128499	Laughlin	ZB5AT4	4
P3	Contact, N.O.	45081	Telemecanique	ZB2-BE101	1
PR1	Relay, 12V DC continuous	27155	Stancor	70-902	1

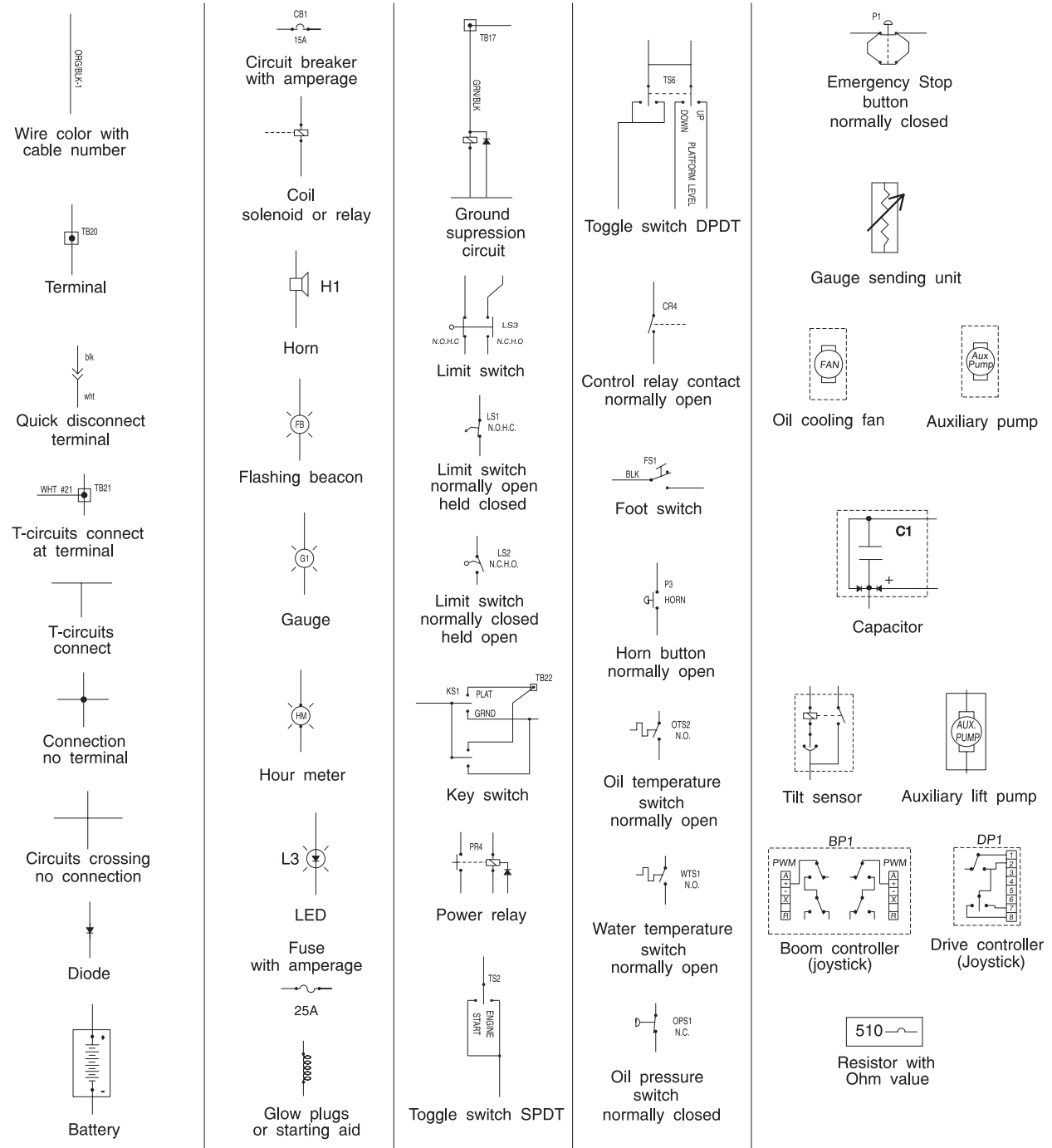
This list continues on the next page.

ELECTRICAL COMPONENTS

Item	Description	Genie Part Part Number	Manufacturer	Manufacturer Part Number	Qty
R2	Resistor, 10Ω 25 watt	27287	Dale	825F10R	1
TS1, TS9	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	2
TS2, 5, 8, 10, 12, 13	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	6
TS20	Toggle switch, DPDT 2 position maintained	27378	Microswitch Control Inc.	2NT1-3	1
TS4	Toggle switch, DPDT 3 position maintained	13038	Microswitch Control Inc.	2NT1-1	1
TS6,7,14,15, 16,17	Toggle switch, DPDT 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	6
TS3, TS11 (Gas/LPG)	Toggle switch, DPDT 2 position maintained	27378	Microswitch Control Inc.	2NT1-3	2
TS3, TS11 (Diesel)	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	2




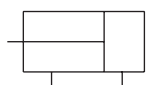
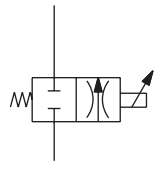
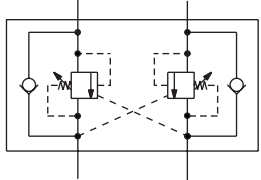
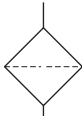

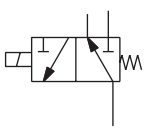
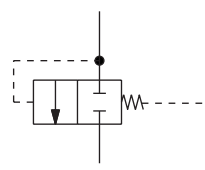

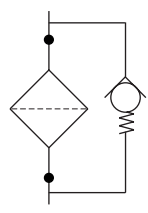
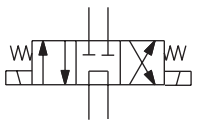
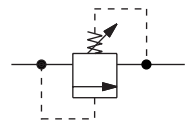

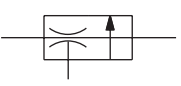
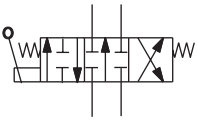
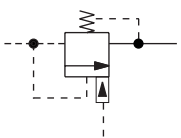

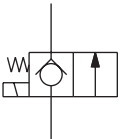
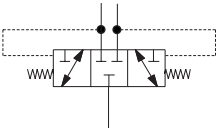
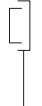

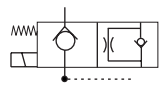
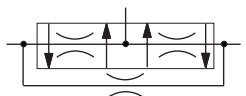

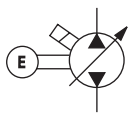

Electrical Symbols Legend



Abbreviation Legend

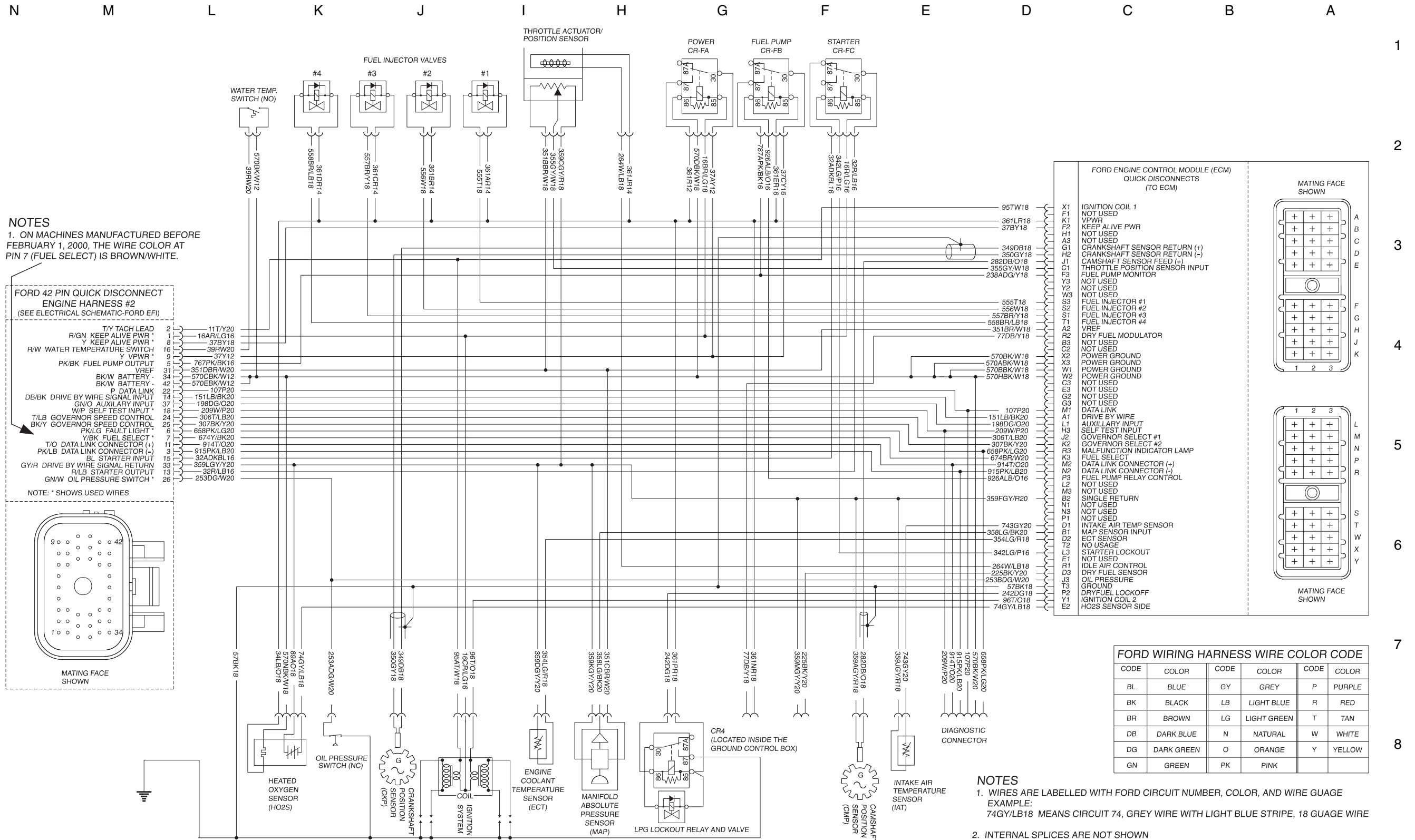
LABEL	DESCRIPTION
BAT	Battery
BP	Boom proportional controller
C1	Capacitor
CB	Circuit breaker
CR	Control relay
DP	Drive proportional controller
FB	Flashing beacon
FS	Foot switch
G	Gauge
H	Horn or Alarm
HM	Hour meter
KS	Keyswitch
L	LED
LS	Limit switch
P	Emergency Stop Button
PR	Power relay
R	Resistor
TB	Terminal base location
TP	Terminal platform location
TS	Toggle switch

Hydraulic Symbols Legend

			
Pressure gauge	Double acting cylinder	Solenoid operated proportional valve	Counterbalance valve
			
Filter	Check valve	Solenoid operated 2 position, 3 way, directional valve	Differential sensing valve
			
Oil cooler	Filter with bypass valve	Solenoid operated 3 pos., 4 way, directional valve	Relief valve
			
Pump prime mover engine or motor	Priority flow regulator	Directional valve	Pilot operated unloader valve
			
Fixed displacement pump	Solenoid operated dump valve	Shuttle valve	Brake
			
Bi-directional motor	Solenoid valve normally closed poppet	Flow divider/combiner valve with pressure balancing orifice	Shutoff valve
			
Bi-directional Pump			Orifice with size

REV A

Ford LRG-425 EFI Engine Wire Harness

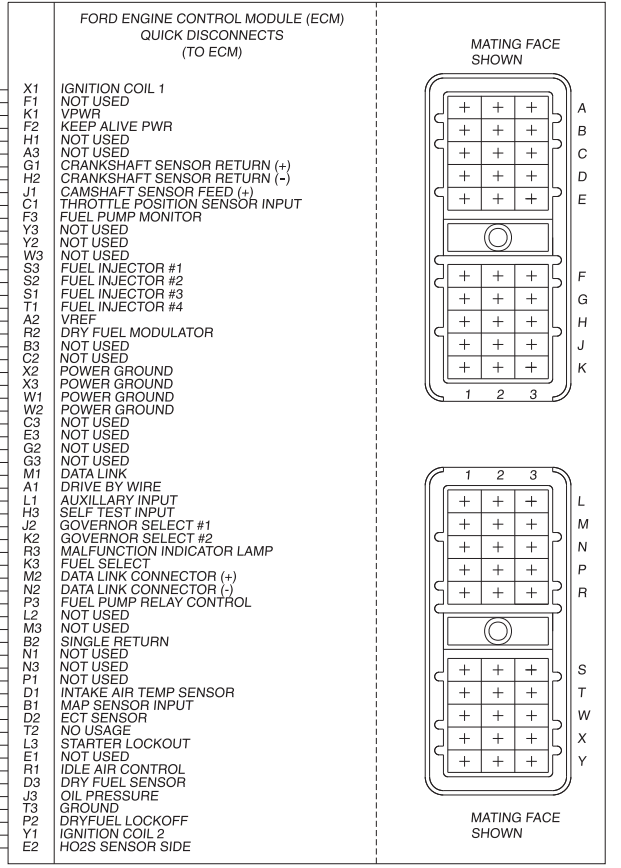
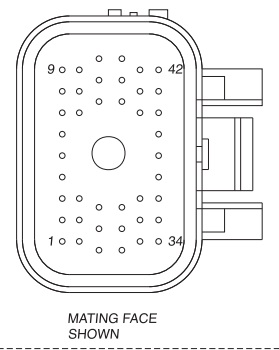


NOTES
 1. ON MACHINES MANUFACTURED BEFORE FEBRUARY 1, 2000, THE WIRE COLOR AT PIN 7 (FUEL SELECT) IS BROWN/WHITE.

FORD 42 PIN QUICK DISCONNECT ENGINE HARNESS #2
 (SEE ELECTRICAL SCHEMATIC-FORD EFI)

2	11T/Y20
1	16AR/LG16
8	37BY18
16	39RW20
9	37Y12
5	767PK/BK16
31	351DBR/W20
34	570CBK/W12
42	570EBK/W12
22	107P20
14	151LB/BK20
37	198DG/O20
18	209W/P20
24	306TL/B20
25	307BK/Y20
6	658PK/LG20
7	674Y/BK20
11	914T/O20
3	915PK/LB20
15	32ADKBL16
33	359LG/Y20
13	321LB16
26	253DG/W20

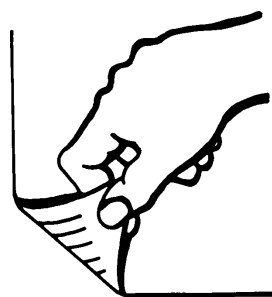
NOTE: * SHOWS USED WIRES



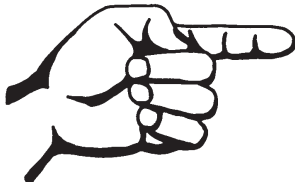
CODE	COLOR	CODE	COLOR	CODE	COLOR
BL	BLUE	GY	GREY	P	PURPLE
BK	BLACK	LB	LIGHT BLUE	R	RED
BR	BROWN	LG	LIGHT GREEN	T	TAN
DB	DARK BLUE	N	NATURAL	W	WHITE
DG	DARK GREEN	O	ORANGE	Y	YELLOW
GN	GREEN	PK	PINK		

NOTES
 1. WIRES ARE LABELLED WITH FORD CIRCUIT NUMBER, COLOR, AND WIRE GAUGE
 EXAMPLE:
 74GY/LB18 MEANS CIRCUIT 74, GREY WIRE WITH LIGHT BLUE STRIPE, 18 GAUGE WIRE
 2. INTERNAL SPLICES ARE NOT SHOWN

**Ford LRG-425 EFI
Engine Wire Harness**

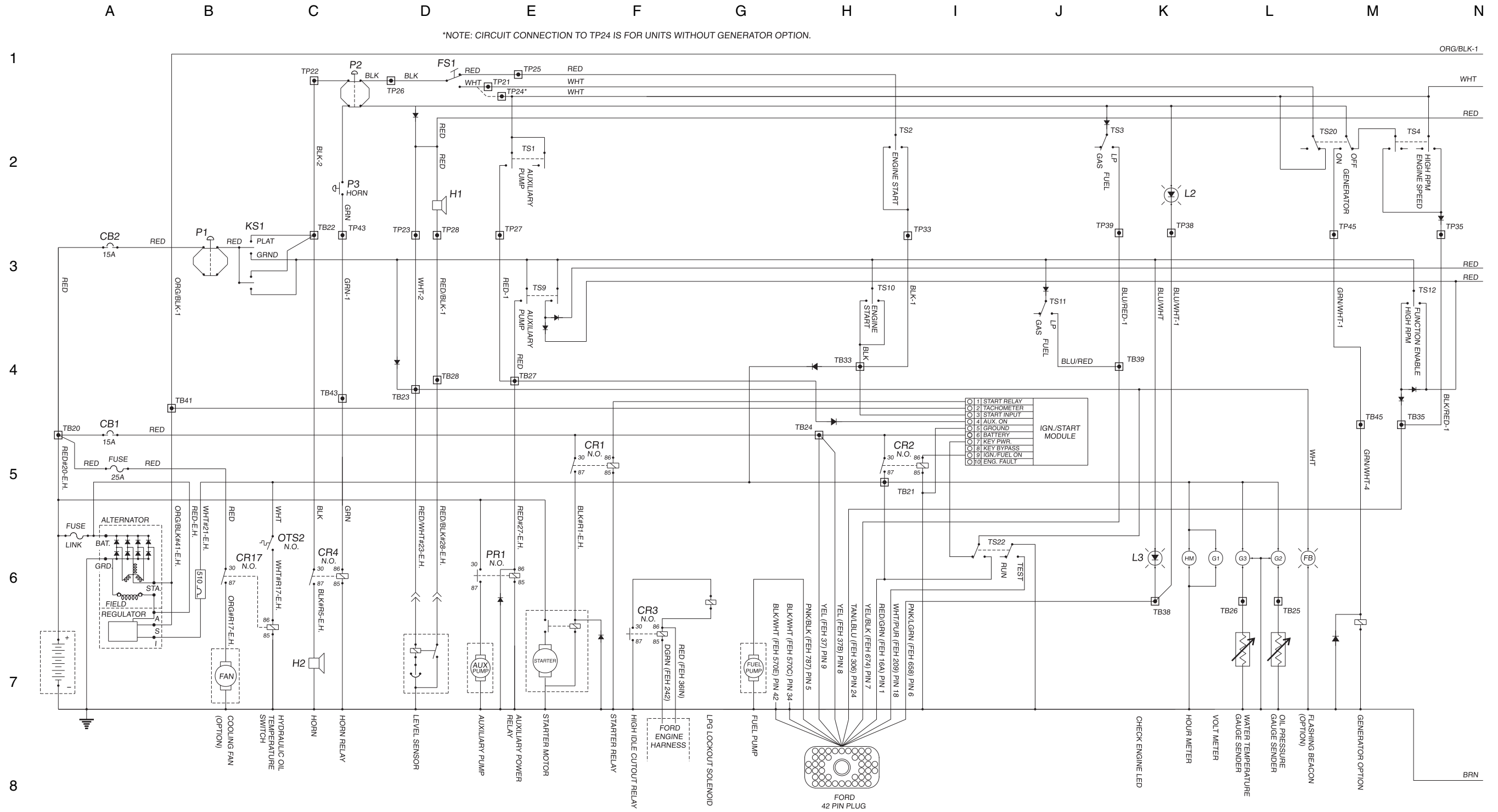


**Electrical Schematic-
Gasoline/LPG Models**



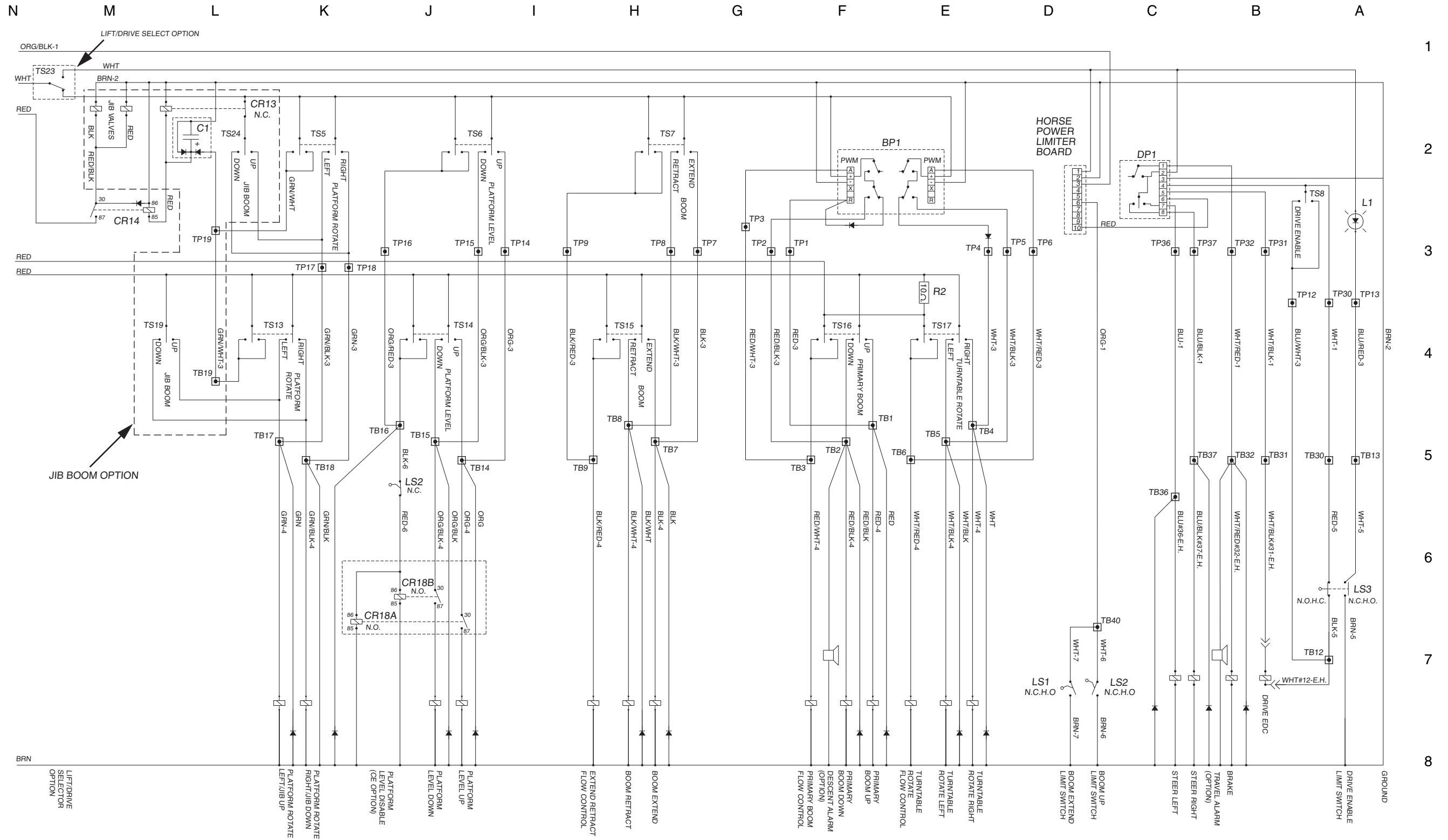
Electrical Schematic- Gasoline/LPG Models

REV A

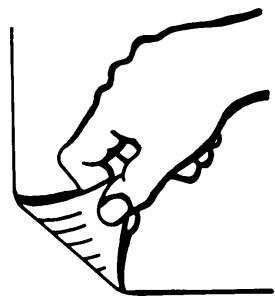


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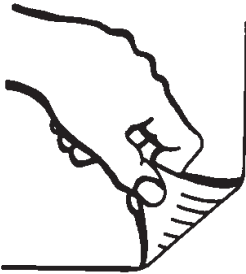
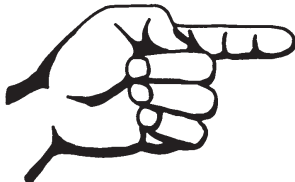
Electrical Schematic- Gasoline/LPG Models



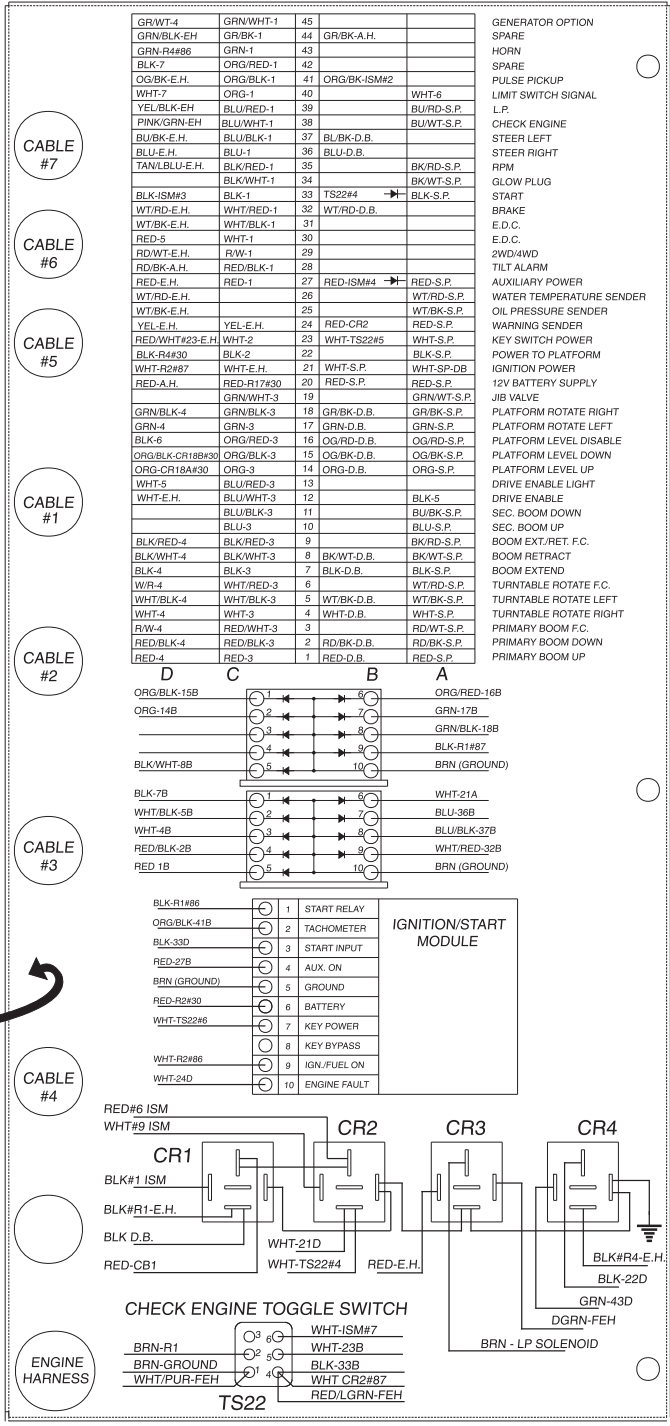
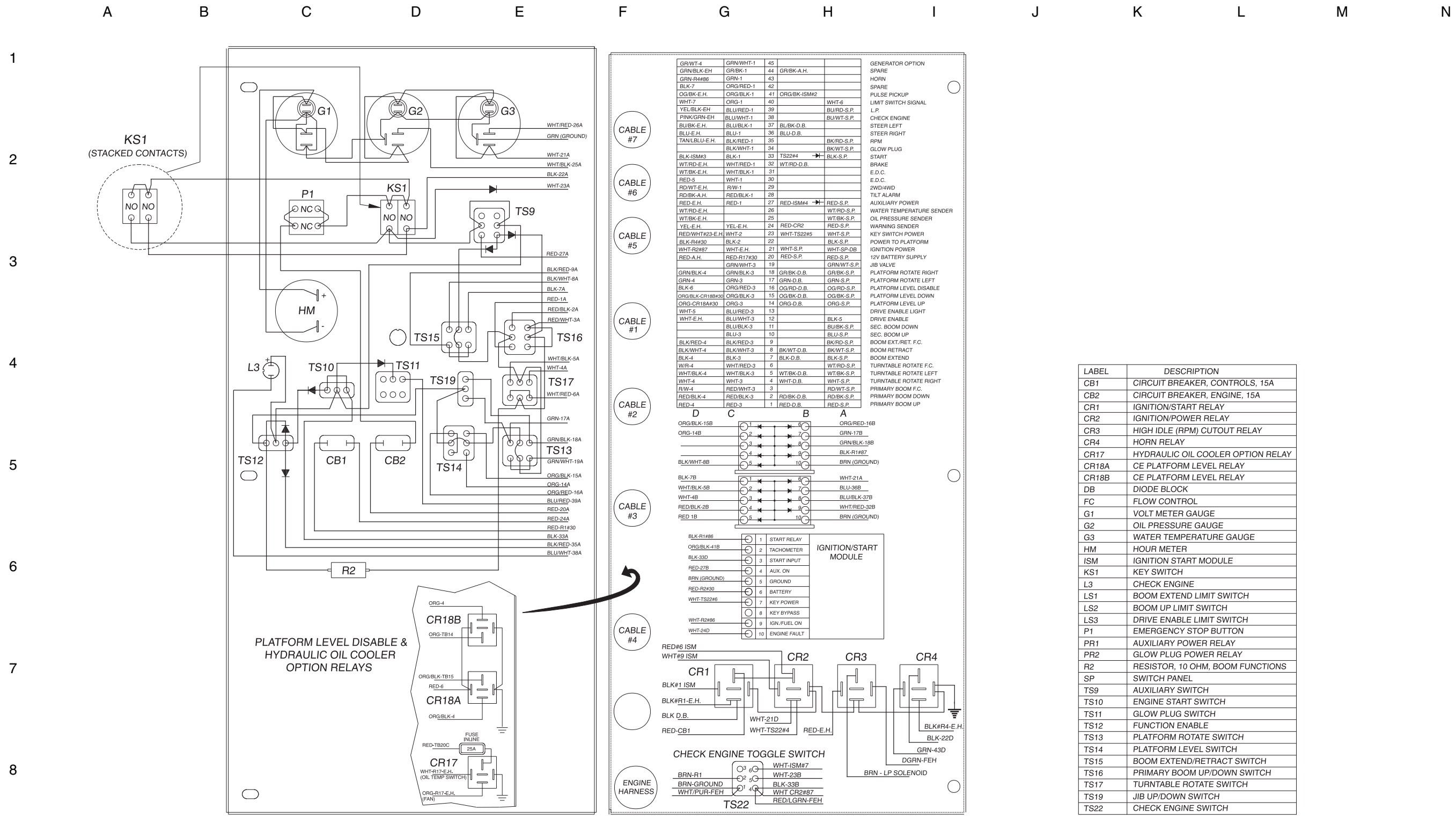
**Electrical Schematic-
Gasoline/LPG Models**



**Ground Control Box Wiring Diagram-
Gasoline/LPG Models**



Ground Control Box Wiring Diagram- Gasoline/LPG Models

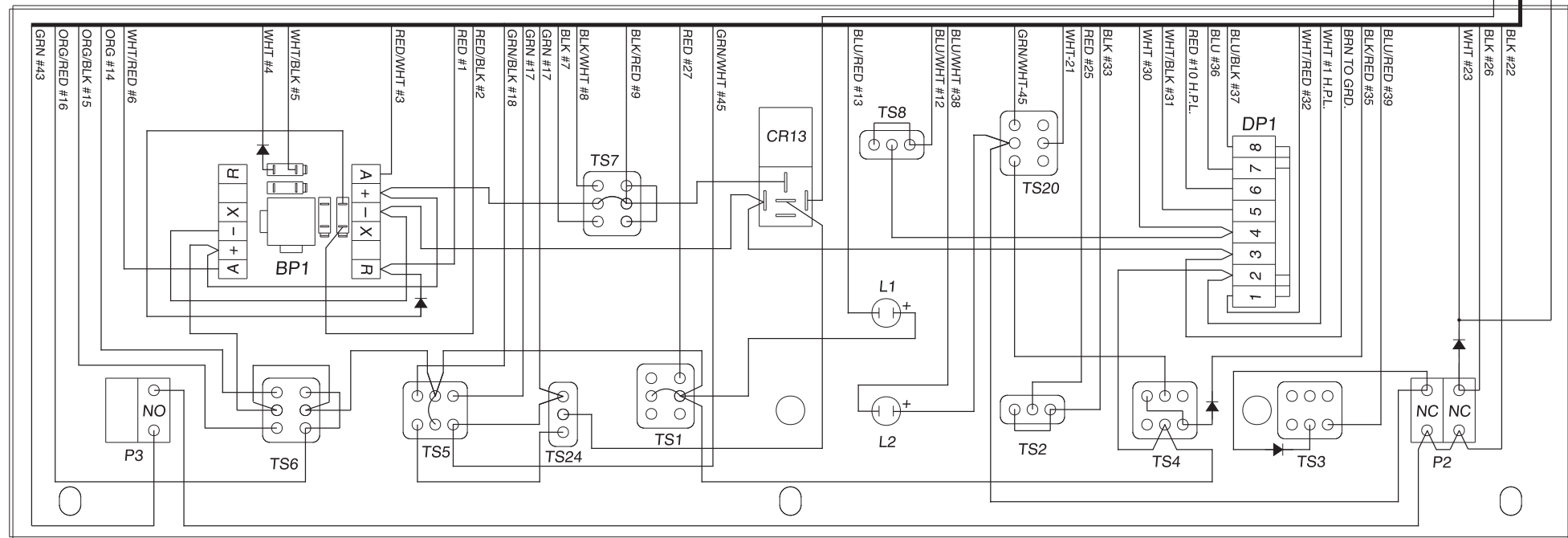
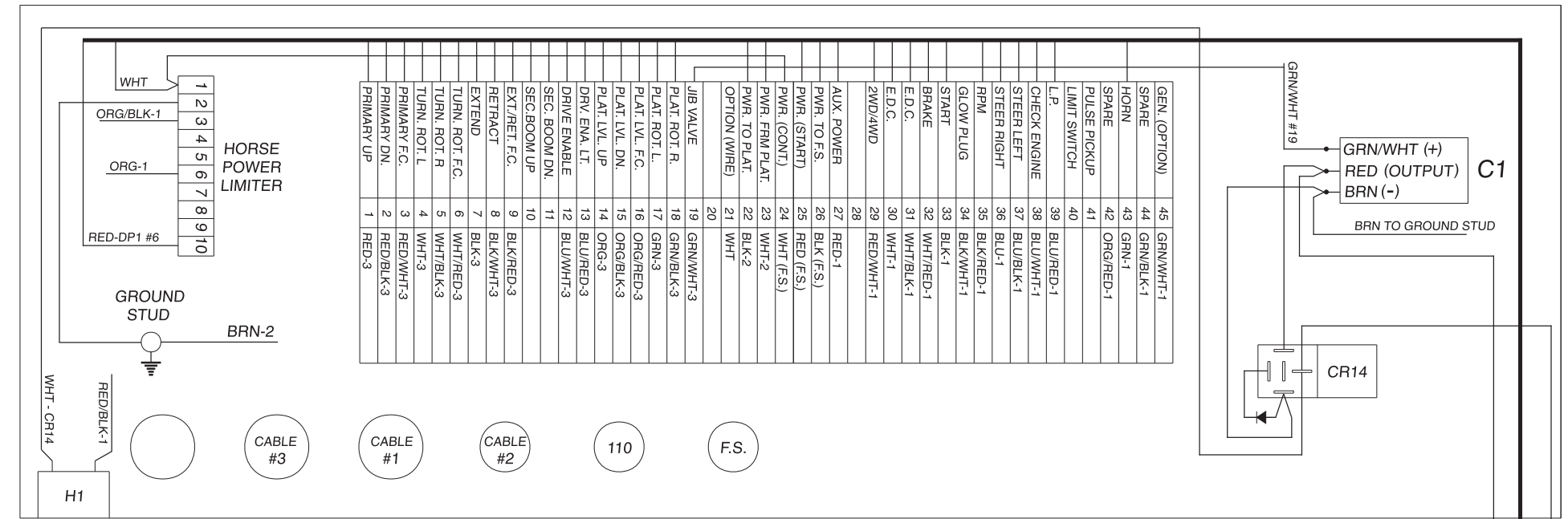


LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, CONTROLS, 15A
CB2	CIRCUIT BREAKER, ENGINE, 15A
CR1	IGNITION/START RELAY
CR2	IGNITION/POWER RELAY
CR3	HIGH IDLE (RPM) CUTOUT RELAY
CR4	HORN RELAY
CR17	HYDRAULIC OIL COOLER OPTION RELAY
CR18A	CE PLATFORM LEVEL RELAY
CR18B	CE PLATFORM LEVEL RELAY
DB	DIODE BLOCK
FC	FLOW CONTROL
G1	VOLT METER GAUGE
G2	OIL PRESSURE GAUGE
G3	WATER TEMPERATURE GAUGE
HM	HOUR METER
ISM	IGNITION START MODULE
KS1	KEY SWITCH
L3	CHECK ENGINE
LS1	BOOM EXTEND LIMIT SWITCH
LS2	BOOM UP LIMIT SWITCH
LS3	DRIVE ENABLE LIMIT SWITCH
P1	EMERGENCY STOP BUTTON
PR1	AUXILIARY POWER RELAY
PR2	GLOW PLUG POWER RELAY
R2	RESISTOR, 10 OHM, BOOM FUNCTIONS
SP	SWITCH PANEL
TS9	AUXILIARY SWITCH
TS10	ENGINE START SWITCH
TS11	GLOW PLUG SWITCH
TS12	FUNCTION ENABLE
TS13	PLATFORM ROTATE SWITCH
TS14	PLATFORM LEVEL SWITCH
TS15	BOOM EXTEND/RETRACT SWITCH
TS16	PRIMARY BOOM UP/DOWN SWITCH
TS17	TURNABLE ROTATE SWITCH
TS19	JIB UP/DOWN SWITCH
TS22	CHECK ENGINE SWITCH

REV A

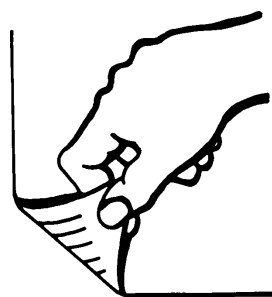
Platform Control Box Wiring Diagram- Gasoline/LPG Models

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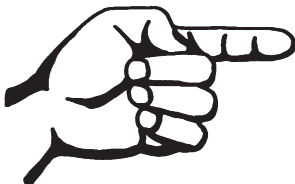


LABEL	DESCRIPTION
BP1	BOOM PROPORTIONAL JOYSTICK PRIMARY UP/DOWN & TURNTABLE ROTATE
C1	DELAY CAPACITOR
CR13	JIB LOCKOUT RELAY
CR14	PLATFORM ROTATOR RELAY
DP1	BOOM PROPORTIONAL JOYSTICK STEER LEFT/RIGHT
H1	TILT ALARM
L1	DRIVE ENABLE LED
L2	CHECK ENGINE
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	ENGINE START SWITCH
TS3	FUEL SELECT SWITCH
TS4	HIGH RPM SWITCH
TS5	PLATFORM ROTATE SWITCH (S45 SHOWN)
TS6	PLATFORM LEVEL SWITCH
TS7	BOOM EXTEND/RETRACT SWITCH
TS8	DRIVE ENABLE SWITCH
TS20	GENERATOR SWITCH (OPTION)
TS23	LIFT/DRIVE SELECT SWITCH (OPTION)
TS24	JIB BOOM SWITCH (S45 ONLY)

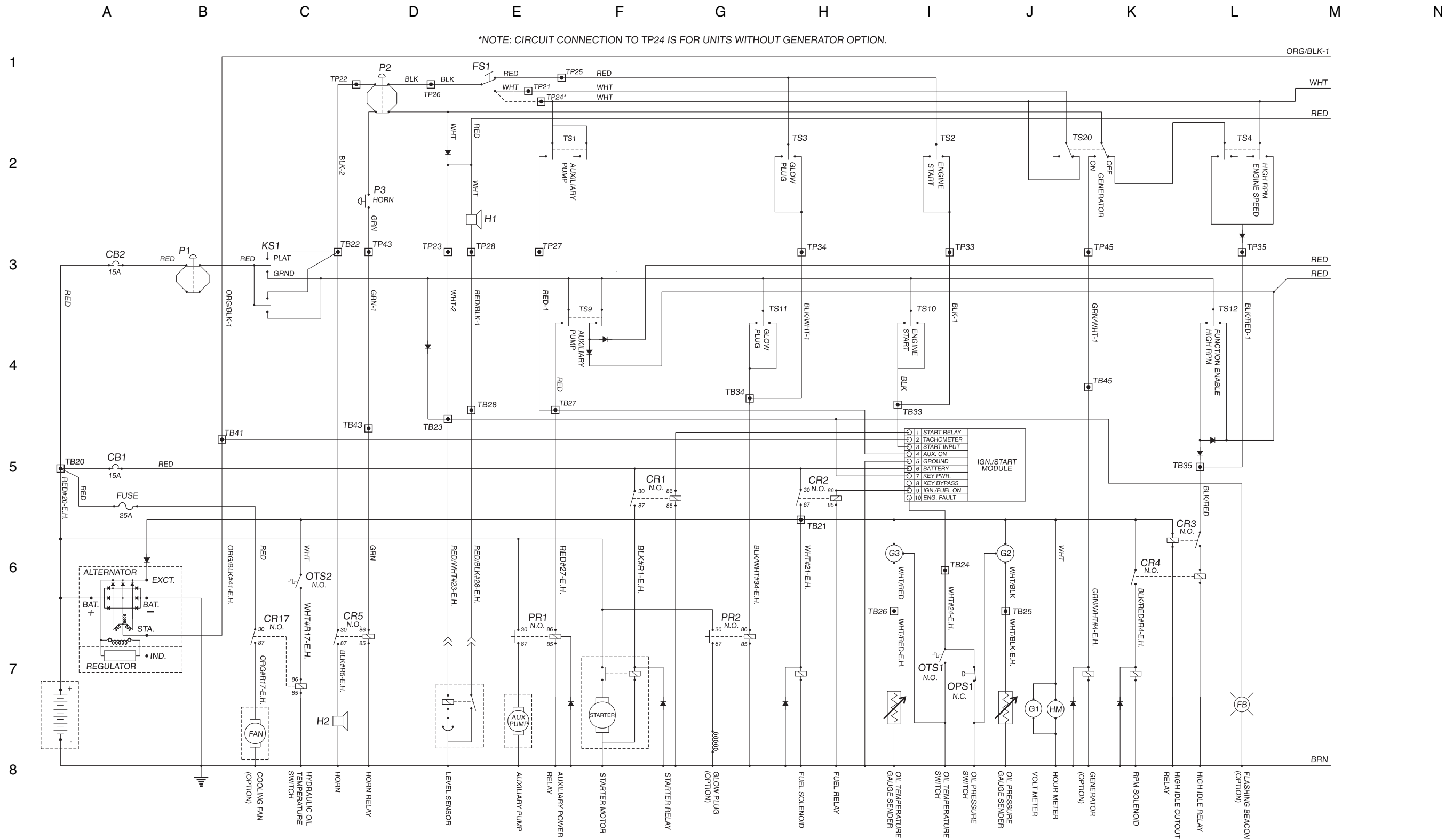
**Platform Control Box Wiring Diagram-
Gasoline/LPG Models**



**Electrical Schematic-
Deutz Diesel Models**

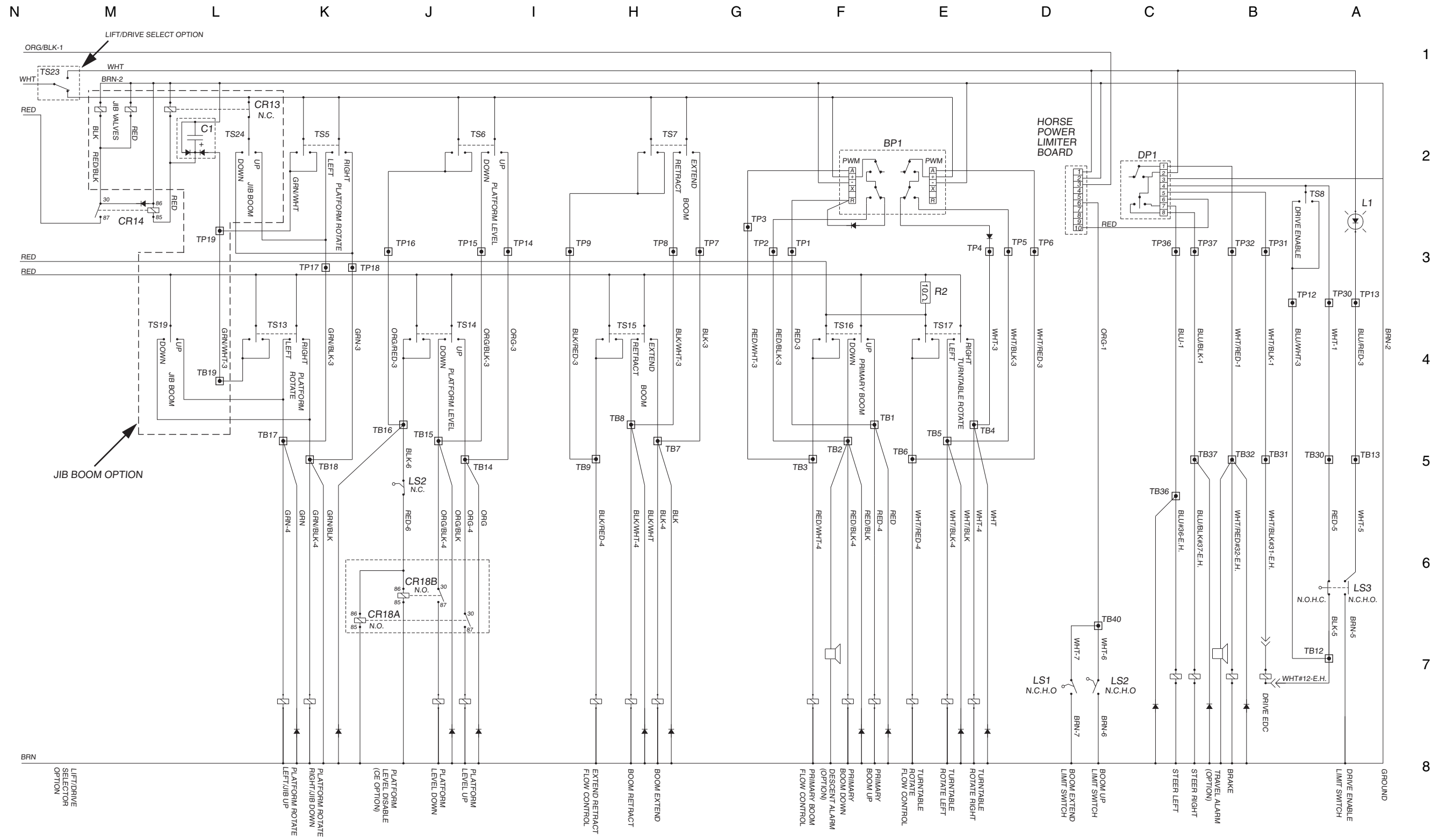


Electrical Schematic- Deutz Diesel Models

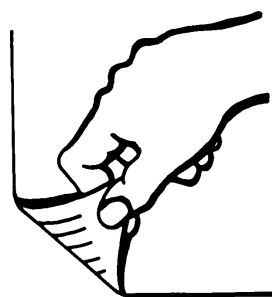


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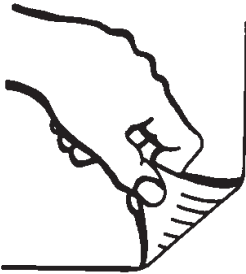
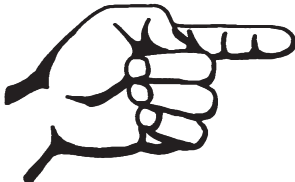
Electrical Schematic- Deutz Diesel Models



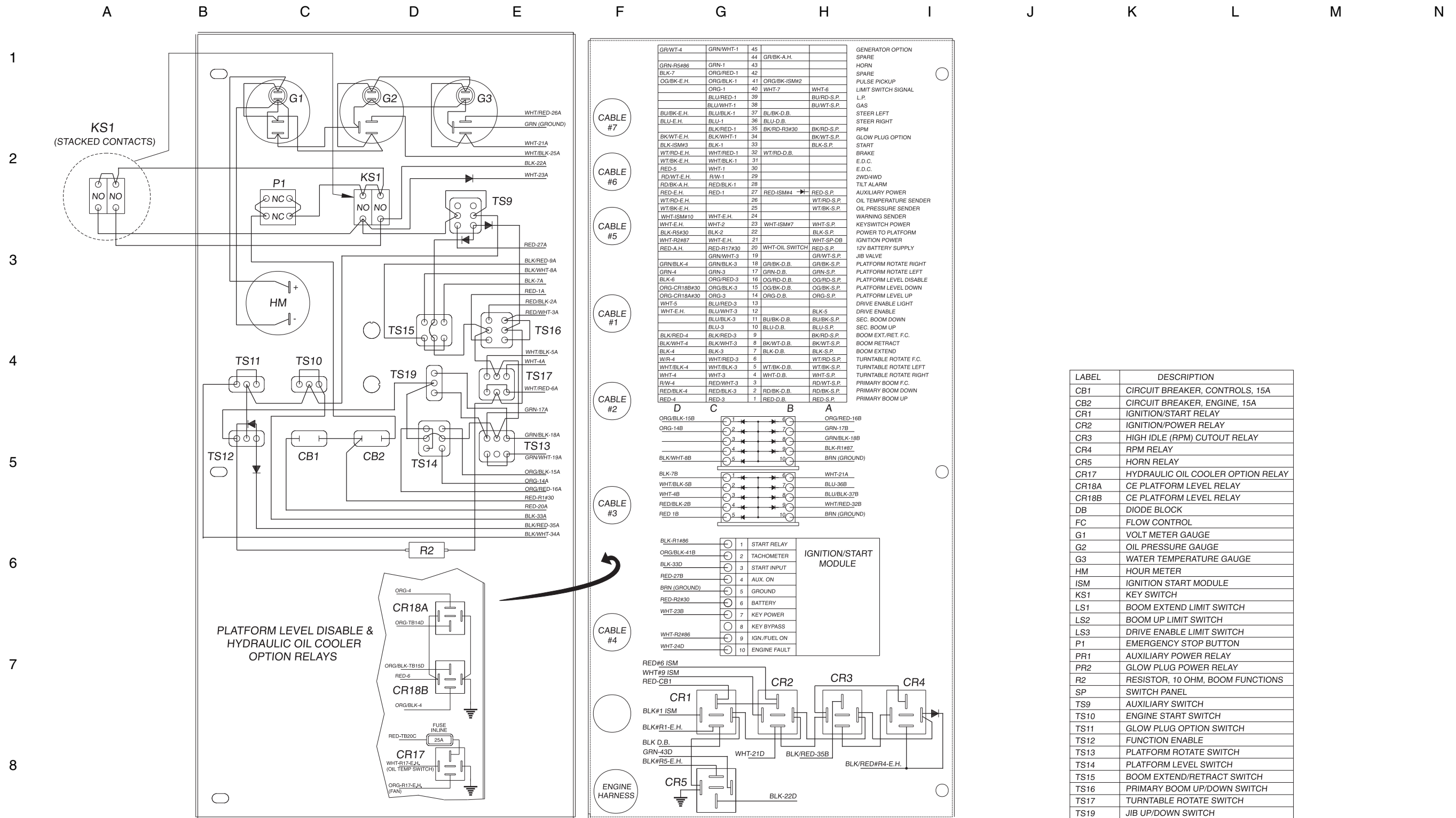
**Electrical Schematic-
Deutz Diesel Models**



**Ground Control Box Wiring Diagram-
Deutz Diesel Models**



Ground Control Box Wiring Diagram- Deutz Diesel Models



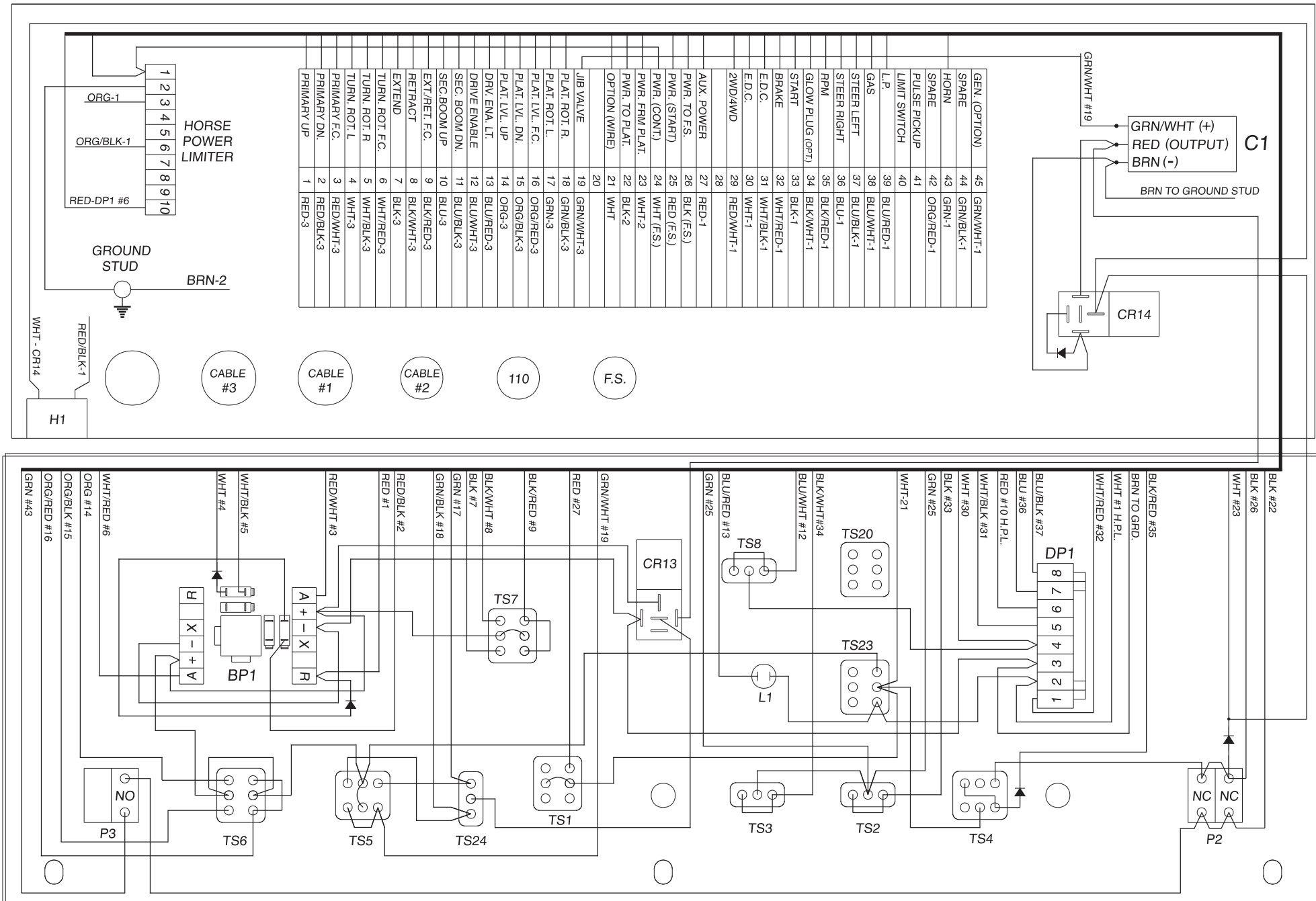
GRWT-4	GRN/WHT-1	45	GR/BK-A.H.		GENERATOR OPTION
GRN-R5#86	GRN-1	43			SPARE
BLK-7	ORG/RED-1	42			HORN
OG/BK-E.H.	ORG/BLK-1	41	ORG/BK-ISM#2		SPARE
	ORG-1	40	WHT-7	WHT-6	PULSE PICKUP
	BLU/RED-1	39		BU/RD-S.P.	LIMIT SWITCH SIGNAL
	BLU/WHT-1	38		BU/WT-S.P.	L.P.
BU/BK-E.H.	BLU/BLK-1	37	BL/BK-D.B.		GAS
BLU-E.H.	BLU-1	36	BLU-D.B.		STEER LEFT
	BLK/RED-1	35	BK/RD-R3#30	BK/RD-S.P.	STEER RIGHT
BK/WT-E.H.	BLK/WHT-1	34		BK/WT-S.P.	RPM
BLK-ISM#3	BLK-1	33		BLK-S.P.	GLOW PLUG OPTION
WT/RD-E.H.	WHT/RED-1	32	WT/RD-D.B.		START
WT/BK-E.H.	WHT/BLK-1	31			BRAKE
RED-5	WHT-1	30			E.D.C.
					E.D.C.
RD/WT-E.H.	R/W-1	29			2WD/4WD
RD/BK-A.H.	RED/BLK-1	28			TLT ALARM
RED-E.H.	RED-1	27	RED-ISM#4	RED-S.P.	AUXILIARY POWER
WT/RD-E.H.		26		WT/RD-S.P.	OIL TEMPERATURE SENDER
WT/BK-E.H.		25		WT/BK-S.P.	OIL PRESSURE SENDER
WHT-ISM#10	WHT-E.H.	24			WARNING SENDER
WHT-E.H.	WHT-2	23	WHT-ISM#7	WHT-S.P.	KEYSWITCH POWER
BLK-R5#30	BLK-2	22		BLK-S.P.	POWER TO PLATFORM
WHT-R2#87	WHT-E.H.	21		WHT-SP-DB	IGNITION POWER
RED-A.H.	RED-R17#30	20	WHT-OIL SWITCH	RED-S.P.	12V BATTERY SUPPLY
	GRN/WHT-3	19		GRWT-S.P.	JIB VALVE
GRN/BLK-4	GRN/BLK-3	18	GR/BK-D.B.	GR/BK-S.P.	PLATFORM ROTATE RIGHT
GRN-4	GRN-3	17	GRN-D.B.	GRN-S.P.	PLATFORM ROTATE LEFT
BLK-6	ORG/RED-3	16	OG/RD-D.B.	OG/RD-S.P.	PLATFORM LEVEL DISABLE
ORG-CR18B#30	ORG/BLK-3	15	OG/BK-D.B.	OG/BK-S.P.	PLATFORM LEVEL DOWN
ORG-CR18A#30	ORG-3	14	ORG-D.B.	ORG-S.P.	PLATFORM LEVEL UP
WHT-5	BLU/RED-3	13			DRIVE ENABLE LIGHT
WHT-E.H.	BLU/WHT-3	12		BLK-5	DRIVE ENABLE
				BLU-D.B.	SEC. BOOM DOWN
BLK/RED-4	BLK/RED-3	9		BLU-S.P.	SEC. BOOM UP
BLK/WHT-4	BLK/WHT-3	8	BK/WT-D.B.	BK/WT-S.P.	BOOM EXT./RET. F.C.
BLK-4	BLK-3	7	BLK-D.B.	BLK-S.P.	BOOM RETRACT
WR-4	WHT/RED-3	6		WT/RD-S.P.	BOOM EXTEND
WHT/BLK-4	WHT/BLK-3	5	WT/BK-D.B.	WT/BK-S.P.	TURNTABLE ROTATE F.C.
WHT-4	WHT-3	4	WHT-D.B.	WHT-S.P.	TURNTABLE ROTATE LEFT
R/W-4	RED/WHT-3	3		RD/WT-S.P.	TURNTABLE ROTATE RIGHT
RED/BLK-4	RED/BLK-3	2	RD/BK-D.B.	RD/BK-S.P.	PRIMARY BOOM DOWN
RED-4	RED-3	1	RED-D.B.	RED-S.P.	PRIMARY BOOM UP

LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, CONTROLS, 15A
CB2	CIRCUIT BREAKER, ENGINE, 15A
CR1	IGNITION/START RELAY
CR2	IGNITION/POWER RELAY
CR3	HIGH IDLE (RPM) CUTOOUT RELAY
CR4	RPM RELAY
CR5	HORN RELAY
CR17	HYDRAULIC OIL COOLER OPTION RELAY
CR18A	CE PLATFORM LEVEL RELAY
CR18B	CE PLATFORM LEVEL RELAY
DB	DIODE BLOCK
FC	FLOW CONTROL
G1	VOLT METER GAUGE
G2	OIL PRESSURE GAUGE
G3	WATER TEMPERATURE GAUGE
HM	HOUR METER
ISM	IGNITION START MODULE
KS1	KEY SWITCH
LS1	BOOM EXTEND LIMIT SWITCH
LS2	BOOM UP LIMIT SWITCH
LS3	DRIVE ENABLE LIMIT SWITCH
P1	EMERGENCY STOP BUTTON
PR1	AUXILIARY POWER RELAY
PR2	GLOW PLUG POWER RELAY
R2	RESISTOR, 10 OHM, BOOM FUNCTIONS
SP	SWITCH PANEL
TS9	AUXILIARY SWITCH
TS10	ENGINE START SWITCH
TS11	GLOW PLUG OPTION SWITCH
TS12	FUNCTION ENABLE
TS13	PLATFORM ROTATE SWITCH
TS14	PLATFORM LEVEL SWITCH
TS15	BOOM EXTEND/RETRACT SWITCH
TS16	PRIMARY BOOM UP/DOWN SWITCH
TS17	TURNTABLE ROTATE SWITCH
TS19	JIB UP/DOWN SWITCH

REV A

Platform Control Box Wiring Diagram- Deutz Diesel Models

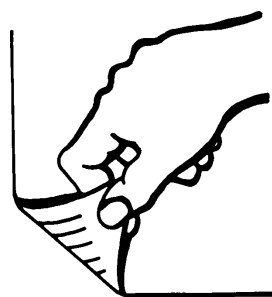
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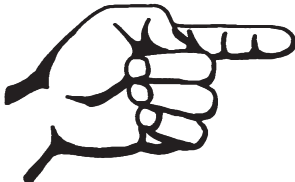
LABEL	DESCRIPTION
BP1	BOOM PROPORTIONAL JOYSTICK PRIMARY UP/DOWN & TURNTABLE ROTATE
C1	DELAY CAPACITOR
CR13	JIB LOCKOUT RELAY
CR14	PLATFORM ROTATOR RELAY
DP1	BOOM PROPORTIONAL JOYSTICK STEER LEFT/RIGHT
H1	TILT ALARM
L1	DRIVE ENABLE LED
P2	EMERGENCY STOP BUTTON
P3	KEY SWITCH
TS1	AUXILIARY SWITCH
TS2	ENGINE START SWITCH
TS3	GLOW PLUG SWITCH (OPTION)
TS4	HIGH RPM SWITCH
TS5	PLATFORM ROTATE SWITCH (S45 SHOWN)
TS6	PLATFORM LEVEL SWITCH
TS7	BOOM EXTEND/RETRACT SWITCH
TS8	DRIVE ENABLE SWITCH
TS24	JIM BOOM SWITCH (S45 ONLY)
TS20	GENERATOR SWITCH (OPTION)

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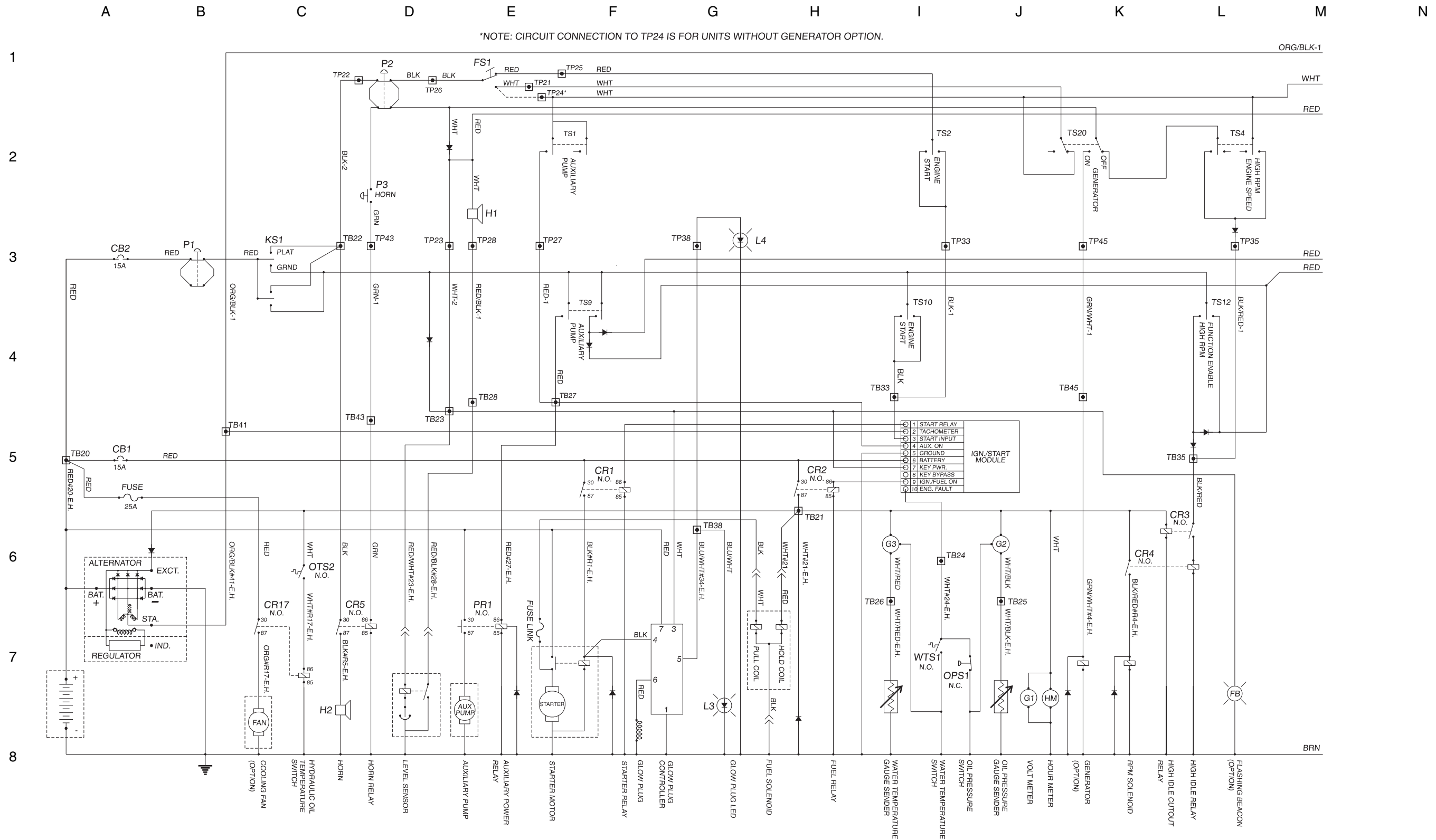
**Platform Control Box Wiring Diagram-
Deutz Diesel Models**



**Electrical Schematic-
Perkins Diesel Models**



Electrical Schematic- Perkins Diesel Models



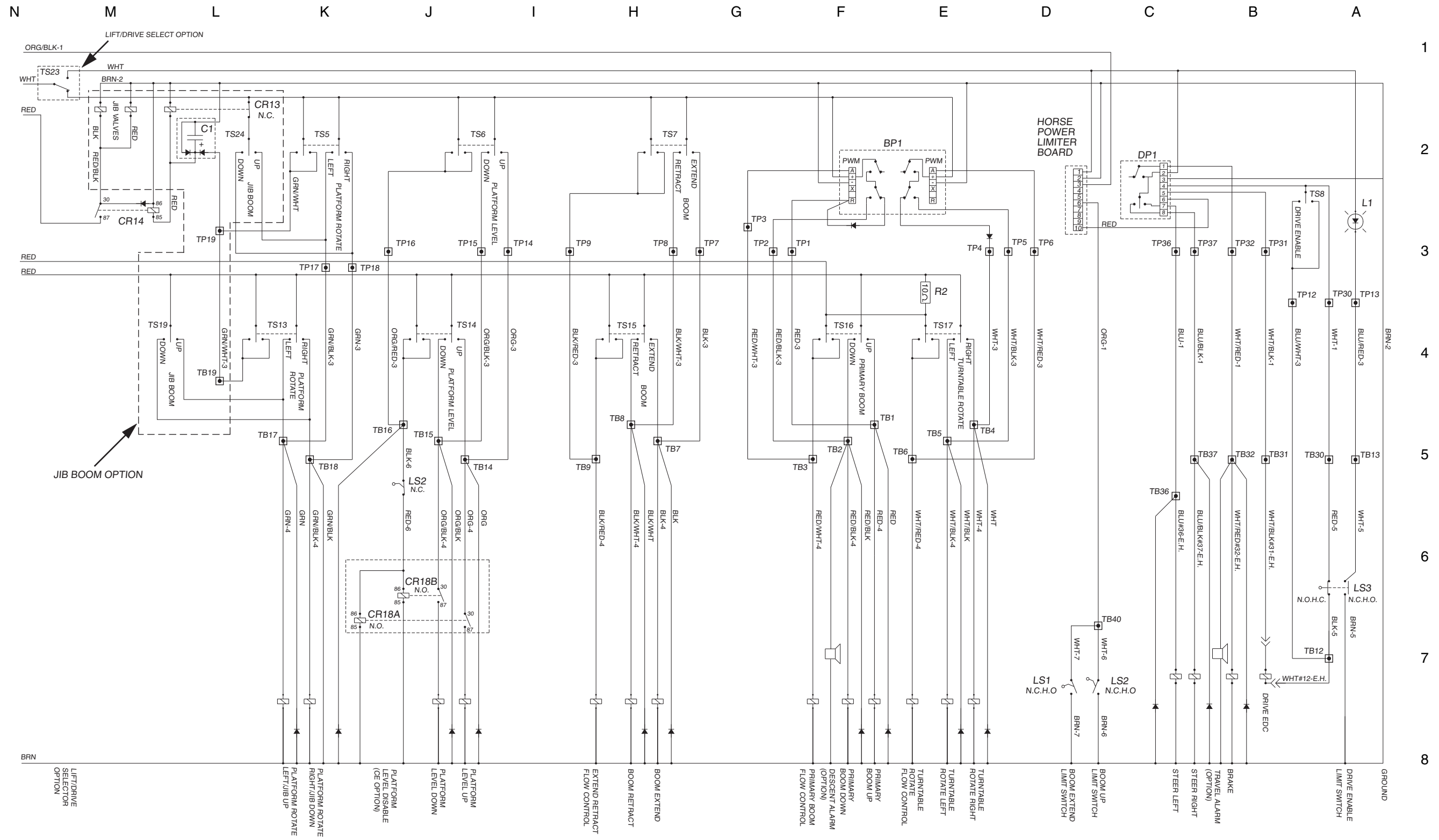
*NOTE: CIRCUIT CONNECTION TO TP24 IS FOR UNITS WITHOUT GENERATOR OPTION.

ORG/BLK-1

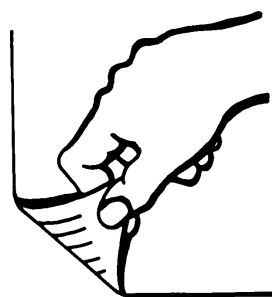
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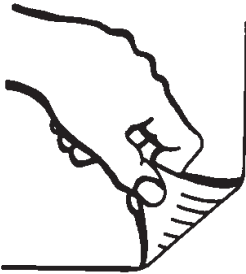
Electrical Schematic- Perkins Diesel Models



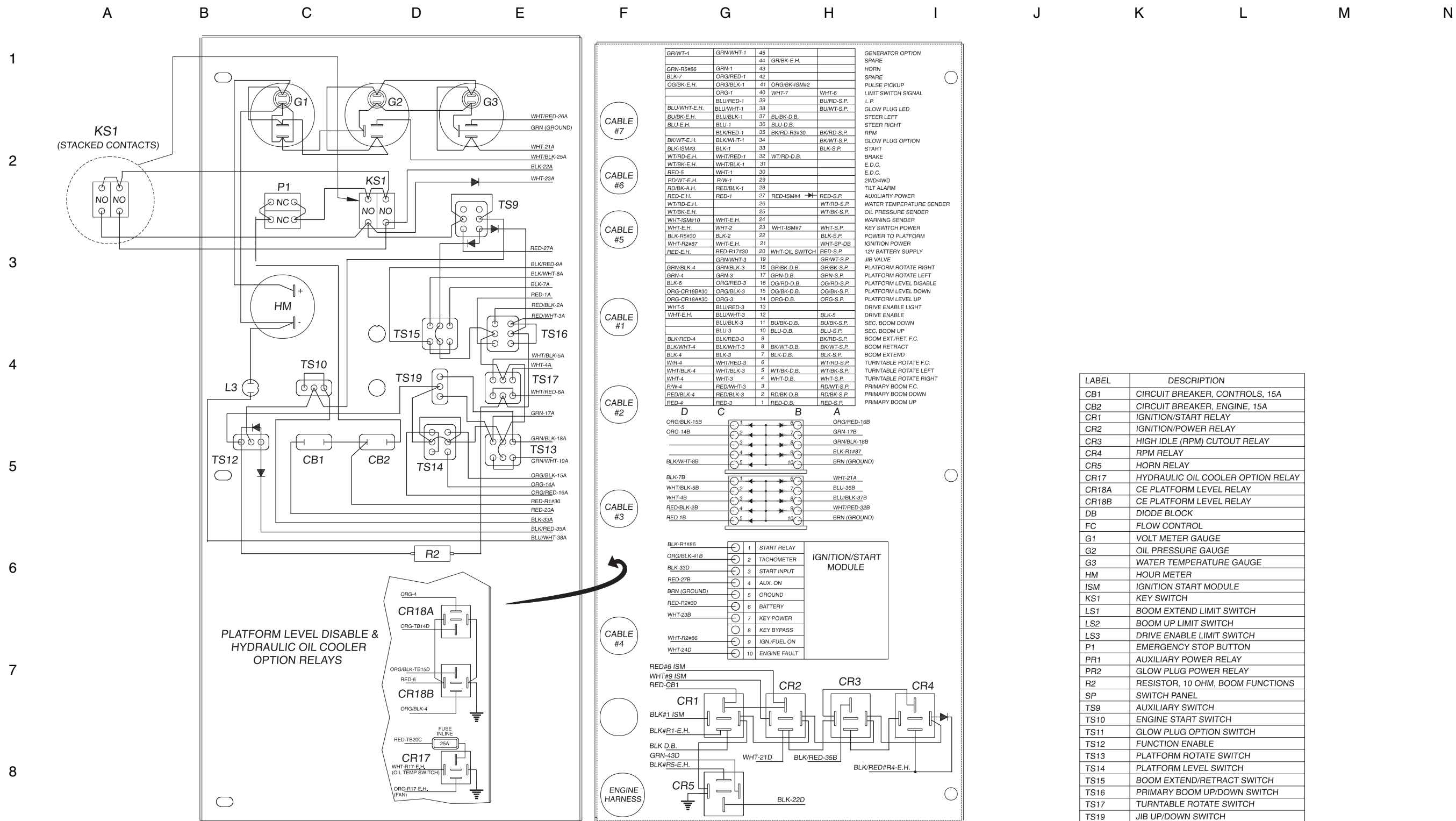
**Electrical Schematic-
Perkins Diesel Models**



**Ground Control Box Wiring Diagram-
Perkins Diesel Models**



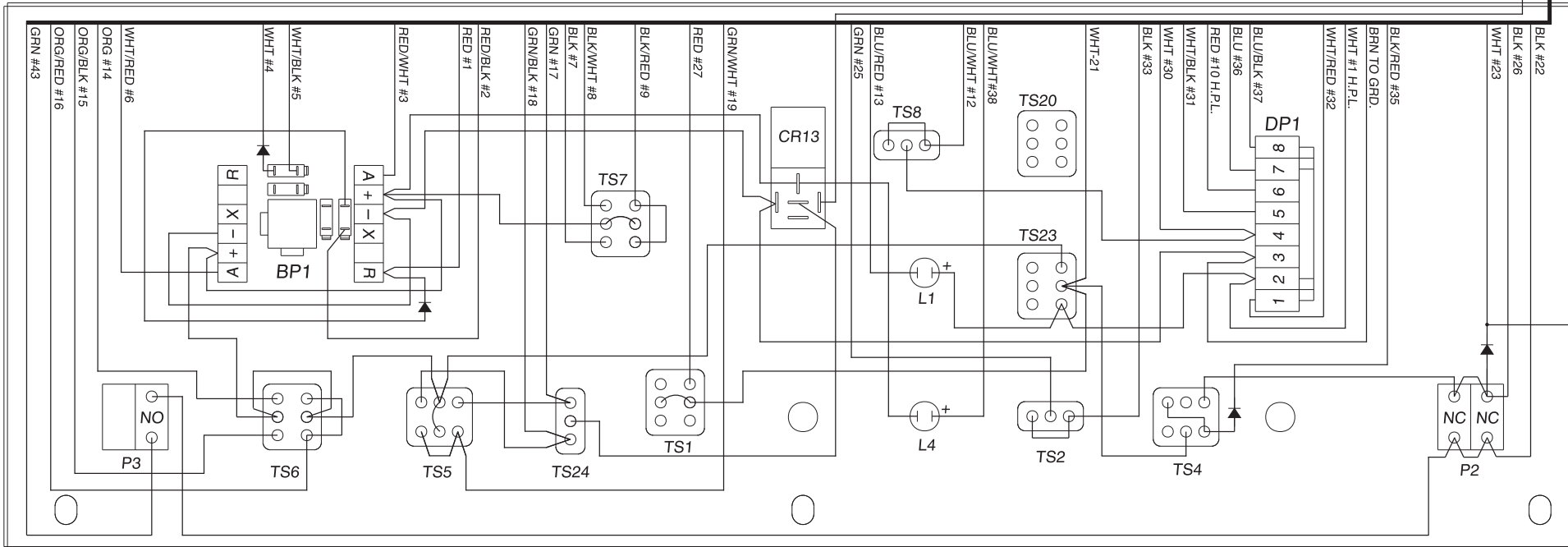
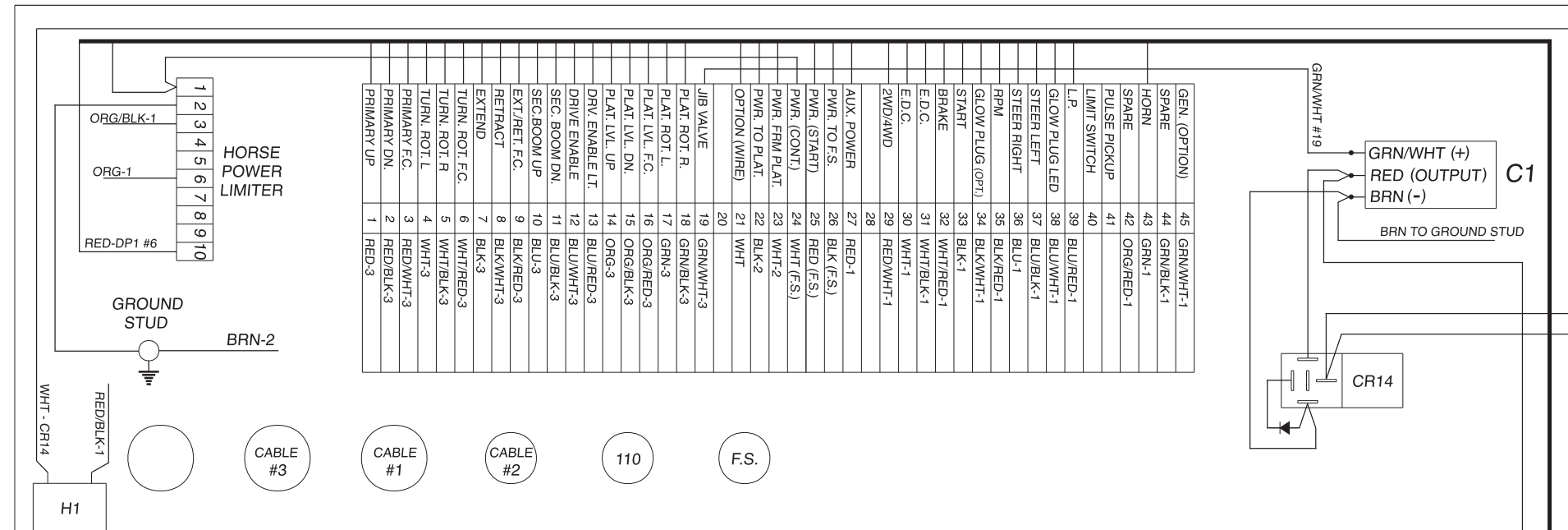
Ground Control Box Wiring Diagram- Perkins Diesel Models



LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, CONTROLS, 15A
CB2	CIRCUIT BREAKER, ENGINE, 15A
CR1	IGNITION/START RELAY
CR2	IGNITION/POWER RELAY
CR3	HIGH IDLE (RPM) CUTOFF RELAY
CR4	RPM RELAY
CR5	HORN RELAY
CR17	HYDRAULIC OIL COOLER OPTION RELAY
CR18A	CE PLATFORM LEVEL RELAY
CR18B	CE PLATFORM LEVEL RELAY
DB	DIODE BLOCK
FC	FLOW CONTROL
G1	VOLT METER GAUGE
G2	OIL PRESSURE GAUGE
G3	WATER TEMPERATURE GAUGE
HM	HOUR METER
ISM	IGNITION START MODULE
KS1	KEY SWITCH
LS1	BOOM EXTEND LIMIT SWITCH
LS2	BOOM UP LIMIT SWITCH
LS3	DRIVE ENABLE LIMIT SWITCH
P1	EMERGENCY STOP BUTTON
PR1	AUXILIARY POWER RELAY
PR2	GLOW PLUG POWER RELAY
R2	RESISTOR, 10 OHM, BOOM FUNCTIONS
SP	SWITCH PANEL
TS9	AUXILIARY SWITCH
TS10	ENGINE START SWITCH
TS11	GLOW PLUG OPTION SWITCH
TS12	FUNCTION ENABLE
TS13	PLATFORM ROTATE SWITCH
TS14	PLATFORM LEVEL SWITCH
TS15	BOOM EXTEND/RETRACT SWITCH
TS16	PRIMARY BOOM UP/DOWN SWITCH
TS17	TURNTABLE ROTATE SWITCH
TS19	JIB UP/DOWN SWITCH

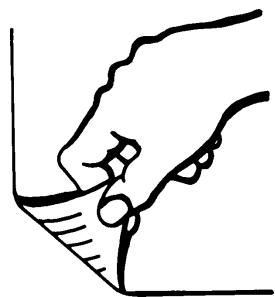
Platform Control Box Wiring Diagram- Perkins Diesel Models

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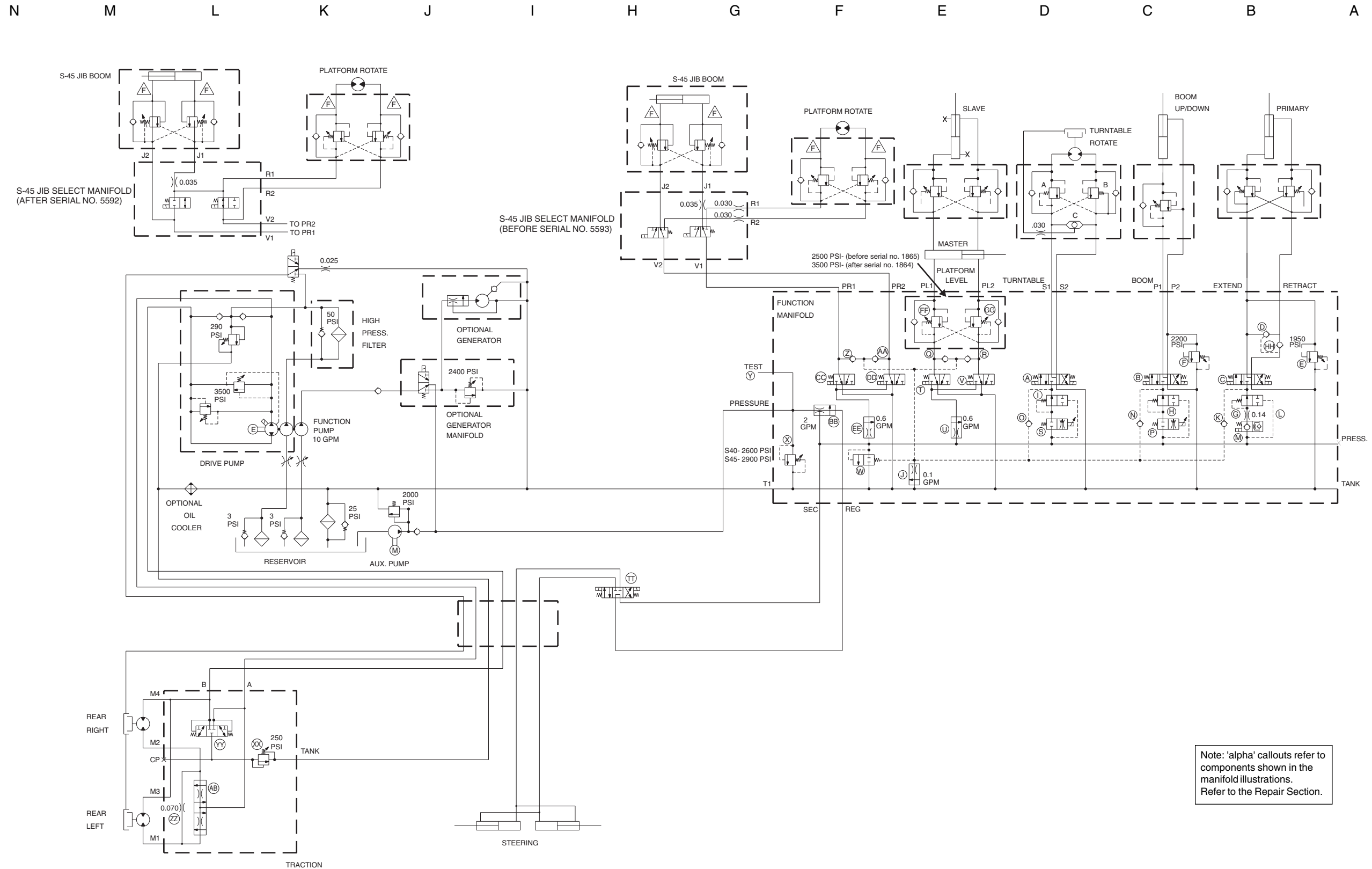
LABEL	DESCRIPTION
BP1	BOOM PROPORTIONAL JOYSTICK PRIMARY UP/DOWN & TURNABLE ROTATE
C1	DELAY CAPACITOR
CR13	JIB LOCKOUT RELAY
CR14	PLATFORM ROTATOR RELAY
DP1	BOOM PROPORTIONAL JOYSTICK STEER LEFT/RIGHT
H1	TILT ALARM
L1	DRIVE ENABLE LED
P2	EMERGENCY STOP BUTTON
P3	KEY SWITCH
TS1	AUXILIARY SWITCH
TS2	ENGINE START SWITCH
TS3	GLOW PLUG SWITCH (OPTION)
TS4	HIGH RPM SWITCH
TS5	PLATFORM ROTATE SWITCH (S45 SHOWN)
TS6	PLATFORM LEVEL SWITCH
TS7	BOOM EXTEND/RETRACT SWITCH
TS8	DRIVE ENABLE SWITCH
TS24	JIB BOOM SWITCH (S45 ONLY)
TS20	GENERATOR SWITCH (OPTION)

**Platform Control Box Wiring Diagram-
Perkins Diesel Models**



REV A

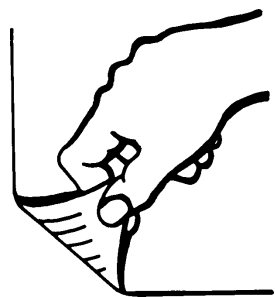
S-40/45 2WD Hydraulic Schematic Non-Oscillating Axle



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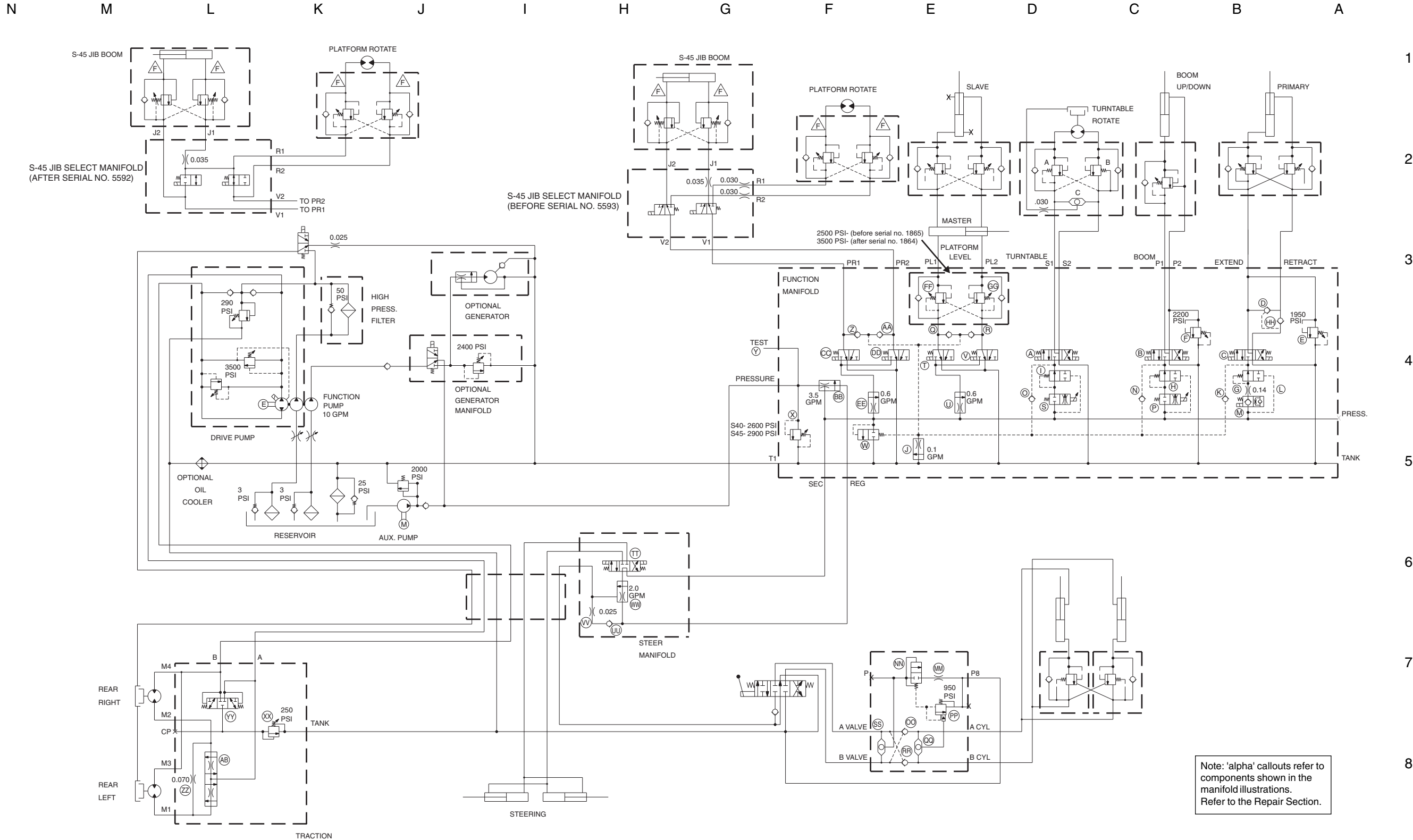
Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

**S-40/45 2WD Hydraulic Schematic
Non-Oscillating Axle**

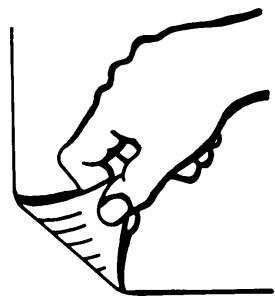


REV A

S-40/45 2WD Hydraulic Schematic Oscillating Axle

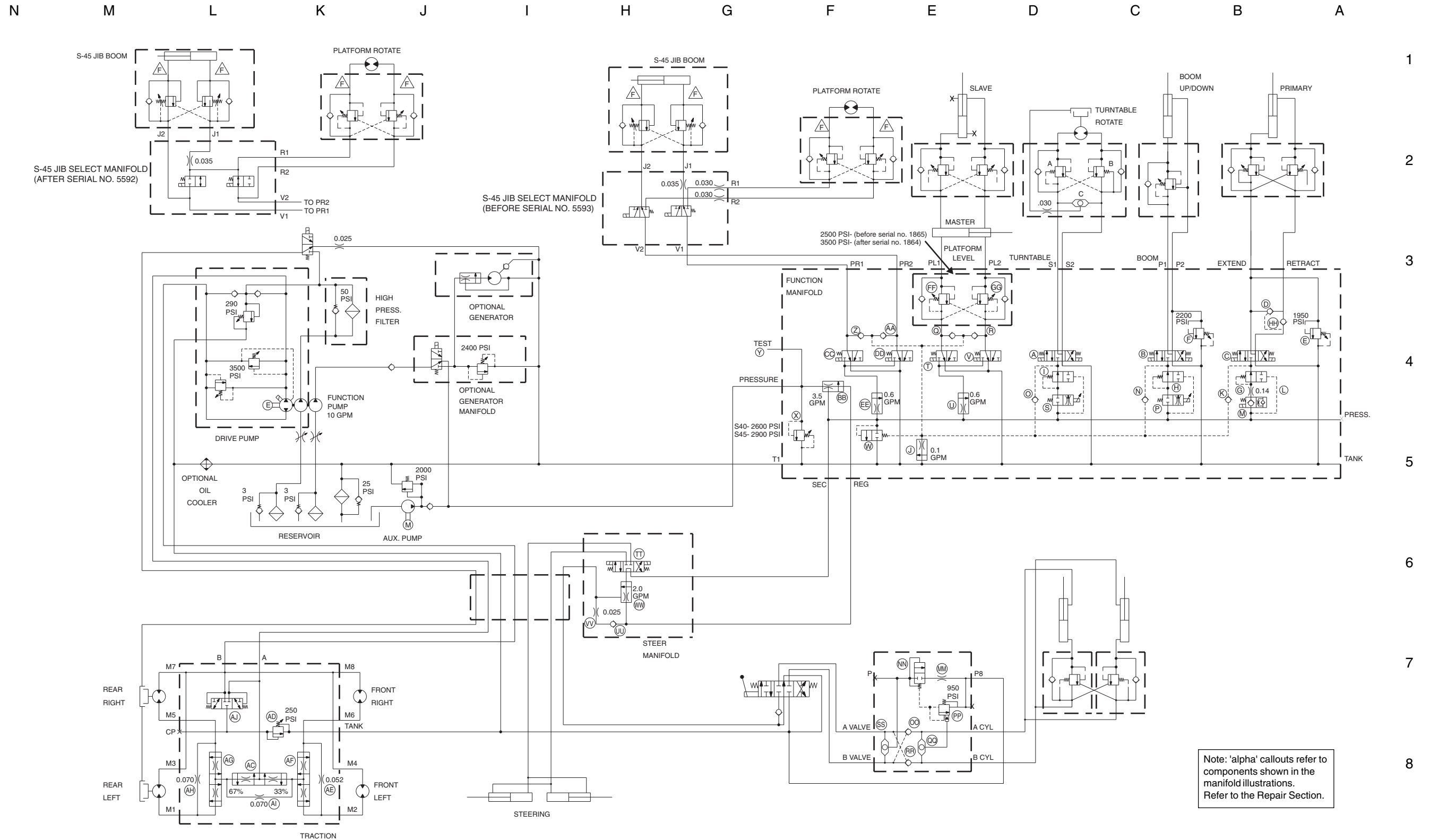


**S-40/45 2WD Hydraulic Schematic
Oscillating Axle**



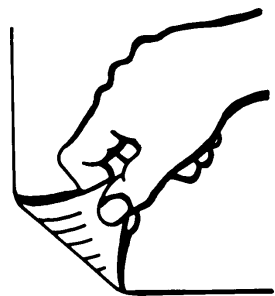
REV A

S-40/45 4WD Hydraulic Schematic Oscillating Axle



Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

**S-40/45 4WD Hydraulic Schematic
Oscillating Axle**



REV A

Repair Procedures



Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie S-40 & Genie S-45 Operator's Manual*.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a flat, level surface
 - Boom in the stowed position
 - Turntable rotated with the boom between the non-steering wheels
 - Turntable secured with the turntable rotation lock pin
 - Key switch in the off position with the key removed
 - Wheels chocked

About This Section

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

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

Symbols Legend



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

▲ DANGER

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

▲ WARNING

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

▲ CAUTION

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

CAUTION

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

NOTICE

Green—used to indicate operation or maintenance information.

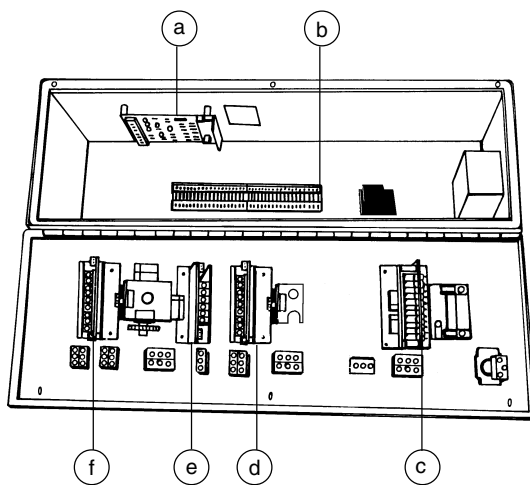
- ⊙ Indicates that a specific result is expected after performing a series of steps.

Platform Controls

REV A

1-1 Joystick Controllers

Maintaining joystick controllers at the proper settings is essential to safe machine operation. Every joystick controller should operate smoothly and provide proportional speed control over its entire range of motion.



Platform control box
 a horsepower limiter board
 b terminals
 c drive controller
 d extend/retract controller
 e boom controller
 f turntable rotate controller

Boom Up/Down Controller Adjustments

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

NOTICE Do not adjust the controllers unless the static battery voltage is above 12V DC and the alternator is operating properly with 13.6 to 14.5V DC output.

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

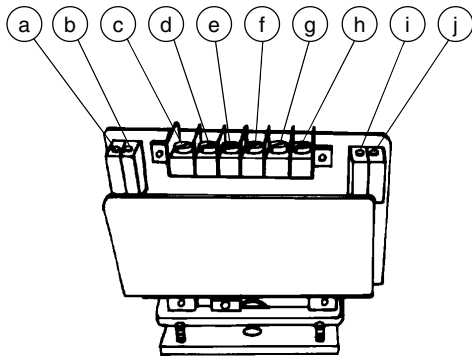
- Max out trim potentiometer (max out trimpot)
- High range trim potentiometer (max out trimpot)
- Lo range trim potentiometer (lo range trimpot)
- Dual range trim potentiometer (lo range trimpot)
- Threshold trim potentiometer (threshold trimpot)
- Ramp rate trim potentiometer (ramp rate trimpot)

- 1 Check the battery condition with a volt meter. The reading should be 12V DC or more to accurately adjust the controller.
- 2 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls. Do not start the engine.

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PLATFORM CONTROLS

- 3 Open the platform control box lid and locate the boom up/down controller.



- a ramp rate trimpot
- b lo range trimpot
- c terminal "R" activates max out range
- d (not used)
- e terminal "X" (not used)
- f terminal "-" ground
- g terminal "+" positive
- h terminal "A" proportional output
- i threshold trimpot
- j max out trimpot

- 4 Set the preliminary ramp rate: Turn the ramp rate trimpot adjustment screw counterclockwise 15 turns or until you hear a repeated click.
- 5 Connect the red(+) lead from a volt meter to the "A" terminal on the controller printed circuit board. Connect the black(-) lead to ground.
- 6 Set the threshold: Press down the foot switch, then slowly move the control handle off center until the moment a voltage reading appears. Adjust the voltage to 3.5V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

- 7 Set the max out: Press down the foot switch, then move the control handle all the way to the UP position. Adjust the voltage to 6.5V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 8 Set the lo range: Press down the foot switch, then move the control handle all the way to the DOWN position. Adjust the voltage to 4.8V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 9 Start the engine and move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol). Lower the boom to the stowed position.

NOTICE Engine should be at normal operating temperature.

- 10 Start a timer and record how long it takes for the boom to fully raise. Adjust the max out trimpot to achieve a 40 to 44 second cycle time. Turn the max out trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.
- 11 Start a timer and record how long it takes for the boom to fully lower. Adjust the lo range trimpot to achieve an 50 to 60 second cycle time. Turn the lo range trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.

NOTICE If the function cycle time is not achievable, check the relief valve pressure. See 11-2, *Valve Adjustments - Function Manifold*.

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- 12 Turn the engine off.
- 13 Pull out the red Emergency Stop button to the ON position.
- 14 Press down the foot switch and then move the control handle all the way to the up position. Record the maximum voltage reading.
- 15 Start the engine.
- 16 Start a timer and simultaneously move the control handle all the way to the up position. Note how long it takes to reach the maximum voltage recorded in step 14. This is the ramp rate.
- 17 Set the ramp rate: turn the ramp rate trimpot to obtain a 3 to 4 second ramp speed. Turn the trimpot clockwise to increase the time or counterclockwise to decrease the time.

Boom up/down specifications

Threshold	3.5V DC
Boom up - Max out Cycle time	40 to 44 seconds
Boom down - Lo range Cycle time	50 to 60 seconds
Ramp rate	3 to 4 seconds

Turntable Rotation Controller Adjustments

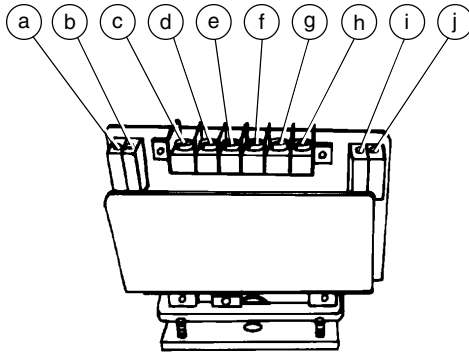
WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Do not adjust the controllers unless the static battery voltage is above 12V DC and the alternator is operating properly with 13.6 to 14.5V DC output.

- 1 Check the battery condition with a volt meter. The reading should be 12V DC or more to accurately adjust the controller.
- 2 Turn the key switch to platform control and pull out the red Emergency Stop button to the ON position at both the ground and platform controls. Do not start the engine.
- 3 Open the platform control box lid and locate the turntable rotation controller. Refer to the platform control box illustration, page 7-2.

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PLATFORM CONTROLS



- a ramp rate trimpot
- b lo range trimpot
- c terminal "R" activates max out range
- d (not used)
- e terminal "X" (not used)
- f terminal "-" ground
- g terminal "+" positive
- h terminal "A" proportional output
- i threshold trimpot
- j hi range trimpot

- 4 Set the preliminary ramp rate: Turn the ramp rate trimpot adjustment screw counterclockwise 15 turns or until you hear a repeated click.
- 5 Connect the red(+) lead from a volt meter to the "A" terminal on the controller printed circuit board. Connect the black(-) lead to ground.
- 6 Set the threshold: Press down the foot switch, then slowly move the control handle off center until the moment a voltage reading appears. Adjust the voltage to 3.5V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 7 Set the max out: Press down the foot switch, fully retract the boom, then move the control handle all the way to the left or right. Adjust the voltage to 5.7V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

NOTICE Engine should be at normal operating temperature.

- 8 Fully retract the boom, then start a timer and record how long it takes the turntable to rotate through a complete circle. Adjust the max out trimpot to achieve a 78 to 83 second cycle time. Turn the max out trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.

NOTICE If the function cycle time is not achievable, check the relief valve pressure. See 11-2, *Valve Adjustments - Function Manifold*.

- 9 Turn the engine off.
- 10 Pull out the Emergency Stop button to the on position.
- 11 Press down the foot switch and then move the control handle all the way to the left or right. Record the maximum voltage reading.
- 12 Start the engine.

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13 Start a timer and simultaneously move the control handle all the way to the left or right. Note how long it takes to reach the maximum voltage recorded in step 14. This is the ramp rate.

14 Set the ramp rate: Turn the ramp rate trimpot to obtain a 5 second ramp speed. Turn the ramp rate trimpot clockwise to increase the time or counterclockwise to decrease the time.

Turntable rotation specifications

Threshold	3.5V DC
<hr/>	
Turntable rotation -	
Max out	
Cycle time	78 to 83 seconds
<hr/>	
Ramp rate	5 seconds
<hr/>	

1-2 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.

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PLATFORM CONTROLS

How to Adjust the Horsepower Limiter Board

NOTICE The engine rpm must be correct before performing this procedure. See Maintenance Procedure B-11, *Check and Adjust the Engine RPM*.

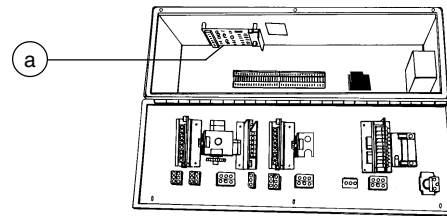
NOTICE Do not adjust the horsepower limiter board unless the static battery voltage is above 12V DC and the alternator is operating properly with 12.5 to 14.5V DC output.

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

1 Remove the fasteners from the platform control box lid.

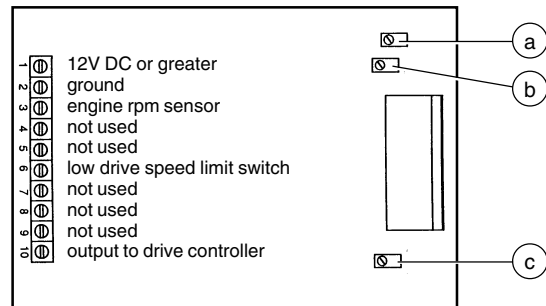
2 Open the control box lid and locate the horsepower limiter board.

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



Platform control box
a horsepower limiter board

3 Connect the black(-) lead from a DC volt meter to the number 2 terminal, and the red(+) lead to the number 10 terminal.



Horsepower limiter board

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

PLATFORM CONTROLS

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- 4 Start the engine from the platform controls.
- 5 Move the engine idle control toggle 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	10.5 to 11.5V DC
-----------------	------------------

- 7 Move the engine idle control toggle switch to low idle (turtle symbol).
- 8 Press down the foot switch and adjust the "C" potentiometer to obtain the correct DC voltage reading.

Diesel Models: 0.1V DC

Gasoline/LPG Models: 3.5V DC

- 9 Move the engine idle control toggle switch to foot switch activated high idle (rabbit and foot switch 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 drop.

- 12 Disconnect the volt meter.
- 13 Raise the boom above horizontal.
- 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. Turn the "B" potentiometer clockwise to increase voltage or counterclockwise to decrease voltage.
- 16 Close the platform control box lid and install the fasteners.

Drive speed specifications

Stowed position	distance: 40 ft / 12 m	
	2WD	4WD
Gasoline/LPG models	40 ft/6.8 sec 12.2 m/6.8 sec	40 ft/7.8 sec 12.2 m/7.8 sec
Diesel models	40 ft/7.8 sec 12.2 m/7.8 sec	40 ft/9.1 sec 12.2 m/9.1 sec
Boom raised or extended	distance: 40ft / 12 m 1 foot per second	
All models	30.5 cm per second	

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PLATFORM CONTROLS

1-3 Foot Switch

How to Test the Foot Switch

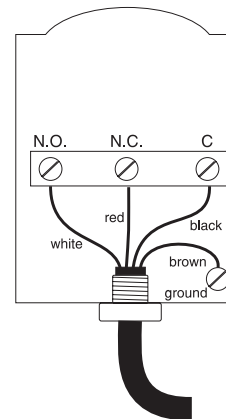
NOTICE Perform this procedure with the key switch in the off position.

- 1 Remove the foot switch cover plate fasteners from the platform.
- 2 Remove the foot switch guard mounting fasteners from the platform.
- 3 Remove the foot switch mounting fasteners that attach the foot switch to the foot switch guard.
- 4 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.
- 5 Do not press down the foot switch. Connect the leads from an ohmmeter or continuity tester to 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 (infinite Ω)

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

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



PLATFORM CONTROLS

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1-4 Toggle Switches

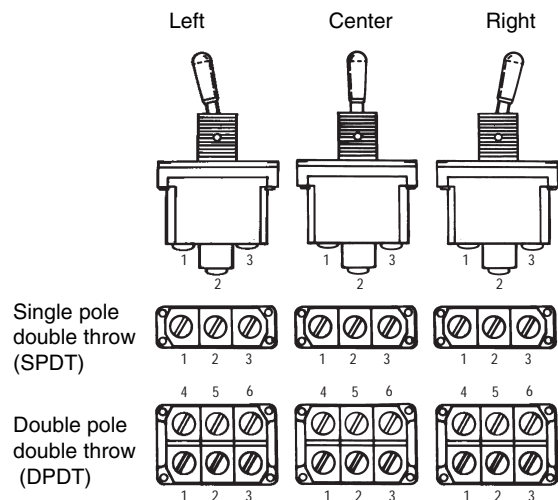
Toggle switches used for single function switching are single pole double throw (SPDT) switches. Dual function switching requires a double pole double throw (DPDT) switch.

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 to on right to check for continuity.



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

Platform Components

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2-1 Platform

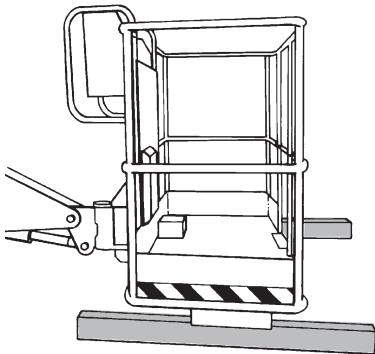
How to Remove the Platform

- 1 Open the platform control box.
- 2 Disconnect the foot switch wiring from the terminal strip inside the platform control box. Remove the cable from the machine.
- 3 Remove the platform control box mounting fasteners. Lower the control box and set it aside.

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

- 4 Raise the boom and place saw horses of ample capacity under the platform mounting weldment. Lower the boom until the platform is resting on the saw horses just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the saw horses.



- 5 Remove the platform mounting fasteners and remove the platform from the machine.

WARNING Crushing hazard. The platform could become unstable and fall if it is not properly supported.

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 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 to correct a malfunction, bleed the slave cylinder to be sure there is no air in the closed loop hydraulic circuit.

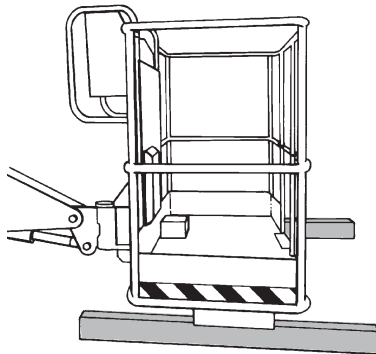
NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Adjust the platform to a level position.
- 2 Extend the boom until the slave cylinder barrel-end pivot pin is accessible.

PLATFORM COMPONENTS

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- 3 Raise the boom slightly and place saw horses of ample capacity under the platform mounting weldment. Lower the boom until the platform is resting on the saw horses just enough to support the platform.



NOTICE Do not rest the entire weight of the boom on the saw horses.

- 4 Protect the slave cylinder rod from damage.

S-40 Models:

- 5 Tag, disconnect and plug the hydraulic hoses from the slave cylinder at the union located near the platform rotate counterbalance valve manifold and connect them together using 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.

S-45 Models:

- 6 Tag, disconnect and plug the slave cylinder hoses at the union.
- 7 Pull the slave cylinder hoses through the platform rotator.
- 8 Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Do not remove the pin.
- 9 Remove the external retaining fastener from the barrel-end pivot pin.
- 10 Use a soft metal drift to drive the rod-end pivot pin out.
- 11 Use a soft metal drift and drive the barrel-end pin out.
- 12 Carefully pull the cylinder out of the boom.

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

How to Bleed the Slave Cylinder

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

- 1 Raise the boom to a horizontal position.
- 2 Move the platform level toggle switch up and down through two platform leveling cycles to remove any air that might be in the system.

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PLATFORM COMPONENTS

2-3**Platform Rotator**

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

How to Remove the Platform Rotator

CAUTION Component damage hazard. Mark the platform mounting weldment and the rotator flange before removing the platform mounting weldment. The platform mounting weldment must be replaced in the exact same position on the rotator flange as it was before removal. If a new rotator is installed or the rotator is disassembled, proper alignment can be achieved by rotating the rotator all the way to the left and then installing the platform mounting weldment all the way in the left position.

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

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

S-40 Models:

- 2 Tag, disconnect and plug the hydraulic hoses from the platform rotator. Cap the fittings on the rotator.

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

S-45 Models:

- 3 Tag and disconnect the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located on the platform rotator and connect them together using a connector. Cap the fittings on the manifold.
- 4 Support the platform leveling arms and platform mounting weldment with an appropriate lifting device, but do not apply any lifting pressure.

All Models:

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

WARNING Crushing hazard. The platform mounting weldment could become unbalanced and fall if it is not properly supported.

- 6 Support the platform rotator with an appropriate lifting device. Do not apply any lifting pressure.

PLATFORM COMPONENTS

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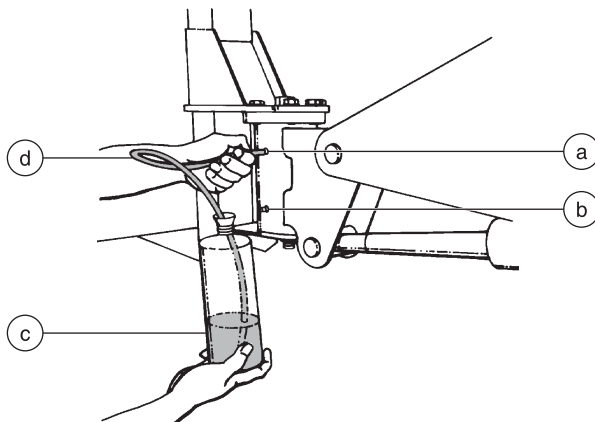
- 7 Support the platform leveling slave cylinder. Protect the cylinder rod from damage.
- 8 Remove the pin retaining fasteners from both the slave cylinder rod-end pivot pin, and the rotator pivot pin.
- 9 Use a soft metal drift to drive both pins out, then remove the platform rotator from the machine.
- 2 Move the platform rotate toggle switch to the left and then to the right through two platform rotation cycles, continue holding the switch to the right until the platform is fully rotated to the right.
- 3 Open the top bleed valve, but do not remove it.
- 4 Move the platform rotate toggle switch to the left until the platform is fully rotated to the left. Continue holding the switch until air stops coming out of the bleed valve. Close the bleed valve.

WARNING Crushing hazard. The platform rotator could become unbalanced and fall if it is not properly supported.

How to Bleed the Platform Rotator

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

- 1 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any drainage. Secure the container to the boom.



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

WARNING Crushing hazard. Keep clear of the platform during rotation.

- 5 Connect the clear hose to the bottom bleed valve. Open the bottom bleed valve, but do not remove it.
- 6 Hold the platform rotate toggle switch to the right until the platform is fully rotated to the right. Continue holding the switch until air stops coming out of the bleed valve. Close the bleed valve.

WARNING Crushing hazard. Keep clear of the platform during rotation.

- 7 Remove the hose from the bleed valve and clean up any hydraulic oil that may have spilled.
- 8 Rotate the platform full right, then full left and inspect the bleed valves for leaks.

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Jib Boom Components, S-45 Models

3-1 Jib Boom

How to Remove the Jib Boom

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform mounting weldment, and the platform rotator. See 2-3, *How to Remove the Platform Rotator*.
- 3 From the ground controls, raise the jib boom to a horizontal position.
- 4 Support the jib boom with a strap from an overhead crane.
- 5 Tag, disconnect and plug the hydraulic hoses from the jib 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.

- 6 Remove the hose cover, hoses and cables from the side of the jib boom and set them aside.

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

- 7 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.
- 8 Remove the pin retaining fasteners from the jib boom lift cylinder barrel-end pivot pin. Do not remove the pin.
- 9 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.
- 10 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin.
- 11 Use a soft metal drift to remove the jib boom lift cylinder barrel-end pivot pin, then remove the jib boom cylinder.

WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

- 12 Remove the pin retaining fasteners from the jib boom pivot pin. Use a soft metal drift to remove the pin, then remove the jib boom from the bellcrank.

WARNING Crushing hazard. The jib boom could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

JIB BOOM COMPONENTS, S-45 MODELS

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3-2 Jib Boom Lift Cylinder, S-45 Models

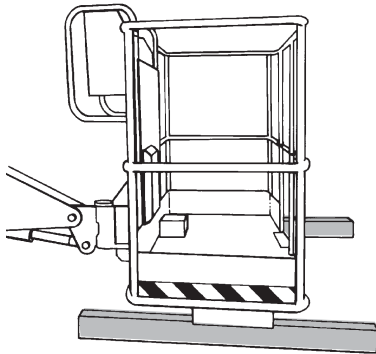
How to Remove the Jib Boom Lift Cylinder

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

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

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

NOTICE Do not rest the entire weight of the boom on the blocks.



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

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

- 2 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.
- 3 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Lower one of the leveling arms to the ground. Tap the pin the opposite direction and lower the second leveling arm. Do not remove the pin.
- 4 Attach a strap from an overhead crane to the jib boom lift cylinder.
- 5 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.
- 6 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 could become unbalanced and fall when it is removed from the machine if it is not properly supported.

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Boom Components

4-1 Cable Track

The boom cable track guides 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 boom cable track is necessary when performing major repairs that involve removing the boom.

How to Remove the Cable Track

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

- 1 Open the platform control box and remove the platform control box mounting fasteners.
- 2 Disconnect the foot switch wiring from the terminal strip inside the platform control box. Remove the cable from the machine.

S-45 Models:

- 3 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located near the platform rotator. Cap the fittings on the manifold.

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

- 4 Tag, disconnect and plug the hydraulic hoses from the platform leveling cylinder at the union and connect the hoses from the cylinder together using a connector.

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

- 5 Raise the boom to a horizontal position.
- 6 Remove the fasteners from the drive speed limit switch mounted on the side of the cable track at the pivot end of the boom. Do not disconnect the wiring.
- 7 Remove the fasteners from the side panel on the lower cable track, then remove the panel. Pull all of the cables out of the channel.

BOOM COMPONENTS

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- 8 Remove the cable cover on the side of the boom.
- 9 Place blocks in between the upper and lower cable tracks and secure the upper and lower tracks together.

WARNING Crushing hazard. If the upper and lower cable tracks are not properly secured together, the cable track could become unbalanced and fall when it is removed from the machine.

- 10 Remove the hose and cable clamp at the platform end of the cable track.
- 11 Attach a lifting strap from an overhead crane to the cable track.
- 12 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.
- 13 Remove the cable track mounting fasteners that attach the lower cable track to the boom.
- 14 Remove the cable track from the machine and place it on a structure capable of supporting it.

WARNING Crushing hazard. The cable track could become unbalanced and fall if it is not properly attached to the overhead crane.

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

How to Repair the Boom Cable Track

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

NOTICE A cable track repair kit is available through the Genie Industries Service Parts Department, part no. 46677. The kit includes a 4 link section of cable track, fasteners, other miscellaneous parts and detailed instructions.

- 1 Remove the boom cable track. See 4-1, *How to Remove the Boom Cable Track*.
- 2 Visually inspect the cable track and determine which 4 link section needs to be replaced.
- 3 Drill out the 4 spot welds on each side of the cable track using a $17/64$ inch drill bit. Repeat this step for the other end of the 4 link section of cable track.

CAUTION Component damage hazard. Cables and hoses can be damaged if the drill bit comes in contact with them. Protect the hoses and cables with a block of wood to prevent drilling into the hoses and cables.

- 4 Remove the retaining fasteners from upper black rollers from the 4 link section of cable track to be replaced. Remove the rollers.

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BOOM COMPONENTS

- 5 Lift up the hoses and cables and carefully remove the damaged 4 link section of cable track.

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

- 6 Remove the upper rollers from the replacement section of cable track.
- 7 Lift up the hoses and cables and carefully insert the new 4 link section of cable track.

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

- 8 Connect the ends of the replacement cable track section to the existing cable track using the fasteners provided in the kit. Do not overtighten the fasteners.

CAUTION Component damage hazard. Over tightening the fasteners will result in the cable track not rotating and it may bind during operation.

NOTICE Be sure that the fasteners are installed from the inside out so the nuts are on the outside of the cable track.

- 9 Install the black rollers onto the new section of cable track.
- 10 Install cable track onto the machine and operate the boom extend/retract function through a full cycle to ensure smooth operation of the new section of cable track.

4-2 Boom

How to Shim the Boom

- 1 Measure each upper and side wear pad.

NOTICE Replace the pad if it is less than $\frac{9}{16}$ inch / 14.3 mm thick. If the pad is more than $\frac{9}{16}$ inch / 14.3 mm thick, perform the following procedure.

- 2 Measure the bottom wear pad.

NOTICE Replace the pad if it is less than $\frac{11}{16}$ inch / 17.5 mm thick (S-40) or $\frac{9}{16}$ inch / 14.3 mm thick (S-45). If the pad is more than $\frac{11}{16}$ inch / 17.5 mm thick (S-40) or $\frac{9}{16}$ inch / 14.3 mm thick (S-45), perform the following procedure.

- 3 Extend the boom until the wear pads are accessible.
- 4 Loosen the wear pad mounting fasteners.
- 5 Install the new shims under the wear pad to obtain zero clearance and zero drag.
- 6 Tighten the mounting fasteners.
- 7 Extend and retract the boom through an entire cycle. Check for tight spots that could cause binding or scraping.

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

BOOM COMPONENTS

REV A

How to Remove the Boom

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

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform rotator and leveling slave cylinder. See 2-3, *How to Remove the Platform Rotator*.

S-45 Models:

- 3 Remove the jib boom. See 3-1, *How to Remove the Jib Boom*.
- 4 Remove the cable track. See 3-1, *How to Remove the Boom Cable Track*.
- 5 Raise the boom to a horizontal position.
- 6 Remove the turntable end cover.
- 7 Remove the retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Pull the cylinder back and secure it out of the way.

CAUTION Component damage hazard. When pulling the master cylinder back, be sure not to damage the master cylinder hoses or fittings.

- 8 Remove the fasteners from the drive speed limit switch mounted to the turntable riser at the pivot end of the boom. Do not disconnect the wiring.
- 9 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.

- 10 Attach an overhead 5 ton / 5,000 kg crane to the center point of the boom.
- 11 Attach a similar lifting device to the boom lift cylinder.
- 12 Place support blocks across the turntable under the lift cylinder.

REV A

BOOM COMPONENTS

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

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

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

15 Remove the pin retaining fastener from the boom pivot pin.

16 Remove the boom pivot pin with a soft metal drift. Carefully remove the boom from the machine.

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

How to Disassemble the 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 Boom*.
- 2 Place blocks under the extension cylinder for support.
- 3 Remove the pin retaining fastener from the extension cylinder barrel-end pivot pin at the pivot end of the boom. Use a soft metal drift to remove the pin.
- 4 Remove and label the wear pads from the platform end of the boom.

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

BOOM COMPONENTS

REV A

- 5 Support and slide the extension tube and extension cylinder out of the boom tube.

▲WARNING Crushing hazard. The extension tube could become unbalanced and fall when it is removed from the primary boom tube if it is not properly supported.

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

- 6 Remove the external snap rings from the extension cylinder rod-end pivot pins at the platform end of the extension tube. Use a soft metal drift to remove the pin.
- 7 Support and slide the extension cylinder out of the base end of the extension tube.

▲WARNING Crushing hazard. The extension cylinder could become unbalanced and fall when it is removed from the boom tube if it is not properly supported.

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

- 8 Remove and label the wear pads from the extension cylinder.

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

4-3 Boom Lift Cylinder

How to Remove the Boom Lift Cylinder

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

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

- 1 Raise the boom until the boom is horizontal.
- 2 Place support blocks across the turntable under the boom lift cylinder.
- 3 Attach an overhead 5 ton / 5,000 kg crane to the boom. Do not lift the boom.
- 4 Support the rod end of the boom lift cylinder with an appropriate lifting device.

REV A

BOOM COMPONENTS

- 5 Tag, disconnect and plug the boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 6 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Lower the lift cylinder onto the blocks. Protect the cylinder rod from damage.

▲WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if it is not properly supported.

- 7 Remove the four mounting fasteners from the lift cylinder barrel-end pivot pin mounting plate.
- 8 With the lift cylinder being supported by the overhead crane, pull the cylinder toward the platform to remove it from the machine.

▲WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if it is not properly supported.

CAUTION Component damage hazard. The cables and hydraulic hoses can be damaged if the lift cylinder is pulled across them.

4-4 Extension Cylinder

The extension cylinder extends and retracts the 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 This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could cause death or serious injury and significant component damage. Dealer service is strongly recommended.

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

- 1 Extend the boom until the extension cylinder rod-end pivot pins are accessible in the extension tube.
- 2 Remove the master cylinder. See 4-5, *How to Remove the Platform Leveling Master Cylinder*.

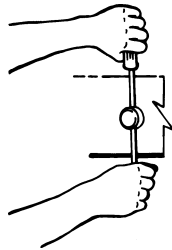
BOOM COMPONENTS

REV A

- 3 Raise the boom to a horizontal position.
- 4 Remove the external snap rings from the extension cylinder rod-end pins (at the platform end). Use a soft metal drift to remove the pins.
- 5 Remove the turntable end cover.
- 6 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.

- 7 Remove the barrel-end pivot pin retaining fasteners.
- 8 Place a rod through the barrel-end pivot pin and twist to remove the pin.



- 9 Support and slide the extension cylinder out of the pivot end of the boom.

WARNING Crushing hazard. The extension cylinder will fall when it is removed from the extension boom if it is not properly supported.

NOTICE Note the length of the cylinder after removal. The cylinder must be at the same length for installation.

REV A

BOOM COMPONENTS

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 boom motion. The master cylinder is located at the base of the boom.

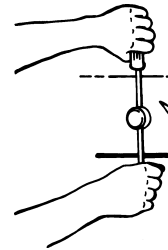
How to Remove the Platform Leveling Master Cylinder

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

- 1 Remove the turntable end cover to access the master cylinder.
- 2 Raise the boom until the master cylinder rod-end pivot pin is accessible.
- 3 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.

- 4 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.
- 5 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin.
- 6 Place a rod through the barrel-end pivot pin and twist to remove the pin.



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

WARNING Crushing hazard. The master cylinder could become unbalanced and fall if it is not properly attached to the overhead crane.

Turntable Covers

REV A

5-1 Turntable Covers

How to Remove a Turntable Cover

- 1 Raise the turntable cover. Support and secure the open cover with an overhead crane or forklift. Do not lift it.

CAUTION Crushing hazard. Due to its heavy weight, do not attempt to support the cover by hand.

CAUTION Component damage hazard. Protect the cover from damage by using carpet or padding on the crane or fork lift forks.

- 2 Remove the upper retaining clip from the gas strut.
- 3 Gently pry the strut pivot socket off of the ball stud and lower the strut. Protect the strut cylinder rod from damage.

NOTICE Mark the location of the hinge support bracket on the bulkhead to ensure proper cover alignment during installation.

- 4 Remove the cover hinge bolts that fasten the hinge support bracket to the bulkhead.

- 5 Carefully lift and remove the cover from the machine.

WARNING Bodily injury hazard. Safety decals are essential to safe machine operation. Failure to replace all safety and instructional decals could result in death or serious injury. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

WARNING Crushing hazard. The turntable cover could become unbalanced and fall if it is not properly supported and secured to an appropriate lifting device.

NOTICE Alignment adjustments may be necessary when a new cover is installed.

Deutz F3L 1011F Engine

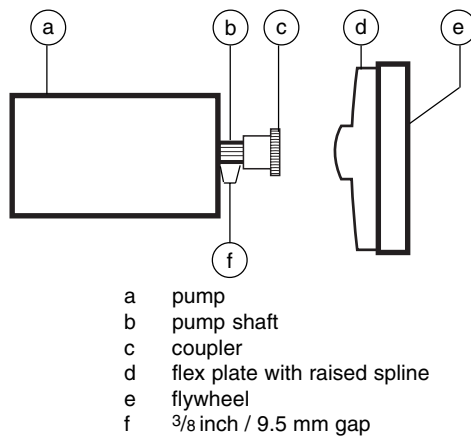
REV A

6-1 RPM Adjustment

Refer to Maintenance Procedures, B-11,
Check and Adjust the Engine RPM.

6-2 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 Disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.
- 2 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.
- 3 Carefully pull the pump away from the engine and secure it from moving.

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

- 4 Remove the flex plate mounting fasteners, then remove the flex plate from the engine flywheel.

How to Install the Flex Plate

- 1 Install the flex plate onto the engine flywheel with the raised spline towards the pump. Torque the flex plate mounting bolts to 34 ft-lbs / 46 Nm.
- 2 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave a 3/8 inch / 9.5 mm gap between the pump coupler and pump end plate.
- 3 Apply removable thread locking material to the pump coupler set screw. Torque the set screw to 45 ft-lbs / 61 Nm.
- 4 Install the pump and torque the pump mounting plate fasteners to 34 ft-lbs / 46 Nm.

CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

DEUTZ F3L 1011F ENGINE

REV A

6-3 Oil Temperature and Oil Pressure Gauges

The engine oil temperature gauge is an electrical gauge. The engine oil temperature sending unit has limit contacts that are factory set. The contacts will close at approximately 300° F / 149° 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. Engine oil temperature will be indicated on the gauge when the key is ON and the Emergency Stop Button is pulled out to the on position.

The engine oil pressure gauge is an electrical gauge. The engine oil pressure sending unit has limit contacts that are factory set. The contacts will close at approximately 7 psi / 0.48 bar. When the contacts close, the engine will shut off to prevent damage. Engine oil pressure will be indicated on the gauge when the engine is running.

How to Remove the Oil Temperature and Oil Pressure Gauge Sending Units

NOTICE Perform this procedure with the engine off.

- 1 Remove the fasteners from the engine side cover, remove the cover.
- 2 Tag and disconnect the wiring from the desired sending unit. Remove the sending unit from the engine block.
- 3 Install the new sending unit. Do not over tighten.
- 4 Connect the wires to the new sending unit.

CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns

NOTICE Always use pipe thread sealant when installing a sending unit.

Oil temperature sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	1 ³ / ₁₆ inch
Temperature switch point	300° F / 149° C

Oil pressure sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	1 ¹ / ₁₆ inch
Oil pressure switch point	7 psi 0.48 bar

Perkins 704-30 Engine

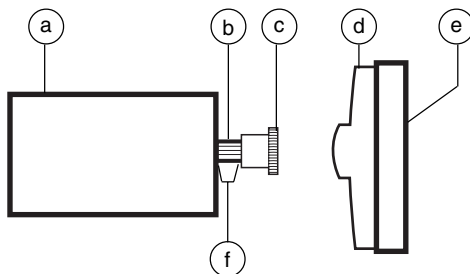
REV A

7-1 RPM Adjustment

Refer to Maintenance Procedures, B-11,
Check and Adjust the Engine RPM.

7-2 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.



- a pump
- b pump shaft
- c coupler
- d flex plate with raised spline
- e flywheel
- f 1/4 inch / 6.4 mm gap

How to Remove the Flex Plate

- 1 Disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.
- 2 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.
- 3 Carefully pull the pump away from the engine and secure it from moving.

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

- 4 Remove the flex plate mounting fasteners, then remove the flex plate from the engine flywheel.

How to Install the Flex Plate

- 1 Install the flex plate onto the engine flywheel with the raised spline towards the pump. Torque the flex plate mounting bolts to 34 ft-lbs / 46 Nm.
- 2 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave a 1/4 inch / 6.4 mm gap between the pump coupler and pump end plate.
- 3 Apply removable thread locking material to the pump coupler set screw. Torque the set screw to 45 ft-lbs / 61 Nm.

CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

- 4 Install the pump and torque the pump mounting plate fasteners to 34 ft-lbs / 46 Nm.

PERKINS 704-30 ENGINE

REV A

7-3 Coolant Temperature and Oil Pressure Gauges

The engine coolant temperature gauge is an electrical gauge. The engine coolant temperature sending unit has limit contacts that are factory set. The contacts will close at approximately 221° F / 105° 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. Engine coolant temperature will be indicated on the gauge when the key is on and the Emergency Stop Button is pulled out to the ON position.

The engine oil pressure gauge is an electrical gauge. The engine oil pressure sending unit has limit contacts that are factory set. The contacts will close at approximately 4.2 psi / 0.3 bar. When the contacts close, the engine will shut off to prevent damage. Engine oil pressure will be indicated on the gauge when the engine is running.

How to Remove the Coolant Temperature and Oil Pressure Gauge Sending Units

NOTICE Perform this procedure with the engine off.

- 1 Tag and disconnect the wiring from the desired sending unit. Remove the sending unit from the engine block.
- 2 Install the new sending unit. Do not over tighten.
- 3 Connect the wires to the new sending unit.

CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns

NOTICE Always use pipe thread sealant when installing a sending unit.

Coolant temperature sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	7/8 inch
Temperature switch point	221° F / 105° C

Oil pressure sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	7/8 inch
Oil pressure switch point	4.2 psi 0.3 bar

Ford LRG-425 EFI Engine

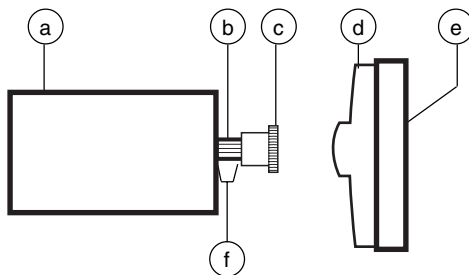
REV A

8-1 Timing Adjustment

NOTICE The ignition timing is controlled by the ECM and can only be adjusted by re-programming the ECM. If timing adjustment or service is required, please contact Genie Industries Service Department OR your local Ford dealer.

8-2 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.



- a pump
- b pump shaft
- c pump coupler
- d flex plate with raised spline
- e engine flywheel
- f 1/16 inch / 1.6mm gap

Flex Plate Removal

- 1 Disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.
- 2 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.
- 3 Carefully pull the pump away from the engine and secure it from moving.

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

- 4 Remove the flex plate mounting fasteners, then remove the flex plate from the engine fly wheel.

How to Install the Flex Plate

- 1 Install the flex plate onto the engine flywheel with the raised spline towards the pump. Torque the flex plate mounting bolts to 34 ft-lbs / 46 Nm.
- 2 Install the pump coupler onto the pump shaft with the set screw towards the pump. Leave a 1/16 inch / 1.59 mm gap between the pump coupler and pump end plate.
- 3 Apply removable thread locking material to the pump coupler set screw. Torque the set screw to 45 ft-lbs / 61 Nm.
- 4 Install the pump and torque the pump mounting plate fasteners to 34 ft-lbs / 46 Nm.

CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

FORD LRG-425 EFI ENGINE

REV A

8-3 Coolant Temperature and Oil Pressure Gauges

The coolant temperature gauge is an electrical gauge. The coolant temperature sending unit has limit contacts that are factory set. The contacts will close at approximately 230° F / 112° 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. Engine coolant temperature will be indicated on the gauge when the key switch is ON and the Emergency Stop button is pulled out to the on position.

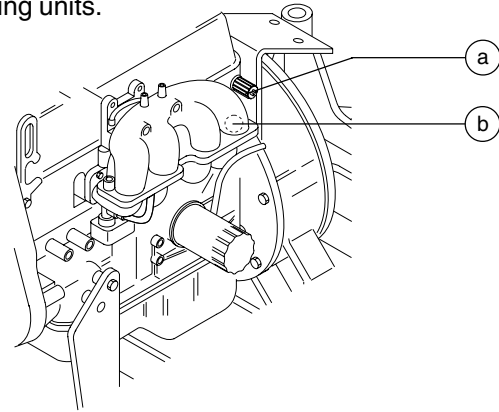
The oil pressure gauge is an electrical gauge. The oil pressure sending unit has limit contacts that are factory set. The contacts will close at approximately 8 psi / 0.55 bar. When the contacts close, the engine will shut off to prevent damage. Engine oil pressure will be indicated on the gauge when the engine is running.

How to Remove the Coolant Temperature and Oil Pressure Gauge Sending Units

NOTICE Perform this procedure with the engine off.

- 1 Remove the air baffle retaining fasteners. Remove the air baffle.
- 2 Remove the 2 engine pivot plate retaining bolts. Swing the engine pivot plate away from the machine to access the water temperature and oil pressure sending units.

- 3 Locate the oil pressure and coolant temperature sending units.



- a oil pressure sending unit
b coolant temperature sending unit (hidden from view)

- 4 Tag and disconnect the wiring from the desired sending unit. Remove the sending unit from the engine block.
- 5 Install the new sending unit. Do not over tighten.
- 6 Connect the wires to the new sending unit.

CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns

NOTICE Always use pipe thread sealant when installing a sending unit.

Coolant temperature sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	13/16 inch
Temperature switch point	230° F / 112° C

Oil pressure sending unit specifications

Torque	8-10 ft-lbs 11-14 Nm
Hex size	1 1/16 inch
Oil pressure switch point	8 psi 0.55 bar

Ground Controls

REV A

9-1 Control Relays

Relays used for single function switching are single pole double throw (SPDT) relays.

How to Test a Single Pole Double Throw Relay

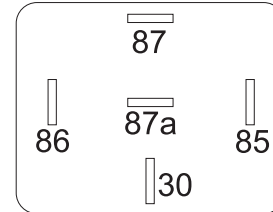
AWARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 1 Label and then disconnect all the wiring from the relay to be tested.
- 2 Connect the leads from an ohmmeter or continuity tester to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

Test	Desired result
terminal 85 to 86 without resistor	85 to 95Ω
terminal 85 to 86 with resistor	75 to 85Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

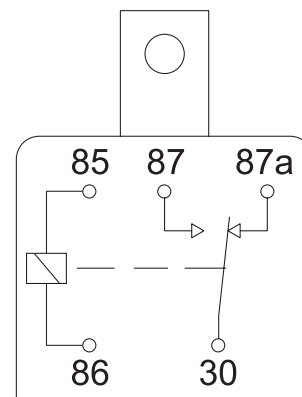
- 3 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

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

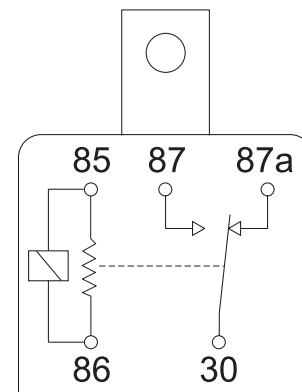


- a terminal no. 87a - N.C.
- b terminal no. 85 - coil negative (-)
- c terminal no. 30 - common
- d terminal no. 86 - coil positive (+)
- e terminal no. 87 - N.O.

Control Relay Schematic - without resistor



Control Relay Schematic - with resistor



GROUND CONTROLS

REV A

9-2 Toggle Switches

See 1-5, *Toggle Switches*.

9-3 Wago® Components

How to Remove a Wago® Component

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

NOTICE Wago® tools are available from the Genie Service Parts Department (Genie part number 33996).

- 1 Label the wiring from the component to be removed.
- 2 Use a small screwdriver to push in and release the wire from the component.
- 3 Locate the removal tab on the bottom or top of the component.
- 4 Use a small screwdriver to gently pry up on the tab of the component and remove it.

9-4 Engine Fault Codes - Gasoline/LPG Models

How to Retrieve Engine Fault Codes

When an engine malfunction is detected by the Electronic Control Module (ECM), a fault code is recorded and the check engine light will turn ON at the ground and platform controls. Use the following procedure to retrieve the engine fault code to determine the engine malfunction.

NOTICE Perform this procedure with the key switch in the off position.

- 1 Open the ground controls side turntable cover.
 - 2 Open the ground control box and locate the run/test toggle switch inside of the ground control box.
 - 3 Pull out the ground controls red Emergency Stop button to the on position.
 - 4 Hold the run/test toggle switch to the test position and turn the key switch to the ground controls position.
- ⊙ Result: The check engine light should turn on. The check engine light should begin to blink.

REV A

GROUND CONTROLS

- 5 Continue to hold the run/test toggle switch in the test position and count the blinks.

NOTICE

Fault codes are two digits. The check engine light will blink the first digit of a two digit code then will pause for 1.2 seconds and then blink the second digit. For example: the check engine light blinks 5 consecutive times then pauses for 1.2 seconds and then blinks 1 time. That would indicate code 51. The ECM is able to store up to six individual fault codes. There will be a 2.4 second pause between codes.

- 6 Refer to the Troubleshooting Section for definition of engine fault codes.

NOTICE

Once a fault code has been retrieved and the repair has been completed, the ECM memory must be reset to clear the fault code from the ECM. See 9-4, *How to Clear Engine Fault Codes*.

How to Clear Engine Fault Codes from the ECM

NOTICE

Perform this procedure with the engine off and the key switch in the off position.

- 1 Open the engine side turntable cover and locate the battery.
- 2 Disconnect the negative battery cable from the battery for a minimum of 20 minutes.

WARNING

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

- 3 Connect the negative battery cable to the battery.

Hydraulic Pumps

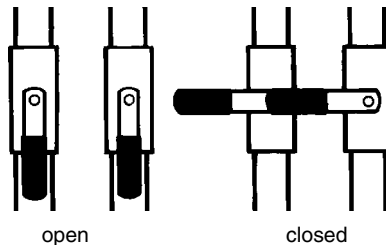
REV A

10-1 Lift/Steer Pump

How to Remove the Lift/Steer Pump

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

- 1 Close the two hydraulic tank valves located at the hydraulic tank.



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

- 2 Tag, disconnect and plug the lift/steer pump hydraulic hoses. Cap the fittings on the pump.

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

- 3 Remove the pump mounting bolts. Carefully remove the pump.

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

REV A

HYDRAULIC PUMPS

10-2 Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Sundstrand-Sauer service center. Call Genie Industries Service Department to locate your local authorized service center.

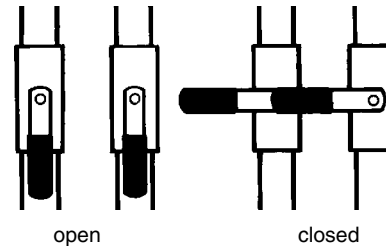
How to Remove the Drive Pump

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

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

- 1 Disconnect the electrical connection at the electronic displacement controller (EDC) located on the drive pump.

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



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

- 3 Tag and disconnect and plug the hydraulic hoses from the drive and lift/steer pumps. Cap the fittings on the pumps.

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

- 4 Support the pumps with a suitable lifting device and remove the two drive pump mounting fasteners.

HYDRAULIC PUMPS

REV A

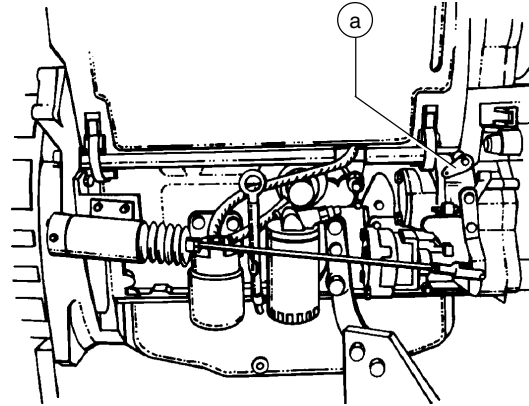
- 5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.
- 6 Remove the drive pump from the machine.

CAUTION

Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

NOTICE

Before installing the pump, verify proper pump coupler spacing. Refer to the appropriate flex plate installation instructions for your engine.



a manual fuel shutoff valve

How to Prime the Pump**CAUTION**

Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the open position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur.

- 1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the test port on the drive pump.
- 2 **Gasoline/LPG models:** Close the valve on the LPG tank, then disconnect the hose from the tank. Move the fuel select toggle switch to the LPG position.

Deutz Diesel models: Hold the manual fuel shutoff valve clockwise to the closed position.

Perkins Diesel models:

Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

- 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 250 psi / 17.2 bar.

4 Gasoline/LPG models:

Connect the LPG hose to the LPG tank and open the valve on the tank.

Perkins Diesel models:

Connect the engine wiring harness to the fuel solenoid.

5 Deutz Diesel Models:

Release the manual fuel shut off valve.

- 6 Start the engine from the ground controls and check for hydraulic leaks.



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Manifolds

REV B

11-1

Function Manifold Components

The function manifold is located on the tank side tray, behind the ground control box.

Index No.	Description	Schematic Item	Function	Torque
1	3 position 4 way DO3 valve	A	Turntable rotate left/right	30-35 in-lbs / 3-4 Nm
2	3 position 4 way DO3 valve	B	Boom up/down	30-35 in-lbs / 3-4 Nm
3	3 position 4 way DO3 valve	C	Boom extend/retract	30-35 in-lbs / 3-4 Nm
4	Check valve, pilot operated	D	Boom extend/retract circuit	11-13 ft-lbs / 15-18 Nm
5	Relief valve, 1950 psi / 134 bar	E	Boom extend	25-30 ft-lbs / 34-41 Nm
6	Relief valve, 2200 psi / 152 bar	F	Boom down	25-30 ft-lbs / 34-41 Nm
7	Flow regulator valve, 1.5 gpm / 5.7 L/min ...	G	Boom extend/retract circuit (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
8	Flow regulator valve, 1.5 gpm / 5.7 L/min ...	H	Boom up/down circuit (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
9	Flow regulator valve, 1.5 gpm / 5.7 L/min	I	Turntable rotate left/right (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
10	Flow regulator valve, 0.1 gpm / 0.4 L/min ...	J	Bleeds off differential sensing valve to tank	10-12 ft-lbs / 14-16 Nm
11	Check valve	K	Differential sensing circuit, boom extend/retract	11-13 ft-lbs / 15-18 Nm
12	Orifice - Plug, 0.140 inch / 3.6 mm	L	Boom extend/retract circuit	
13	Solenoid valve - N.C. Poppet	M	Boom extend/retract	25-30 ft-lbs / 34-41 Nm
14	Check valve	N	Differential sensing circuit, boom up/down	11-13 ft-lbs / 15-18 Nm

This list continues. Please turn the page

Plug Torque Specifications

Description	Hex size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm

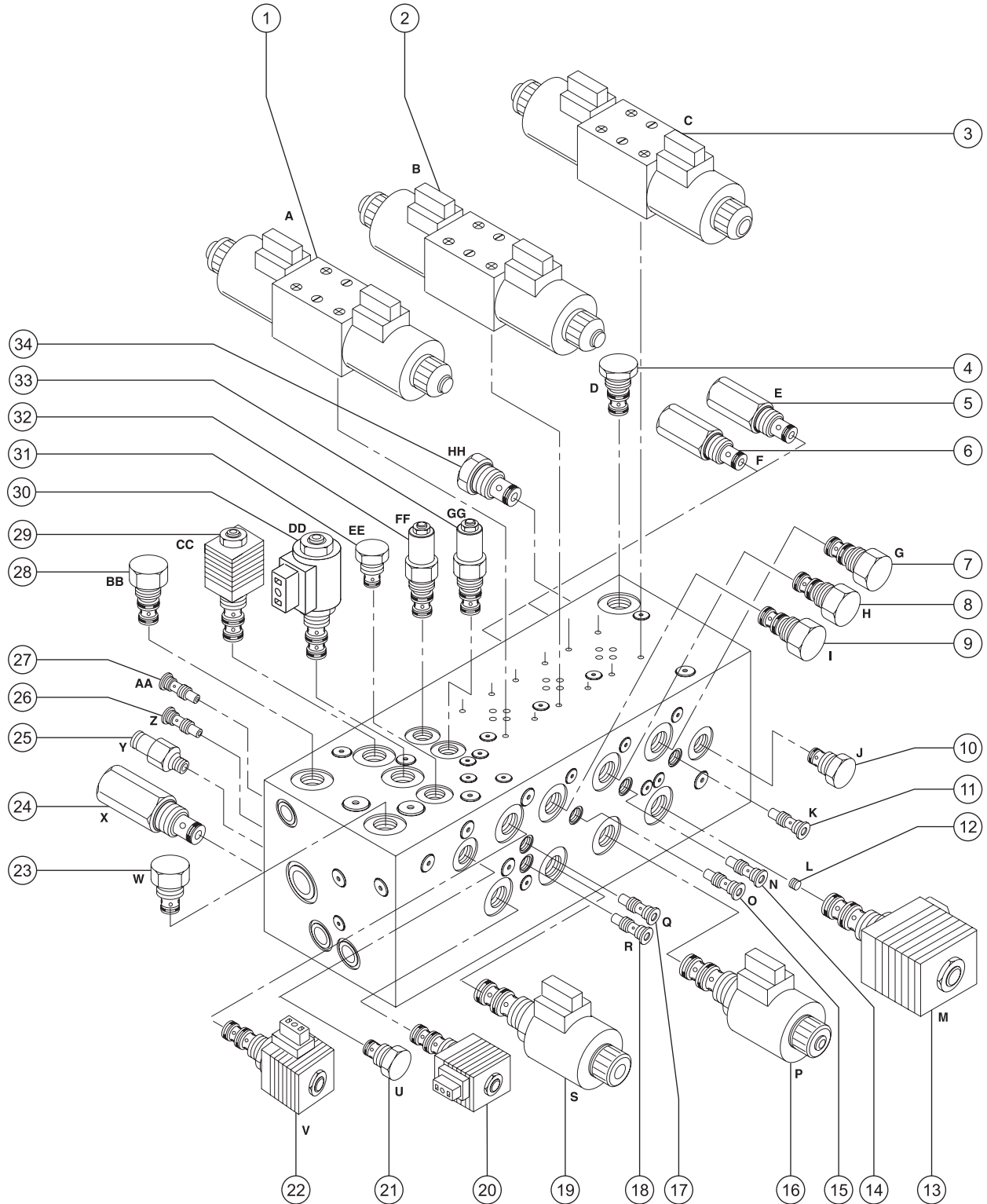
Valve Coil Resistance Specifications

3 position 4 way directional valve, 10V (schematic items A, B and C)	2 to 5Ω
Proportional solenoid valve, 10V (schematic item M)	7.5 to 10.5Ω



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MANIFOLDS



MANIFOLDS

REV B

Function Manifold Components, continued

Index No.	Description	Schematic Item	Function	Torque
15	Check valve	O	Differential sensing circuit, turntable rotate left/right	11-13 ft-lbs / 15-18 Nm
16	Proportional solenoid valve	P	Boom up/down	10-12 ft-lbs / 14-16 Nm
17	Check valve	Q	Differential sensing circuit, platform level up	11-13 ft-lbs / 15-18 Nm
18	Check valve	R	Differential sensing circuit, platform level down	11-13 ft-lbs / 15-18 Nm
19	Proportional solenoid valve	S	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm
20	Solenoid valve - N.O. Poppet	T	Platform level up	25-30 ft-lbs / 34-41 Nm
21	Flow regulator valve, 0.6 gpm / 2.3 L/min	U	Platform level circuit	10-12 ft-lbs / 14-16 Nm
22	Solenoid valve - N.O. Poppet	V	Platform level down	25-30 ft-lbs / 34-41 Nm
23	Differential sensing valve	W	Pilot to close, flow directional valve ..	10-12 ft-lbs / 14-16 Nm
24	Relief valve, 2600 psi / 180 bar (S-40)	X	System relief	35-40 ft-lbs / 47-54 Nm
24	Relief valve, 2900 psi / 200 bar (S-45)	X	System relief	35-40 ft-lbs / 47-54 Nm
25	Diagnostic nipple	Y	Testing	
26	Check valve	Z	Differential sensing circuit Platform rotate left	11-13 ft-lbs / 15-18 Nm
27	Check valve	AA ...	Differential sensing circuit Platform rotate right	11-13 ft-lbs / 15-18 Nm
28	Priority flow regulator valve,	BB ...	Steering	10-12 ft-lbs / 14-16 Nm
	3.5 gpm / 13.25 L/min, oscillate models			
	2.0 gpm / 7.6 L/min, non-oscillate models			
29	Solenoid valve - N.O. Poppet	CC ...	Platform rotate left	25-30 ft-lbs / 34-41 Nm
30	Solenoid valve - N.O. Poppet	DD ...	Platform rotate right	25-30 ft-lbs / 34-41 Nm
31	Flow regulator valve, 0.6 gpm / 2.27 l/min ...	EE ...	Platform rotate	10-12 ft-lbs / 14-16 Nm
32	Counterbalance valve	FF	Platform level up	35-40 ft-lbs / 47-54 Nm
33	Counterbalance valve	GG ..	Platform level down	35-40 ft-lbs / 47-54 Nm
34	Check valve	HH ...	Boom extend/retract circuit	11-13 ft-lbs / 15-18 Nm

Plug Torque Specifications

Description	Hex size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm

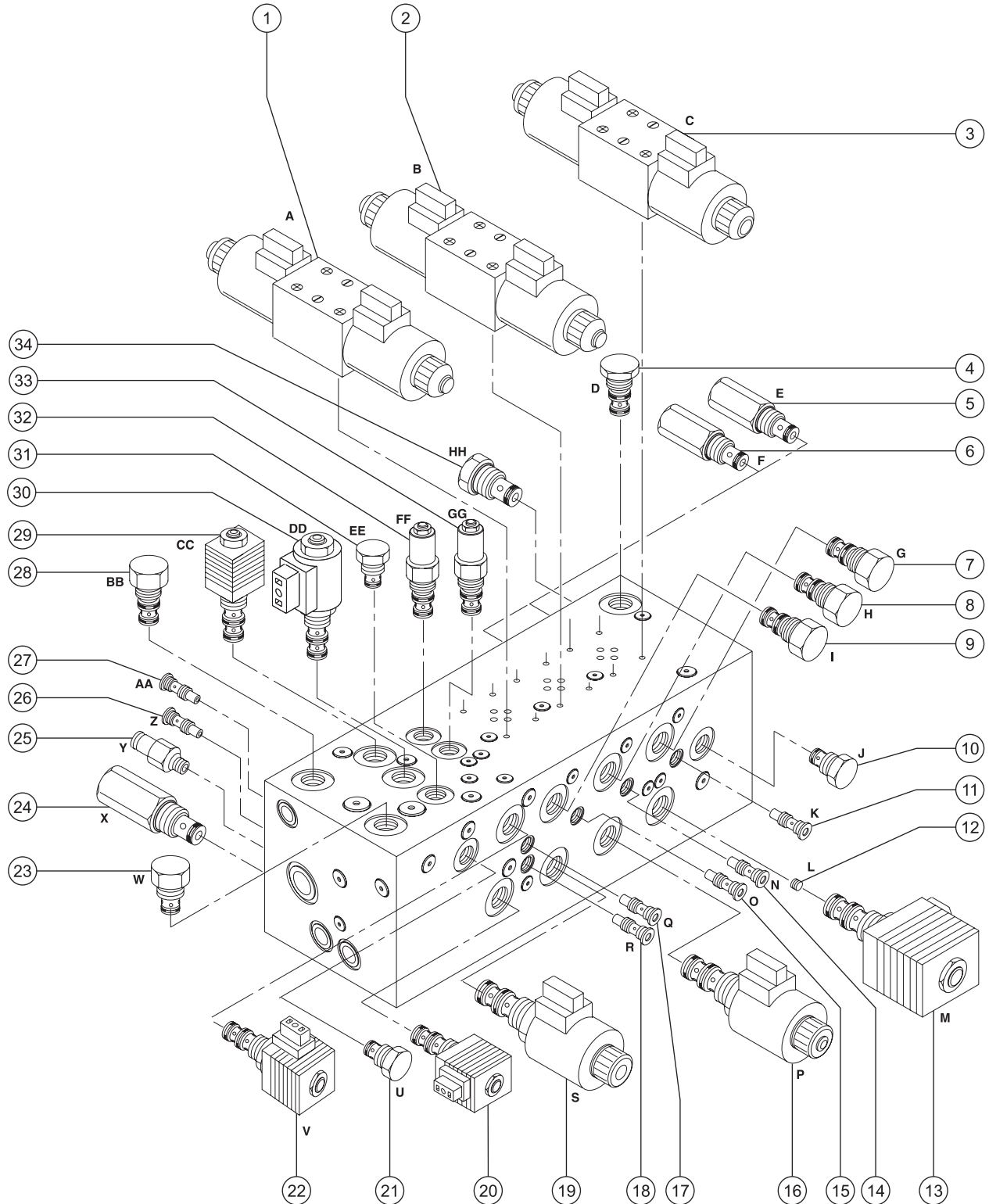
Valve Coil Resistance Specifications

Proportional solenoid valve, 12V (schematic items P and S)	4.7 to 6.5Ω
Normally open poppet valve (schematic item T, V, CC and DD)	4 to 7Ω



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MANIFOLDS



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REV B

11-2 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

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

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port (index 25) on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Hold the function enable switch to either side and activate and hold the retract switch with the boom fully retracted. Observe the pressure reading on the pressure gauge.

System relief valve specifications

Pressure	
S-40	2600 psi 179 bar
S-45	2900 psi 200 bar

- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (index 24, function manifold).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 6 Repeat steps 2 through 5 and check the relief valve pressure.

How to Adjust the Boom Down Relief Valve

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

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port (index 25) on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Hold the function enable switch to the high rpm (rabbit symbol) side and activate and hold the boom down toggle switch with the boom fully lowered. Observe the pressure reading on the pressure gauge.

Boom down relief valve specifications

Pressure	2200 psi 152 bar
----------	---------------------

- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (index 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 check the relief valve pressure.

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How to Adjust the Boom Extend Relief Valve

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

- 1 Connect a 0 to 3000 psi / 0 to 207 bar pressure gauge to the test port (index 25) on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Hold the function enable switch to the high rpm (rabbit symbol) side and activate and hold the extend switch with the boom fully extended. Observe the pressure reading on the pressure gauge.

Boom extend relief valve specifications

Pressure	1950 psi 134 bar
----------	---------------------

- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (index 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.

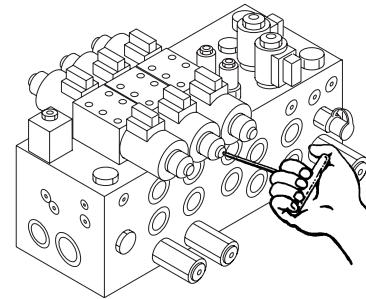
WARNING Tip-over hazard. Do not adjust the relief valves higher than specified.

- 6 Repeat steps 2 through 5 to confirm relief valve pressure.

How to Override a Valve

A hydraulic valve may need to be manually overridden to troubleshoot a malfunction. The proportional boom functions (boom up/down, extend/retract and turntable rotate) use a variable position proportional valve and a three position directional valve. Example: one position for boom up, one position for neutral and one position for boom down. The platform rotate function uses a three position valve. The platform level uses a three position and a two position valve. The three position valves and the proportional valves can be manually overridden. To identify the manifold valves see 11-1, *Function Manifold*, in this section.

- 1 Push the button on the end of the valve in $\frac{1}{4}$ inch / 6 mm.



- 2 Hold the function enable switch to either side and move the ground control function switch for the function being overridden to operate function.

WARNING Collision hazard. Impact with moving boom components could result in death or serious injury. Use extreme caution when overriding a machine function. Identify the direction of machine movement before overriding a valve.

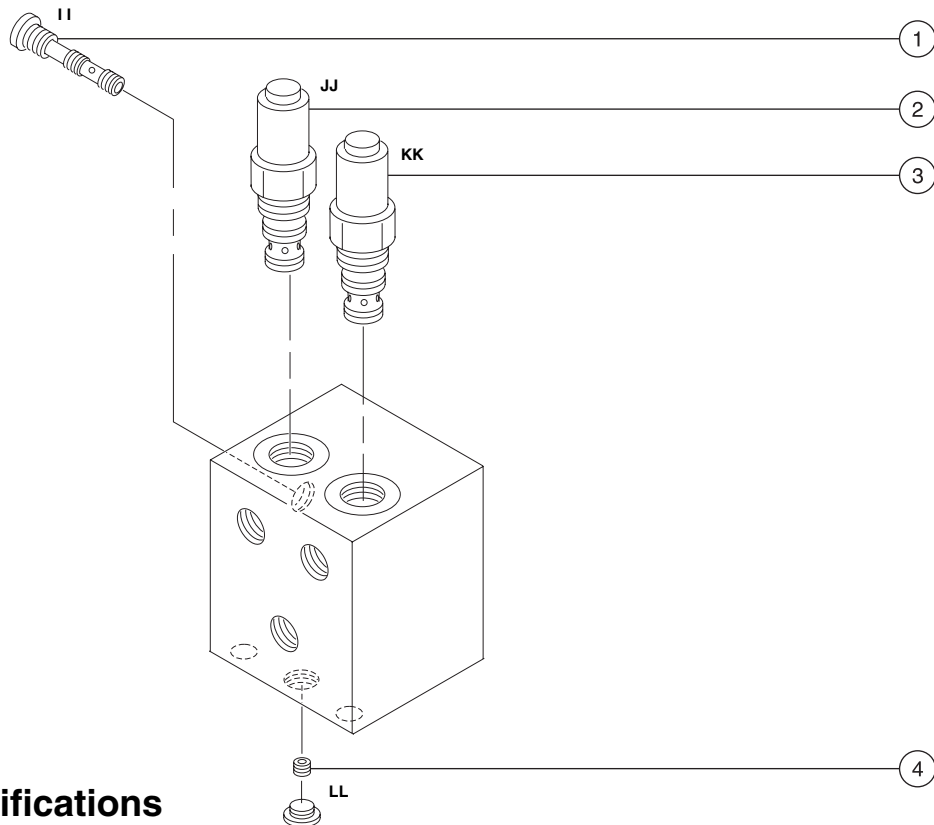
MANIFOLDS

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11-3 Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor on the tank side of the turntable.

Index No.	Description	Schematic Item	Function	Torque
1	Shuttle valve, 2 position 3 way	II	Turntable rotation brake release	10-13 ft-lbs / 14-18 Nm
2	Counterbalance valve	JJ	Turntable rotate right	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	KK	Turntable rotate left	35-40 ft-lbs / 47-54 Nm
4	Orifice plug, 0.030 inch / 0.76 mm	LL	Brake 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





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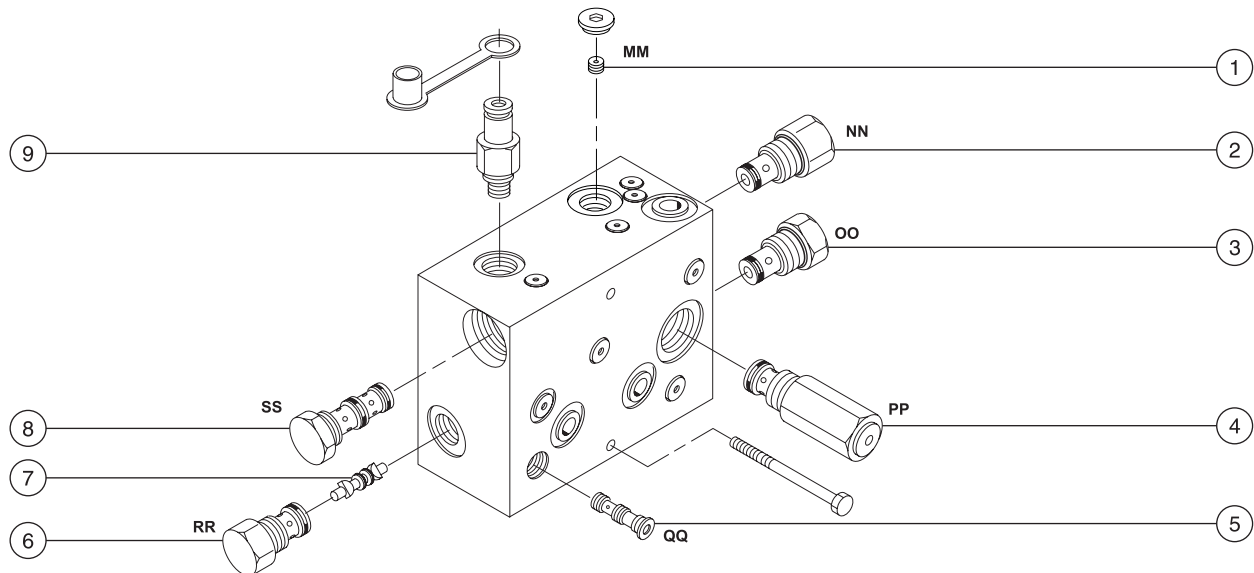
MANIFOLDS

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11-4 Oscillate Manifold Components

The oscillate manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Orifice plug, 0.052 inch / 1.32 mm	MM	Differential sensing circuit	
2	Differential sensing valve	NN	Differential sensing	10-12 ft-lbs / 14-16 Nm
3	Check valve	OO	Oscillate check - left	35-40 ft-lbs / 47-54 Nm
4	Pilot operated unloader valve, 950 psi / 65 bar	PP	Sequencing	10-12 ft-lbs / 14-16 Nm
5	Shuttle valve, 2 position 3 way	QQ	Pilot	10-12 ft-lbs / 14-16 Nm
6	Check valve	RR	Oscillate check - right	35-40 ft-lbs / 47-54 Nm
7	Piston		Check valve circuit (the piston is located between index numbers 3 and 6)	
8	Shuttle valve, 2 position 3 way	SS	Unloading	35-40 ft-lbs / 47-54 Nm
9	Diagnostic nipple		Testing	



Plug Torque Specifications

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



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11-5 Valve Adjustments - Oscillate Manifold

How to Adjust the Oscillate Sequencing Valve Pressure

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

- 1 Connect a 0 to 2000 psi / 0 to 138 bar pressure gauge to the diagnostic nipple (index 9) located on the oscillate 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 Remove the chassis cover from the non-steer end of the drive chassis.
- 3 Disconnect the directional valve linkage, by removing the clevis yoke from the drive chassis.

- 4 Start the engine from the platform controls.
- 5 With the engine running, manually activate the valve and observe the pressure reading on the pressure gauge.

Sequencing valve specifications

Pressure	950 psi 65 bar
----------	-------------------

- 6 Turn the engine off. Hold the unloader valve with a wrench and remove the cap (index 4).
- 7 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

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

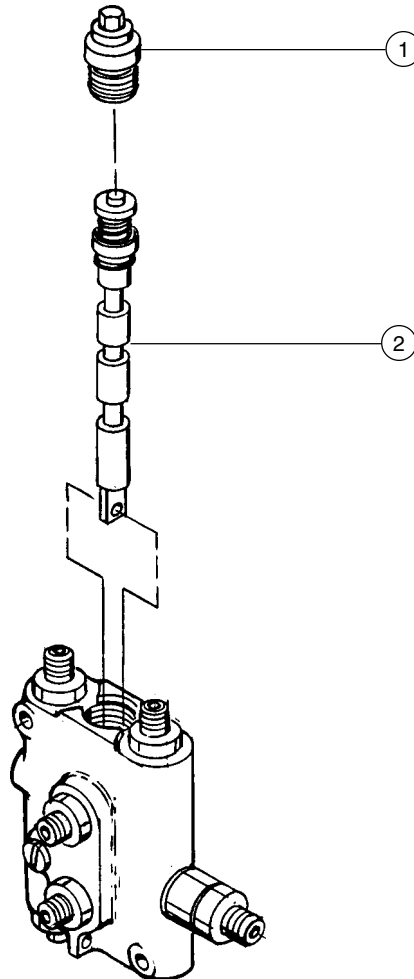
- 8 Repeat steps 3 through 6 and manually activate the valve to confirm the valve pressure.
- 9 Turn the engine off, remove the pressure gauge and assemble the directional valve linkage.
- 10 Install the cover on the non-steer end of the drive chassis.

11-6 Directional Valve Manifold Components

The directional valve manifold is mounted inside the drive chassis at the non-steer end.

Index

No.	Description	Function	Torque
1	Cap	Breather	20-25 ft-lbs / 27-33Nm
2	Spool valve	Directional control	



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How to Set Up the Directional Valve Linkage

NOTICE Adjustment of the directional valve linkage is only necessary when the linkage or valve has been replaced.

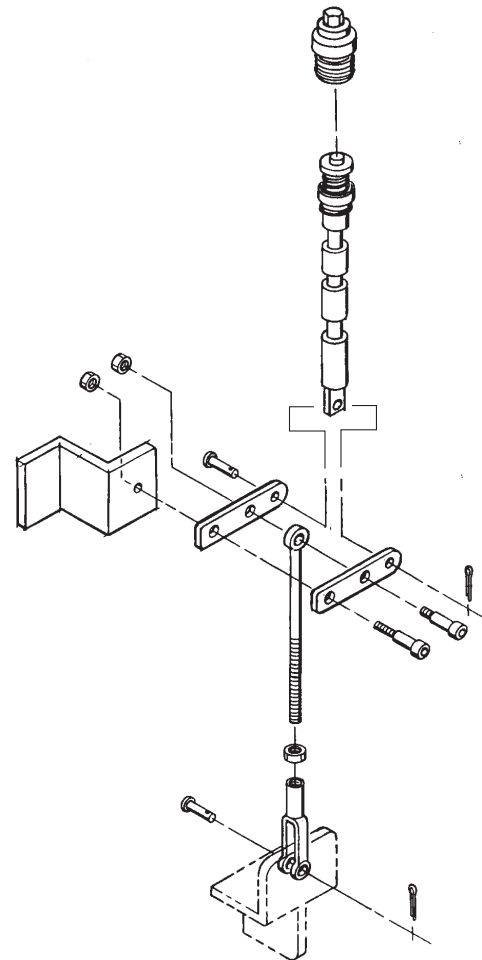
- 1 Lower the boom to the stowed position.
- 2 Use a "bubble type" level to be sure the floor is completely level.

⚠ DANGER Tip-over hazard. Failure to perform this procedure on a level floor will compromise the stability of the machine and could result in the machine tipping over.

- 3 Check the tire pressure in all four tires and add air if needed to meet specification.
- 4 Remove the drive chassis cover from the non-steer end.
- 5 Disconnect the linkage clevis yoke from the drive chassis (if not already disconnected).
- 6 Place a "bubble type" level across the drive chassis side plates at the non-steer end. Check to be sure the drive chassis is completely level.
- 7 To level the drive chassis, start the engine and push up or pull down on the linkage adjustment rod until the machine is completely level.
- 8 Verify that the ground and drive chassis are completely level.

- 9 Adjust the length of the rod by turning the clevis yoke until the clevis yoke can be pinned to the drive chassis.
- 10 Install the clevis yoke pin then the cotter pin. Be sure to bend the cotter pin.
- 11 Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

NOTICE If the distance is not equal and the adjustment to the linkage was completed with the ground and drive chassis level, consult Genie Industries Service Department.



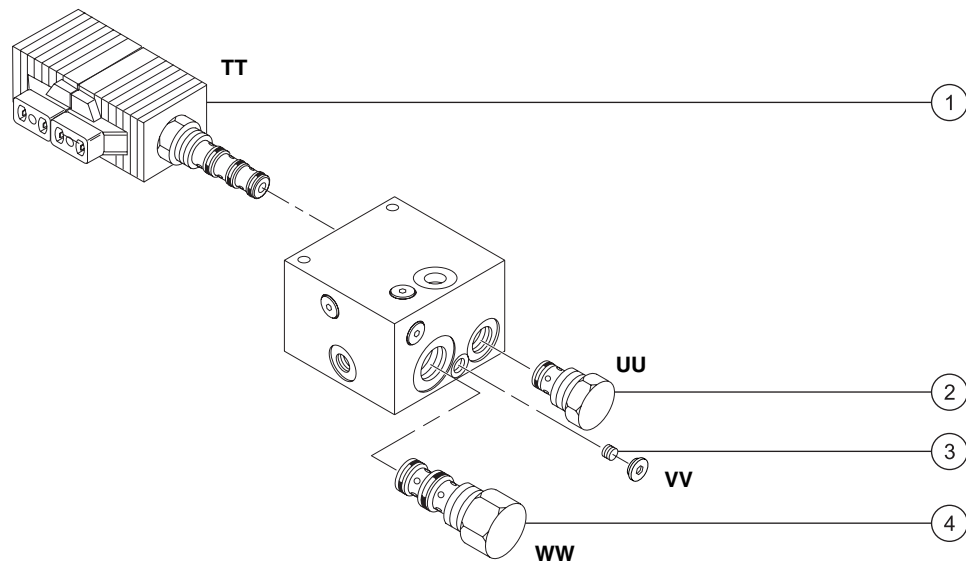
MANIFOLDS

REV B

11-7 Steer Manifold Components, Oscillating Models

The steer manifold is mounted underneath the function manifold.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	TT	Steer left/right.....	30-35 in-lbs / 3-4 Nm
2	Check valve	UU	Priority flow regulator circuit.....	10-12 ft-lbs / 14-16 Nm
3	Orifice plug, 0.025 inch / 0.64 mm	VV	Priority flow regulator circuit	
4	Priority flow regulator valve, 2 gpm / 7.6 L/min	WW	Regulates flow to oscillate manifold...	10-12 ft-lbs / 14-16 Nm



Valve Coil Resistance Specifications

Description	Measurement
Solenoid valve, 3 position 4 way, 10V (schematic item TT)	4.5 to 7.5Ω

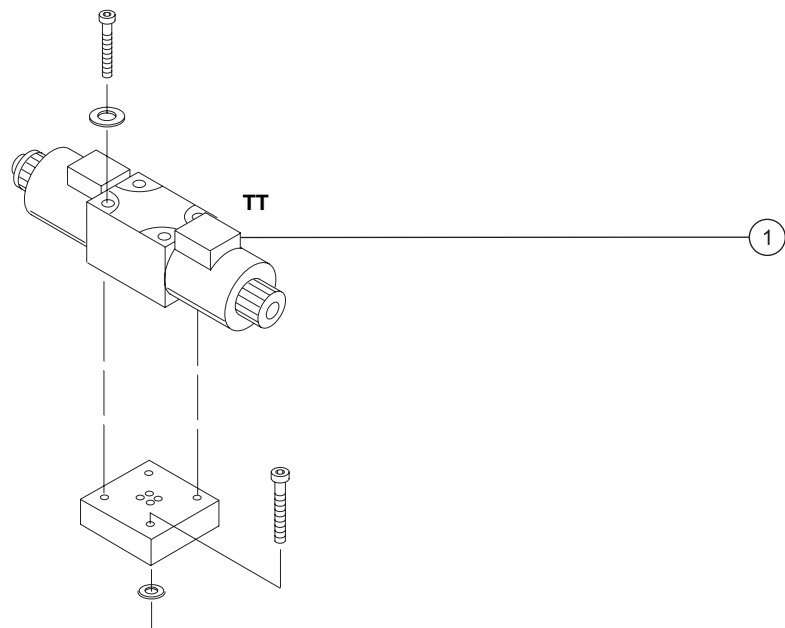
REV B

MANIFOLDS

11-8 Steer Manifold Components, Non-oscillating Models

The steer manifold is located underneath the function manifold.

Index No.	Description	Schematic Item	Function	
1	3 position 4 way DO3 valve	TT	Steer left/right	30-35 in-lbs / 3-4 Nm



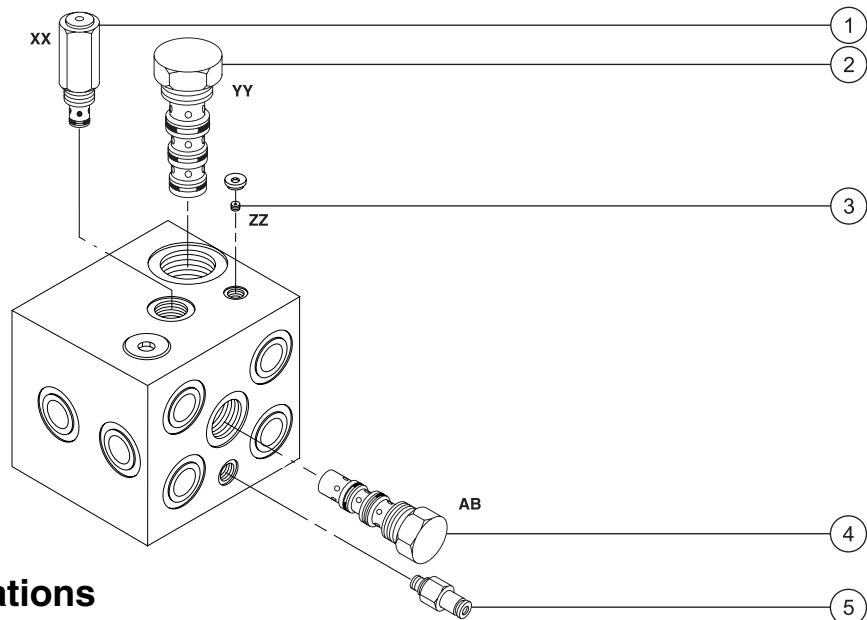
MANIFOLDS

REV B

11-9 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	Relief valve, 250 psi / 17 bar	XX	Charge pressure circuit	10-12 ft-lbs / 14-16 Nm
2	Shuttle valve, 3 position 3 way	YY	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
3	Orifice plug, 0.070 in / 1.8 mm	ZZ	Drive circuit	
4	Flow divider/combiner valve	AB	Controls flow to drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
5	Diagnostic nipple		Testing	



Plug Torque Specifications

Description	Hex size	Torque
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

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11-10 Valve Adjustments, 2WD Drive Manifold

How to Adjust the Charge Pressure Relief Valve

- 1 Connect a 0 to 600 psi / 0 to 40 bar pressure gauge to the diagnostic nipple (index 5) located on the drive manifold.
- 2 Start the engine from the platform controls.
- 3 Drive the machine slowly in either direction and observe the pressure reading on the pressure gauge.

Charge Pressure Relief valve specifications

Pressure	250 psi 17 bar
----------	-------------------

- 4 Turn the engine off. Hold the charge pressure relief valve with a wrench and remove the cap (index 1).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
- 6 Start the engine from the platform controls. Drive the machine in either direction and recheck the valve pressure.
- 7 Turn the engine off. Remove the pressure gauge.

MANIFOLDS

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11-11 4WD Drive Manifold Components

The drive manifold is mounted inside the drive chassis at the non-steer end.

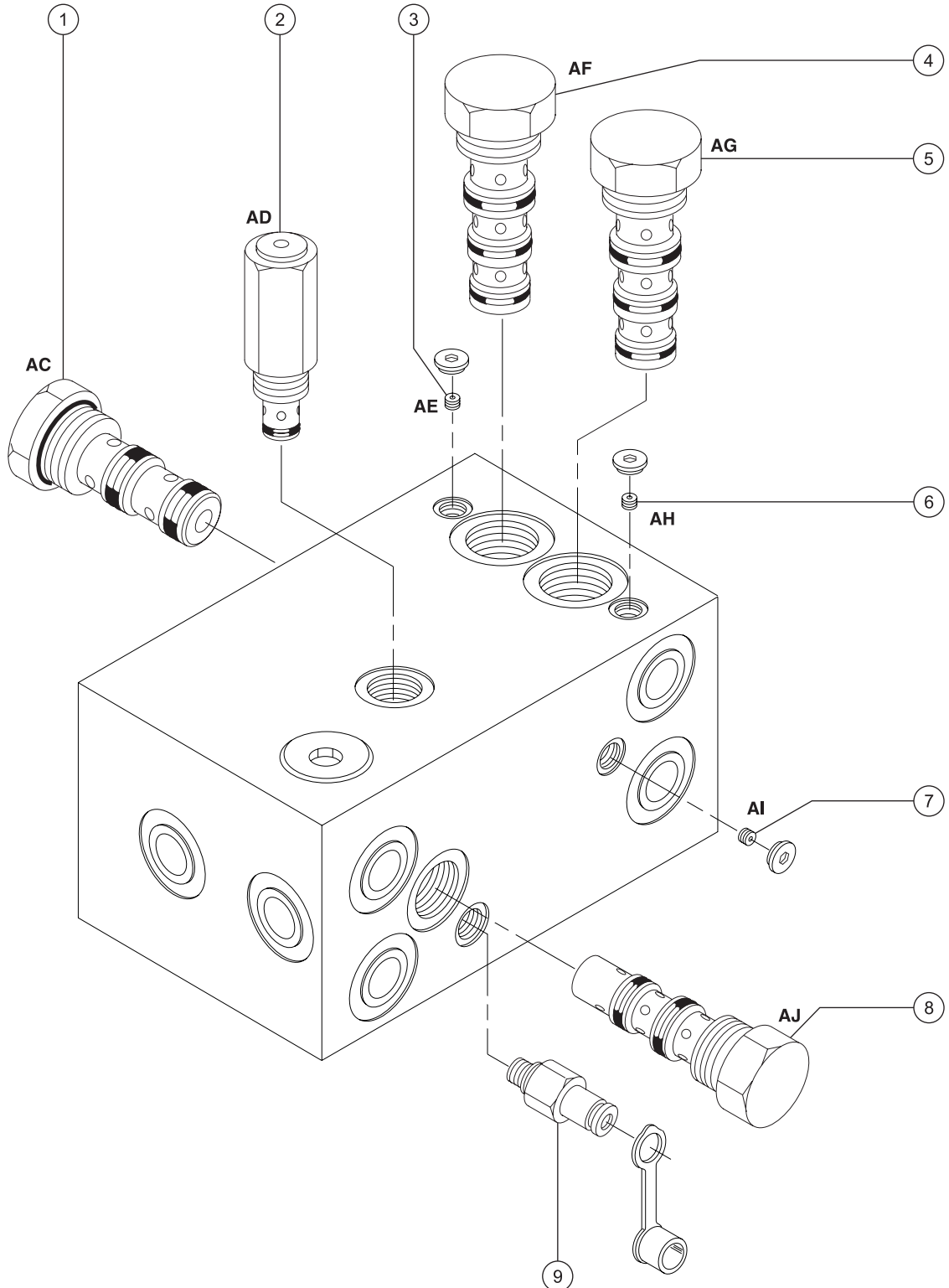
Index No.	Description	Schematic Item	Function	Torque
1	Flow divider/combiner valve	AC	Controls flow to flow divider/combiner valves 4 and 5	25-30 ft-lbs / 34-41 Nm
2	Relief valve, 250 psi / 17 bar	AD	Charge pressure circuit	10-12 ft-lbs / 14-16 Nm
3	Orifice plug, 0.052 inch / 1.32 mm	AE	Front drive motor circuit	
4	Flow divider/combiner valve	AF	Controls flow to steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
5	Flow divider/combiner valve	AG	Controls flow to non-steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
6	Orifice plug, 0.070 in / 1.8 mm	AH	Rear drive motor circuit	
7	Orifice plug, 0.070 in / 1.8 mm	AI	Equalizes pressure on both sides of flow divider combiner valve Index no. 1	
8	Shuttle valve, 3 position 3 way	AJ	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
9	Diagnostic nipple		Testing	

Plug Torque Specifications

Description	Hex size	Torque
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

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11-12**Valve Adjustments, 4WD
Drive Manifold**

**How to Adjust the Charge
Pressure Relief Valve**

- 1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the diagnostic nipple (index 9) located on the drive manifold.
- 2 Start the engine from the platform controls.
- 3 Drive the machine slowly in either direction and observe the pressure reading on the pressure gauge.

Charge Pressure Relief valve specifications

Pressure	250 psi 17.2 bar
----------	---------------------

- 4 Turn the engine off. Hold the charge pressure relief valve with a wrench 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. Install the valve cap.
- 6 Start the engine from the platform controls. Drive the machine in either direction and recheck the valve pressure.
- 7 Turn the engine off. Remove the pressure gauge.

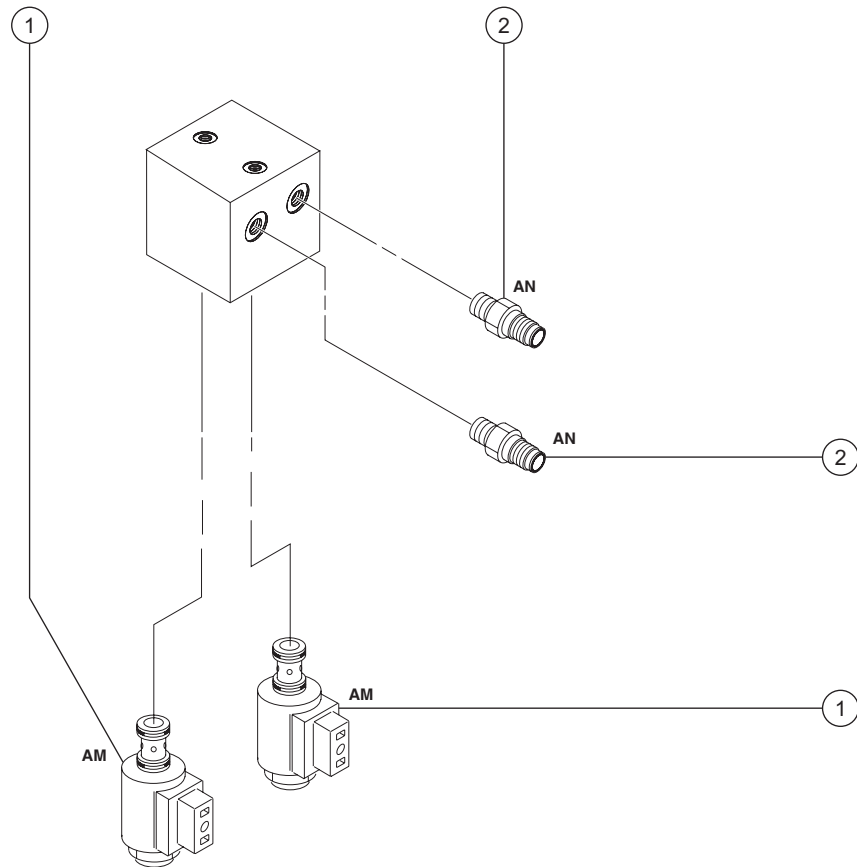
REV B

11-13

Jib Boom / Platform Rotate Manifold Components, S-45 Models (before serial number 5593)

The jib boom/platform rotate manifold is mounted on the platform end of the boom.

Index No.	Description	Schematic Item	Function	Torque
1	2 position 3 way valve	AM	Platform rotate select	8-10 ft-lbs / 11-14 Nm
2	Orifice Disc, 0.030 / 0.762 mm	AN	Platform rotate select	



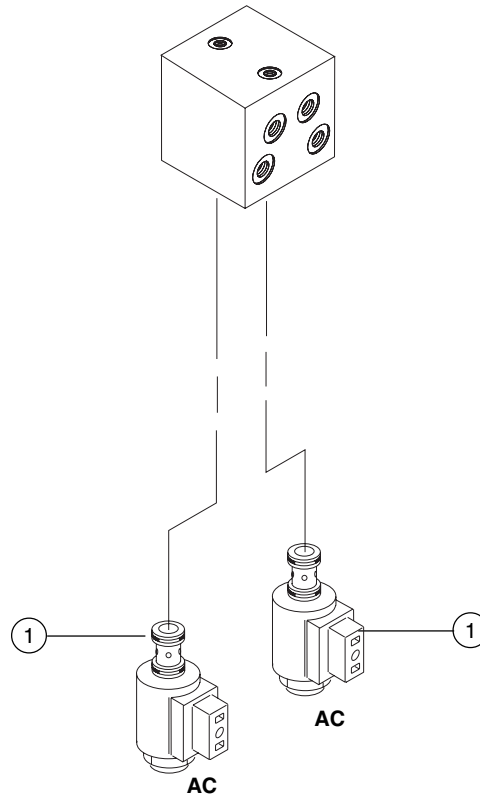
Valve Coil Resistance Specification

3 position 4 way solenoid valve, 12V (schematic item AM)	4.5 to 7.5Ω
---	-------------

11-14 Jib Boom / Platform Rotate Manifold Components, S-45 Models (after serial number 5592)

The jib boom/platform rotate manifold is mounted on the platform end of the boom.

Index No.	Description	Schematic Item	Function	Torque
1	2 position 3 way valve	AC	Platform rotate select	8-10 ft-lbs / 11-14 Nm



Valve Coil Resistance Specification

2 position 3 way solenoid valve, 12V (schematic item AC)	4.5 to 7.5Ω
---	-------------



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Fuel and Hydraulic Tanks

REV A

12-1 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 Turn the manual fuel shutoff valve to the closed position.
- 2 Remove the tank side turntable cover. See 5-1, *How to Remove a Turntable Cover*.
- 3 **Gasoline/LPG models:** Disconnect, drain and plug the fuel hose.

Diesel models: Disconnect, drain and plug the supply and return fuel hoses. Cap the fuel return fitting on the fuel tank.

Steel tank:

- 4 Remove the retaining fasteners from the fuel tank hold down straps. Remove the straps from the fuel tank.

Plastic tanks:

- 5 Remove the fuel tank mounting fasteners
- 6 Support the fuel tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.
- 7 Remove the fuel tank from the machine.

⚠ WARNING Crushing hazard. The fuel tank could become unbalanced and fall if it is not properly supported and secured to the overhead crane.

NOTICE Clean the fuel tank and inspect for rust and corrosion before installing.

REV A

FUEL AND HYDRAULIC TANKS

12-2 Hydraulic Tank

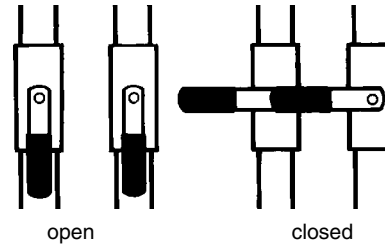
The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply hoses and has an external return filter equipped with a filter condition indicator.

How to Remove the Hydraulic Tank

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

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

- 1 Remove the fuel tank. See 12-1, *How to Remove the Fuel Tank*.
- 2 Close the two hydraulic shutoff valves located at the hydraulic tank.



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

- 3 Remove the drain plug from the hydraulic tank.
- 4 Completely drain the tank into a suitable container. See capacity specifications.
- 5 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.
- 6 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter housing.
- 7 Disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.
- 8 Remove the retaining fasteners from the hydraulic tank hold down straps. Remove the hold down straps from the hydraulic tank.

FUEL AND HYDRAULIC TANKS

REV A

9 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.

10 Remove the hydraulic tank from the machine.

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

11 Remove the suction strainers from the tank and clean them using a mild solvent.

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

13 Install the suction strainers using pipe thread sealant on the threads.

14 Install the drain plug using pipe thread sealant on the threads.

15 Install the hydraulic tank onto the machine.

16 Install the two suction hoses and the supply hose for the auxiliary power unit.

17 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill.

18 Clean up any oil that may have spilled.

19 Open the hydraulic tank shutoff valves.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank.

NOTICE Always use pipe thread sealant when installing the drain plug and strainers.

NOTICE Use only Rykon MV equivalent hydraulic fluid.

Hydraulic system

Hydraulic tank capacity	45 gallons 170 liters
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Hydraulic system capacity (including tank)	55 gallons 208 liters
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Hydraulic fluid	Rykon MV equivalent
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REV A

FUEL AND HYDRAULIC TANKS

How to Prime the Pump

CAUTION Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the open position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur.

- 1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the diagnostic nipple on the drive pump.
- 2 **Gasoline/LPG models:** Close the valve on the LPG tank, then disconnect the hose from the tank. Move the fuel select toggle switch to the LPG position.

Deutz Diesel models: Hold the manual fuel shutoff valve clockwise to the closed position.

Perkins Diesel models:

Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

- 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 250 psi / 17.2 bar.

4 Gasoline/LPG models:

Connect the LPG hose to the LPG tank and open the valve on the tank.

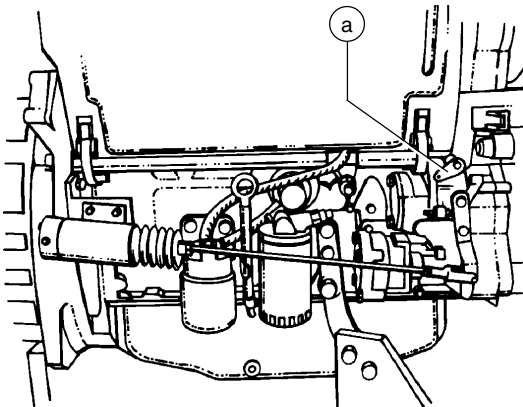
Perkins Diesel models:

Connect the engine wiring harness to the fuel solenoid.

5 Deutz Diesel Models:

Release the manual fuel shut off valve.

- 6 Start the engine from the ground controls and check for hydraulic leaks.



a manual fuel shutoff valve

Turntable Rotation Components

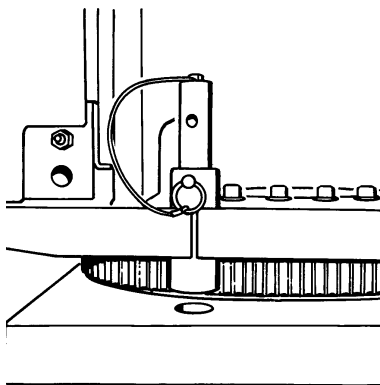
REV A

13-1 Rotation Hydraulic Motor

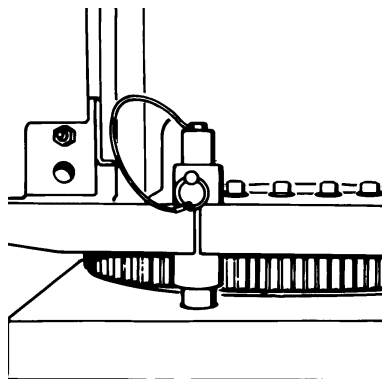
How to Remove the Rotation Hydraulic Motor

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

- 1 Secure the turntable from rotating with the turntable rotation lock pin.



Unlocked position

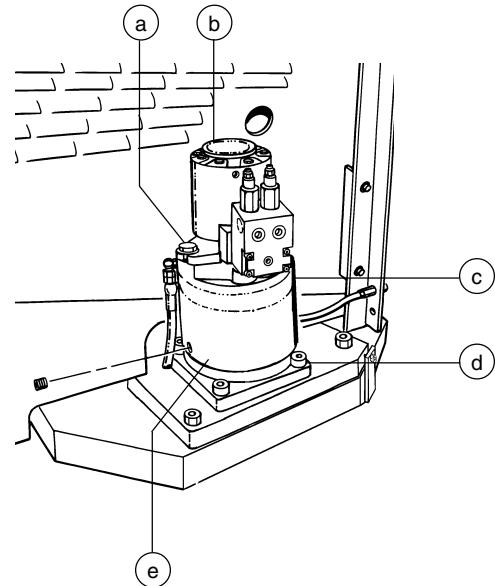


Locked position

- 2 Tag, disconnect and plug the hydraulic hoses from the motor, brake and manifold. Cap the fittings on the motor, brake and 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 Remove the motor/brake mounting fasteners, then remove the motor from the brake.



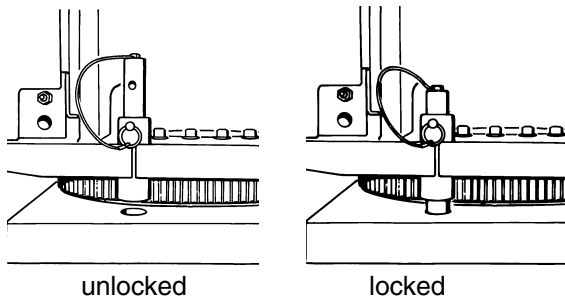
- a motor/brake mounting bolts
- b motor
- c brake
- d drive hub mounting bolts
- e drive hub

REV A

TURNTABLE ROTATION COMPONENTS

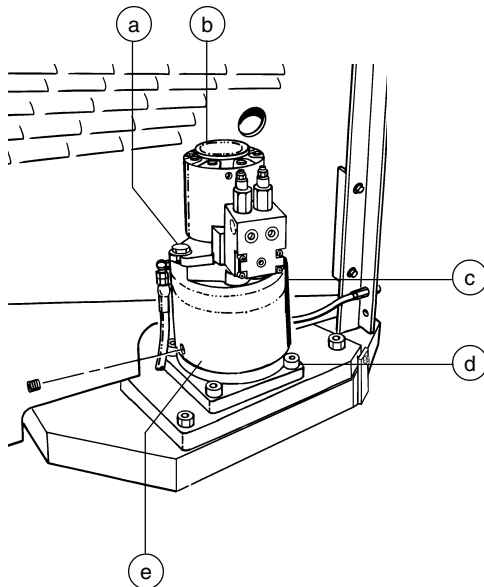
How to Remove the Turntable Rotation Brake or Drive Hub

- 1 Secure the turntable from rotating with the turntable rotation lock pin.



- 2 Remove the motor, See 13-1, *How to Remove the Rotation Hydraulic Motor*.

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



- a motor/brake mounting bolts
- b motor
- c brake
- d drive hub mounting bolts
- e drive hub

- 3 Remove the drive hub mounting bolts, and then use an appropriate lifting device to remove the drive hub from the machine.

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

- 4 Install the drive hub. Torque the drive hub mounting bolts to 180 ft-lbs / 244 Nm.
- 5 Install the brake, then motor onto the drive hub. Torque the brake/motor mounting bolts to 75 ft-lbs / 102 Nm.

Turntable rotate drive hub

Capacity	8 fluid ounces 0.24 liters
----------	-------------------------------

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

2WD Steering Axle Components

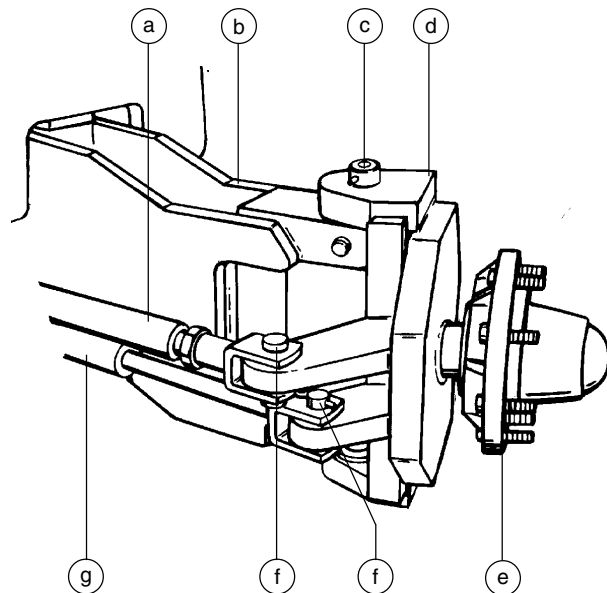
REV B

14-1 Yoke and Hub

How to Remove the Yoke and Hub

- 1 Remove the pin retaining fasteners from the steering cylinder and tie rod clevis pins. Remove the pins.

NOTICE Always use a new cotter pin when installing a clevis pin.



- a tie rod
- b axle
- c yoke pivot pin
- d yoke
- e hub
- f pivot pin
- g steering cylinder

- 2 Loosen the wheel lug nuts. Do not remove them.
- 3 Block the non-steering wheels, and center a lifting jack of ample capacity under the steering axle.
- 4 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.
- 5 Remove the lug nuts. Remove the tire and wheel assembly.
- 6 Remove the pin retaining fasteners from the yoke pivot pins.
- 7 Support and secure the yoke/hub assembly to a lifting jack.
- 8 Use a slide hammer to remove the upper yoke pivot pin.
- 9 Use a soft metal drift to drive the lower yoke pivot pin down and out.

CAUTION Crushing hazard. The yoke/hub assembly may become unbalanced and fall when the yoke pivot pins are removed if it is not properly supported and secured to the lifting jack.

Torque specifications

Lug nut torque, dry	170 ft-lbs 230 Nm
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Lug nut torque, lubricated	130 ft-lbs 176 Nm
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Before serial number 5370

Drive hub mounting bolts, dry	150 ft-lbs 203 Nm
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Drive hub mounting bolts, lubricated	110 ft-lbs 149 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
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Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm
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REV B

2WD STEERING AXLE COMPONENTS

After serial number 5369

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
Drive hub mounting bolts, lubricated	160 ft-lbs 217 Nm
Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
Drive motor mounting bolts, lubricated	80 ft-lbs 109 Nm

How to Remove the Hub and Bearings

- 1 Loosen the wheel lug nuts. Do not remove them.
- 2 Block the non-steering wheels and place a lifting jack of ample capacity under the steering axle.
- 3 Raise the machine approximately 6 inches/ 15 cm and place blocks under the 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.

NOTICE Always use a new cotter pin when installing a clevis pin.

- 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.

NOTICE Always install a new bearing seal when removing a hub.

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 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.

- 5 Place the outer bearing into the hub.
- 6 Install the washer and slotted nut.
- 7 Tighten the slotted nut to 158 ft-lbs / 214 Nm to seat the bearing.
- 8 Loosen the slotted nut, then re-tighten to 35 ft-lbs / 47 Nm.
- 9 Install a new cotter pin. Bend the cotter pin to lock it.

NOTICE Always use a new cotter pin when installing a clevis pin.

- 10 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts.

Torque specifications

Lug nut torque, dry	170 ft-lbs 230 Nm
Lug nut torque, lubricated	130 ft-lbs 176 Nm

2WD STEERING AXLE COMPONENTS

REV A

14-2 Steering Cylinders

How to Remove a Steering Cylinder

There are two identical steering cylinders that work in parallel. They are part of the same hydraulic circuit, but move in opposite directions. The tie rod maintains equal movement of the tires.

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

- 1 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings on the cylinder.

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

- 2 Remove the pin retaining fasteners from the steering cylinder clevis pins.

- 3 Remove the clevis pins from the steer cylinder.

NOTICE Always use a new cotter pin when installing a clevis pin.

- 4 Remove the steering cylinder from the machine.

REV A

2WD STEERING AXLE COMPONENTS

14-3 Tie Rod

How to Remove the Tie Rod

- 1 Remove the cotter pins from the clevis pins at each end of the tie rod, then remove the clevis pins.

NOTICE Always use a new cotter pin when installing a clevis pin.

- 2 Remove the tie rod.

How to Perform the Toe-in Adjustment (before serial number 3536)

NOTICE Perform this procedure on a firm, level surface. Block the non-steering tires and be sure that the machine is in the stowed position.

NOTICE Machines manufactured after serial number 3535 have non-adjustable tie-rods.

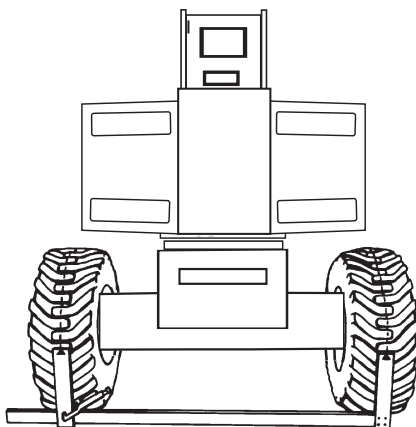
- 1 Straighten the steer wheels.
- 2 Measure the steer tires, front to front and back to back, using a measuring fixture.

- 3 Block the non-steering wheels, and center a lifting jack of ample capacity under the steering axle.
- 4 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.
- 5 Loosen the jam nut on the adjustable end of the tie rod.
- 6 Remove the pin retaining fasteners, then remove the pivot pin from the adjustable end of the tie rod.
- 7 Slide the tie rod off the yoke and adjust it by turning the end.

NOTICE One half turn on the adjustable end equals approximately 1/8 inch / 6.4 mm change in the front and rear measurements.

- 8 Slide the tie rod onto the yoke. Install the pivot pin, then install the retaining fasteners.
- 9 Tighten the jam nut against the tie rod.
- 10 Lower the machine and recheck the front and back measurements (step 2). If further adjustment is needed, repeat steps 3 through 8.

Toe-in specification 0 ± 1/8 inch / 6.35 mm



4WD Steering Axle Components

REV B

15-1 Yoke and Hub

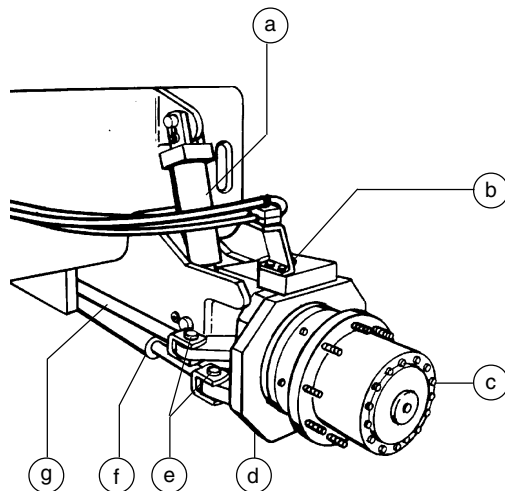
How to Remove the Yoke and Hub

The yoke installation utilizes bushings and a thrust washer that may require periodic replacement. The yoke must be removed before the drive hub can be removed.

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

- 1 Remove the pin retaining fasteners from both the steering cylinder and the tie rod clevis pins. Remove the pins.

NOTICE Always use a new cotter pin when installing a clevis pin.



- a oscillate cylinder
- b yoke pivot pin
- c drive hub
- d yoke
- e pivot pin
- f steer cylinder
- g tie rod

- 2 Tag, disconnect and plug the hydraulic hoses from the drive motor. Cap the fittings on the drive motor.

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

- 3 Loosen the wheel lug nuts. Do not remove them.
- 4 Block the non-steering wheels, and center a lifting jack of ample capacity under the steering axle.
- 5 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.
- 6 Remove the lug nuts, then remove the tire and wheel assembly.
- 7 Remove the hydraulic hose clamp retaining fastener from the top of the yoke.
- 8 Remove the drive motor mounting fasteners.
- 9 Slide the drive motor shaft out of the drive hub and then remove the drive motor from the machine.
- 10 Remove the pin retaining fasteners from the upper and lower yoke pivot pins.
- 11 Support and secure the yoke/drive hub assembly to a lifting jack.
- 12 Use a slide hammer to remove the upper yoke pivot pin, then use a soft metal drift to drive the lower yoke pivot pin down and out.

CAUTION Crushing hazard. The yoke/hub assembly may become unbalanced and fall when the yoke pivot pins are removed if it is not properly secured and supported by the lifting jack.

REV B

4WD STEERING AXLE COMPONENTS

- 13 Place the yoke/drive hub assembly on a flat surface with the drive hub facing down.
- 14 Remove the drive hub mounting fasteners that attach the yoke to the drive hub. Remove the yoke weldment from the drive hub.

NOTICE Replace the thrust washer when installing the yoke/drive hub assembly onto the axle.

Torque specifications

Lug nut torque, dry	170 ft-lbs 230 Nm
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Lug nut torque, lubricated	130 ft-lbs 176 Nm
----------------------------	----------------------

Before serial number 5370

Drive hub mounting bolts, dry	150 ft-lbs 203 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	110 ft-lbs 149 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
---------------------------------	---------------------

Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm
--	--------------------

After serial number 5369

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	160 ft-lbs 217 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
---------------------------------	----------------------

Drive motor mounting bolts, lubricated	80 ft-lbs 109 Nm
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15-2 Steering Cylinders

How to Remove a Steering Cylinder

This procedure is the same as the 2WD procedure. See 14-2, *How to Remove a Steering Cylinder*.

15-3 Tie Rod

How to Remove the Tie Rod

This procedure is the same as the 2WD procedure. See 14-3, *How to Remove the Tie Rod*.

How to Perform the Toe-in Adjustment (before serial number 3536)

This procedure is the same as the 2WD procedure. See 14-3, *How to Perform the Toe-in Adjustment*.

Oscillating Axle Components

REV A

16-1

Oscillating Axle Lock-out Cylinders

The oscillating axle cylinders extend and retract between the drive chassis and the oscillating axle. The cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic hose failure.

How to Remove an Oscillating Axle Cylinder

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

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

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

1 Rotate the turntable until the boom is between the steer tires.

- 2 Remove the fasteners from drive chassis cover at the steer end. Remove the cover.
- 3 Tag, disconnect and plug the oscillating axle cylinder hydraulic hoses. Cap the fittings on the oscillate cylinder.

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

- 4 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.
- 5 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.
- 6 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pin.
- 7 Remove the cylinder from the machine.

WARNING Crushing hazard. The oscillate cylinder could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

Non-steering Axle Components

REV B

17-1 Drive Motor

How to Remove a Drive Motor

CAUTION Component damage hazard. Repairs to the motor should only be performed by an authorized Sundstrand-Sauer dealer.

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

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

1 Remove the fasteners from the cover on the non-steer axle. Remove the cover.

2 Tag, disconnect and plug the hydraulic hoses from the drive motor. Cap the fittings on the drive motor.

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

3 Remove the drive motor mounting fasteners.

4 Slide the drive motor shaft out of the brake and remove the drive motor from the machine.

Torque specifications

Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm

NON-STEERING AXLE COMPONENTS

REV B

17-2 Drive Hub

How to Remove a Drive Hub

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

- 1 Remove the drive motor. See 17-1, *How to Remove a Drive Motor*.
- 2 Tag, disconnect and plug the hydraulic hose from the brake.
- 3 Loosen the wheel lug nuts. Do not remove them.
- 3 Block the steering wheels, and center a lifting jack of ample capacity under the non-steering axle.
- 4 Raise the machine approximately 6 inches / 15 cm and place blocks under the chassis for support.
- 5 Remove the wheel lug nuts, then the tire and wheel assembly.

- 6 Place a second lifting jack under the drive hub for support and secure the drive hub to the lifting jack.
- 7 Remove the drive hub mounting bolts that attach the drive hub to the chassis. Remove the drive hub.

CAUTION Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported and secured to the lifting jack.

Torque specifications

Lug nut torque, dry	170 ft-lbs 230 Nm
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Lug nut torque, lubricated	130 ft-lbs 176 Nm
----------------------------	----------------------

Before serial number 5370

Drive hub mounting bolts, dry	150 ft-lbs 203 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	110 ft-lbs 149 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
---------------------------------	---------------------

Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm
--	--------------------

After serial number 5369

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
-------------------------------	----------------------

Drive hub mounting bolts, lubricated	160 ft-lbs 217 Nm
--------------------------------------	----------------------

Drive motor mounting bolts, dry	110 ft-lbs 149 Nm
---------------------------------	----------------------

Drive motor mounting bolts, lubricated	80 ft-lbs 109 Nm
--	---------------------

REV B

NON-STEERING AXLE COMPONENTS

17-3 Wheel Brake

How to Remove a Wheel Brake

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

- 1 Remove the drive motor. See 17-1, *How to Remove a Drive Motor*.
- 2 Tag, disconnect and plug the hydraulic hose from the brake.

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

- 3 Remove the brake from the machine.

California Proposition 65

WARNING

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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