

Genie®

Service Manual

First Edition
Second Printing
Part No. 52709

Z™-45/25
Z™-45/25J

From Serial number 9998 to 21179

Genie® Z-45/25™
Genie® Z-45/25J™

Important

Read, understand and obey the safety rules and operating instructions in the *Genie Z-45/25 & Genie Z-45/25J Operator's Manual* before attempting any maintenance or repair procedure.

This service manual covers the Genie Z-45/25 & Genie Z-45/25J 2WD and 4WD models introduced in 1998.

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

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

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

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

If you have any questions, please call Genie Industries.

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Genie® Industries

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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie Z-45/25 & Genie Z-45/25J 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 Green—used to indicate operation or maintenance information.



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



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

Workplace Safety



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



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



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



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



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



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

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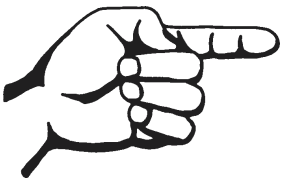
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Specifications

Machine Specifications

Stowed dimensions	**Z-45/25** (non jib)	**Z-45/25J** (jib)
Length	18 ft 5.5 m	22 ft 3 in 6.8 m
Width		
Standard Base Models	7 ft 4 in 2.2 m	7 ft 4 in 2.2 m
Narrow Base Models	5 ft 9 in 1.8 m	5 ft 9 in 1.8 m
Height		
Standard Base Models	6 ft 10 in 2.1 m	6 ft 10 in 2.1 m
Narrow Base Models	6 ft 7 in 2.05 m	6 ft 7 in 2.05 m
Weight		
Standard Base Models	14,000 lbs 6350 kg	14,700 lbs 6668 kg
Narrow Base Models	17,100 lbs 7756 kg	17,100 lbs 7756 kg
Ground clearance		
Standard Base Models	10 in 25.4 cm	10 in 25.4 cm
Narrow Base Models	7 in 17.7 cm	7 in 17.7 cm
Operational dimensions		
Maximum platform height		
Standard Base Models	45 ft 8 in 13.9 m	45 ft 6 in 13.8 m
Narrow Base Models	45 ft 5 in 13.9 m	45 ft 5 in 13.9 m
Maximum horizontal reach	[1]24 ft 6 in [1]7.5 m	25 ft 3 in 7.7 m
Maximum turntable tailswing	0 in 0 cm	0 in 0 cm
Wheelbase	6 ft 8 in 2 m	6 ft 8 in 2 m
Minimum turning radius, inside		
Standard Base Models	4 ft 6 in 1.4 m	4 ft 6 in 1.4 m
Narrow Base Models	5 ft 1.5 m	5 ft 1.5 m
Minimum turning radius, outside		
Standard Base Models	11 ft 6 in 3.5 m	11 ft 6 in 3.5 m
Narrow Base Models	11 ft 3.35 m	11 ft 3.35 m
Turntable rotation	359°	359°
Platform rotation	180°	160°
Maximum capacity 6 foot platform	500 lbs 227 kg	500 lbs 227 kg
Maximum allowable side force (ANSI and CSA)	150 lbs 68 kg	150 lbs 68 kg
Platform dimensions		
Length		72 in 183 cm
Width		30 in 76 cm

[1] Outreach specification with platform rotated 90 degrees.

SPECIFICATIONS

Tires and wheels	Rough terrain	Industrial
Wheel diameter	17.5 inches	14.5 inches
Wheel width	10.5 inches	7 inches
Wheel lugs, 4WD	9 @ 5/8 -18	
Wheel lugs, 2WD Front Rear	 8 @ 5/8 -18 9 @ 5/8 -18	 8 @ 5/8 -18 9 @ 5/8 -18
Lug nut torque	125 ft-lbs 169.5 Nm	125 ft-lbs 169.5 Nm
Tire size	14-17.5 NHS	9-14.5 LT
Tire ply rating	14	Tread 8 Sidewall 6
Tire contact area	59 sq in 149.9 sq cm	43.5 sq in 280 sq cm
Overall tire diameter	35.8 in 90.9 cm	28 in 71 cm
Tire pressure	45 psi 2.76 bar	Foam filled
Fluid capacities		
Fuel tank		17 gallons 64.3 liters
LPG tank		33.5 pounds 15.2 kg
Hydraulic tank		24 gallons 91 liters
Hydraulic system (including tank)		30 gallons 113.6 liters
Drive torque hubs		17 fl oz 0.51 liters

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

Performance Specifications

Drive speeds, maximum	
Drive speed, stowed All models	4.8 mph 7.7 km/h 40 ft/5.7 sec 12.2 m/5.7 sec
Drive speed, boom raised or extended, Standard Base Models	0.6 mph 1 km/h 40 ft/45 sec 12.2 m/45 sec
Drive speed, boom raised or extended, Narrow Base Models	0.36 mph 0.58 km/h 40 ft/79 sec 12.2 m/79 sec

Gradeability	2WD	4WD
Boom Stowed Position	30%	45%

SPECIFICATIONS

Boom function speeds, maximum from platform controls	
Jib boom up	38 to 42 seconds
Jib boom down	24 to 27 seconds
Primary boom up	24 to 27 seconds
Primary boom down	32 to 37 seconds
Secondary boom up	23 to 27 seconds
Secondary boom down	23 to 27 seconds
Primary boom extend	10 to 14 seconds
Primary boom retract	18 to 22 seconds
Turntable rotate - 359° primary boom retracted	73 to 78 seconds
Platform rotate - 180° Z-45/25 Models	10 to 14 seconds
Platform rotate - 160° Z-45/25J Models	9 to 13 seconds
Platform level up	35 to 39 seconds
Platform level down	26 to 32 seconds

SPECIFICATIONS

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
Drive pump	
Type: bi-directional variable displacement piston pump	
Displacement @ 2500 rpm	0 to 30.3 gallons per minute 0 to 114.7 liters per minute
Maximum drive pressure	3500 psi 241.3 bar
Charge pressure neutral position drive position	 290 psi 250 psi
	 20 bar 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**
Displacement per revolution	1.53 cu in 25 cc
Non-steer end drive motors	
Displacement per revolution, variable 4WD (2 speed motor)	0.16 to 2.8 cu in 2.62 to 45.9 cc
Displacement per revolution, variable 2WD	1.1 to 2.8 cu in 18.4 to 45.9 cc
Function pump	
Type: pressure balanced gear	
Displacement - static	0.67 cu in 11 cc
Displacement @ 2500 rpm	0 to 2.1 gallons per minute 0 to 7.95 liters per minute
Hydraulic tank circuit return line filter	6 micron with 25 psi (1.7 bar) bypass

Function manifold	
Function relief valve pressure	3200 psi 220.6 bar
Primary boom down relief valve pressure	2300 psi 158.6 bar
Secondary boom down relief valve pressure	1800 psi 124 bar
Steer flow regulator	1.5 gpm 5.7 liters/min
Auxiliary pump	
Type: fixed displacement gear pump	
Displacement	1.75 gallons per minute 2.8 liters per minute
Auxiliary pump relief pressure	3200 psi 220.6 bar

SPECIFICATIONS

Ford Engine LRG-425 EFI

Displacement	153 cu in 2.5 liters
Number of cylinders	4
Bore & stroke	3.78 x 3.4 in 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
High idle	2500 rpm
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 in 0.889 to 1.397 mm
Lubrication system	
Oil pressure (operating temp. @ 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. Units ship with 10W-40 SG/CC.	

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
Brush spring tension	64 ounces 18 Newtons
Bolt torque through brush	45 to 84 in-lbs 5.08 to 9.5 Nm
Brush mounting bolt torque	15 to 20 ft-lbs 20 to 27 Nm
Maximum commutator run-out	0.005 in 0.127 mm

SPECIFICATIONS

Battery	
Type	12V, Group 34/78
Quantity	1
Cold cranking ampere	900A
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 L/min
Ignition System	
Spark plug type	Motorcraft AWSF-52C
Spark plug gap	0.042 to 0.046 in 1.07 to 1.18 mm
Engine coolant	
Capacity	11 1/2 quarts 10.9 liters
Alternator	
Output	95A, 14.5V

SPECIFICATIONS

Deutz Engine F3L 1011F

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	
gross intermittent	44
continuous	40
horsepower @ 3000 rpm	36
Firing order	1 - 2 - 3
Low idle	1400 rpm
High idle	2500 rpm
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
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 bar
Oil capacity (including filter)	6.5 quarts 6 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 CC/SG or CD/SG grades. Units ship with 10W-40 SG/CC.	

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	0.72 in 18.5 mm
Brush length, minimum	0.27 in 7 mm
Battery	
Type	12V, Group 34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

SPECIFICATIONS

Perkins Engine 104-22 (KR model)

Displacement	135 cu in 2.2 liters
Number of cylinders	4
Bore and stroke	3.31 x 3.94 inches 84 x 100 mm
Horsepower	
gross intermittent	50
continuous	46.9
horsepower @ 2800 rpm	41
Firing order	1 - 3 - 4 - 2
Low idle	1600 rpm
High idle	2500 rpm
Compression ratio	22:1
Compression pressure	300 to 500 psi 20.7 to 34.5 bar
Pressure (psi) of lowest cylinder must be 50 psi (3.45 bar) of highest cylinder	
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.008 in 0.2 mm
Exhaust	0.008 in 0.2 mm
Lubrication system	
Oil pressure (at 2600 rpm)	41 psi 2.8 bar
Oil capacity (including filter)	8.6 quarts 8.2 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
Injection pressure	2133 psi 147 bar
Fuel requirement	#2 Diesel
Alternator output	55A @ 13.8V
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 34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 in 10 mm

Hydraulic Hose and Fitting Torque Specifications

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

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

Torque Procedure

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

NOTICE The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are standard SAE size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

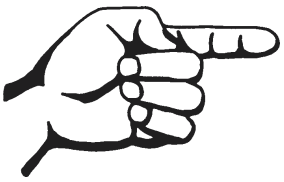
2 Lubricate the O-ring before installation.

3 Be sure that the face seal O-ring is seated and retained properly.

4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.

5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table above.

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



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Theory of Operation

Power Source

The Genie Z-45/25 and Genie Z-45/25J are powered by either a gasoline/LPG engine or one of two diesel engines. The gasoline/LPG option uses a Ford LRG-425 EFI engine rated at 70 horsepower @ 2500 rpm. The diesel options include a Deutz F3L 1011F engine rated at 36 horsepower @ 3000 rpm, and a Perkins 104-22 KR engine rated at 41 horsepower @ 2800 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 7 gpm (26.5 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 3500 psi (241.3 bar).

Drive functions are powered by a bi-directional, variable output piston pump rated at 0 to 30.3 gpm (0 to 114.7 L/min) @ 2500 rpm. Two internal 3200 psi (220.6 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 (Z-45/25J models) 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

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 Z-45/25 and Genie Z-45/25J machines are equipped with operational controls which are found in two locations: the ground controls, located on the engine 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, six months, annually and every 2 years as specified on the *Maintenance Inspection Report.*

⚠WARNING Failure to perform each procedure as presented and scheduled may cause death, serious injury or substantial damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Keep records on all inspections for three years.
- ☑ Unless otherwise specified, perform each maintenance 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
  - · 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 information and step-by-step instructions.

Symbols Legend



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

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

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

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

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

NOTICE Green—used to indicate operation or maintenance information.

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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



Indicates that tools will be required to perform this procedure.



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



Indicates that a cold 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 years. The *Scheduled Maintenance Procedures Section* and the *Maintenance Inspection Report* have been divided into five subsections—A, B, C, D and E. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	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 years or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

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

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

Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

☐	**Daily or 8 hour Inspection: A**
☐	**Quarterly or 250 hour Inspection: A+B**
☐	**Six Month or 500 hour Inspection: A+B+C**
☐	**Annual or 1000 hours Inspection: A+B+C+D**
☐	**2 Year or 2000 hour Inspection: A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist A	Y	N	R
A-1 Manuals			
A-2 Decals and placards			
A-3 Damage and loose or missing parts			
A-4 Engine oil level			
A-5 Engine coolant-Liquid Cooled 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 Check the engine belt-Perkins Models			
A-16 Air filter			
A-17 Fuel filter- Ford Models			
A-18 Inspect the radiator-Perkins Models			
A-19 Perform 30 day service			
Perform every 100 hours:			
A-20 Replace oil filter-Ford and Perkins Models			
A-21 Inspect fuel filter/water separator-Diesel Models			
A-22 Check engine RPM-Perkins Engine Models			
Perform every 200 hours:			
A-23 Check the engine belt-Ford Models			

Checklist B	Y	N	R
B-1 Check the battery			
B-2 Inspect electrical wiring			
B-3 Check the radiator-Ford Models			
B-4 Exhaust system			
B-5 Hydraulic return filter condition indicator			
B-6 Check oil cooler and fins-Deutz Models			
B-7 Tires and wheels			
B-8 Brake configuration			
B-9 Drive hub oil level			
B-10 Engine RPM-Ford and Deutz Models			
B-11 Key switch			
B-12 Emergency Stop			
B-13 Ground control override			
B-14 Directional valve			
B-15 Platform leveling			
B-16 Horn			
B-17 Foot switch			
B-18 Engine idle select			
B-19 Fuel select-Ford Models			
B-20 Drive enable system			
B-21 Drive brakes			
B-22 Drive speed-stowed			
B-23 Drive speed-raised			
B-24 Alarm package			
B-25 Hydraulic oil analysis			
Perform every 250 hours:			
B-26 Replace hydraulic tank return filter			
Perform every 400 hours:			
B-27 Replace fuel filter/water separator element-Perkins models			
B-28 Replace the fuel filter element - Perkins Models			
B-29 Replace spark plugs-Ford Models			
B-30 Replace engine air filter			

MAINTENANCE INSPECTION REPORT

Instructions

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

☐	**Daily or 8 hour Inspection:**	**A**
☐	**Quarterly or 250 hour Inspection:**	**A+B**
☐	**Six Month or 500 hour Inspection:**	**A+B+C**
☐	**Annual or 1000 hours Inspection:**	**A+B+C+D**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- 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	Y	N	R
C-1 Engine belt-Deutz Models			
C-2 Replace engine oil and filter-Deutz Models			
C-3 Valves-Deutz Models			
C-4 Check the coolant-Liquid Cooled Models			
C-5 Check the valve clearance-Perkins Models			
C-6 PCV valve-Ford Models			

Checklist D	Y	N	R
D-1 Boom wear pads			
D-2 Turntable bearing bolts			
D-3 Free-wheel configuration			
D-4 Grease rotation bearing			
D-5 Drive hub oil			
D-6 Drive loop hydraulic filter			
D-7 Check Air/LPG mixture-Ford Models			
D-8 Replace the diesel fuel filter/water separator-Deutz Models			

Checklist E	Y	N	R
E-1 Hydraulic oil			
E-2 Engine coolant-Ford Models			
E-3 Fuel hoses			
E-4 Check the toothed belt-Deutz Models			
E-5 Check the engine valve clearance-Ford Models			
E-6 Check cylinder compression-Ford Models			
E-7 Check the fuel injection pump-Deutz Models			
E-8 Replace timing belt Ford Models			
E-9 Grease the steer axle wheel bearings, 2WD Models			

Table A Procedures

A-1
Inspect the Operator's and Safety Manuals

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

1 Check to be sure 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

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 Z45/25 & Genie Z45/25J 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.

TABLE A PROCEDURES

A-3
Inspect for Damage and Loose or Missing Parts



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

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

- · Electrical components, wiring and electrical cables
- · Hydraulic hoses, fittings, cylinders and manifolds
- · Fuel and hydraulic tanks
- · Drive and turntable rotation motors and drive torque hubs
- · Axle components
- · Boom components and wear pads
- · Platform entry mid-rail or gate
- · Tires and wheels
- · Engine and related components
- · Limit switches
- · Alarms, horn and beacon (if equipped)
- · Nuts, bolts and other fasteners

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.

TABLE A PROCEDURES

A-4
Check the Engine Oil Level

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

NOTICE Check the oil level with the engine off.

1 Check the oil dipstick. Add oil as needed.

⊙ Result: The oil level should be in the "safe" zone.

Ford LRG-425 EFI Engine **Oil capacity (including filter)**	4.5 quarts 4.3 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. Units ship with 10-40 CC/SG.	

Deutz Engine F3L 1011F **Oil capacity (including filter)**	6.3 quarts 6 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, CD/SE, SF/CC or SF/CD grades. Units ship with 10-40 CC/SG.	

Perkins Engine 104-22 **Oil capacity (including filter)**	8.6 quarts 8.2 liters
Oil viscosity requirements	
below 60°F / 15.5°C	5W-20
-10° to 90°F / -23° to 32°C	10W-30
above -10°F / -23°C	15W-40
above 25°F / -4°C	20W-50
Engine oil should have properties of API classification CC/SE, CD/SE, SF/CC or SF/CD grades. Units ship with 10-40 CC/SG.	

TABLE A PROCEDURES

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



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 result in 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



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.

Ford 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.

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

Deutz and Perkins Models:

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

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

A-7
Check the Hydraulic Oil Level

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

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

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

2 Add oil as needed.

Hydraulic oil specifications		
Hydraulic oil type		Dexron equivalent
Tank capacity	24 gallons	90.8 liters
Hydraulic system (including tank)	30 gallons	113.6 liters

TABLE A PROCEDURES

A-8
Check for Hydraulic Leaks

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

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

- Hydraulic tank— fittings, hoses, auxiliary power unit, filters, and turntable surface
- Engine compartment—hydraulic filters, fittings, hoses, pumps, filter and turntable surface
- All hydraulic cylinders
- All hydraulic manifolds
- Primary and jib boom
- The underside of the turntable
- The underside of the drive chassis
- Ground area under the machine

A-9
Check the Tire Pressure

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

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

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

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

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

Tire specifications	2WD Models	4WD Models
Standard base models		
Rough terrain tire	14-17.5 NHS 45 psi (3.1 bar)	14-17.5 NHS 45 psi (3.1 bar)
Narrow base models		
Industrial tire	Foam Filled Only	N/A

A-10
Test the Oscillate Axle (if equipped)

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 (15.2 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 (15.2 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 (15.2 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 12-4, *How to Set Up the Directional Valve Linkage*

A-11
Test the Platform and Ground Controls

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

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

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

TABLE A PROCEDURES

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

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

NOTICE Deutz and Perkins 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 foot switch.

8 Attempt to activate each machine function.

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

9 Press down on the foot switch and activate each machine function.

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

⊙ Result: All machine functions should operate through a full cycle.

10 Push in the 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 Emergency Stop button.

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

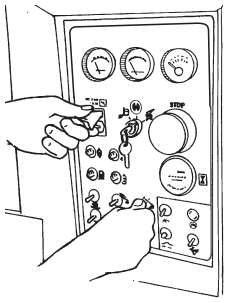
A-12
Test the Auxiliary Power Operation

Detection of auxiliary power system malfunctions is essential for safe machine operation. An unsafe working condition exists if the auxiliary powered functions do not operate in the event of a main power loss. 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 Emergency Stop button to the ON position.

2 Lift the red auxiliary power switch cover.

3 Simultaneously hold the auxiliary power switch ON and activate each boom function toggle switch.



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

⊙ Result: All boom functions should operate.

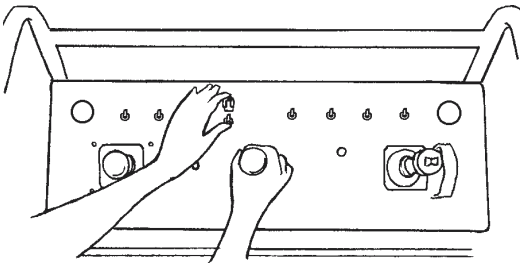
4 Turn the key switch to platform control.

5 Pull out the Emergency Stop button to the ON position at the platform controls.

6 Press down the foot switch.

7 Lift the red auxiliary power switch cover.

8 Simultaneously hold the auxiliary power 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

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

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

1 Open the engine side turntable cover.

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

3 Locate the tilt sensor to the right of the hydraulic pump.

4 Press down on one side of the tilt sensor.

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

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

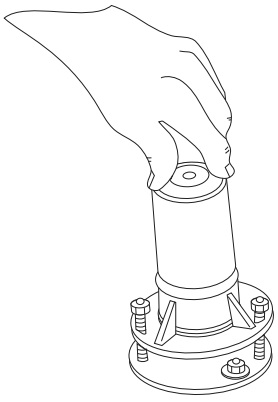


TABLE A PROCEDURES

A-14
Test the Limit Switches

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 at an unsafe drive speed.

1 Remove the hose and cable cover from the rear of the upper mid-pivot.

2 Locate the primary boom drive limit switch located on the inside of the upper mid-pivot.

3 Visually inspect primary boom drive limit switch for the following:

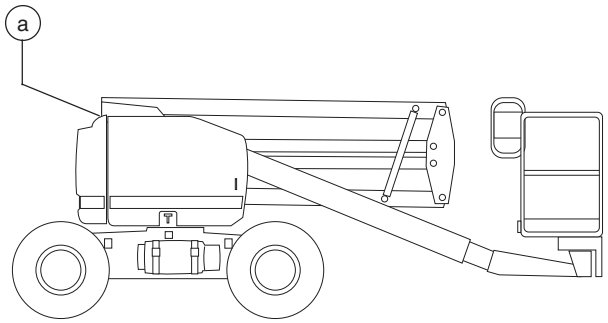
· Broken or missing roller or arm

· Missing fasteners

· Loose wiring

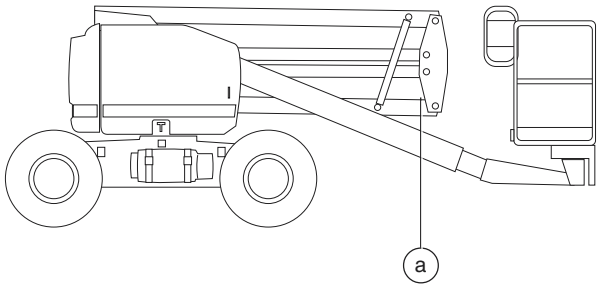
4 Manually activate the primary boom drive limit switch.

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



a primary boom drive limit switch (LS2)

5 Locate the secondary boom drive limit switch located at the platform end of the lower secondary boom.



a secondary boom drive limit switch (LS3)

6 Visually inspect secondary boom drive limit switch for the following:

· Broken or missing roller or arm

· Missing fasteners

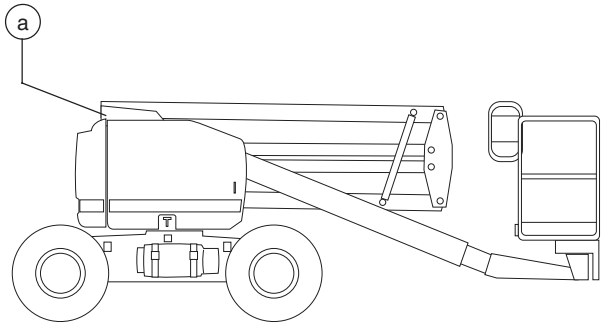
· Loose wiring

7 Manually activate the secondary boom drive limit switch.

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

TABLE A PROCEDURES

8 Locate the primary boom extend drive limit switch located at the pivot end of the primary boom.



a primary boom extend drive limit switch (LS1)

9 Visually inspect the boom extend drive limit switch located at the pivot end of the primary boom. Inspect for the following:

· Broken or missing arm

· Missing fasteners

· Loose wiring

10 Start the engine from the ground controls and extend the primary boom approximately 2 feet (61 cm).

11 Turn the engine off.

12 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.

13 Start the engine from the platform controls.

14 Move the lift/drive select switch to the lift position (if equipped).

15 Press down the foot switch. Fully retract the primary boom.

16 Move the lift/drive select switch to the drive position (if equipped).

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

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

18 Move the lift/drive select switch to the lift position (if equipped).

19 Press down the foot switch and raise the primary boom approximately 2 feet (61 cm).

20 Move the lift/drive select switch to the drive position (if equipped).

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

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

22 Move the lift/drive select switch to the lift position (if equipped).

23 Press down the foot switch and lower the primary boom to the stowed position, then raise the secondary boom approximately 2 feet (61 cm).

TABLE A PROCEDURES

24 Move the lift/drive select switch to the drive position (if equipped).

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

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

26 Move the lift/drive select switch to the lift position (if equipped).

27 Press down the foot switch and lower the secondary boom to the stowed position, then extend the primary boom approximately 2 feet (0.6 m).

28 Move the lift/drive select switch to the drive position (if equipped).

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

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

Drive speed, maximum, raised or extended	
Drive speed, boom raised or extended, Standard Base Models	0.6 mph 1.0 km/h 40 ft/45 sec 12.2 m/45 sec
Drive speed, boom raised or extended, Narrow Base Models	0.36 mph 0.58 km/h 40 ft/79 sec 12.2 m/79 sec

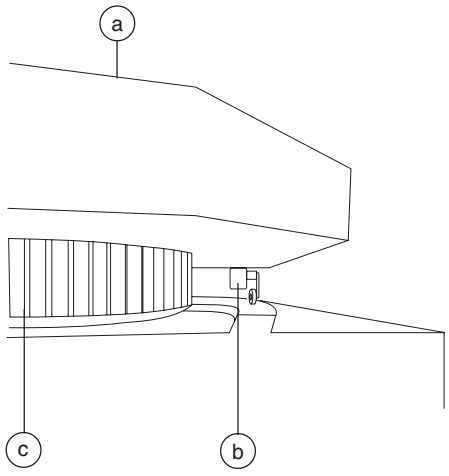
Drive Enable Limit Switch

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 ground controls and rotate the boom between the steer and non-steer tires. 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 (LS4)
c turntable rotation bearing

TABLE A PROCEDURES

3 Manually activate the drive enable limit switch.

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

4 Start the engine from the platform controls.

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

5 Move the lift/drive select switch to the lift position (if equipped).

6 Press down the foot switch. Then rotate the turntable until the primary boom is in between the non-steer tires.

⊙ Result: The drive enable indicator light should be off.

7 Move the lift/drive select switch to the drive position (if equipped).

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

⊙ Result: The drive function should operate.

9 Move the lift/drive select switch to the lift position (if equipped).

10 Press down the foot switch and 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.

11 Move the lift/drive select switch to the drive position (if equipped).

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

⊙ Result: Drive function should not operate.

13 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.

⊙ Result: Drive function should operate.

14 Move the lift/drive select switch to the lift position (if equipped).

15 Press down the foot switch and 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.

16 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.

17 Move the lift/drive select switch to the drive position (if equipped).

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

⊙ Result: Drive function should not operate.

19 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.

⊙ Result: Drive function should operate.

TABLE A PROCEDURES

A-15
Check the Engine Belt - Perkins Models

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

1 Remove the safety pin from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

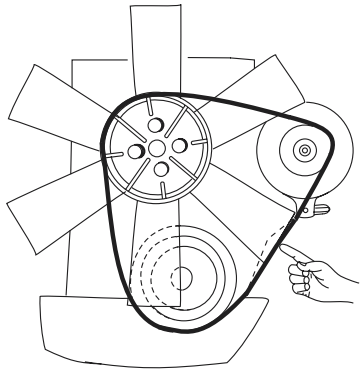
2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Inspect the engine belt for:

- Cracking
- Glazing
- Separation
- Breaks

4 Replace belt if any damage is found.

5 Check the engine belt for proper tension.



6 Swing the engine back to its original position and close the engine pivot plate latch.

7 Install the engine pivot plate safety pin.

8 Replace the air baffle and install the air baffle retaining fasteners.

Belt deflection	3/8 in to 1/2 in 9.5 mm to 12 mm
Engine belt - Genie part number	65537

A-16
Clean the Engine Air Filter Element

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.

All Models:

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Remove the end cap from the air cleaner canister.

4 Remove the air filter retaining fastener. Remove the filter element.

5 Clean the inside of the canister and the gasket with a damp cloth.

6 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.

7 Install the end cap onto the canister. Install and tighten the retaining ring.

8 Swing the engine back to its original position and close the engine pivot plate latch.

9 Install the engine pivot plate safety pin (if equipped).

TABLE A PROCEDURES

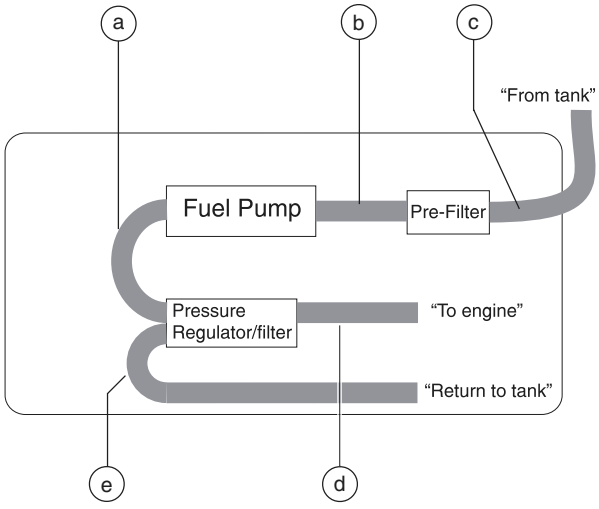
A-17
Replace the Fuel Filters - Ford Models

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 system components mounted underneath the engine pivot plate (viewed from bottom of engine pivot plate).



a hose from fuel pump to regulator/filter
b hose from fuel pre-filter to fuel pump
c hose from fuel tank to fuel pre-filter
d hose from regulator/filter to engine
e hose from regulator/filter to tank

2 At the pre-filter, disconnect and plug the fuel hose that goes to the fuel tank.

3 Disconnect the fuel hose from the fuel pre-filter to the fuel pump, then remove the pre-filter.

4 Install the new fuel pre-filter (Genie part number 52179) and connect the fuel hoses to the filter.

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

6 Disconnect the hoses from the 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 lines very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.

7 Remove the regulator/filter mounting fasteners. Then remove the regulator/filter from the engine pivot plate.

8 Install the new regulator/filter (Genie part number 58967) onto the engine pivot plate and install the hoses to the regulator/filter.

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

9 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.

Fuel filters - Genie part numbers

Fuel pre-filter	52179
Fuel pressure regulator/filter	58967

A-18
Inspect the Radiator - Perkins Models

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

1 Remove the safety pin from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

TABLE A PROCEDURES

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 back to its original position and close the engine pivot plate latch.

7 Install the engine pivot plate safety pin.

A-19
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:

- Replace the Engine Oil and Filter - Ford/Perkins Models ..... A-19 Deutz Diesel Models C-2
- Inspect the Tires and Wheels (including lug nut torque) B-5
- Replace the Hydraulic Tank Return Filter B-24
- Check the Turnable Rotation Bearing Bolts D-2

A-20
Replace the Engine Oil and Filter - Ford and Perkins Models



NOTICE Ford and Perkins 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 Burn hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may result in severe burns.

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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

4 Pull the oil drain hose out from underneath the engine.

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

6 Close the valve on the oil pan.

7 Place a container under the oil filter.

8 Use an oil filter wrench and remove the filter.

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

Oil filters - Genie part numbers	
Ford LRG-425 EFI Engine	28656
Perkins 104-22 Engine	65540

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.

TABLE A PROCEDURES

13 Check the oil filter and the oil pan hose for leaks.

14 Swing the engine back to its original position and close the engine pivot plate latch.

15 Install the engine pivot plate safety pin (if equipped).

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

Ford LRG-425 EFI Engine **Oil capacity (including filter)**	4.5 quarts 4.3 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. Units ship with 10-40 CC/SG	
Perkins 104-22 Engine **Oil capacity (including filter)**	8.6 quarts 8.2 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-21
Inspect the Fuel Filter/ Water Separator - Diesel Models



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

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:

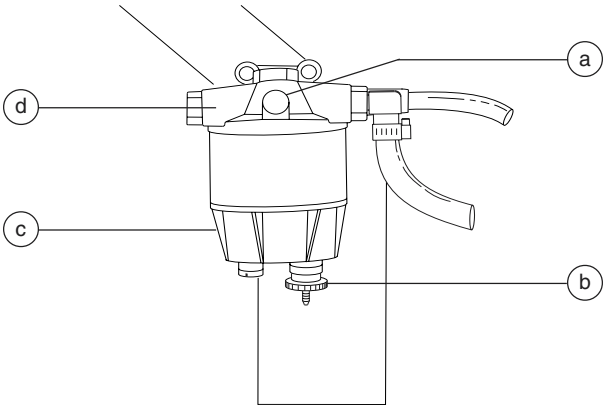
1 Open the engine side turntable cover and locate the fuel filter/water separator next to the hydraulic return filter on the bulkhead.

2 Inspect the filter bowl for water buildup.

⊙ Result: If water is present in the filter bowl continue with steps 3 through 7 for Perkins models only.

TABLE A PROCEDURES

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



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

4 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.

5 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 B-27 in this section, *Replace The Fuel Filter Element - Perkins Diesel Models,* for instructions on how to prime the fuel filter/water separator.

6 Clean up any fuel that may have spilled.

7 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:

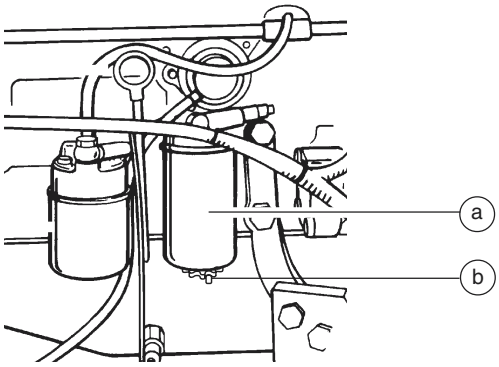
1 Open the engine side turntable cover and locate the fuel filter/water separator.

2 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

4 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/water separator
b drain plug

TABLE A PROCEDURES

4 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-8 in this section, *Replace The Diesel Fuel Filter/Water Separator - Deutz Diesel Models,* for instructions on how to prime the fuel filter/water separator.

5 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.

6 Swing the engine back to its original position and close the engine pivot plate latch.

7 Install the engine pivot plate safety pin (if equipped).

A-22
Check and Adjust the Engine RPM - Perkins Diesel Models



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

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.

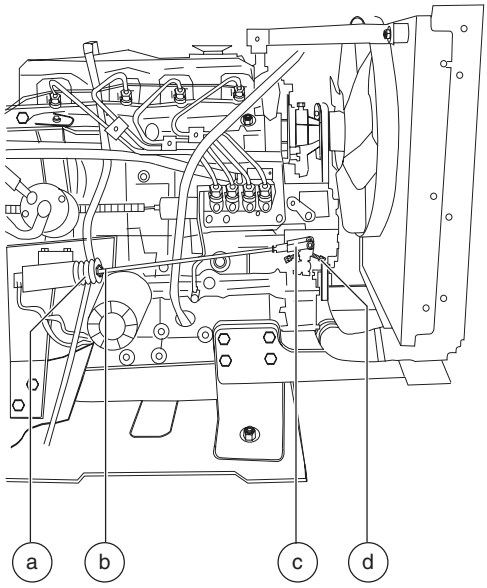
NOTICE This procedure will require two people.

1 Connect a tachometer to the engine. Start the engine from the ground controls.

⊙ Result: Low idle should be 1600 rpm.

Skip to step 3 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
d low idle lock nut and adjustment screw

3 Move the function enable toggle switch to the high idle (rabbit symbol) position.

⊙ Result: High idle should be 2500 rpm.

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.

Perkins Diesel models	
Low idle	1600 rpm
High idle	2500 rpm

TABLE A PROCEDURES

A-23
Check the Engine Belt - Ford 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 Burn hazard. Beware of hot engine components. Contact with hot engine components may result in severe burns.

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Inspect the engine belt for:
- · Cracking
- · Glazing
- · Separation
- · Breaks

4 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.

5 Swing the engine back to its original position and close the engine pivot plate latch.

6 Install the engine pivot plate safety pin (if equipped).

Engine belt - Genie part number	
Ford Models	52580

Table B Procedures

B-1
Check the Battery



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.

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

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

1 Put on protective clothing and eye wear.

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

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

NOTICE The battery is a maintenance free battery and does not require the replenishing of electrolyte.

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

B-2
Inspect the Electrical Wiring



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

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

1 Open the engine side turntable cover.

2 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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

- Engine wiring harness
- Hydraulic manifold wiring

TABLE B PROCEDURES

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 boom/Platform rotate manifold
- Inside of the platform control box

11 Swing the engine back to its original position and close the engine pivot plate latch.

12 Install the engine pivot plate safety pin (if equipped).

B-3
Check the Radiator - Ford Models

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

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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 back to its original position and close the engine pivot plate latch.

7 Install the engine pivot plate safety pin (if equipped).

8 Replace the air baffle and install the air baffle retaining fasteners.

B-4
Check the Exhaust System

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

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

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

1 **Ford models:** Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine to access the exhaust system.

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 **Ford models:** Swing the engine back to its original position and close the engine pivot plate latch.

7 Install the engine pivot plate safety pin (if equipped).

TABLE B PROCEDURES

B-5
Check the Hydraulic Return Filter Condition Indicator

Maintaining the hydraulic 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.

1 Open the engine side turntable cover.

2 Start the engine from the platform controls.

3 Move the engine RPM toggle switch to the maintained high idle position (rabbit symbol).

4 Inspect the filter condition indicator gauge.

⊙ Result: The needle on the gauge should be operating in the *green* area. If the needle is in the *red* area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced.

NOTICE The hydraulic filter condition indicator gauge is mounted to the hydraulic return filter on the engine side bulkhead.

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

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

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

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

Oil Cooler

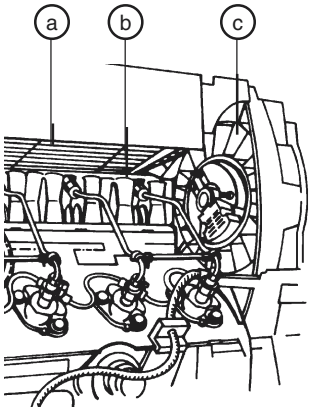
1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Remove the fasteners from the engine side cover, then remove the cover.

4 Inspect the oil cooler for leaks and physical damage.



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

5 Clean the oil cooler of debris and foreign material.

Cooling and Fan Blower Fins

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 of debris and foreign material.

10 Install the engine side cover.

11 Swing the engine back to its original position and close the engine pivot plate latch.

12 Install the engine pivot plate safety pin (if equipped).

B-7
Inspect the Tires and Wheels (including lug nut torque)

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

⚠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.

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

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

3 Check each lug nut for proper torque.

4 Check the pressure in each air-filled tire.

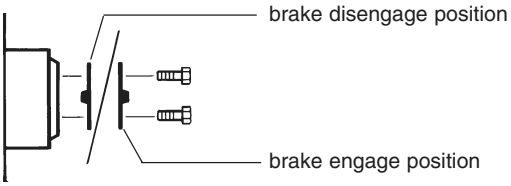
Tire specifications	Industrial	Rough terrain
Tire size	9-14.5 LT	14-17.5 NHS
Inflation pressure	Foam Filled	45 psi (3.1 bar)
Tire ply rating (minimum)	12	14
Wheel lugs, 4WD	8 @ 5/8 -18	9 @ 5/8 -18
Wheel lugs, 2WD Front Rear	 8 @ 5/8 -18 9 @ 5/8 -18	 8 @ 5/8 -18 9 @ 5/8 -18
Lug nut torque, dry	125 ft-lbs 169.5 Nm	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm	94 ft-lbs 127.4 Nm

TABLE B PROCEDURES

B-8
Confirm the Proper Brake Configuration

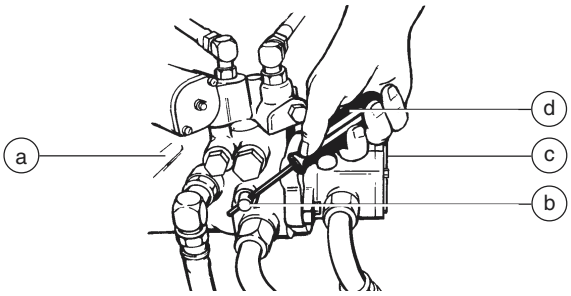
Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

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



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

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



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

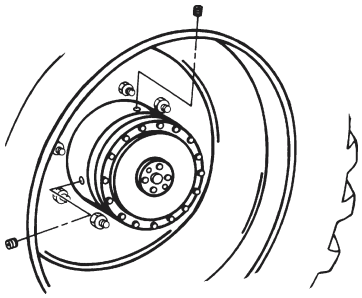
NOTICE The free-wheel valve should always remain closed.

B-9
Check the Oil Level in the Drive Hubs

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

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.

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, and then install it in the drive hub.

5 Repeat this procedure for each drive hub.

Drive hub oil	
Capacity	17 fl oz 0.5 liters

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

B-10
Check and Adjust the Engine RPM - Ford and Deutz Models



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.

Ford 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 Genie Industries Service Department OR your local Ford dealer.

Ford Models	
Low idle	1600 rpm
High idle	2500 rpm

Deutz Diesel Models:

NOTICE This procedure will require two people.

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

TABLE B PROCEDURES

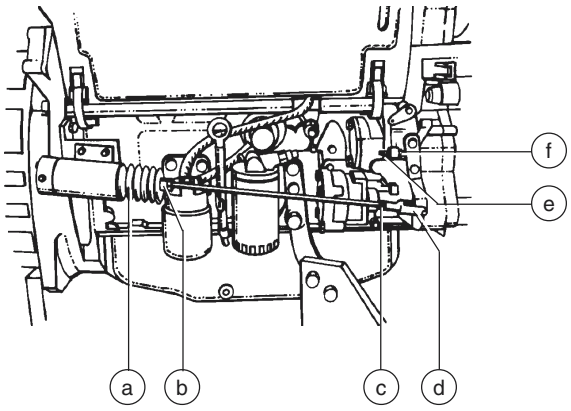
2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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

⊙ Result: Low idle should be 1400 rpm.

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

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

5 Move the function enable toggle switch to the high idle (rabbit symbol) position at the ground controls.

⊙ Result: High idle should be 2500 rpm.

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

6 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	1400 rpm
High idle	2500 rpm

B-11
Test the Key Switch

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

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

2 Turn the key switch to 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 Deutz and Perkins Diesel models: All functions should stop immediately. The engine will shut off after 2 to 3 seconds.

B-12
Test the Emergency Stop Buttons

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 the ground controls.

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

⊙ Result: The engine should shut off and no machine functions should operate.

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

3 Start the engine from the platform controls.

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

⊙ Result: The engine should shut off and no machine functions should operate.

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

TABLE B PROCEDURES

B-13
Test the Ground Control Override

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

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

2 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.

B-14
Check the Directional Valve Linkage



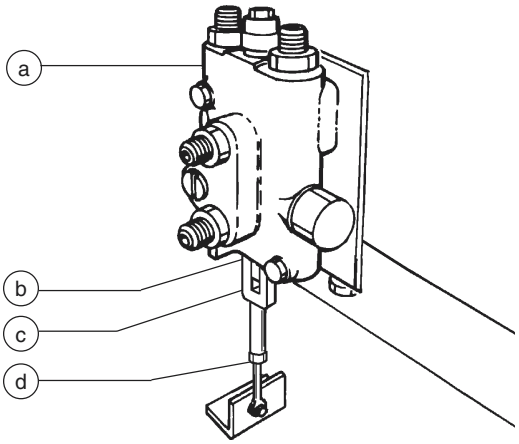
NOTICE Perform this test only on models equipped with a oscillating axle.

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 and the axle covers from the non-steer end of the drive chassis.

2 Locate the directional valve inside of the non-steer axle and 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-15
Test the Platform Self-leveling

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which 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 into 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 primary boom through a full cycle.

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

TABLE B PROCEDURES

B-16
Test the Horn

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 control and pull out the 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-17
Test the Foot Switch

A properly functioning foot switch is essential to safe machine operation. Machine functions should activate and operate smoothly as long as the foot switch is pressed down, and promptly stop when the foot switch is released. 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 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. Check 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 Engine Idle Select

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

Low idle (turtle symbol) allows the operator to control individual boom functions 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 Emergency Stop button to the ON position at both the ground and platform controls.

2 Start the engine from the ground controls then move the function enable toggle switch to the high idle (rabbit symbol) position and hold in the ON position.

⊙ Result: The engine should change to high idle.

3 Release the function enable toggle switch.

⊙ Result: The engine should return to low idle.

4 Turn the key switch to platform controls.

5 At the platform controls, move the engine idle control switch to high idle (rabbit symbol). Do not press down the footswitch.

⊙ Result: The engine should change to high idle.

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

⊙ Result: The engine should change to low idle.

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

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

8 Press down the foot switch.

⊙ Result: The engine should change to high idle.

TABLE B PROCEDURES

B-19
Test the Fuel Select Operation - Ford Models

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

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

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

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

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

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

4 Release the foot switch and shut the engine off by pushing the Emergency Stop button in to the OFF position.

5 Move the fuel select switch to LPG.

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

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

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

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

B-20
Test the Drive Enable System

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 to either side to reactivate the drive function and should inform the operator that the machine will move in the opposite direction that the drive and steer controls are moved. An improperly functioning drive enable system may allow the machine to be moved into an unsafe position.

1 Start the engine from the platform controls.

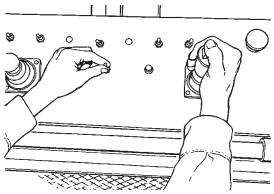
2 Rotate the turntable to the right until the boom is past the right non-steering wheel.

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

3 Slowly move the drive control handle off center.

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

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



⚠CAUTION Collsion 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.

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

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

6 Repeat steps 3 and 4.

TABLE B PROCEDURES

B-21
Test the Drive Brakes

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydrostatic brakes and hydraulically-released individual wheel brakes can appear to operate normally when 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-8 in this section, *Confirm the Proper Brake Configuration*.

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

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

3 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch), then lower the boom into the stowed position.

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

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

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

Braking: paved surface	**4WD**
Stopping distance	3 to 6 ft 0.9 to 1.8 m

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

B-22
Test the Drive Speed - Stowed Position

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

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

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

2 Start the engine from the platform controls.

3 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch), then lower the boom into the stowed position.

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

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

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

Drive speed, maximum stowed position	
All models	40 ft / 5.7 sec 12.2 m / 5.7 sec

TABLE B PROCEDURES

B-23
Test the Drive Speed - Raised or Extended Position

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

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

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

2 Start the engine from the platform controls.

3 Move the 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, boom raised or extended, Standard Base Models	0.6 mph 1 km/h 40 ft/45 sec 12.2 m/45 sec
Drive speed, boom raised or extended, Narrow Base Models	0.36 mph 0.58 km/h 40 ft/79 sec 12.2 m/79 sec

B-24
Test the Alarm Package - Optional Equipment

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

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

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

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

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

2 Move the function enable switch to either side and activate the primary boom toggle switch in the DOWN position, hold for a moment and then release it.

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

3 Move the function enable switch to either side and activate the secondary boom toggle switch in the DOWN position, hold for a moment and then release it.

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

4 Turn the key switch to platform control.

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

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

⊙ Result: The descent alarm should sound when the control handle is held down.

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

⊙ Result: The descent alarm should sound when the control handle is held down.

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

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

TABLE B PROCEDURES

B-25
Perform Hydraulic Oil Analysis



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

B-26
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 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 Burn hazard. Beware of hot oil. Contact with hot oil may result in severe burns.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover and locate the hydraulic return filter on the bulkhead.

2 Remove the filter with an oil filter wrench.

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

4 Install the new filter (Genie part number 65540) and tighten it securely by hand. Clean up any oil that may have spilled during the installation procedure.

5 Start the engine from the ground controls.

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

TABLE B PROCEDURES

B-27
Replace the Fuel Filter/ Water Separator Element - Perkins Diesel Models

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.

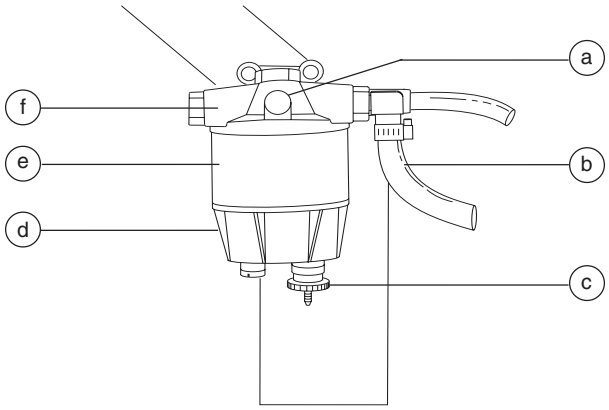
⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover and locate the fuel filter/water separator next to the hydraulic return filter on the bulkhead.

2 Disconnect and plug the fuel supply hose from the fuel tank to the fuel filter/water separator.

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



Fuel filter/water separator
a vent plug
b main fuel line
c drain plug
d filter bowl
e filter element
f separator head

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

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

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

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

8 Apply a thin layer of oil onto the element gasket. Install the filter/bowl assembly onto the filter head. Tighten the drain plug.

10 Tighten the vent plug.

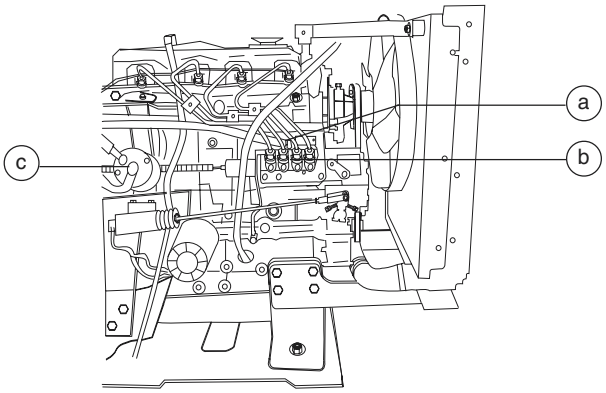
TABLE B PROCEDURES

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

12 Install the fuel supply hose from the fuel tank to the fuel filter/water separator. Tighten the clamp.

Bleed the system:

13 Loosen the vent plug on top of the fuel injection pump.



a vent plug
b fuel injection pump
c fuel lift pump

14 Operate the priming lever or priming bulb (if equipped) of the fuel lift pump until fuel, free from air, comes from the vent plug.

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

16 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.

B-28
Replace the Fuel Filter Element - Perkins Diesel Models

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 required 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.

1 Remove the safety pin from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Thoroughly clean the outside surfaces of the fuel filter assembly.

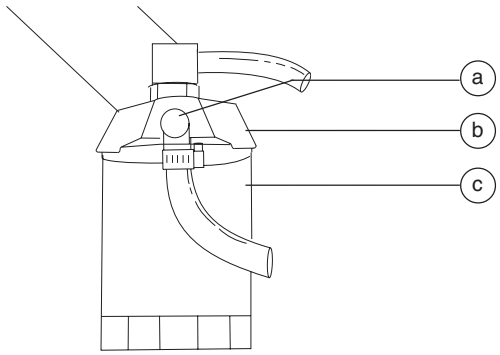
4 Place a suitable container under the fuel filter element.

5 Disconnect and plug the fuel line from the fuel pump to the fuel filter element.

6 Remove the fuel filter element with a filter wrench.

7 Apply a thin layer of fuel to the new fuel filter element o-ring.

8 Install the new fuel filter element (Genie part number 65542) and tighten it securely by hand. Clean up any fuel that may have spilled during the installation procedure.

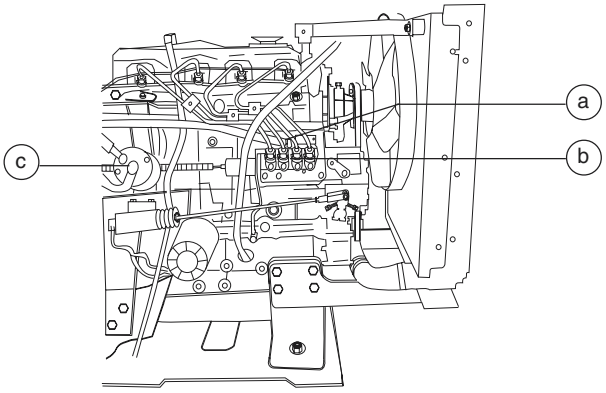


a fuel line
b filter head
c fuel filter element

TABLE B PROCEDURES

Bleed the system:

9 Loosen the vent plug on top of the fuel injection pump.



a vent plug
b fuel injection pump
c fuel lift pump

10 Operate the priming lever or priming bulb (if equipped) of the fuel lift pump until fuel, free from air, comes from the vent plug.

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

12 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.

B-29
Replace the Spark Plugs - Ford 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 safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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 and torque to specifications.

8 Connect the wires. Be sure that each spark plug wire is attached to the correct spark plug.

9 Swing the engine back to its original position and close the engine pivot plate latch.

10 Install the engine pivot plate safety pin (if equipped).

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

B-30
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.

All Models:

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Open the engine side cover and remove the retaining ring from the end cap of the air filter canister.

TABLE B PROCEDURES

4 Remove the end cap from the air cleaner canister.

5 Remove the air filter retaining fastener. Remove the filter element.

6 Clean the inside of the canister and the gasket with a damp cloth.

7 Install the new air filter element and install the mounting fastener.

8 Install the end cap onto the canister. Install and tighten the retaining ring.

9 Swing the engine back to its original position and close the engine pivot plate latch.

10 Install the engine pivot plate safety pin (if equipped).

Air filters - Genie part numbers	
All Models	27916

Table C Procedures

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

1 Remove the safety pin (if equipped) from the engine pivot plate latch .

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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

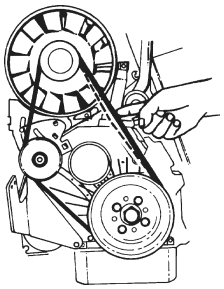
4 Remove the front engine access cover mounting fasteners.

5 Inspect the engine belt for:

- Cracking
- Glazing
- Separation
- Breaks

6 Replace belt if any damage is found.

7 Check the engine belt for proper tension. Adjust as necessary.



Deutz Diesel engine

8 Install the front engine access cover.

9 Replace the air baffle and install the air baffle retaining fasteners.

10 Swing the engine back to its original position and close the engine pivot plate latch.

11 Install the engine pivot plate safety pin (if equipped).

Belt deflection -	3/8 inch to 1/2 inch 9.5 mm to 12 mm
Engine belt - Genie part number	32698

TABLE C PROCEDURES

C-2
Replace the Engine Oil and Filter - Deutz Diesel Models

NOTICE Engine specifications require that this procedure be performed every 500 hours. Perform this procedure more often if dusty conditions exist or if the machine is operated in hot climates.

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 Burn hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may result in severe burns.

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

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Remove the oil filler cap located above the dipstick.

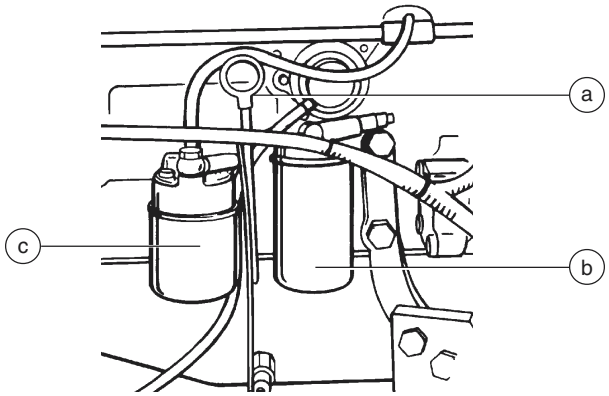
4 Pull the end of the oil drain hose out from under the engine.

5 Remove the plug from the drain hose and allow all of the oil from the engine to drain into a suitable container. See capacity specifications.

6 Install the plug on the oil drain hose.

7 Place a pan under the oil filter.

8 Use an oil filter wrench and remove the oil filter.



a engine oil level dipstick
b fuel filter/water separator
c oil filter

9 Apply a thin layer of oil to the new oil filter gasket (Genie part number 49924). 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 oil filler cap.

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 and oil drain hose for leaks.

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

Deutz Engine F3L 1011F **Oil capacity (including filter)**	6.3 quarts 6 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 CC/SE, CD/SE, CC/SF or CD/SF grades. Units shipped with 10-40 CC/SG	
Oil filter - Genie part number	49924

C-3
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).

TABLE C PROCEDURES

C-4
Change or Recondition the Engine Coolant - Liquid Cooled Models



NOTICE Engine specifications require that this procedure be performed every 500 hours or 6 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 Burn hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant may result in severe burns.

NOTICE Perform this procedure with the engine off and cooled.

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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 and connect the coolant return hose to the radiator.

8 Open the drain valve on the engine block and allow the coolant to drain into a suitable 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 return 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 return tank. Add coolant if needed.

15 Swing the engine back to its original position and close the engine pivot plate latch.

16 Install the engine pivot plate safety pin (if equipped).

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 return tank. Add coolant if needed.

Coolant capacity		
Ford Gasoline/LPG Engine	11.5 quarts	10.9 liters
Perkins 104-22 Engine	6.3 quarts	6 liters

C-5
Check the Engine Valve Clearances - Perkins Diesel Models



NOTICE Engine specifications require that this procedure be performed every 600 hours.

Complete information to perform this procedure is available in the *Perkins Workshop Manual*, Perkins part number TPD 1378 (Genie part number 72352).

TABLE C PROCEDURES

C-6
Replace the PCV Valve - Ford Models

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

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.

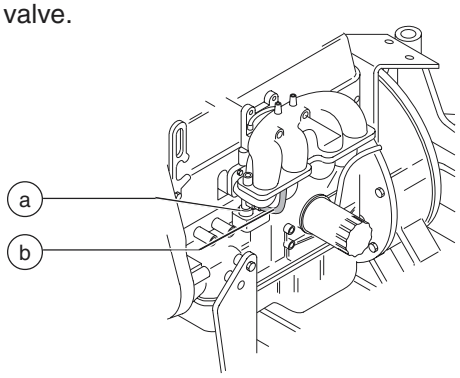
1 Open the engine side turntable cover.

2 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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 engine. 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 back to its original position and close the engine pivot plate latch.

9 Install the engine pivot plate safety pin (if equipped).

PCV Valve - Genie part number	33957

Table D Procedures

D-1 Check the Boom Wear Pads



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

NOTICE If the wear pads are not worn below specification but are still within tolerence, see Repair Procedure 4-2, *How to Shim the Primary Boom.*

1 Start the engine from the ground controls.

2 Raise the end of the primary 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 9/16 inch. If the wear pad is not less than 9/16 inch, shim as necessary to obtain zero clearance and zero drag.

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

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

Wear pad specifications

All wear pads	9/16 inch 14.3 mm

TABLE D PROCEDURES

D-2
Check the Turntable Rotation Bearing Bolts

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

1 Raise the secondary boom and place safety chocks on the lift cylinders rods. Carefully lower the boom onto the lift cylinders safety chocks.

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

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

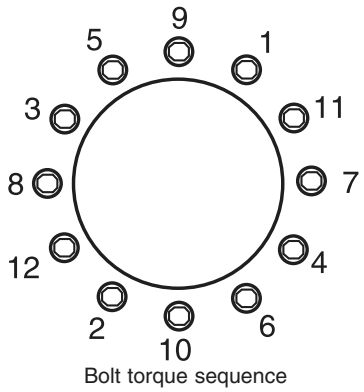
2 Turn the engine off.

3 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

4 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

5 Be sure that each turntable mounting bolt is torqued in sequence to 210 ft-lbs (285 Nm).



Bolt torque sequence

6 Start the engine form the ground controls.

7 Rais the secondary boom and remove the safety chocks.

8 Lower the boom to the stowed position.

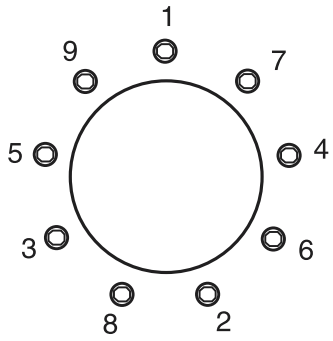
9 Remove drive chassis covers from both the steer end and the non-steer end of the machine.

10 Remove the lower chassis cover mounting fasteners from inside of the drive chassis.

TABLE D PROCEDURES

11 Remove the lower chassis cover to access the lower turntable bearing bolts under the drive chassis.

12 Check to ensure that each lower bearing mounting bolt under the drive chassis is torqued in sequence to 210 ft-lbs (285 Nm).



Bolt torque sequence

D-3
Check the Free-wheel Configuration

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

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

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

Non-Steer Wheels: All Models

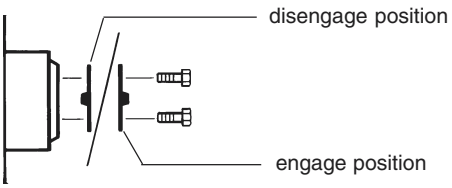
1 Chock the steer wheels to prevent the machine from rolling.

2 Center a lifting jack of ample capacity (20,000 lbs/10,000 kg) under the drive chassis between the non-steer tires.

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

TABLE D PROCEDURES

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



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 jack stands.

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

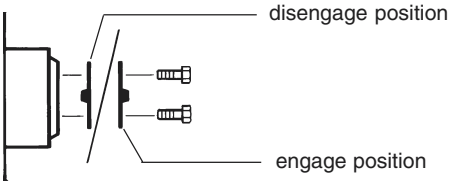
Steer Wheels: 4WD Models

7 Chock the non-steer 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 tires.

9 Lift the wheels off the ground and then place jack stands 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.

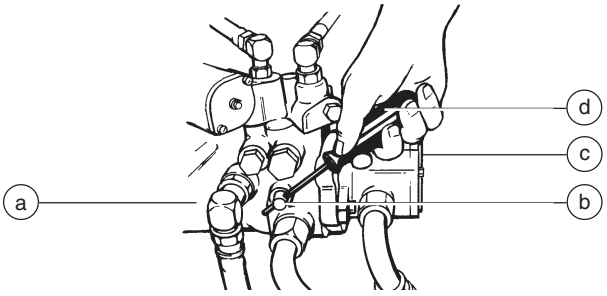
12 Re-engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Raise the machine and remove the jack stands.

⚠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 side of the drive pump.



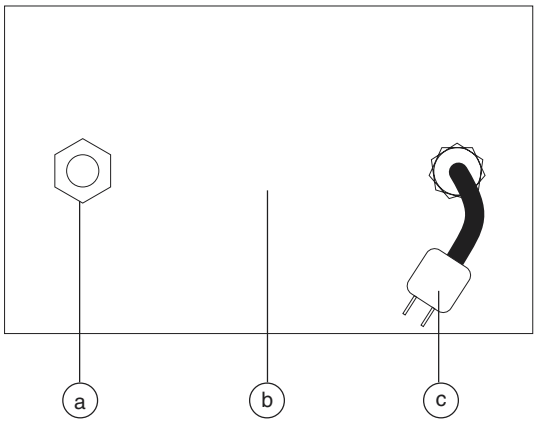
a drive pump
b free-wheel valve
c lift pump
d screwdriver

NOTICE The free-wheel valve should always remain closed.

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 front turntable cover.



a turntable bearing grease fitting
b front turntable cover
c power to platform plug

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	Multipurpose grease

TABLE D PROCEDURES

D-5
Replace the Drive Hub Oil

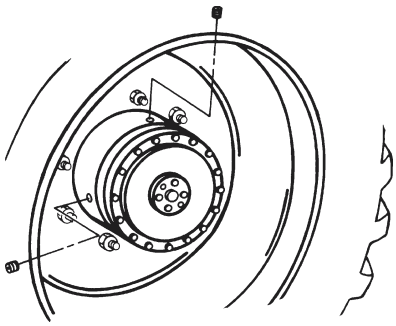
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

Drive Hubs:

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

2 Remove both plugs and drain the oil.

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



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

D-6
Replace the Drive Loop Hydraulic Filter



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 Open the engine side turntable cover and locate the drive loop hydraulic filter mounted near the pump.

2 Remove the filter housing by using a wrench on the nut provided on the bottom of the housing.

3 Remove the filter element from the housing.

4 Inspect the housing seal and replace it if necessary.

5 Install the new filter (Genie part number 20880) and tighten the housing onto the filter securly head by hand. 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 during the installation procedure.

TABLE D PROCEDURES

D-7
Check and Adjust the Air/LPG Mixture - Ford Models



Maintaining the proper air-to-fuel mixture during LPG operation is essential to good engine performance.

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

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

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

2 Locate the high idle mixture adjustment screw on the throttle body elbow that attaches to the air cleaner.

3 Loosen the lock nut on the high idle mixture adjustment screw.

4 Load the system by activating the primary boom retract function, then move the function enable toggle switch to the high idle (rabbit symbol) position.

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

NOTICE Preliminary setting is 1/4 inch (6.4mm) of threads showing. Measure from top of lock nut to top of adjustment screw.

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

6 Hold the adjustment screw and tighten the lock nut.

7 Return the function enable toggle switch to the center position.

8 Locate the low idle mixture adjustment screw on the LPG regulator.

9 Adjust the low idle mixture adjustment screw to obtain an air-to-fuel mixture ratio of 13.0:1 to 13.2:1.

NOTICE Preliminary setting: turn low idle adjustment screw clockwise all the way in. Turn low idle adjustment screw counterclockwise 2 3/4 turns.

D-8
Replace the Diesel Fuel Filter/Water Separator - Deutz Diesel Models

Replacing the diesel fuel filter/water separator 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.

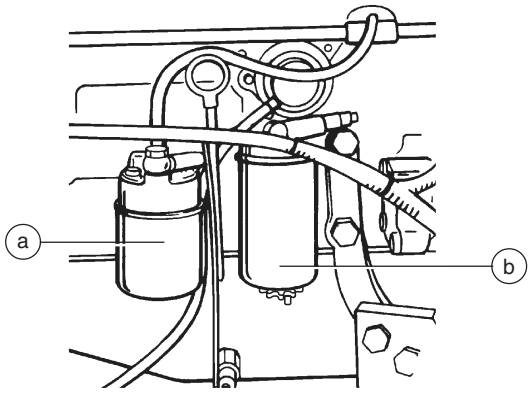
1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 At the fuel pump, disconnect and plug the fuel hose that goes to the fuel tank.

4 Remove the fuel filter with a filter wrench.



a oil filter
b fuel filter/water separator

Prime the Fuel Pump:

5 Fill the new filter (Genie part number 65541) with fresh diesel fuel and apply a thin layer of oil or diesel fuel to the new fuel filter gasket.

6 Install the new filter and tighten it securely by hand. Clean up any diesel fuel that might have spilled during the procedure.

7 Connect the fuel hose from the tank to the fuel pump.

8 Start the engine from the ground controls, then 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.

Table E Procedures

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 often.

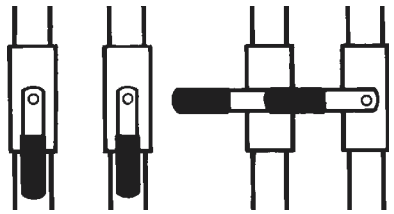
NOTICE The machine uses Dexron equivalent hydraulic oil. Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly.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

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

1 **Ford models:** Turn the valve on the LPG tank clockwise to the OFF position. Then slowly disconnect the hose from the LPG tank.

2 **Ford models:** Open the clamps from the LPG tank straps and remove the LPG tank from the machine.

3 Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.



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

4 Place a suitable container underneath the hydraulic tank.

5 Remove the drain plug from the hydraulic tank.

6 Completely drain the tank into a suitable container. See capacity specifications.

7 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.

8 Disconnect and plug the return filter hydraulic hose at the hydraulic tank. Cap the fitting on the tank.

TABLE E PROCEDURES

9 Disconnect and plug the supply hose for the auxiliary power unit through the access hole underneath the turntable. Cap the fitting on the hydraulic tank.

10 Remove the ground controls side turntable cover. See Repair Procedure 6-1, *How to Remove a Turntable Cover.*

11 Support the hydraulic tank with an appropriate lifting device.

12 Remove the hydraulic tank mounting fasteners.

13 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank may become unbalanced and fall if it is not properly supported by the lifting device.

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

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

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

17 Install the drain plug using a thread sealant on the threads.

18 Install the hydraulic tank onto the machine.

19 Install the two suction hoses to the suction strainers.

20 Install the supply hose for the auxiliary power unit and the return filter hose.

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

22 Clean up any oil that may have spilled and open the hydraulic tank valves.

TABLE E PROCEDURES

23 Prime the pump. See Repair Procedure 11-2, *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. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

NOTICE Always use pipe thread sealant when installing the suction hose fittings and the drain plug.

NOTICE Use only Dexron equivalent hydraulic fluid.

Hydraulic system	
Hydraulic tank capacity	24 gallons 91 liters
Hydraulic system capacity (including tank)	30 gallons 114 liters
Hydraulic fluid	Dexron equivalent

E-2
Change or Recondition the Engine Coolant - Ford Models



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

NOTICE Perform this procedure with the engine off and cooled.

1 Put on protective clothing and eye wear.

2 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

TABLE E PROCEDURES

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.

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

11 Fill the radiator and then fill the coolant return tank to the NORMAL range.

12 Clean up any coolant spilled during this procedure.

13 Swing the engine back to its original position and close the engine pivot plate latch.

14 Install the engine pivot plate safety pin (if equipped).

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

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

17 Start the engine from the ground controls and let it run until it reaches normal operating temperature.

18 Turn the engine off.

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

Coolant capacity	11.5 quarts 10.9 liters

TABLE E PROCEDURES

E-3
Change the Fuel Hoses

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 hoses 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 the key switch in the OFF position.

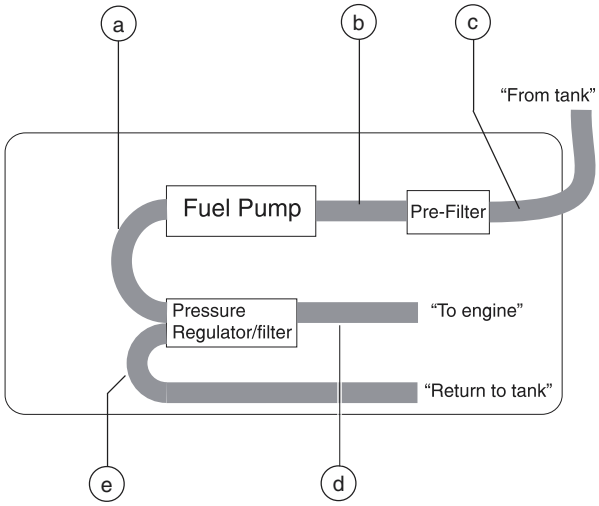
1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 Place a suitable container underneath the engine pivot plate.

4 **Ford Models:** At the pre-filter, disconnect the fuel hose to the fuel tank and drain the fuel tank into the container.



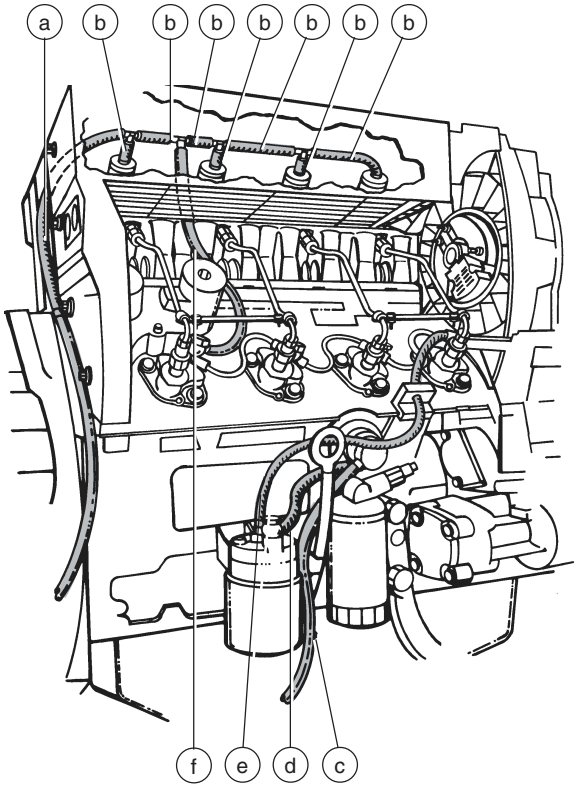
a hose from fuel pump to regulator/filter
b hose from fuel pre-filter to fuel pump
c hose from fuel tank to fuel pre-filter
d hose from regulator/filter to engine
e hose from regulator/filter to tank

TABLE E PROCEDURES

Deutz Diesel Models: 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 line hoses and clamps according to the following illustrations:

⚠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.

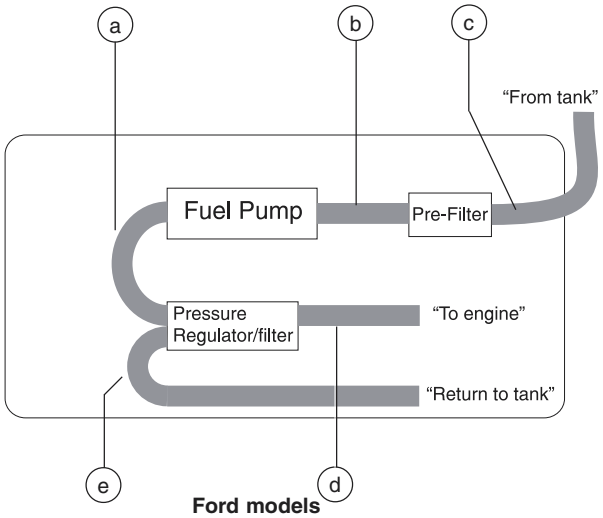


Deutz Diesel models

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

TABLE E PROCEDURES

⚠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 lines very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.



Ford models

a high pressure hose from fuel pump to regulator/filter
b hose from fuel pre-filter to fuel pump
c hose from fuel tank to fuel pre-filter
d high pressure hose from regulator/filter to engine
e hose from regulator/filter to tank

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

7 Swing the engine back to its original position and close the engine pivot plate latch.

8 Install the engine pivot plate safety pin (if equipped).

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

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

TABLE E PROCEDURES

E-4
Check the Toothed Belt - Deutz Diesel Models



Complete information to perform this procedure is available in the *Deutz FL 1011F Operation Manual*
Deutz part number: 0297 4706 EN.
(Genie part number 29790).

E-5
Check the Engine Valve Clearance - Ford Models



Complete information to perform this procedure is available in the *Ford LRG-425 EFI 2.5 Liter Industrial Engine Service Manual*
Ford number: FPP-194-303.
(Genie part number 52695).

E-6
Check the Engine Cylinder Compression - Ford Models



Complete information to perform this procedure is available in the *Ford LRG-425 EFI 2.5 Liter Industrial Engine Service Manual*
Ford number: FPP-194-303.
(Genie part number 52695).

E-7
Check the Fuel Injection Pump and Injectors - Deutz Diesel Models



Complete information to perform this procedure is available in the *Deutz FL 1011F Workshop Manual*
Deutz part number: 0297 7195.
(Genie part number 52229).

E-8
Replace the Timing Belt - Ford Models



Complete information to perform this procedure is available in the *Ford LRG-425 EFI 2.5 Liter Industrial Engine Service Manual*
Ford part number: FPP-194-303.
(Genie part number 52695).

TABLE E PROCEDURES

E-9
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, then center a lifting jack under the steer axle.

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

4 Remove the lug nuts, then remove the tire and wheel assembly.

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

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

Skip to step 10 if there is no movement.

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

7 Tighten the castle nut to 35 ft-lbs (47 Nm) to seat the bearings.

8 Loosen the castle nut, then re-tighten to 8 ft-lbs (11 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 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.

⊙ Result: If there is no side to side or up and down movement, continue with step 11 and grease the wheel bearings.

10 Remove the dust cap from the hub, then 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.

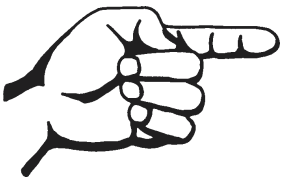
19 Install the washer and castle nut.

20 Tighten the slotted nut to 35 ft-lbs (47 Nm) to seat the bearings.

21 Loosen the castle nut, then re-tighten to 8 ft-lbs (11 Nm).

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

23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to 125 ft-lbs (169.5 Nm).



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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
  - · Key switch in the OFF position with the key removed
  - · Wheels chocked

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-45/25 and Genie Z-45/25J Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

TROUBLESHOOTING FLOW CHARTS

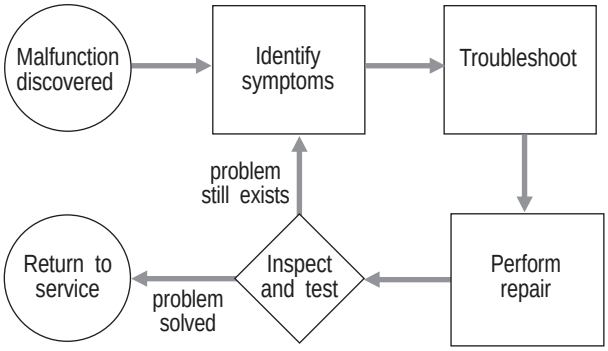
About This Section

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

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

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

General Repair Process



Fault codes

The ECM constantly monitors the engine by the use of sensors on the engine. The ECM also uses signals from the sensors to initiate sequential fuel injection and make constant and instantaneous changes to ignition timing, fuel delivery and throttle position to maintain the engine's running condition at its highest efficiency while at the same time keeping exhaust emissions to a minimum. When a sensor fails or returns signals that are outside of set parameters, the ECM will store a fault code in memory that relates to the appropriate sensor and will turn on the Check Engine Light. See Repair Section, *How to Retrieve Engine Fault Codes.* Use the Fault Code Chart on the following pages to aid in identifying the fault.

Fault Codes

Fault Code	Problem	Cause	Solution
11	--	--	Normal operation.
12	Throttle Position (TP) sensor low voltage.	Faulty TP sensor OR sensor wires shorted 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 bad.	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.
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 (HO^2) sensor low voltage.	Water in the fuel, misfiring cylinder, plugged fuel filter OR the HO^2 sensor wiring is shorted to ground OR there is a poor terminal connection OR the HO^2 sensor is bad.	Check for water in the fuel, misfiring cylinder or pugged fuel filter OR check for poor terminal connections or shorted wires from the HO^2 sensor to the ECM to ground OR replace HO^2 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 bad	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.

FAULT CODES

Fault Code	Problem	Cause	Solution
35	Intake Air Temperature (IAT) sensor high voltage.	IAT sensor signal is greater than or equal to 4.93V DC for at least 3 seconds.	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 connections from the fuel pump relay to fuel pump OR replace the ECM.
42	Heated Oxygen (HO^2) sensor high voltage.	A leaking or malfunctioning fuel injector, misfiring cylinder, faulty TP sensor or contamination from 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 bad.	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 a 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 a 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.	Bad 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 CODES

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.
55	ECM - Illegal Interuption.	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

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.

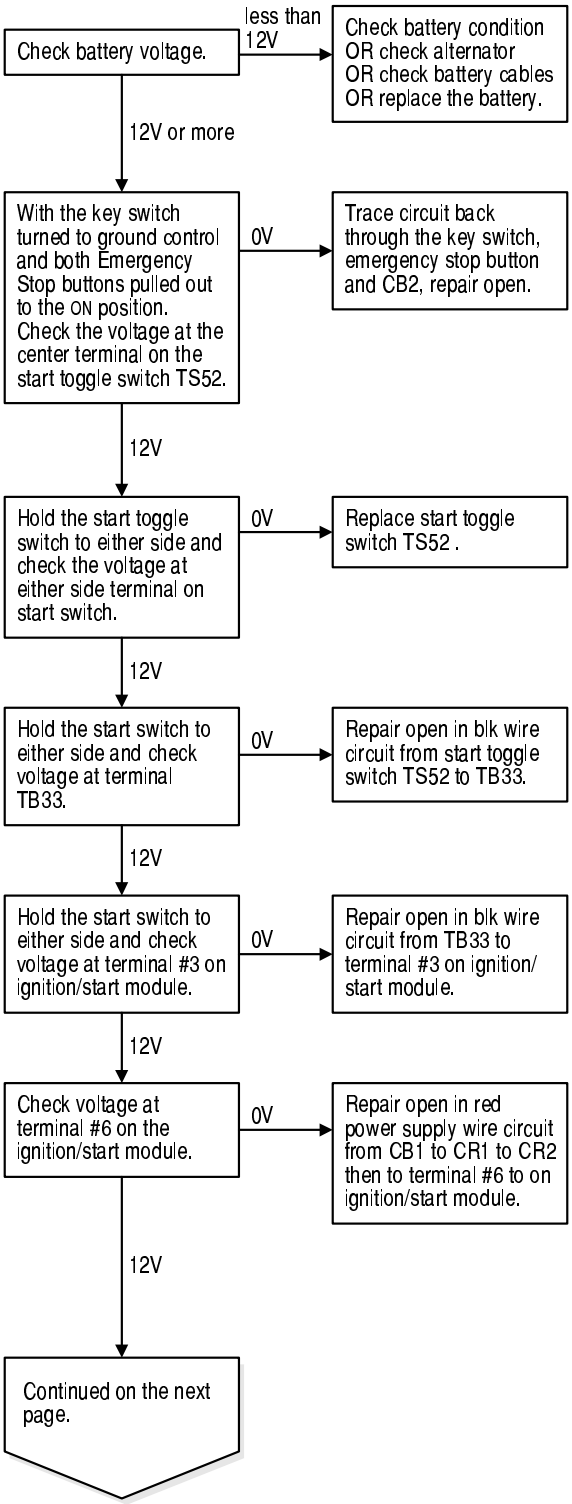


CHART 1

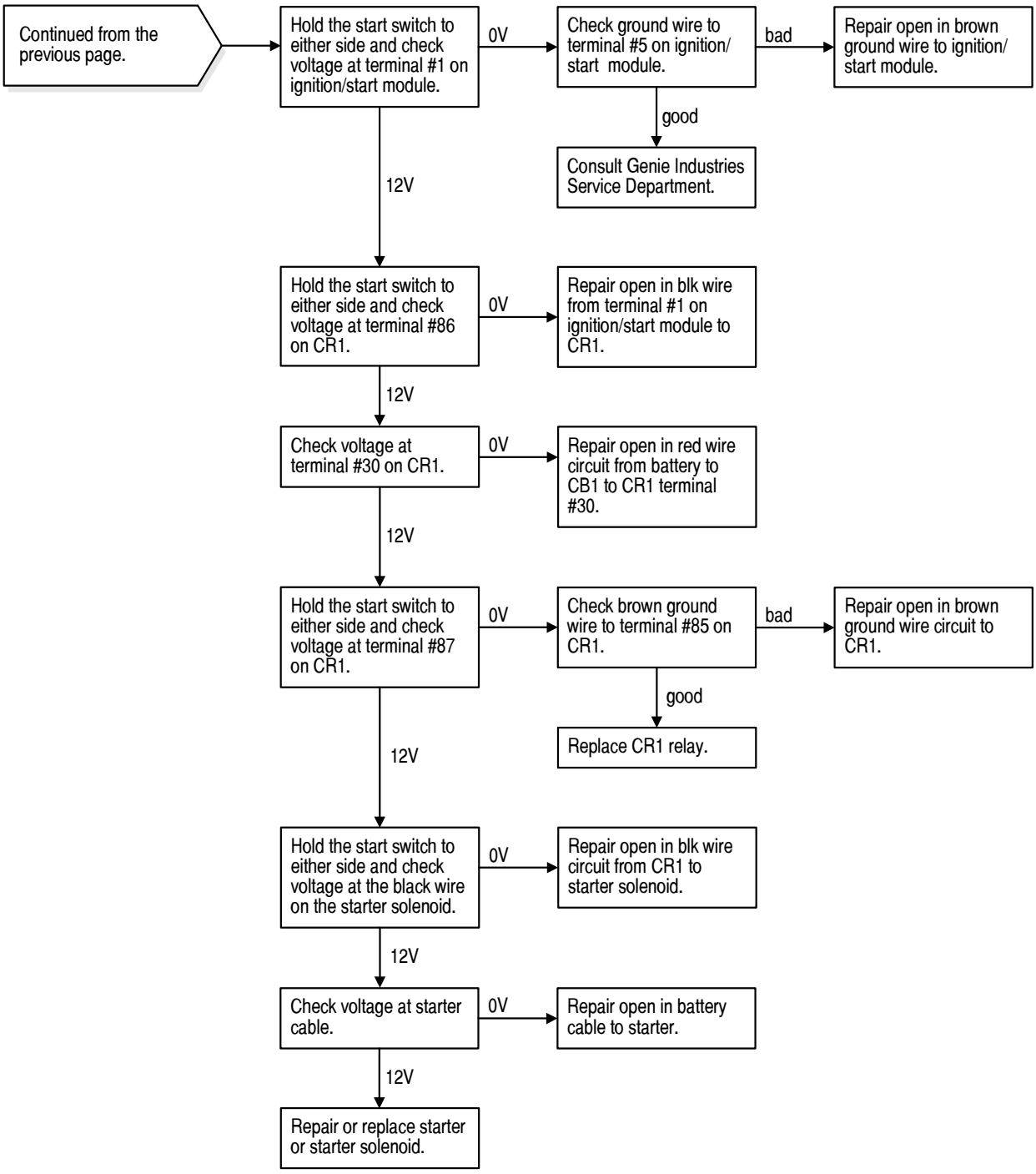

Continued from the previous page.
Hold the start switch to either side and check voltage at terminal #1 on ignition/start module.
0V
Check ground wire to terminal #5 on ignition/ start module.
bad
Repair open in brown ground wire to ignition/ start module.
good
Consult Genie Industries Service Department.
12V
Hold the start switch to either side and check voltage at terminal #86 on CR1.
0V
Repair open in blk wire from terminal #1 on ignition/start module to CR1.
12V
Check voltage at terminal #30 on CR1.
0V
Repair open in red wire circuit from battery to CB1 to CR1 terminal #30.
12V
Hold the start switch to either side and check voltage at terminal #87 on CR1.
0V
Check brown ground wire to terminal #85 on CR1.
bad
Repair open in brown ground wire circuit to CR1.
good
Replace CR1 relay.
12V
Hold the start switch to either side and check voltage at the black wire on the starter solenoid.
0V
Repair open in blk wire circuit from CR1 to starter solenoid.
12V
Check voltage at starter cable.
0V
Repair open in battery cable to starter.
12V
Repair or replace starter or starter solenoid.

Chart 2

Engine Cranks Over But Will Not Start - Ford 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.

Perform following tests in gasoline mode only.

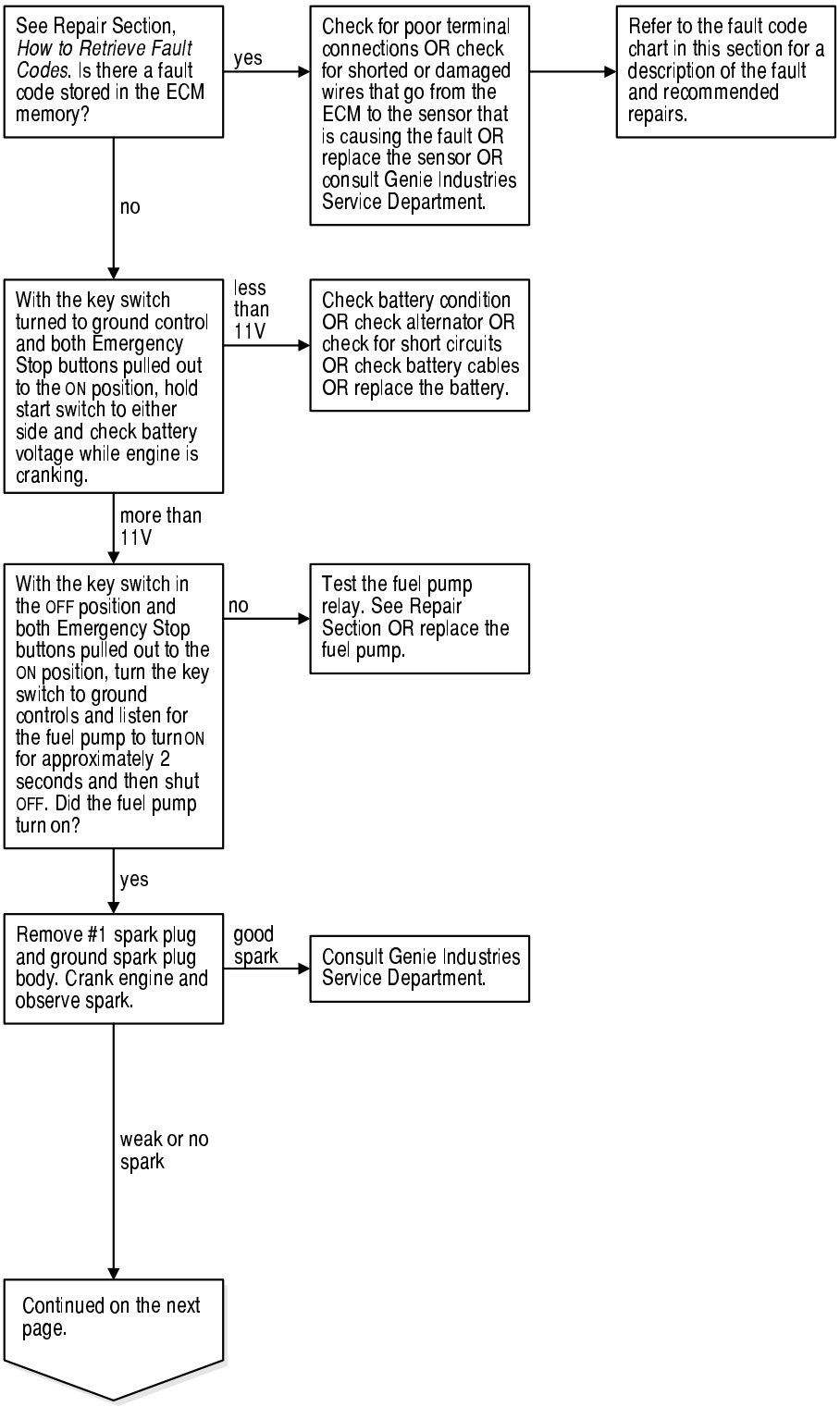


CHART 2

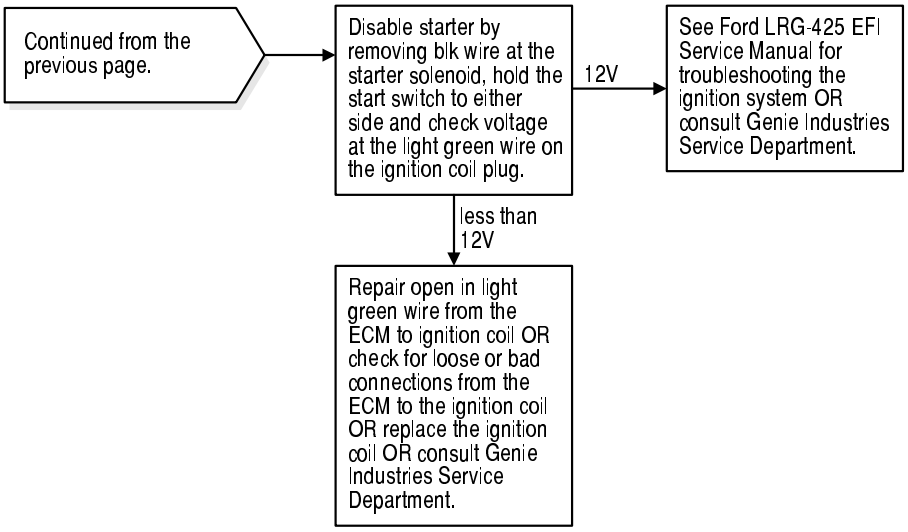

Continued from the previous page.
Disable starter by removing blk wire at the starter solenoid, hold the start switch to either side and check voltage at the light green wire on the ignition coil plug.
12V
See Ford LRG-425 EFI Service Manual for troubleshooting the ignition system OR consult Genie Industries Service Department.
less than 12V
Repair open in light green wire from the ECM to ignition coil OR check for loose or bad connections from the ECM to the ignition coil OR replace the ignition coil OR consult Genie Industries Service Department.

Chart 2A

Engine Runs While Cranking Then Dies

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

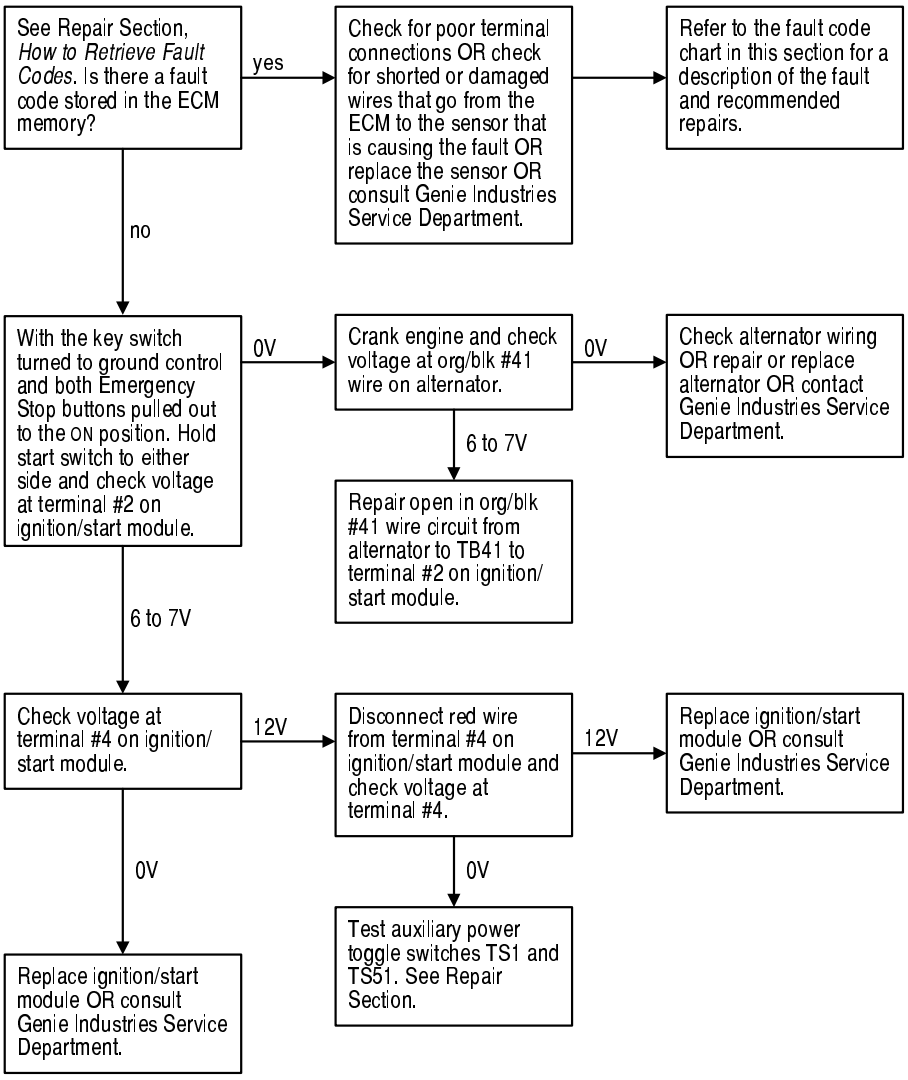


Chart 3

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 that the battery is fully charged.

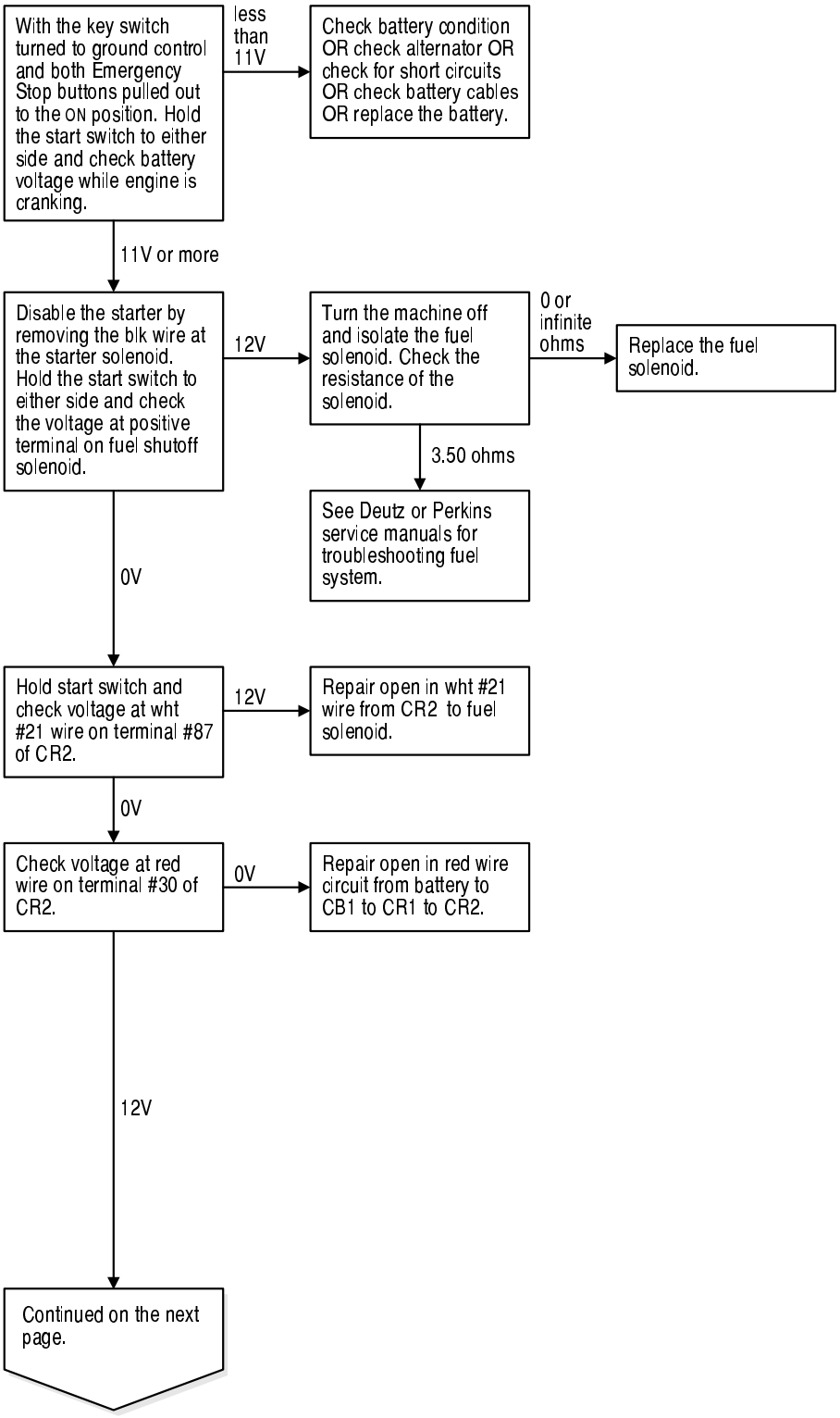


CHART 3

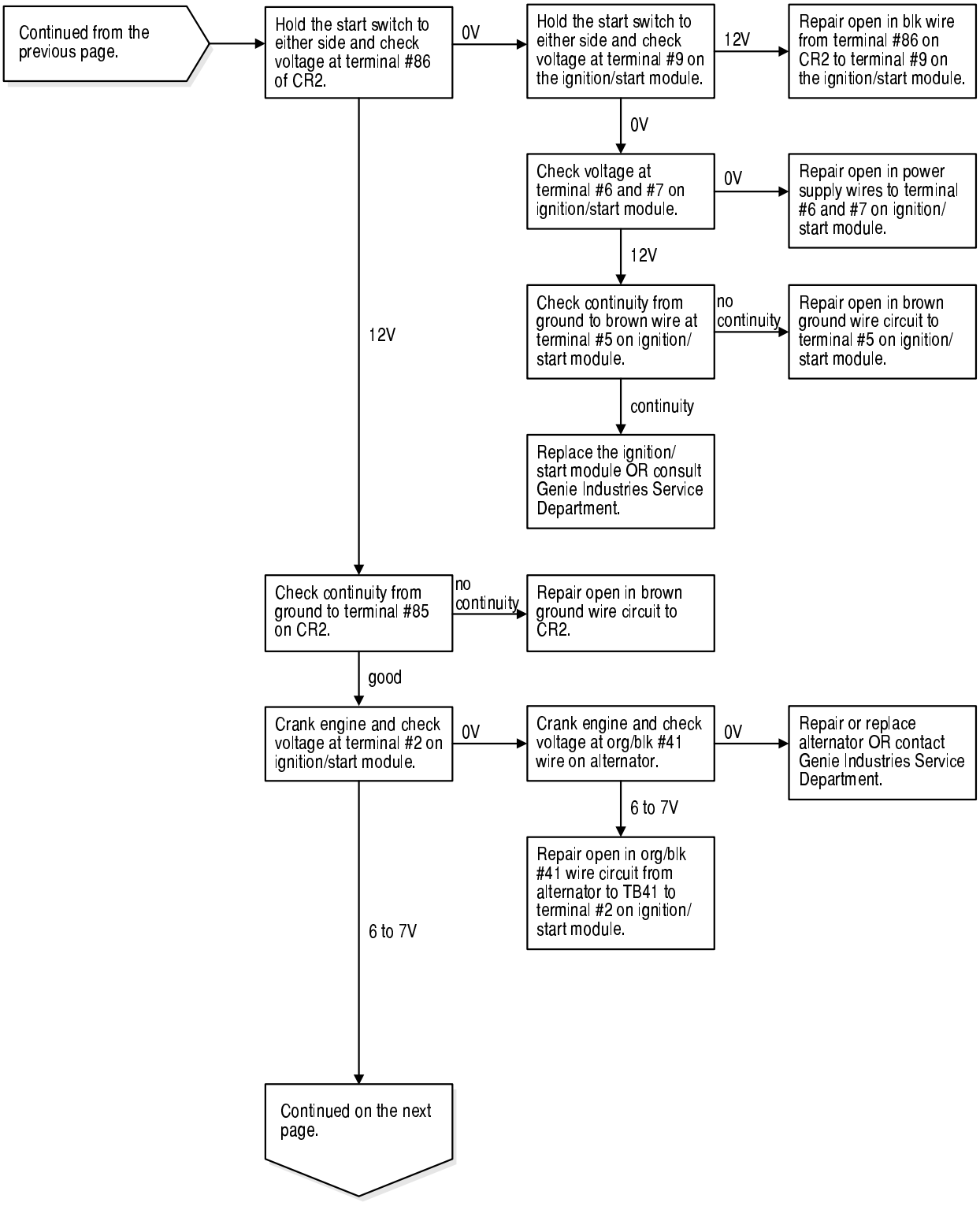

Continued from the previous page.
Hold the start switch to either side and check voltage at terminal #86 of CR2.
0V
Hold the start switch to either side and check voltage at terminal #9 on the ignition/start module.
12V
Repair open in blk wire from terminal #86 on CR2 to terminal #9 on the ignition/start module.
0V
Check voltage at terminal #6 and #7 on ignition/start module.
0V
Repair open in power supply wires to terminal #6 and #7 on ignition/ start module.
12V
Check continuity from ground to brown wire at terminal #5 on ignition/ start module.
no continuity
Repair open in brown ground wire circuit to terminal #5 on ignition/ start module.
continuity
Replace the ignition/ start module OR consult Genie Industries Service Department.
12V
Check continuity from ground to terminal #85 on CR2.
no continuity
Repair open in brown ground wire circuit to CR2.
good
Crank engine and check voltage at terminal #2 on ignition/start module.
0V
Crank engine and check voltage at org/blk #41 wire on alternator.
0V
Repair or replace alternator OR contact Genie Industries Service Department.
6 to 7V
Repair open in org/blk #41 wire circuit from alternator to TB41 to terminal #2 on ignition/ start module.
6 to 7V
Continued on the next page.

CHART 3

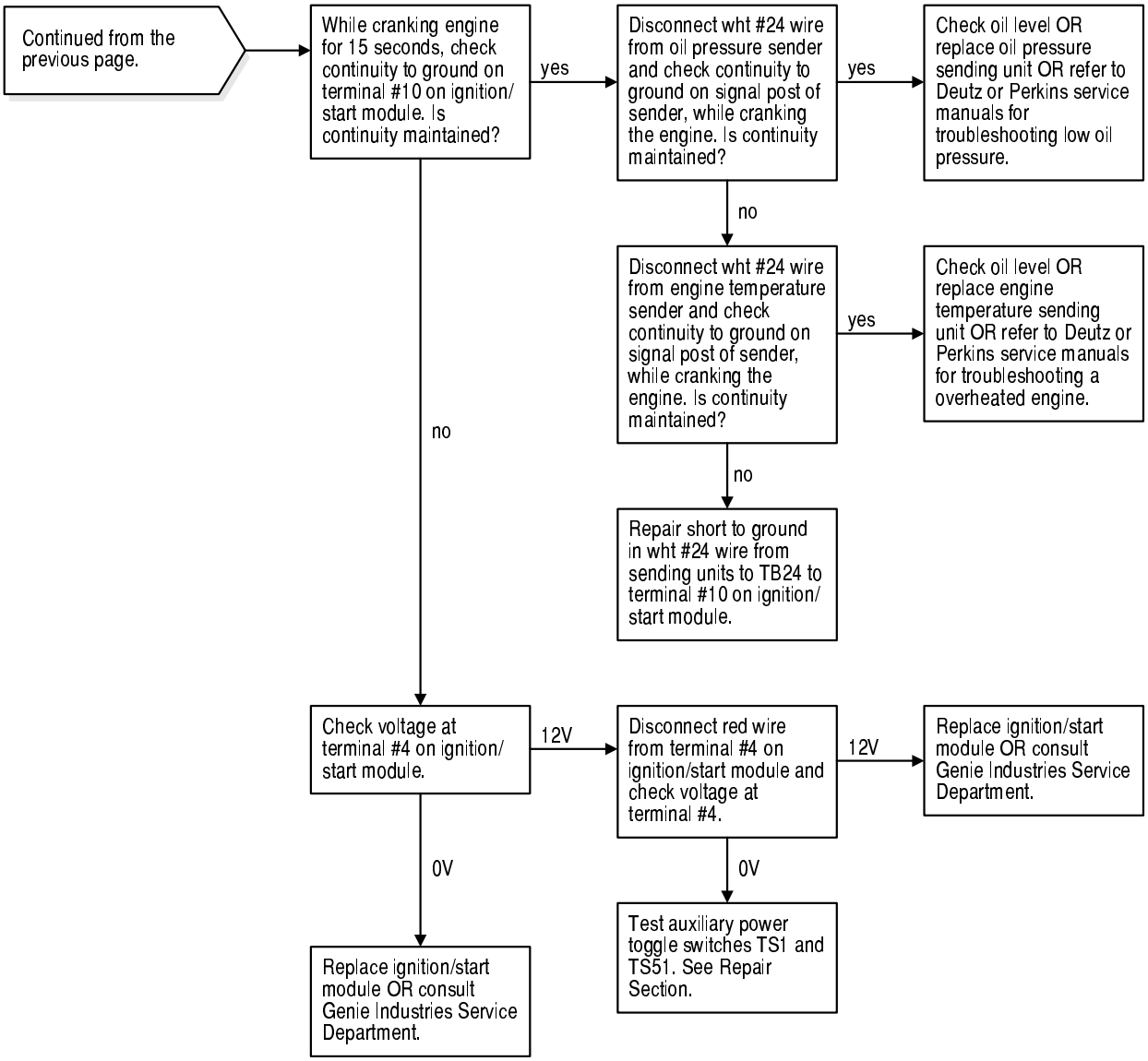

Continued from the previous page.
While cranking engine for 15 seconds, check continuity to ground on terminal #10 on ignition/ start module. Is continuity maintained?
yes
Disconnect wht #24 wire from oil pressure sender and check continuity to ground on signal post of sender, while cranking the engine. Is continuity maintained?
yes
Check oil level OR replace oil pressure sending unit OR refer to Deutz or Perkins service manuals for troubleshooting low oil pressure.
no
Disconnect wht #24 wire from engine temperature sender and check continuity to ground on signal post of sender, while cranking the engine. Is continuity maintained?
yes
Check oil level OR replace engine temperature sending unit OR refer to Deutz or Perkins service manuals for troubleshooting a overheated engine.
no
Repair short to ground in wht #24 wire from sending units to TB24 to terminal #10 on ignition/ start module.
no
Check voltage at terminal #4 on ignition/ start module.
12V
Disconnect red wire from terminal #4 on ignition/start module and check voltage at terminal #4.
12V
Replace ignition/start module OR consult Genie Industries Service Department.
0V
0V
Test auxiliary power toggle switches TS1 and TS51. See Repair Section.
Replace ignition/start module OR consult Genie Industries Service Department.

Chart 4

Engine Will Not Start On LPG, But Will Start On Gasoline - Ford 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.

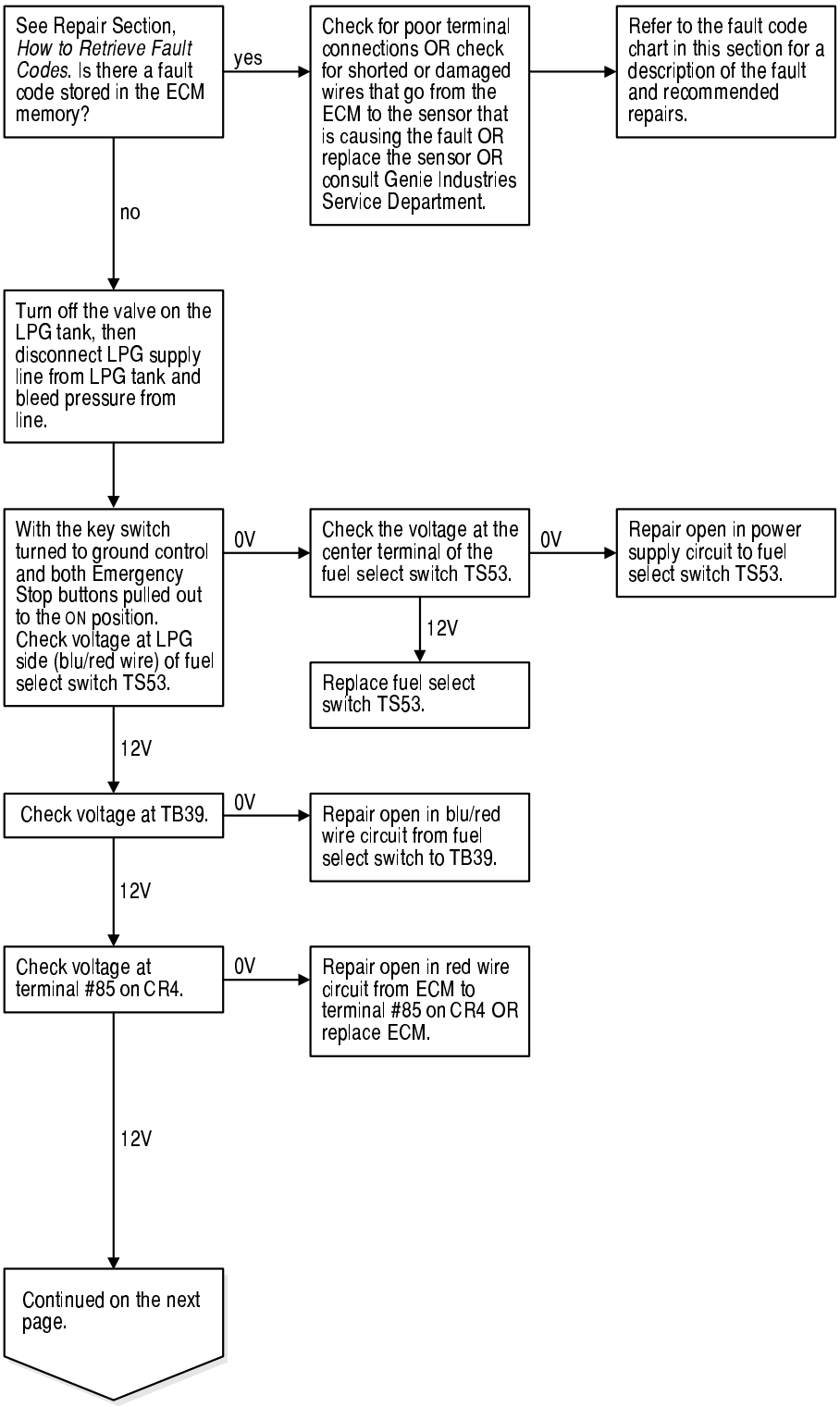


CHART 4

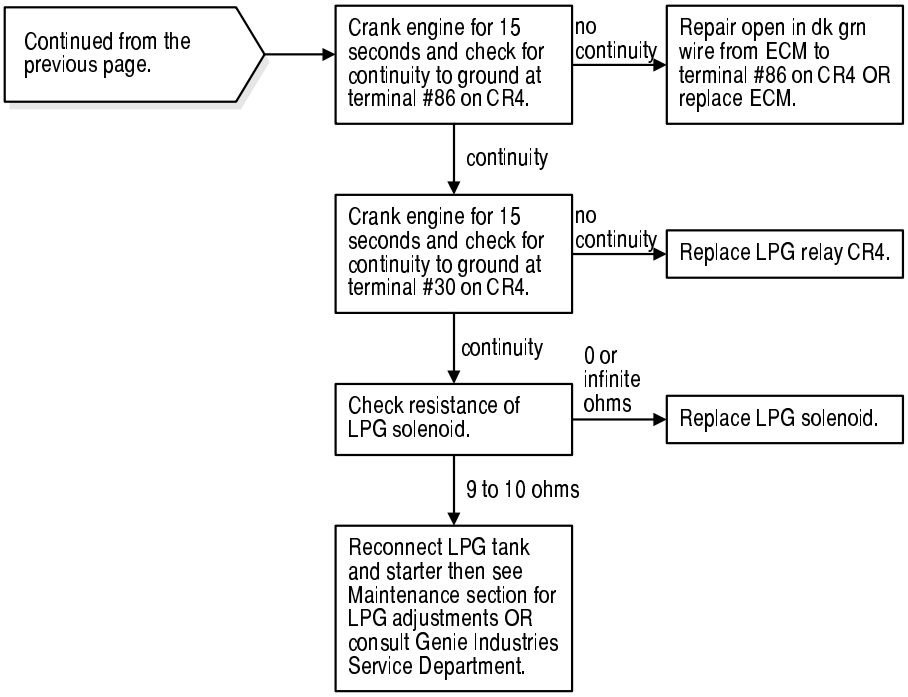

Continued from the previous page.
Crank engine for 15 seconds and check for continuity to ground at terminal #86 on CR4.
no continuity
Repair open in dk grn wire from ECM to terminal #86 on CR4 OR replace ECM.
continuity
Crank engine for 15 seconds and check for continuity to ground at terminal #30 on CR4.
no continuity
Replace LPG relay CR4.
continuity
Check resistance of LPG solenoid.
0 or infinite ohms
Replace LPG solenoid.
9 to 10 ohms
Reconnect LPG tank and starter then see Maintenance section for LPG adjustments OR consult Genie Industries Service Department.

Chart 5

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

Be sure fuel select switch is switched to gasoline.

Be sure to check gasoline fuel level.

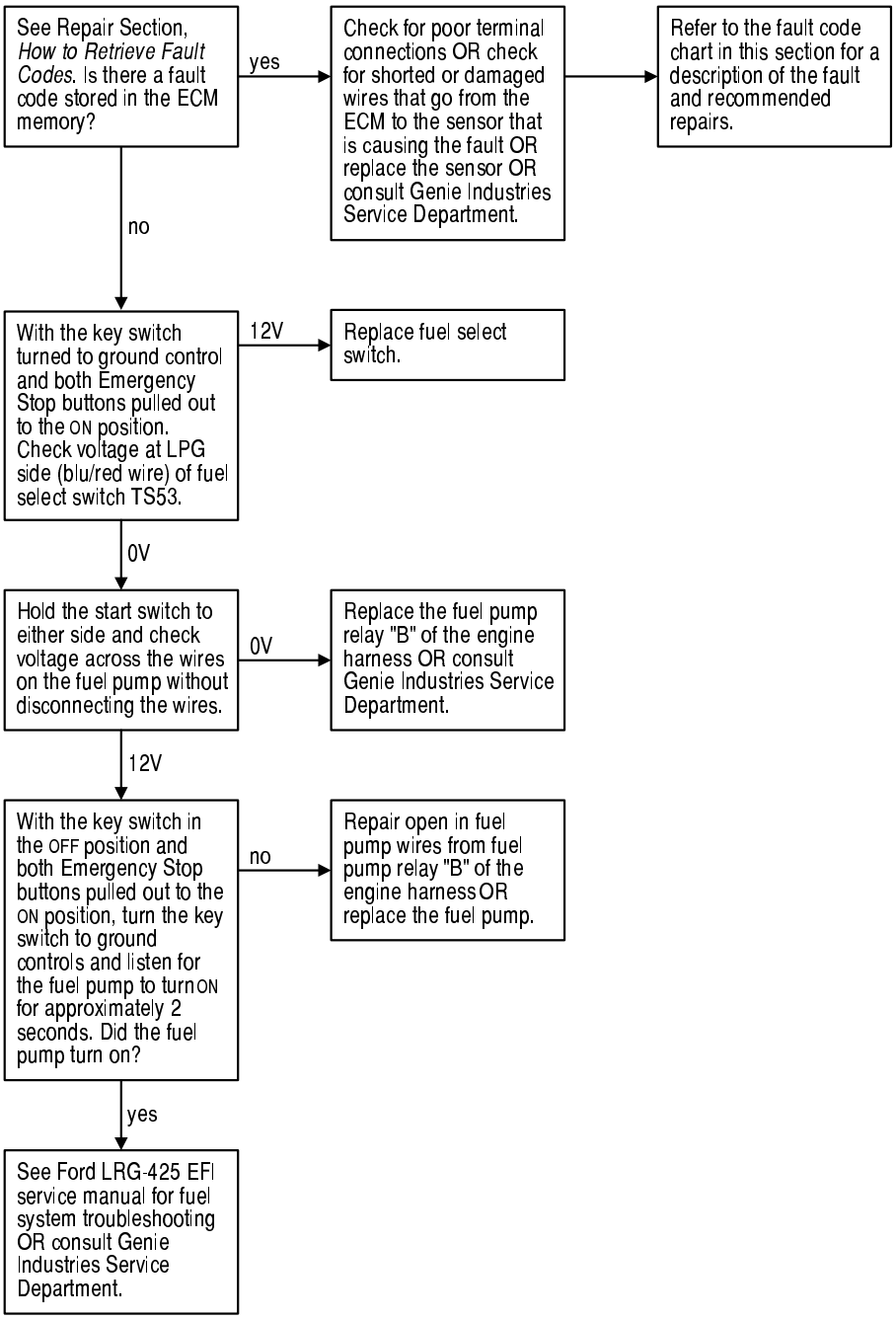


Chart 6

Engine High Idle Inoperative - Ford Models

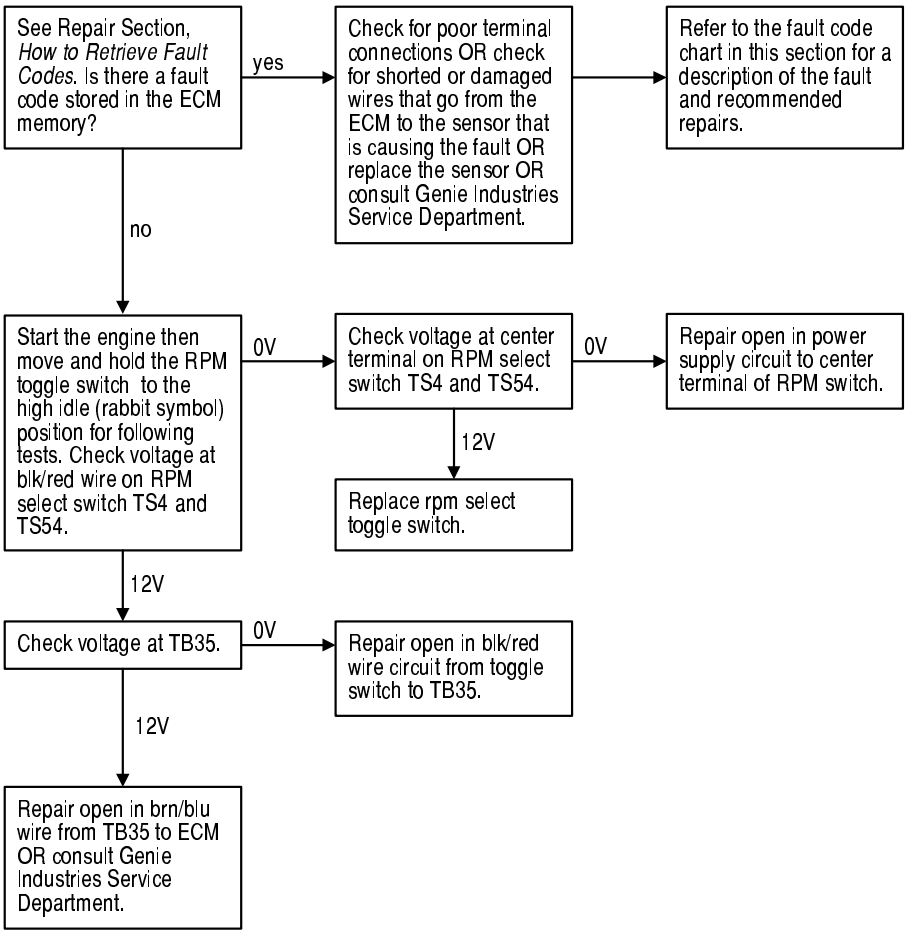


Chart 7

Engine Low Idle Inoperative - Ford Models

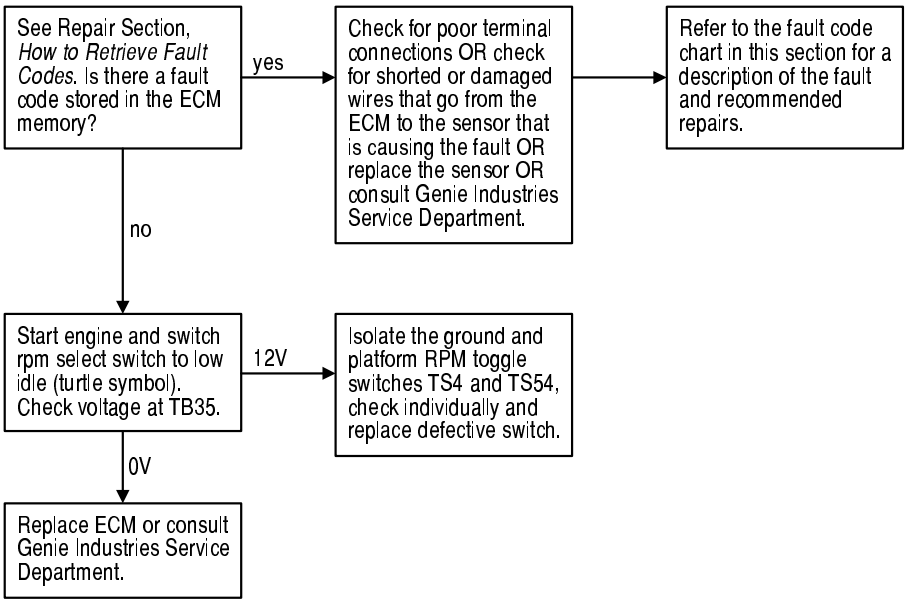


Chart 8

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.

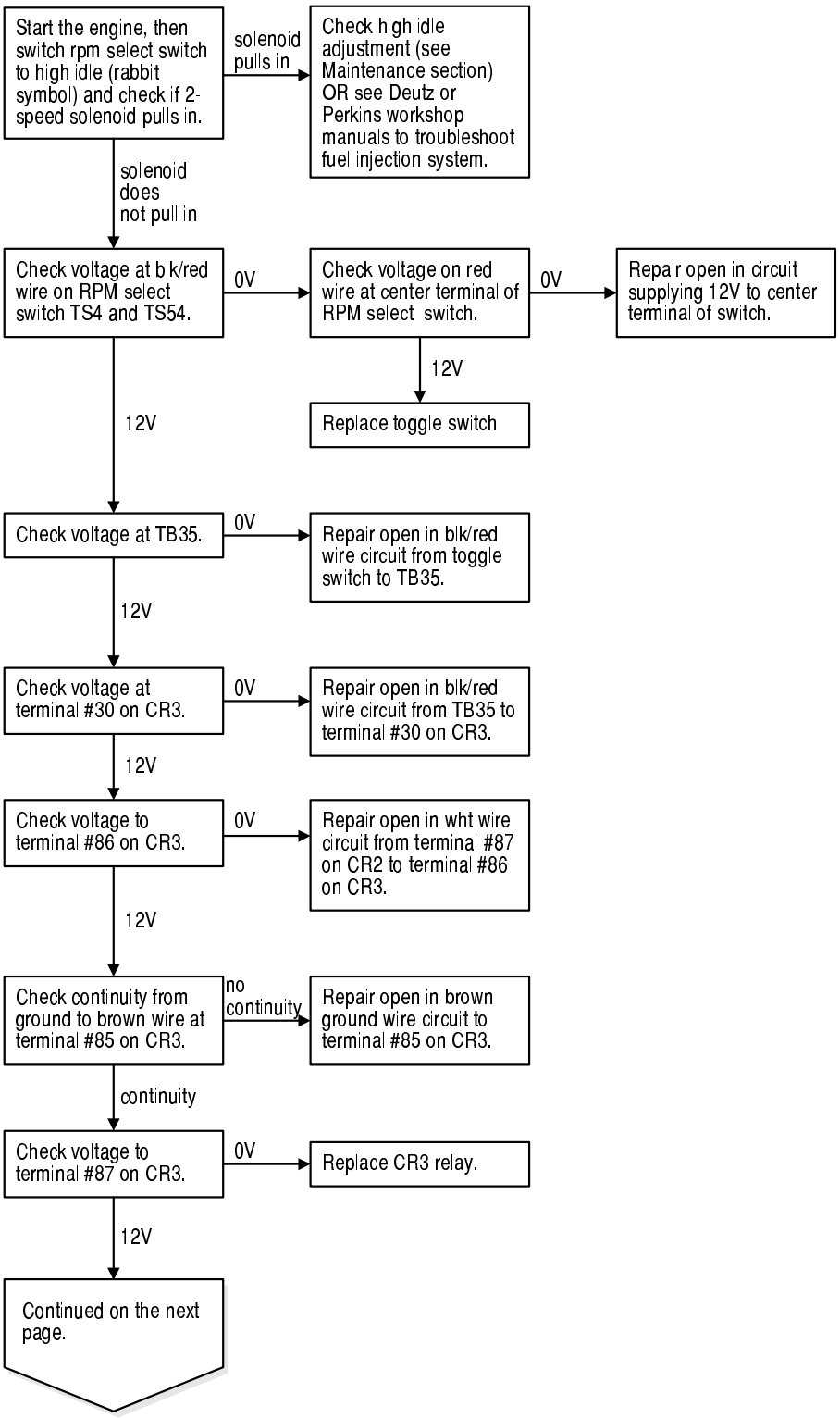


CHART 8

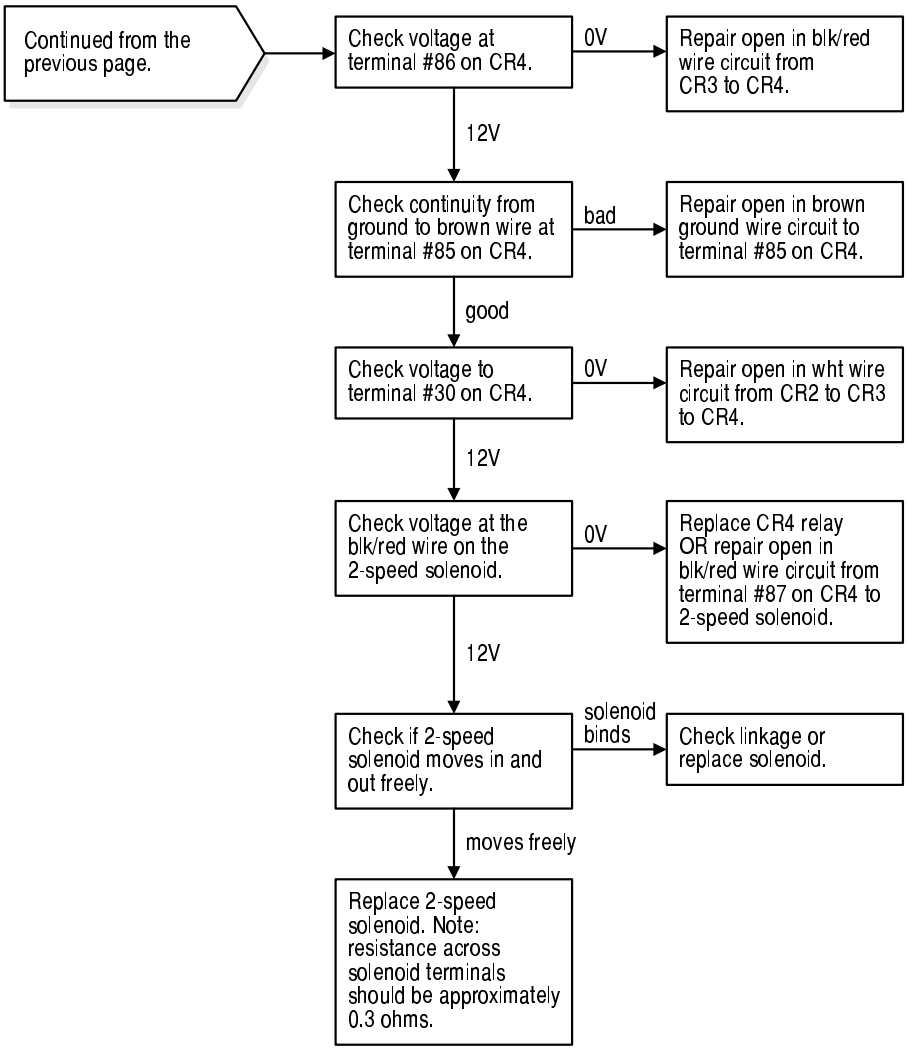

Continued from the previous page.
Check voltage at terminal #86 on CR4.
0V
Repair open in blk/red wire circuit from CR3 to CR4.
12V
Check continuity from ground to brown wire at terminal #85 on CR4.
bad
Repair open in brown ground wire circuit to terminal #85 on CR4.
good
Check voltage to terminal #30 on CR4.
0V
Repair open in wht wire circuit from CR2 to CR3 to CR4.
12V
Check voltage at the blk/red wire on the 2-speed solenoid.
0V
Replace CR4 relay OR repair open in blk/red wire circuit from terminal #87 on CR4 to 2-speed solenoid.
12V
Check if 2-speed solenoid moves in and out freely.
solenoid binds
Check linkage or replace solenoid.
moves freely
Replace 2-speed solenoid. Note: resistance across solenoid terminals should be approximately 0.3 ohms.

Chart 9

Engine Low Idle Inoperative - Diesel Models

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

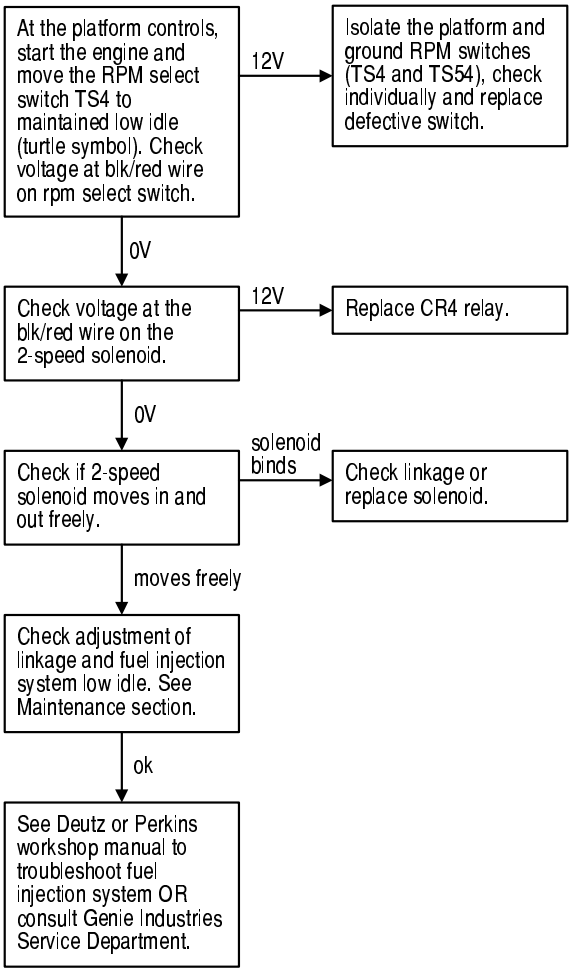


Chart 10

All Functions Inoperative, Engine Starts and Runs

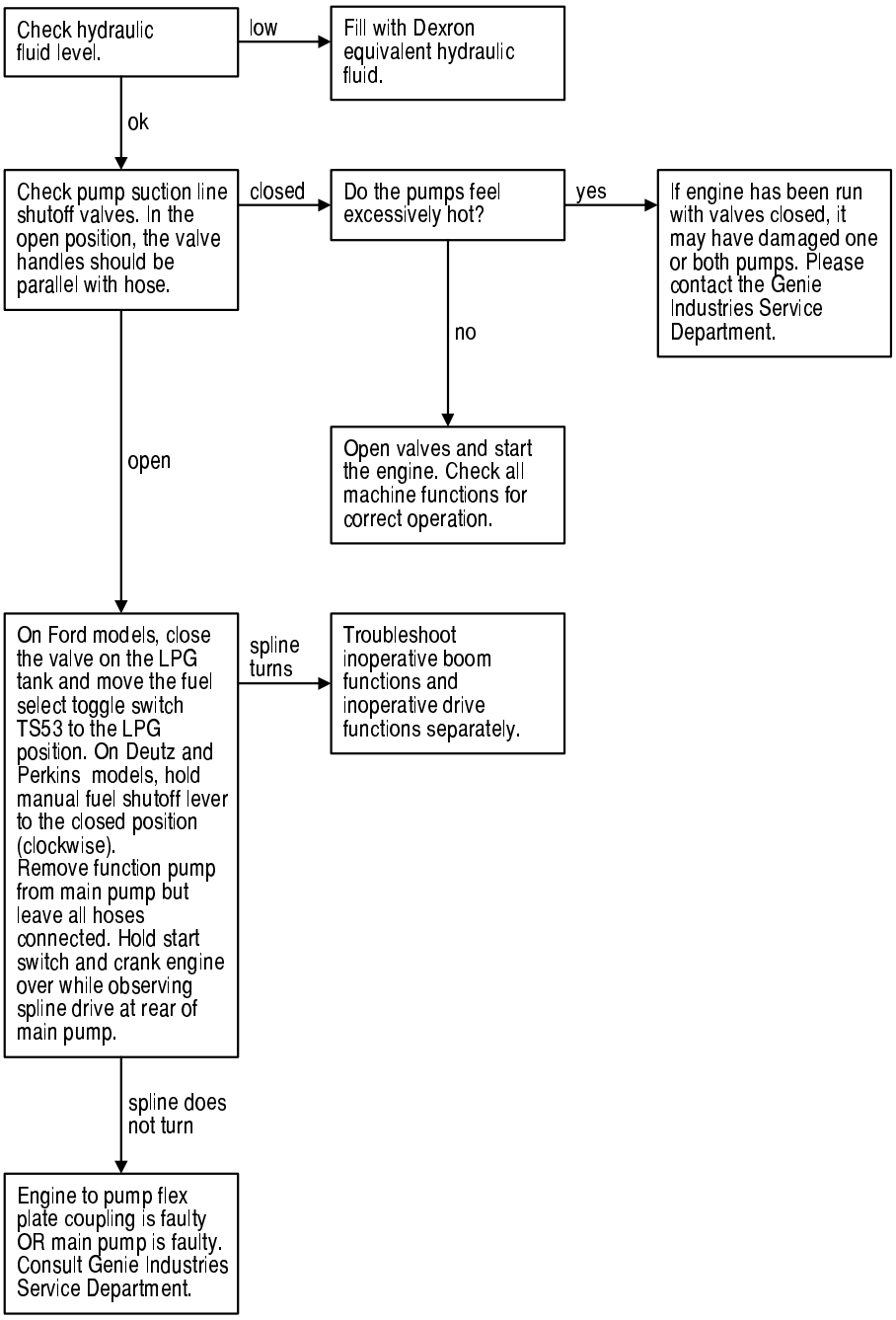


Chart 11

All Lift and Steer Functions Inoperative, Drive Functions Operational

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.

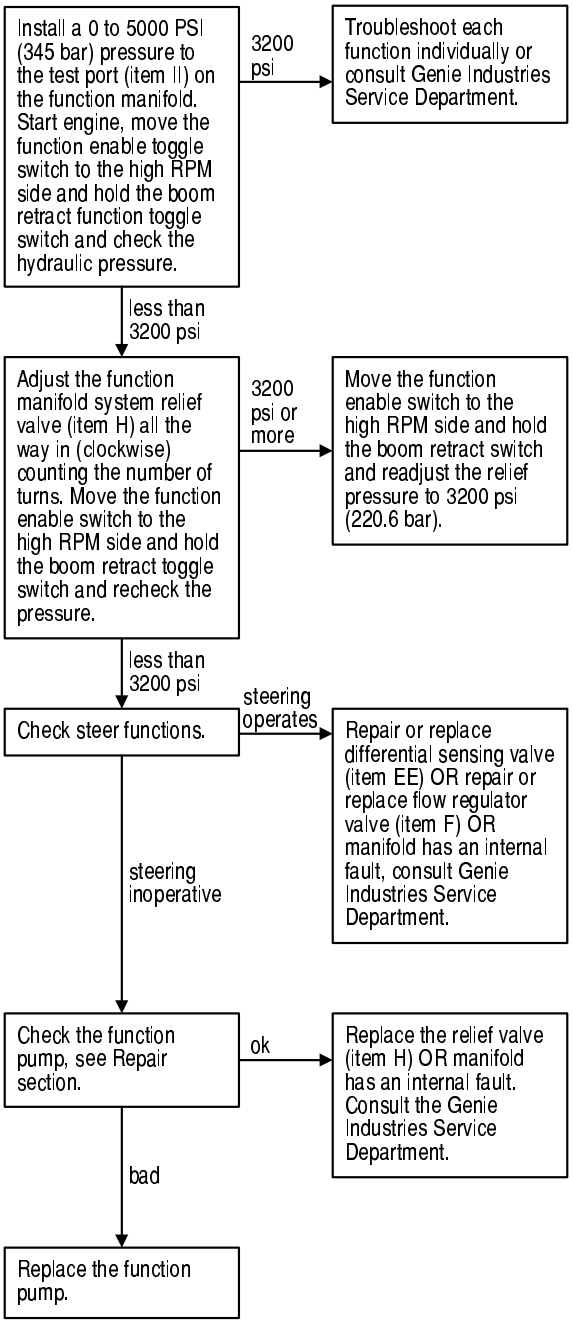


Chart 12

Ground Controls Inoperative, Platform Controls Operate Normally

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

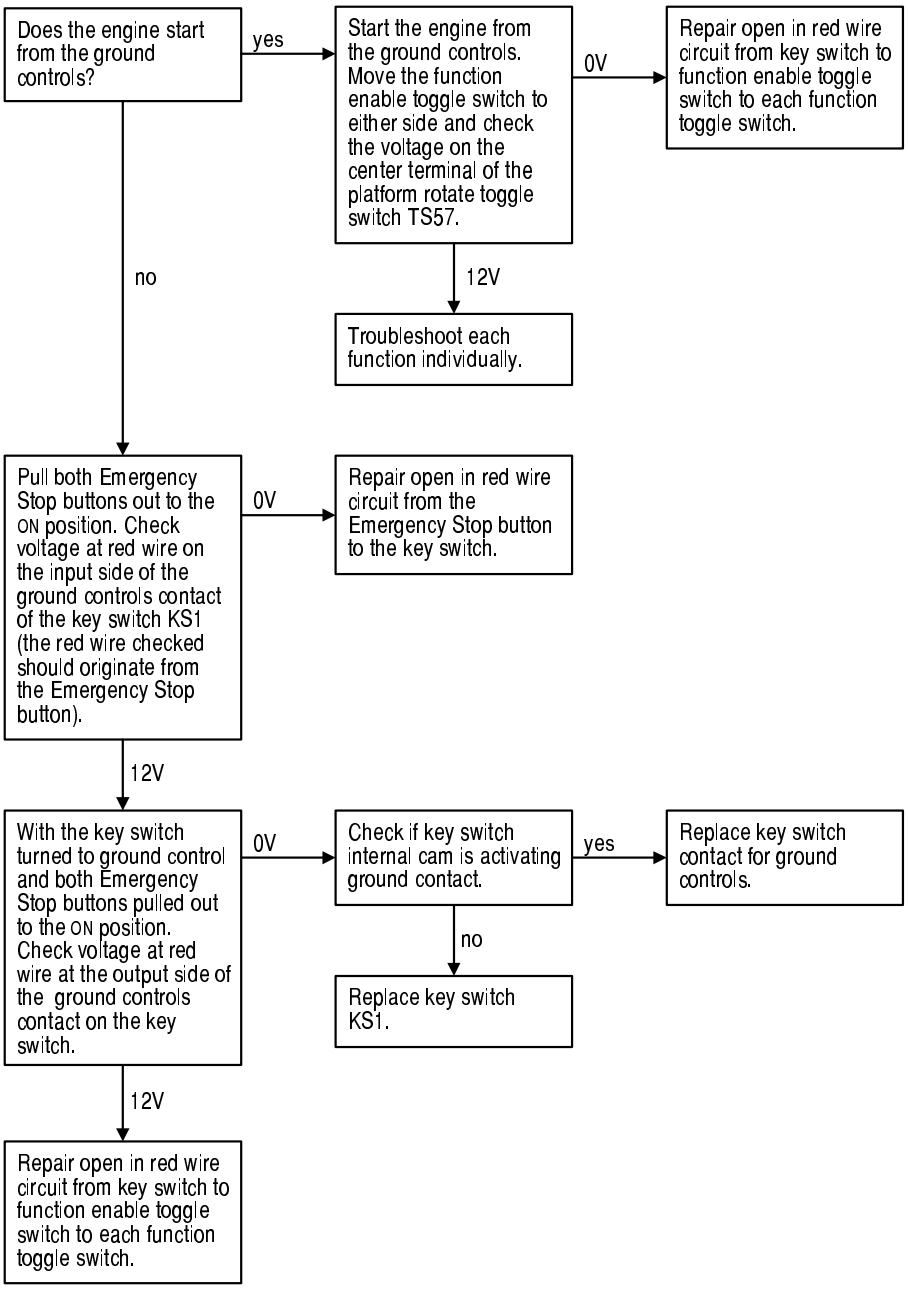


Chart 13

Platform Controls Inoperative, Ground Controls Operate Normally

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

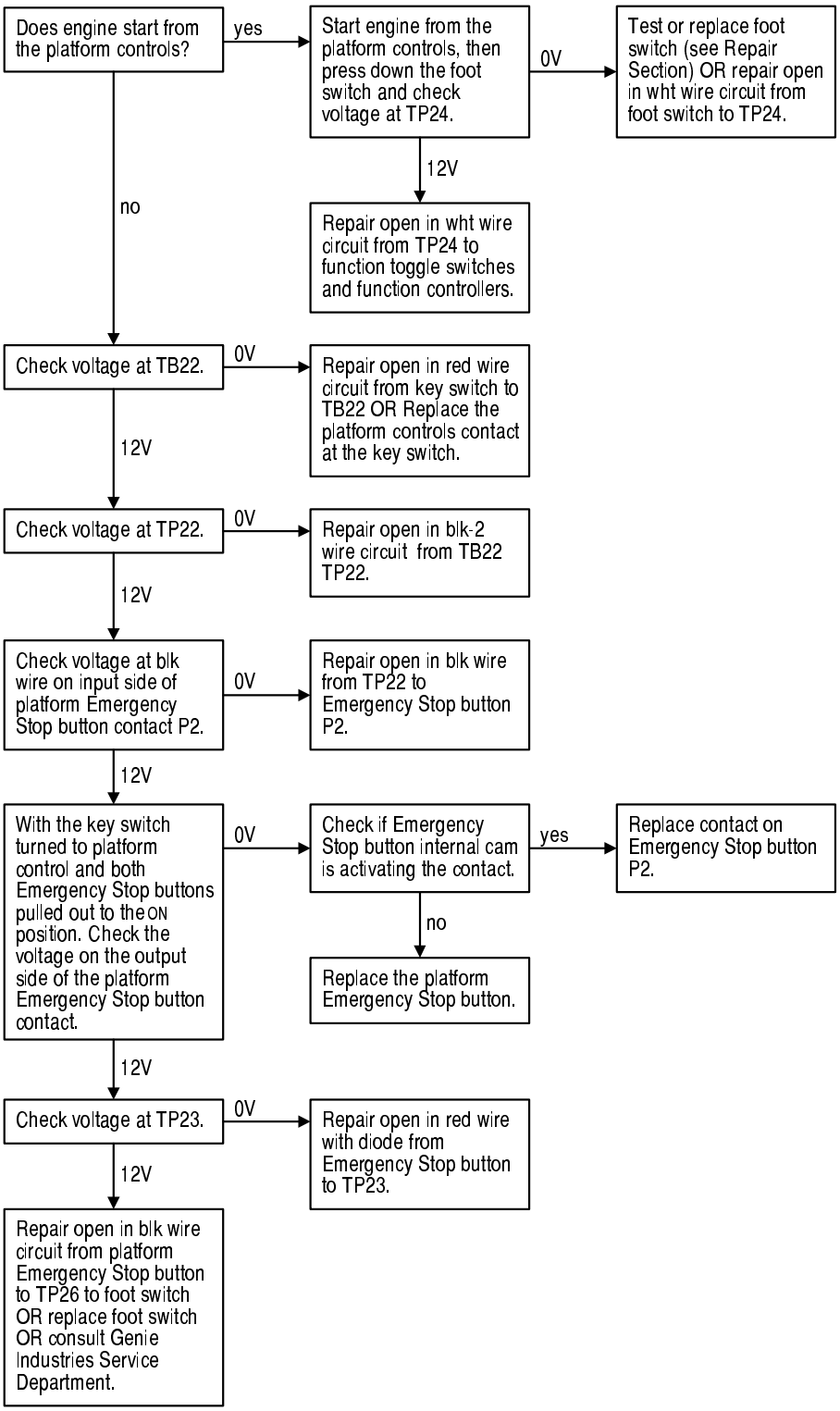


Chart 14

Primary Boom Up Function Inoperative

Be sure all other functions operate normally.

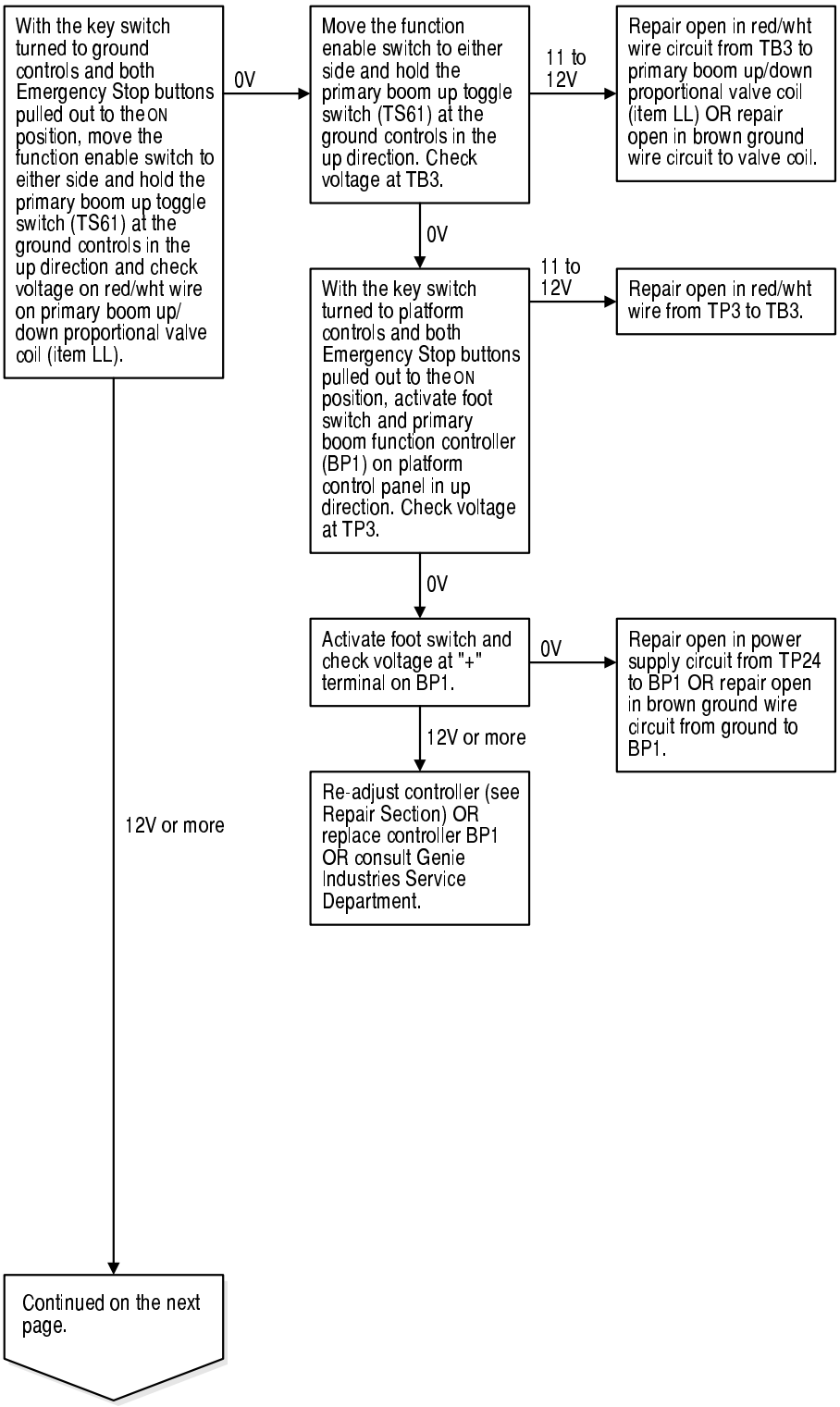


CHART 14

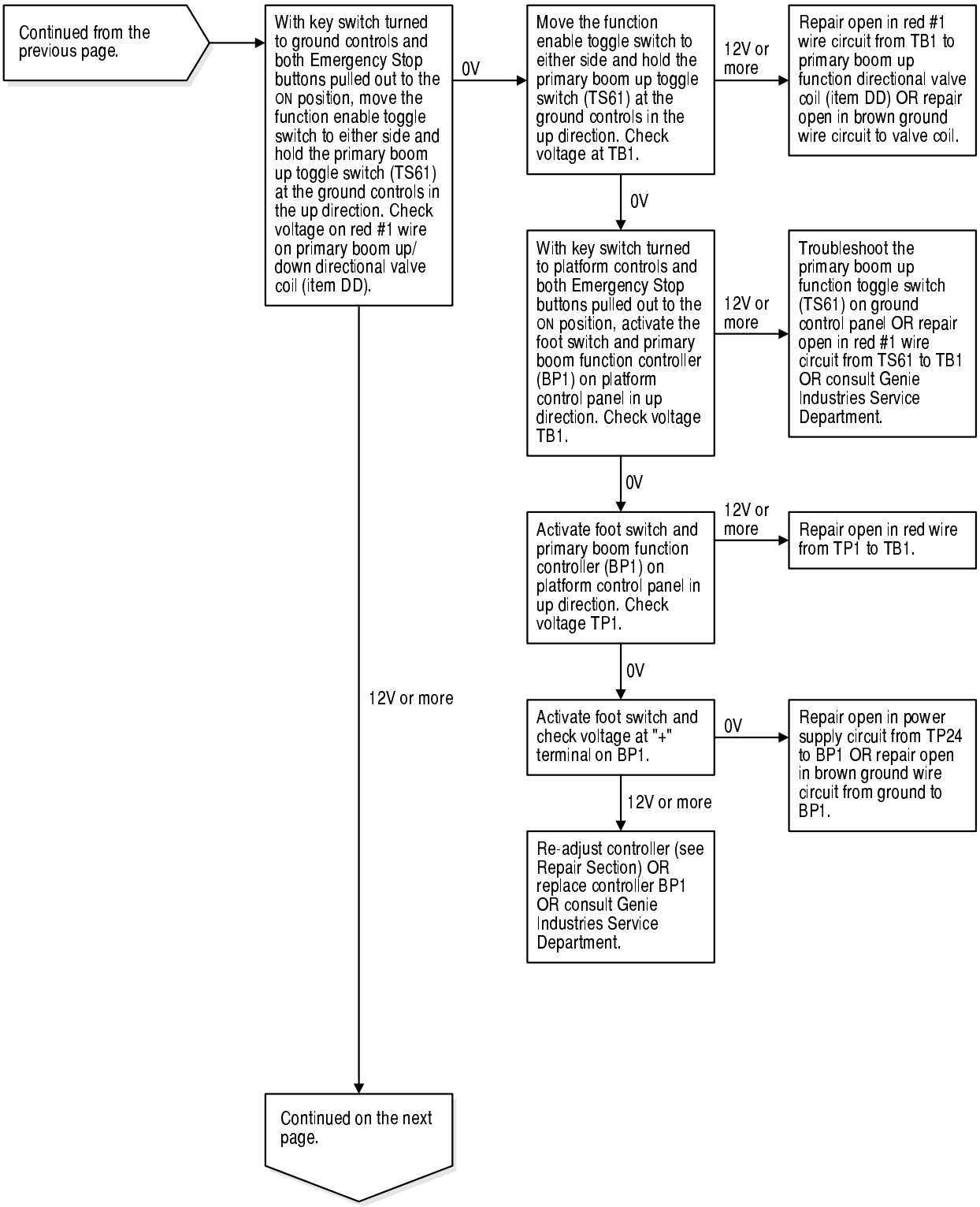

Continued from the previous page.
With key switch turned to ground controls and both Emergency Stop buttons pulled out to the ON position, move the function enable toggle switch to either side and hold the primary boom up toggle switch (TS61) at the ground controls in the up direction. Check voltage on red #1 wire on primary boom up/ down directional valve coil (item DD).
0V
Move the function enable toggle switch to either side and hold the primary boom up toggle switch (TS61) at the ground controls in the up direction. Check voltage at TB1.
12V or more
Repair open in red #1 wire circuit from TB1 to primary boom up function directional valve coil (item DD) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, activate the foot switch and primary boom function controller (BP1) on platform control panel in up direction. Check voltage TB1.
12V or more
Troubleshoot the primary boom up function toggle switch (TS61) on ground control panel OR repair open in red #1 wire circuit from TS61 to TB1 OR consult Genie Industries Service Department.
0V
Activate foot switch and primary boom function controller (BP1) on platform control panel in up direction. Check voltage TP1.
12V or more
Repair open in red wire from TP1 to TB1.
0V
Activate foot switch and check voltage at "+" terminal on BP1.
0V
Repair open in power supply circuit from TP24 to BP1 OR repair open in brown ground wire circuit from ground to BP1.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP1 OR consult Genie Industries Service Department.
12V or more
Continued on the next page.

CHART 14

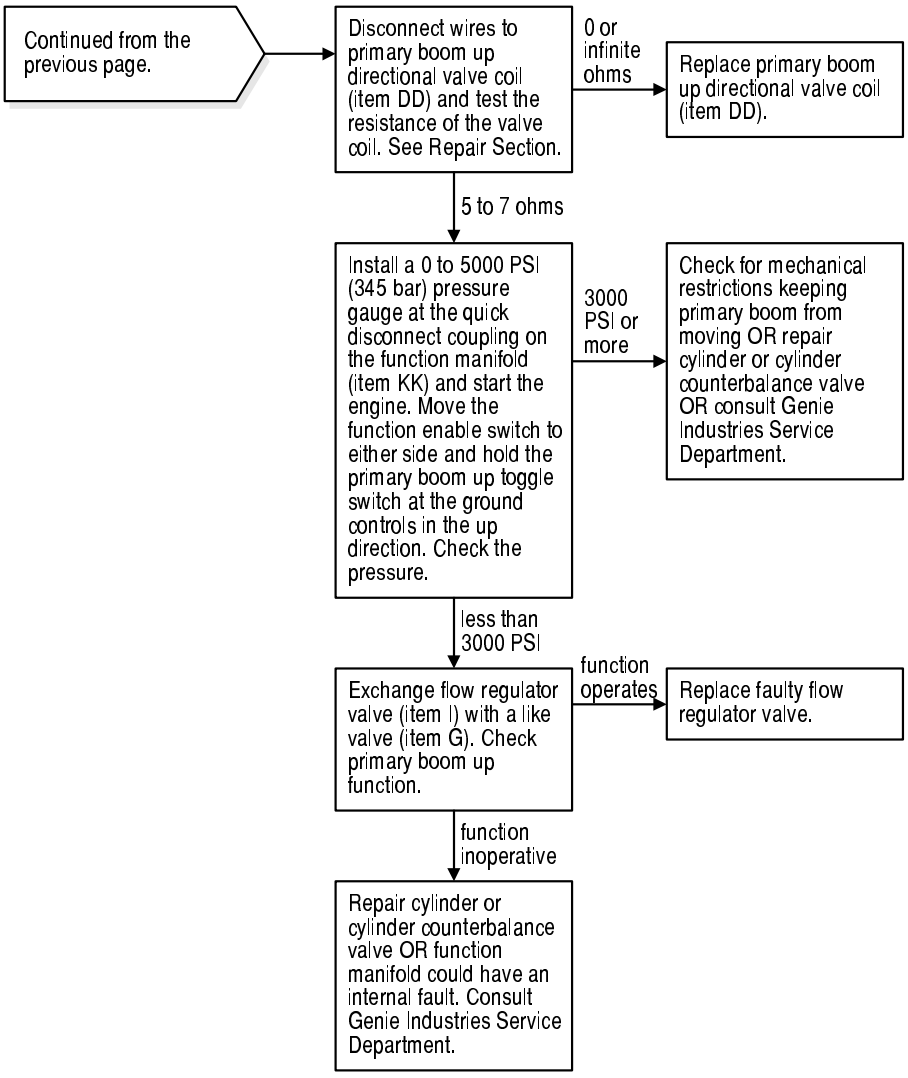

Continued from the previous page.
Disconnect wires to primary boom up directional valve coil (item DD) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace primary boom up directional valve coil (item DD).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the function manifold (item KK) and start the engine. Move the function enable switch to either side and hold the primary boom up toggle switch at the ground controls in the up direction. Check the pressure.
3000 PSI or more
Check for mechanical restrictions keeping primary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3000 PSI
Exchange flow regulator valve (item I) with a like valve (item G). Check primary boom up function.
function operates
Replace faulty flow regulator valve.
function inoperative
Repair cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 15

Primary Boom Down Function Inoperative (before serial number 13099)

Be sure all other functions operate normally.

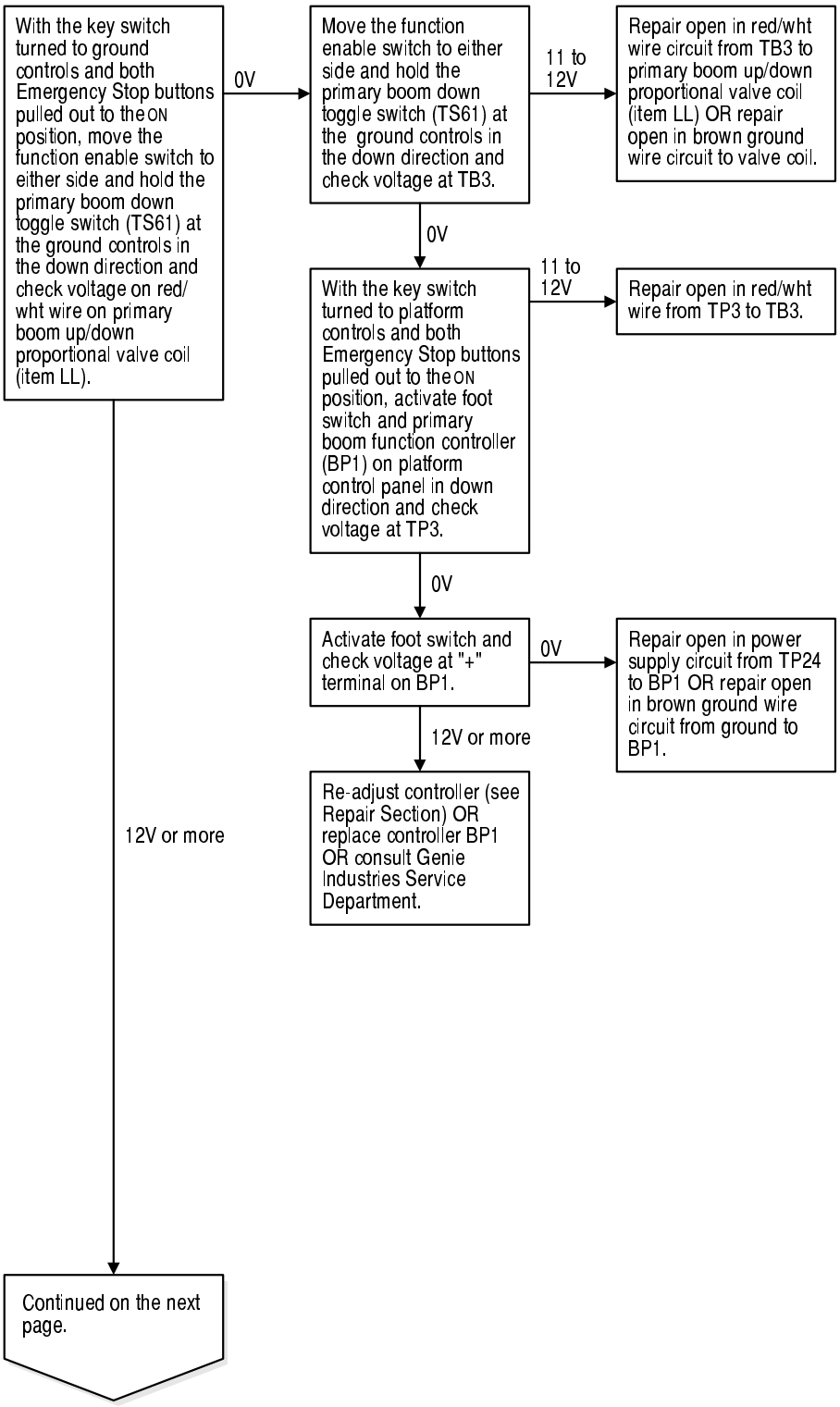


CHART 15

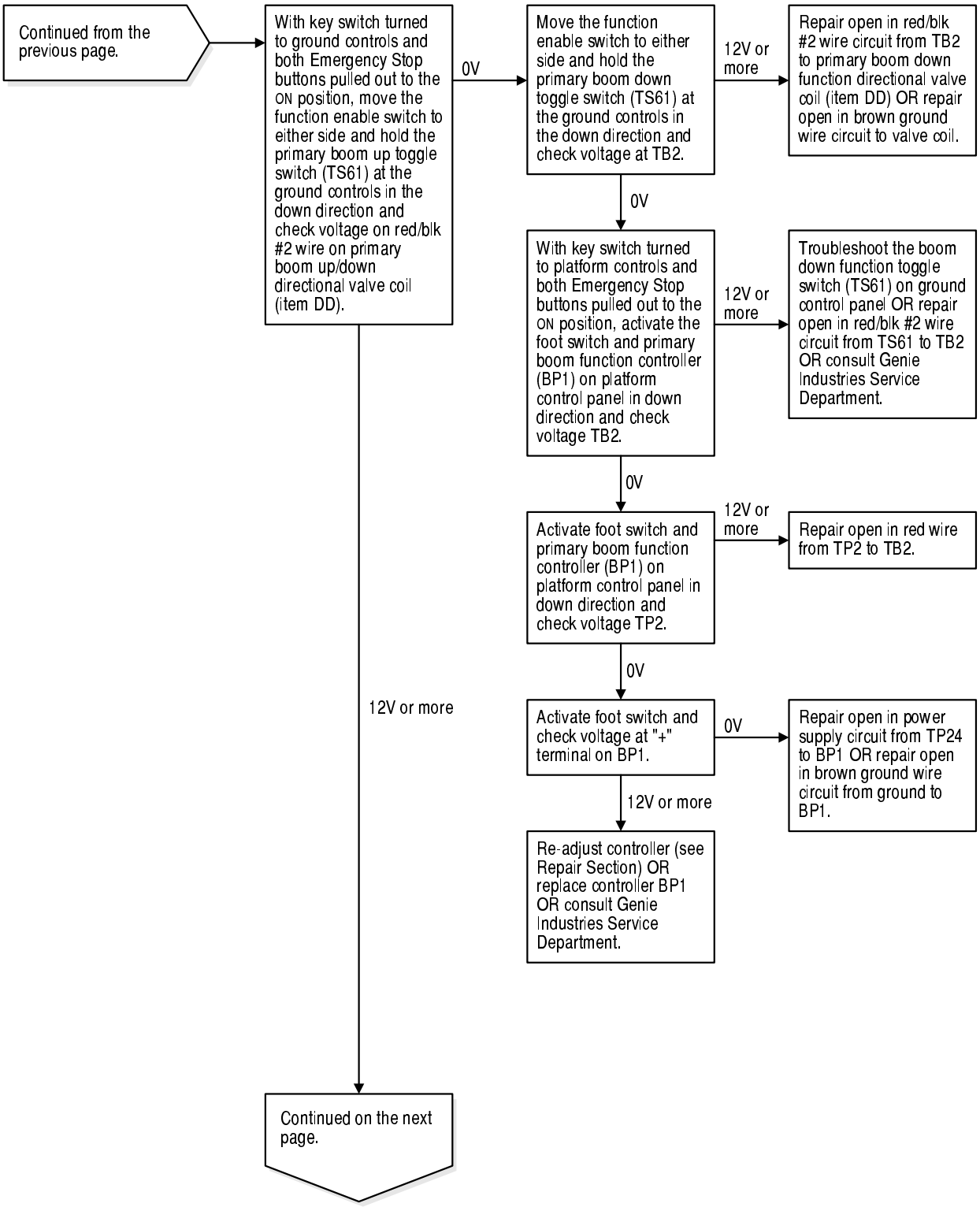

Continued from the previous page.
With key switch turned to ground controls and both Emergency Stop buttons pulled out to the ON position, move the function enable switch to either side and hold the primary boom up toggle switch (TS61) at the ground controls in the down direction and check voltage on red/blk #2 wire on primary boom up/down directional valve coil (item DD).
0V
Move the function enable switch to either side and hold the primary boom down toggle switch (TS61) at the ground controls in the down direction and check voltage at TB2.
12V or more
Repair open in red/blk #2 wire circuit from TB2 to primary boom down function directional valve coil (item DD) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, activate the foot switch and primary boom function controller (BP1) on platform control panel in down direction and check voltage TB2.
12V or more
Troubleshoot the boom down function toggle switch (TS61) on ground control panel OR repair open in red/blk #2 wire circuit from TS61 to TB2 OR consult Genie Industries Service Department.
0V
Activate foot switch and primary boom function controller (BP1) on platform control panel in down direction and check voltage TP2.
12V or more
Repair open in red wire from TP2 to TB2.
0V
Activate foot switch and check voltage at "+" terminal on BP1.
0V
Repair open in power supply circuit from TP24 to BP1 OR repair open in brown ground wire circuit from ground to BP1.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP1 OR consult Genie Industries Service Department.
12V or more
Continued on the next page.

CHART 15

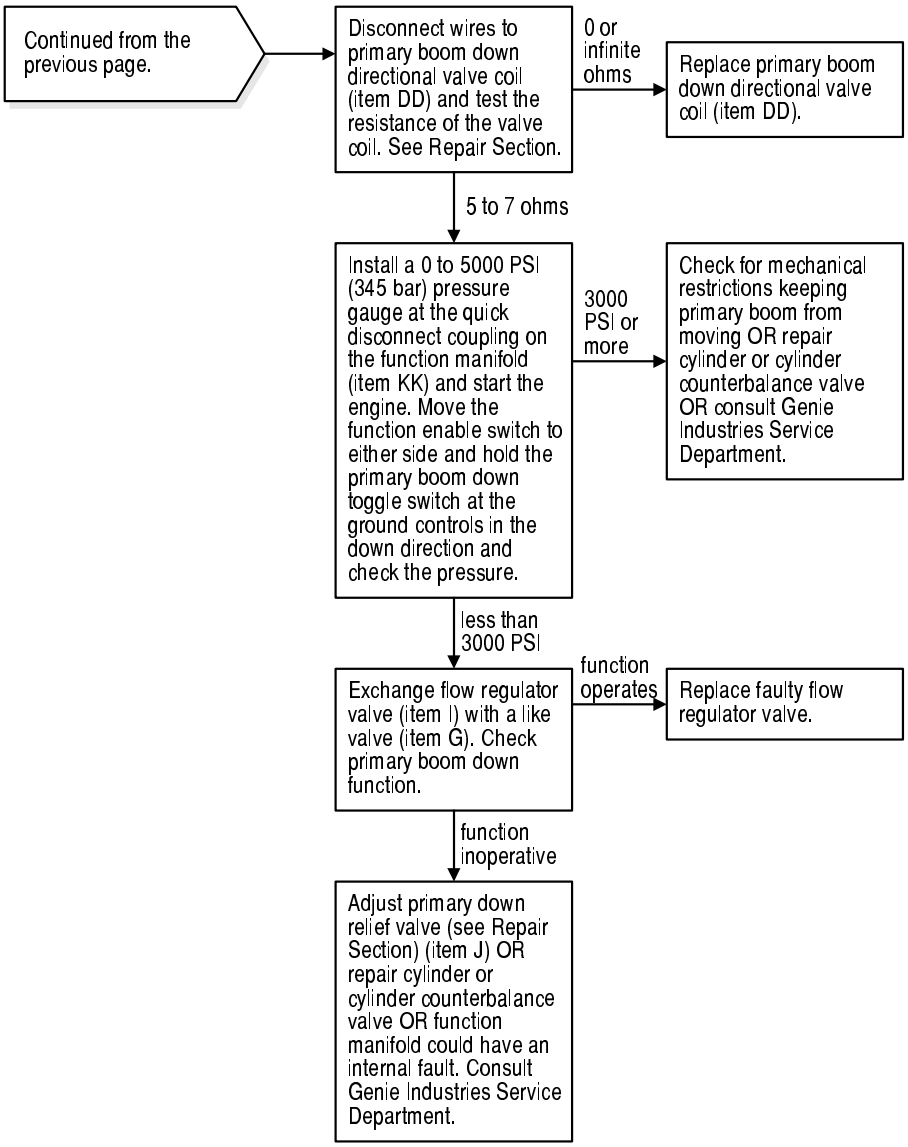

Continued from the previous page.
Disconnect wires to primary boom down directional valve coil (item DD) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace primary boom down directional valve coil (item DD).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the function manifold (item KK) and start the engine. Move the function enable switch to either side and hold the primary boom down toggle switch at the ground controls in the down direction and check the pressure.
3000 PSI or more
Check for mechanical restrictions keeping primary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3000 PSI
Exchange flow regulator valve (item I) with a like valve (item G). Check primary boom down function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust primary down relief valve (see Repair Section) (item J) OR repair cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 16

Primary Boom Down Function Inoperative (after serial number 13098)

Be sure all other functions operate normally.

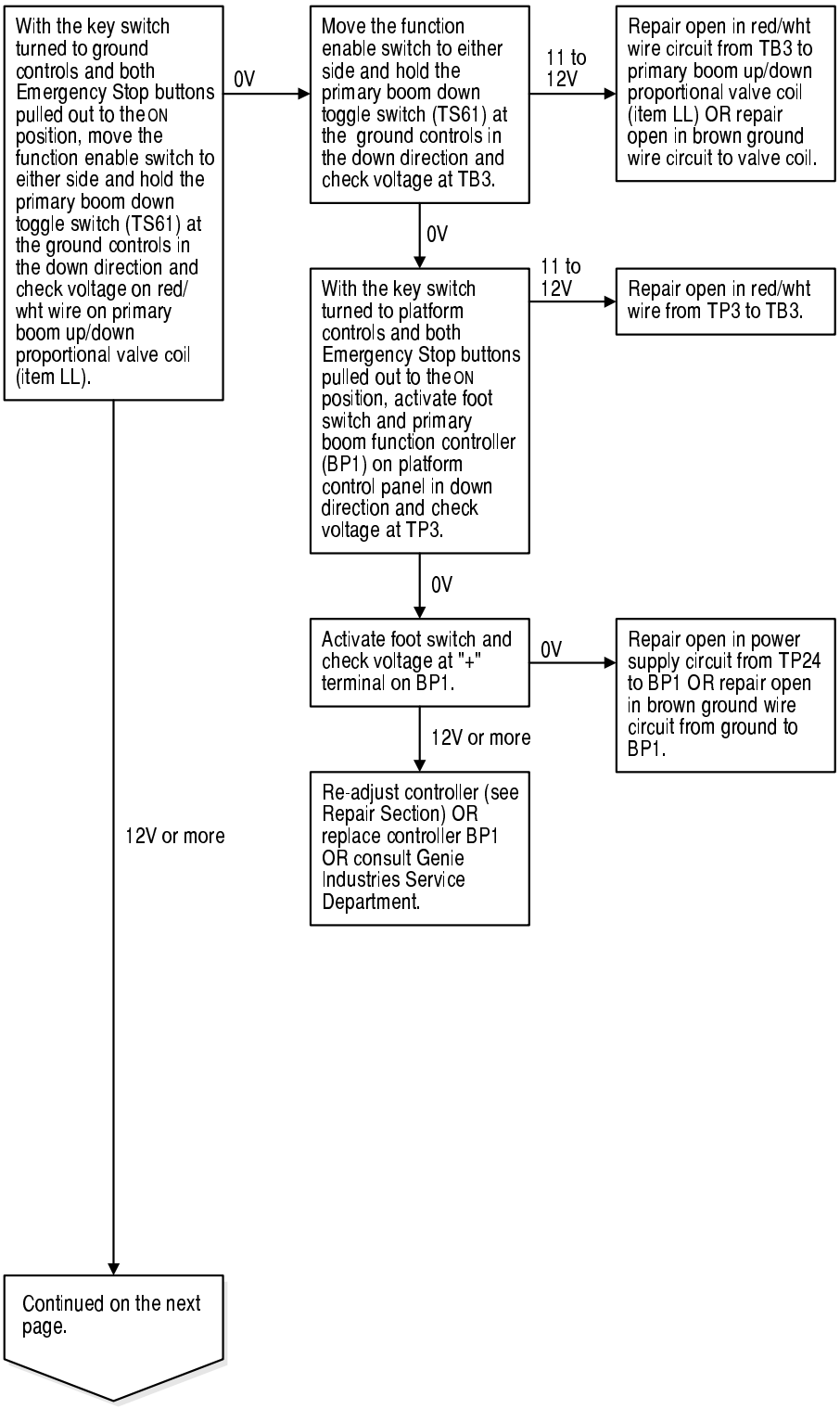


CHART 16

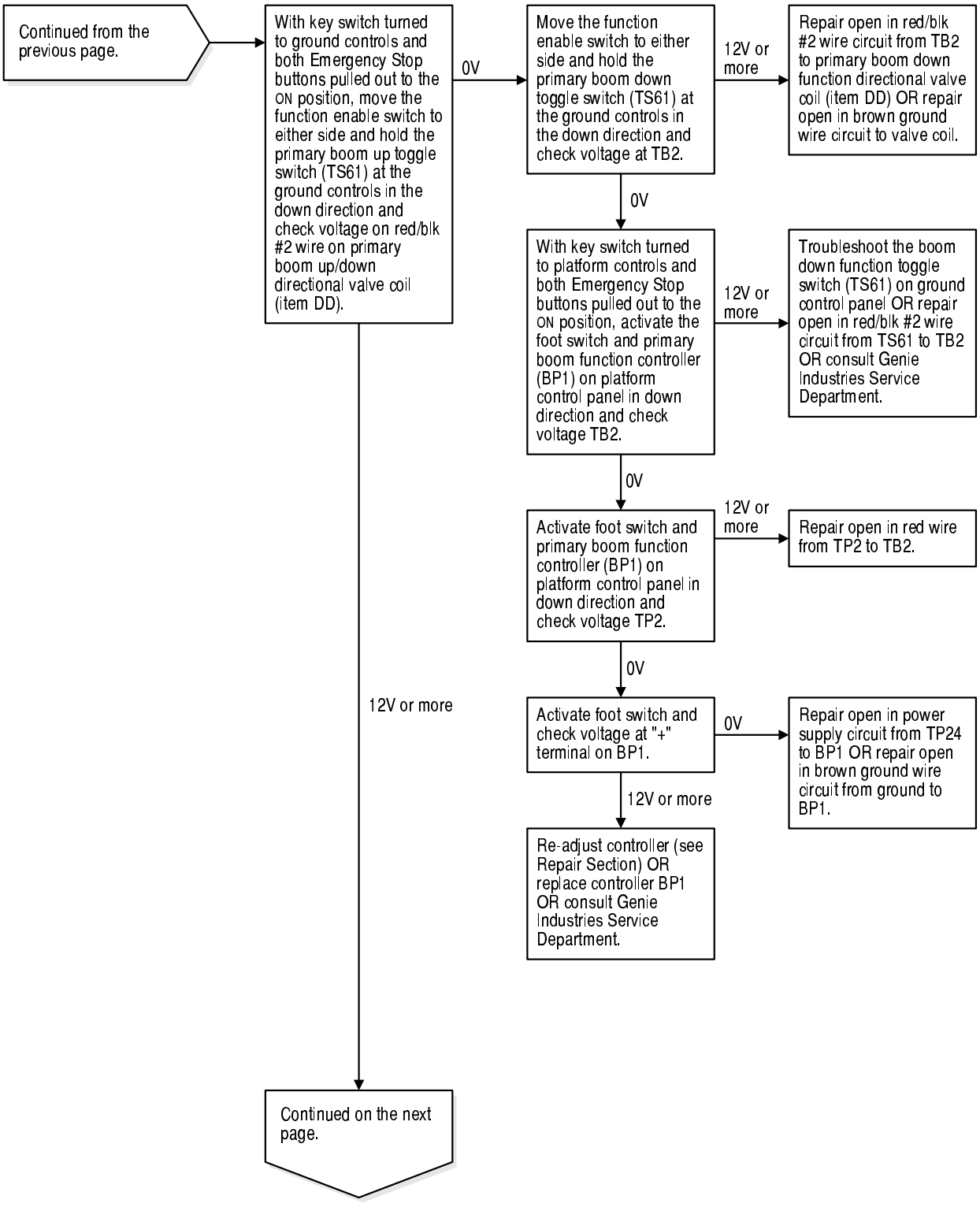

Continued from the previous page.
With key switch turned to ground controls and both Emergency Stop buttons pulled out to the ON position, move the function enable switch to either side and hold the primary boom up toggle switch (TS61) at the ground controls in the down direction and check voltage on red/blk #2 wire on primary boom up/down directional valve coil (item DD).
0V
Move the function enable switch to either side and hold the primary boom down toggle switch (TS61) at the ground controls in the down direction and check voltage at TB2.
12V or more
Repair open in red/blk #2 wire circuit from TB2 to primary boom down function directional valve coil (item DD) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, activate the foot switch and primary boom function controller (BP1) on platform control panel in down direction and check voltage TB2.
12V or more
Troubleshoot the boom down function toggle switch (TS61) on ground control panel OR repair open in red/blk #2 wire circuit from TS61 to TB2 OR consult Genie Industries Service Department.
0V
Activate foot switch and primary boom function controller (BP1) on platform control panel in down direction and check voltage TP2.
12V or more
Repair open in red wire from TP2 to TB2.
0V
Activate foot switch and check voltage at "+" terminal on BP1.
0V
Repair open in power supply circuit from TP24 to BP1 OR repair open in brown ground wire circuit from ground to BP1.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP1 OR consult Genie Industries Service Department.
12V or more
Continued on the next page.

CHART 16

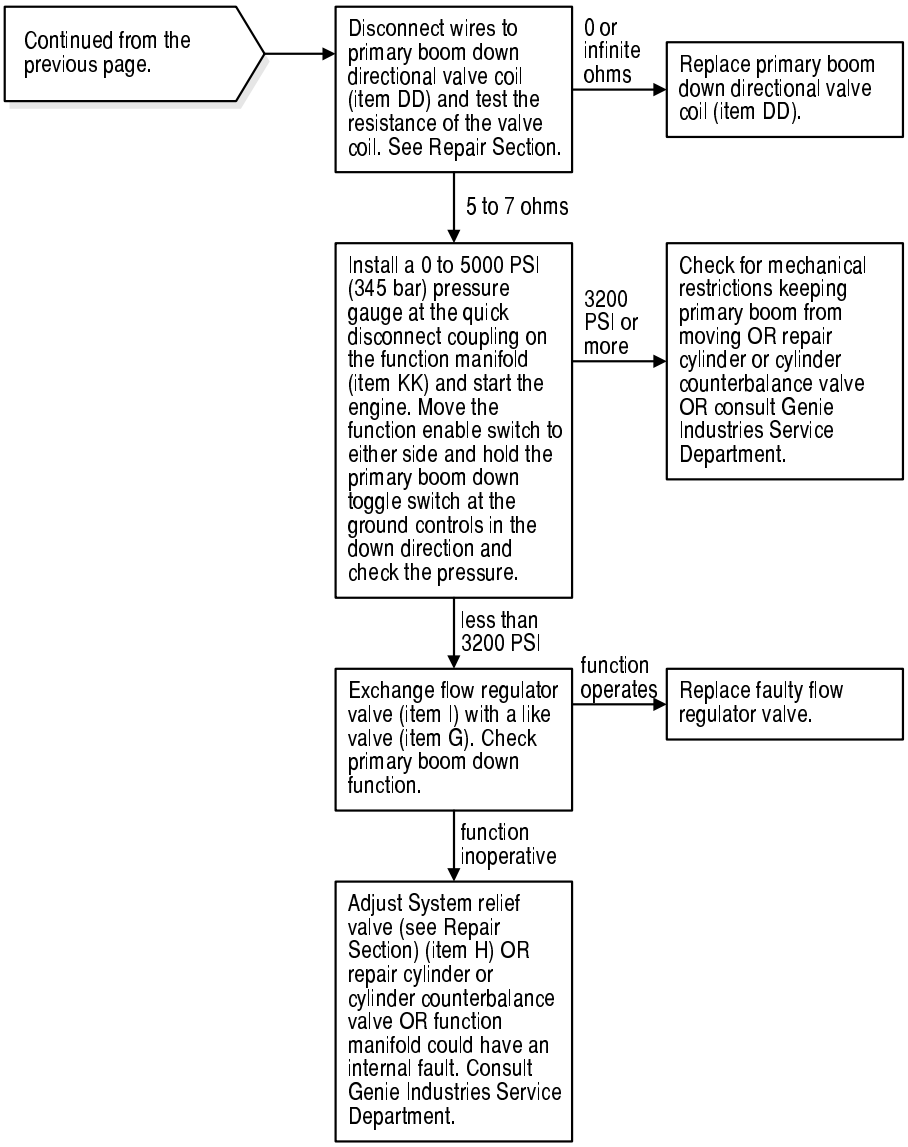

Continued from the previous page.
Disconnect wires to primary boom down directional valve coil (item DD) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace primary boom down directional valve coil (item DD).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the function manifold (item KK) and start the engine. Move the function enable switch to either side and hold the primary boom down toggle switch at the ground controls in the down direction and check the pressure.
3200 PSI or more
Check for mechanical restrictions keeping primary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3200 PSI
Exchange flow regulator valve (item I) with a like valve (item G). Check primary boom down function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust System relief valve (see Repair Section) (item H) OR repair cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 17

Secondary Boom Up Function Inoperative

Be sure all other functions operate normally.

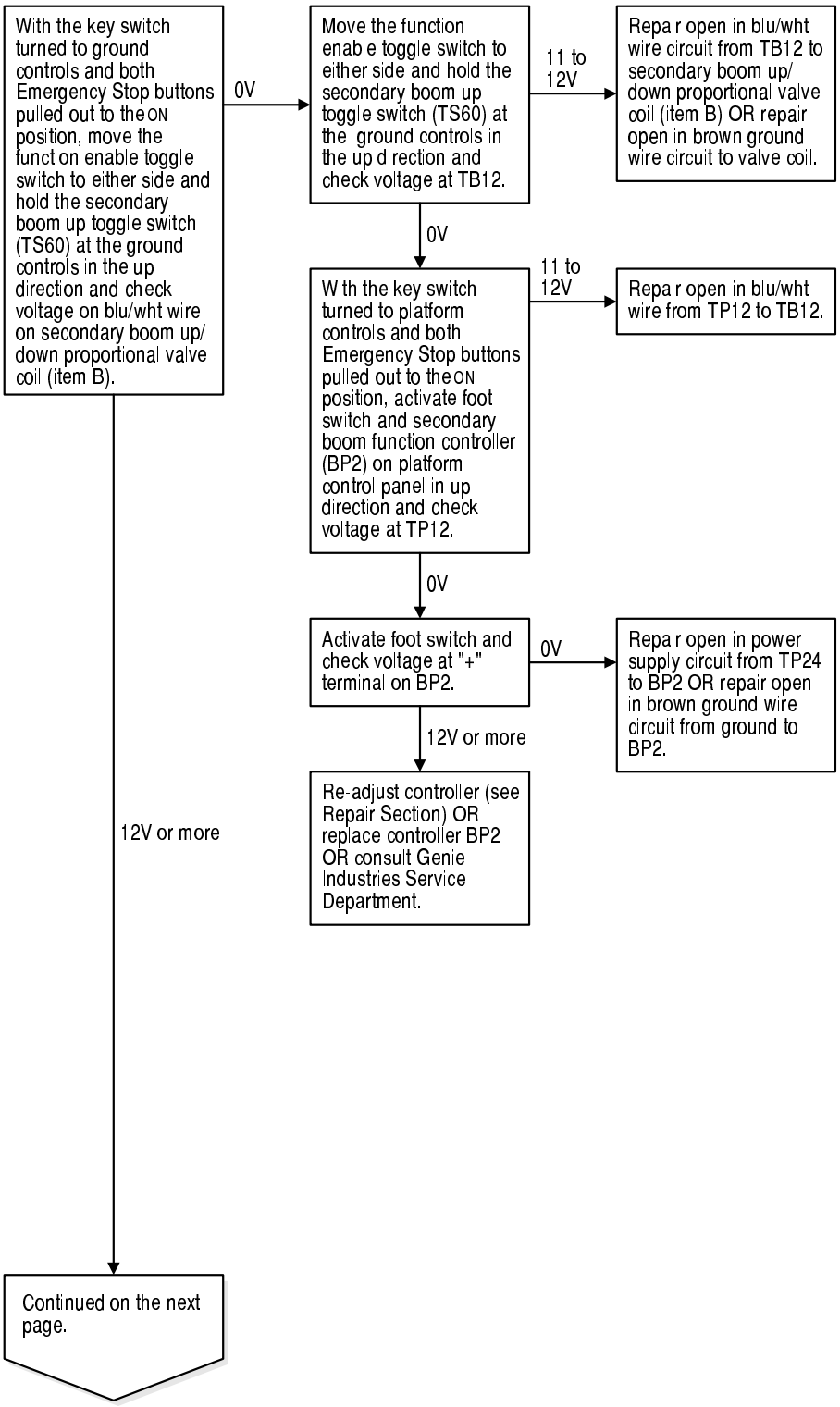


CHART 17

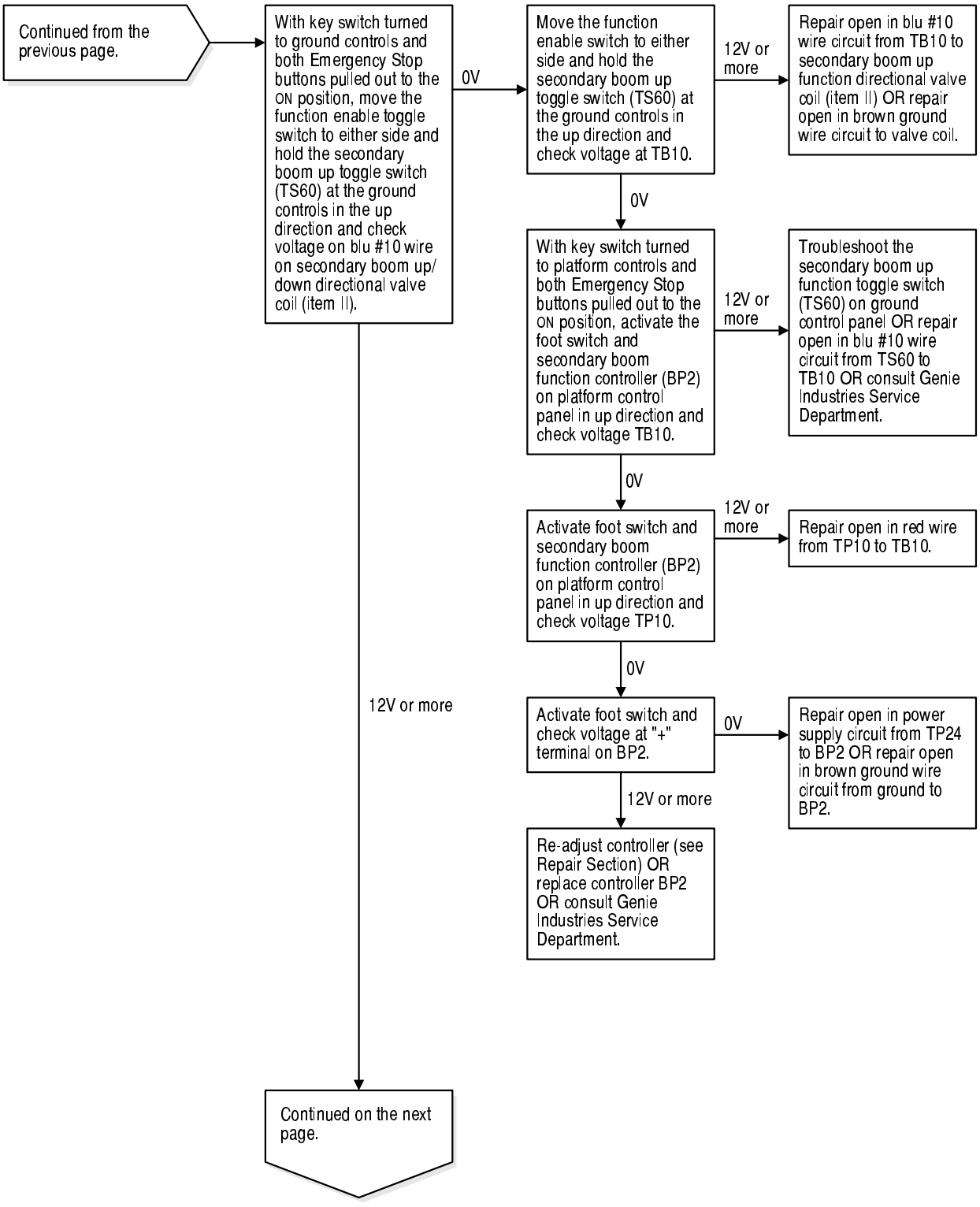

Continued from the previous page.
With key switch turned to ground controls and both Emergency Stop buttons pulled out to the ON position, move the function enable toggle switch to either side and hold the secondary boom up toggle switch (TS60) at the ground controls in the up direction and check voltage on blu #10 wire on secondary boom up/ down directional valve coil (item II).
0V
Move the function enable switch to either side and hold the secondary boom up toggle switch (TS60) at the ground controls in the up direction and check voltage at TB10.
12V or more
Repair open in blu #10 wire circuit from TB10 to secondary boom up function directional valve coil (item II) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, activate the foot switch and secondary boom function controller (BP2) on platform control panel in up direction and check voltage TB10.
12V or more
Troubleshoot the secondary boom up function toggle switch (TS60) on ground control panel OR repair open in blu #10 wire circuit from TS60 to TB10 OR consult Genie Industries Service Department.
0V
Activate foot switch and secondary boom function controller (BP2) on platform control panel in up direction and check voltage TP10.
12V or more
Repair open in red wire from TP10 to TB10.
0V
Activate foot switch and check voltage at "+" terminal on BP2.
0V
Repair open in power supply circuit from TP24 to BP2 OR repair open in brown ground wire circuit from ground to BP2.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP2 OR consult Genie Industries Service Department.
12V or more
Continued on the next page.

CHART 17

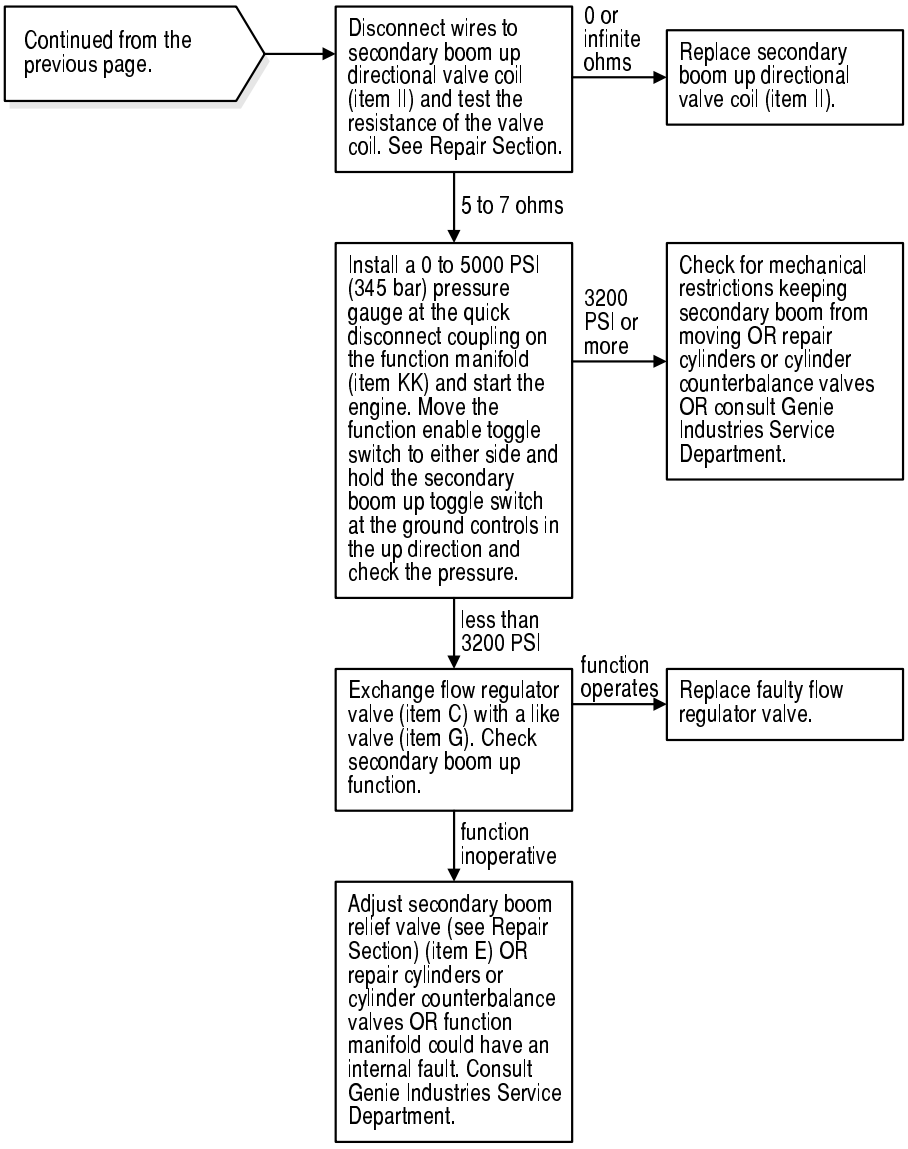

Continued from the previous page.
Disconnect wires to secondary boom up directional valve coil (item II) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace secondary boom up directional valve coil (item II).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the function manifold (item KK) and start the engine. Move the function enable toggle switch to either side and hold the secondary boom up toggle switch at the ground controls in the up direction and check the pressure.
3200 PSI or more
Check for mechanical restrictions keeping secondary boom from moving OR repair cylinders or cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Exchange flow regulator valve (item C) with a like valve (item G). Check secondary boom up function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust secondary boom relief valve (see Repair Section) (item E) OR repair cylinders or cylinder counterbalance valves OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 18

Secondary Boom Down Function Inoperative

Be sure all other functions operate normally.

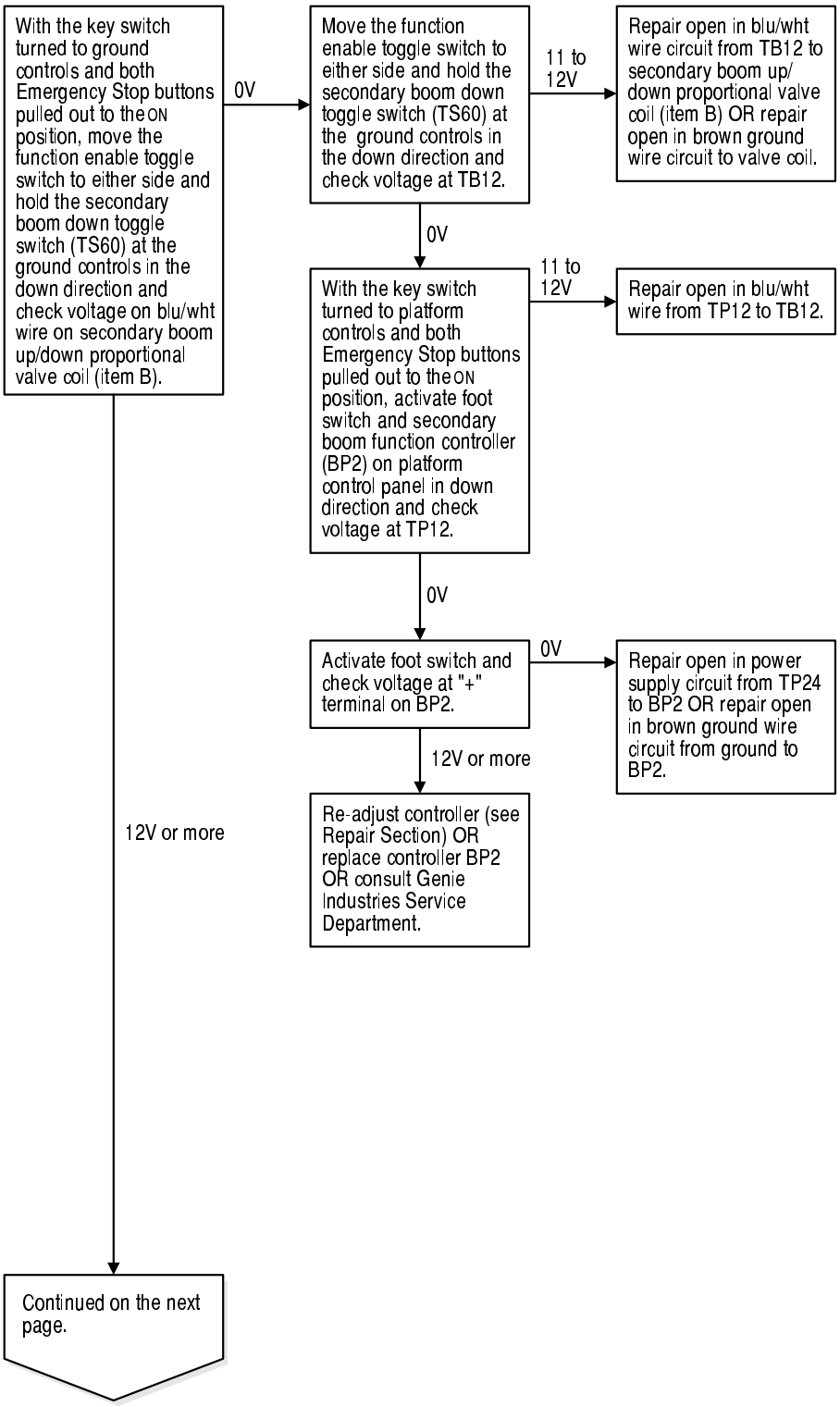


CHART 18

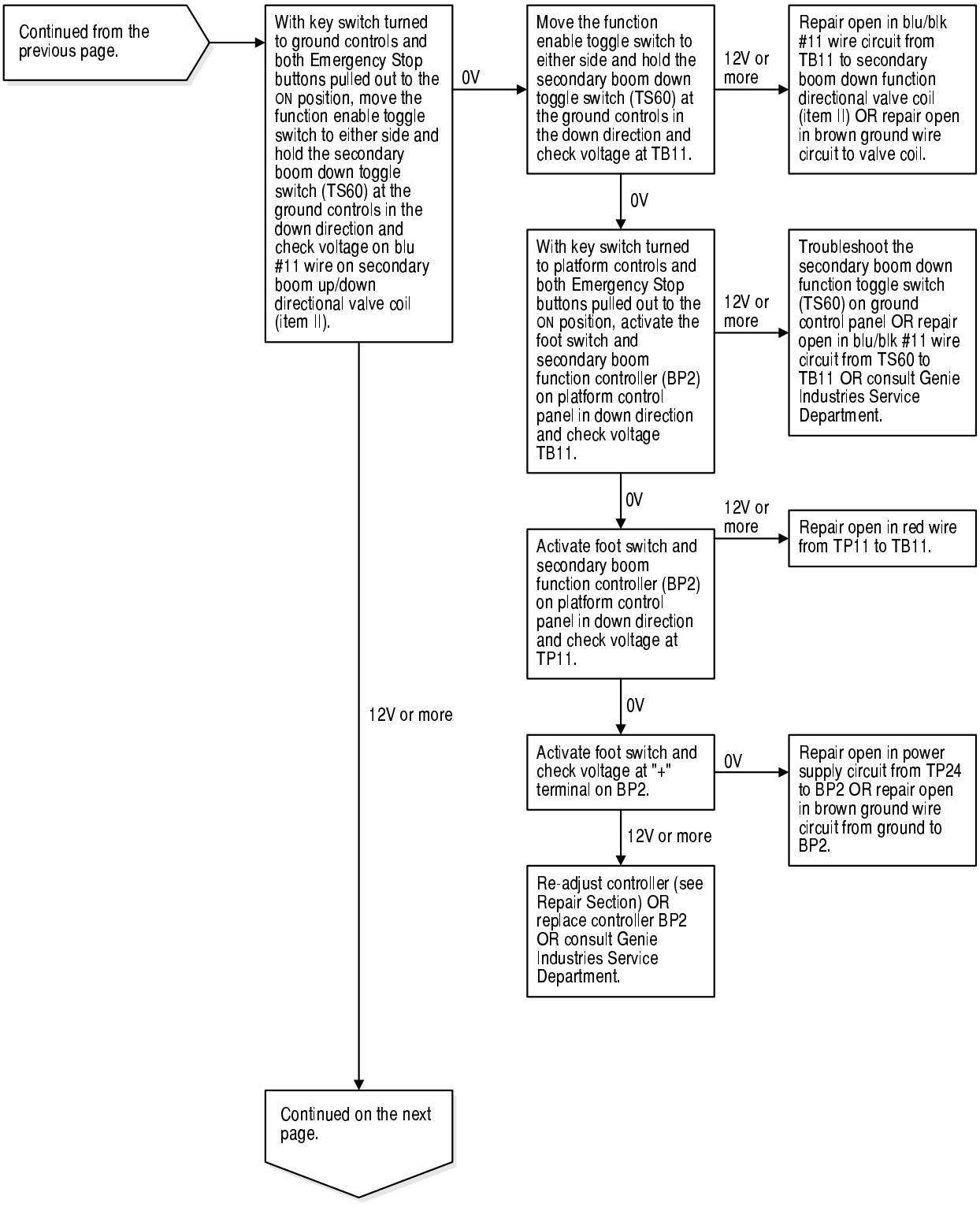

Continued from the previous page.
With key switch turned to ground controls and both Emergency Stop buttons pulled out to the ON position, move the function enable toggle switch to either side and hold the secondary boom down toggle switch (TS60) at the ground controls in the down direction and check voltage on blu #11 wire on secondary boom up/down directional valve coil (item II).
0V
Move the function enable toggle switch to either side and hold the secondary boom down toggle switch (TS60) at the ground controls in the down direction and check voltage at TB11.
12V or more
Repair open in blu/blk #11 wire circuit from TB11 to secondary boom down function directional valve coil (item II) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, activate the foot switch and secondary boom function controller (BP2) on platform control panel in down direction and check voltage TB11.
12V or more
Troubleshoot the secondary boom down function toggle switch (TS60) on ground control panel OR repair open in blu/blk #11 wire circuit from TS60 to TB11 OR consult Genie Industries Service Department.
0V
Activate foot switch and secondary boom function controller (BP2) on platform control panel in down direction and check voltage at TP11.
12V or more
Repair open in red wire from TP11 to TB11.
0V
Activate foot switch and check voltage at "+" terminal on BP2.
0V
Repair open in power supply circuit from TP24 to BP2 OR repair open in brown ground wire circuit from ground to BP2.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP2 OR consult Genie Industries Service Department.
12V or more
Continued on the next page.

CHART 18

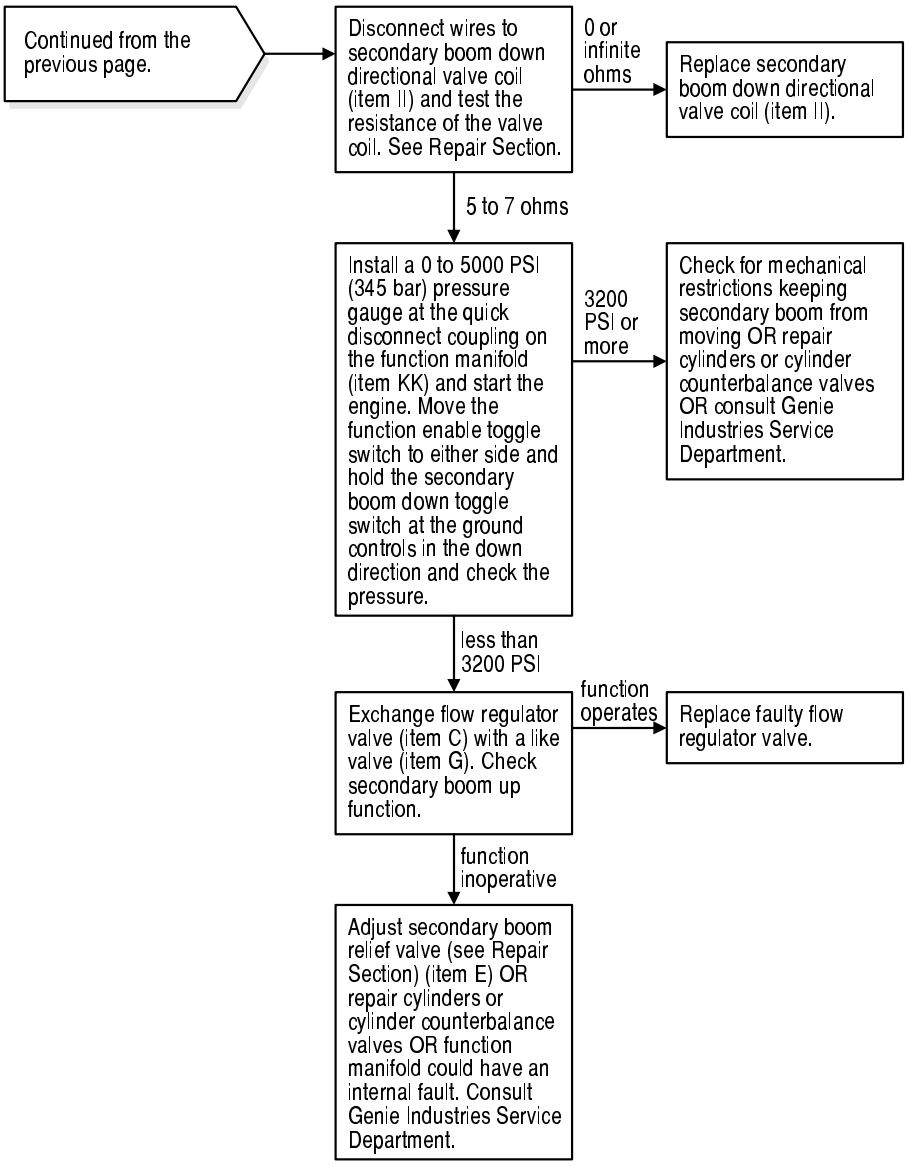

Continued from the previous page.
Disconnect wires to secondary boom down directional valve coil (item II) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace secondary boom down directional valve coil (item II).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the function manifold (item KK) and start the engine. Move the function enable toggle switch to either side and hold the secondary boom down toggle switch at the ground controls in the down direction and check the pressure.
3200 PSI or more
Check for mechanical restrictions keeping secondary boom from moving OR repair cylinders or cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Exchange flow regulator valve (item C) with a like valve (item G). Check secondary boom up function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust secondary boom relief valve (see Repair Section) (item E) OR repair cylinders or cylinder counterbalance valves OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 19

Primary Boom Extend Function Inoperative

Be sure all other functions operate normally.

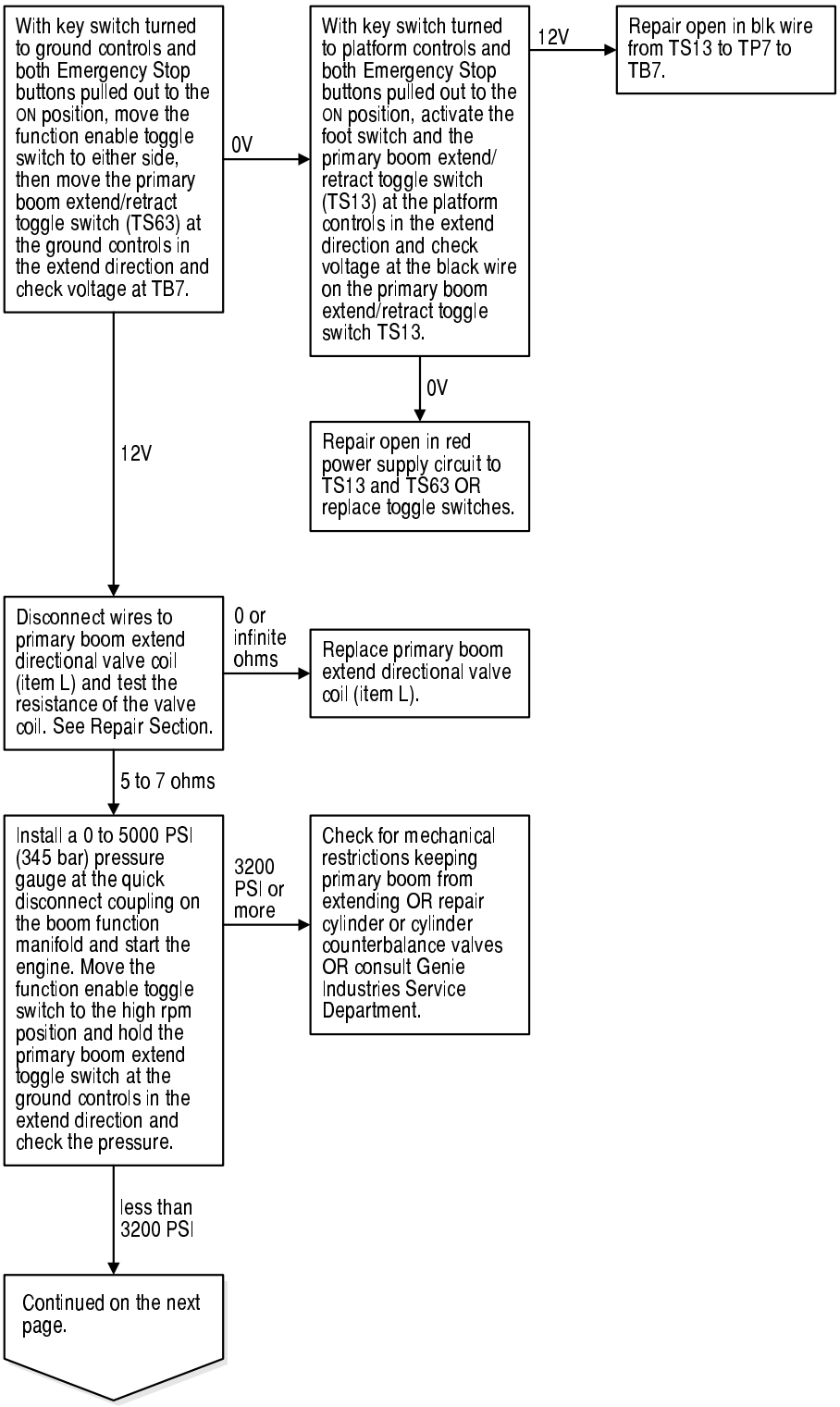


CHART 19

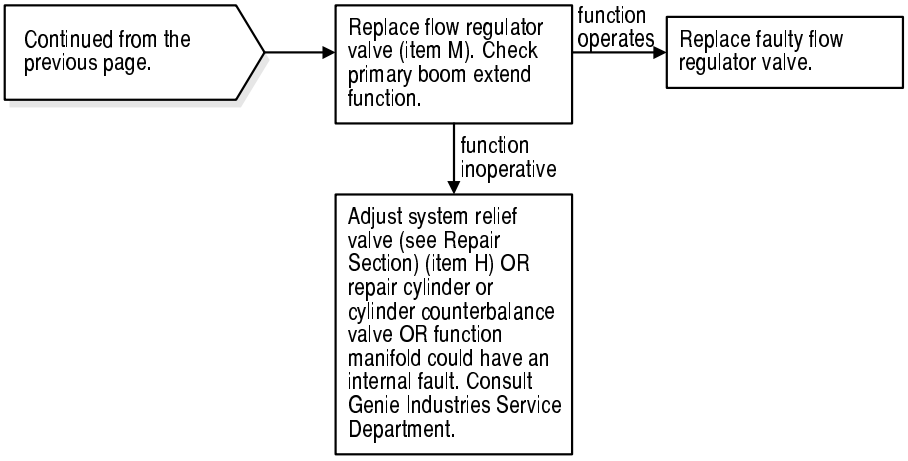

Continued from the previous page.
Replace flow regulator valve (item M). Check primary boom extend function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust system relief valve (see Repair Section) (item H) OR repair cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 20

Primary Boom Retract Function Inoperative

Be sure all other functions operate normally.

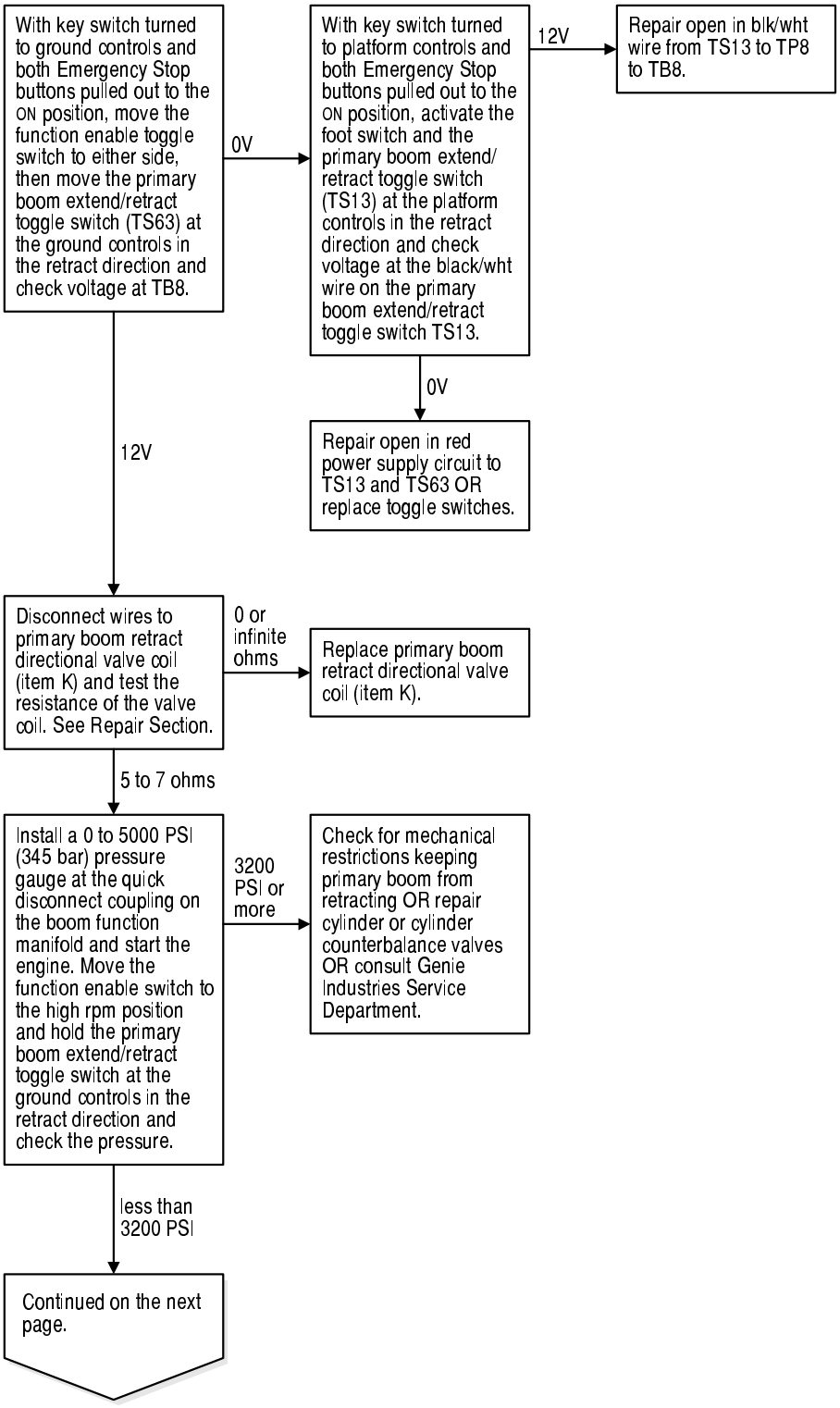


CHART 20

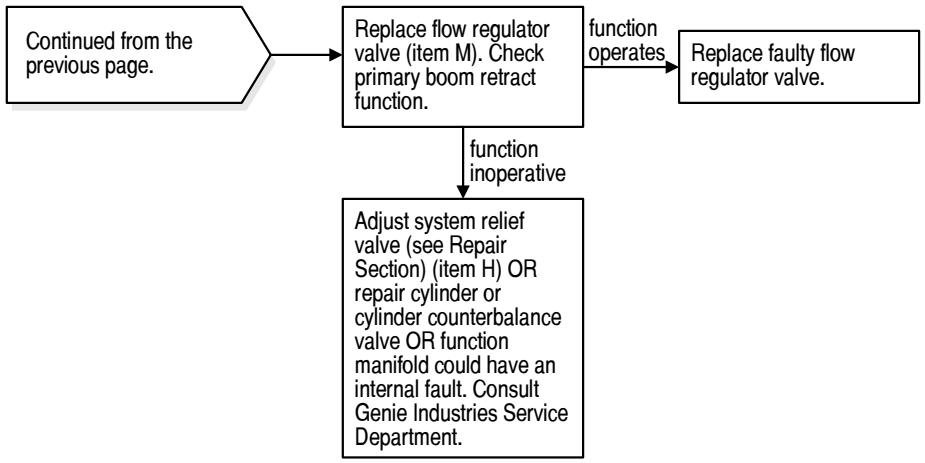

Continued from the previous page.
Replace flow regulator valve (item M). Check primary boom retract function.
function operates
Replace faulty flow regulator valve.
function inoperative
Adjust system relief valve (see Repair Section) (item H) OR repair cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 21

Turntable Rotate Left Function Inoperative

Be sure all other functions operate normally.

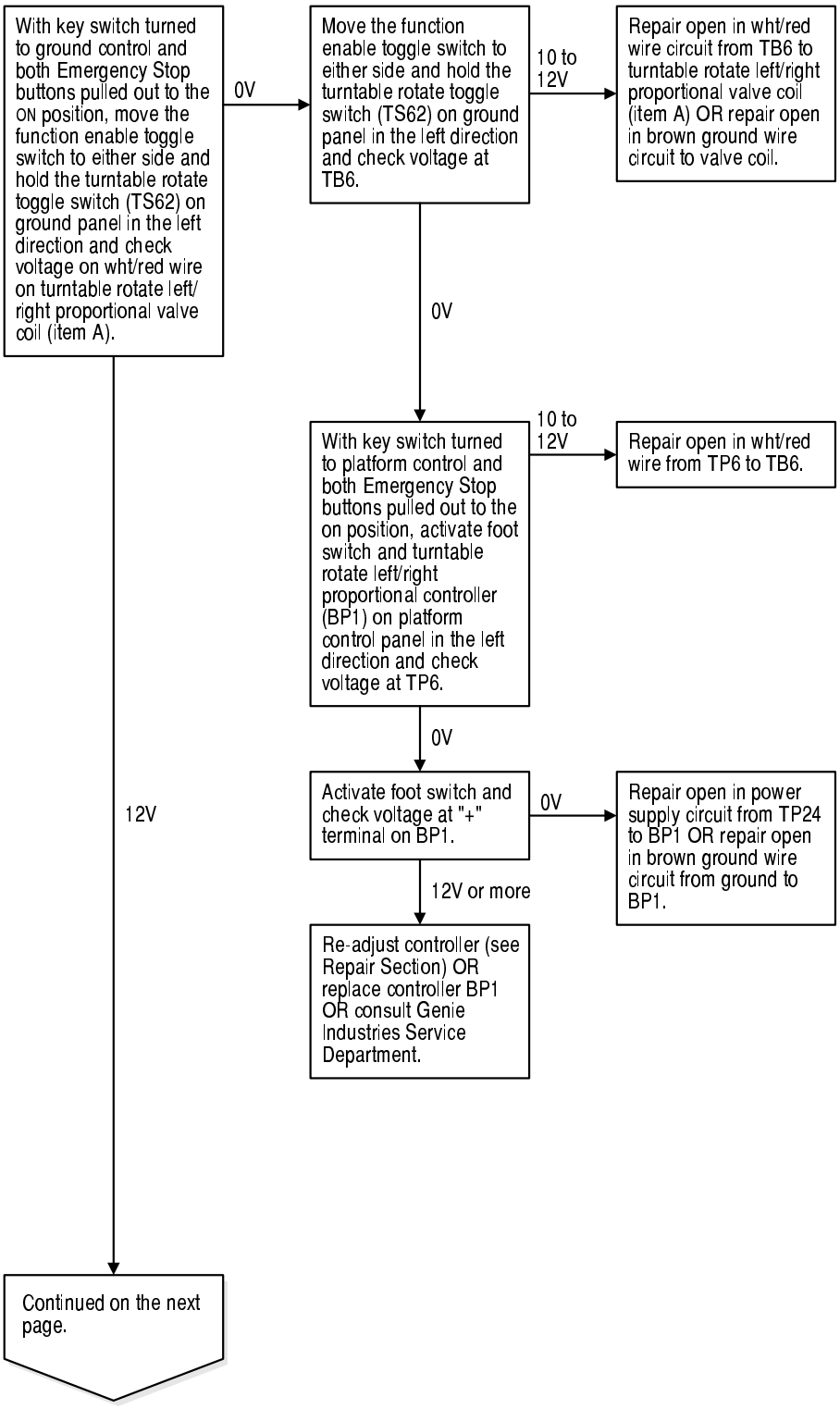


CHART 21

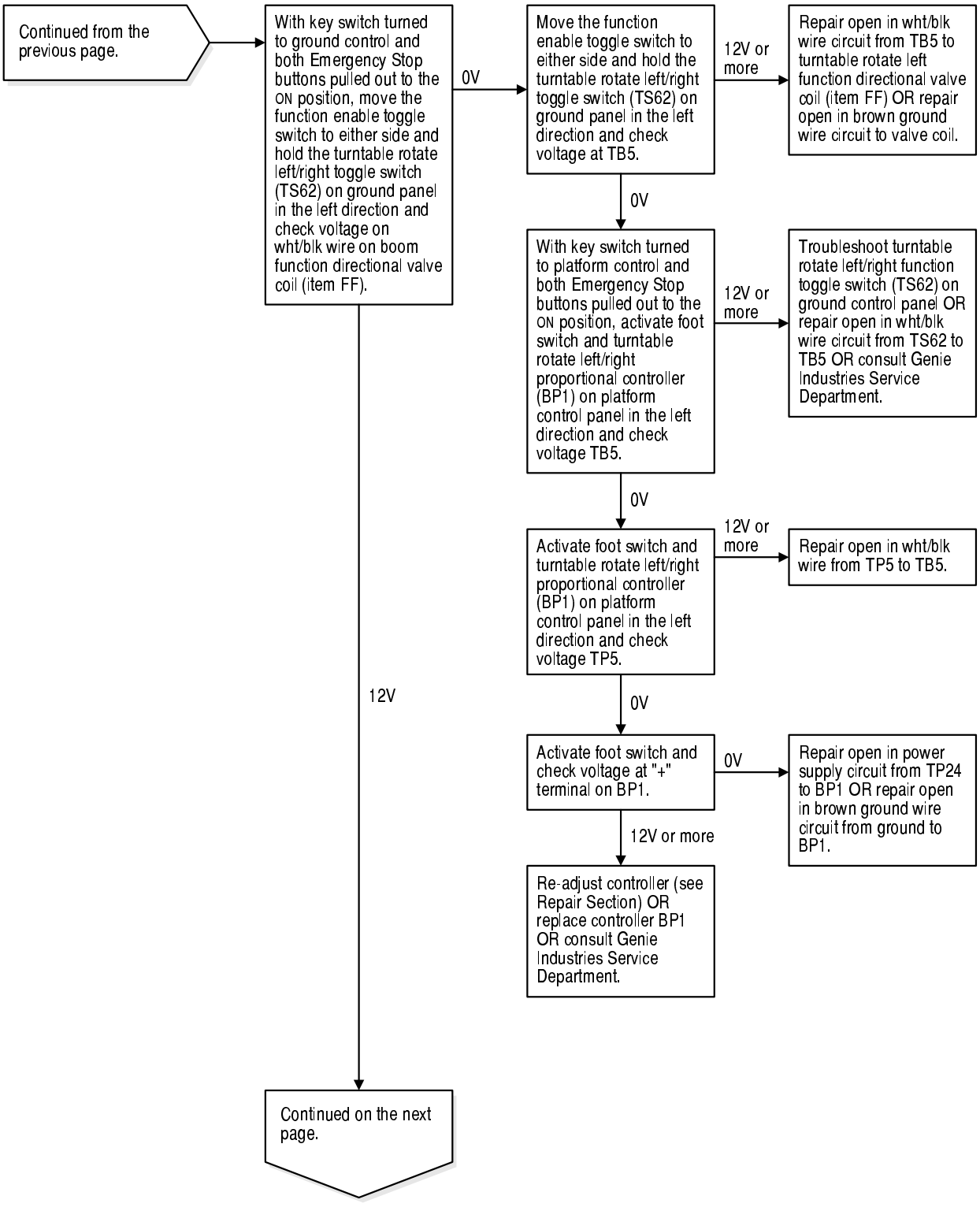

Continued from the previous page.
With key switch turned to ground control and both Emergency Stop buttons pulled out to the ON position, move the function enable toggle switch to either side and hold the turntable rotate left/right toggle switch (TS62) on ground panel in the left direction and check voltage on wht/blk wire on boom function directional valve coil (item FF).
0V
Move the function enable toggle switch to either side and hold the turntable rotate left/right toggle switch (TS62) on ground panel in the left direction and check voltage at TB5.
12V or more
Repair open in wht/blk wire circuit from TB5 to turntable rotate left function directional valve coil (item FF) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform control and both Emergency Stop buttons pulled out to the ON position, activate foot switch and turntable rotate left/right proportional controller (BP1) on platform control panel in the left direction and check voltage TB5.
12V or more
Troubleshoot turntable rotate left/right function toggle switch (TS62) on ground control panel OR repair open in wht/blk wire circuit from TS62 to TB5 OR consult Genie Industries Service Department.
0V
Activate foot switch and turntable rotate left/right proportional controller (BP1) on platform control panel in the left direction and check voltage TP5.
12V or more
Repair open in wht/blk wire from TP5 to TB5.
0V
Activate foot switch and check voltage at "+" terminal on BP1.
0V
Repair open in power supply circuit from TP24 to BP1 OR repair open in brown ground wire circuit from ground to BP1.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP1 OR consult Genie Industries Service Department.
12V
Continued on the next page.

CHART 21

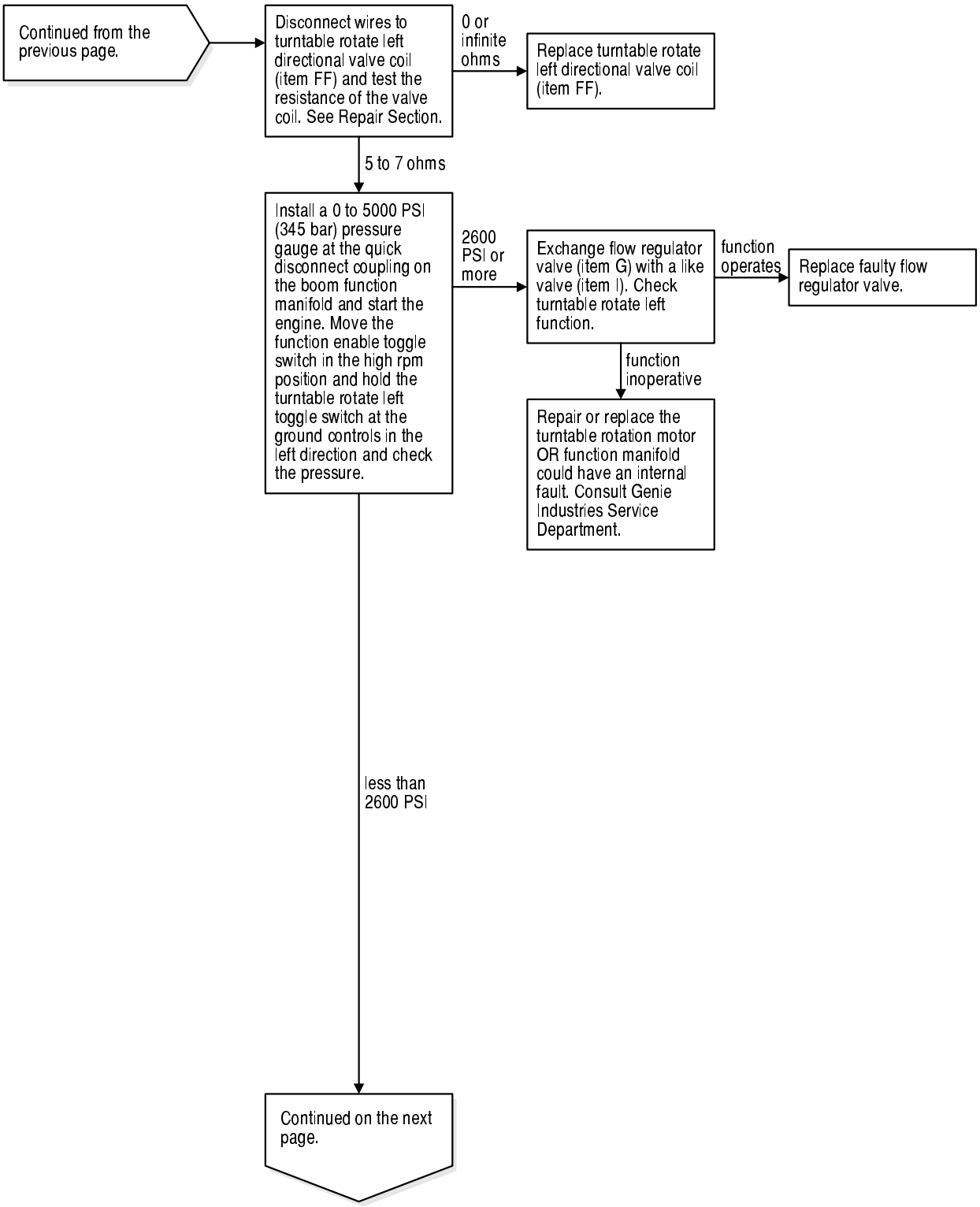

Continued from the previous page.
Disconnect wires to turntable rotate left directional valve coil (item FF) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace turntable rotate left directional valve coil (item FF).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and start the engine. Move the function enable toggle switch in the high rpm position and hold the turntable rotate left toggle switch at the ground controls in the left direction and check the pressure.
2600 PSI or more
Exchange flow regulator valve (item G) with a like valve (item I). Check turntable rotate left function.
function operates
Replace faulty flow regulator valve.
function inoperative
Repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.
less than 2600 PSI
Continued on the next page.

CHART 21

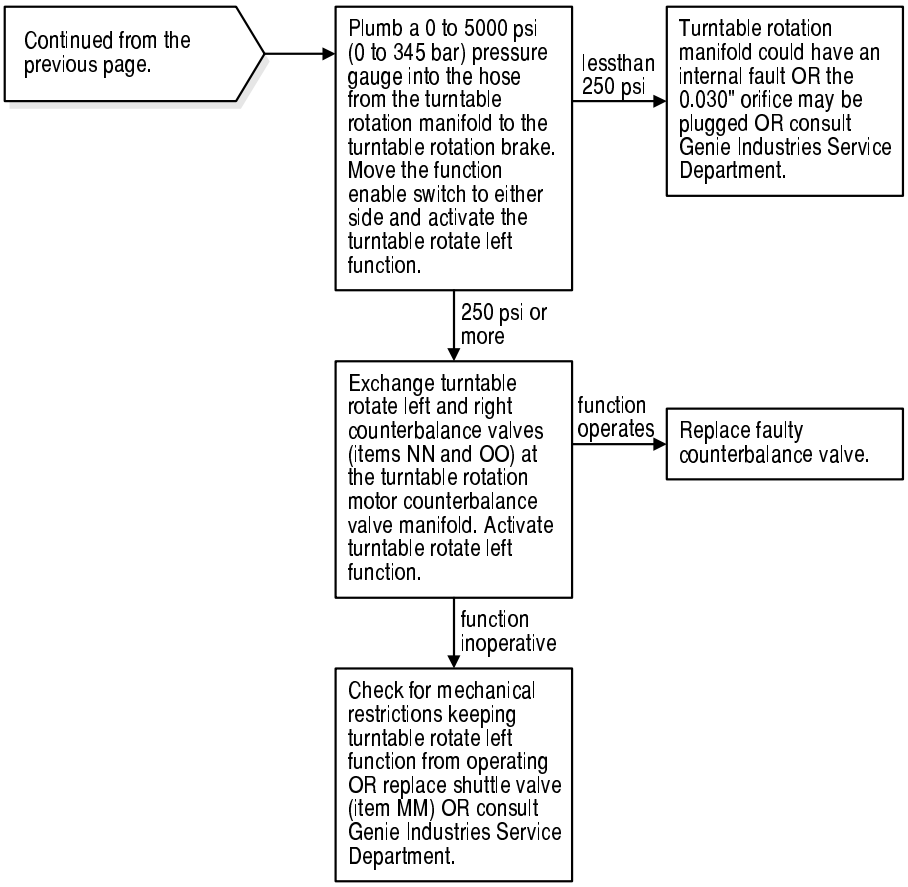

Continued from the previous page.
Plumb a 0 to 5000 psi (0 to 345 bar) pressure gauge into the hose from the turntable rotation manifold to the turntable rotation brake. Move the function enable switch to either side and activate the turntable rotate left function.
lessthan 250 psi
Turntable rotation manifold could have an internal fault OR the 0.030" orifice may be plugged OR consult Genie Industries Service Department.
250 psi or more
Exchange turntable rotate left and right counterbalance valves (items NN and OO) at the turntable rotation motor counterbalance valve manifold. Activate turntable rotate left function.
function operates
Replace faulty counterbalance valve.
function inoperative
Check for mechanical restrictions keeping turntable rotate left function from operating OR replace shuttle valve (item MM) OR consult Genie Industries Service Department.

Chart 22

Turntable Rotate Right Function Inoperative

Be sure all other functions operate normally.

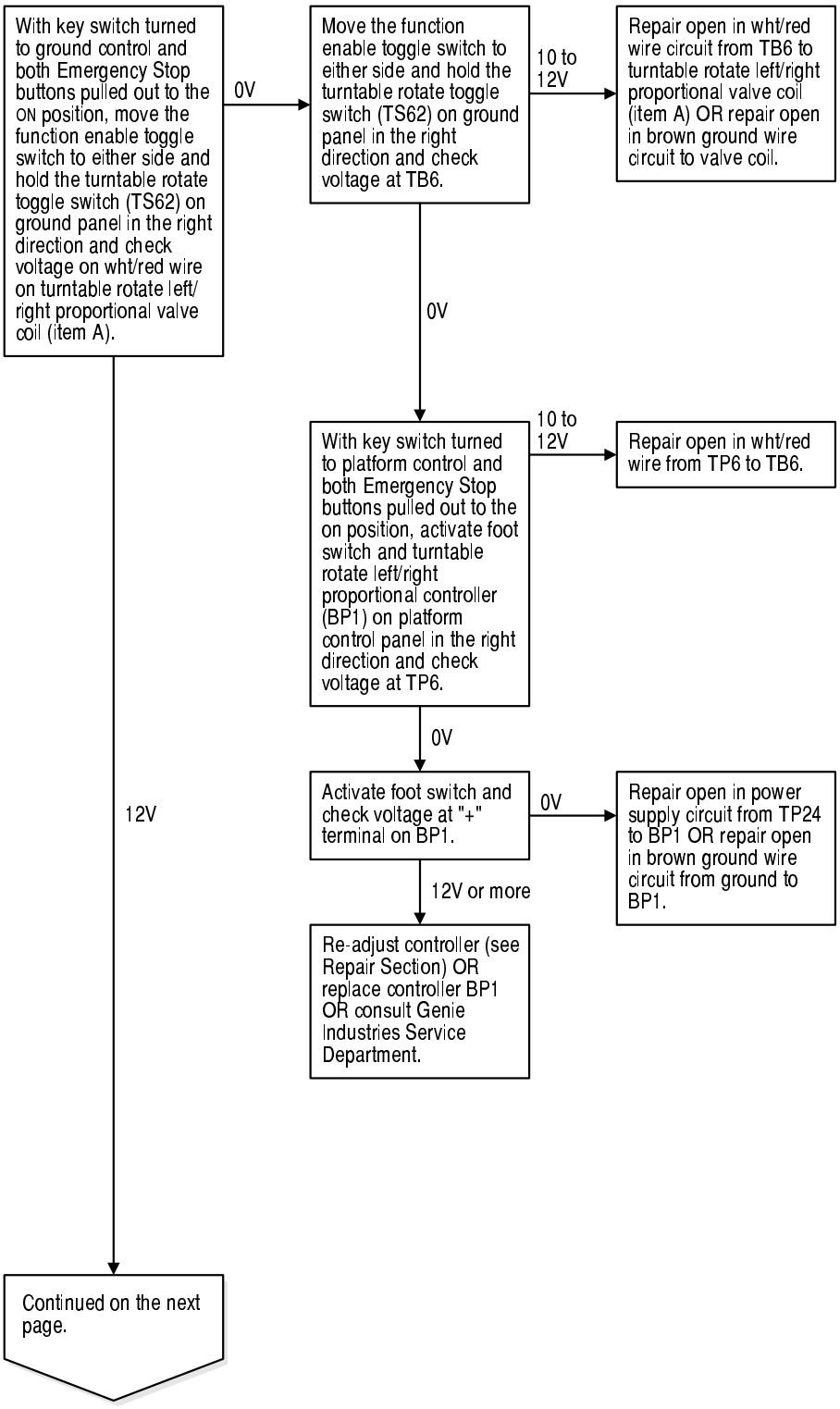


CHART 22

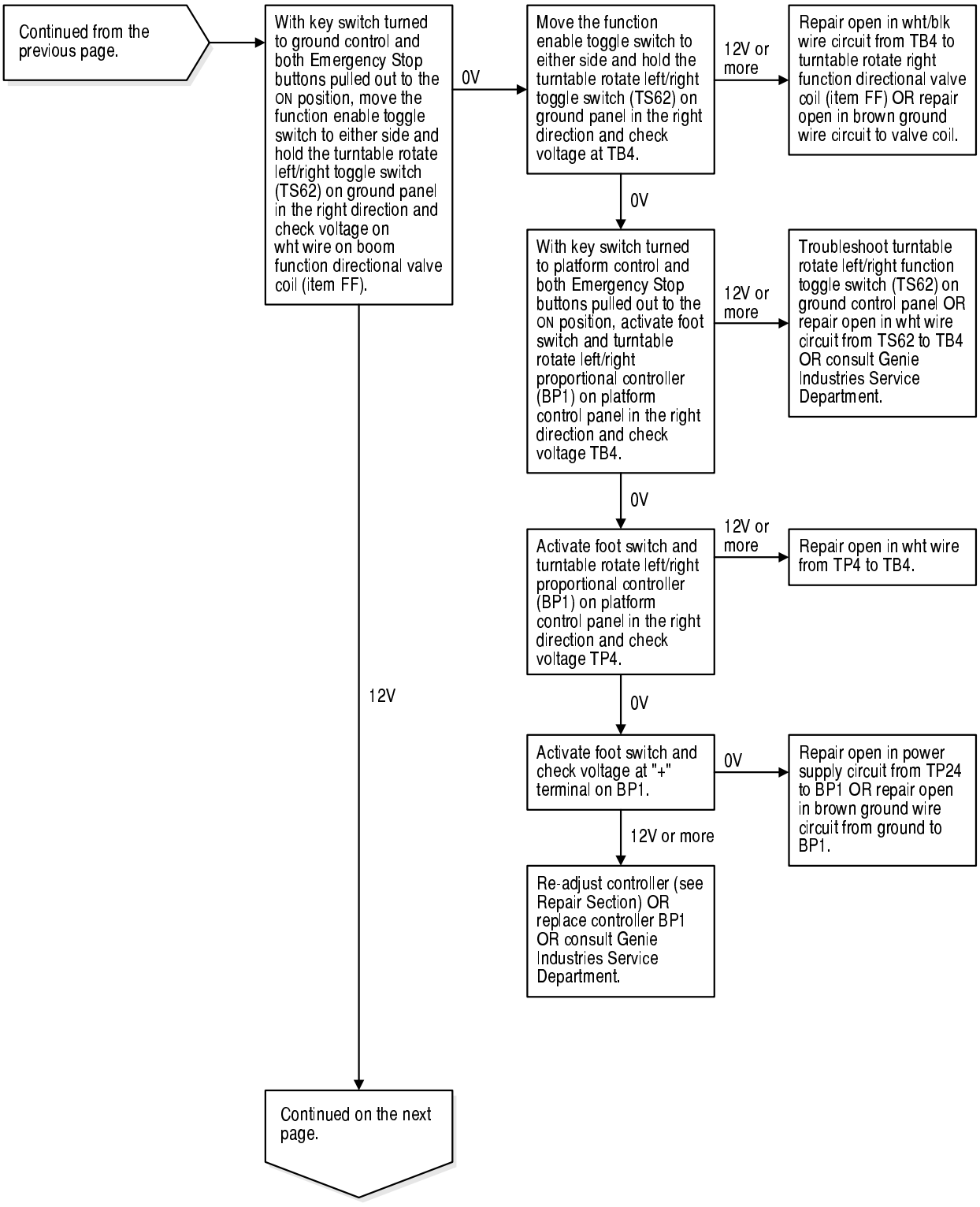

Continued from the previous page.
With key switch turned to ground control and both Emergency Stop buttons pulled out to the ON position, move the function enable toggle switch to either side and hold the turntable rotate left/right toggle switch (TS62) on ground panel in the right direction and check voltage on wht wire on boom function directional valve coil (item FF).
0V
Move the function enable toggle switch to either side and hold the turntable rotate left/right toggle switch (TS62) on ground panel in the right direction and check voltage at TB4.
12V or more
Repair open in wht/blk wire circuit from TB4 to turntable rotate right function directional valve coil (item FF) OR repair open in brown ground wire circuit to valve coil.
0V
With key switch turned to platform control and both Emergency Stop buttons pulled out to the ON position, activate foot switch and turntable rotate left/right proportional controller (BP1) on platform control panel in the right direction and check voltage TB4.
12V or more
Troubleshoot turntable rotate left/right function toggle switch (TS62) on ground control panel OR repair open in wht wire circuit from TS62 to TB4 OR consult Genie Industries Service Department.
0V
Activate foot switch and turntable rotate left/right proportional controller (BP1) on platform control panel in the right direction and check voltage TP4.
12V or more
Repair open in wht wire from TP4 to TB4.
12V
0V
Activate foot switch and check voltage at "+" terminal on BP1.
0V
Repair open in power supply circuit from TP24 to BP1 OR repair open in brown ground wire circuit from ground to BP1.
12V or more
Re-adjust controller (see Repair Section) OR replace controller BP1 OR consult Genie Industries Service Department.
Continued on the next page.

CHART 22

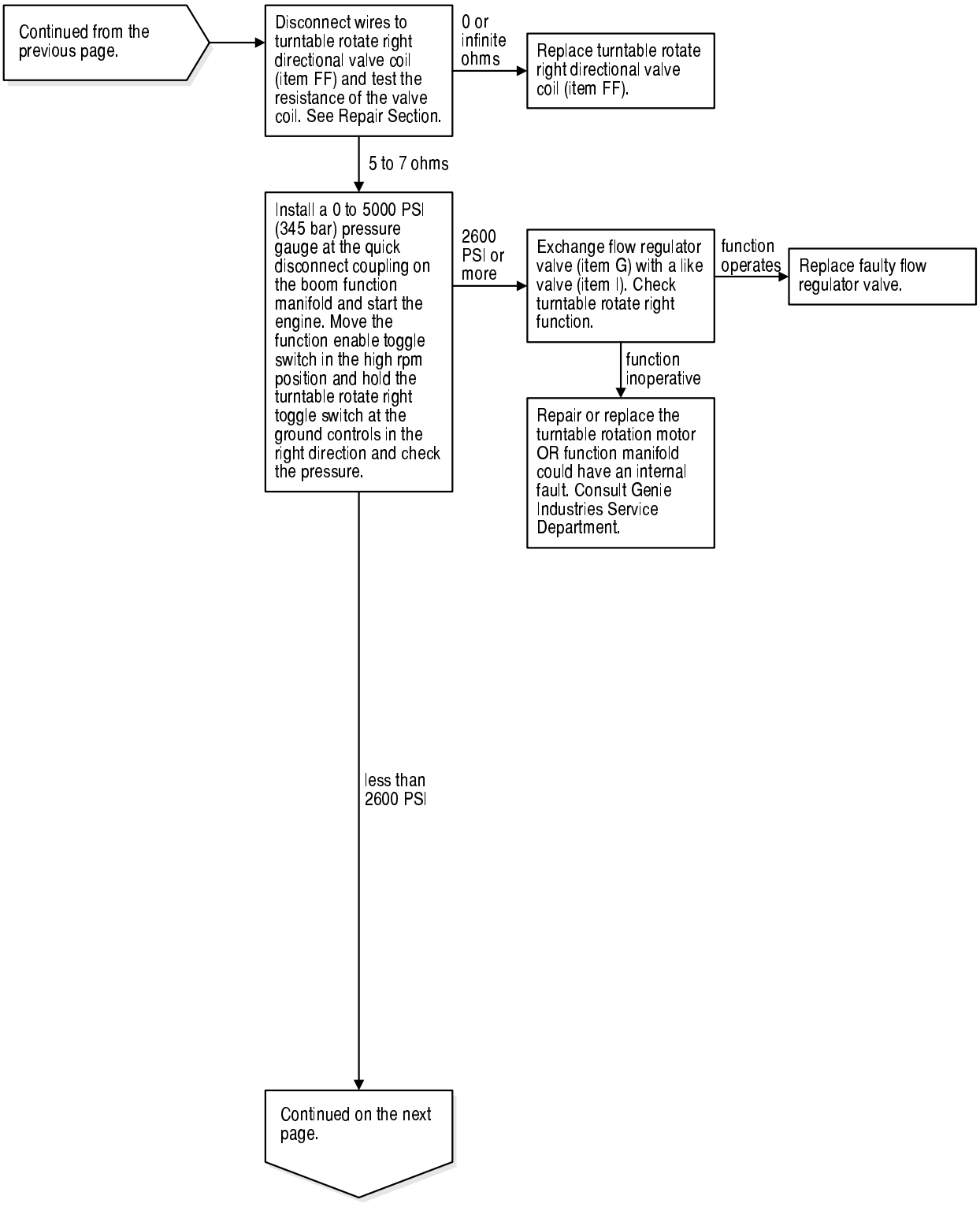

Continued from the previous page.
Disconnect wires to turntable rotate right directional valve coil (item FF) and test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace turntable rotate right directional valve coil (item FF).
5 to 7 ohms
Install a 0 to 5000 PSI (345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and start the engine. Move the function enable toggle switch in the high rpm position and hold the turntable rotate right toggle switch at the ground controls in the right direction and check the pressure.
2600 PSI or more
Exchange flow regulator valve (item G) with a like valve (item I). Check turntable rotate right function.
function operates
Replace faulty flow regulator valve.
function inoperative
Repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.
less than 2600 PSI
Continued on the next page.

CHART 22

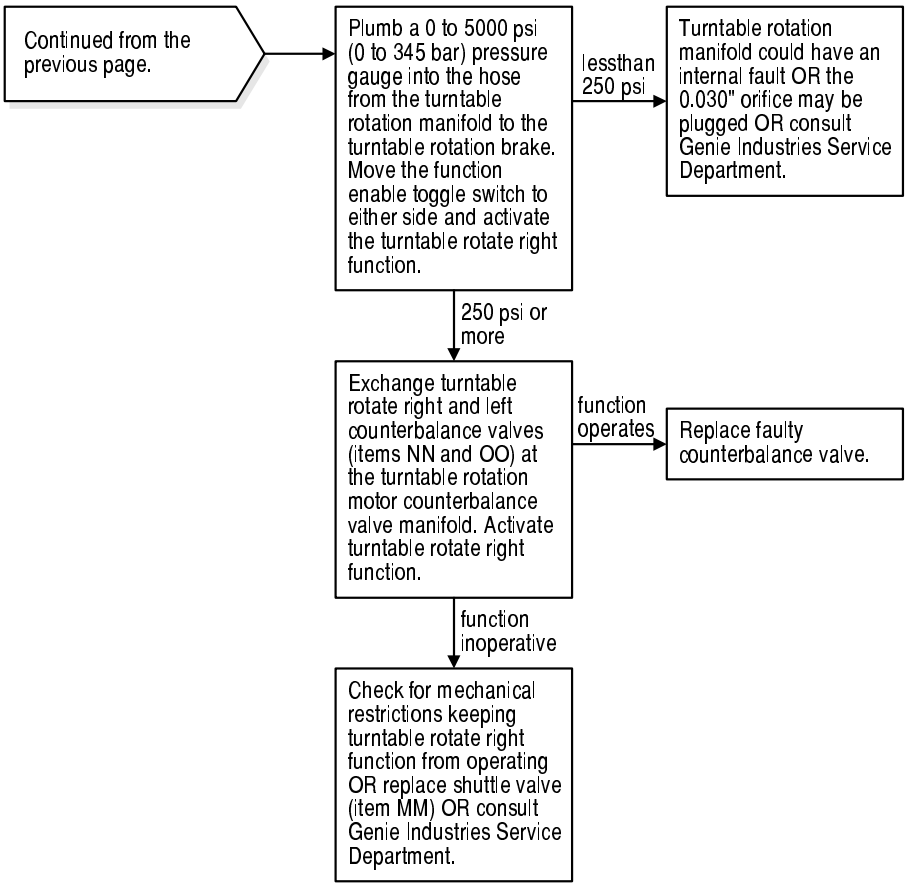

Continued from the previous page.
Plumb a 0 to 5000 psi (0 to 345 bar) pressure gauge into the hose from the turntable rotation manifold to the turntable rotation brake. Move the function enable toggle switch to either side and activate the turntable rotate right function.
lessthan 250 psi
Turntable rotation manifold could have an internal fault OR the 0.030" orifice may be plugged OR consult Genie Industries Service Department.
250 psi or more
Exchange turntable rotate right and left counterbalance valves (items NN and OO) at the turntable rotation motor counterbalance valve manifold. Activate turntable rotate right function.
function operates
Replace faulty counterbalance valve.
function inoperative
Check for mechanical restrictions keeping turntable rotate right function from operating OR replace shuttle valve (item MM) OR consult Genie Industries Service Department.

Chart 23

All Platform Leveling Functions Inoperative

Be sure all other functions operate normally.

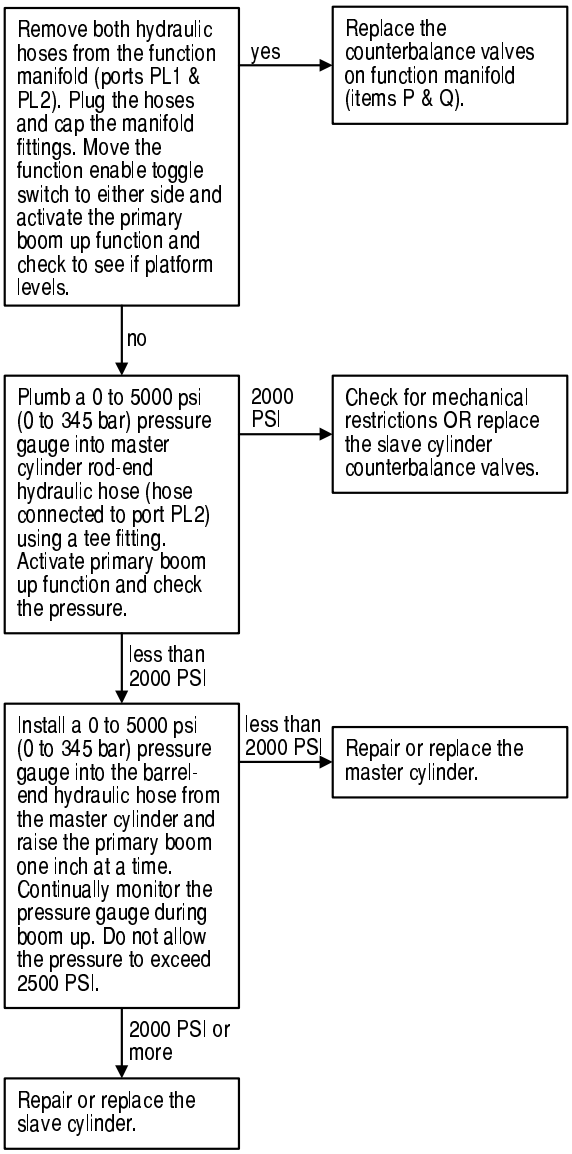


Chart 24

Platform Level Up Function Inoperative

Be sure all other functions operate normally.

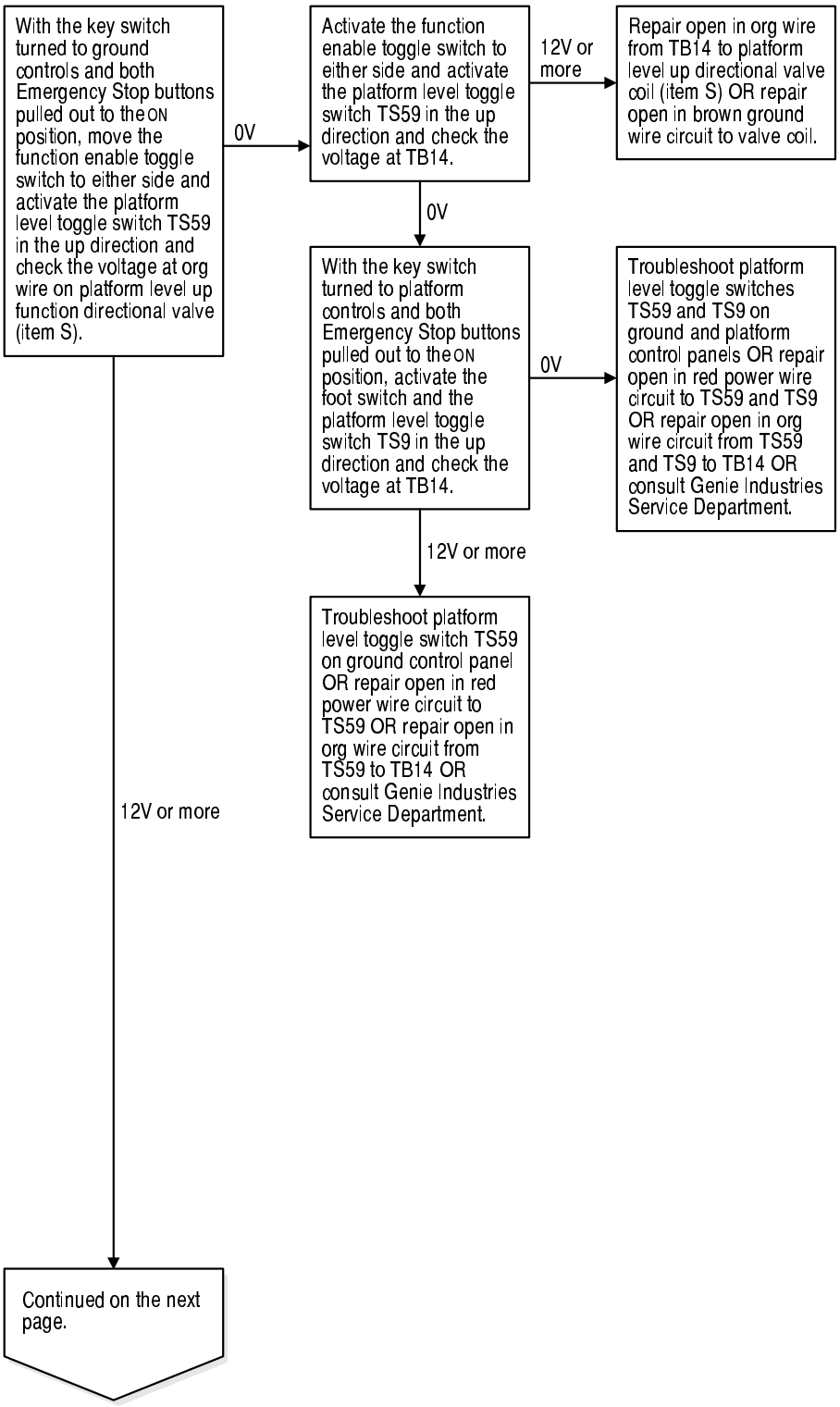


CHART 24

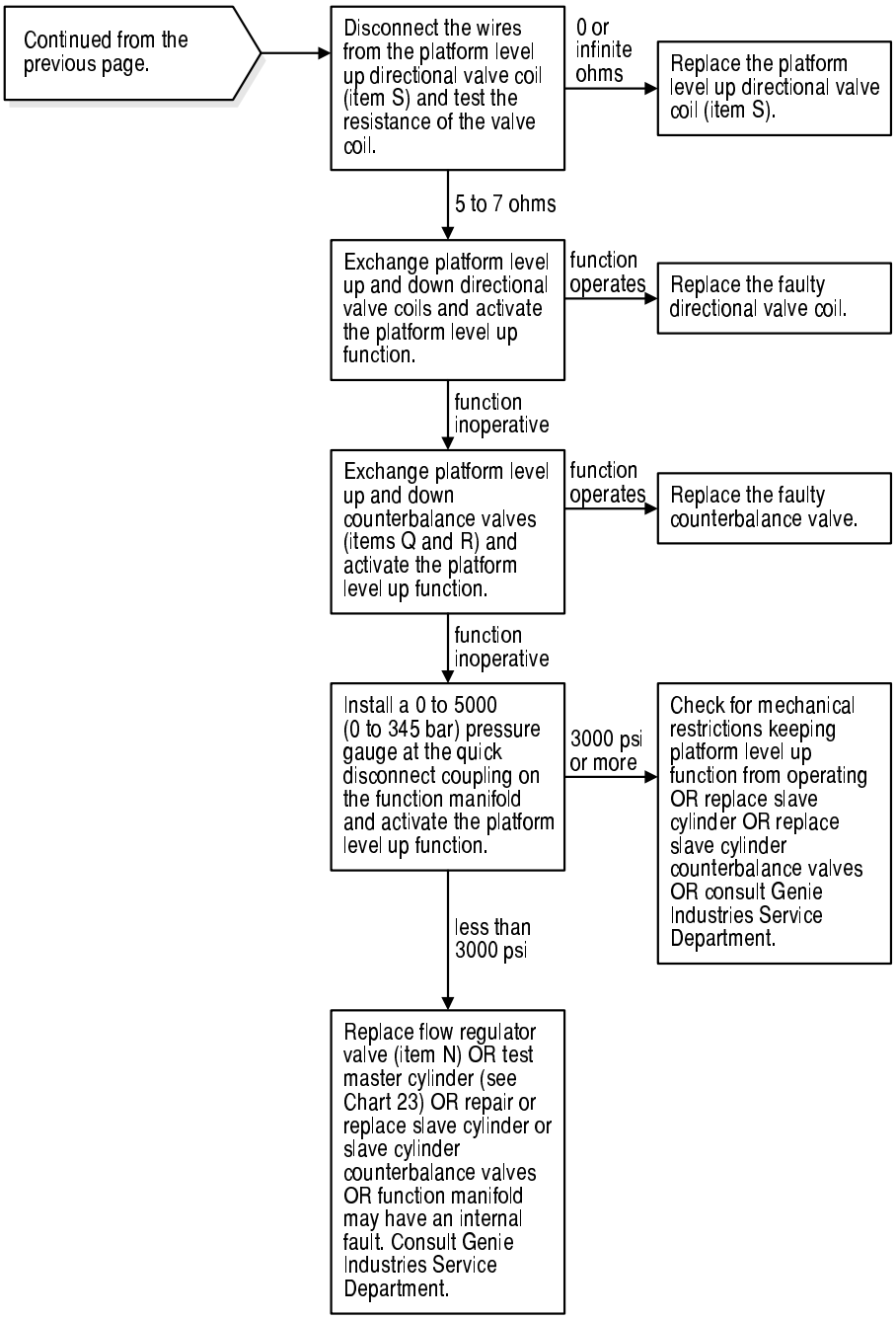

Continued from the previous page.
Disconnect the wires from the platform level up directional valve coil (item S) and test the resistance of the valve coil.
0 or infinite ohms
Replace the platform level up directional valve coil (item S).
5 to 7 ohms
Exchange platform level up and down directional valve coils and activate the platform level up function.
function operates
Replace the faulty directional valve coil.
function inoperative
Exchange platform level up and down counterbalance valves (items Q and R) and activate the platform level up function.
function operates
Replace the faulty counterbalance valve.
function inoperative
Install a 0 to 5000 (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold and activate the platform level up function.
3000 psi or more
Check for mechanical restrictions keeping platform level up function from operating OR replace slave cylinder OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3000 psi
Replace flow regulator valve (item N) OR test master cylinder (see Chart 23) OR repair or replace slave cylinder or slave cylinder counterbalance valves OR function manifold may have an internal fault. Consult Genie Industries Service Department.

Chart 25

Platform Level Down Function Inoperative

Be sure all other functions operate normally.

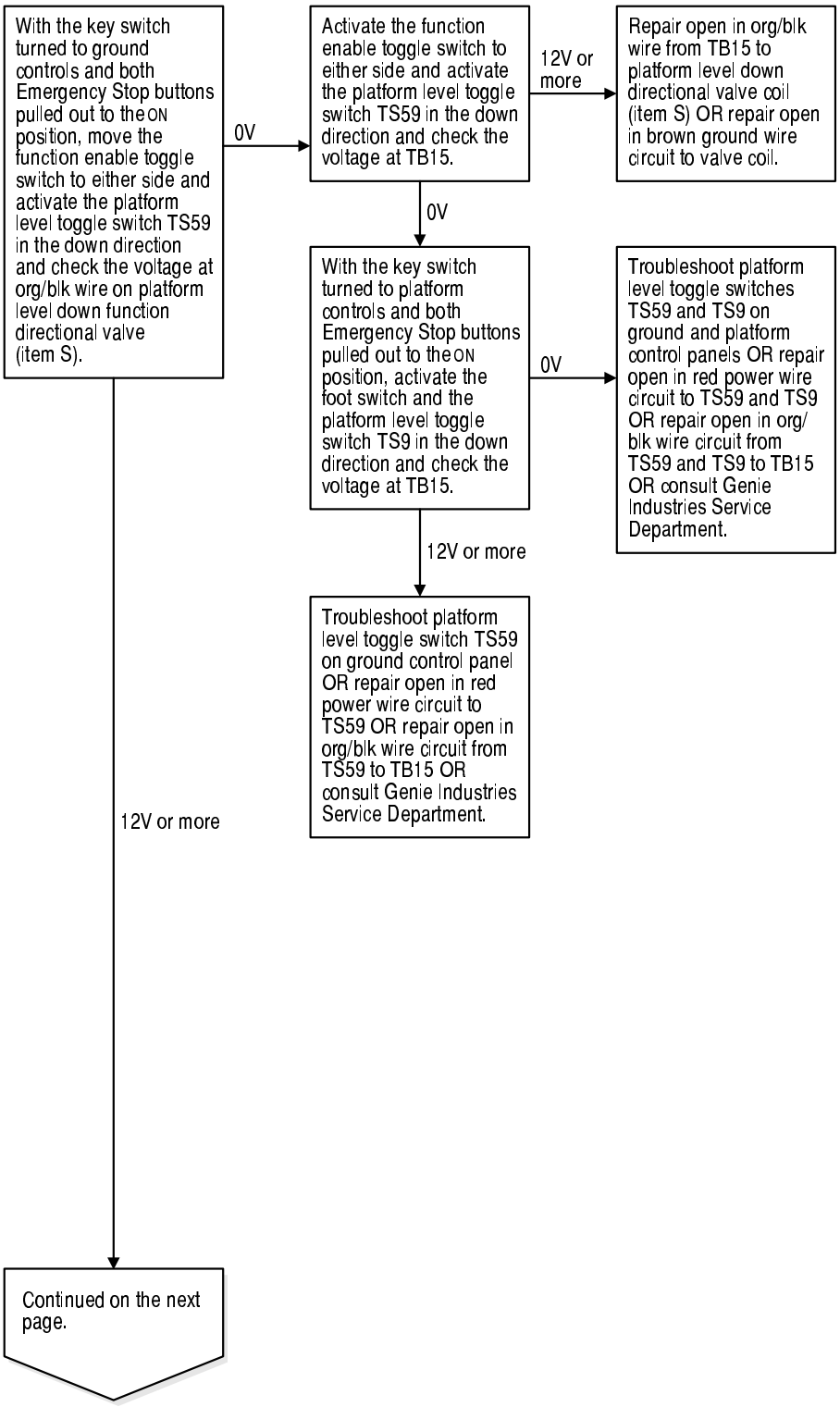


CHART 25

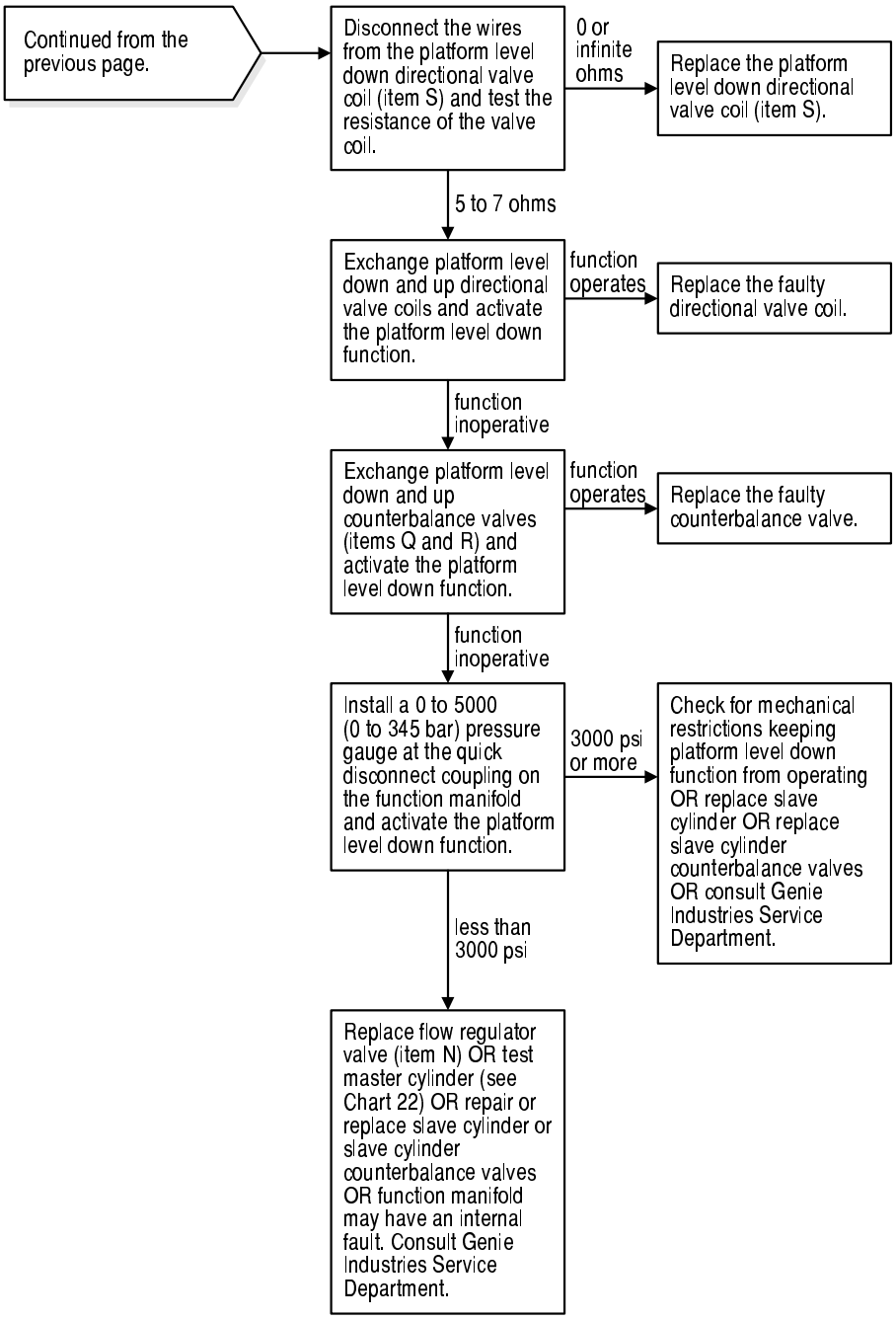

Continued from the previous page.
Disconnect the wires from the platform level down directional valve coil (item S) and test the resistance of the valve coil.
0 or infinite ohms
Replace the platform level down directional valve coil (item S).
5 to 7 ohms
Exchange platform level down and up directional valve coils and activate the platform level down function.
function operates
Replace the faulty directional valve coil.
function inoperative
Exchange platform level down and up counterbalance valves (items Q and R) and activate the platform level down function.
function operates
Replace the faulty counterbalance valve.
function inoperative
Install a 0 to 5000 (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold and activate the platform level down function.
3000 psi or more
Check for mechanical restrictions keeping platform level down function from operating OR replace slave cylinder OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3000 psi
Replace flow regulator valve (item N) OR test master cylinder (see Chart 22) OR repair or replace slave cylinder or slave cylinder counterbalance valves OR function manifold may have an internal fault. Consult Genie Industries Service Department.

Chart 26

Platform Rotate Left Function Inoperative

Be sure all other functions operate normally.

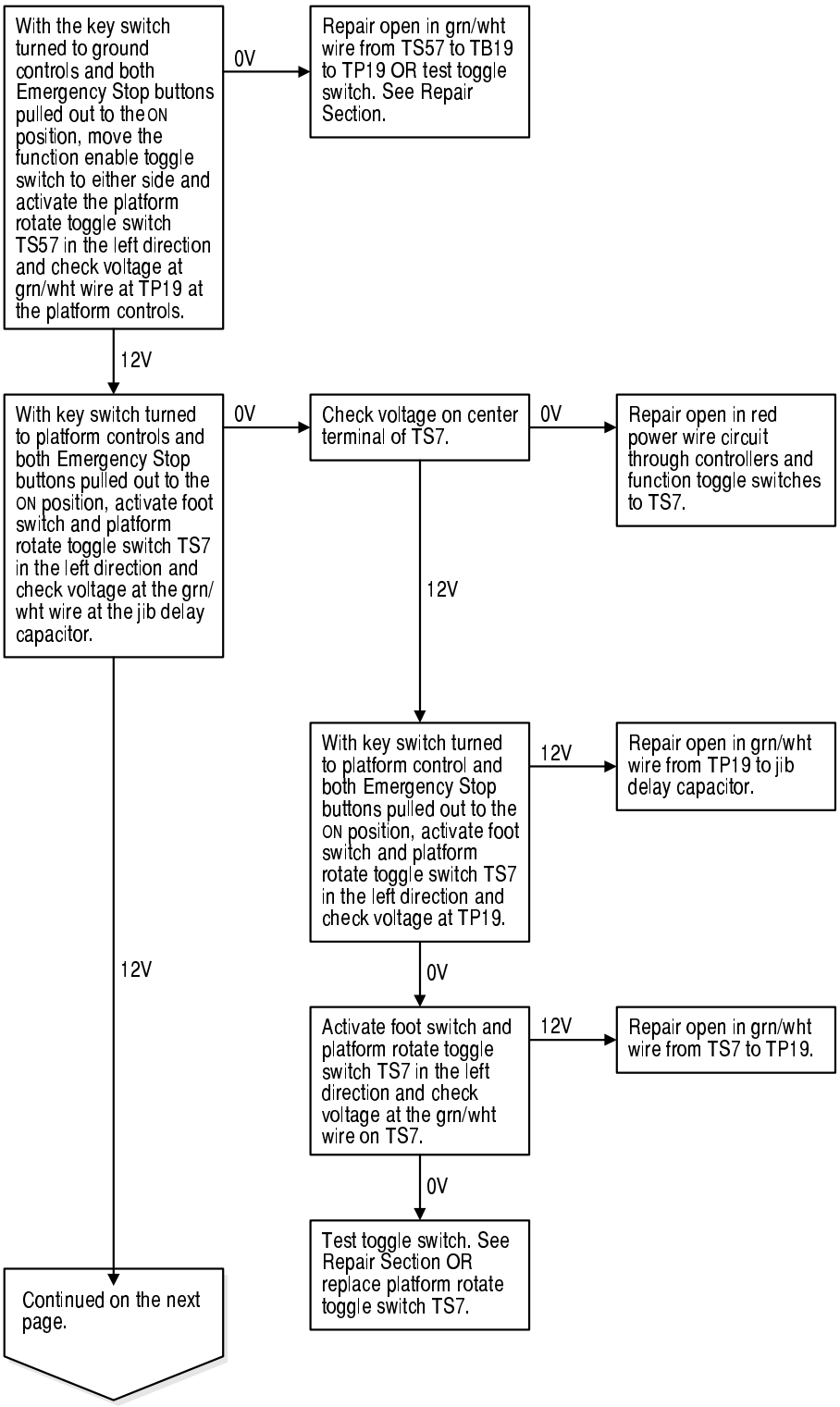


CHART 26

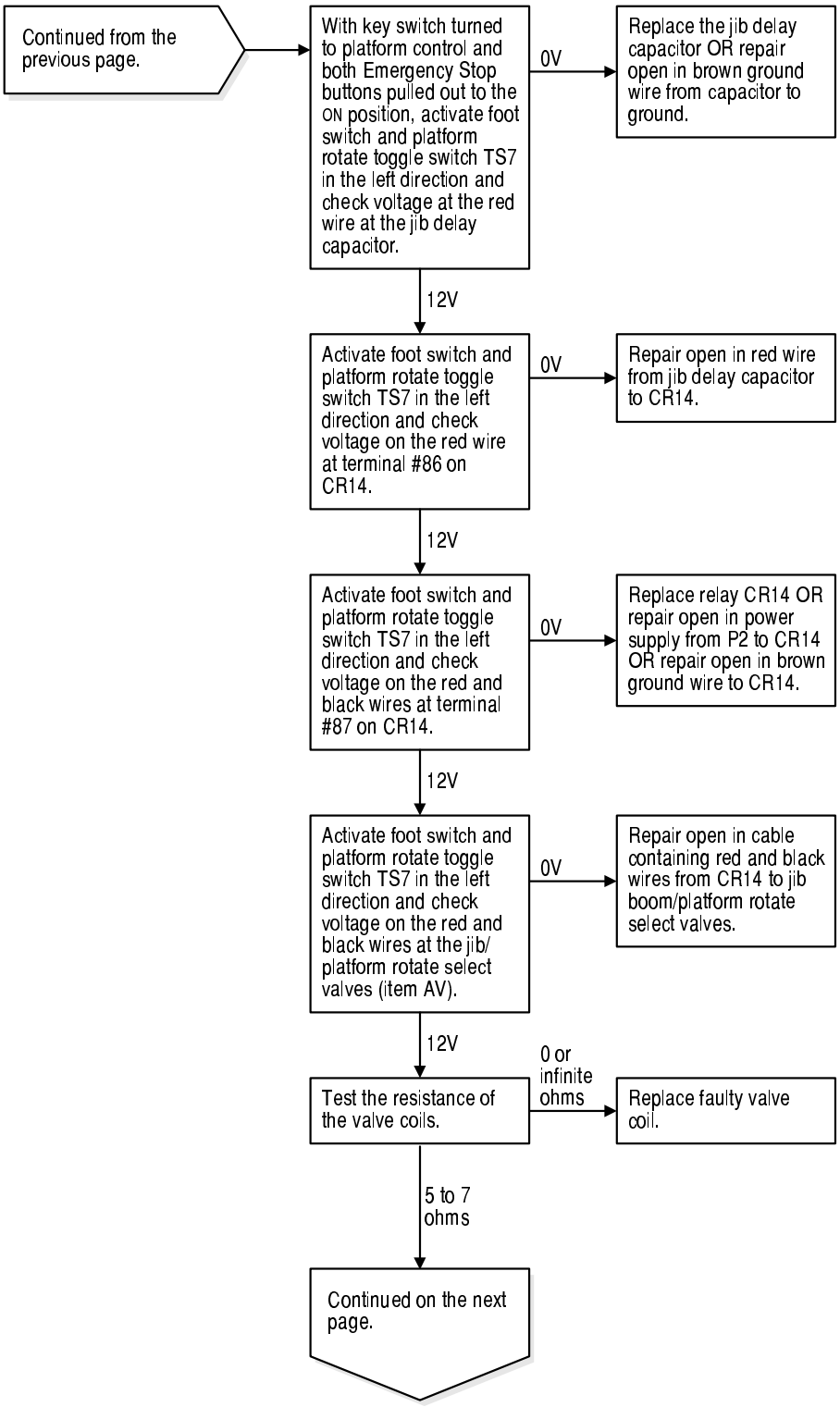

Continued from the previous page.
With key switch turned to platform control and both Emergency Stop buttons pulled out to the ON position, activate foot switch and platform rotate toggle switch TS7 in the left direction and check voltage at the red wire at the jib delay capacitor.
0V
Replace the jib delay capacitor OR repair open in brown ground wire from capacitor to ground.
12V
Activate foot switch and platform rotate toggle switch TS7 in the left direction and check voltage on the red wire at terminal #86 on CR14.
0V
Repair open in red wire from jib delay capacitor to CR14.
12V
Activate foot switch and platform rotate toggle switch TS7 in the left direction and check voltage on the red and black wires at terminal #87 on CR14.
0V
Replace relay CR14 OR repair open in power supply from P2 to CR14 OR repair open in brown ground wire to CR14.
12V
Activate foot switch and platform rotate toggle switch TS7 in the left direction and check voltage on the red and black wires at the jib/ platform rotate select valves (item AV).
0V
Repair open in cable containing red and black wires from CR14 to jib boom/platform rotate select valves.
12V
Test the resistance of the valve coils.
0 or infinite ohms
Replace faulty valve coil.
5 to 7 ohms
Continued on the next page.

CHART 26

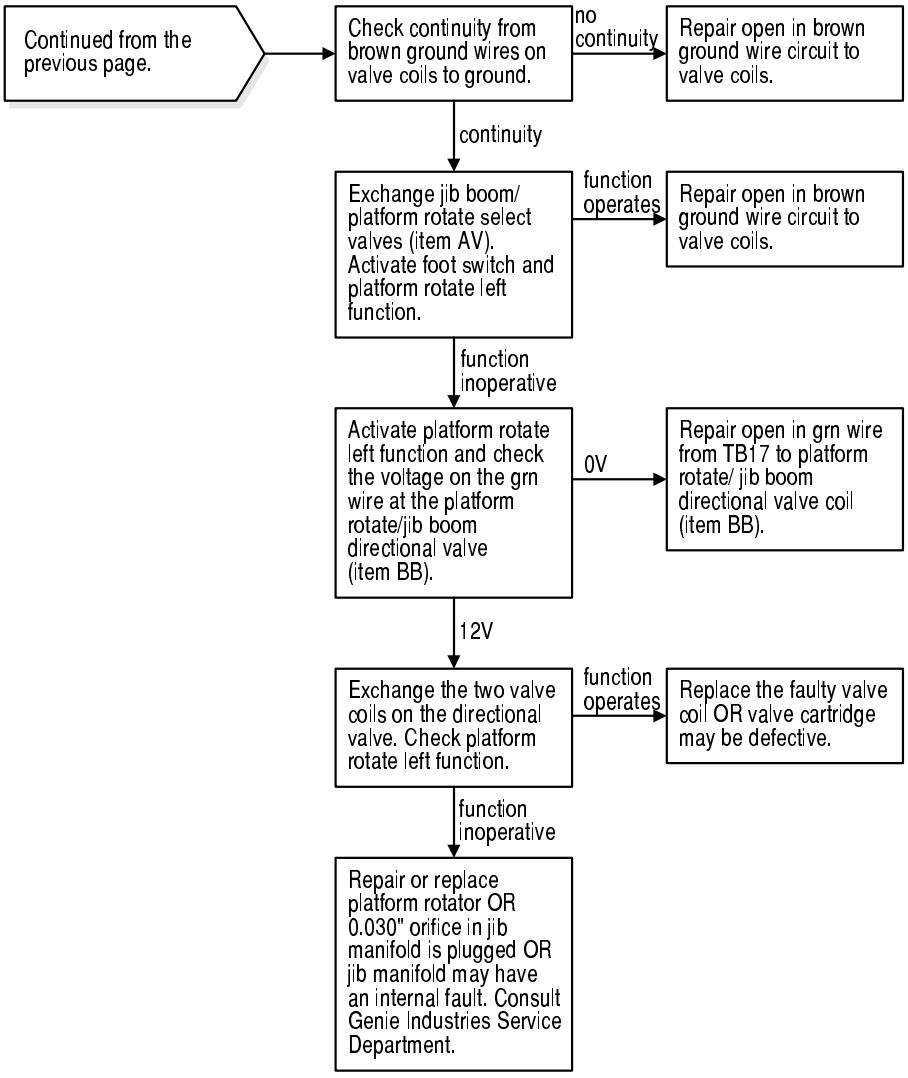

Continued from the previous page.
Check continuity from brown ground wires on valve coils to ground.
no continuity
Repair open in brown ground wire circuit to valve coils.
continuity
Exchange jib boom/ platform rotate select valves (item AV). Activate foot switch and platform rotate left function.
function operates
Repair open in brown ground wire circuit to valve coils.
function inoperative
Activate platform rotate left function and check the voltage on the grn wire at the platform rotate/jib boom directional valve (item BB).
0V
Repair open in grn wire from TB17 to platform rotate/ jib boom directional valve coil (item BB).
12V
Exchange the two valve coils on the directional valve. Check platform rotate left function.
function operates
Replace the faulty valve coil OR valve cartridge may be defective.
function inoperative
Repair or replace platform rotator OR 0.030" orifice in jib manifold is plugged OR jib manifold may have an internal fault. Consult Genie Industries Service Department.

Chart 27

Platform Rotate Right Function Inoperative

Be sure all other functions operate normally.

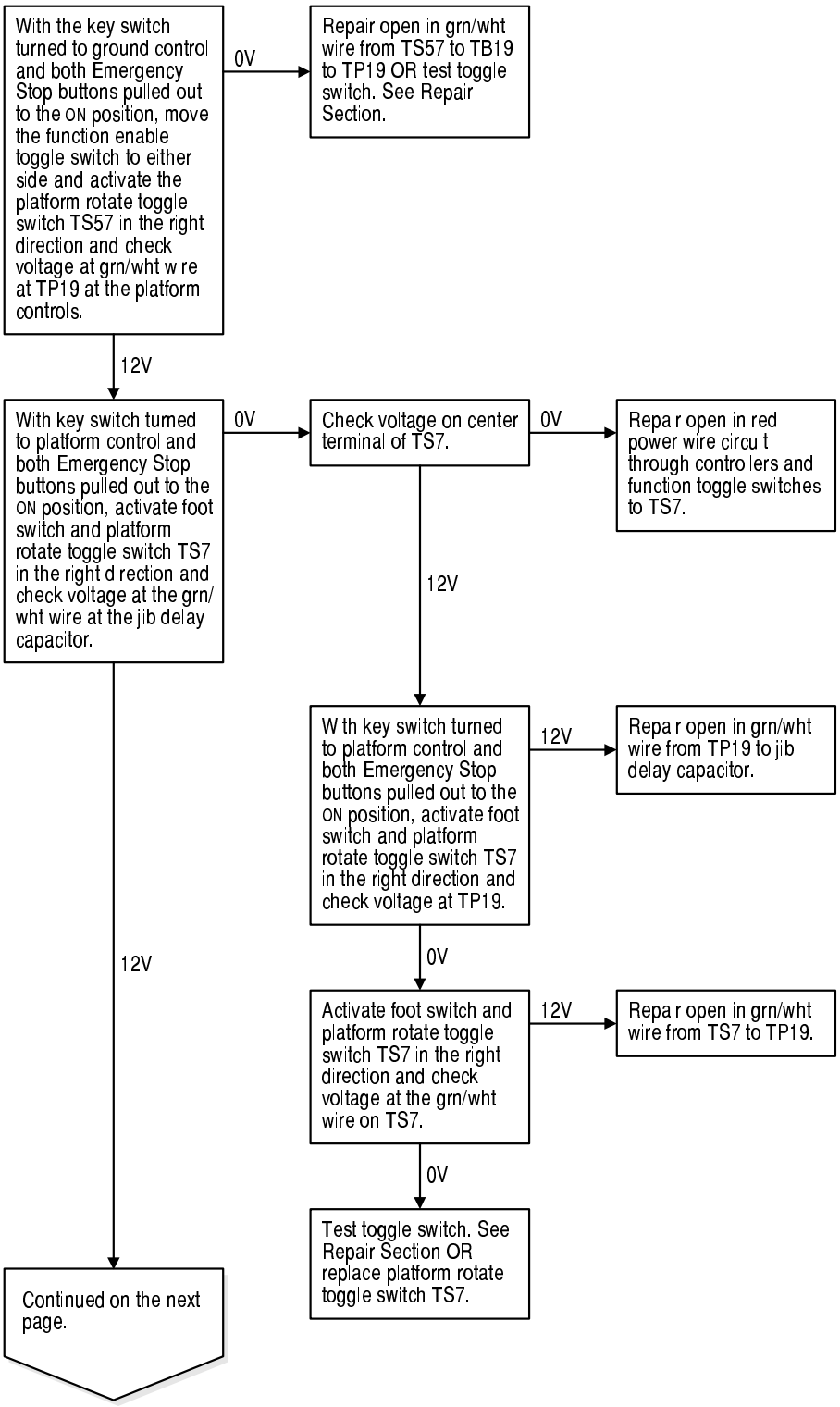


CHART 27

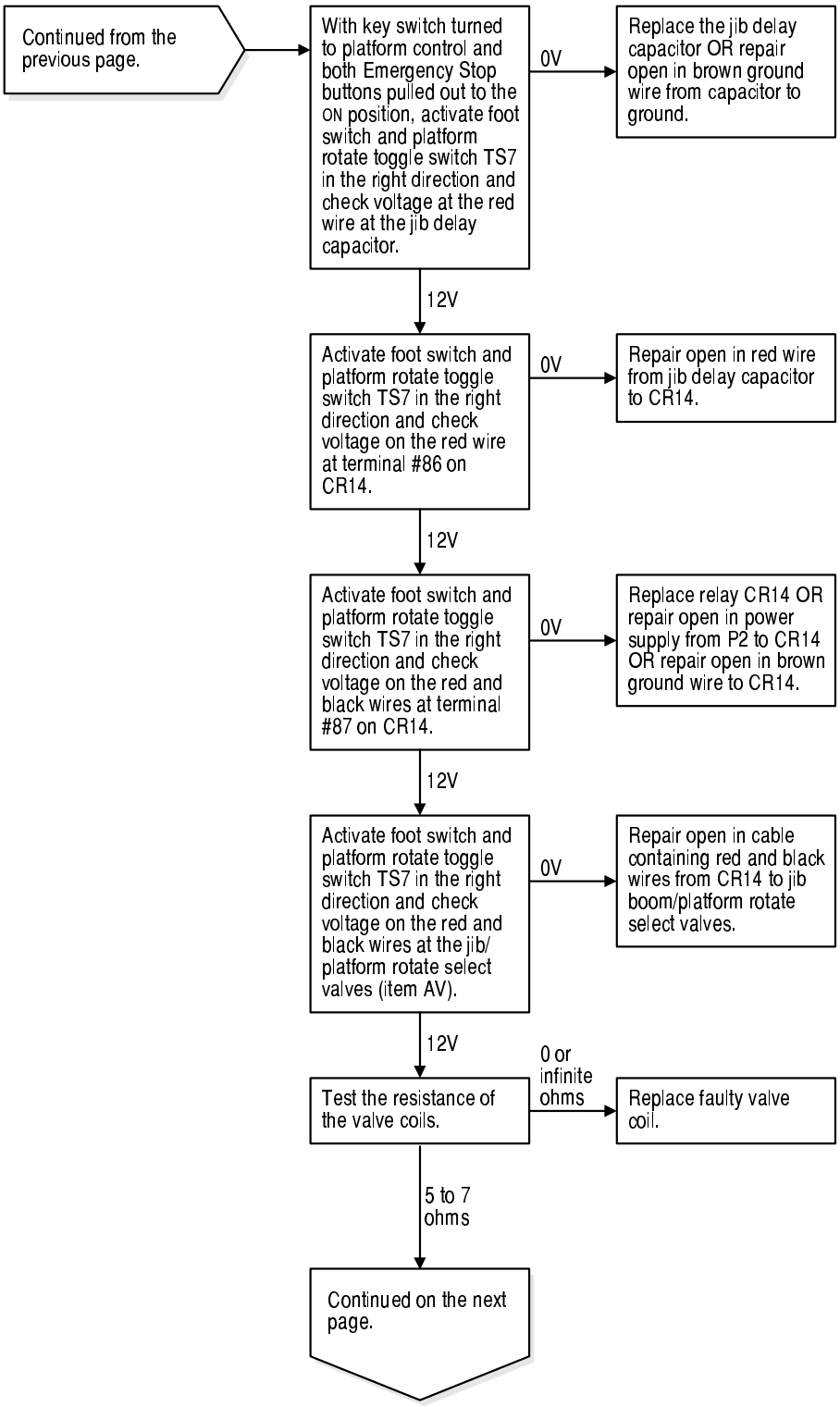

Continued from the previous page.
With key switch turned to platform control and both Emergency Stop buttons pulled out to the ON position, activate foot switch and platform rotate toggle switch TS7 in the right direction and check voltage at the red wire at the jib delay capacitor.
0V
Replace the jib delay capacitor OR repair open in brown ground wire from capacitor to ground.
12V
Activate foot switch and platform rotate toggle switch TS7 in the right direction and check voltage on the red wire at terminal #86 on CR14.
0V
Repair open in red wire from jib delay capacitor to CR14.
12V
Activate foot switch and platform rotate toggle switch TS7 in the right direction and check voltage on the red and black wires at terminal #87 on CR14.
0V
Replace relay CR14 OR repair open in power supply from P2 to CR14 OR repair open in brown ground wire to CR14.
12V
Activate foot switch and platform rotate toggle switch TS7 in the right direction and check voltage on the red and black wires at the jib/ platform rotate select valves (item AV).
0V
Repair open in cable containing red and black wires from CR14 to jib boom/platform rotate select valves.
12V
Test the resistance of the valve coils.
0 or infinite ohms
Replace faulty valve coil.
5 to 7 ohms
Continued on the next page.

CHART 27

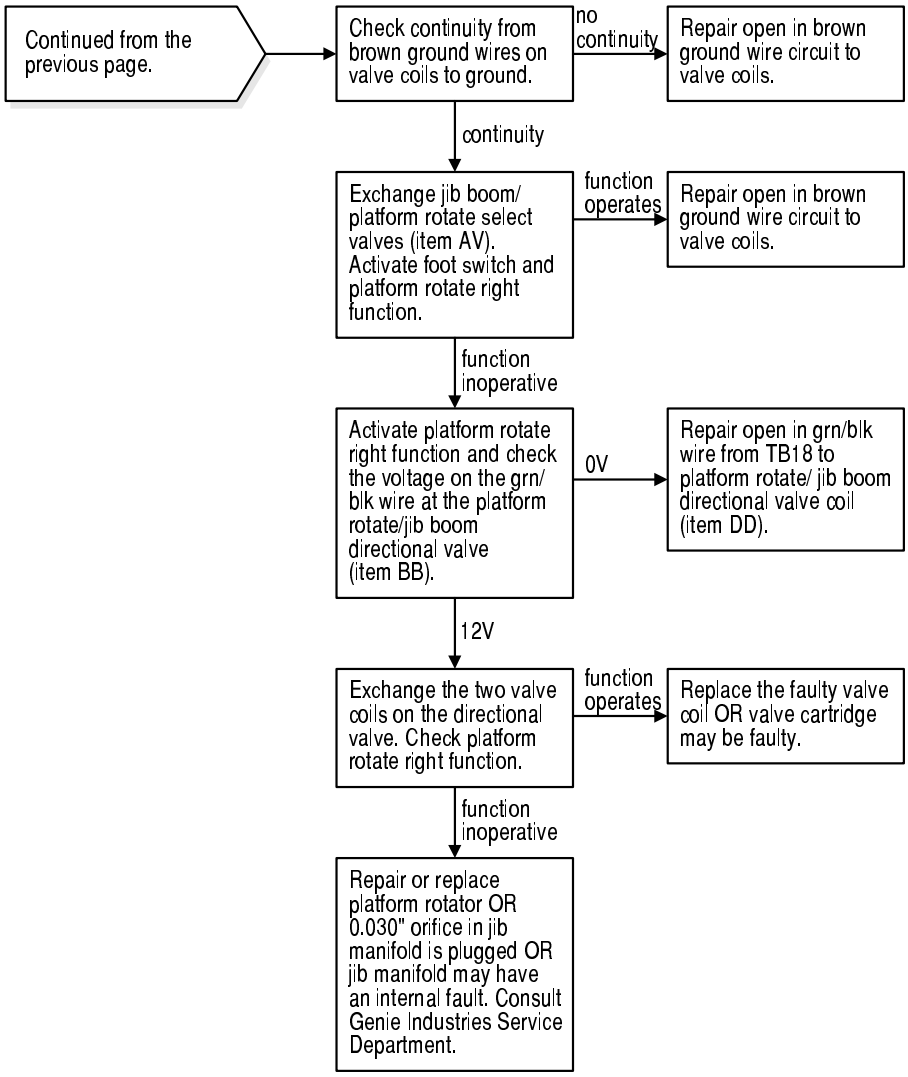

Continued from the previous page.
Check continuity from brown ground wires on valve coils to ground.
no continuity
Repair open in brown ground wire circuit to valve coils.
continuity
Exchange jib boom/ platform rotate select valves (item AV). Activate foot switch and platform rotate right function.
function operates
Repair open in brown ground wire circuit to valve coils.
function inoperative
Activate platform rotate right function and check the voltage on the grn/ blk wire at the platform rotate/jib boom directional valve (item BB).
0V
Repair open in grn/blk wire from TB18 to platform rotate/ jib boom directional valve coil (item DD).
12V
Exchange the two valve coils on the directional valve. Check platform rotate right function.
function operates
Replace the faulty valve coil OR valve cartridge may be faulty.
function inoperative
Repair or replace platform rotator OR 0.030" orifice in jib manifold is plugged OR jib manifold may have an internal fault. Consult Genie Industries Service Department.

Chart 28

Jib Boom Up Function Inoperative, Z-45/25J Models

Be sure all other functions operate normally.

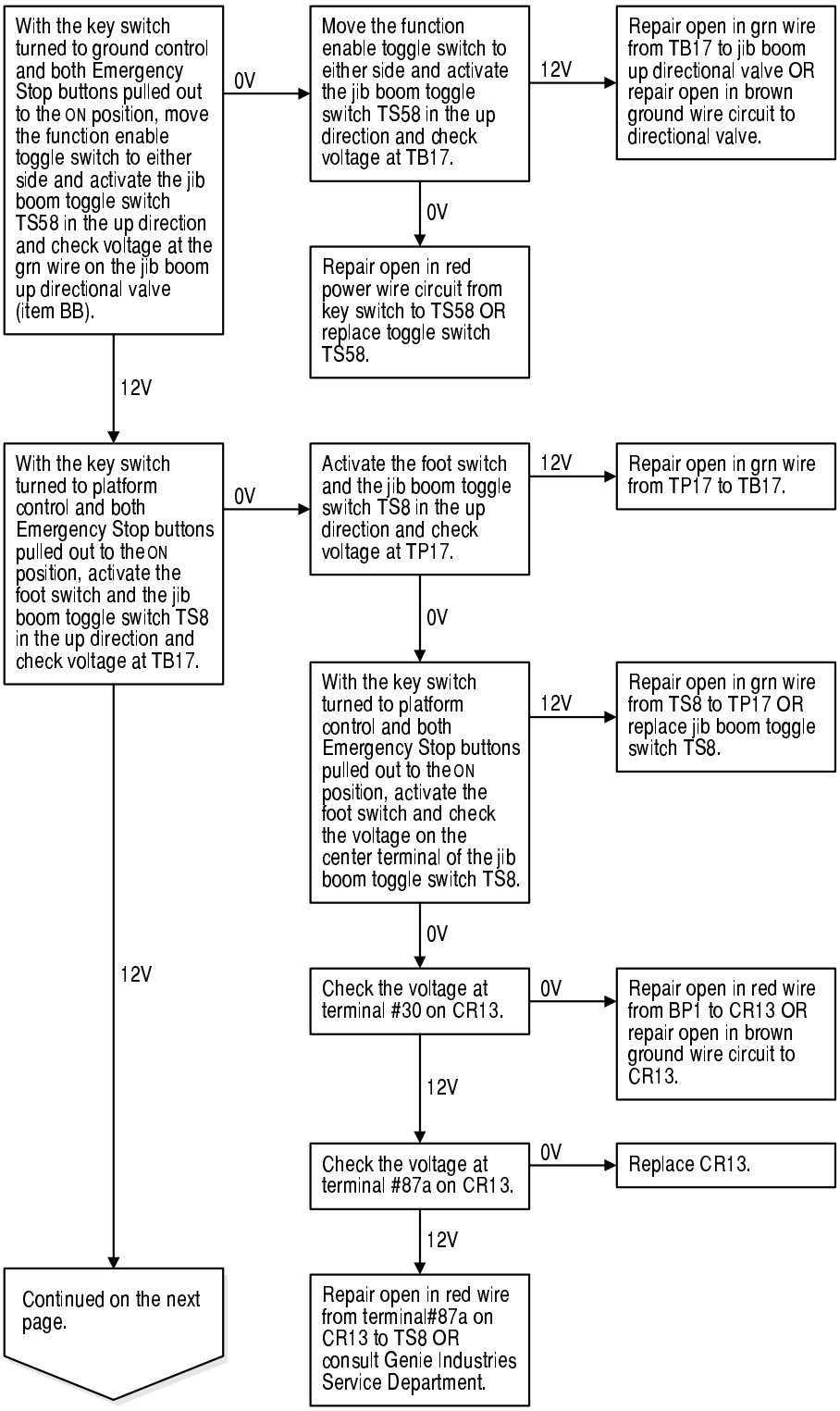


CHART 28

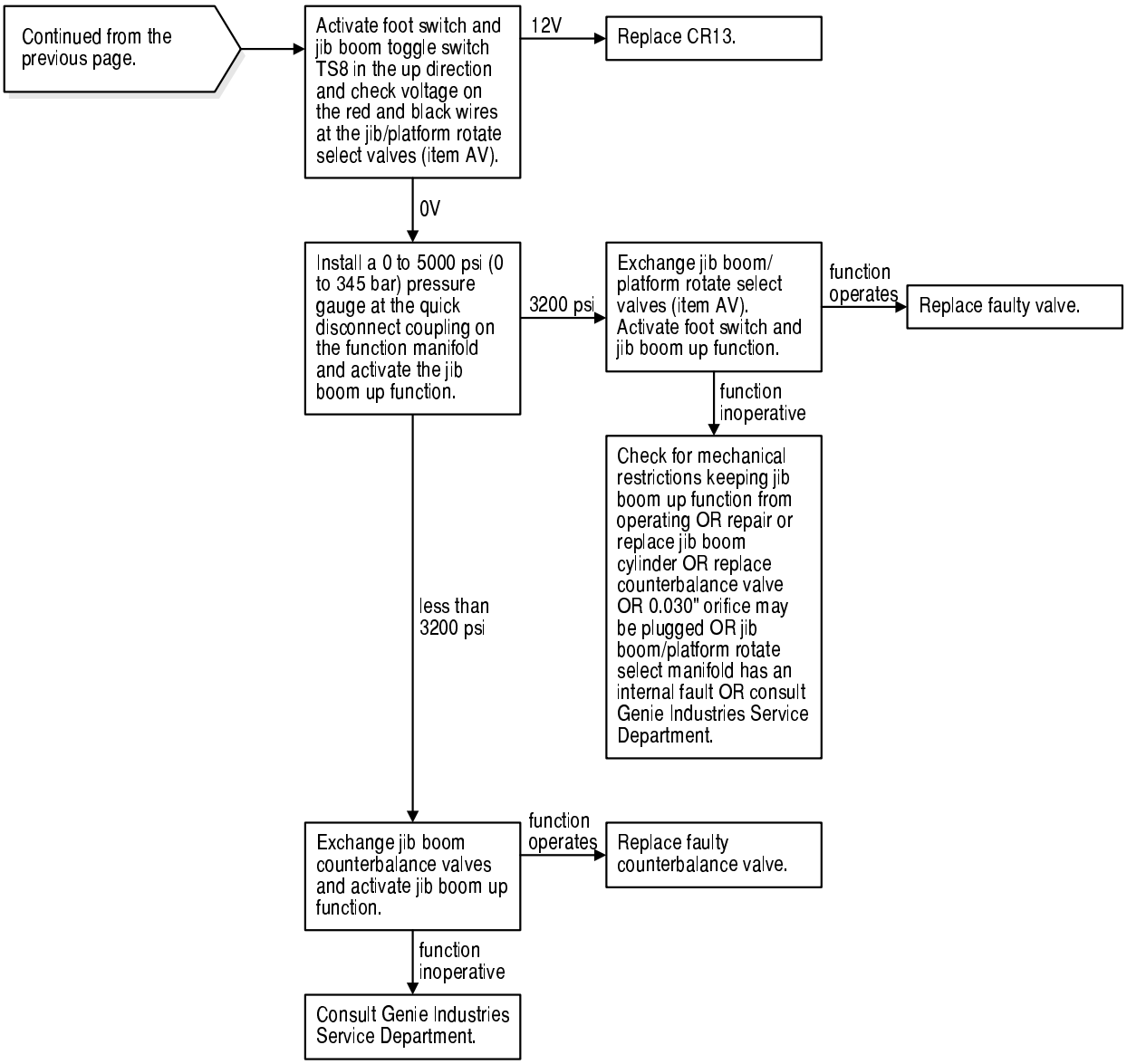

Continued from the previous page.
Activate foot switch and jib boom toggle switch TS8 in the up direction and check voltage on the red and black wires at the jib/platform rotate select valves (item AV).
12V
Replace CR13.
0V
Install a 0 to 5000 psi (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold and activate the jib boom up function.
3200 psi
Exchange jib boom/ platform rotate select valves (item AV). Activate foot switch and jib boom up function.
function operates
Replace faulty valve.
function inoperative
Check for mechanical restrictions keeping jib boom up function from operating OR repair or replace jib boom cylinder OR replace counterbalance valve OR 0.030" orifice may be plugged OR jib boom/platform rotate select manifold has an internal fault OR consult Genie Industries Service Department.
less than 3200 psi
Exchange jib boom counterbalance valves and activate jib boom up function.
function operates
Replace faulty counterbalance valve.
function inoperative
Consult Genie Industries Service Department.

Chart 29

Jib Boom Down Function Inoperative, Z-45/25J Models

Be sure all other functions operate normally.

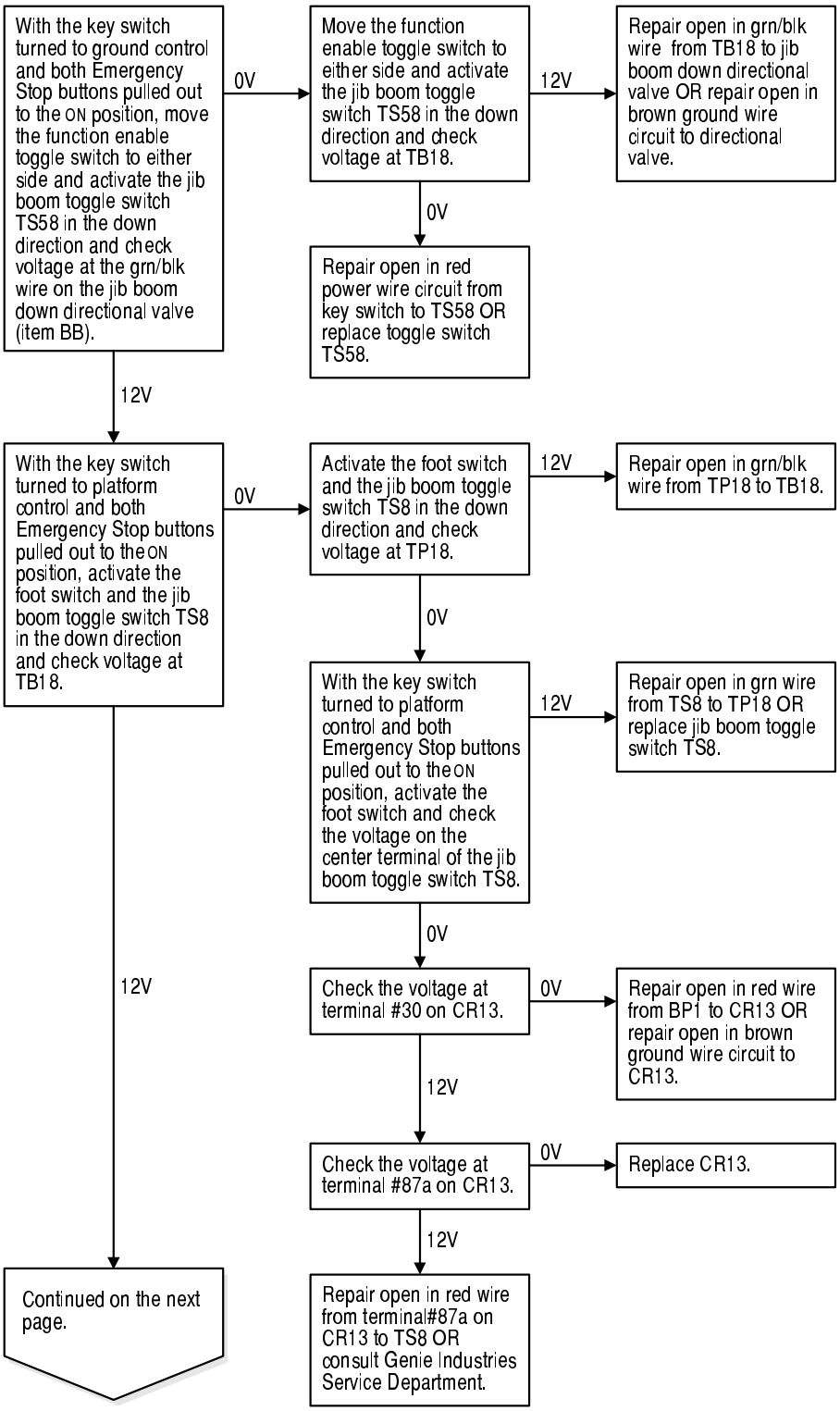


CHART 29

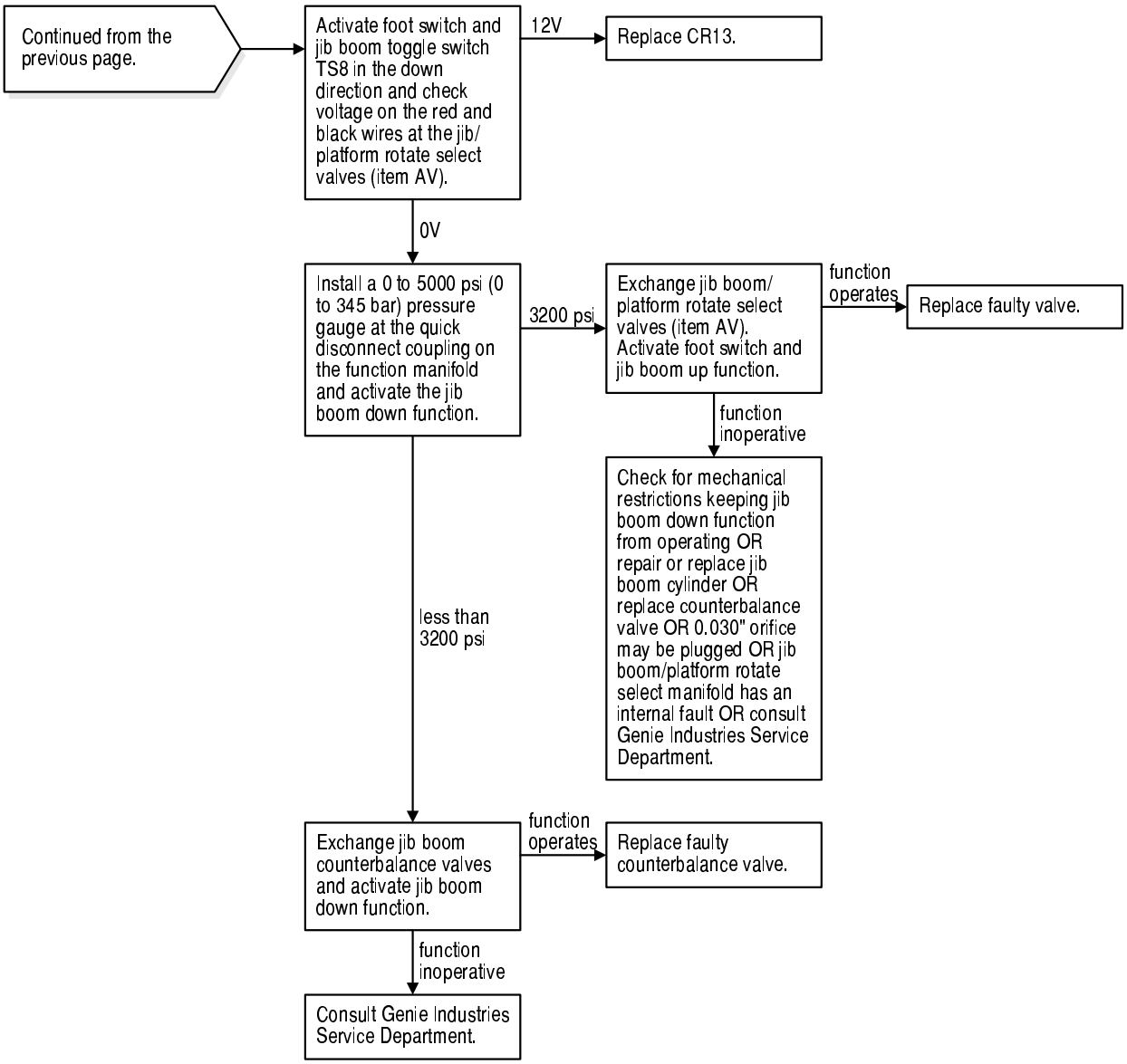

Continued from the previous page.
Activate foot switch and jib boom toggle switch TS8 in the down direction and check voltage on the red and black wires at the jib/ platform rotate select valves (item AV).
12V
Replace CR13.
0V
Install a 0 to 5000 psi (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold and activate the jib boom down function.
3200 psi
Exchange jib boom/ platform rotate select valves (item AV). Activate foot switch and jib boom up function.
function operates
Replace faulty valve.
function inoperative
Check for mechanical restrictions keeping jib boom down function from operating OR repair or replace jib boom cylinder OR replace counterbalance valve OR 0.030" orifice may be plugged OR jib boom/platform rotate select manifold has an internal fault OR consult Genie Industries Service Department.
less than 3200 psi
Exchange jib boom counterbalance valves and activate jib boom down function.
function operates
Replace faulty counterbalance valve.
function inoperative
Consult Genie Industries Service Department.

Chart 30

Steer Left Function Inoperative

Be sure all other functions operate normally.

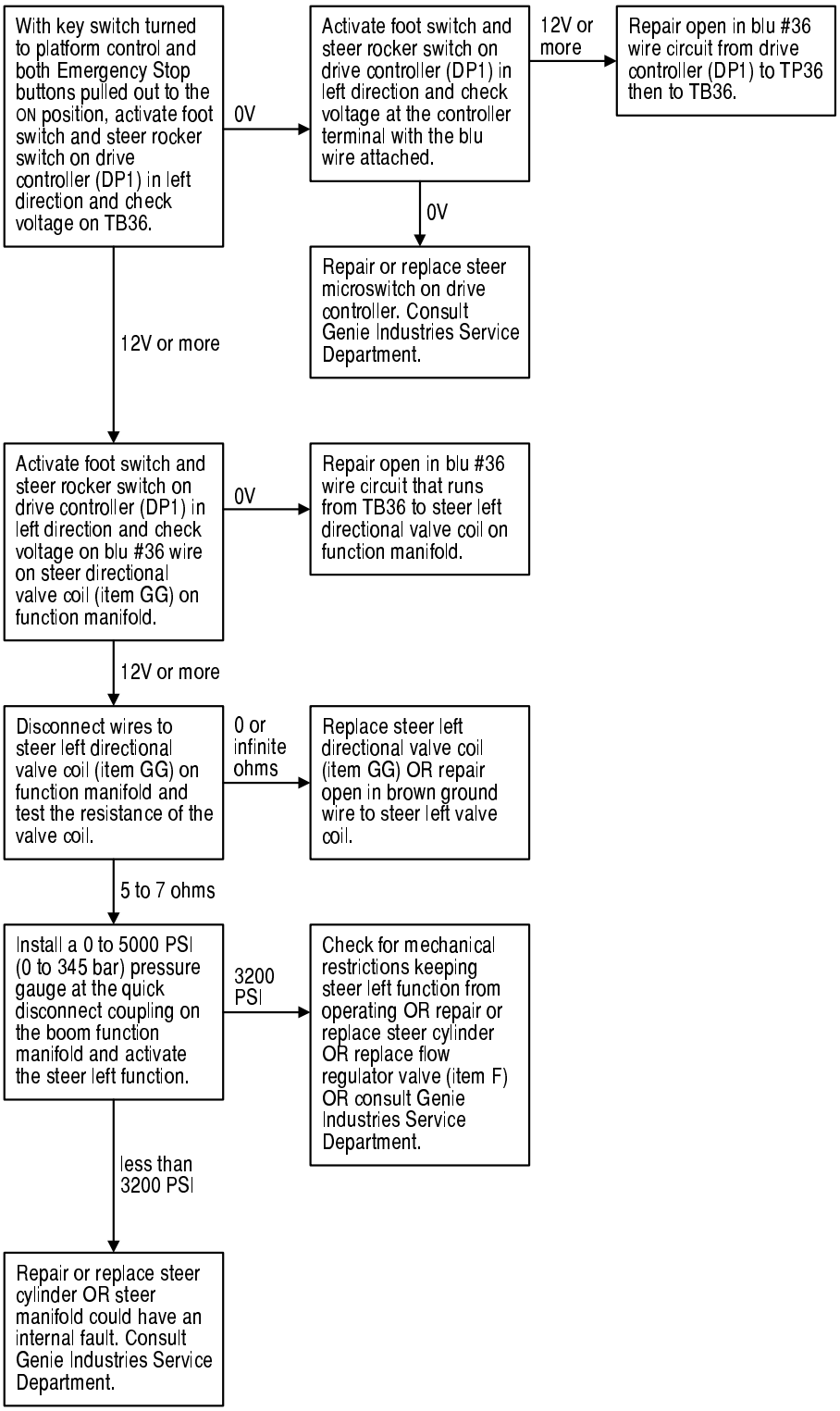


Chart 31

Steer Right Function Inoperative

Be sure all other functions operate normally.

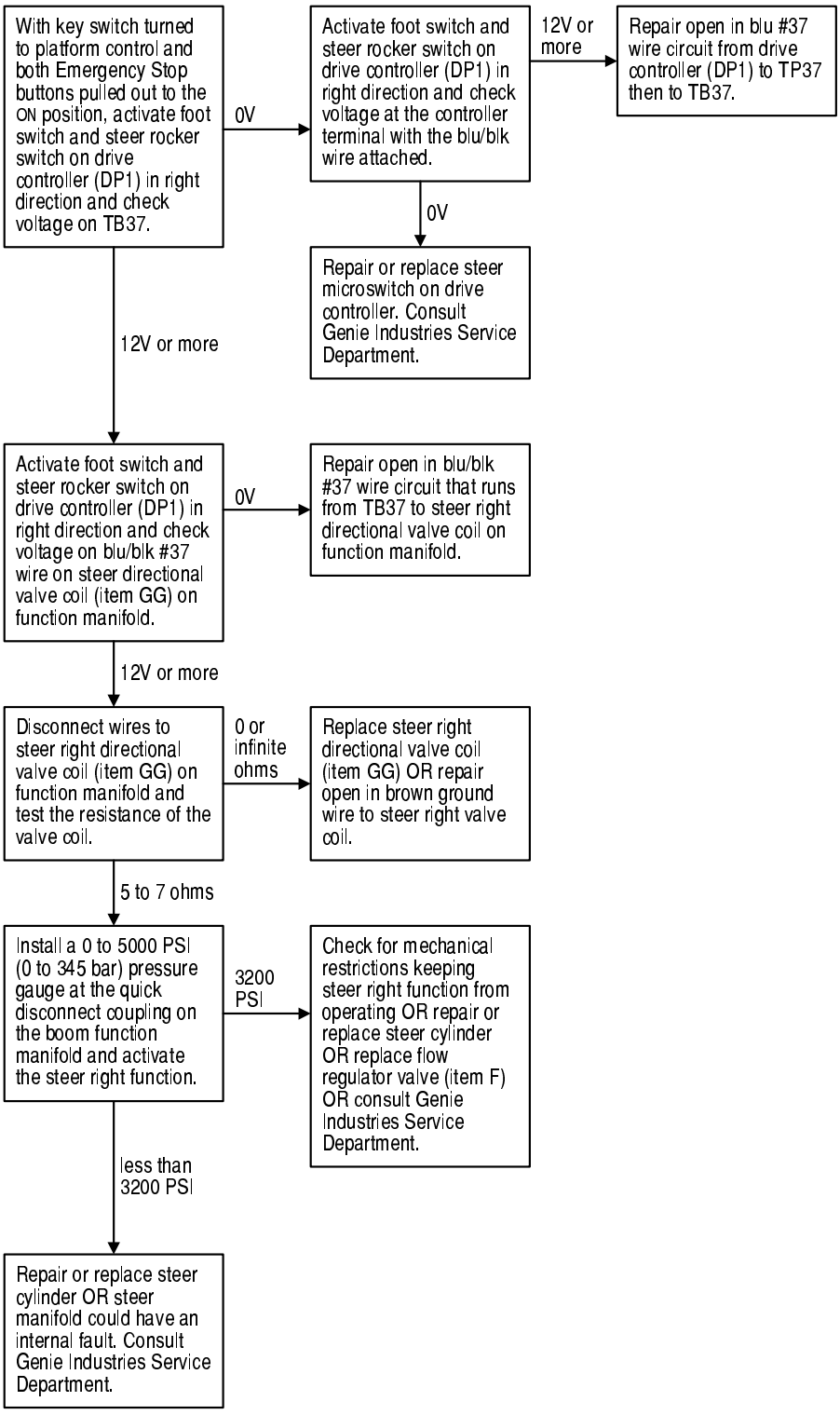


Chart 32

Oscillate Function Inoperative

Be sure all other function operate normally.

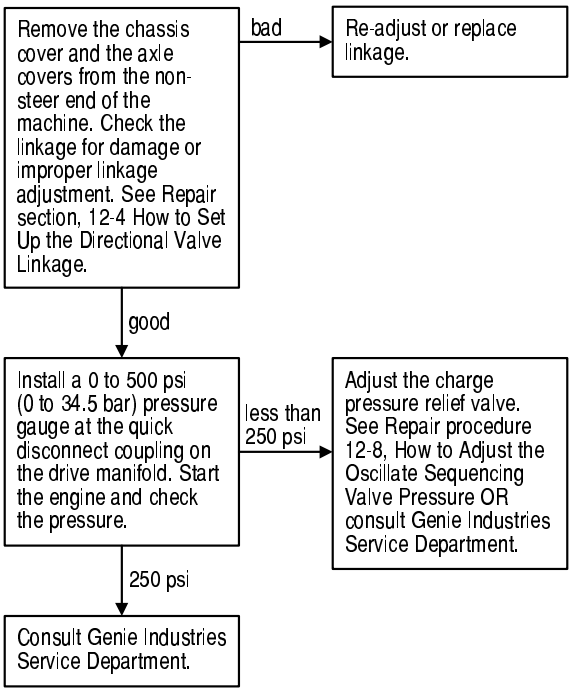


Chart 33

All Drive Functions Inoperative, All Other Functions Operate Normally

Be sure the rpm toggle switch is in the footswitch 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.

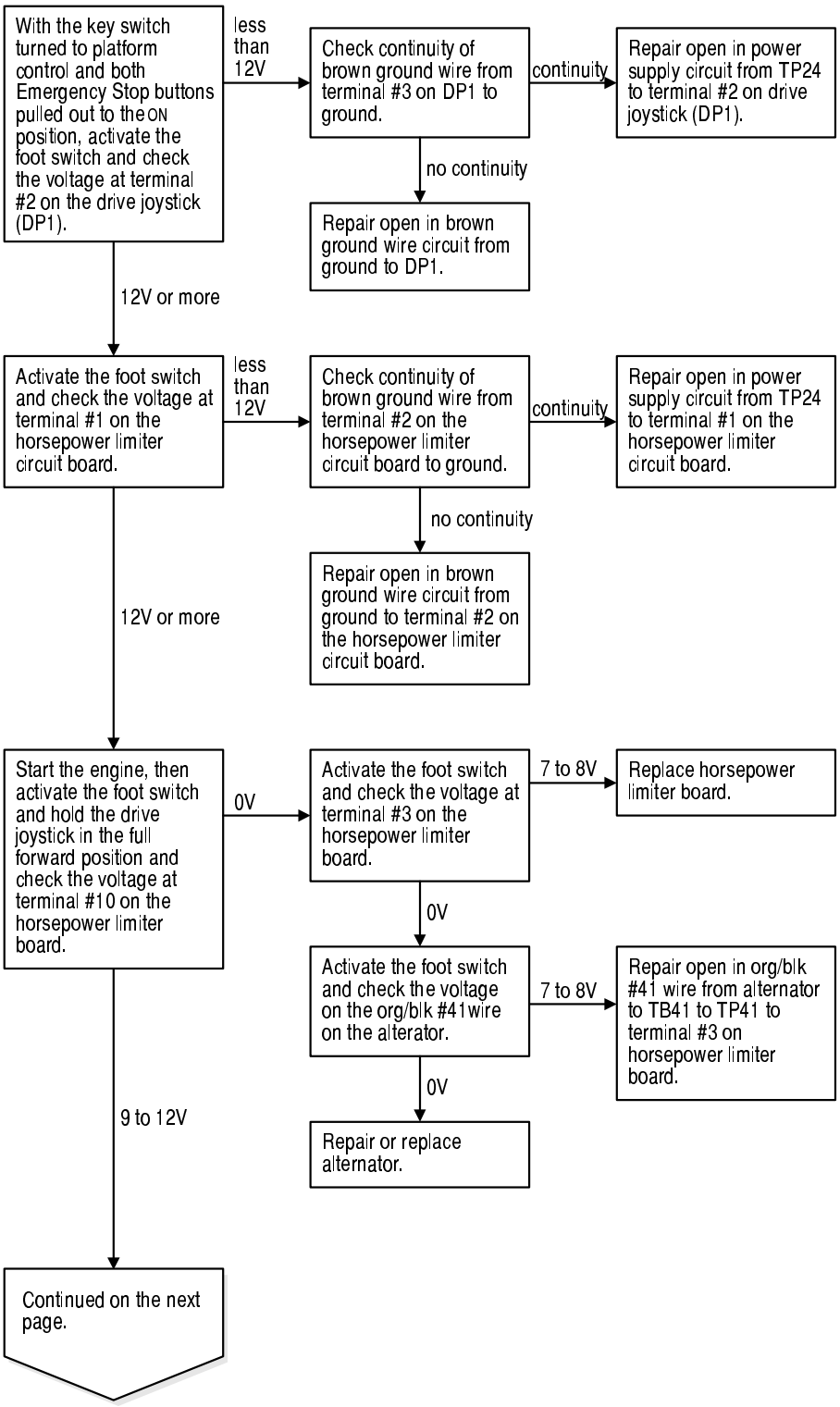


CHART 33

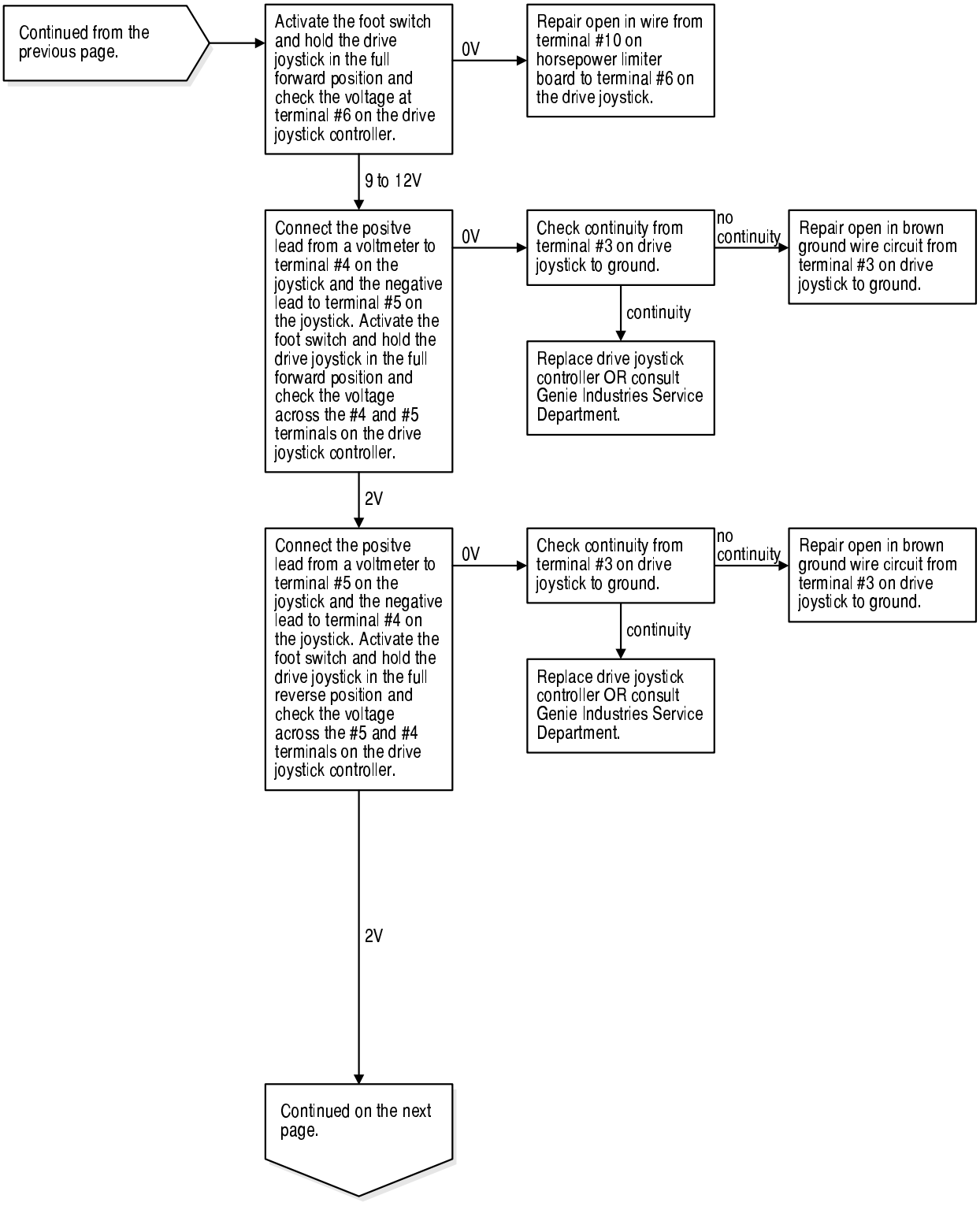

Continued from the previous page.
Activate the foot switch and hold the drive joystick in the full forward position and check the voltage at terminal #6 on the drive joystick controller.
0V
Repair open in wire from terminal #10 on horsepower limiter board to terminal #6 on the drive joystick.
9 to 12V
Connect the positve lead from a voltmeter to terminal #4 on the joystick and the negative lead to terminal #5 on the joystick. Activate the foot switch and hold the drive joystick in the full forward position and check the voltage across the #4 and #5 terminals on the drive joystick controller.
0V
Check continuity from terminal #3 on drive joystick to ground.
no continuity
Repair open in brown ground wire circuit from terminal #3 on drive joystick to ground.
continuity
Replace drive joystick controller OR consult Genie Industries Service Department.
2V
Connect the positve lead from a voltmeter to terminal #5 on the joystick and the negative lead to terminal #4 on the joystick. Activate the foot switch and hold the drive joystick in the full reverse position and check the voltage across the #5 and #4 terminals on the drive joystick controller.
0V
Check continuity from terminal #3 on drive joystick to ground.
no continuity
Repair open in brown ground wire circuit from terminal #3 on drive joystick to ground.
continuity
Replace drive joystick controller OR consult Genie Industries Service Department.
2V
Continued on the next page.

CHART 33

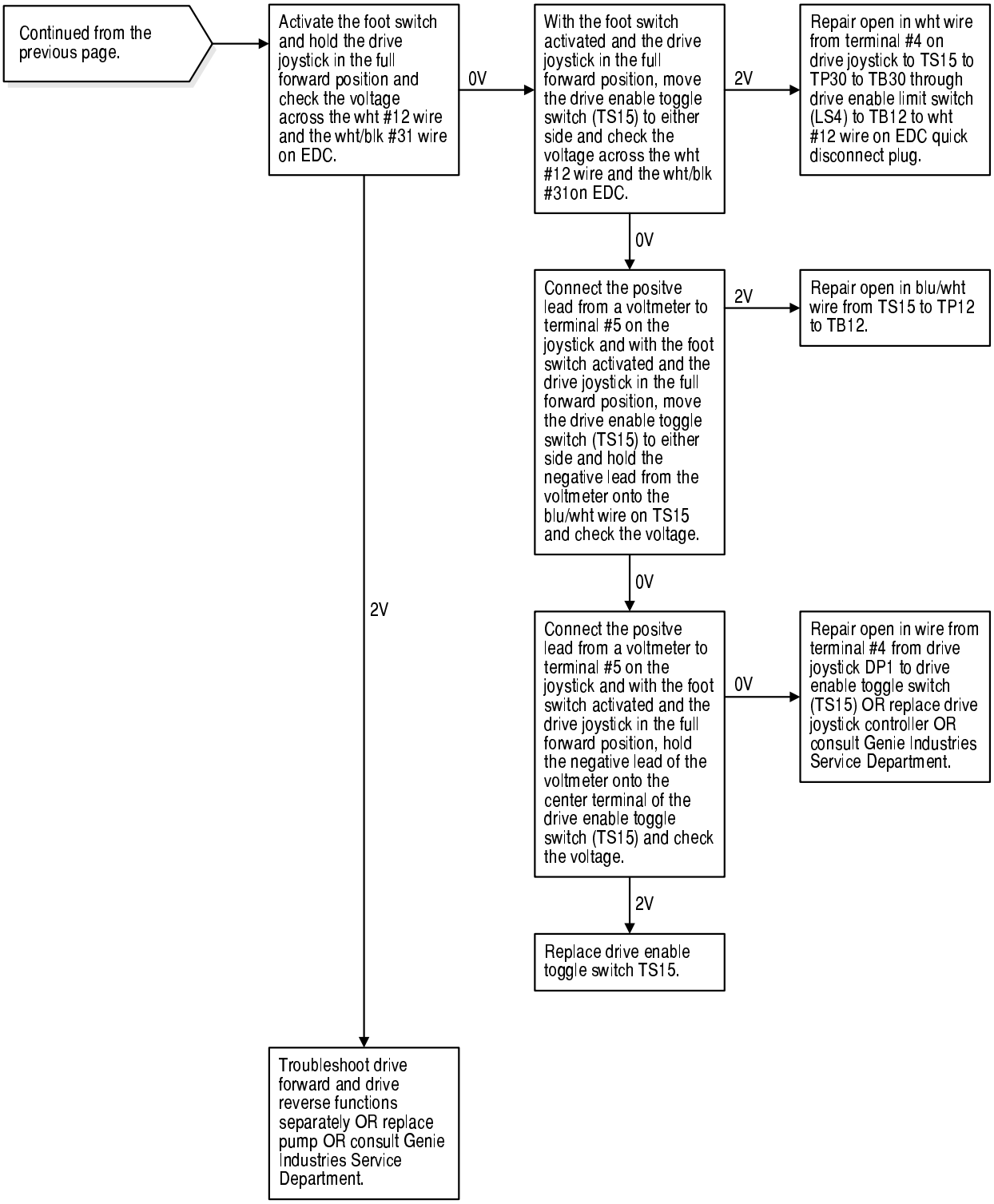

Continued from the previous page.
Activate the foot switch and hold the drive joystick in the full forward position and check the voltage across the wht #12 wire and the wht/blk #31 wire on EDC.
0V
With the foot switch activated and the drive joystick in the full forward position, move the drive enable toggle switch (TS15) to either side and check the voltage across the wht #12 wire and the wht/blk #31on EDC.
2V
Repair open in wht wire from terminal #4 on drive joystick to TS15 to TP30 to TB30 through drive enable limit switch (LS4) to TB12 to wht #12 wire on EDC quick disconnect plug.
0V
Connect the positve lead from a voltmeter to terminal #5 on the joystick and with the foot switch activated and the drive joystick in the full forward position, move the drive enable toggle switch (TS15) to either side and hold the negative lead from the voltmeter onto the blu/wht wire on TS15 and check the voltage.
2V
Repair open in blu/wht wire from TS15 to TP12 to TB12.
0V
Connect the positve lead from a voltmeter to terminal #5 on the joystick and with the foot switch activated and the drive joystick in the full forward position, hold the negative lead of the voltmeter onto the center terminal of the drive enable toggle switch (TS15) and check the voltage.
0V
Repair open in wire from terminal #4 from drive joystick DP1 to drive enable toggle switch (TS15) OR replace drive joystick controller OR consult Genie Industries Service Department.
2V
Replace drive enable toggle switch TS15.
2V
Troubleshoot drive forward and drive reverse functions separately OR replace pump OR consult Genie Industries Service Department.

Chart 34

Drive Forward Or Reverse Function Inoperative

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

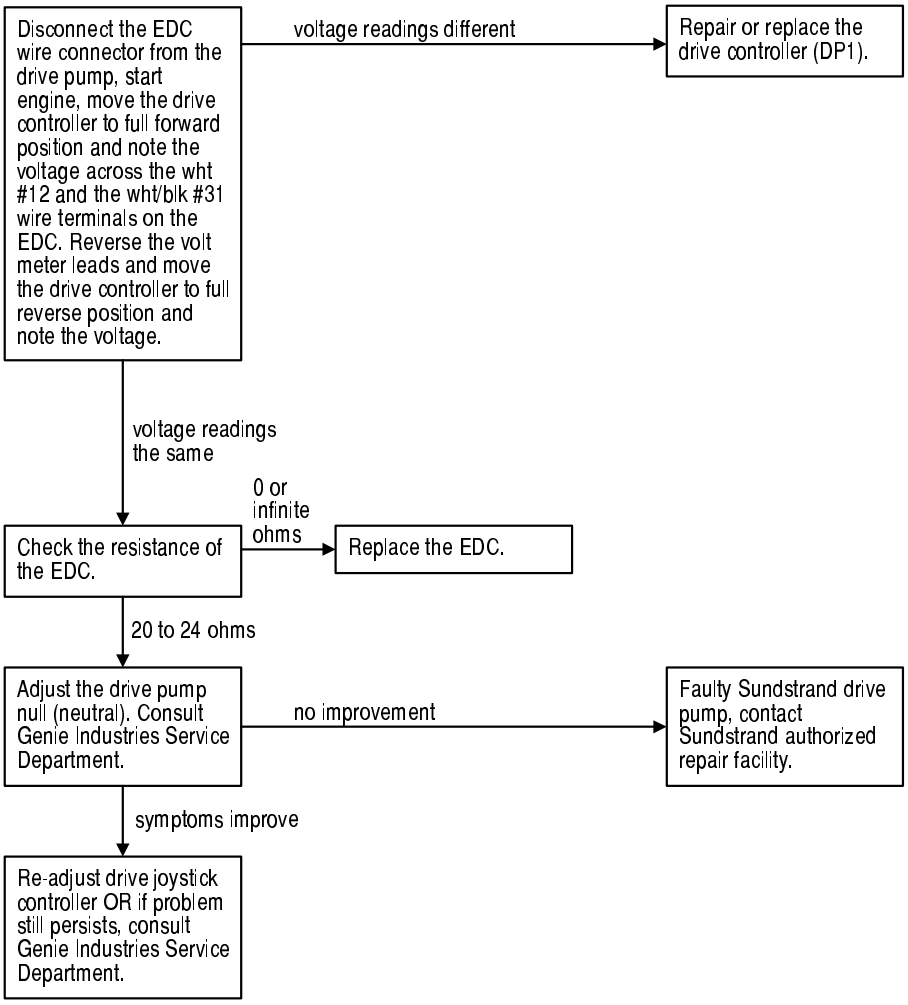


Chart 35

Traction Function Inoperative

Be sure all other functions operate normally.

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

Chart 36

Machine Will Not Drive At Full Speed

Be sure all other functions operate normally.

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

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

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

Be sure that the primary boom extend drive limit switch arm is being activated when the boom is fully retracted.

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

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

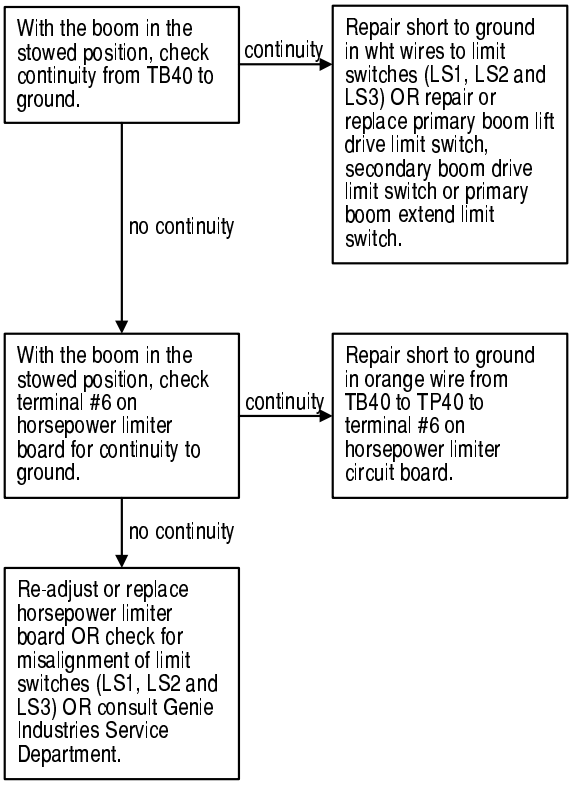


Chart 37

Machine Drives At Full Speed With Platform Raised or Extended

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

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

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

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

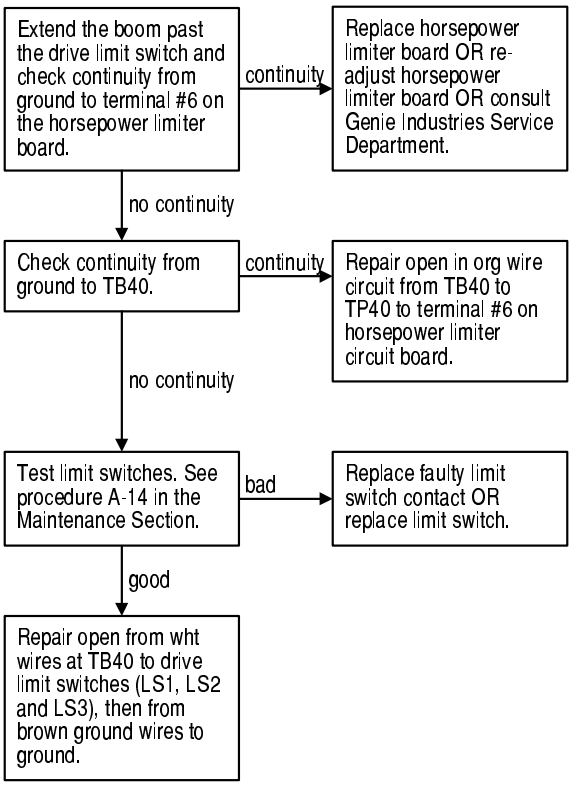


Chart 38

Drive Enable System Is Malfunctioning

Be sure the boom is in the stowed position.

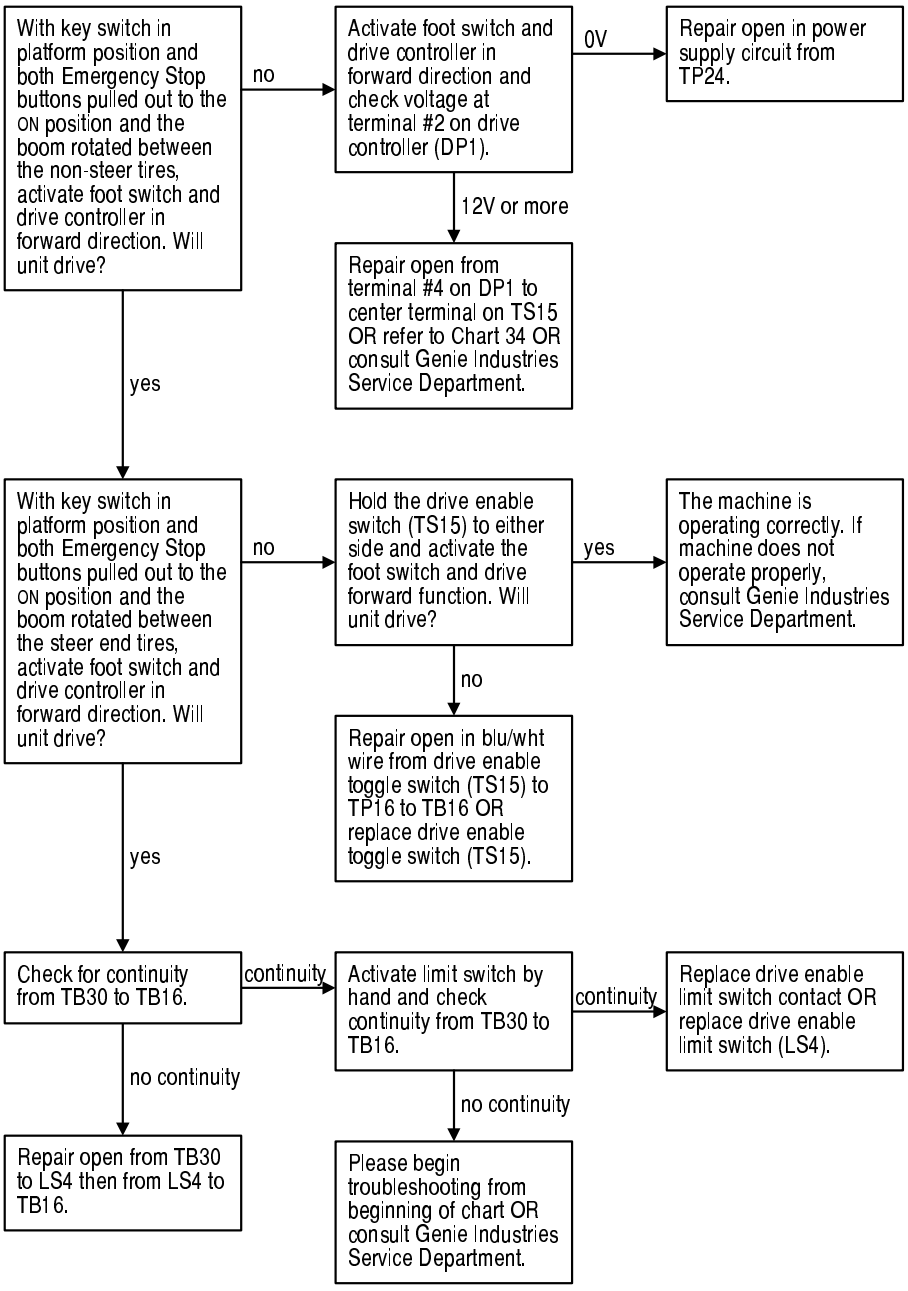


Chart 39

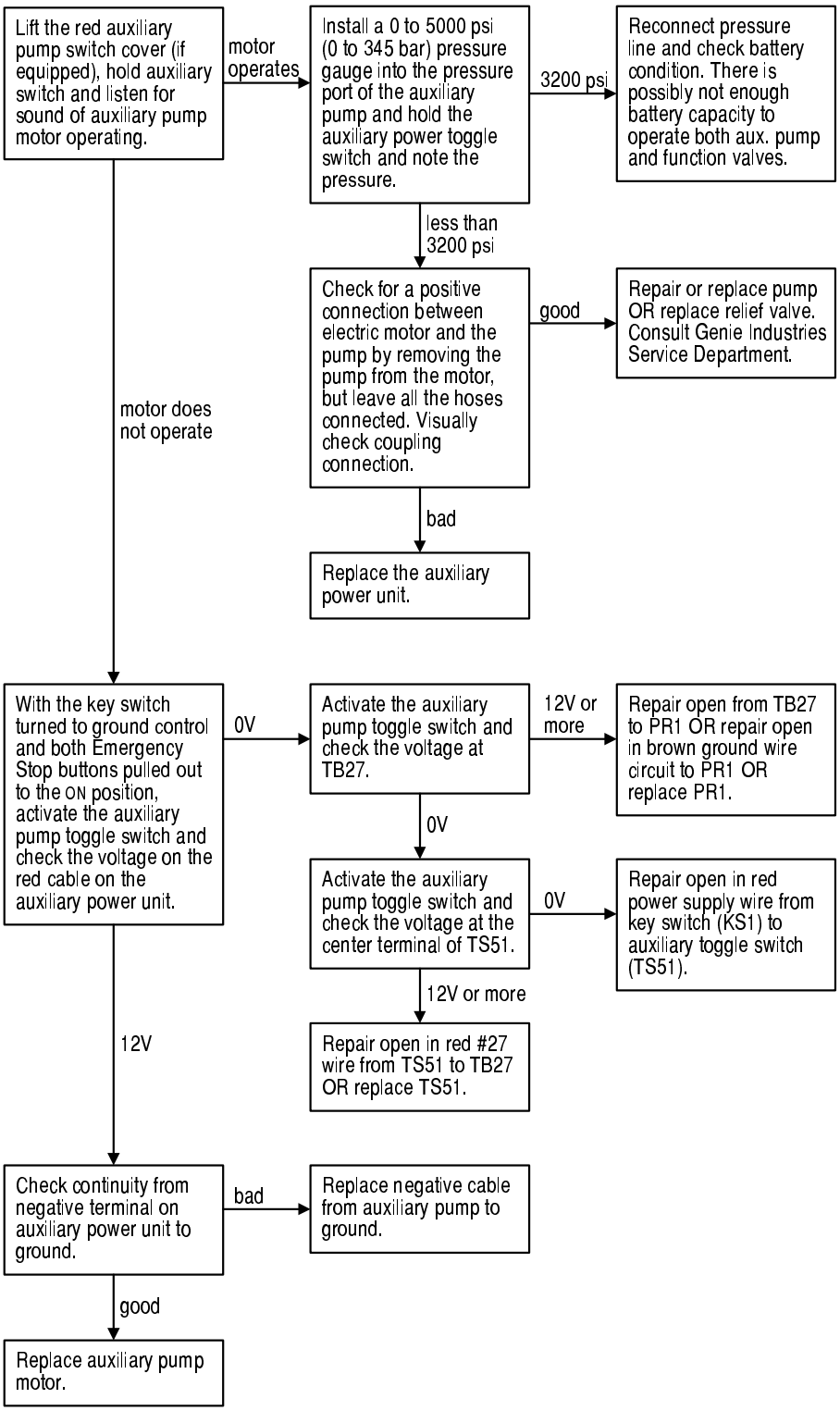
Auxiliary Functions Inoperative

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 kill the engine.





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Schematics

Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-45/25 & Genie Z-45/25J Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

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

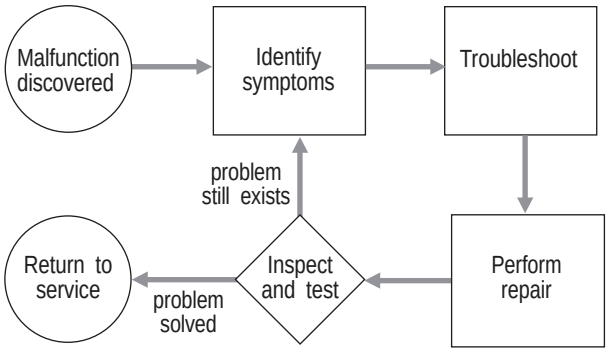
Electrical Schematics

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

Hydraulic Schematics

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

General Repair Process



Electrical Components

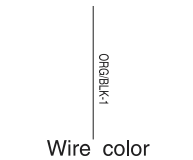
Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
BAT	Battery, 900 CCA, 12V DC	36872	Delco	34DT78	1
BP1	Joystick controller, Dual axis	53073	OEM Controls	EJS5DM11179	1
CB1, CB2	Circuit breaker	24018	ETA	45-700-IG1-P10	2
CR1,2,4,5,7,8 CR7, 8, (Gas/LPG)	Relay, SPDT, 12V DC	34052	Potter-Brumfield	VF4-15F11-CO5	6
CR1through 5, CR7, 8, (Diesel)	Relay, SPDT, 12V DC	34052	Potter-Brumfield	VF4-15F11-CO5	7
CR7,12,13 and 14 (Diesel)	Relay, SPDT, 12V DC	19274	Potter-Brumfield	VF4-15F11-CO5	2
Diode (Gas/LPG)	Diode, 6 amp, 200 PIV	45782	Motorola	MOTMR752	25
Diode (Diesel)	Diode, 6 amp, 200 PIV	45782	Motorola	MOTMR752	25
DP1	Joystick controller - Drive	20424	OEM Controls	MCH1159AD1386	1
FB	Flashing beacon	20189	ECCO Electronic Controls	6400A-GEN	1
FS1	Footswitch	13482	Linemaster Switch Corp.	632-S	1
H1	Alarm, Warble tone	19270	Floyd Bell Inc.	MW-09-616-Q	1
H2	Horn, 12V DC, 130 dB	56264	Wolo Industries.	300ST - 12 GEN	1
H3	Alarm, intermittent	18963	Floyd Bell Inc.	XB-09-630-Q	1
H4	Alarm, chime tone	45462	Floyd Bell Inc.	CH-09-525-Q	1
HM	Hourmeter	56100	Curtis Instruments	17305666	1
KS1	Contact - Keyswitch, N.O.	45081	Telemecanique	ZB2-BE101	2
L1,2,3,4 (Gas/LPG)	LED - Red, 12V DC	32335	Arctolectric Corp.	LE177C39007	4
L1,2,3 (Diesel)	LED - Red, 12V DC	32335	Arctolectric Corp.	LE177C39007	3
LS1, 2, 3	Contact - Limit switch, N.C.H.O.	19491	Telemecanique	XESP2051	3

This list continues on the next page.

ELECTRICAL COMPONENTS

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
Level sensor	Level sensor, 4.5°	44586	Power Comp. of Midwest	LS36	1
P1, P2	Contact, N.C.	29732	Telemecanique	ZB2-BE102	4
P3	Contact, N.O.	45081	Telemecanique	ZB2-BE101	1
PR1	Relay, 12V DC continuous	27155	Stancor	70-902	1
R1	Resistor, 50Ω 5 watt	49866	Dale	RH5- 50R-1%	1
R2	Resistor, 100Ω 25 watt	27116	Dale	RH25-100R-1%	1
R3	Resistor, 250Ω 5 watt	27117	Dale	RH5- 250R-1%	1
R4, (before serial number 13099)	Resistor, 15Ω 25 watt	45836	Dale	RH25-15R-1%	1
R4, (after serial number 13098)	Resistor, 10Ω 25 watt	54516	Dale	D25K10R	1
R5	Resistor, 10Ω 25 watt	27287	Dale	RH25-10R-1%	1
TS1, TS51, TS64 (Gas/LPG)	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	3
TS1, TS51 (Diesel)	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	2
TS2, 3, 9,13,15, 52,54 58, 59, 63 (Gas/LPG)	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	9
TS2,8, 9,13,15,52,54,58, 59, 63 (Diesel)	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	10
TS14	Toggle switch, DPST 2 position maintained	27378	Microswitch Control Inc.	2NT1-3	1
TS4	Toggle switch, DPDT 3 position maintained	13038	Microswitch Control Inc.	2NT1-1	1
TS7, 57, 60, 61, 62,	Toggle switch, DPDT 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	5

Electrical Symbols Legend



Wire color with cable number



Terminal



Quick disconnect terminal



T-circuits connect at terminal


T-circuits connect

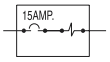

Connection no terminal


Circuits crossing no connection

Diode



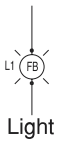
Battery



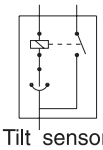
Circuit breaker


Solenoid or relay coil


Horn

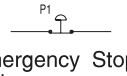


Light


Tilt sensor



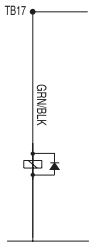
Limit switch normally closed held open



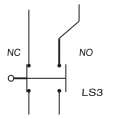
Emergency Stop button normally closed



Relay contact normally open



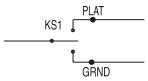
Ground supression circuit



Limit switch



Limit switch normally open held closed



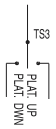
Key switch



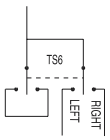
Horn button normally open



Relay panel contactor



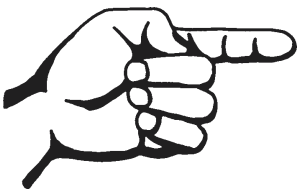
Toggle switch SPDT



Toggle switch DPDT

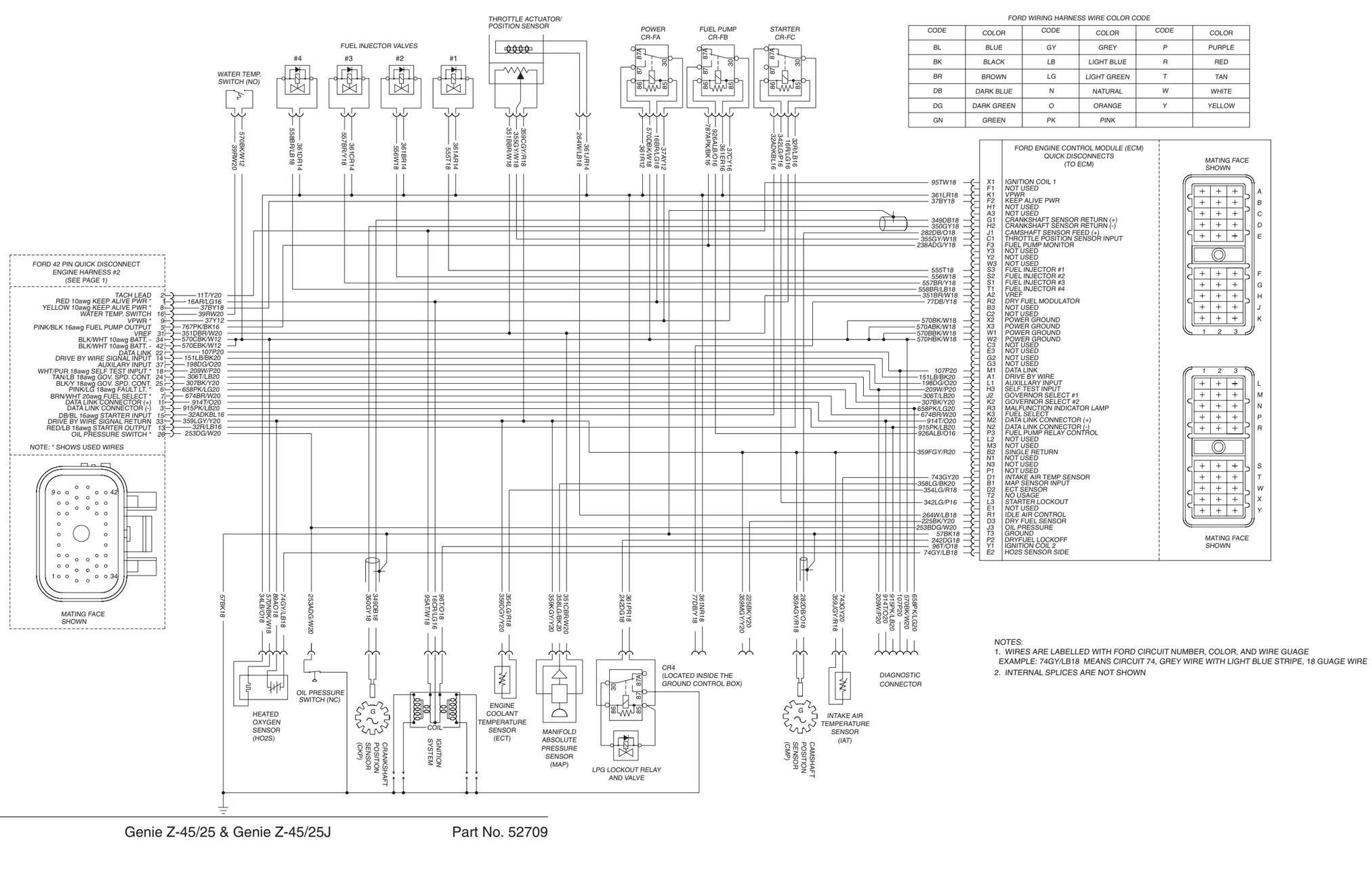
Abbreviation Legend

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



Ford LRG-425 EFI Engine Wire Harness (before serial number 13099)

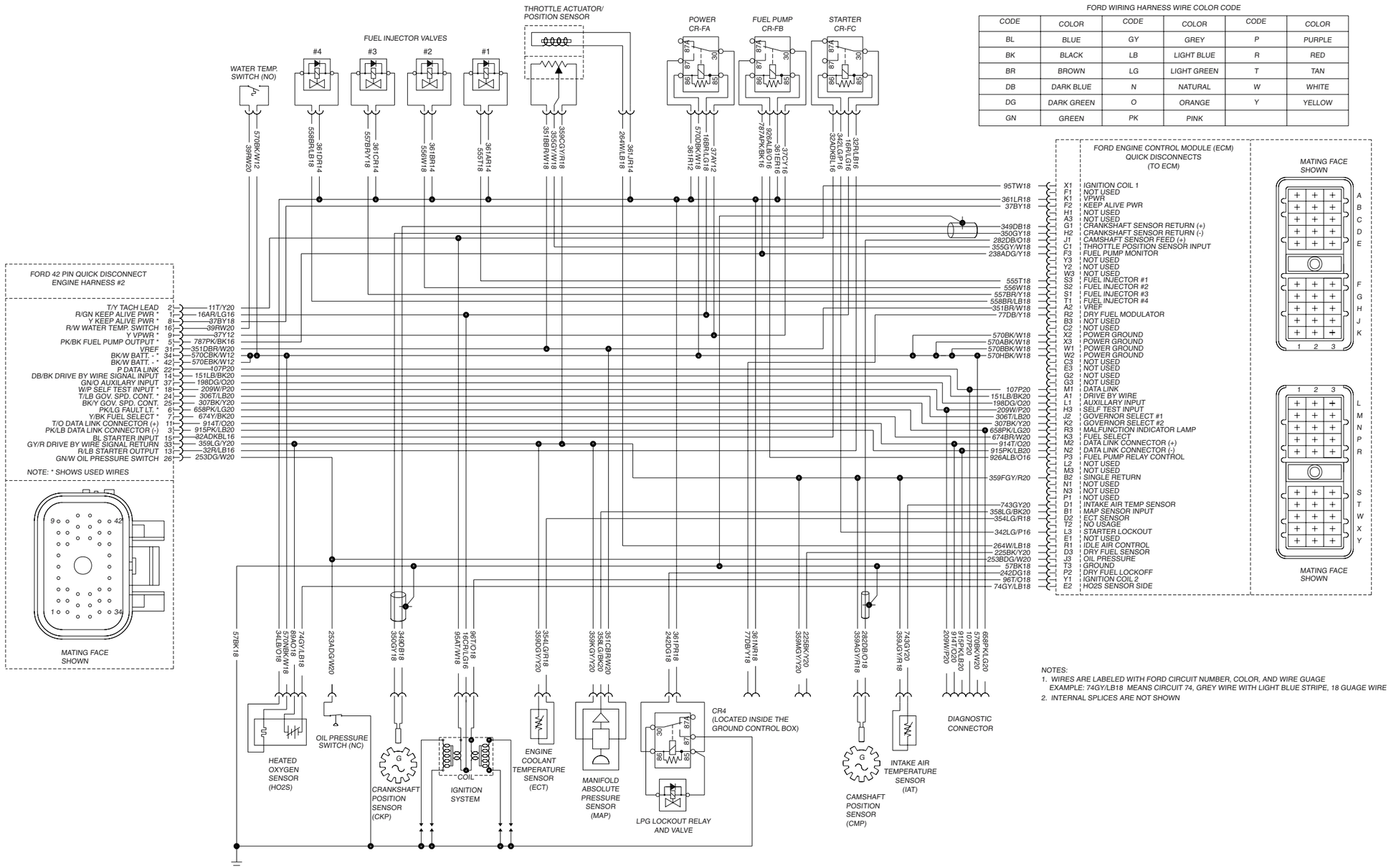
Ford LRG-425 EFI Engine Wire Harness (before serial number 13099)



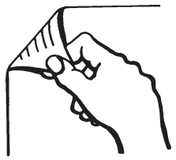
Ford LRG-425 EFI Engine Wire Harness (after serial number 13098)

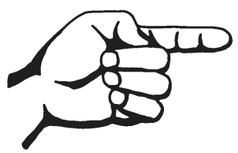
N M L K J I H G F E D C B A

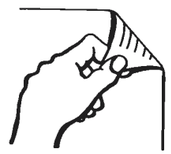
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Ford LRG-425 EFI Engine Wire Harness (after serial number 13908)

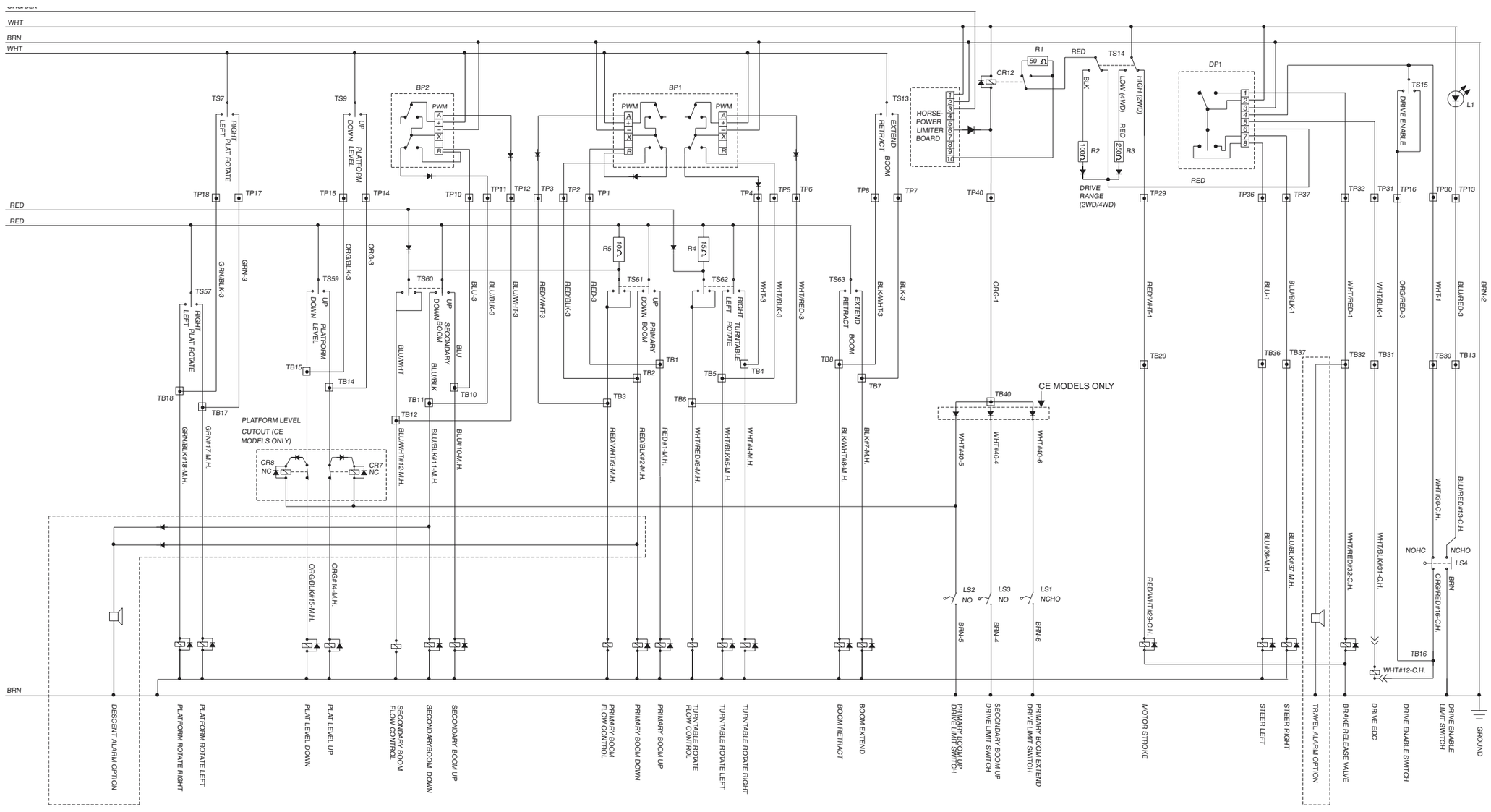




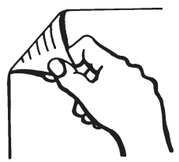


Electrical Schematic, Z-45/25 Ford Models (before serial number 13099)

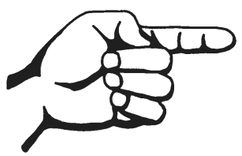
Electrical Schematic, Z-45/25 Ford Models (before serial number 13099)

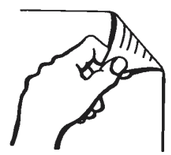


Electrical Schematic, Z-45/25 Ford Models (before serial number 13099)



Ground Control Box Wiring Diagram- Z-45/25 Ford Models (before serial number 13099)





Ground Control Box Wiring Diagram- Z-45/25 Ford Models (before serial number 13099)

RED-M.H	RED-3	1		RED-S.P.			PRI. BOOM UP
RED/BLK-M.H	RED/BLK-3	2		RD/BK-S.P.			PRI. BOOM DOWN
R/W-M.H	RED/WHT-3	3		RD/WT-S.P.			PRI. BOOM F.C.
WHT-M.H	WHT-3	4		WHT-S.P.			TURN. ROT. R
WHT/BLK-M.H	WHT/BLK-3	5		WT/BLK-S.P.			TURN. ROT. L
W/R-M.H	WHT/RED-3	6		WT/RD-S.P.			TURN. ROT. F.C.
BLK-M.H	BLK-3	7		BLK-S.P.			BOOM EXTEND
BLK/WHT-M.H	BLK/WHT-3	8		BK/WT-S.P.			BOOM RETRACT
BLK/RED-C.H	BLK/RED-3	9		BK/RD-R5			HORN
BLU-M.H	BLU-3	10		BLU-S.P.			SEC. BOOM UP
BLU/BLK-M.H	BLU/BLK-3	11		BU/BK-S.P.			SEC. BOOM DN
BLU/WHT-M.H	BLU/WHT-3	12		BLU/WT-S.P.			SEC. BOOM F.C.
BL/RED#13-C.H.	BLU/RED-3	13					DRV. ENA. LT. SW.
ORG-M.H.	ORG-3	14		ORG-S.P			PLAT. LEVEL. UP
OR/BK-M.H.	ORG/BLK-3	15		OG/BK-S.P			PLAT. LEVEL DN.
ORG/RED-CH	ORG/RED-3	16		WHT#12-C.H.			DRV. ENA.
GRN-M.H	GRN-3	17		GRN-S.P.			PLAT. ROT. L.
GRN/BLK-M.H	GRN/BLK-3	18		GR/BK-S.P.			PLAT. ROT. R.
	GRN/WHT-3	19		GR/WT-S.P.			JIB VALVE
RED-C.H.	RED-ISM#6	20		RED-S.P.			12V BATT. SUPPLY
RED-EXT.#6		21	WHT-E.H.#1	WHT-S.P.			IGNITION PWR.
	BLK-2	22		BLK-S.P.			PWR. TO PLAT.
RD/WT-C.H.	WHT-2	23	WHT-TEST SW	WHT-S.P.			KEYSWITCH PWR.
		24					
RD/GRN-EH#1		25	BLK-TEST SW				OIL PRESSURE SENDER
		26					WATER TEMP. SENDER
RED-C.H.	RED-1	27	RED-ISM#4	RED-S.P.			AUX. PWR.
RD/BK-C.H.	RED/BLK-1	28					TILT ALARM
RD/WT-C.H.	R/W-1	29					2WD/4WD (DRIVE RANGE)
WHT#30-C.H.	WHT-1	30					E.D.C.
WT/BK-C.H..	WHT/BLK-1	31					E.D.C.
WT/RD-C.H.	WHT/RED-1	32					BRAKE
BLK-ISM#3	BLK-1	33	BLK-S.P.				START
	BLK/WHT-1	34					GLOW PLUG
BR/BLU-EH2	BLK/RED-1	35					RPM BK/RD-S.P.
BLU-M.H.	BLU-1	36					STEER RIGHT
BU/BK-M.H.	BLU/BLK-1	37					STEER LEFT
PK/GR-EH#2	BLU/WHT-1	38		BU/WT-S.P.			TEST LIGHT
BRN/WHT-EH2	BLU/RED-1	39		BU/RD-S.P.			L.P. (FUEL SELECT)
	ORG-1	40	WHT-SEC.#4	WHT-EXT.#6			LIMIT SWITCH SIG.
OG/BK-C.H.	ORG/BLK-1	41		OG/BK-ISM#2			PULSE PICKUP
BLACK-SEC.#4	ORG/RED-1	42					SPARE
	GRN-1	43					SPARE
	GRN/BLK-1	44					SPARE
GRN/WHT-C.H	GRN/WHT-1	45					GEN. OPTION

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	TURNTABLE ROTATE SPEED LIMITING RESISTOR, 15 OHMS
R5	BOOM PRIMARY AND SECONDARY SPEED LIMITING RESISTOR, 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

EH#1	ENGINE HARNESS #1
EH#2	ENGINE HARNESS #2 (FORD EFI HARNESS)
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

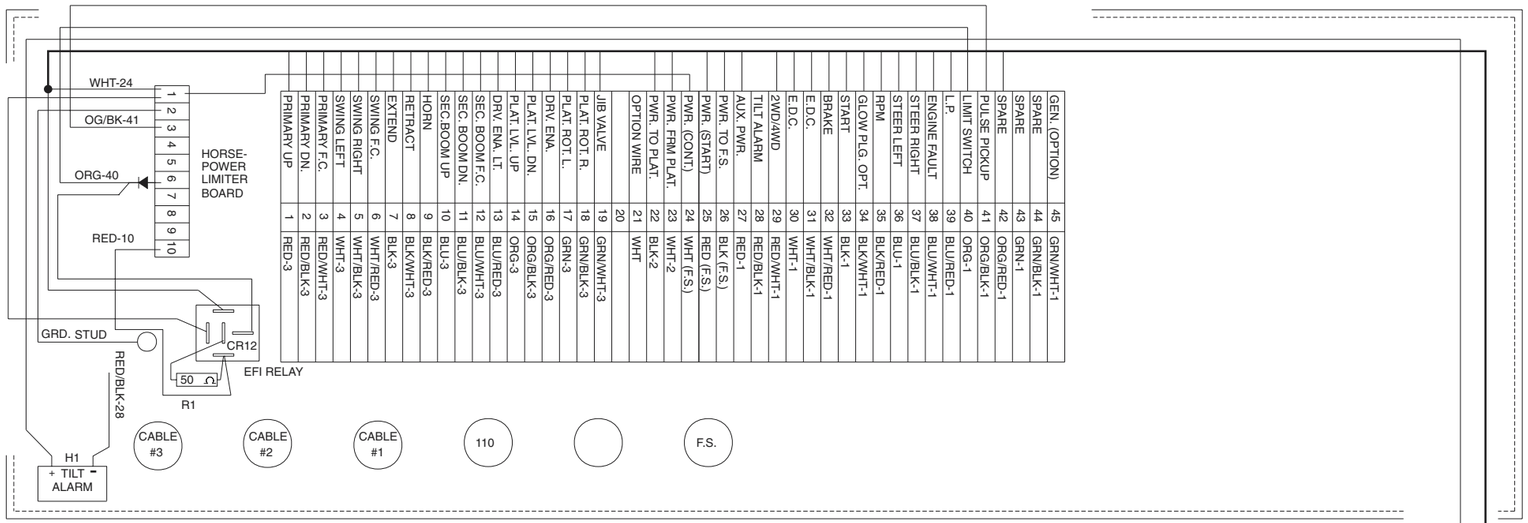
PIN/#:	TO:
RED/GRN	#1 - 25D
PNK/GRN	#6 - 38D
BRN/WHT	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
BRN/BLU	#26 - 35D

Platform Control Box Wiring Diagram- Z-45/25 Ford Models (before serial number 13099)

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

1

PLATFORM CONTROL BOX



LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS7	PLATFORM ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
H1	TILT ALARM

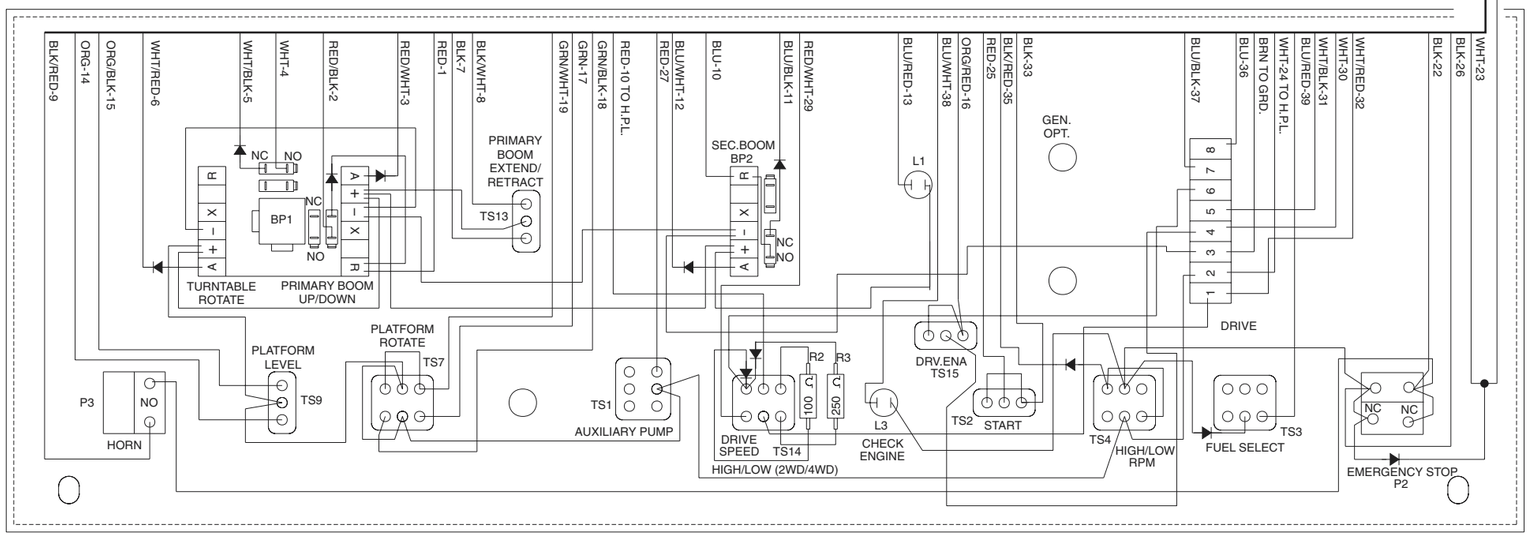
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3

4

5

PLATFORM CONTROL SWITCH PANEL



6

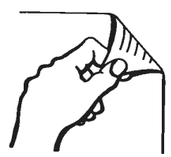
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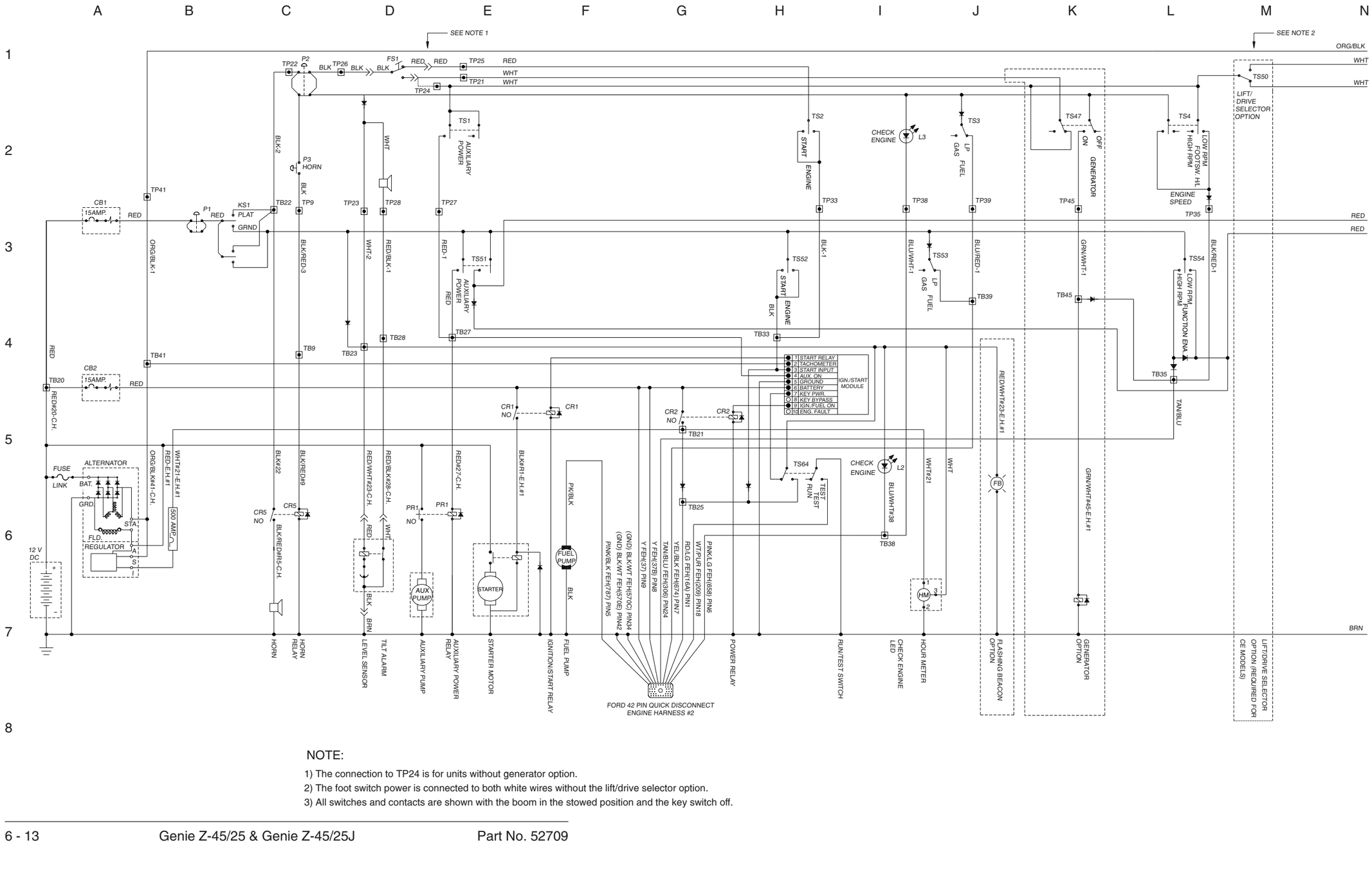
Platform Control Box Wiring Diagram- Z-45/25 Ford Models (before serial number 13099)







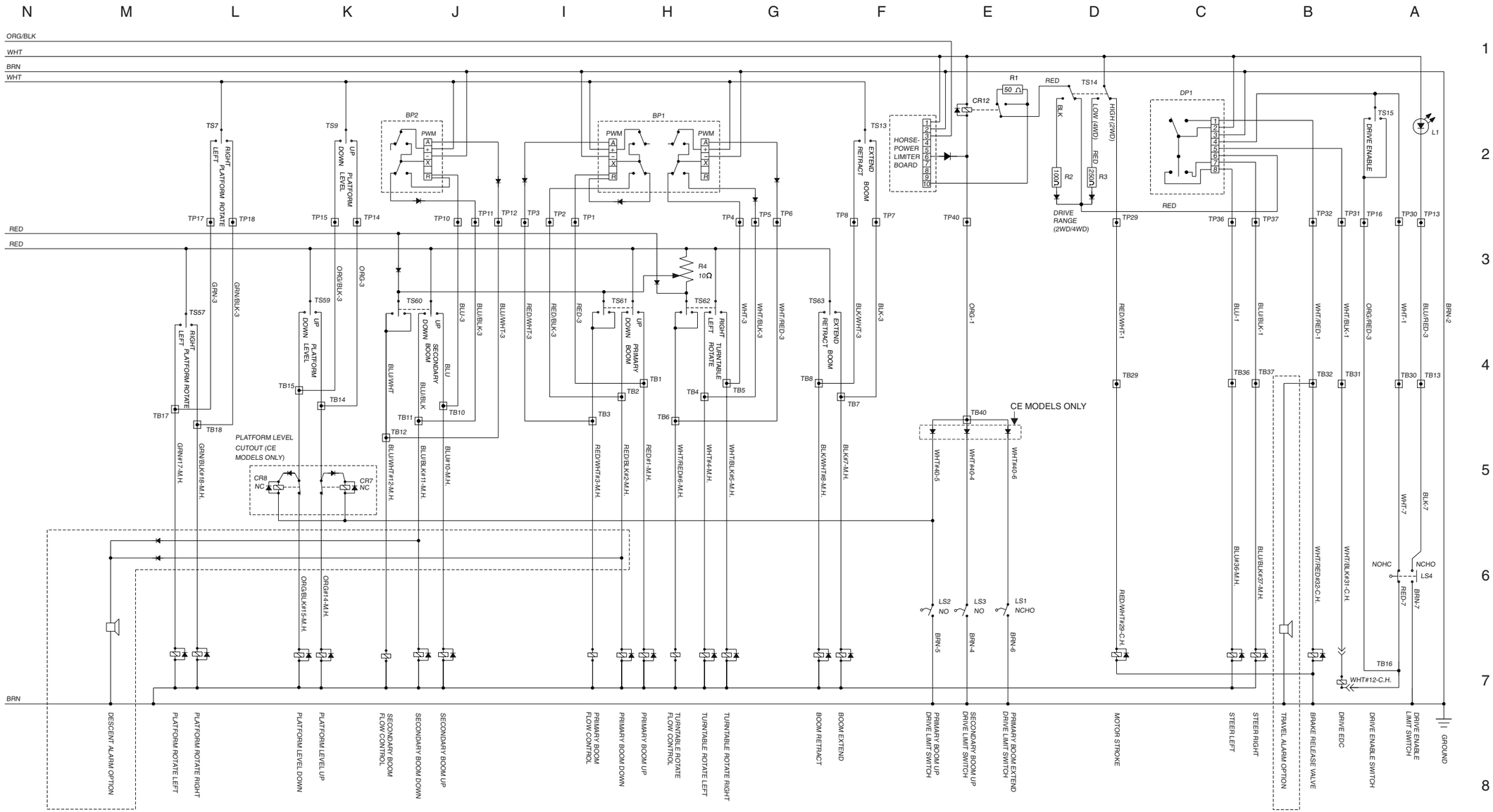
Electrical Schematic, Z-45/25 Ford Models (from serial number 13099 to 16303)



NOTE:

1) The connection to TP24 is for units without generator option.
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off.

Electrical Schematic, Z-45/25 Ford Models (from serial number 13099 to 16303)

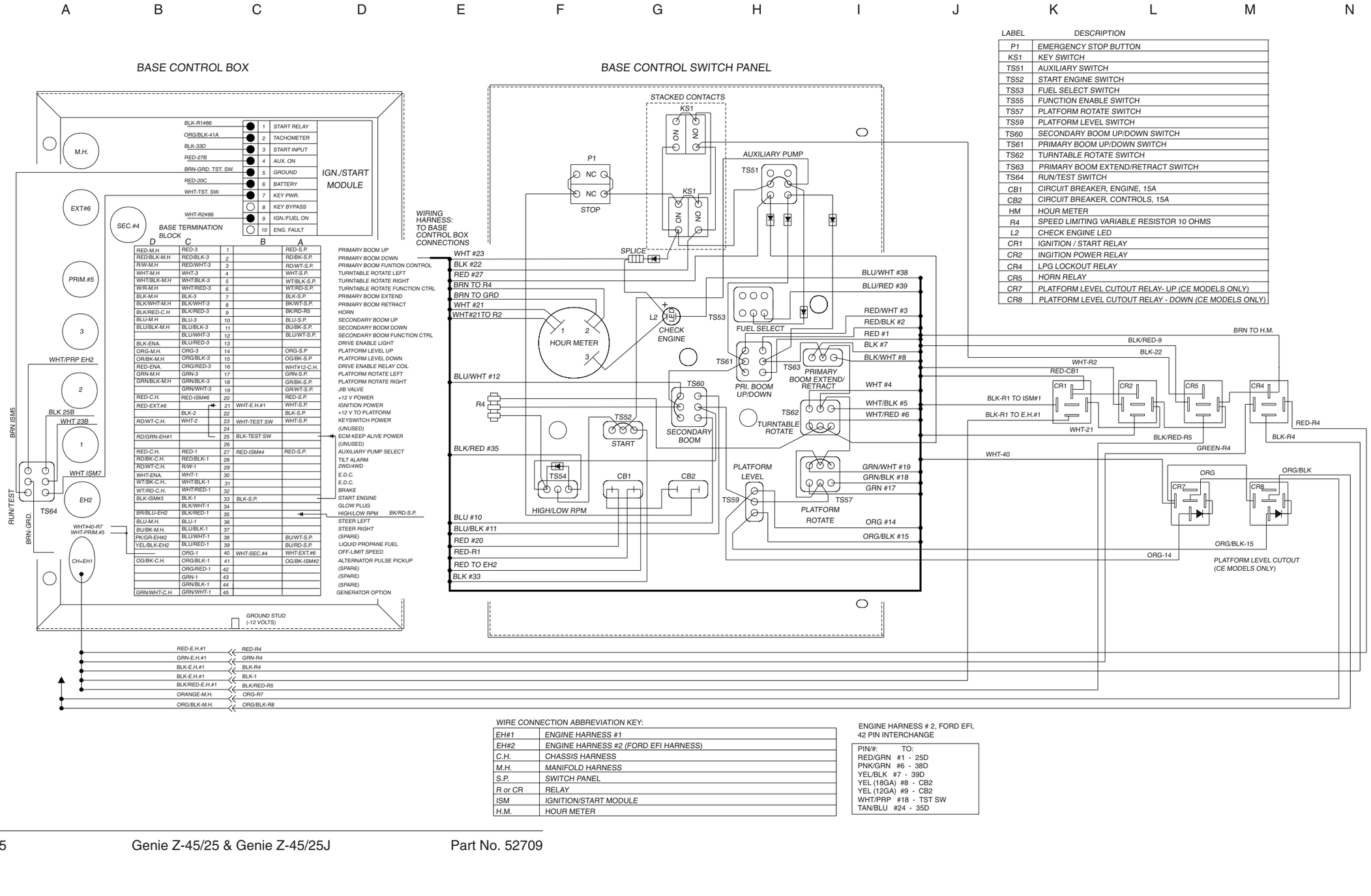


Electrical Schematic, Z-45/25 Ford Models (from serial number 13099 to 16303)



Ground Control Box Wiring Diagram- Z-45/25 Ford Models (from serial number 13099 to 16303)

Ground Control Box Wiring Diagram- Z-45/25 Ford Models (from serial number 13099 to 16303)



D	C		B	A	
RED-M.H	RED-3	1		RED-S.P.	PRIMARY BOOM UP
RED/BLK-M.H	RED/BLK-3	2		RD/BK-S.P.	PRIMARY BOOM DOWN
R/W-M.H	RED/WHT-3	3		RD/WT-S.P.	PRIMARY BOOM FUNTION CONTROL
WHT-M.H	WHT-3	4		WHT-S.P.	TURNTABLE ROTATE LEFT
WHT/BLK-M.H	WHT/BLK-3	5		WT/BLK-S.P.	TURNTABLE ROTATE RIGHT
W/R-M.H	WHT/RED-3	6		WT/RD-S.P.	TURNTABLE ROTATE FUNCTION CTRL
BLK-M.H	BLK-3	7		BLK-S.P.	PRIMARY BOOM EXTEND
BLK/WHT-M.H	BLK/WHT-3	8		BK/WT-S.P.	PRIMARY BOOM RETRACT
BLK/RED-C.H	BLK/RED-3	9		BK/RD-R5	HORN
BLU-M.H	BLU-3	10		BLU-S.P.	SECONDARY BOOM UP
BLU/BLK-M.H	BLU/BLK-3	11		BU/BK-S.P.	SECONDARY BOOM DOWN
	BLU/WHT-3	12		BLU/WT-S.P.	SECONDARY BOOM FUNCTION CTRL
BLK-ENA.	BLU/RED-3	13			DRIVE ENABLE LIGHT
ORG-M.H.	ORG-3	14		ORG-S.P	PLATFORM LEVEL UP
OR/BK-M.H	ORG/BLK-3	15		OG/BK-S.P	PLATFORM LEVEL DOWN
RED-ENA.	ORG/RED-3	16		WHT#12-C.H.	DRIVE ENABLE RELAY COIL
GRN-M.H	GRN-3	17		GRN-S.P.	PLATFORM ROTATE LEFT
GRN/BLK-M.H	GRN/BLK-3	18		GR/BK-S.P.	PLATFORM ROTATE RIGHT
	GRN/WHT-3	19		GR/WT-S.P.	JIB VALVE
RED-C.H.	RED-ISM#6	20		RED-S.P.	+12 V POWER
RED-EXT.#6		21	WHT-E.H.#1	WHT-S.P.	IGNITION POWER
	BLK-2	22		BLK-S.P.	+12 V TO PLATFORM
RD/WT-C.H.	WHT-2	23	WHT-TEST SW	WHT-S.P.	KEYSWITCH POWER
		24			(UNUSED)
RD/GRN-EH#1		25	BLK-TEST SW		ECM KEEP ALIVE POWER
		26			(UNUSED)
RED-C.H.	RED-1	27	RED-ISM#4	RED-S.P.	AUXILIARY PUMP SELECT
RD/BK-C.H.	RED/BLK-1	28			TILT ALARM
RD/WT-C.H.	R/W-1	29			2WD/4WD
WHT-ENA.	WHT-1	30			E.D.C.
WT/BK-C.H.	WHT/BLK-1	31			E.D.C.
WT/RD-C.H.	WHT/RED-1	32			BRAKE
BLK-ISM#3	BLK-1	33	BLK-S.P.		START ENGINE
	BLK/WHT-1	34			GLOW PLUG
BR/BLU-EH2	BLK/RED-1	35			HIGH/LOW RPM BK/RD-S.P.
BLU-M.H.	BLU-1	36			STEER LEFT
BU/BK-M.H.	BLU/BLK-1	37			STEER RIGHT
PK/GR-EH#2	BLU/WHT-1	38		BU/WT-S.P.	(SPARE)
YEL/BLK-EH2	BLU/RED-1	39		BU/RD-S.P.	LIQUID PROPANE FUEL
	ORG-1	40	WHT-SEC.#4	WHT-EXT.#6	OFF-LIMIT SPEED
OG/BK-C.H.	ORG/BLK-1	41		OG/BK-ISM#2	ALTERNATOR PULSE PICKUP
	ORG/RED-1	42			(SPARE)
	GRN-1	43			(SPARE)
	GRN/BLK-1	44			(SPARE)
GRN/WHT-C.H	GRN/WHT-1	45			GENERATOR OPTION

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

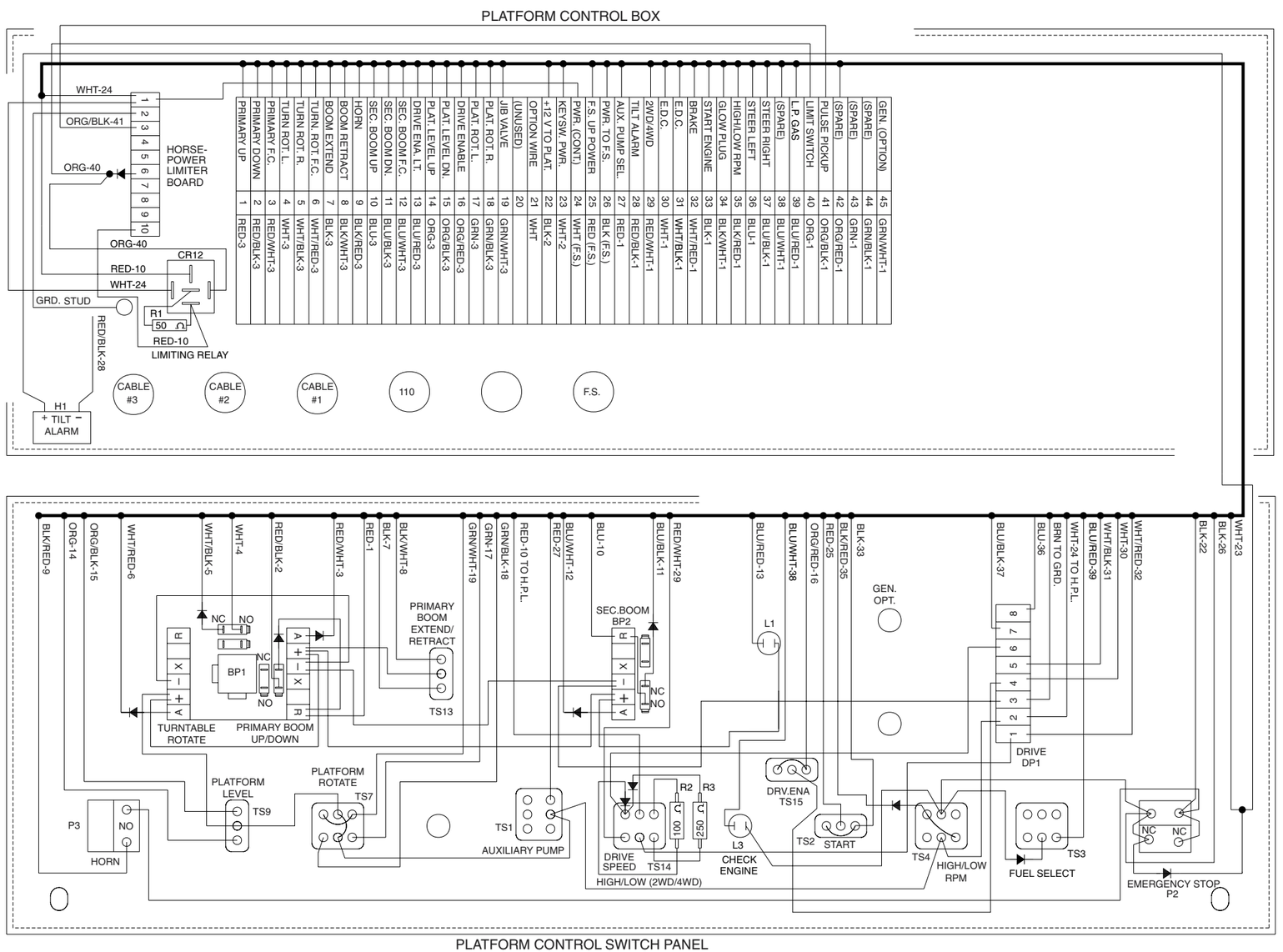
WIRE CONNECTION ABBREVIATION KEY:

EH#1	ENGINE HARNESS #1
EH#2	ENGINE HARNESS #2 (FORD EFI HARNESS)
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

PIN/#:	TO:
RED/GRN	#1 - 25D
PNK/GRN	#6 - 38D
YEL/BLK	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
TAN/BLU	#24 - 35D

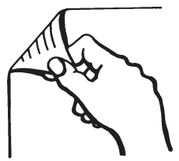
Platform Control Box Wiring Diagram- Z-45/25 Ford Models (from serial number 13099 to 16303)

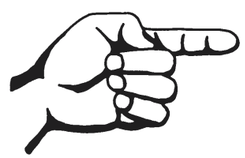


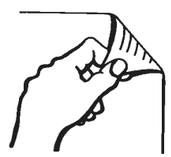
PLATFORM CONTROL SWITCH PANEL

LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS7	PLATFORM ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY (JIB ONLY)
H1	TILT ALARM

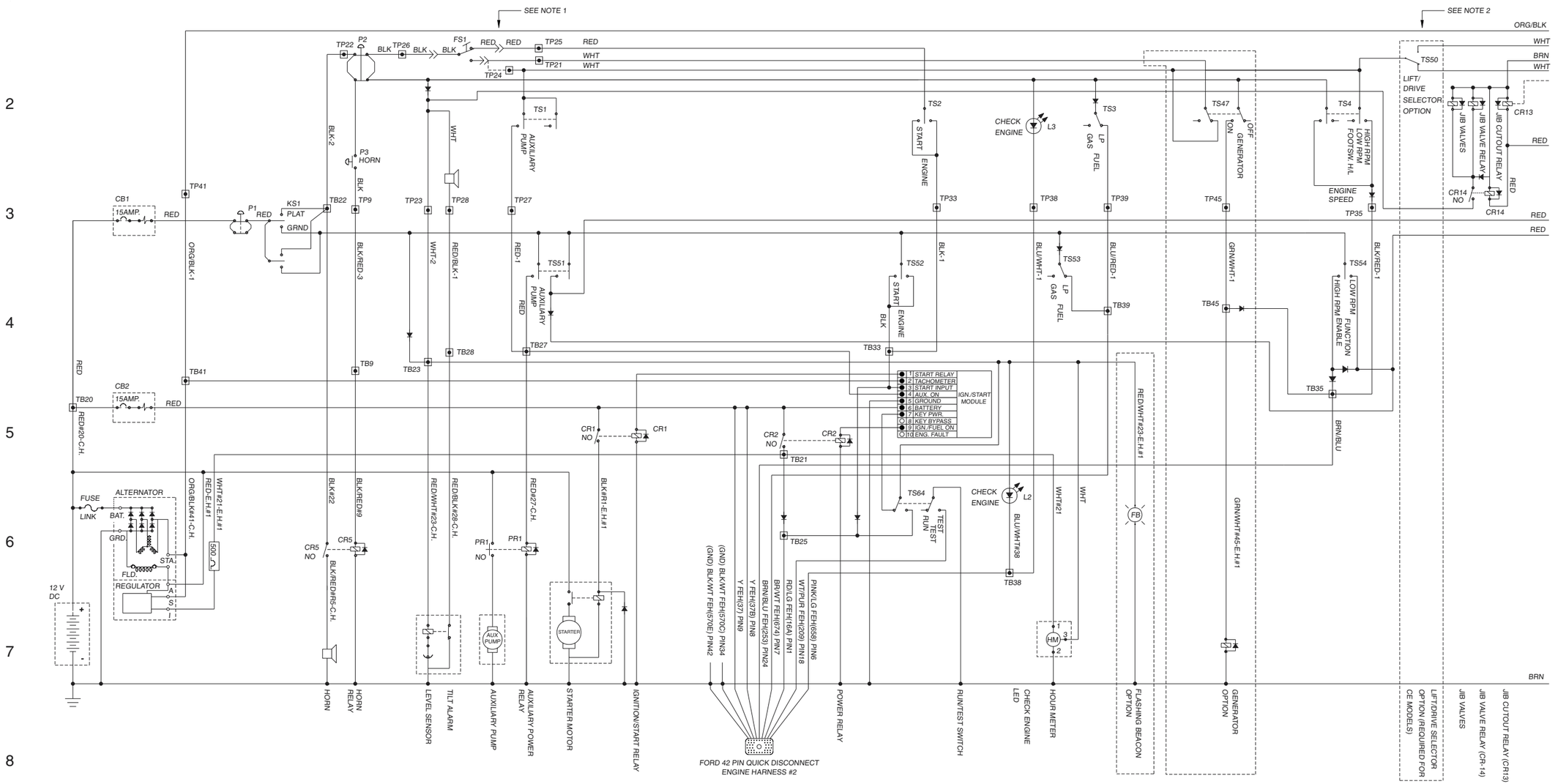
Platform Control Box Wiring Diagram- Z-45/25 Ford Models (from serial number 13099 to 16303)



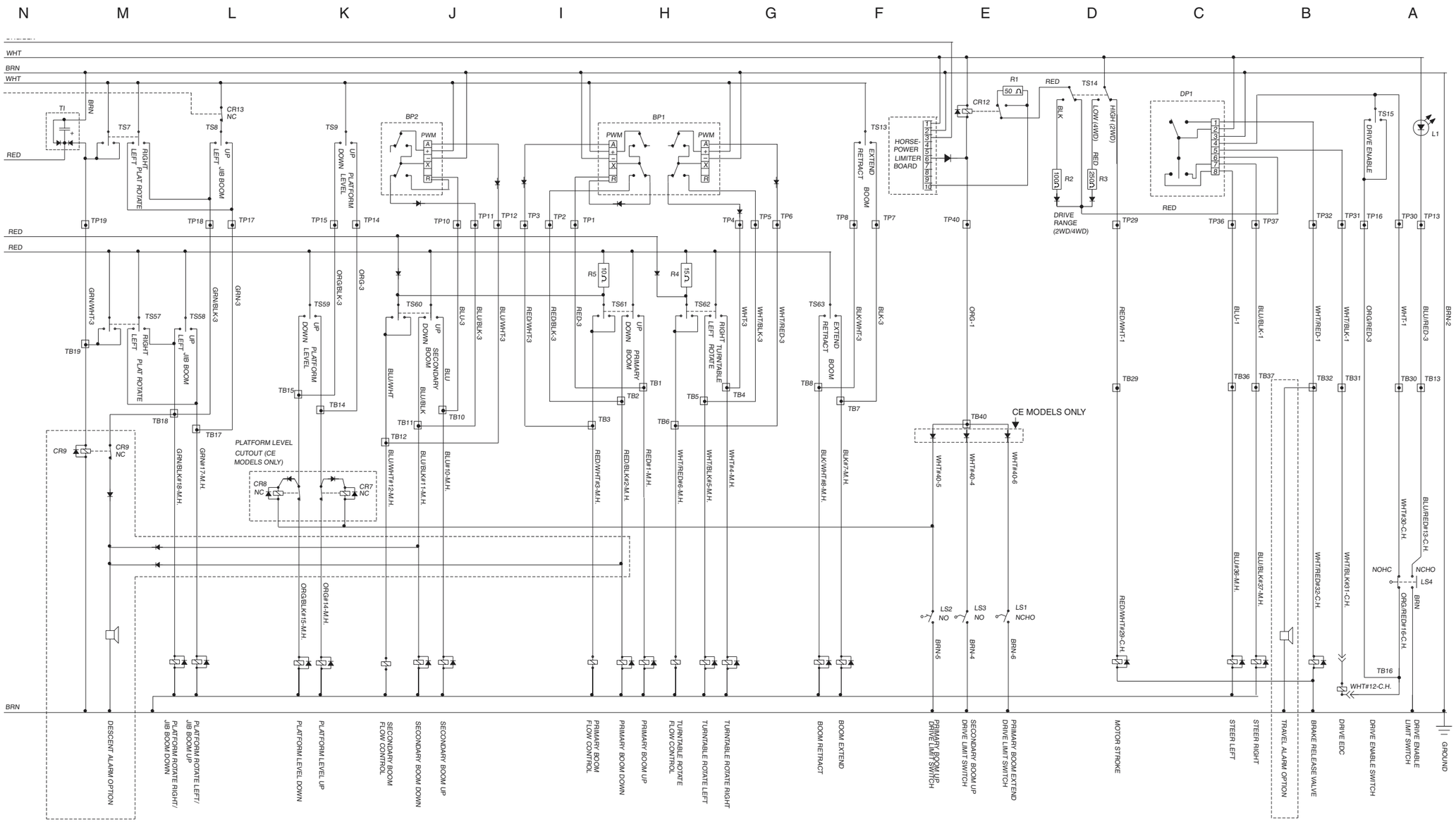




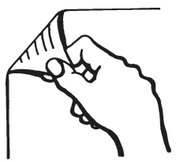
Electrical Schematic, Z-45/25J Ford Models (before serial number 13099)



Electrical Schematic, Z-45/25J Ford Models (before serial number 13099)

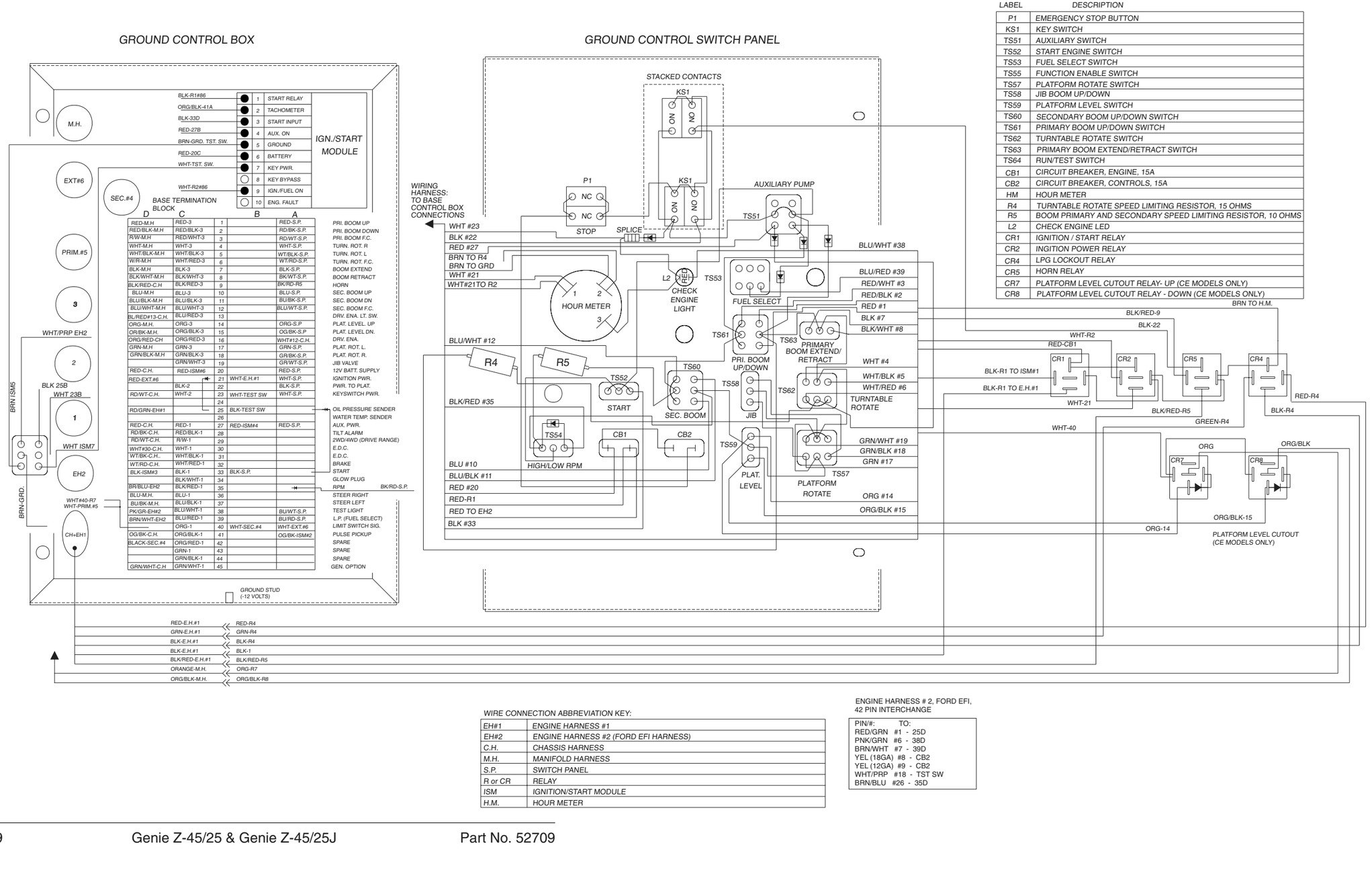


Electrical Schematic, Z-45/25J Ford Models (before serial number 13099)



Ground Control Box Wiring Diagram- Z-45/25J Ford Models (before serial number 13099)

Ground Control Box Wiring Diagram- Z-45/25J Ford Models (before serial number 13099)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	TURNTABLE ROTATE SPEED LIMITING RESISTOR, 15 OHMS
R5	BOOM PRIMARY AND SECONDARY SPEED LIMITING RESISTOR, 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	IGNITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

RED-M.H	RED-3	1		RED-S.P.		PRI. BOOM UP
RED/BLK-M.H	RED/BLK-3	2		RD/BK-S.P.		PRI. BOOM DOWN
R/W-M.H	RED/WHT-3	3		RD/WT-S.P.		PRI. BOOM F.C.
WHT-M.H	WHT-3	4		WHT-S.P.		TURN. ROT. R
WHT/BLK-M.H	WHT/BLK-3	5		WT/BLK-S.P.		TURN. ROT. L
W/R-M.H	WHT/RED-3	6		WT/RD-S.P.		TURN. ROT. F.C.
BLK-M.H	BLK-3	7		BLK-S.P.		BOOM EXTEND
BLK/WHT-M.H	BLK/WHT-3	8		BK/WT-S.P.		BOOM RETRACT
BLK/RED-C.H	BLK/RED-3	9		BK/RD-RS		HORN
BLU-M.H	BLU-3	10		BLU-S.P.		SEC. BOOM UP
BLU/BLK-M.H	BLU/BLK-3	11		BU/BK-S.P.		SEC. BOOM DN
BLU/WHT-M.H	BLU/WHT-3	12		BLU/WT-S.P.		SEC. BOOM F.C.
BL/RED#13-C.H.	BLU/RED-3	13				DRV. ENA. LT. SW.
ORG-M.H.	ORG-3	14		ORG-S.P		PLAT. LEVEL UP
OR/BK-M.H.	ORG/BLK-3	15		OG/BK-S.P		PLAT. LEVEL DN.
ORG/RED-CH	ORG/RED-3	16		WHT#12-C.H.		DRV. ENA.
GRN-M.H	GRN-3	17		GRN-S.P.		PLAT. ROT. L.
GRN/BLK-M.H	GRN/BLK-3	18		GR/BK-S.P.		PLAT. ROT. R.
	GRN/WHT-3	19		GR/WT-S.P.		JIB VALVE
RED-C.H.	RED-ISM#6	20		RED-S.P.		12V BATT. SUPPLY
RED-EXT.#6		21	WHT-E.H.#1	WHT-S.P.		IGNITION PWR.
	BLK-2	22		BLK-S.P.		PWR. TO PLAT.
RD/WT-C.H.	WHT-2	23	WHT-TEST SW	WHT-S.P.		KEYSWITCH PWR.
		24				
RD/GRN-EH#1		25	BLK-TEST SW			OIL PRESSURE SENDER
		26				WATER TEMP. SENDER
RED-C.H.	RED-1	27	RED-ISM#4	RED-S.P.		AUX. PWR.
RD/BK-C.H.	RED/BLK-1	28				TILT ALARM
RD/WT-C.H.	R/W-1	29				2WD/4WD (DRIVE RANGE)
WHT#30-C.H.	WHT-1	30				E.D.C.
WT/BK-C.H.	WHT/BLK-1	31				E.D.C.
WT/RD-C.H.	WHT/RED-1	32				BRAKE
BLK-ISM#3	BLK-1	33	BLK-S.P.			START
	BLK/WHT-1	34				GLOW PLUG
BR/BLU-EH2	BLK/RED-1	35			BK/RD-S.P.	RPM
BLU-M.H.	BLU-1	36				STEER RIGHT
BU/BK-M.H.	BLU/BLK-1	37				STEER LEFT
PK/GR-EH#2	BLU/WHT-1	38		BU/WT-S.P.		TEST LIGHT
BRN/WHT-EH2	BLU/RED-1	39		BU/RD-S.P.		L.P. (FUEL SELECT)
	ORG-1	40	WHT-SEC.#4	WHT-EXT.#6		LIMIT SWITCH SIG.
OG/BK-C.H.	ORG/BLK-1	41		OG/BK-ISM#2		PULSE PICKUP
BLACK-SEC.#4	ORG/RED-1	42				SPARE
	GRN-1	43				SPARE
	GRN/BLK-1	44				SPARE
GRN/WHT-C.H	GRN/WHT-1	45				GEN. OPTION

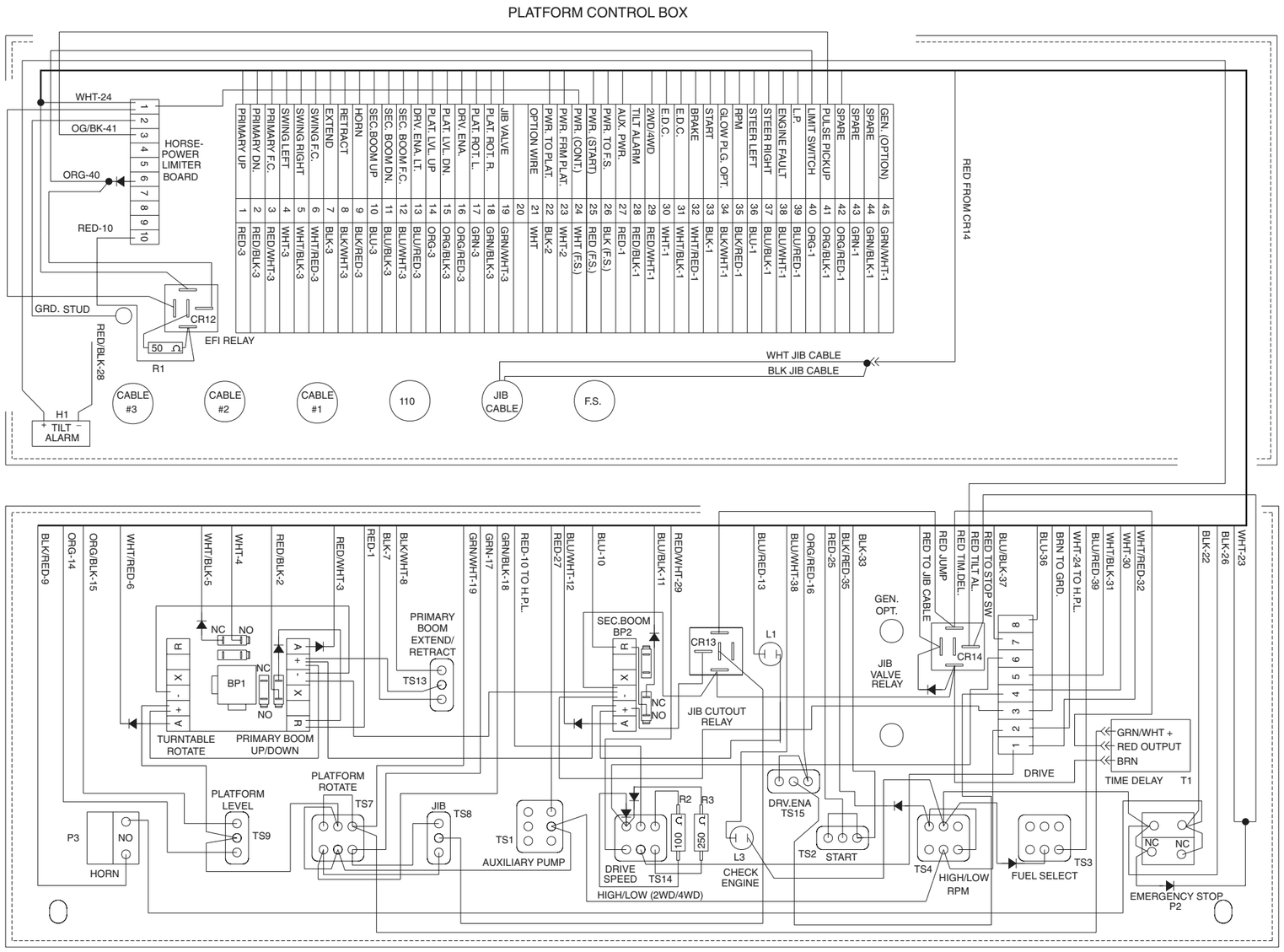
WIRE CONNECTION ABBREVIATION KEY:

EH#1	ENGINE HARNESS #1
EH#2	ENGINE HARNESS #2 (FORD EFI HARNESS)
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

PIN/#:	TO:
RED/GRN	#1 - 25D
PNK/GRN	#6 - 38D
BRN/WHT	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
BRN/BLU	#26 - 35D

Platform Control Box Wiring Diagram- Z-45/25J Ford Models (before serial number 13099)



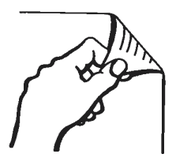
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

PLATFORM CONTROL SWITCH PANEL

Platform Control Box Wiring Diagram- Z-45/25J Ford Models (before serial number 13099)





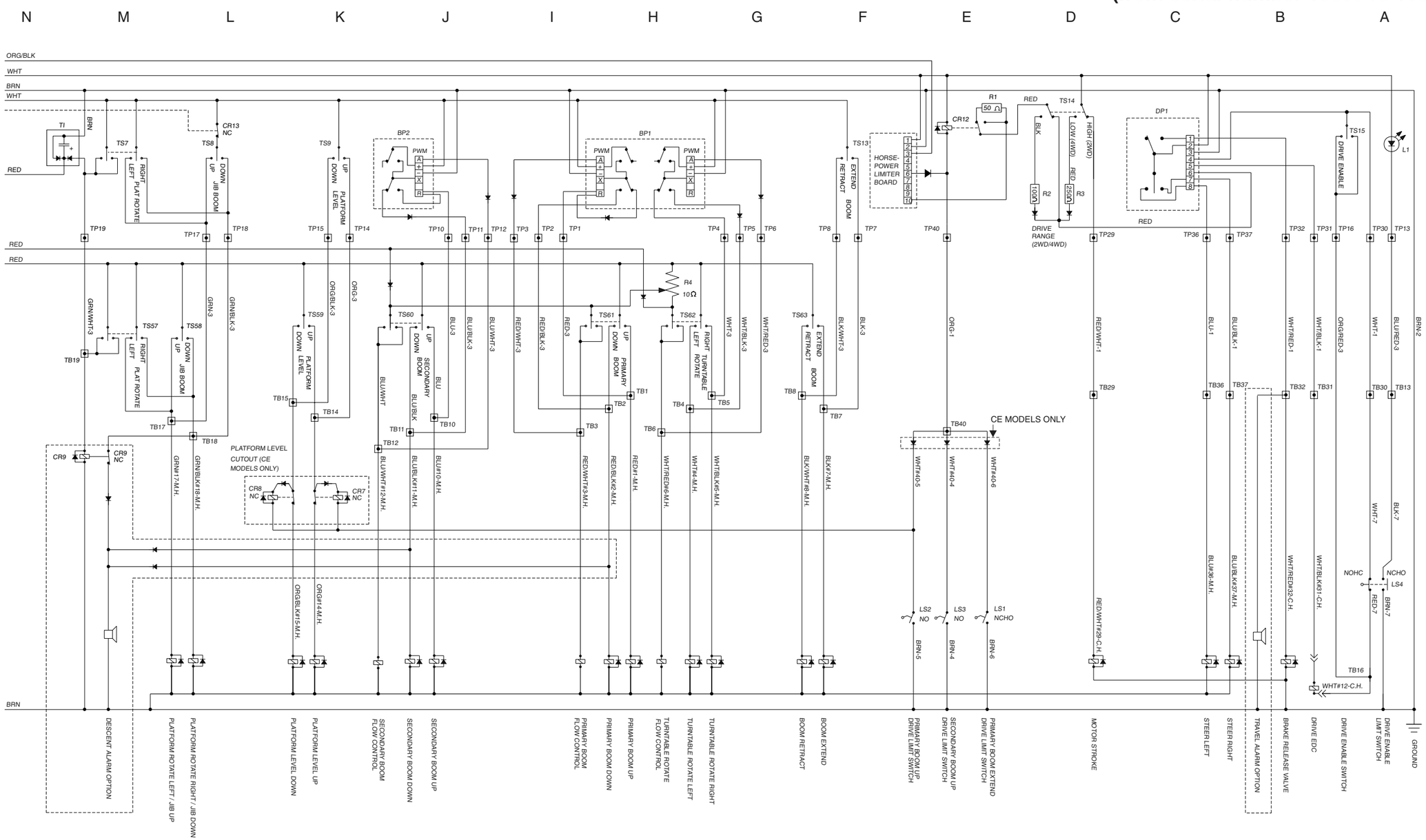


Electrical Schematic, Z-45/25J Ford Models (from serial number 13099 to 16303)

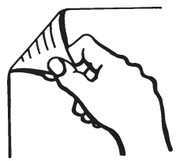
NOTE:

1) The connection to TP24 is for units without generator option.
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off.

Electrical Schematic, Z-45/25J Ford Models (from serial number 13099 to 16303)



Electrical Schematic, Z-45/25J Ford Models (from serial number 13099 to 16303)



Ground Control Box Wiring Diagram- Z-45/25J Ford Models (from serial number 13099 to 16303)

Ground Control Box Wiring Diagram- Z-45/25J Ford Models (from serial number 13099 to 16303)

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	SERVICE HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

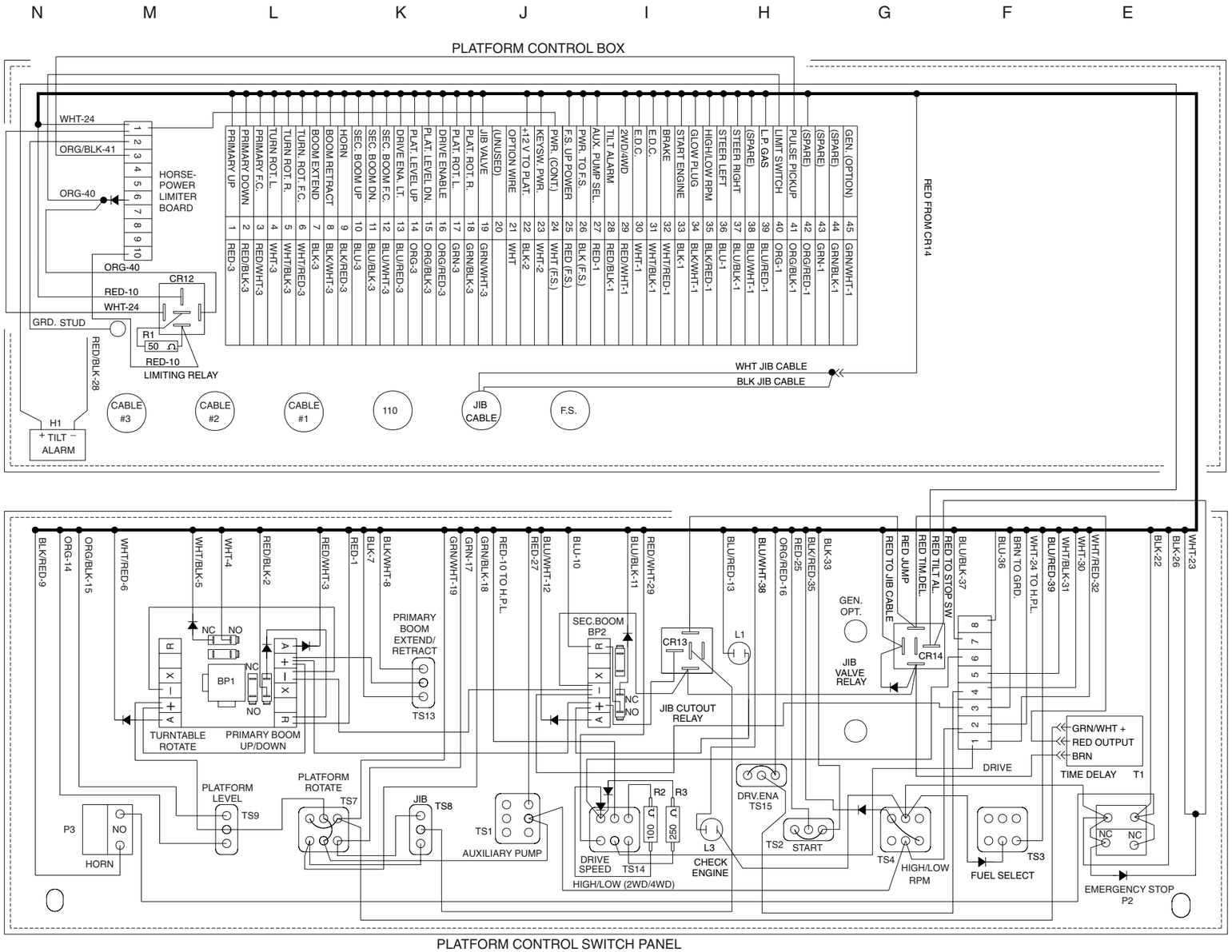
WIRE CONNECTION ABBREVIATION KEY:

EH#1	ENGINE HARNESS #1
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C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

PIN/#:	TO:
RED/GRN	#1 - 25D
PNK/GRN	#6 - 38D
YEL/BLK	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
TAN/BLU	#24 - 35D

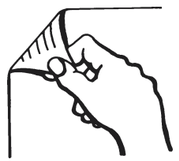
Platform Control Box Wiring Diagram- Z-45/25J Ford Models (from serial number 13099 to 16303)



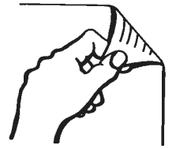
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIBBOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN, TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

PLATFORM CONTROL SWITCH PANEL

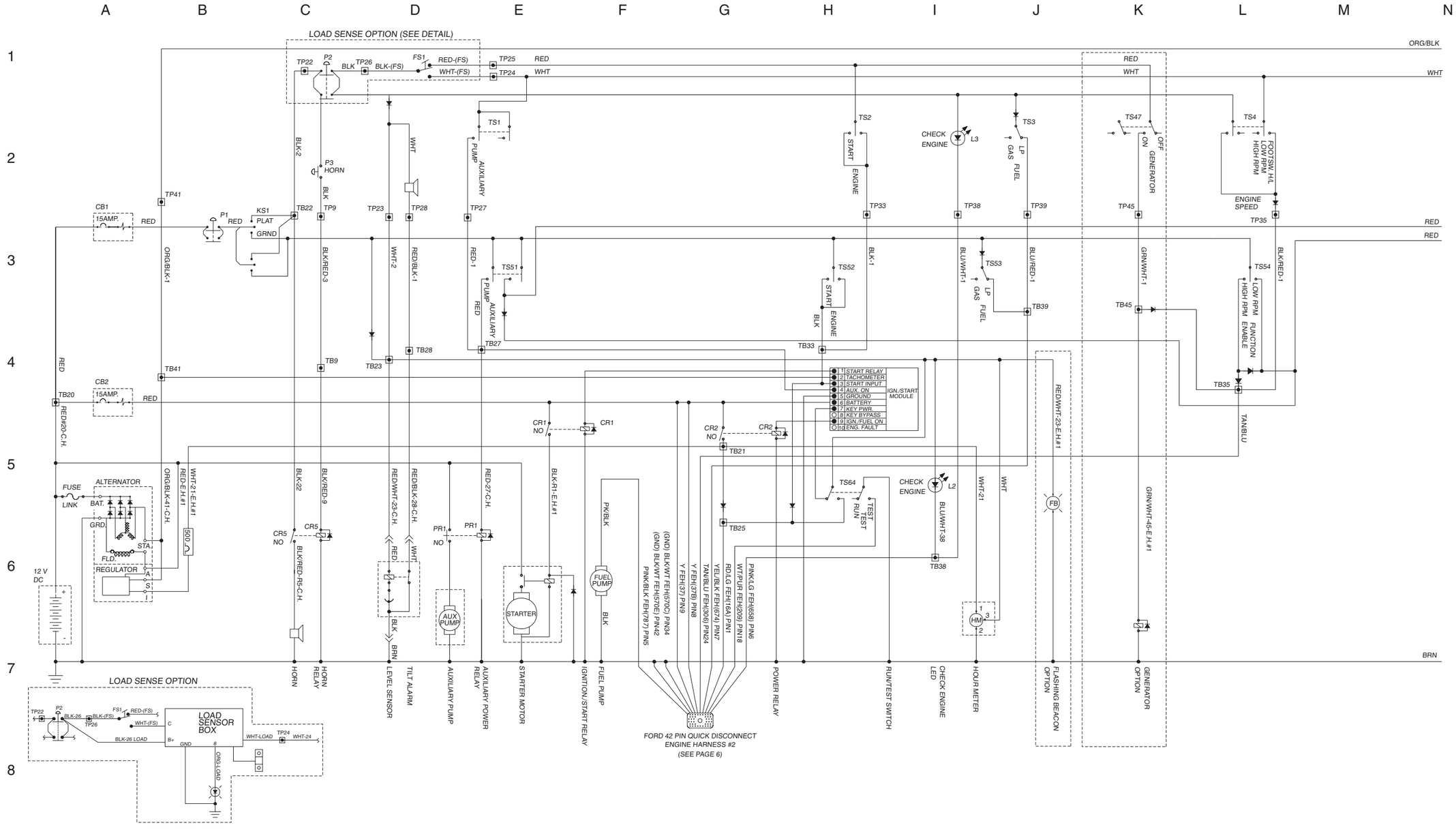
Platform Control Box Wiring Diagram- Z-45/25J Ford Models (from serial number 13099 to 16303)



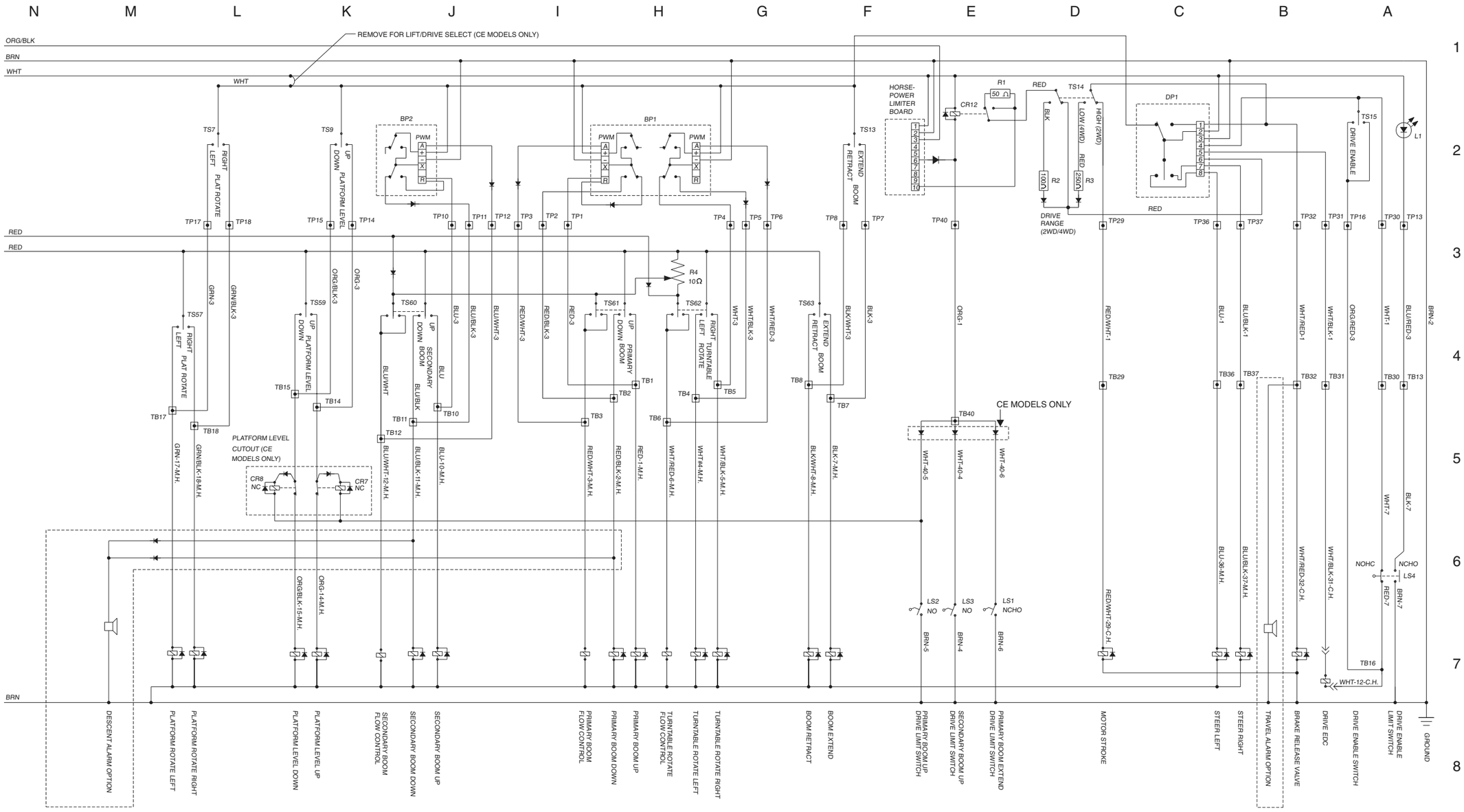




Electrical Schematic, Z-45/25 Ford Models (after serial number 16303)



Electrical Schematic, Z-45/25 Ford Models (after serial number 16303)



Electrical Schematic, Z-45/25 Ford Models (after serial number 16303)



Ground Control Box Wiring Diagram- Z-45/25 Ford Models (after serial number 16303)

Ground Control Box Wiring Diagram- Z-45/25 Ford Models (after serial number 16303)

D	C		B	A
RED-M.H	RED-3	1		RED-S.P.
RED/BLK-M.H	RED/BLK-3	2		RD/BK-S.P.
R/W-M.H	RED/WHT-3	3		RD/WT-S.P.
WHT-M.H	WHT-3	4		WHT-S.P.
WHT/BLK-M.H	WHT/BLK-3	5		WT/BLK-S.P.
W/R-M.H	WHT/RED-3	6		WT/RD-S.P.
BLK-M.H	BLK-3	7		BLK-S.P.
BLK/WHT-M.H	BLK/WHT-3	8		BK/WT-S.P.
BLK/RED-C.H	BLK/RED-3	9		BK/RD-R5
BLU-M.H	BLU-3	10		BLU-S.P.
BLU/BLK-M.H	BLU/BLK-3	11		BU/BK-S.P.
	BLU/WHT-3	12		BLU/WT-S.P.
BLK-ENA.	BLU/RED-3	13		
ORG-M.H.	ORG-3	14		ORG-S.P
OR/BK-M.H	ORG/BLK-3	15		OG/BK-S.P
RED-ENA.	ORG/RED-3	16		WHT#12-C.H.
GRN-M.H	GRN-3	17		GRN-S.P.
GRN/BLK-M.H	GRN/BLK-3	18		GR/BK-S.P.
	GRN/WHT-3	19		GR/WT-S.P.
RED-C.H.	RED-ISM#6	20		RED-S.P.
RED-EXT.#6		21	WHT-E.H.#1	WHT-S.P.
	BLK-2	22		BLK-S.P.
RD/WT-C.H.	WHT-2	23	WHT-TEST SW	WHT-S.P.
		24		
RD/GRN-EH#1		25	BLK-TEST SW	
		26		
RED-C.H.	RED-1	27	RED-ISM#4	RED-S.P.
RD/BK-C.H.	RED/BLK-1	28		
RD/WT-C.H.	R/W-1	29		
WHT-ENA.	WHT-1	30		
WT/BK-C.H.	WHT/BLK-1	31		
WT/RD-C.H.	WHT/RED-1	32		
BLK-ISM#3	BLK-1	33	BLK-S.P.	
	BLK/WHT-1	34		
BR/BLU-EH2	BLK/RED-1	35	BLK/RED-35GEN	
BLU-M.H.	BLU-1	36		
BU/BK-M.H.	BLU/BLK-1	37		
PK/GR-EH#2	BLU/WHT-1	38		BU/WT-S.P.
YEL/BLK-EH2	BLU/RED-1	39		BU/RD-S.P.
	ORG-1	40	WHT-SEC.#4	WHT-EXT.#6
OG/BK-C.H.	ORG/BLK-1	41		OG/BK-ISM#2
	ORG/RED-1	42		
	GRN-1	43		
	GRN/BLK-1	44		
GRN/WHT-C.H	GRN/WHT-1	45	BLK/RED-35GEN	

PRIMARY BOOM UP	
PRIMARY BOOM DOWN	
PRIMARY BOOM FUNTION CONTROL	
TURNTABLE ROTATE LEFT	
TURNTABLE ROTATE RIGHT	
TURNTABLE ROTATE FUNCTION CTRL	
PRIMARY BOOM EXTEND	
PRIMARY BOOM RETRACT	
HORN	
SECONDARY BOOM UP	
SECONDARY BOOM DOWN	
SECONDARY BOOM FUNCTION CTRL	
DRIVE ENABLE LIGHT	
PLATFORM LEVEL UP	
PLATFORM LEVEL DOWN	
DRIVE ENABLE RELAY COIL	
PLATFORM ROTATE LEFT/JIB UP	
PLATFORM ROTATE RIGHT/JIB DOWN	
JIB VALVE	
+12 V POWER	
IGNITION POWER	
+12 V TO PLATFORM	
KEYSWITCH POWER	
(UNUSED)	
ECM KEEP ALIVE POWER	
(SPARE)	
AUXILIARY PUMP SELECT	
TILT ALARM	
2WD/4WD	
E.D.C.	
E.D.C.	
BRAKE	
START ENGINE	
GLOW PLUG	
HIGH/LOW RPM	BK/RD-S.P.
STEER LEFT	
STEER RIGHT	
(SPARE)	
LIQUID PROPANE FUEL	
OFF-LIMIT SPEED	
ALTERNATOR PULSE PICKUP	
(SPARE)	
(SPARE)	
(SPARE)	
GENERATOR OPTION	

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

EH#1	ENGINE HARNESS #1
EH#2	ENGINE HARNESS #2 (FORD EFI HARNESS)
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

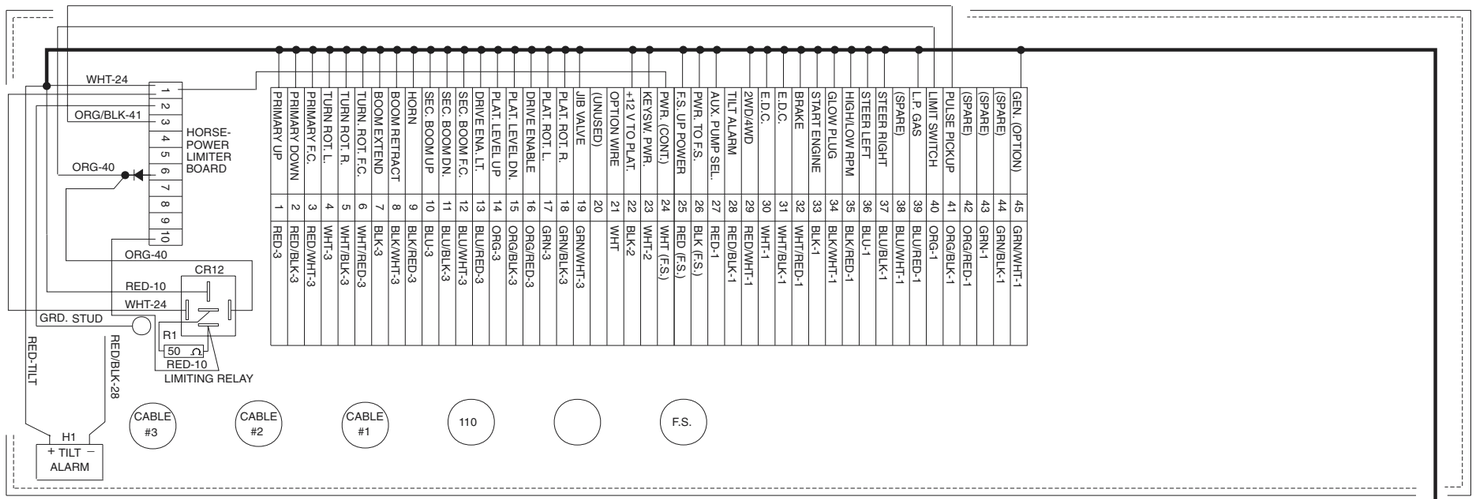
PIN/#:	TO:
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PNK/GRN	#6 - 38D
YEL/BLK	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
TAN/BLU	#24 - 35D

Platform Control Box Wiring Diagram- Z-45/25 Ford Models (after serial number 16303)

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

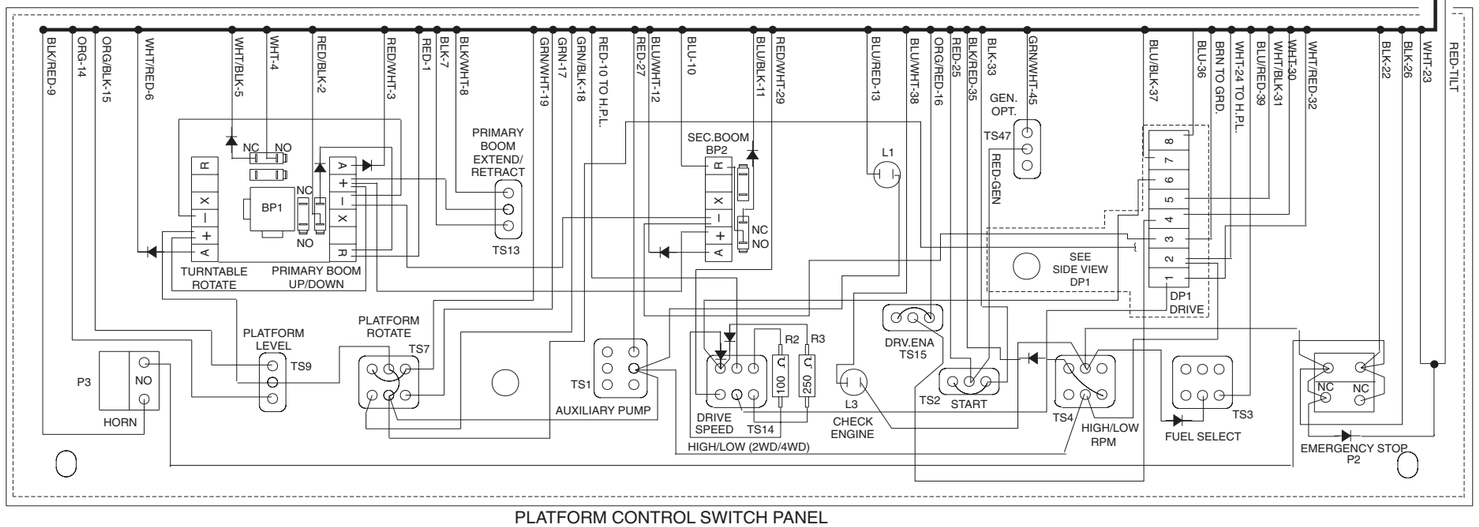
1 2 3 4 5 6 7 8

PLATFORM CONTROL BOX

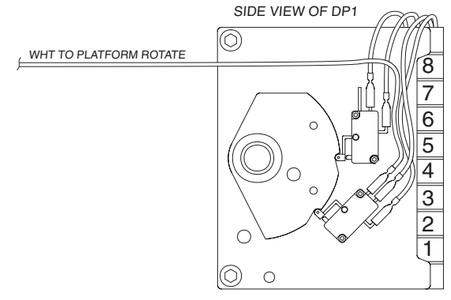


COMPONENT INDEX

P2	*EMERGENCY STOP BUTTON*
P3	*HORN SWITCH*
TS1	*AUXILIARY SWITCH*
TS2	*START ENGINE SWITCH*
TS3	*FUEL SELECT SWITCH*
TS7	*PLATFORM ROTATE SWITCH*
TS9	*PLATFORM LEVEL SWITCH*
TS10	*SECONDARY BOOM UP/DOWN SWITCH*
TS11	*PRIMARY BOOM UP/DOWN SWITCH*
TS12	*TURNTABLE ROTATE SWITCH*
TS13	*PRIMARY BOOM EXTEND/RETRACT SWITCH*
TS47	*GENERATOR SWITCH (OPTION)*
R1	*EFI RESISTOR*
R2	*LOW SPEED RESISTOR*
R3	*LOW SPEED RESISTOR*
L1	*DRIVE ENABLE LED*
L3	*CHECK ENGINE LED*
BP1	*BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN ,TURNTABLE ROTATE*
BP2	*BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN*
CR12	*EFI RELAY*
DP1	*DRIVE PROPORTIONAL JOYSTICK*
H.P.L.	*HORSEPOWER LIMITER BOARD*
H1	*TILT ALARM*



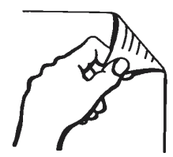
PLATFORM CONTROL SWITCH PANEL



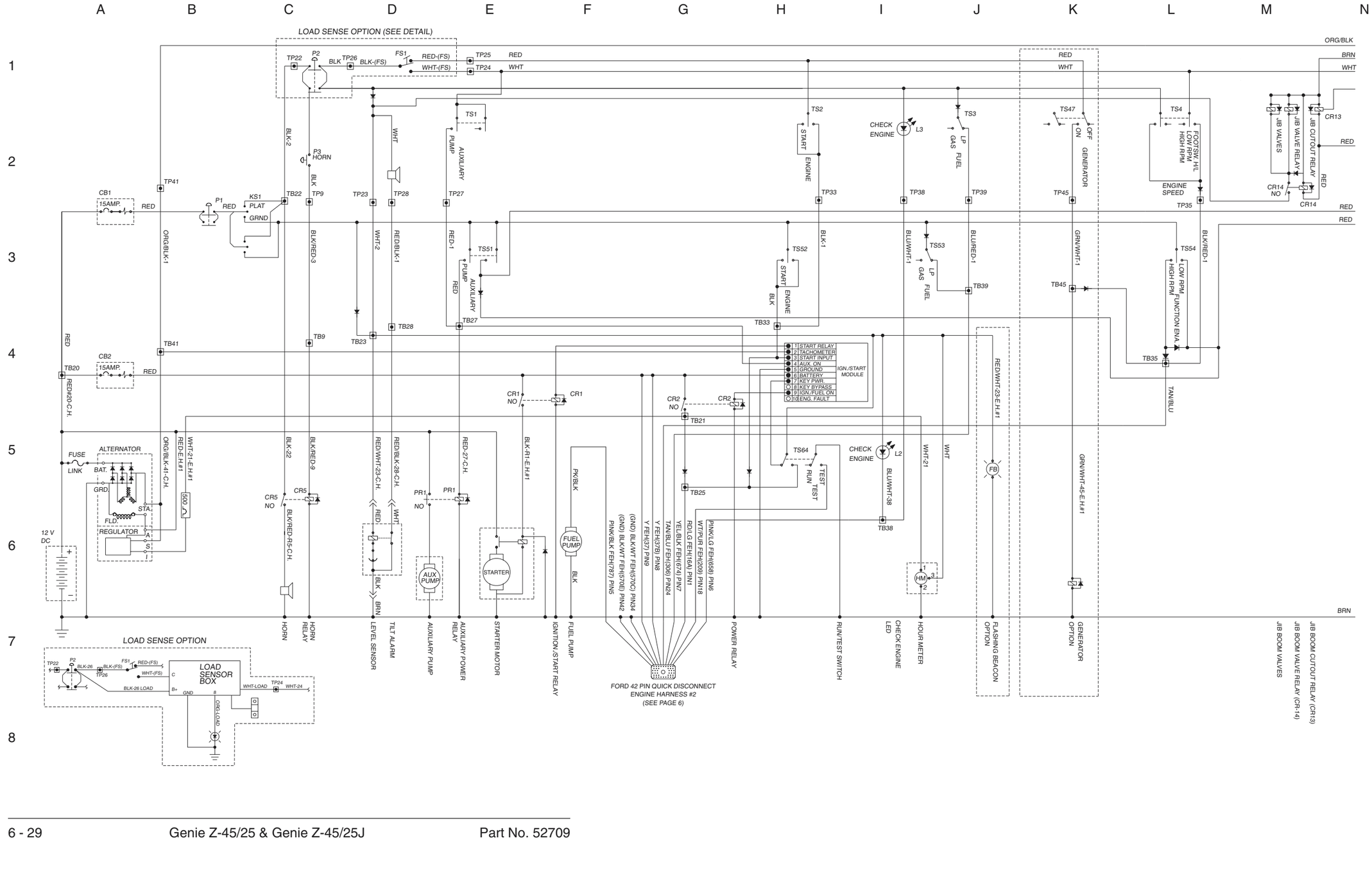
Platform Control Box Wiring Diagram- Z-45/25 Ford Models (after serial number 16303)



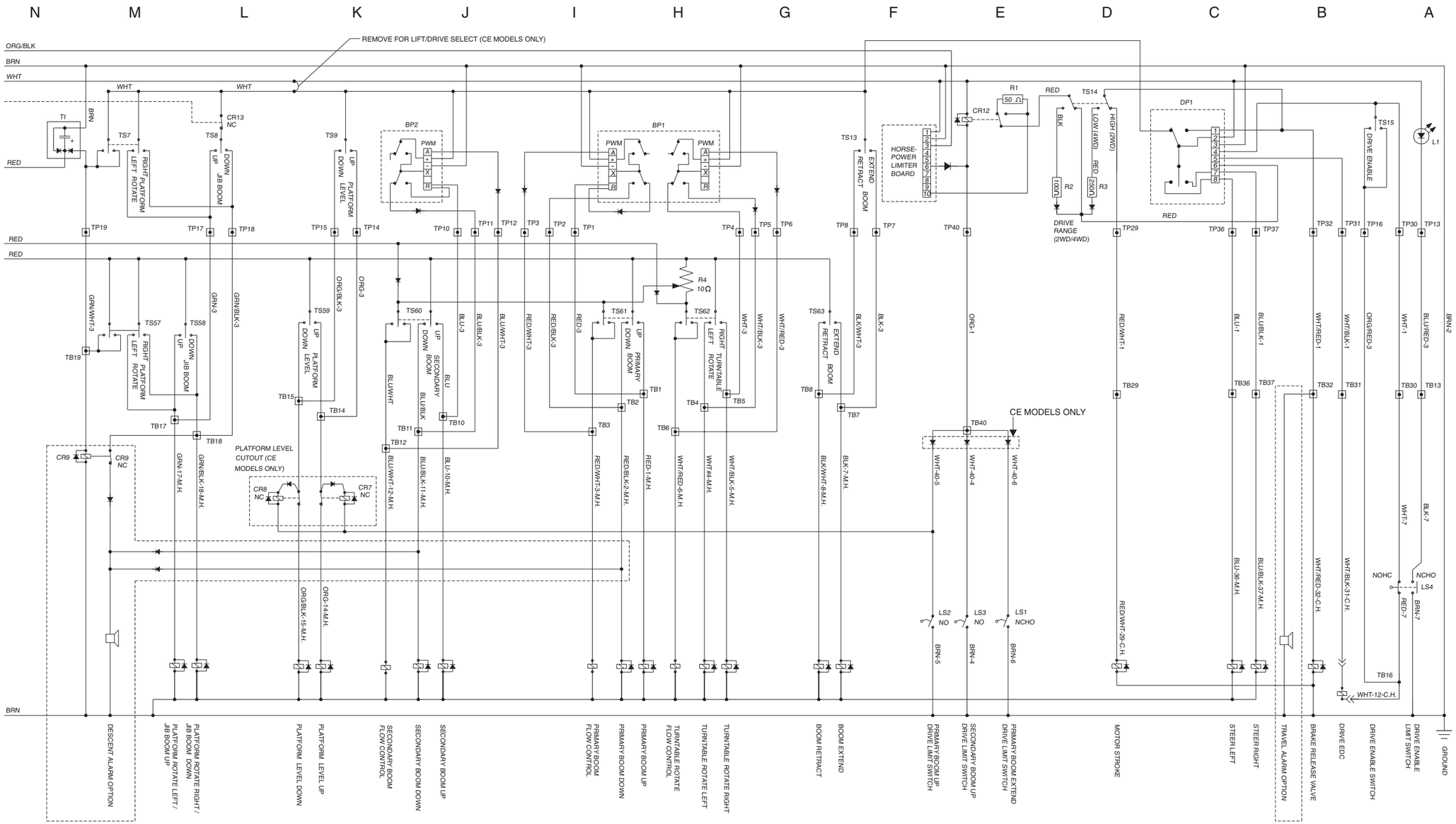




Electrical Schematic, Z-45/25J Ford Models (after serial number 16303)



Electrical Schematic, Z-45/25J Ford Models (after serial number 16303)



Electrical Schematic, Z-45/25J Ford Models (after serial number 16303)



Ground Control Box Wiring Diagram- Z-45/25J Ford Models (after serial number 16303)

Ground Control Box Wiring Diagram- Z-45/25J Ford Models (after serial number 16303)

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS53	FUEL SELECT SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
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TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
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HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	CHECK ENGINE LED
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR4	LPG LOCKOUT RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

RED-M.H	RED-3	1		RED-S.P.
RED/BLK-M.H	RED/BLK-3	2		RD/BK-S.P.
R/W-M.H	RED/WHT-3	3		RD/WT-S.P.
WHT-M.H	WHT-3	4		WHT-S.P.
WHT/BLK-M.H	WHT/BLK-3	5		WT/BLK-S.P.
W/R-M.H	WHT/RED-3	6		WT/RD-S.P.
BLK-M.H	BLK-3	7		BLK-S.P.
BLK/WHT-M.H	BLK/WHT-3	8		BK/WT-S.P.
BLK/RED-C.H	BLK/RED-3	9		BK/RD-R5
BLU-M.H	BLU-3	10		BLU-S.P.
BLU/BLK-M.H	BLU/BLK-3	11		BU/BK-S.P.
	BLU/WHT-3	12		BU/WT-S.P.
BLK-ENA.	BLU/RED-3	13		
ORG-M.H.	ORG-3	14		ORG-S.P
OR/BK-M.H	ORG/BLK-3	15		OG/BK-S.P
RED-ENA.	ORG/RED-3	16		WHT#12-C.H.
GRN-M.H	GRN-3	17		GRN-S.P.
GRN/BLK-M.H	GRN/BLK-3	18		GR/BK-S.P.
	GRN/WHT-3	19		GR/WT-S.P.
RED-C.H.	RED-ISM#6	20		RED-S.P.
RED-EXT.#6		21	WHT-E.H.#1	WHT-S.P.
	BLK-2	22		BLK-S.P.
RD/WT-C.H.	WHT-2	23	WHT-TEST SW	WHT-S.P.
		24		
RD/GRN-EH#1		25	BLK-TEST SW	
		26		
RED-C.H.	RED-1	27	RED-ISM#4	RED-S.P.
RD/BK-C.H.	RED/BLK-1	28		
RD/WT-C.H.	R/W-1	29		
WHT-ENA.	WHT-1	30		
WT/BK-C.H..	WHT/BLK-1	31		
WT/RD-C.H.	WHT/RED-1	32		
BLK-ISM#3	BLK-1	33	BLK-S.P.	
	BLK/WHT-1	34		
BR/BLU-EH2	BLK/RED-1	35	BLK/RED-35GEN	
BLU-M.H.	BLU-1	36		
BU/BK-M.H.	BLU/BLK-1	37		
PK/GR-EH#2	BLU/WHT-1	38		BU/WT-S.P.
YEL/BLK-EH2	BLU/RED-1	39		BU/RD-S.P.
	ORG-1	40	WHT-SEC.#4	WHT-EXT.#6
OG/BK-C.H.	ORG/BLK-1	41		OG/BK-ISM#2
	ORG/RED-1	42		
	GRN-1	43		
	GRN/BLK-1	44		
GRN/WHT-C.H	GRN/WHT-1	45	BLK/RED-35GEN	

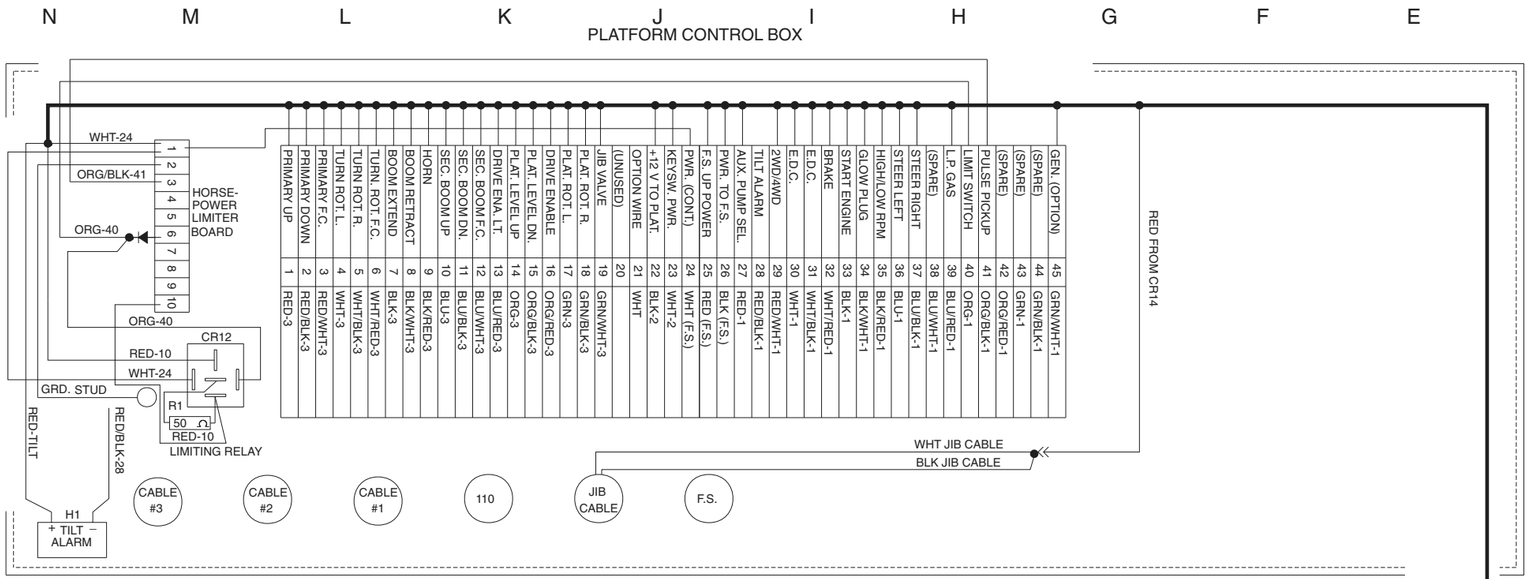
WIRE CONNECTION ABBREVIATION KEY:

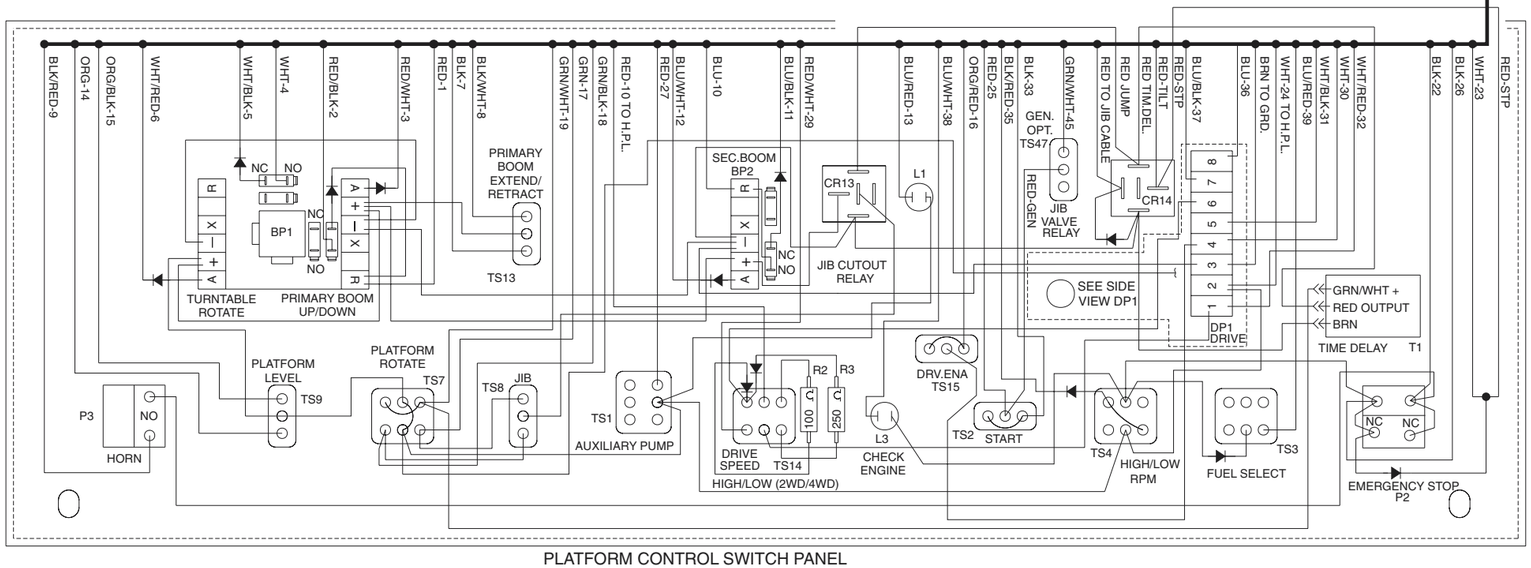
EH#1	ENGINE HARNESS #1
EH#2	ENGINE HARNESS #2 (FORD EFI HARNESS)
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

ENGINE HARNESS # 2, FORD EFI, 42 PIN INTERCHANGE

PIN/#:	TO:
RED/GRN	#1 - 25D
PNK/GRN	#6 - 38D
YEL/BLK	#7 - 39D
YEL (18GA)	#8 - CB2
YEL (12GA)	#9 - CB2
WHT/PRP	#18 - TST SW
TAN/BLU	#24 - 35D

Platform Control Box Wiring Diagram- Z-45/25J Ford Models (after serial number 16303)



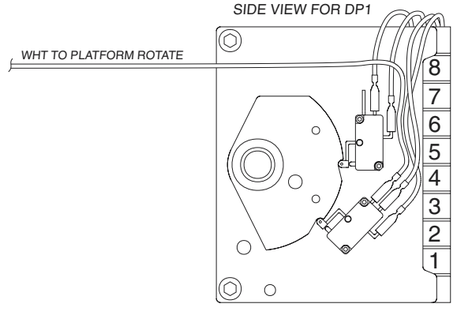


PLATFORM CONTROL SWITCH PANEL

COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS47	GENERATOR SWITCH (OPTION)
R1	EFI RESISTOR
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN ,TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

SIDE VIEW FOR DP1

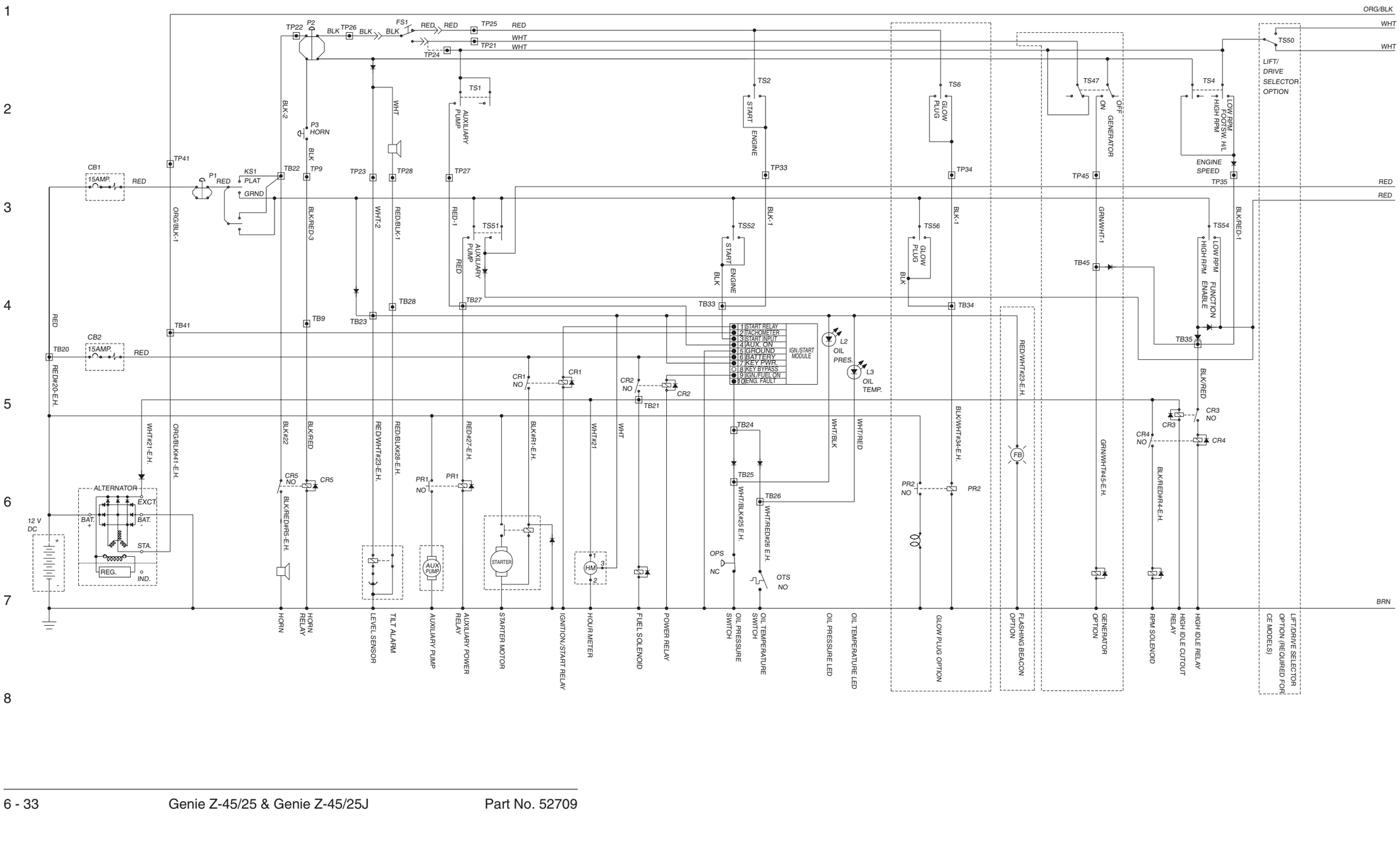


Platform Control Box Wiring Diagram- Z-45/25J Ford Models (after serial number

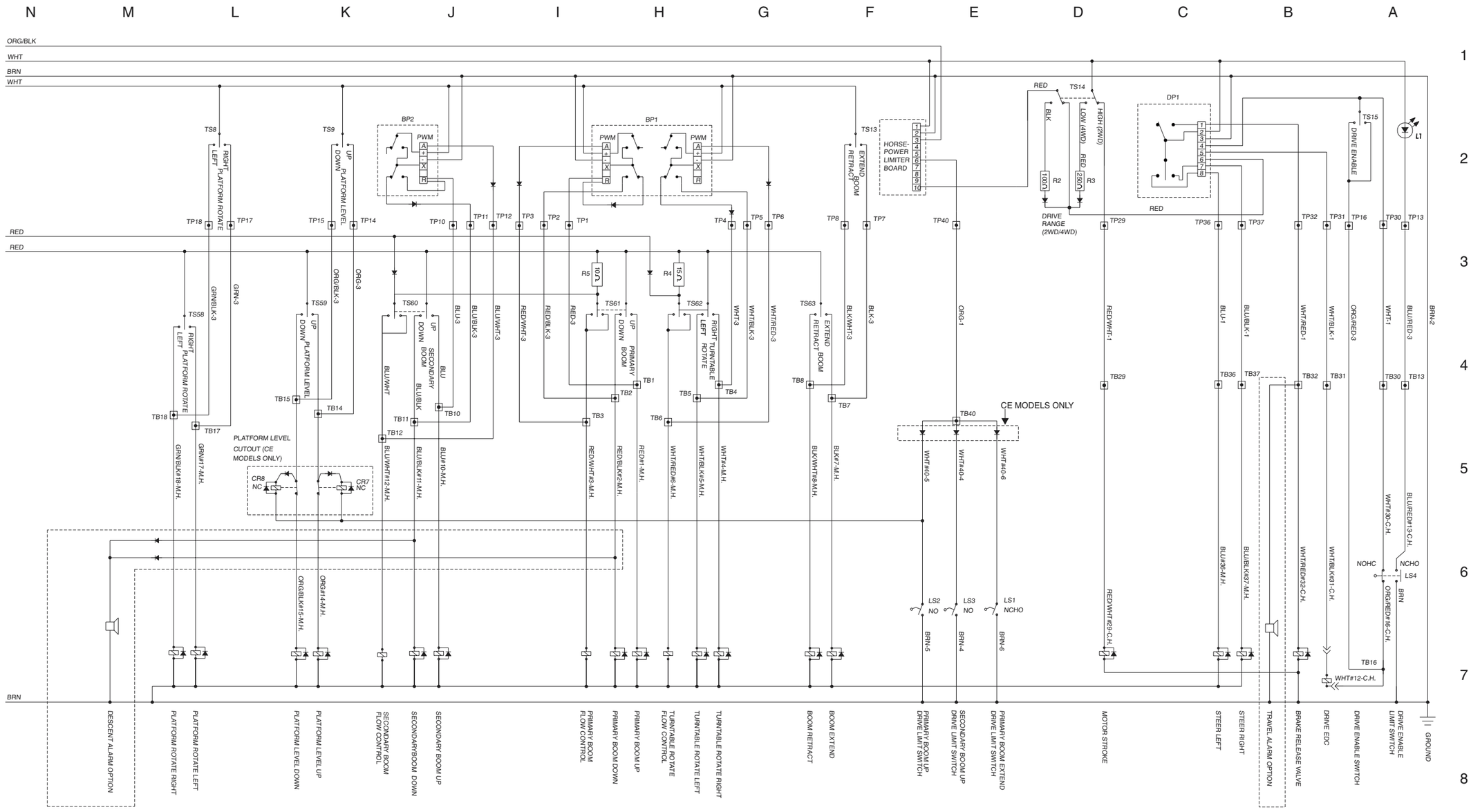




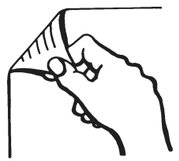
Electrical Schematic, Z-45/25 Deutz Models (before serial number 13099)



Electrical Schematic, Z-45/25 Deutz Models (before serial number 13099)

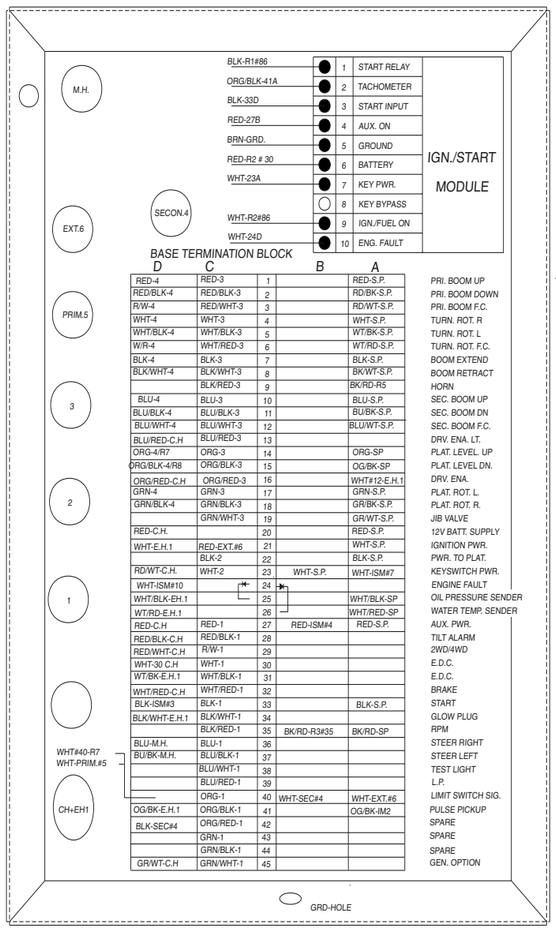


Electrical Schematic, Z-45/25 Deutz Models (before serial number 13099)



Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (before serial number 13099)

Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (before serial number 13099)



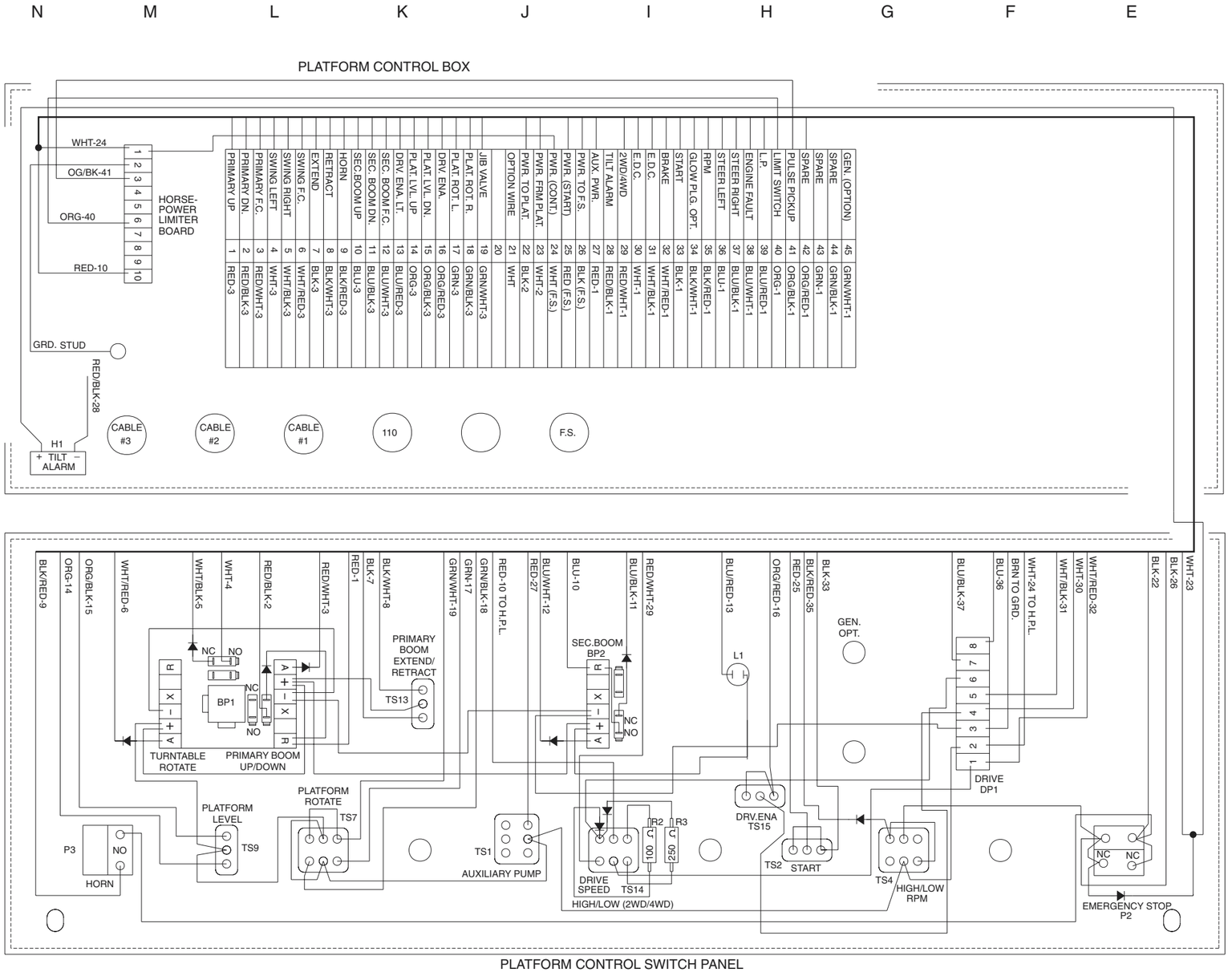
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	TURNTABLE ROTATE SPEED LIMITING RESISTOR, 15 OHMS
R5	BOOM PRIMARY AND SECONDARY SPEED LIMITING RESISTOR, 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

BLK/RED-EH → BLK/RED-R4
BLK/RED-EH → BLK/RED-R5
BLK-E.H → BLK-R1
ORG-M.H → ORG-R7
ORG/BLK-M.H → ORG/BLK-R8

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (before serial number 13099)

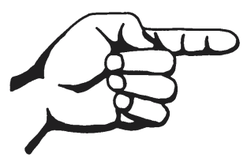


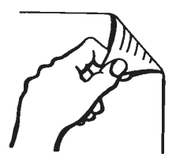
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN, TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

PLATFORM CONTROL SWITCH PANEL

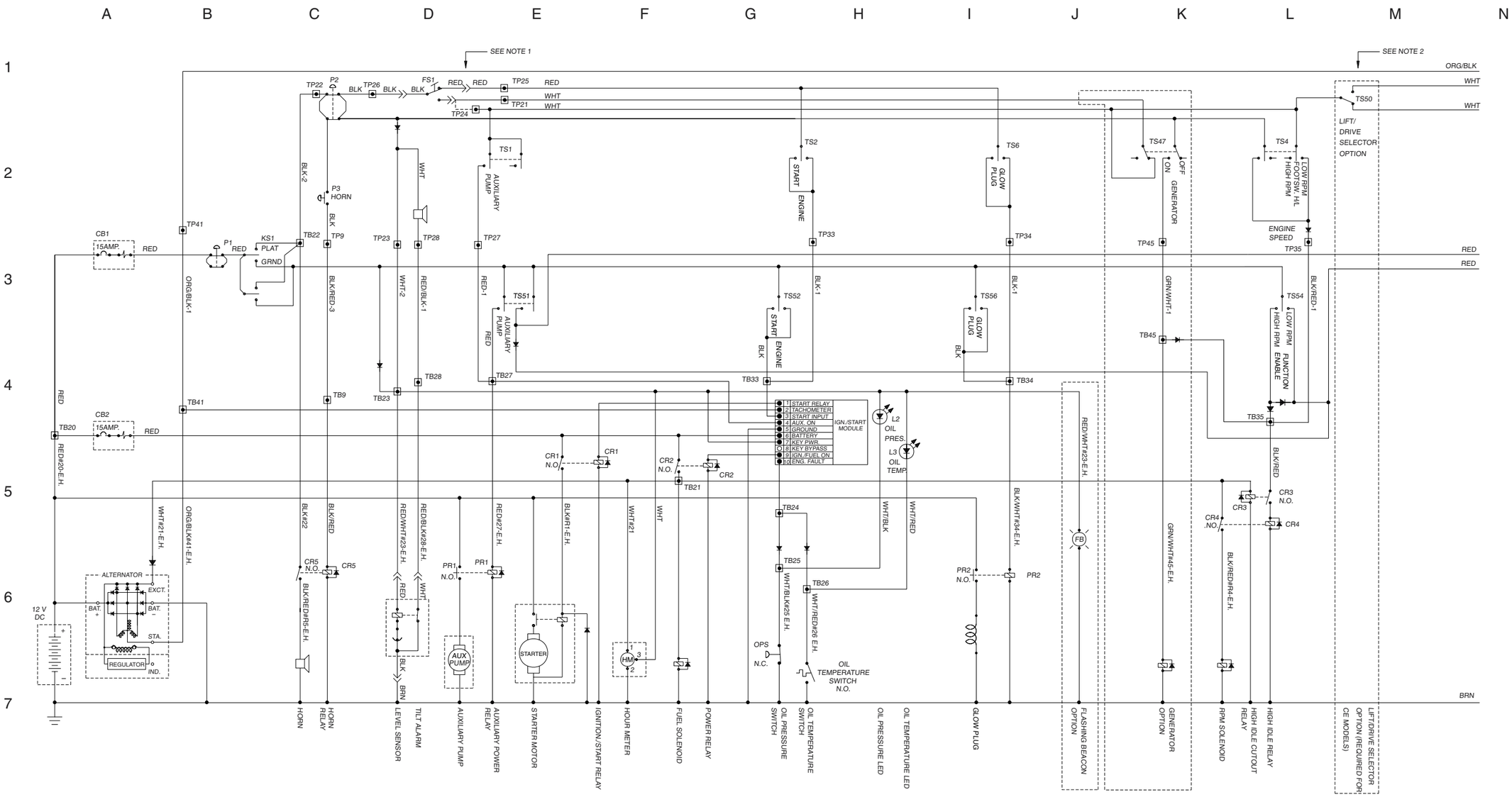
Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (before serial number 13099)







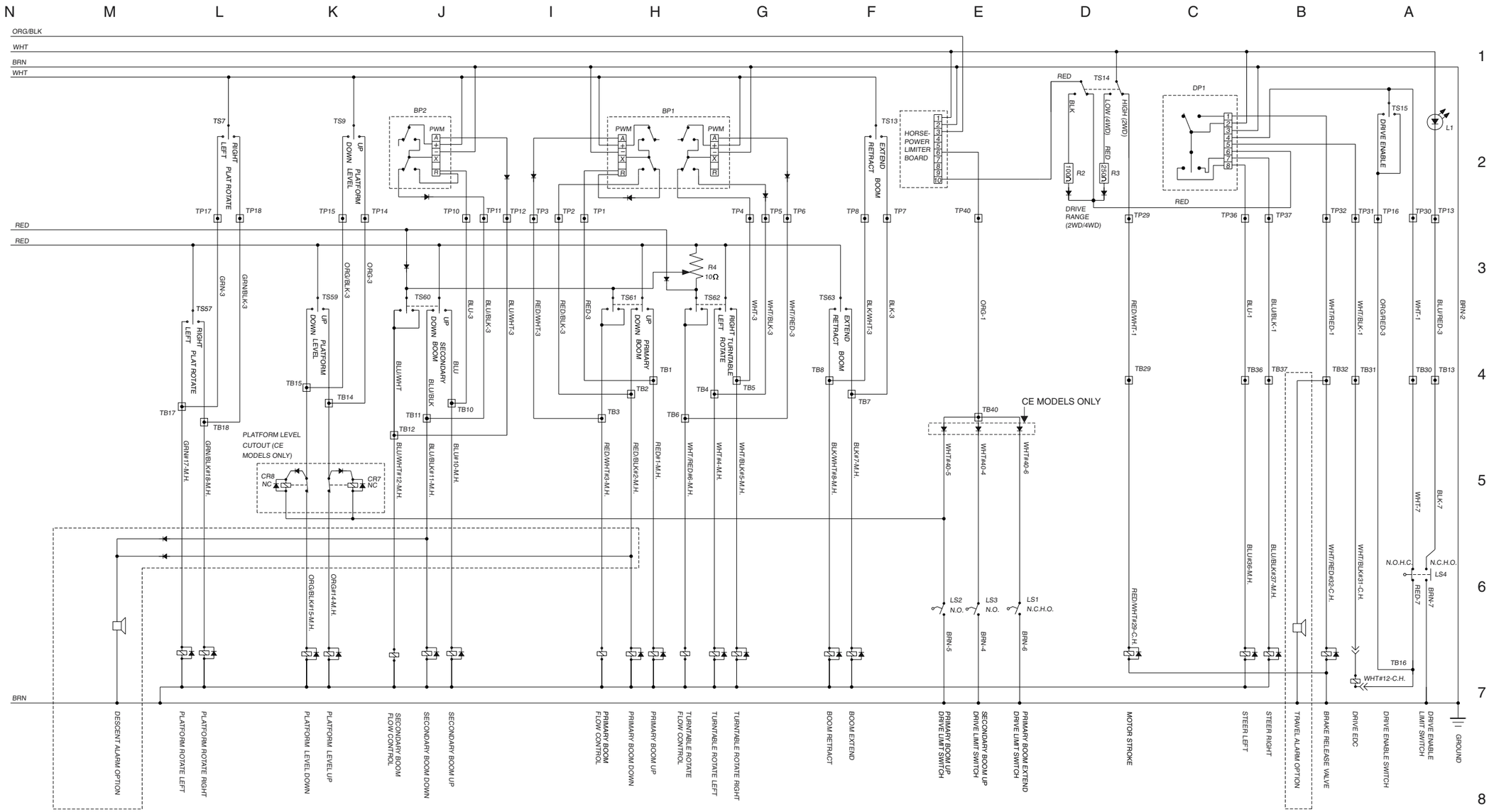
Electrical Schematic, Z-45/25 Deutz Models (from serial number 13099 to 16303)



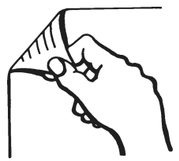
NOTE:

1) The connection to TP24 is for units without the generator option.
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off.

Electrical Schematic, Z-45/25 Deutz Models (from serial number 13099 to 16303)

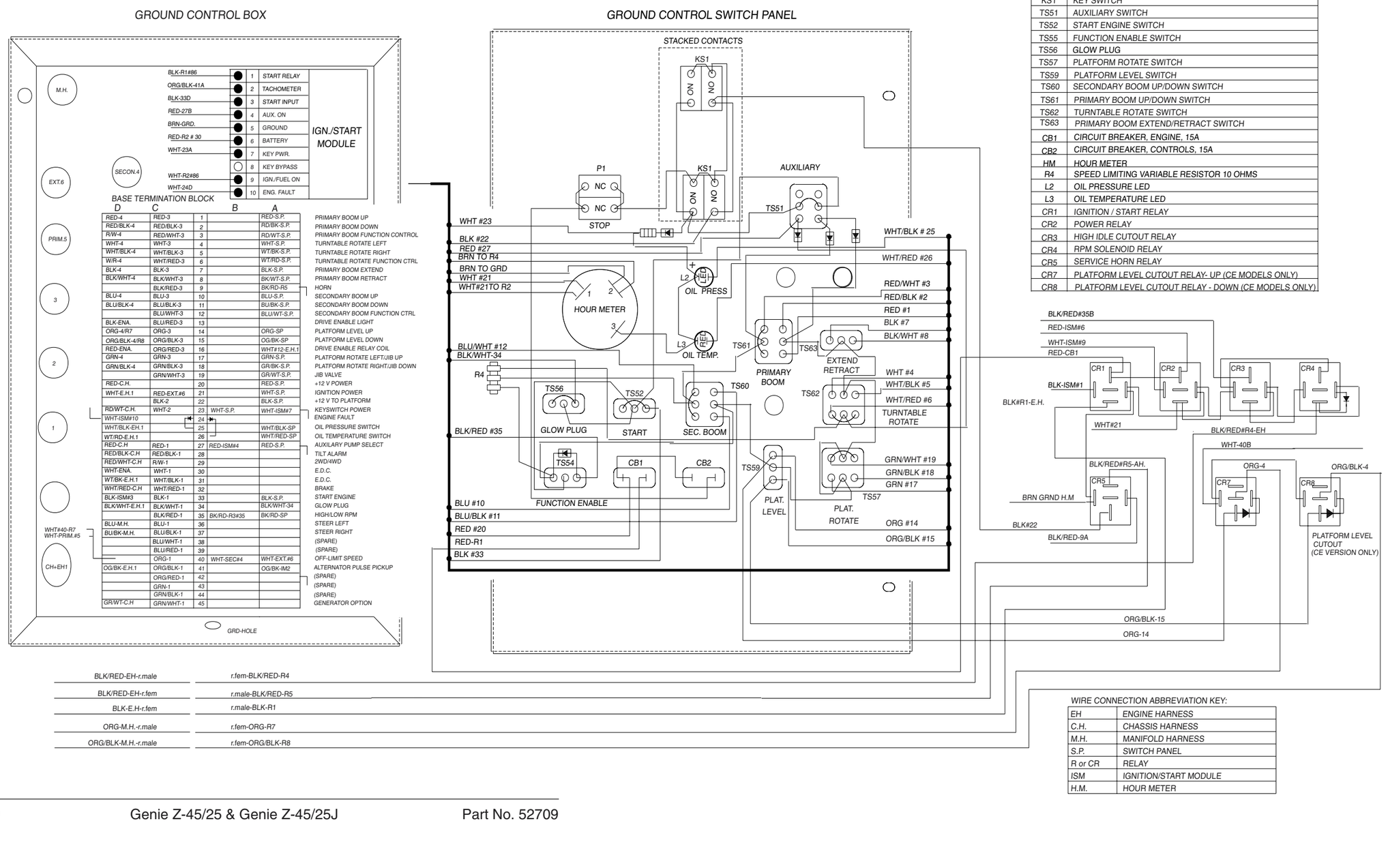


Electrical Schematic, Z-45/25 Deutz Models (from serial number 13099 to 16303)



Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (from serial number 13099 to 16303)

Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (from serial number 13099 to 16303)



RED-4	RED-3	1		RED-S.P.		PRIMARY BOOM UP
RED/BLK-4	RED/BLK-3	2		RD/BK-S.P.		PRIMARY BOOM DOWN
R/W-4	RED/WHT-3	3		RD/WT-S.P.		PRIMARY BOOM FUNCTION CONTROL
WHT-4	WHT-3	4		WHT-S.P.		TURNTABLE ROTATE LEFT
WHT/BLK-4	WHT/BLK-3	5		WT/BK-S.P.		TURNTABLE ROTATE RIGHT
W/R-4	WHT/RED-3	6		WT/RD-S.P.		TURNTABLE ROTATE FUNCTION CTRL
BLK-4	BLK-3	7		BLK-S.P.		PRIMARY BOOM EXTEND
BLK/WHT-4	BLK/WHT-3	8		BK/WT-S.P.		PRIMARY BOOM RETRACT
	BLK/RED-3	9		BK/RD-R5		HORN
BLU-4	BLU-3	10		BLU-S.P.		SECONDARY BOOM UP
BLU/BLK-4	BLU/BLK-3	11		BU/BK-S.P.		SECONDARY BOOM DOWN
	BLU/WHT-3	12		BLU/WT-S.P.		SECONDARY BOOM FUNCTION CTRL
BLK-ENA.	BLU/RED-3	13				DRIVE ENABLE LIGHT
ORG-4/R7	ORG-3	14		ORG-SP		PLATFORM LEVEL UP
ORG/BLK-4/R8	ORG/BLK-3	15		OG/BK-SP		PLATFORM LEVEL DOWN
RED-ENA.	ORG/RED-3	16		WHT#12-E.H.1		DRIVE ENABLE RELAY COIL
GRN-4	GRN-3	17		GRN-S.P.		PLATFORM ROTATE LEFT/JIB UP
GRN/BLK-4	GRN/BLK-3	18		GR/BK-S.P.		PLATFORM ROTATE RIGHT/JIB DOWN
	GRN/WHT-3	19		GR/WT-S.P.		JIB VALVE
RED-C.H.		20		RED-S.P.		+12 V POWER
WHT-E.H.1	RED-EXT.#6	21		WHT-S.P.		IGNITION POWER
	BLK-2	22		BLK-S.P.		+12 V TO PLATFORM
RD/WT-C.H.	WHT-2	23	WHT-S.P.	WHT-ISM#7		KEYSWITCH POWER
WHT-ISM#10		24				ENGINE FAULT
WHT/BLK-EH.1		25		WHT/BLK-SP		OIL PRESSURE SWITCH
WT/RD-E.H.1		26		WHT/RED-SP		OIL TEMPERATURE SWITCH
RED-C.H	RED-1	27	RED-ISM#4	RED-S.P.		AUXILARY PUMP SELECT
RED/BLK-C.H	RED/BLK-1	28				TILT ALARM
RED/WHT-C.H	R/W-1	29				2WD/4WD
WHT-ENA.	WHT-1	30				E.D.C.
WT/BK-E.H.1	WHT/BLK-1	31				E.D.C.
WHT/RED-C.H	WHT/RED-1	32				BRAKE
BLK-ISM#3	BLK-1	33		BLK-S.P.		START ENGINE
BLK/WHT-E.H.1	BLK/WHT-1	34		BLK/WHT-34		GLOW PLUG
	BLK/RED-1	35	BK/RD-R3#35	BK/RD-SP		HIGH/LOW RPM
BLU-M.H.	BLU-1	36				STEER LEFT
BU/BK-M.H.	BLU/BLK-1	37				STEER RIGHT
	BLU/WHT-1	38				(SPARE)
	BLU/RED-1	39				(SPARE)
	ORG-1	40	WHT-SEC#4	WHT-EXT.#6		OFF-LIMIT SPEED
OG/BK-E.H.1	ORG/BLK-1	41		OG/BK-IM2		ALTERNATOR PULSE PICKUP
	ORG/RED-1	42				(SPARE)
	GRN-1	43				(SPARE)
	GRN/BLK-1	44				(SPARE)
GR/WT-C.H	GRN/WHT-1	45				GENERATOR OPTION

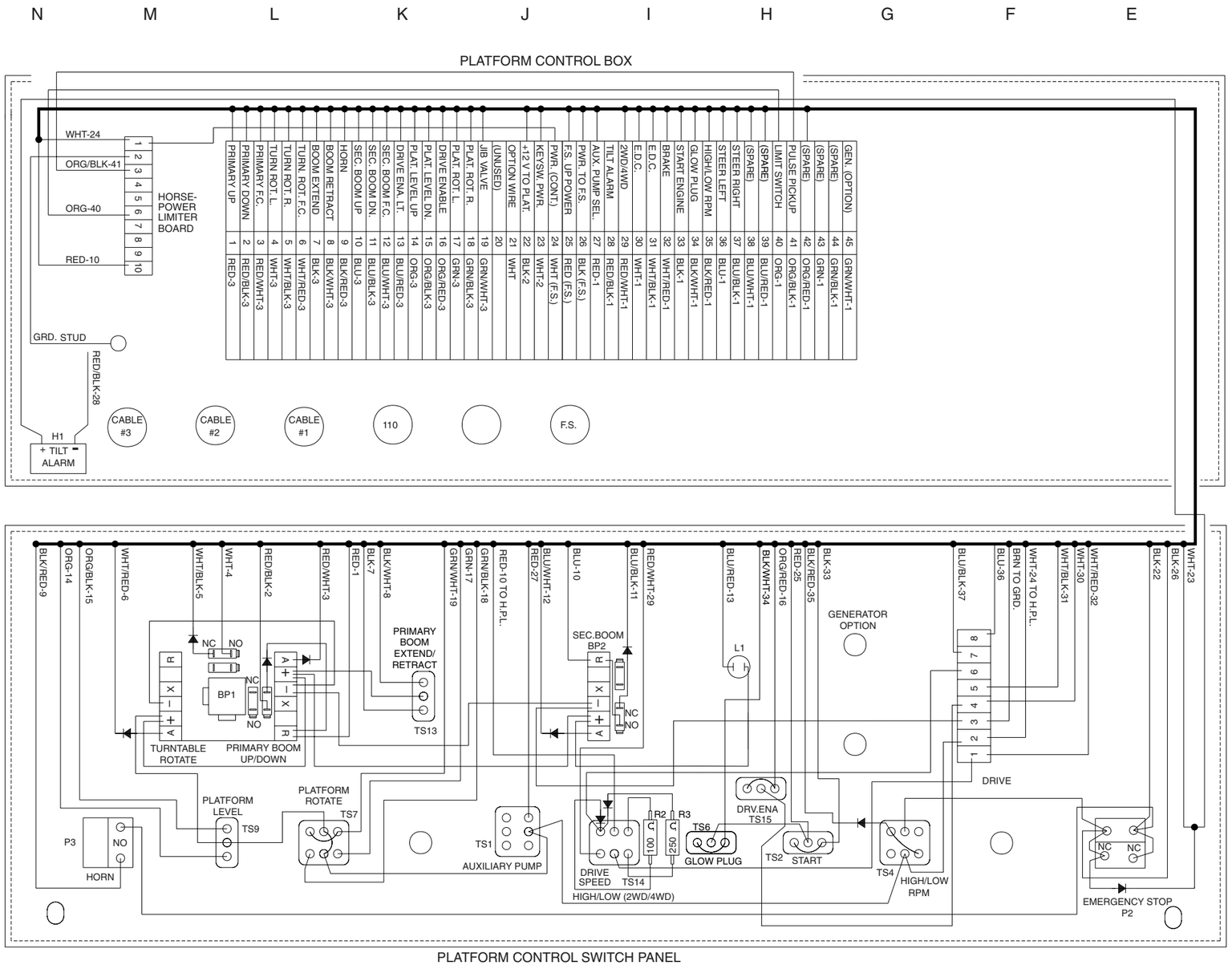
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS55	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	SERVICE HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

BLK/RED-EH-r.male	r.fem-BLK/RED-R4
BLK/RED-EH-r.fem	r.male-BLK/RED-R5
BLK-E.H-r.fem	r.male-BLK-R1
ORG-M.H.-r.male	r.fem-ORG-R7
ORG/BLK-M.H.-r.male	r.fem-ORG/BLK-R8

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

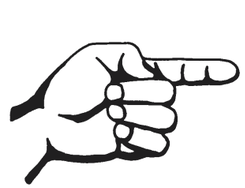
Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (from serial number 13099 to 16303)

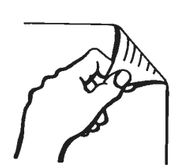


PLATFORM CONTROL SWITCH PANEL

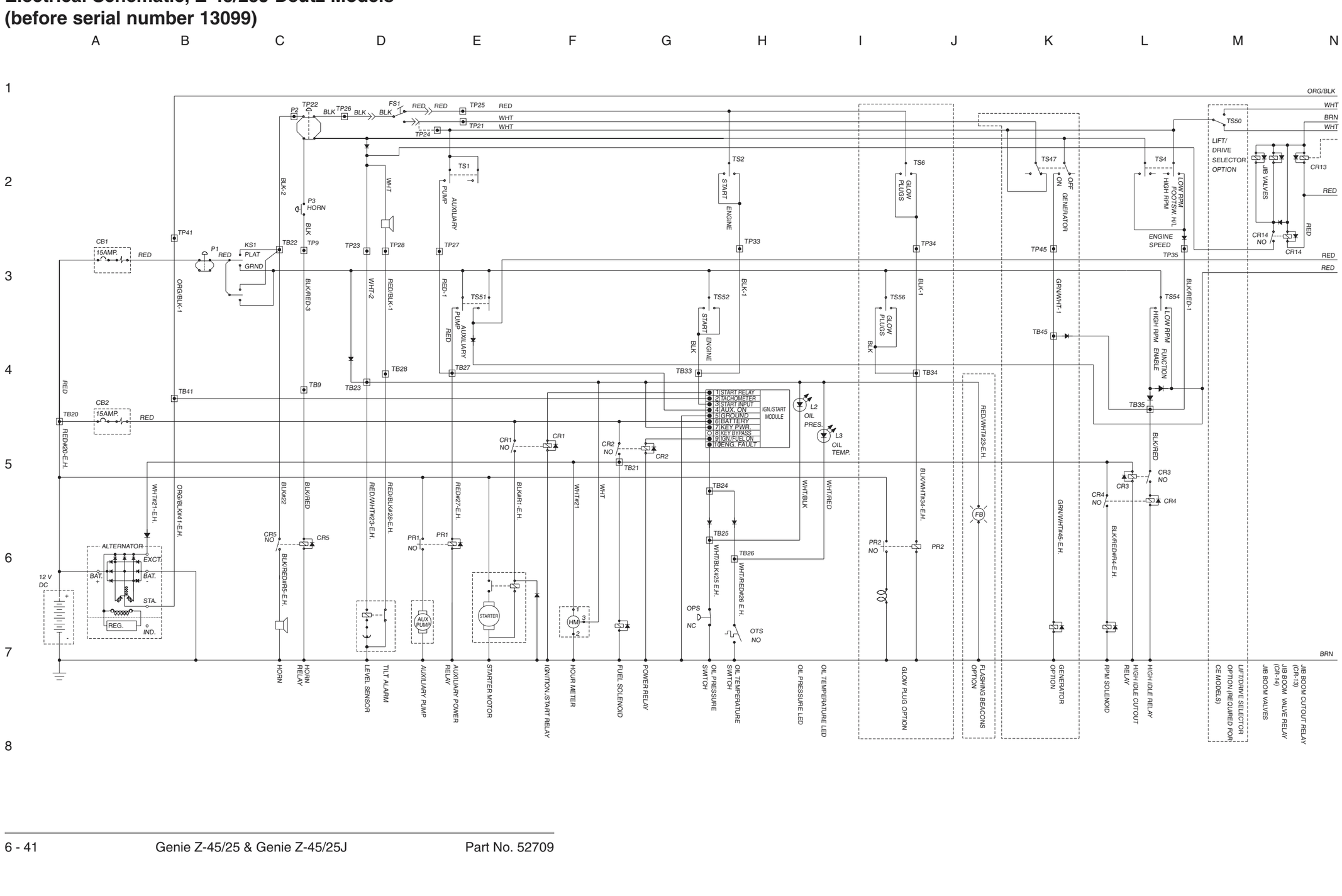
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN, TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
H.P.L.	HORSEPOWER LIMITER BOARD
H1	TILT ALARM

Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (from serial number 13099 to 16303)

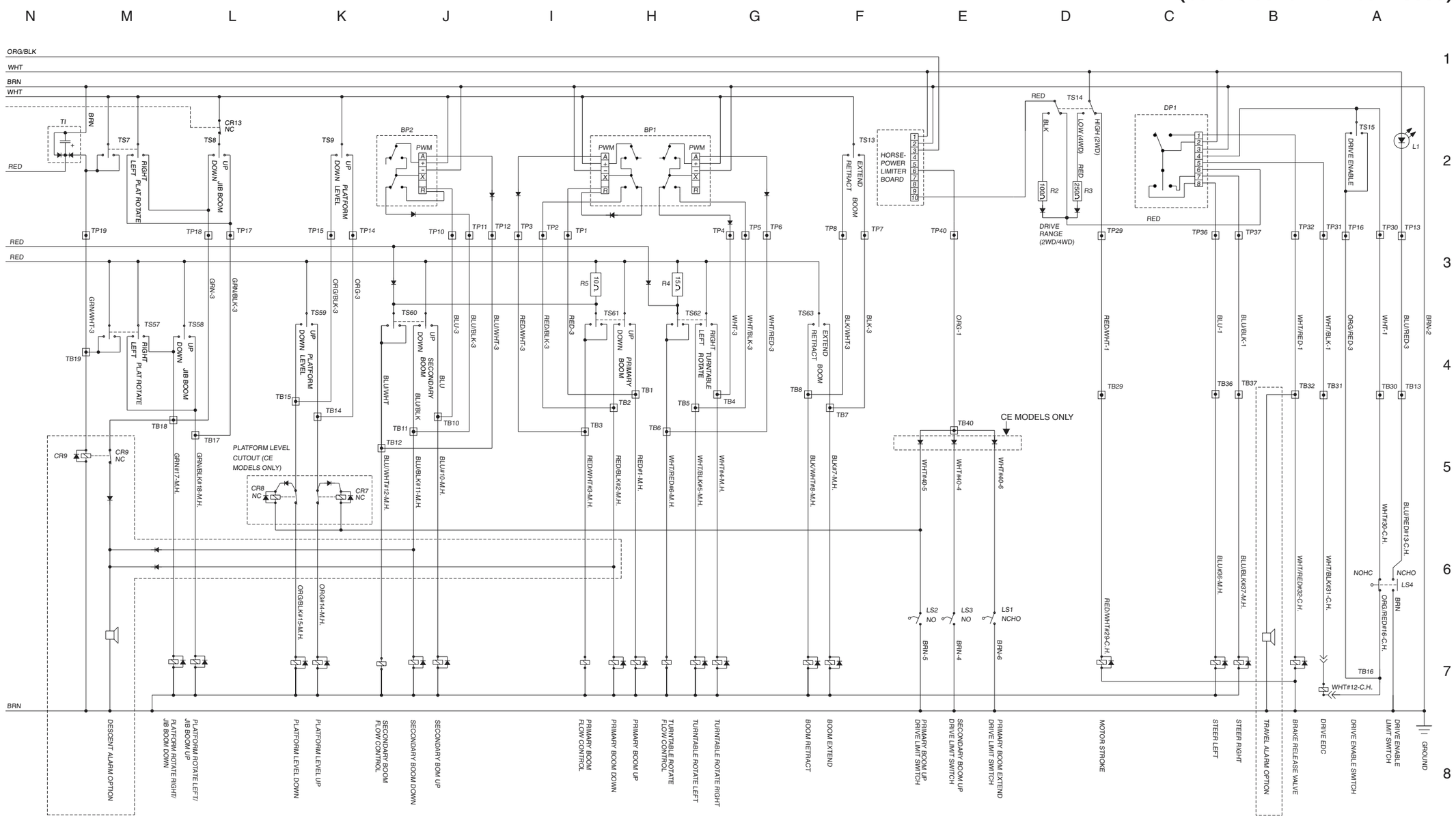




Electrical Schematic, Z-45/25J Deutz Models (before serial number 13099)



Electrical Schematic, Z-45/25J Deutz Models (before serial number 13099)

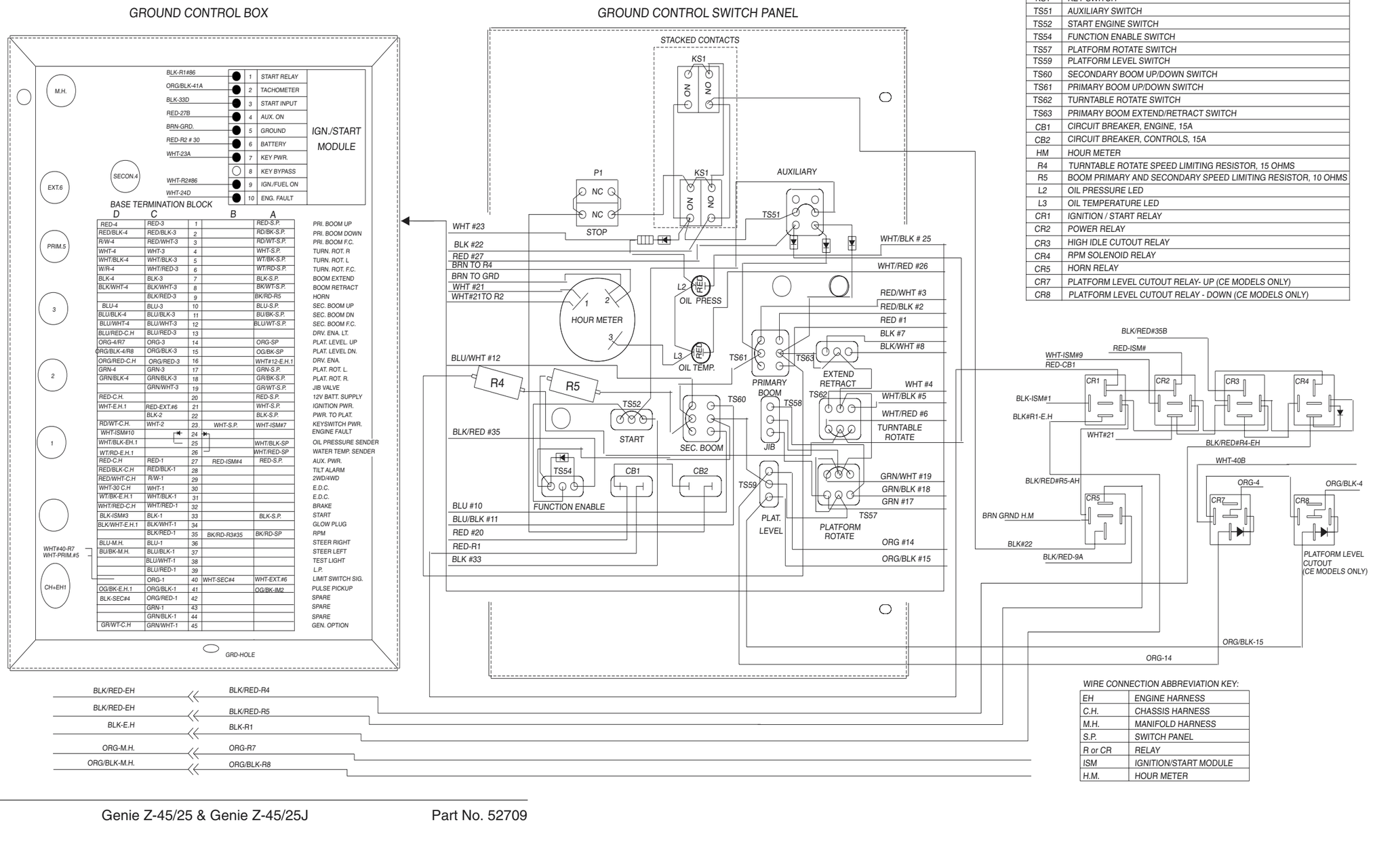


Electrical Schematic, Z-45/25J Deutz Models (before serial number 13099)



Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (before serial number 13099)

Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (before serial number 13099)



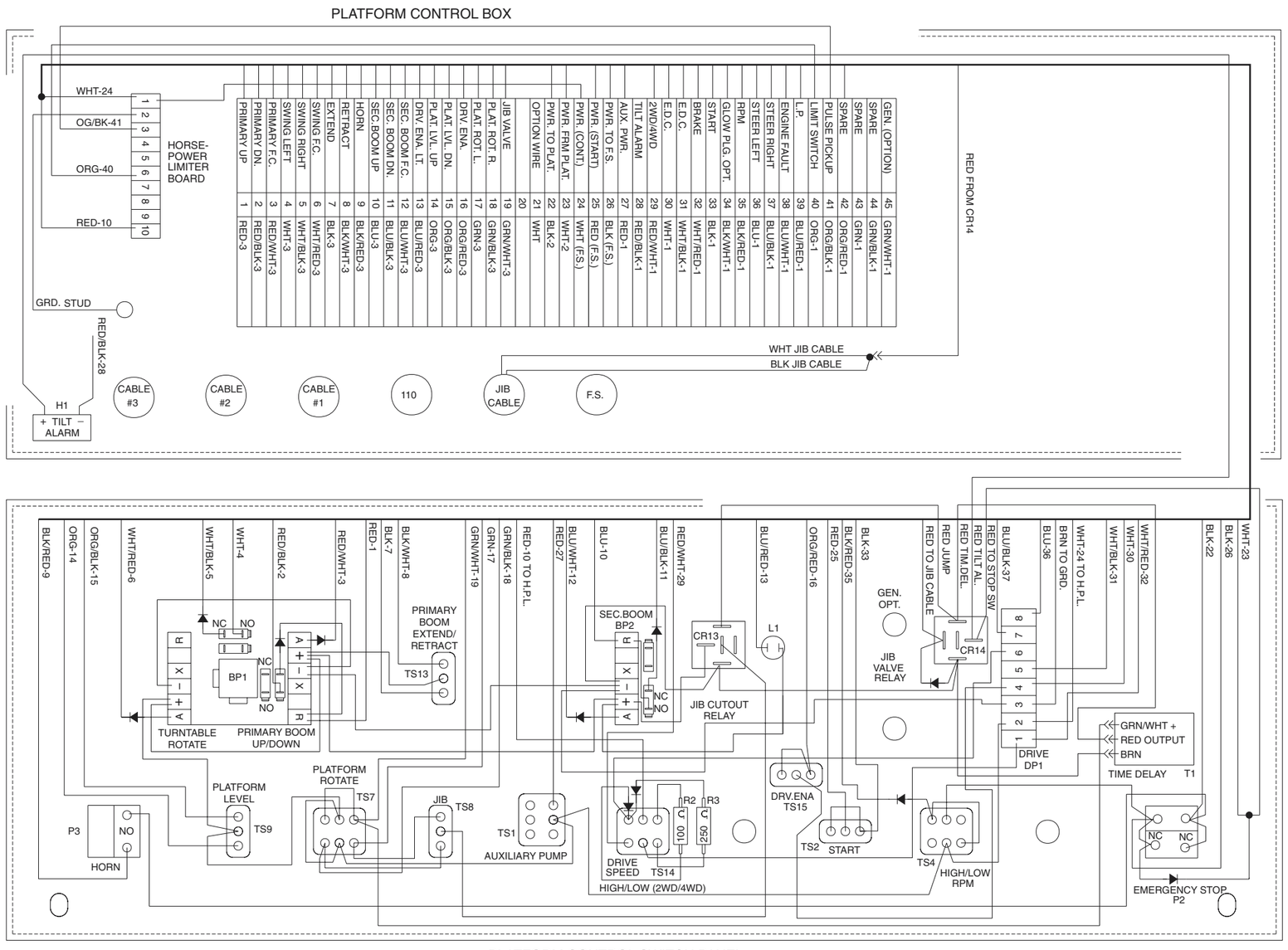
D	C		B	A	
RED-4	RED-3	1		RED-S.P.	PRI. BOOM UP
RED/BLK-4	RED/BLK-3	2		RD/BK-S.P.	PRI. BOOM DOWN
R/W-4	RED/WHT-3	3		RD/WT-S.P.	PRI. BOOM F.C.
WHT-4	WHT-3	4		WHT-S.P.	TURN. ROT. R
WHT/BLK-4	WHT/BLK-3	5		WT/BK-S.P.	TURN. ROT. L
W/R-4	WHT/RED-3	6		WT/RD-S.P.	TURN. ROT. F.C.
BLK-4	BLK-3	7		BLK-S.P.	BOOM EXTEND
BLK/WHT-4	BLK/WHT-3	8		BK/WT-S.P.	BOOM RETRACT
	BLK/RED-3	9		BK/RD-R5	HORN
BLU-4	BLU-3	10		BLU-S.P.	SEC. BOOM UP
BLU/BLK-4	BLU/BLK-3	11		BU/BK-S.P.	SEC. BOOM DN
BLU/WHT-4	BLU/WHT-3	12		BLU/WT-S.P.	SEC. BOOM F.C.
BLU/RED-C.H	BLU/RED-3	13			DRV. ENA. LT.
ORG-4/R7	ORG-3	14		ORG-SP	PLAT. LEVEL. UP
ORG/BLK-4/R8	ORG/BLK-3	15		OG/BK-SP	PLAT. LEVEL DN.
ORG/RED-C.H	ORG/RED-3	16		WHT#12-E.H.1	DRV. ENA.
GRN-4	GRN-3	17		GRN-S.P.	PLAT. ROT. L.
GRN/BLK-4	GRN/BLK-3	18		GR/BK-S.P.	PLAT. ROT. R.
	GRN/WHT-3	19		GR/WT-S.P.	JIB VALVE
RED-C.H.		20		RED-S.P.	12V BATT. SUPPLY
WHT-E.H.1	RED-EXT.#6	21		WHT-S.P.	IGNITION PWR.
	BLK-2	22		BLK-S.P.	PWR. TO PLAT.
RD/WT-C.H.	WHT-2	23.	WHT-S.P.	WHT-ISM#7	KEYSWITCH PWR.
WHT-ISM#10		24			ENGINE FAULT
WHT/BLK-EH.1		25		WHT/BLK-SP	OIL PRESSURE SENDER
WT/RD-E.H.1		26		WHT/RED-SP	WATER TEMP. SENDER
RED-C.H	RED-1	27	RED-ISM#4	RED-S.P.	AUX. PWR.
RED/BLK-C.H	RED/BLK-1	28			TILT ALARM
RED/WHT-C.H	R/W-1	29			2WD/4WD
WHT-30 C.H	WHT-1	30			E.D.C.
WT/BK-E.H.1	WHT/BLK-1	31			E.D.C.
WHT/RED-C.H	WHT/RED-1	32			BRAKE
BLK-ISM#3	BLK-1	33		BLK-S.P.	START
BLK/WHT-E.H.1	BLK/WHT-1	34			GLOW PLUG
	BLK/RED-1	35	BK/RD-R3#35	BK/RD-SP	RPM
BLU-M.H.	BLU-1	36			STEER RIGHT
BU/BK-M.H.	BLU/BLK-1	37			STEER LEFT
	BLU/WHT-1	38			TEST LIGHT
	BLU/RED-1	39			L.P.
	ORG-1	40	WHT-SEC#4	WHT-EXT.#6	LIMIT SWITCH SIG.
OG/BK-E.H.1	ORG/BLK-1	41		OG/BK-IM2	PULSE PICKUP
BLK-SEC#4	ORG/RED-1	42			SPARE
	GRN-1	43			SPARE
	GRN/BLK-1	44			SPARE
GR/WT-C.H	GRN/WHT-1	45			GEN. OPTION

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	TURNTABLE ROTATE SPEED LIMITING RESISTOR, 15 OHMS
R5	BOOM PRIMARY AND SECONDARY SPEED LIMITING RESISTOR, 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (before serial number 13099)

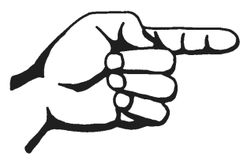


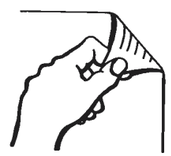
PLATFORM CONTROL SWITCH PANEL

LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

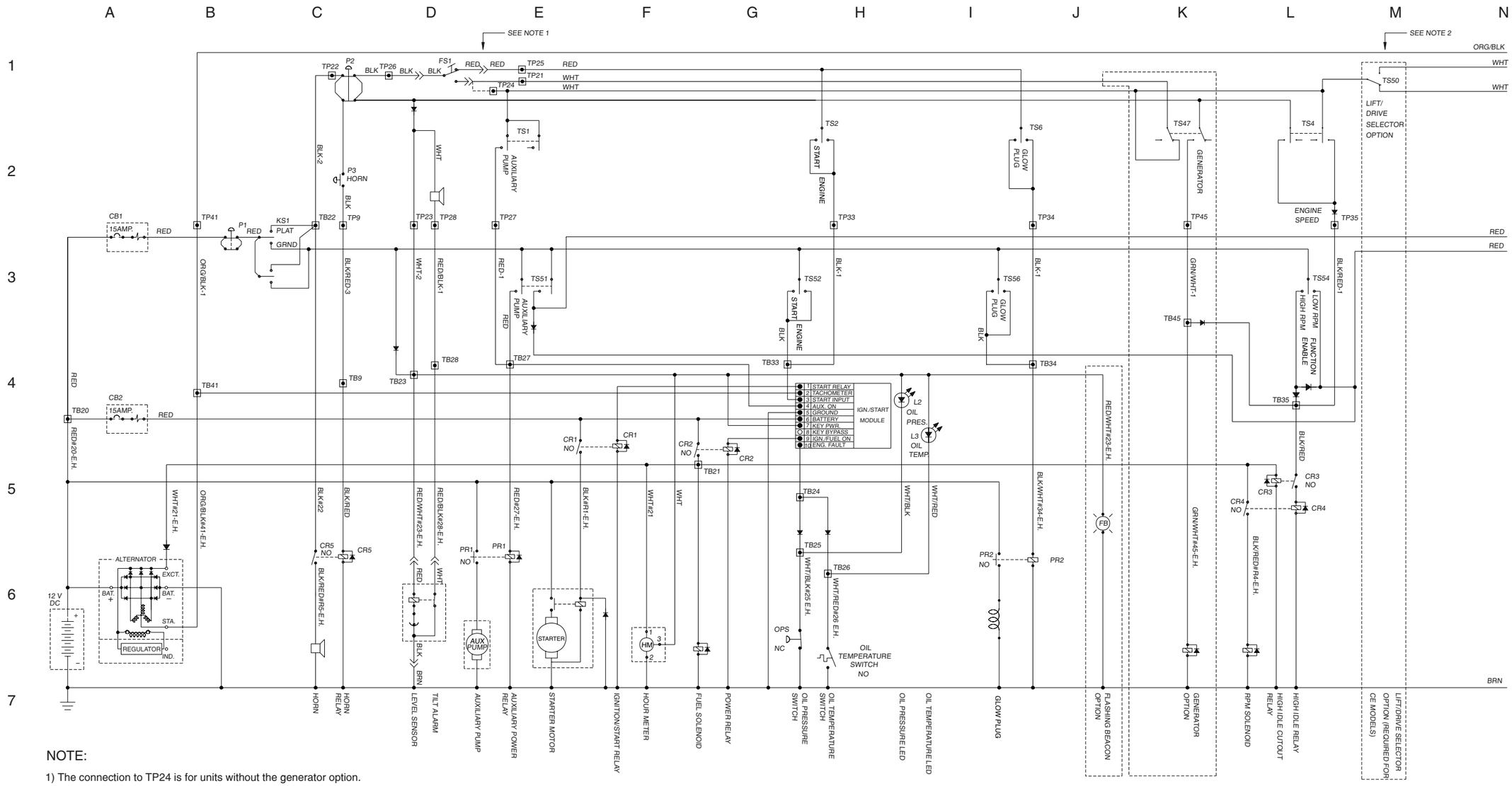
Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (before serial number 13099)







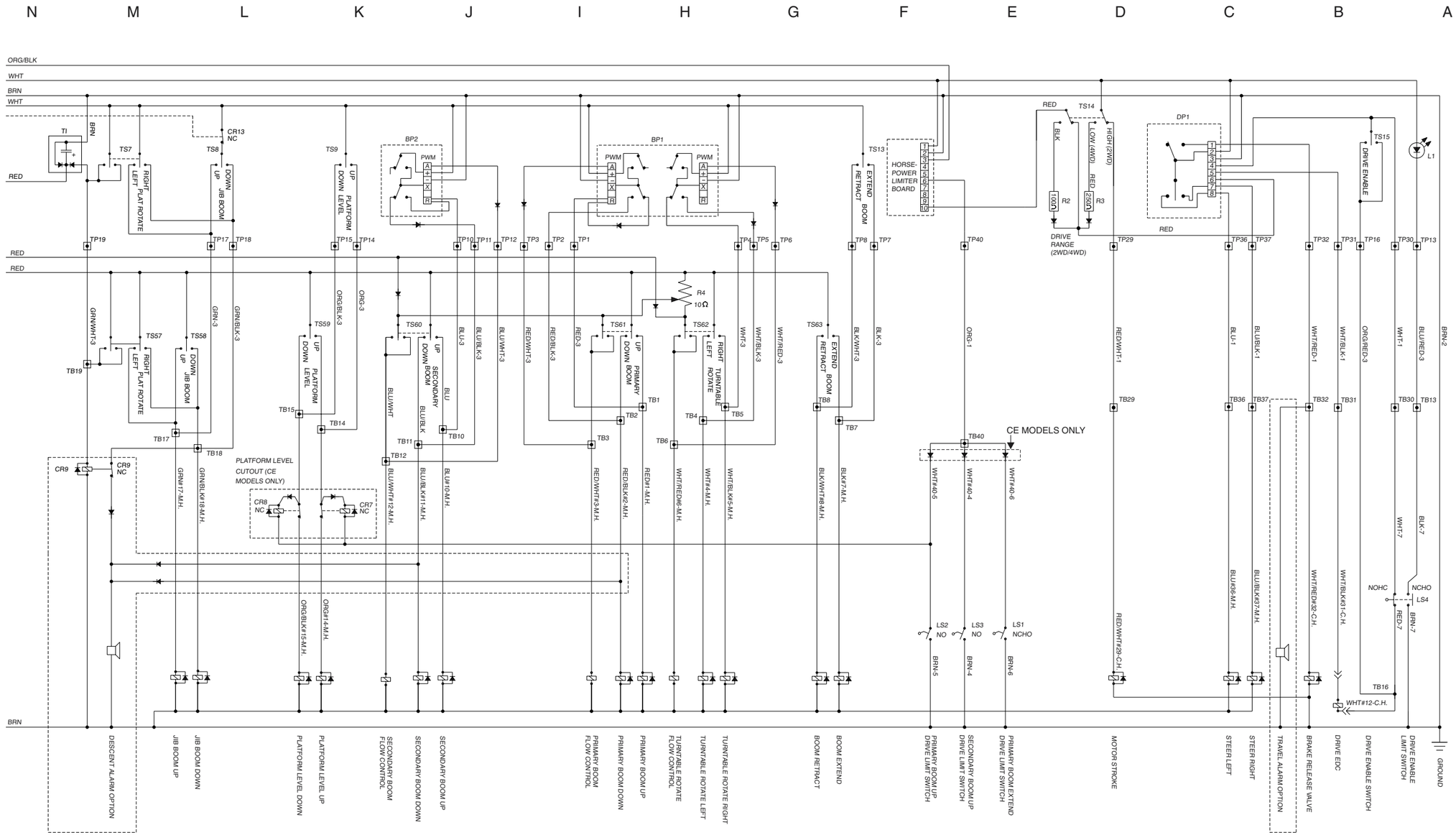
Electrical Schematic, Z-45/25J Deutz Models (from serial number 13099 to 16303)



NOTE:

1) The connection to TP24 is for units without the generator option.
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off.

Electrical Schematic, Z-45/25J Deutz Models (from serial number 13099 to 16303)

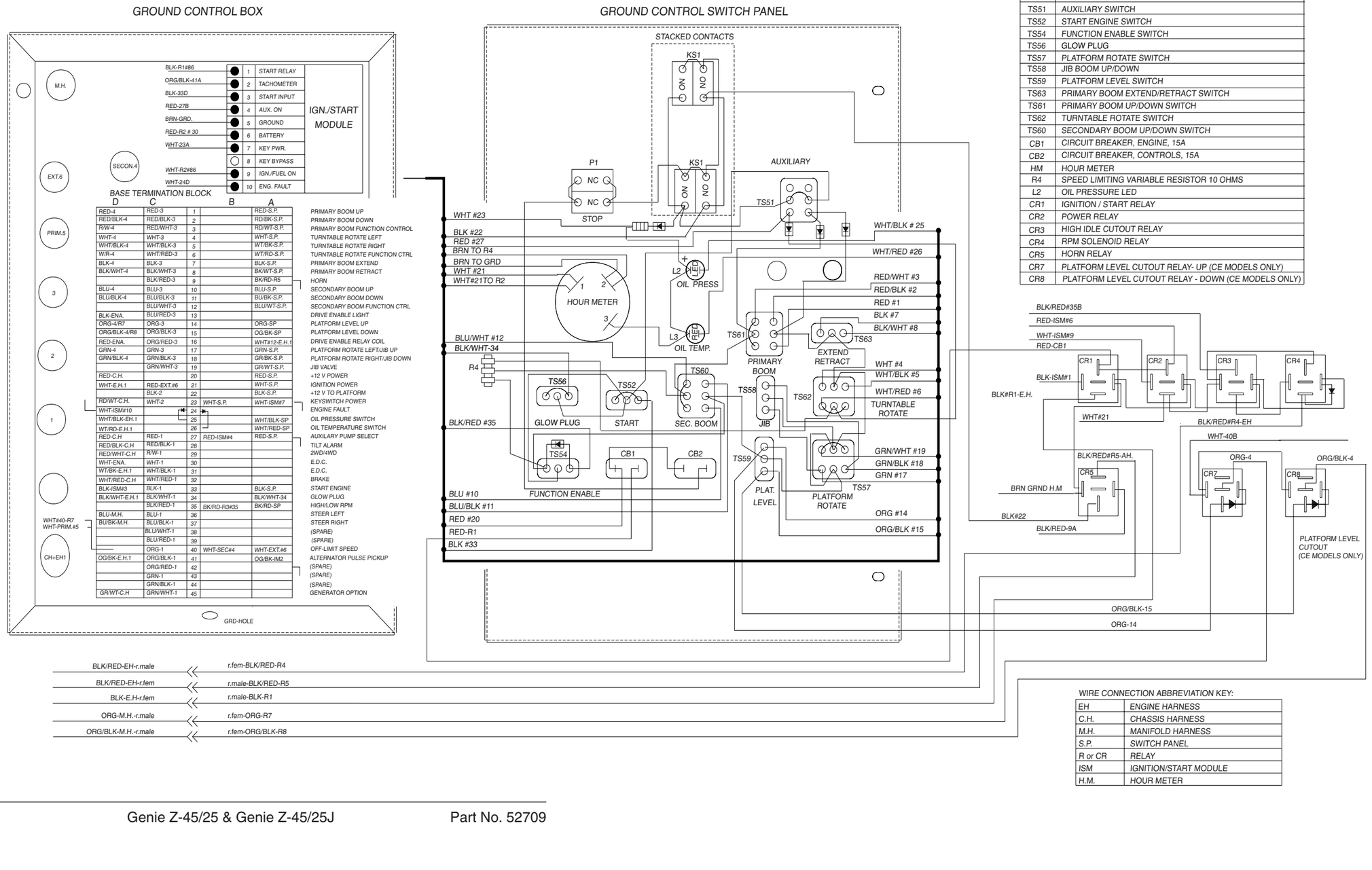


Electrical Schematic, Z-45/25J Deutz Models (from serial number 13099 to 16303)



Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (from serial number 13099 to 16303)

Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (from serial number 13099 to 16303)

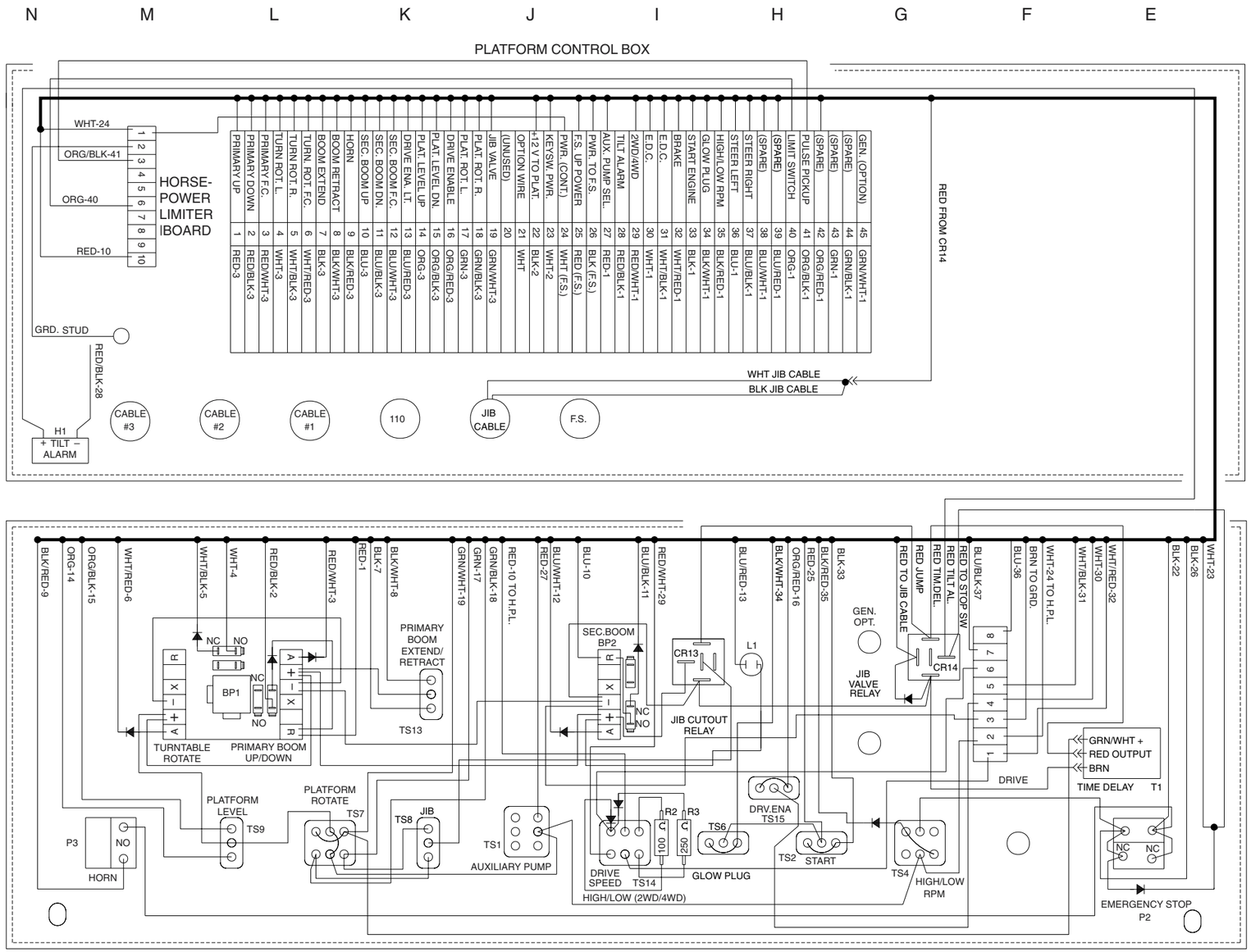


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (from serial number 13099 to 16303)

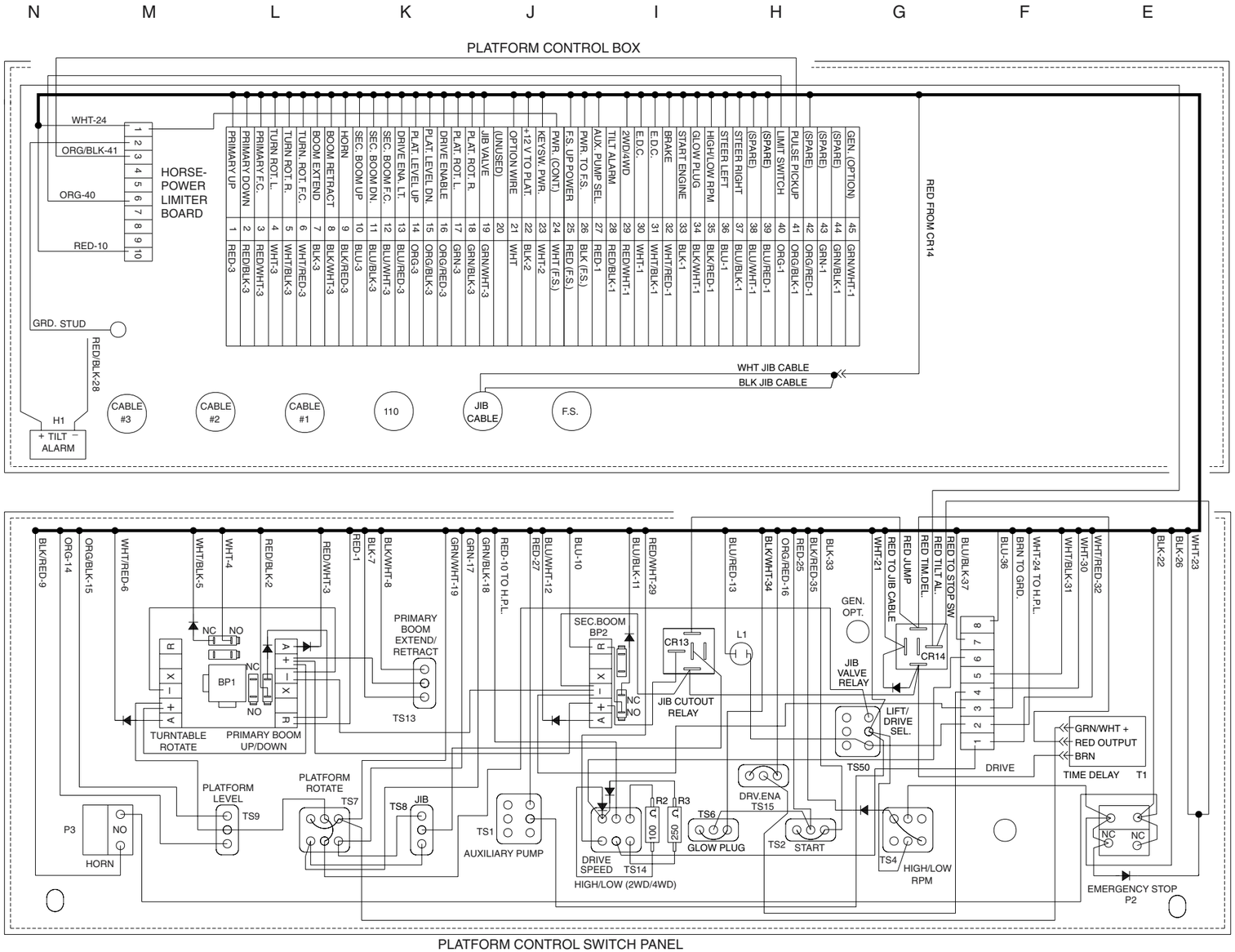


LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

PLATFORM CONTROL SWITCH PANEL

Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (from serial number 13099 to 16303)

Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25J Deutz Models (from serial number 13099 to 16303)

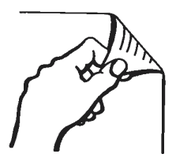


PLATFORM CONTROL SWITCH PANEL

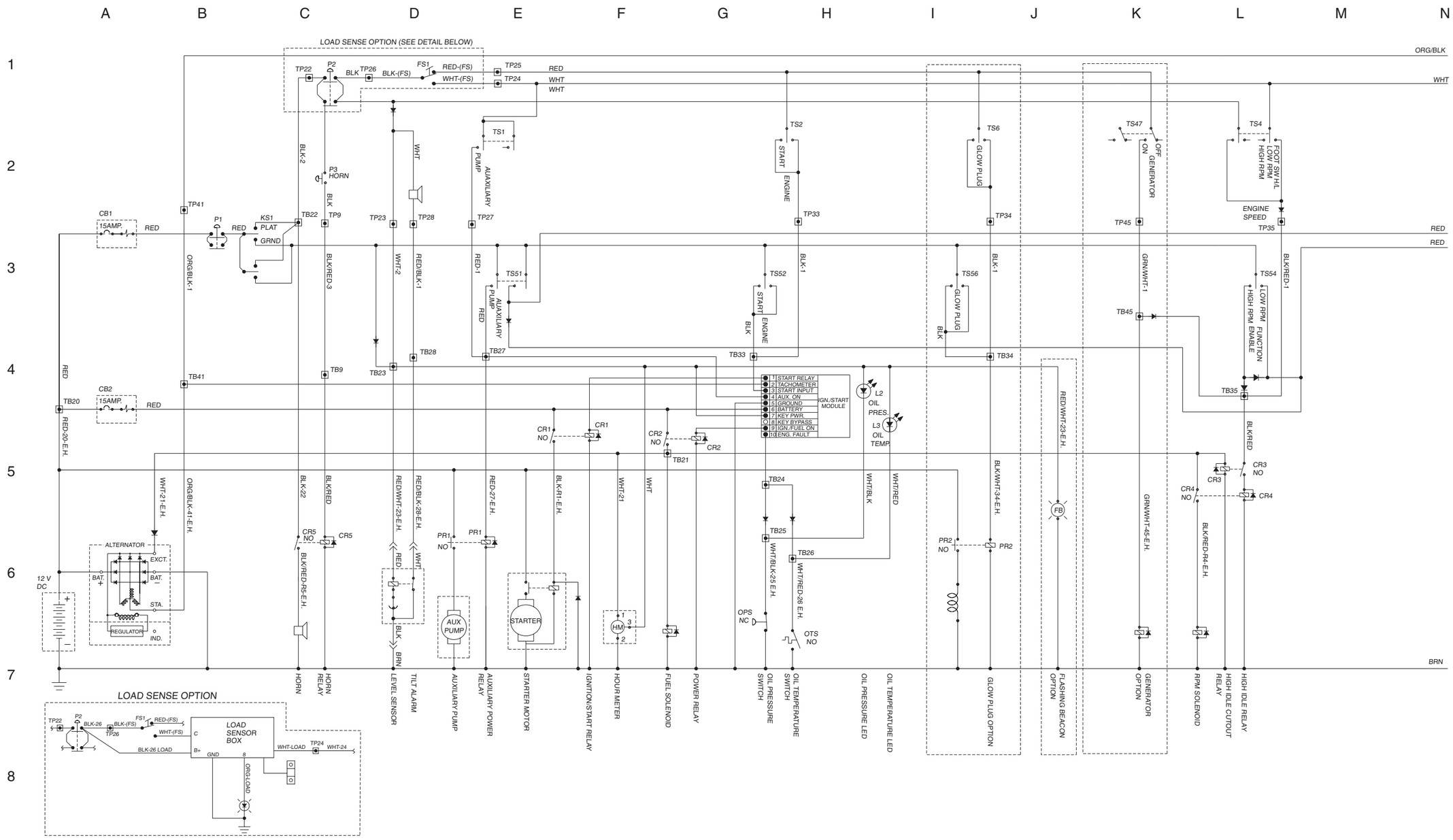
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25J Deutz Models (from serial number 13099 to 16303)

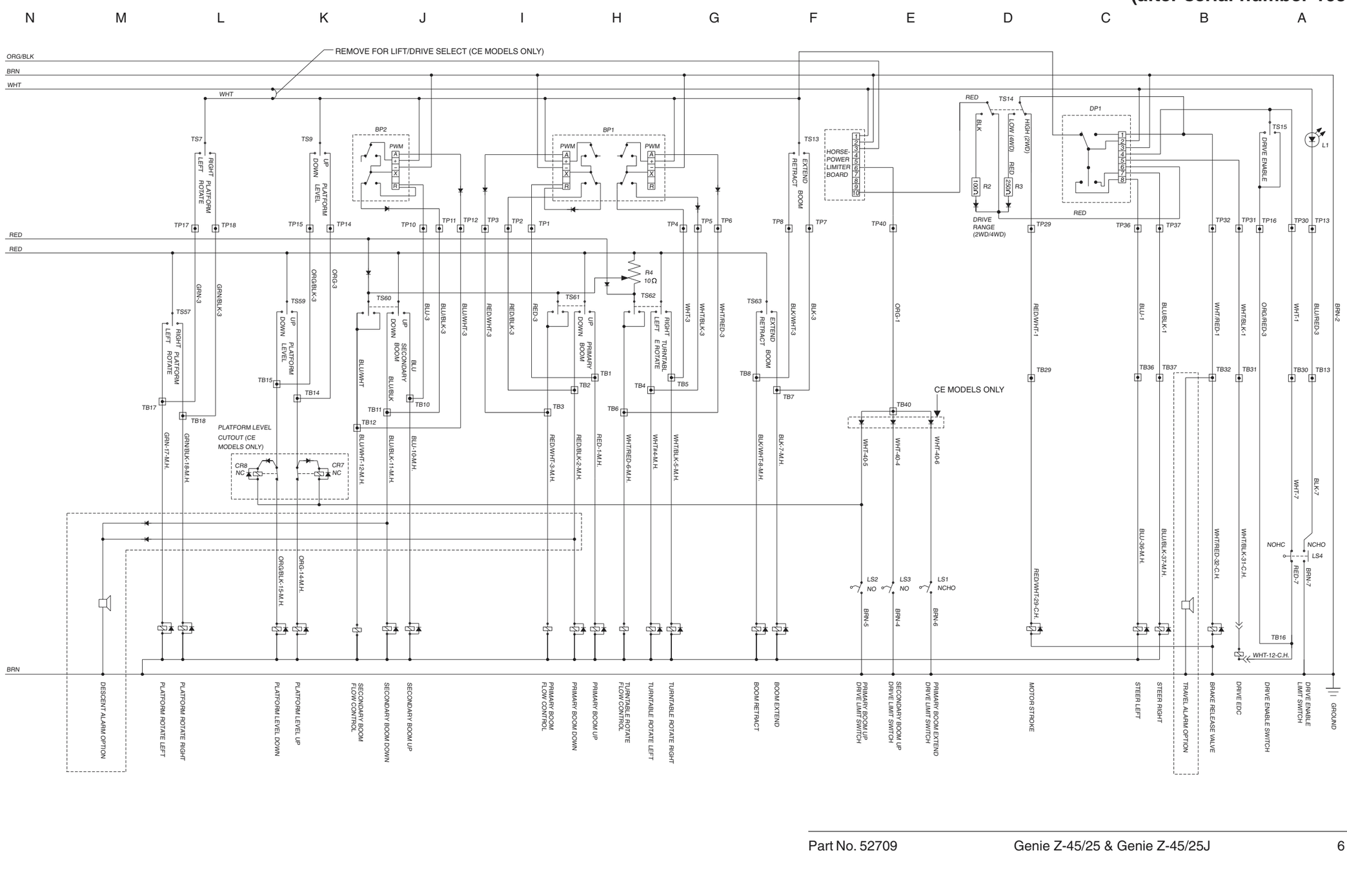




Electrical Schematic, Z-45/25 Deutz Models (after serial number 16303)



Electrical Schematic, Z-45/25 Deutz Models (after serial number 16303)

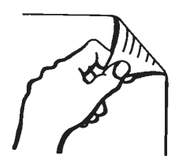


Electrical Schematic- Z-45/25 Deutz Models (after serial number 16303)



Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (after serial number 16303)





Ground Control Box Wiring Diagram- Z-45/25 Deutz Models (after serial number 16303)

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	SERVICE HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

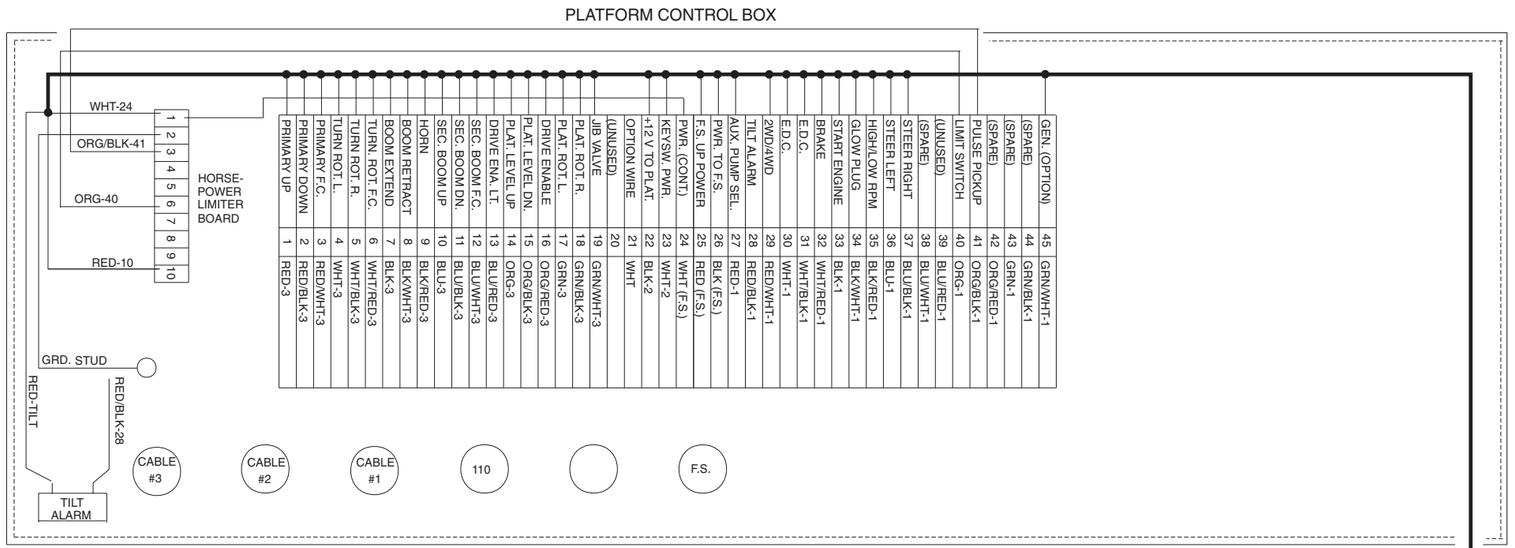
BLK/RED-EH-r.male — r.fem-BLK/RED-R4
BLK/RED-EH-r.fem — r.male-BLK/RED-R5
BLK-E.H-r.fem — r.male-BLK-R1
ORG-M.H.-r.male — r.fem-ORG-R7
ORG/BLK-M.H.-r.male — r.fem-ORG/BLK-R8

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

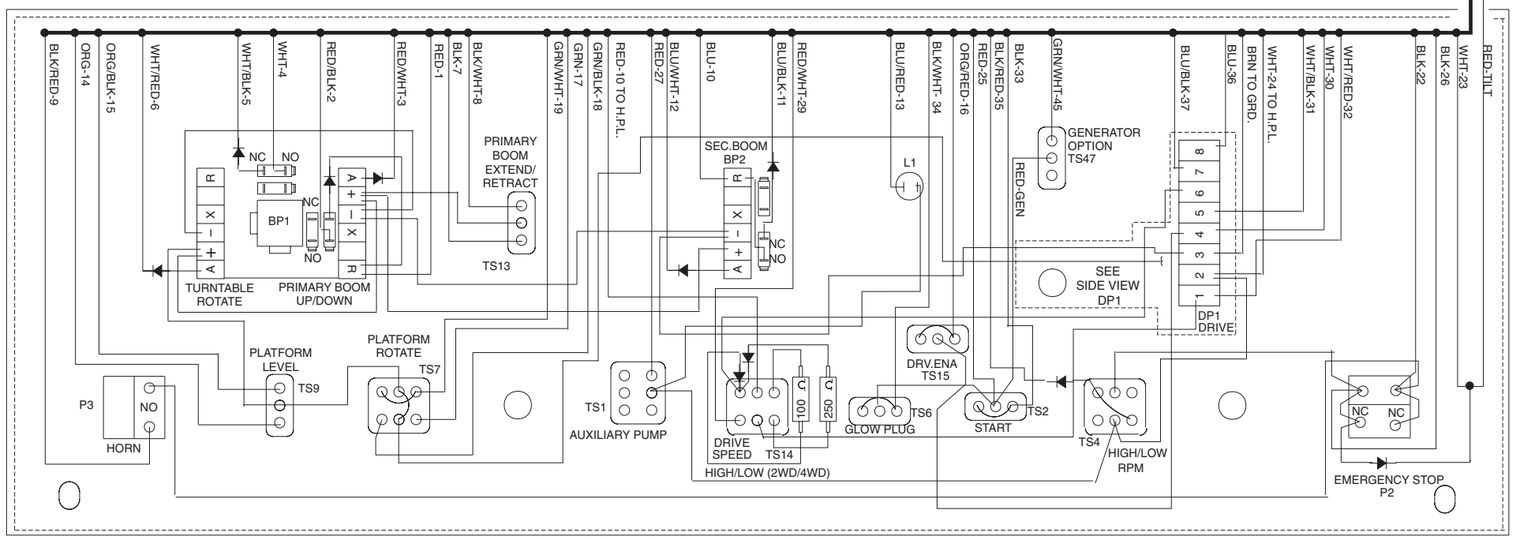
Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (after serial number 16303)

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



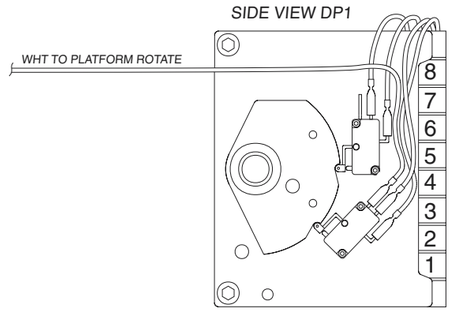
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG OPTION (DIESEL ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN (JIB OPTION ONLY)
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS47	GENERATOR SWITCH (OPTION)
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
CR13	JIB CUTOUT RELAY (JIB ONLY)
CR14	JIB VALVE RELAY (JIB ONLY)
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY (JIB ONLY)
	TILT ALARM



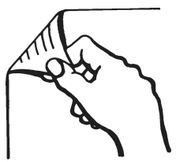
PLATFORM CONTROL SWITCH PANEL

SIDE VIEW DP1

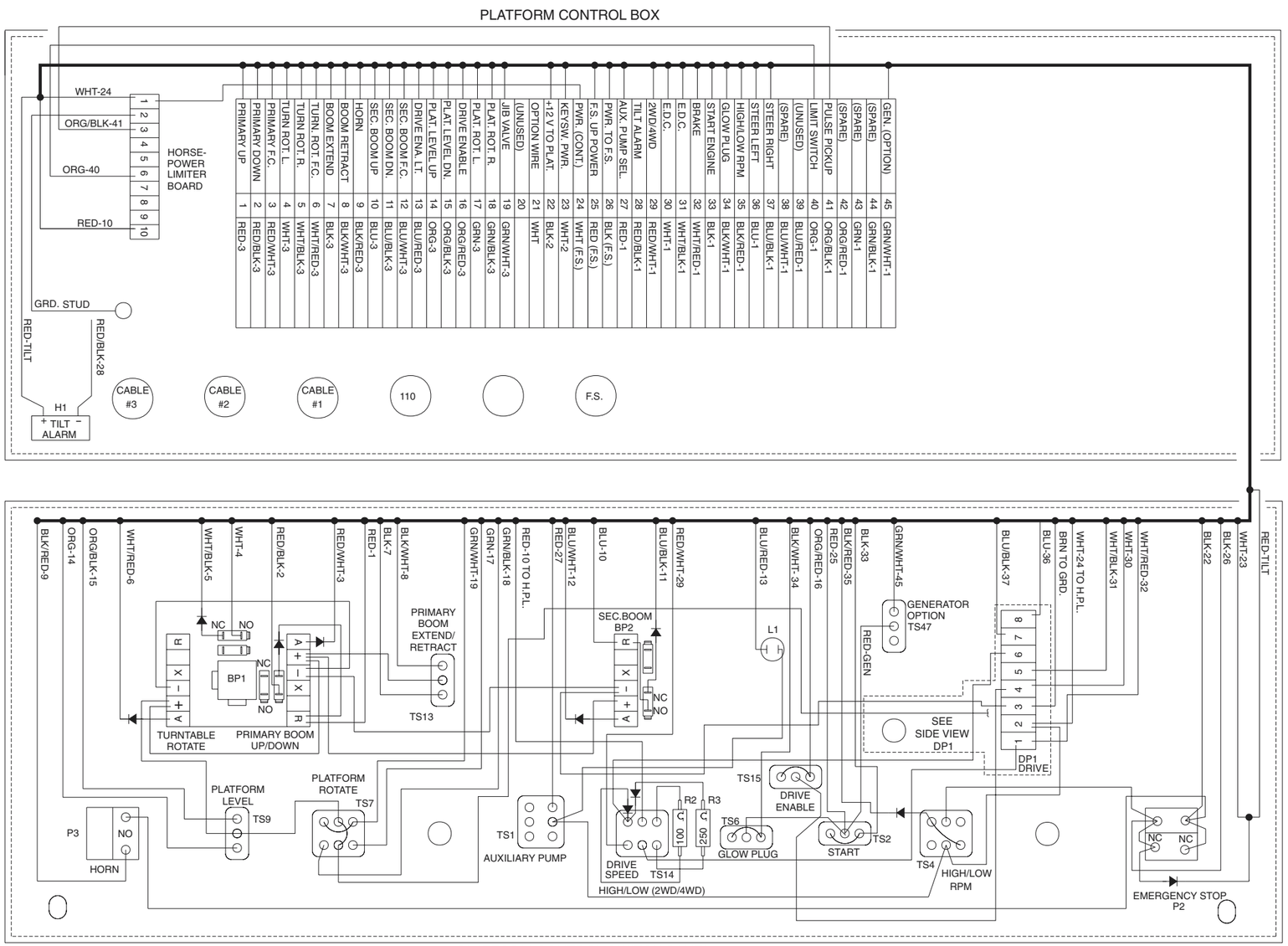


1 2 3 4 5 6 7 8

Platform Control Box Wiring Diagram- Z-45/25 Deutz Models (after serial number 16303)



Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25 Deutz Models (after serial number 16303)

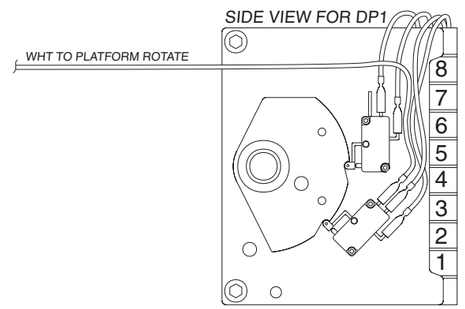


PLATFORM CONTROL SWITCH PANEL

COMPONENT INDEX

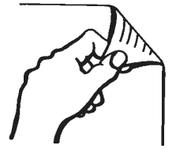
P2	*EMERGENCY STOP BUTTON*
P3	*HORN SWITCH*
TS1	*AUXILIARY SWITCH*
TS2	*START ENGINE SWITCH*
TS6	*GLOW PLUG*
TS7	*PLATFORM ROTATE SWITCH*
TS9	*PLATFORM LEVEL SWITCH*
TS10	*SECONDARY BOOM UP/DOWN SWITCH*
TS11	*PRIMARY BOOM UP/DOWN SWITCH*
TS12	*TURNTABLE ROTATE SWITCH*
TS13	*PRIMARY BOOM EXTEND/RETRACT SWITCH*
TS47	*GENERATOR SWITCH (OPTION)*
R2	*LOW SPEED RESISTOR*
R3	*LOW SPEED RESISTOR*
L1	*DRIVE ENABLE LED*
L3	*CHECK ENGINE LED*
BP1	*BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN , TURNTABLE ROTATE*
BP2	*BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN*
DP1	*DRIVE PROPORTIONAL JOYSTICK*
H.P.L.	*HORSEPOWER LIMITER BOARD*
H1	*TILT ALARM*

SIDE VIEW FOR DP1

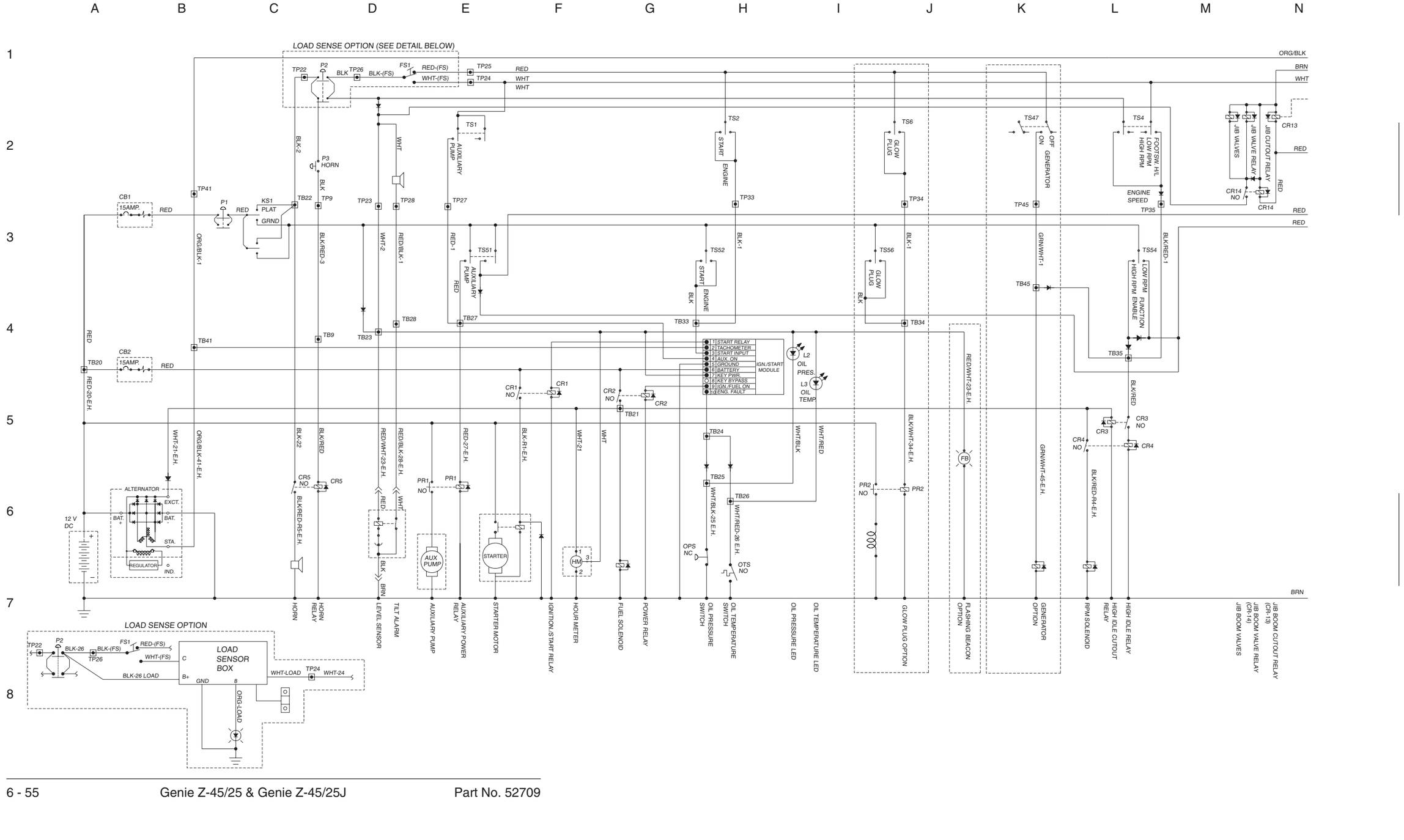


Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25 Deutz Models (after serial number 16303)

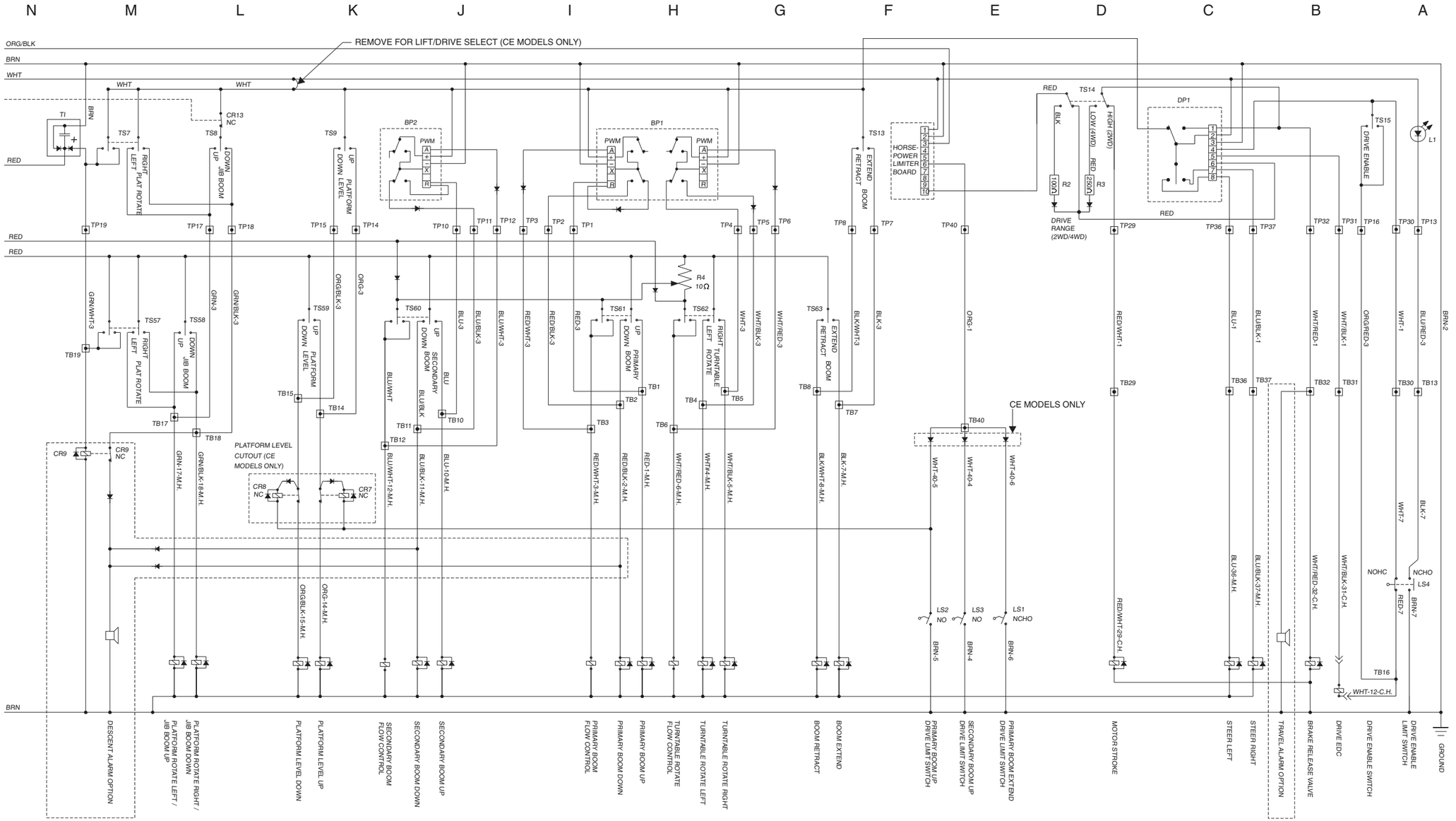




Electrical Schematic, Z-45/25J Deutz Models (after serial number 16303)



Electrical Schematic, Z-45/25J Deutz Models (after serial number 16303)

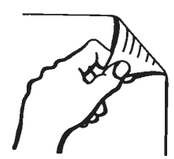


Electrical Schematic- Z-45/25J Deutz Models (after serial number 16303)

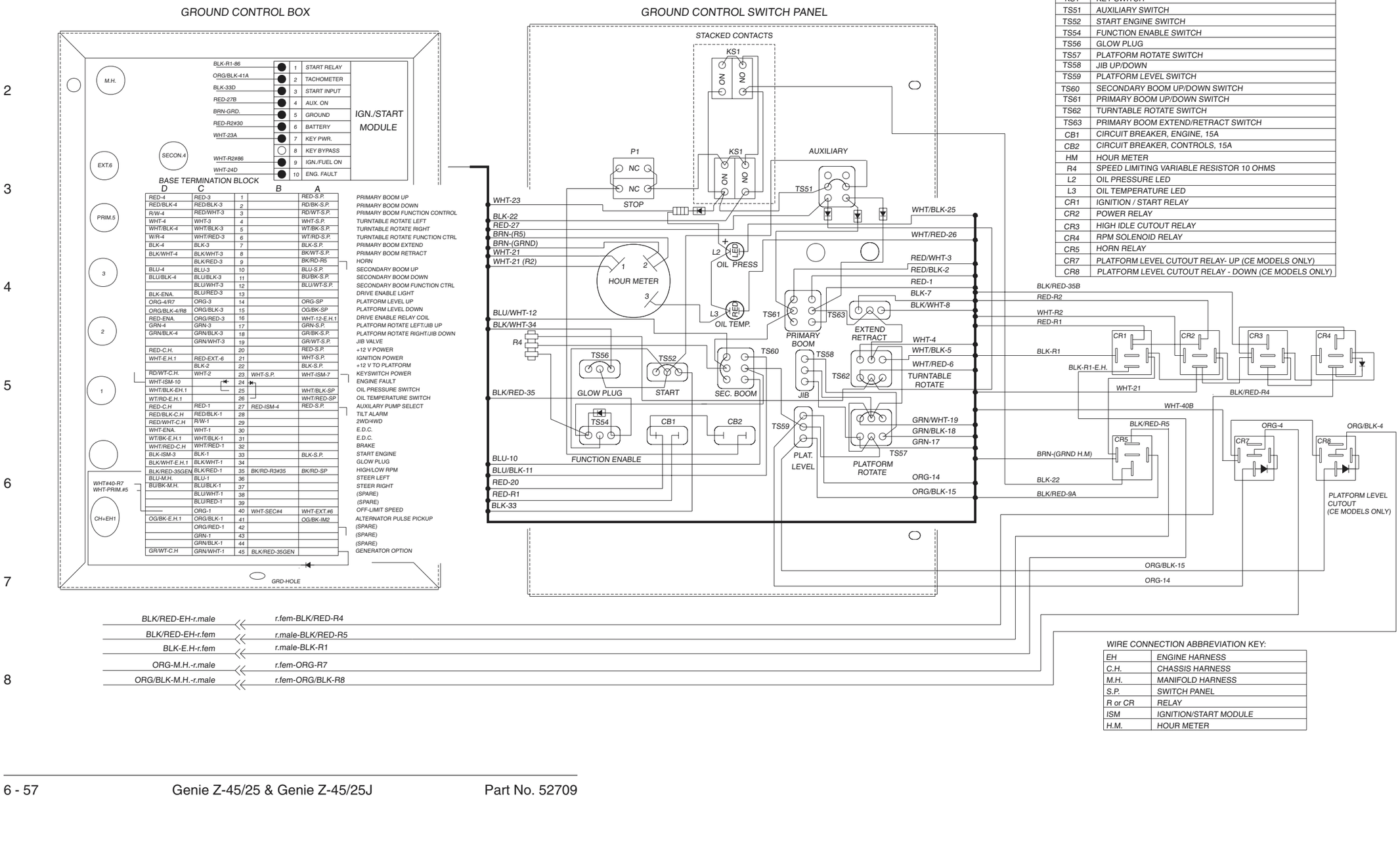


Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (after serial number 16303)





Ground Control Box Wiring Diagram- Z-45/25J Deutz Models (after serial number 16303)



D	C		B	A	
RED-4	RED-3	1		RED-S.P.	PRIMARY BOOM UP
RED/BLK-4	RED/BLK-3	2		RD/BK-S.P.	PRIMARY BOOM DOWN
R/W-4	RED/WHT-3	3		RD/WT-S.P.	PRIMARY BOOM FUNCTION CONTROL
WHT-4	WHT-3	4		WHT-S.P.	TURNTABLE ROTATE LEFT
WHT/BLK-4	WHT/BLK-3	5		WT/BK-S.P.	TURNTABLE ROTATE RIGHT
W/R-4	WHT/RED-3	6		WT/RD-S.P.	TURNTABLE ROTATE FUNCTION CTRL
BLK-4	BLK-3	7		BLK-S.P.	PRIMARY BOOM EXTEND
BLK/WHT-4	BLK/WHT-3	8		BK/WT-S.P.	PRIMARY BOOM RETRACT
	BLK/RED-3	9		BK/RD-R5	HORN
BLU-4	BLU-3	10		BLU-S.P.	SECONDARY BOOM UP
BLU/BLK-4	BLU/BLK-3	11		BU/BK-S.P.	SECONDARY BOOM DOWN
	BLU/WHT-3	12		BLU/WT-S.P.	SECONDARY BOOM FUNCTION CTRL
BLK-ENA.	BLU/RED-3	13			DRIVE ENABLE LIGHT
ORG-4/R7	ORG-3	14		ORG-SP	PLATFORM LEVEL UP
ORG/BLK-4/R8	ORG/BLK-3	15		OG/BK-SP	PLATFORM LEVEL DOWN
RED-ENA.	ORG/RED-3	16		WHT-12-E.H.1	DRIVE ENABLE RELAY COIL
GRN-4	GRN-3	17		GRN-S.P.	PLATFORM ROTATE LEFT/JIB UP
GRN/BLK-4	GRN/BLK-3	18		GR/BK-S.P.	PLATFORM ROTATE RIGHT/JIB DOWN
	GRN/WHT-3	19		GR/WT-S.P.	JIB VALVE
RED-C.H.		20		RED-S.P.	+12 V POWER
WHT-E.H.1	RED-EXT.-6	21		WHT-S.P.	IGNITION POWER
	BLK-2	22		BLK-S.P.	+12 V TO PLATFORM
RD/WT-C.H.	WHT-2	23	WHT-S.P.	WHT-ISM-7	KEYSWITCH POWER
WHT-ISM-10		24			ENGINE FAULT
WHT/BLK-EH.1		25		WHT/BLK-SP	OIL PRESSURE SWITCH
WT/RD-E.H.1		26		WHT/RED-SP	OIL TEMPERATURE SWITCH
RED-C.H.	RED-1	27	RED-ISM-4	RED-S.P.	AUXILARY PUMP SELECT
RED/BLK-C.H	RED/BLK-1	28			TILT ALARM
RED/WHT-C.H	R/W-1	29			2WD/4WD
WHT-ENA.	WHT-1	30			E.D.C.
WT/BK-E.H.1	WHT/BLK-1	31			E.D.C.
WHT/RED-C.H	WHT/RED-1	32			BRAKE
BLK-ISM-3	BLK-1	33		BLK-S.P.	START ENGINE
BLK/WHT-E.H.1	BLK/WHT-1	34			GLOW PLUG
BLK/RED-35GEN	BLK/RED-1	35	BK/RD-R3#35	BK/RD-SP	HIGH/LOW RPM
BLU-M.H.	BLU-1	36			STEER LEFT
BU/BK-M.H.	BLU/BLK-1	37			STEER RIGHT
	BLU/WHT-1	38			(SPARE)
	BLU/RED-1	39			(SPARE)
	ORG-1	40	WHT-SEC#4	WHT-EXT.#6	OFF-LIMIT SPEED
OG/BK-E.H.1	ORG/BLK-1	41		OG/BK-IM2	ALTERNATOR PULSE PICKUP
	ORG/RED-1	42			(SPARE)
	GRN-1	43			(SPARE)
	GRN/BLK-1	44			(SPARE)
GR/WT-C.H	GRN/WHT-1	45	BLK/RED-35GEN		GENERATOR OPTION

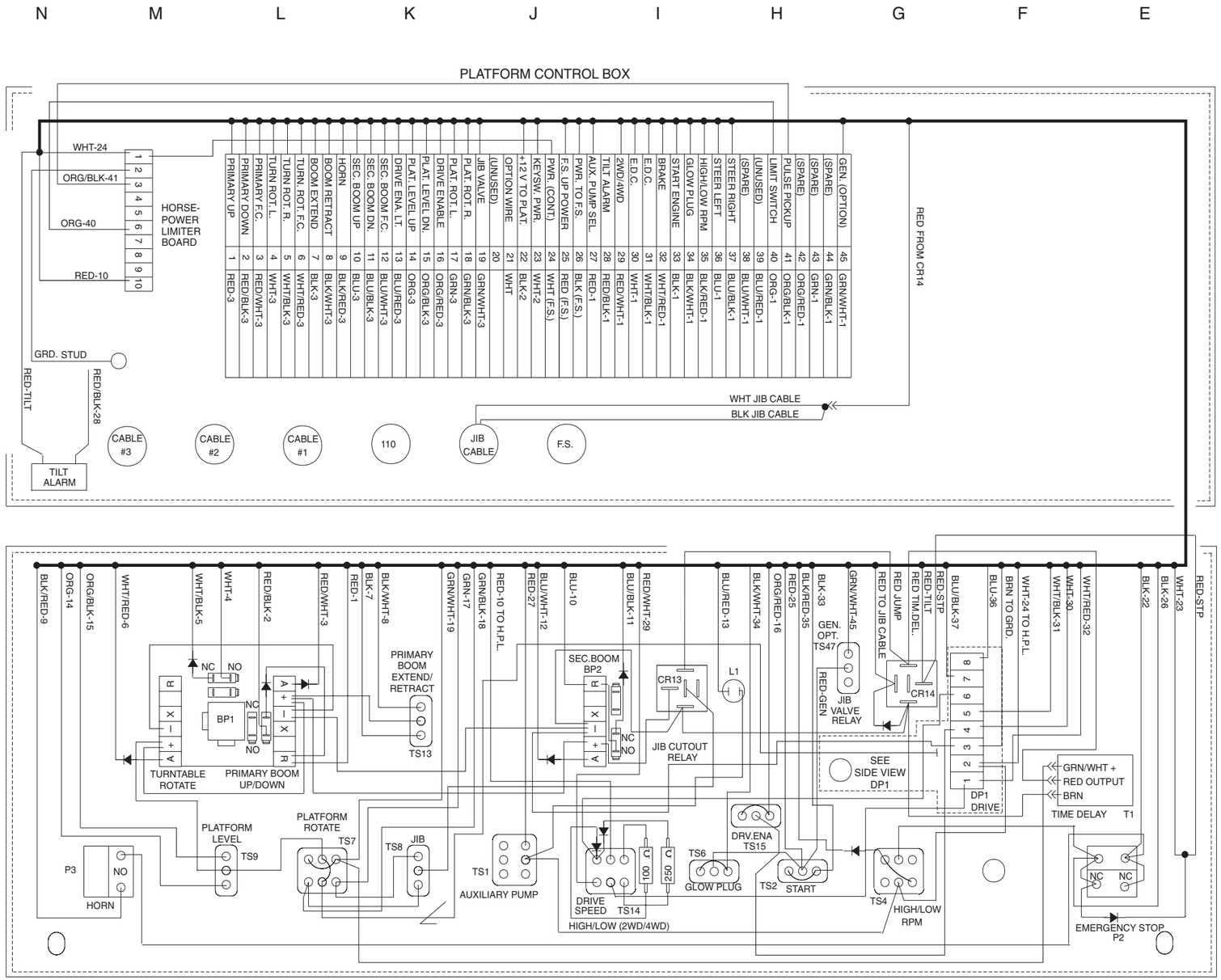
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS58	JIB UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

BLK/RED-EH-r.male	r.fem-BLK/RED-R4
BLK/RED-EH-r.fem	r.male-BLK/RED-R5
BLK-E.H-r.fem	r.male-BLK-R1
ORG-M.H.-r.male	r.fem-ORG-R7
ORG/BLK-M.H.-r.male	r.fem-ORG/BLK-R8

WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (after serial number 16303)

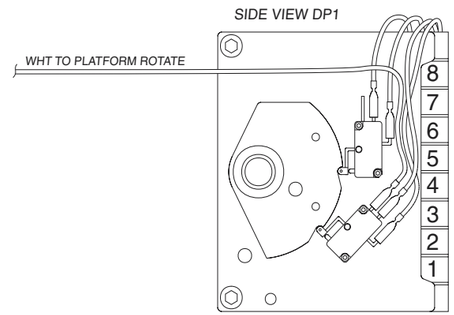


PLATFORM CONTROL SWITCH PANEL

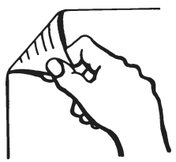
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG OPTION (DIESEL ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN (JIB OPTION ONLY)
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS47	GENERATOR SWITCH (OPTION)
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
CR13	JIB CUTOUT RELAY (JIB ONLY)
CR14	JIB VALVE RELAY (JIB ONLY)
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY (JIB ONLY)
	TILT ALARM

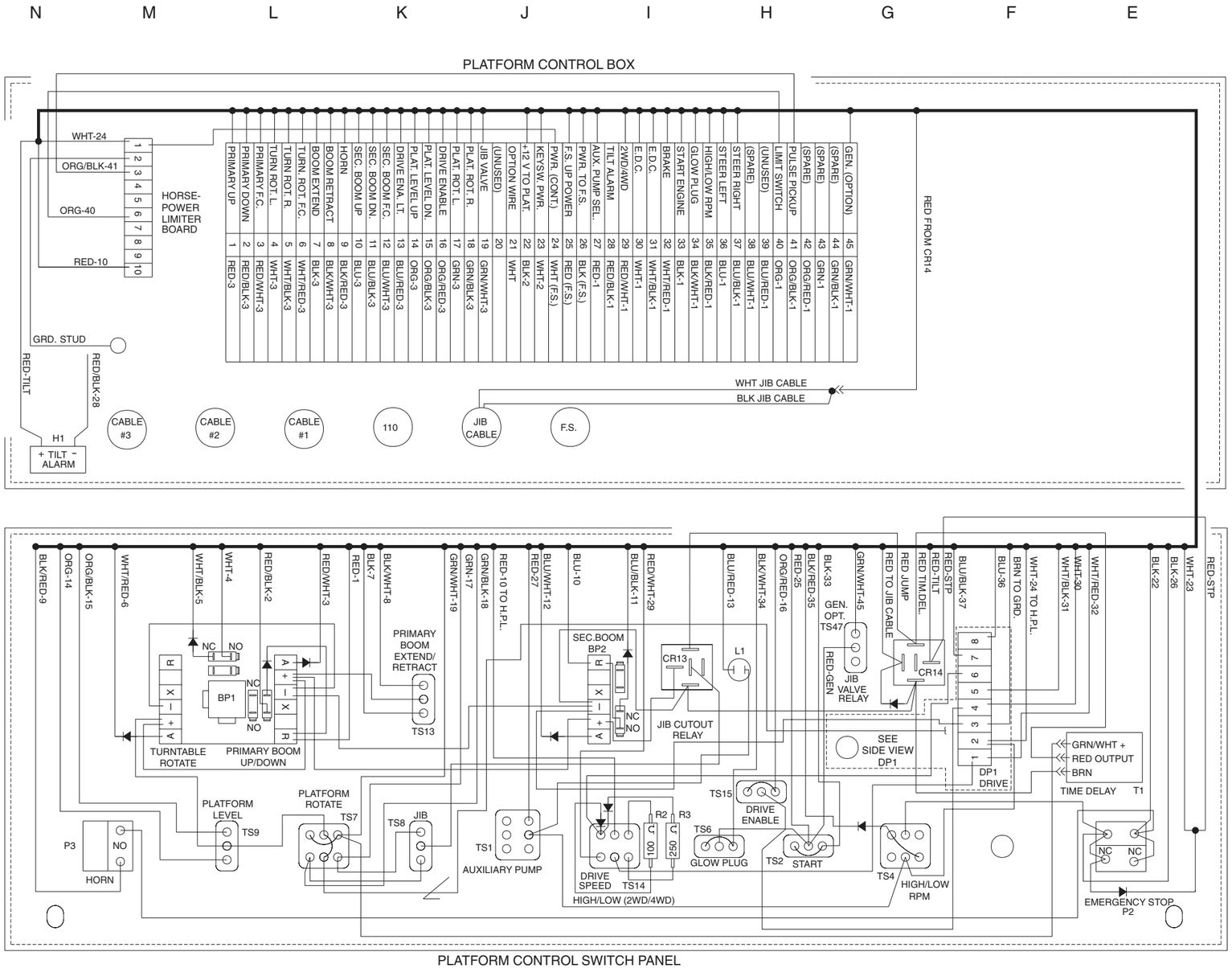
SIDE VIEW DP1



Platform Control Box Wiring Diagram- Z-45/25J Deutz Models (after serial number 16303)



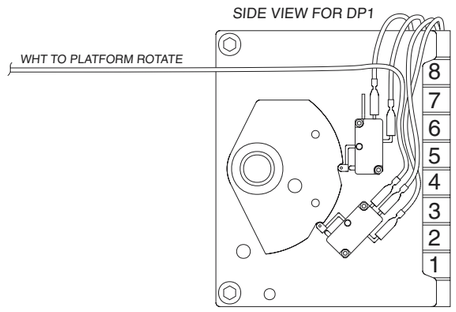
Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25J Deutz Models (after serial number 16303)



PLATFORM CONTROL SWITCH PANEL

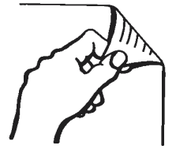
COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS47	GENERATOR SWITCH (OPTION)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOM UP/DOWN,TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

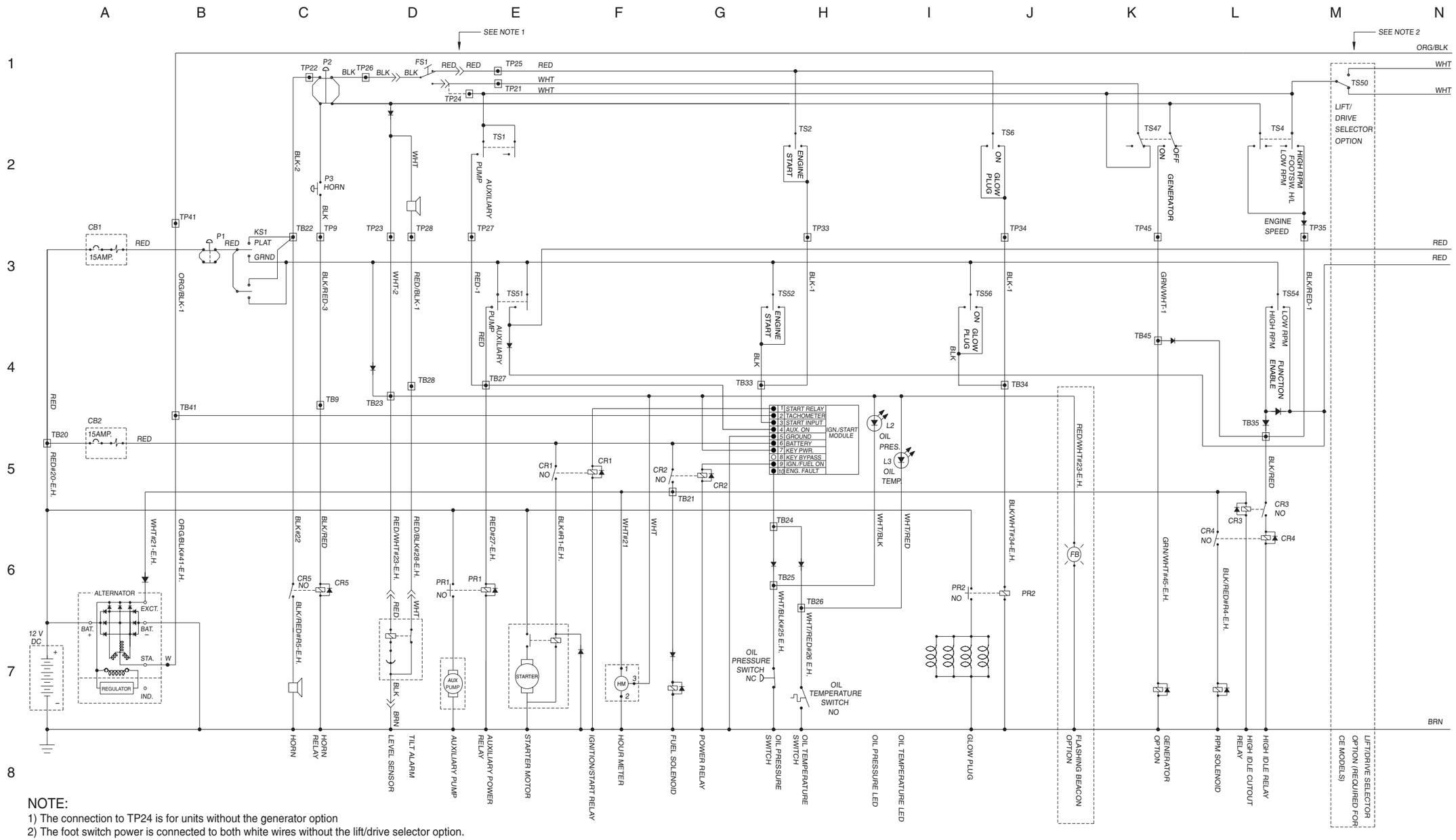


Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25J Deutz Models (after serial number 16303)





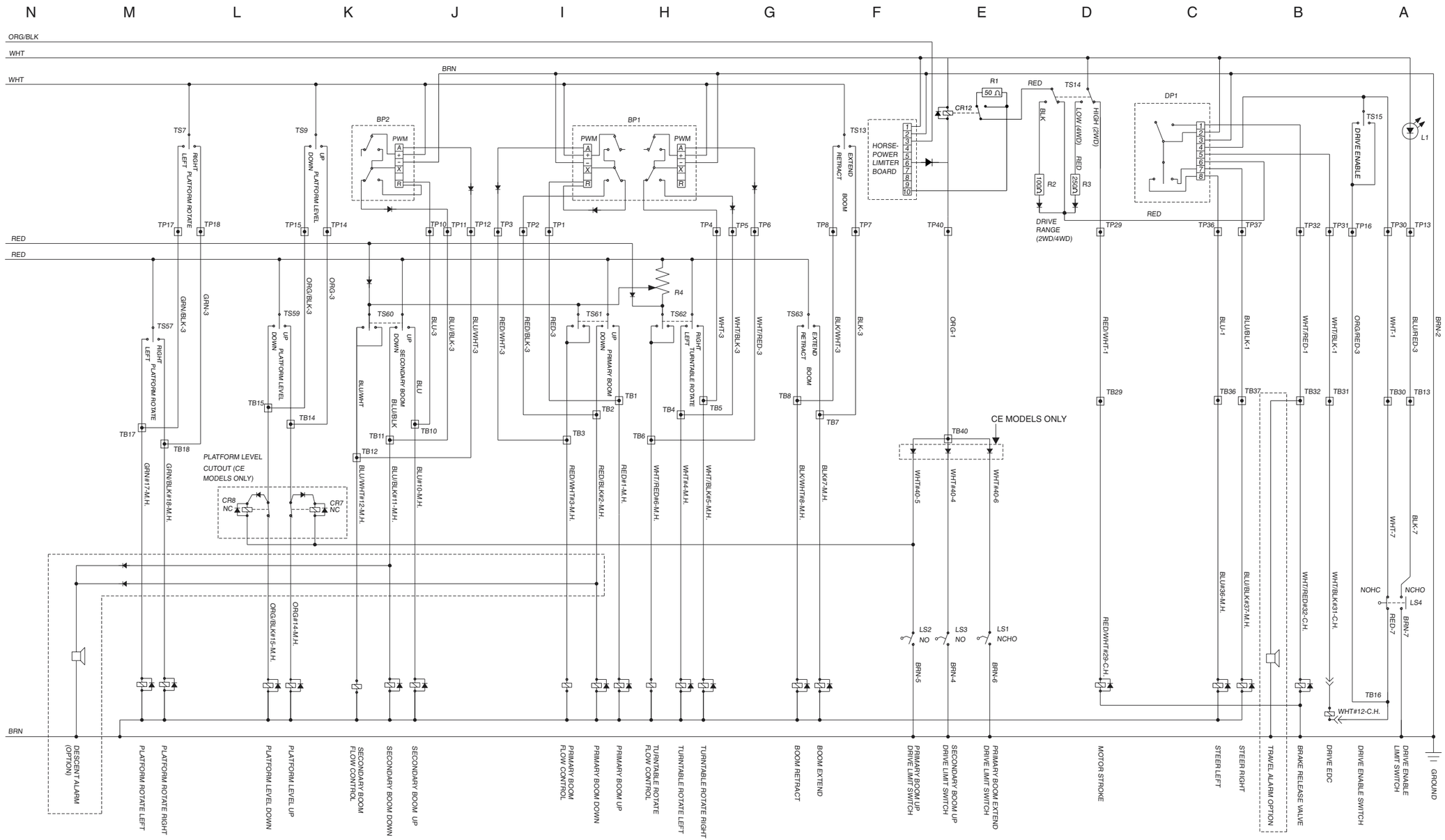
Electrical Schematic, Z-45/25 Perkins Models (before serial number 16304)



NOTE:

1) The connection to TP24 is for units without the generator option
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off

Electrical Schematic, Z-45/25 Perkins Models (before serial number 16304)

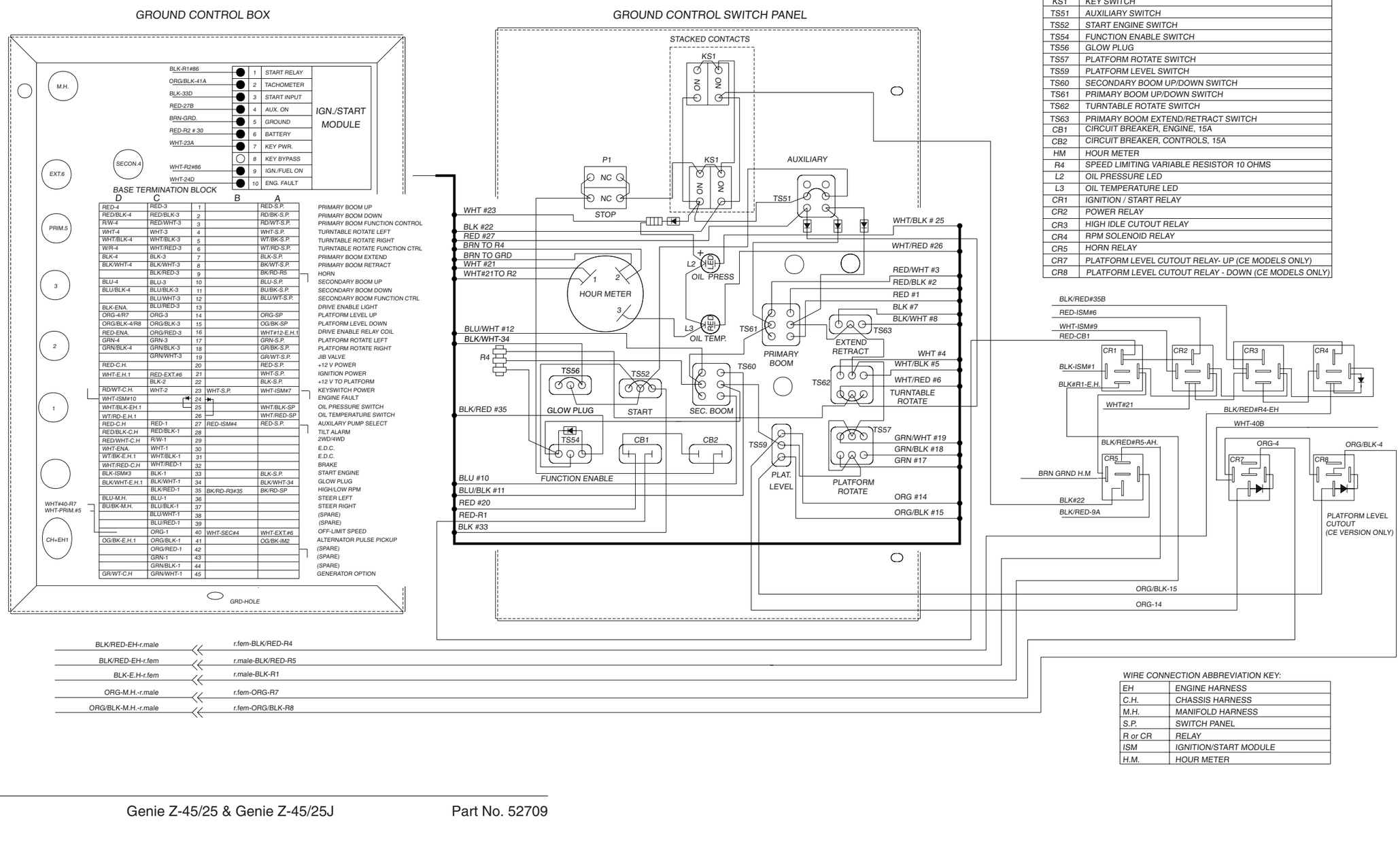


Electrical Schematic, Z-45/25 Perkins Models (before serial number 16304)



Ground Control Box Wiring Diagram, Z-45/25 Perkins Models (before serial number 16304)

Ground Control Box Wiring Diagram, Z-45/25 Perkins Models (before serial number 16304)



BLK-R1#86		1	START RELAY		
ORG/BLK-41A		2	TACHOMETER		
BLK-33D		3	START INPUT		
RED-27B		4	AUX. ON		
BRN-GRD.		5	GROUND		
RED-R2 # 30		6	BATTERY		
WHT-23A		7	KEY PWR.		
		8	KEY BYPASS		
WHT-R2#86		9	IGN./FUEL ON		
WHT-24D		10	ENG. FAULT		

BASE TERMINATION BLOCK

D	C		B	A	
RED-4	RED-3	1		RED-S.P.	PRIMARY BOOM UP
RED/BLK-4	RED/BLK-3	2		RD/BK-S.P.	PRIMARY BOOM DOWN
R/W-4	RED/WHT-3	3		RD/WT-S.P.	PRIMARY BOOM FUNCTION CONTROL
WHT-4	WHT-3	4		WHT-S.P.	TURNTABLE ROTATE LEFT
WHT/BLK-4	WHT/BLK-3	5		WT/BK-S.P.	TURNTABLE ROTATE RIGHT
W/R-4	WHT/RED-3	6		WT/RD-S.P.	TURNTABLE ROTATE FUNCTION CTRL
BLK-4	BLK-3	7		BLK-S.P.	PRIMARY BOOM EXTEND
BLK/WHT-4	BLK/WHT-3	8		BK/WT-S.P.	PRIMARY BOOM RETRACT
	BLK/RED-3	9		BK/RD-R5	HORN
BLU-4	BLU-3	10		BLU-S.P.	SECONDARY BOOM UP
BLU/BLK-4	BLU/BLK-3	11		BU/BK-S.P.	SECONDARY BOOM DOWN
	BLU/WHT-3	12		BLU/WT-S.P.	SECONDARY BOOM FUNCTION CTRL
BLK-ENA.	BLU/RED-3	13			DRIVE ENABLE LIGHT
ORG-4/R7	ORG-3	14		ORG-SP	PLATFORM LEVEL UP
ORG/BLK-4/R8	ORG/BLK-3	15		OG/BK-SP	PLATFORM LEVEL DOWN
RED-ENA.	ORG/RED-3	16		WHT#12-E.H.1	DRIVE ENABLE RELAY COIL
GRN-4	GRN-3	17		GRN-S.P.	PLATFORM ROTATE LEFT
GRN/BLK-4	GRN/BLK-3	18		GR/BK-S.P.	PLATFORM ROTATE RIGHT
	GRN/WHT-3	19		GR/WT-S.P.	JIB VALVE
RED-C.H.		20		RED-S.P.	+12 V POWER
WHT-E.H.1	RED-EXT.#6	21		WHT-S.P.	IGNITION POWER
	BLK-2	22		BLK-S.P.	+12 V TO PLATFORM
RD/WT-C.H.	WHT-2	23	WHT-S.P.	WHT-ISM#7	KEYSWITCH POWER
WHT-ISM#10		24			ENGINE FAULT
WHT/BLK-EH.1		25		WHT/BLK-SP	OIL PRESSURE SWITCH
WT/RD-E.H.1		26		WHT/RED-SP	OIL TEMPERATURE SWITCH
RED-C.H	RED-1	27	RED-ISM#4	RED-S.P.	AUXILARY PUMP SELECT
RED/BLK-C.H	RED/BLK-1	28			TILT ALARM
RED/WHT-C.H	R/W-1	29			2WD/4WD
WHT-ENA.	WHT-1	30			E.D.C.
WT/BK-E.H.1	WHT/BLK-1	31			E.D.C.
WHT/RED-C.H	WHT/RED-1	32			BRAKE
BLK-ISM#3	BLK-1	33		BLK-S.P.	START ENGINE
BLK/WHT-E.H.1	BLK/WHT-1	34		BLK/WHT-34	GLOW PLUG
	BLK/RED-1	35	BK/RD-R3#35	BK/RD-SP	HIGH/LOW RPM
BLU-M.H.	BLU-1	36			STEER LEFT
BU/BK-M.H.	BLU/BLK-1	37			STEER RIGHT
	BLU/WHT-1	38			(SPARE)
	BLU/RED-1	39			(SPARE)
	ORG-1	40	WHT-SEC#4	WHT-EXT.#6	OFF-LIMIT SPEED
OG/BK-E.H.1	ORG/BLK-1	41		OG/BK-IM2	ALTERNATOR PULSE PICKUP
	ORG/RED-1	42			(SPARE)
	GRN-1	43			(SPARE)
	GRN/BLK-1	44			(SPARE)
GR/WT-C.H	GRN/WHT-1	45			GENERATOR OPTION

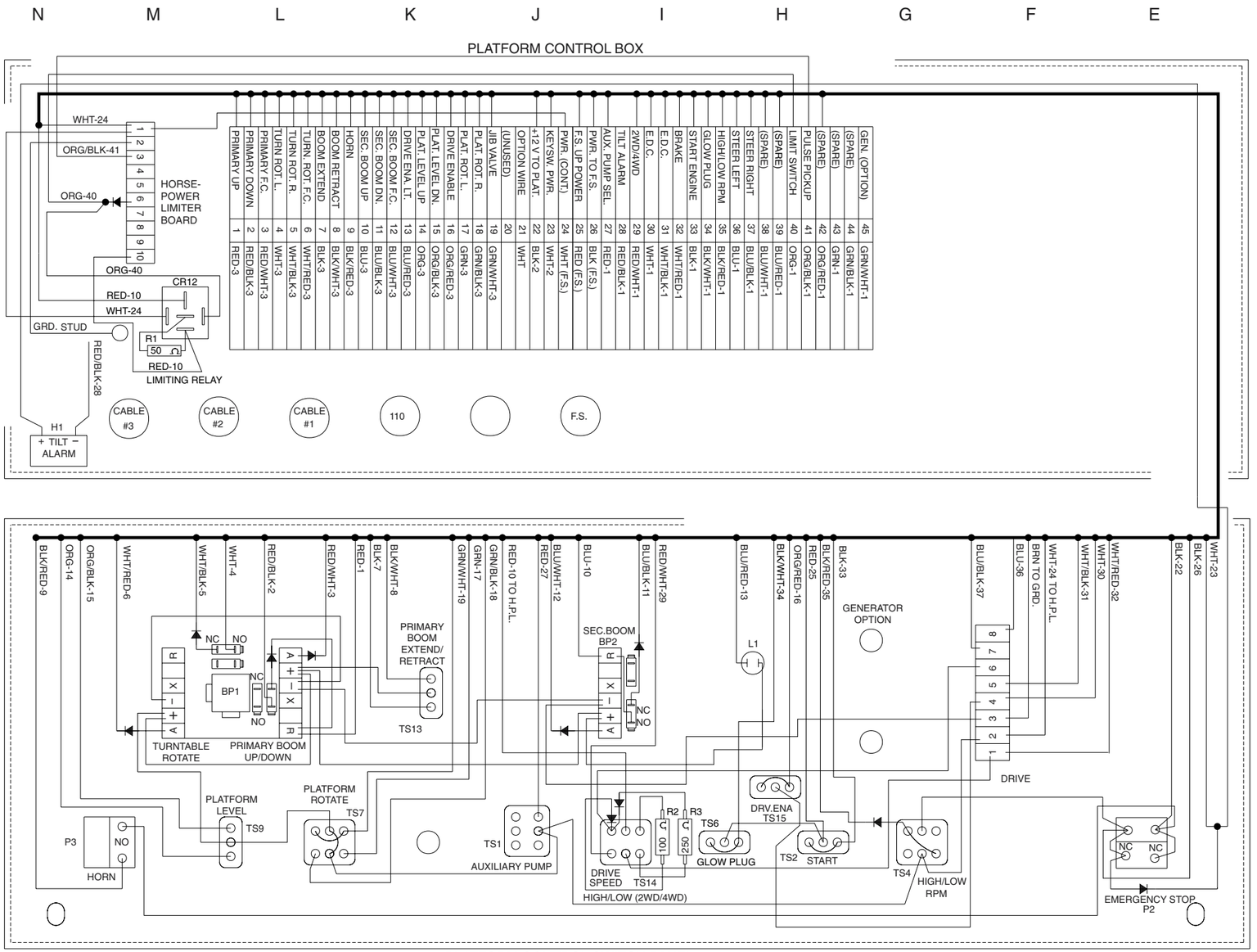
WHT#40-R7
WHT-PRIM.#5

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

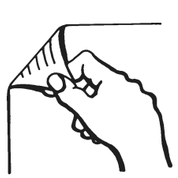
EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

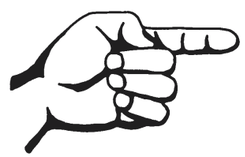
Platform Control Box Wiring Diagram- Z-45/25 Perkins Models (before serial number 16304)

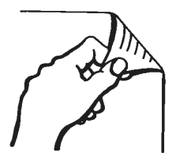


LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOM UP/DOWN, TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
H1	TILT ALARM

Platform Control Box Wiring Diagram- Z-45/25 Perkins Models (before serial number 16304)





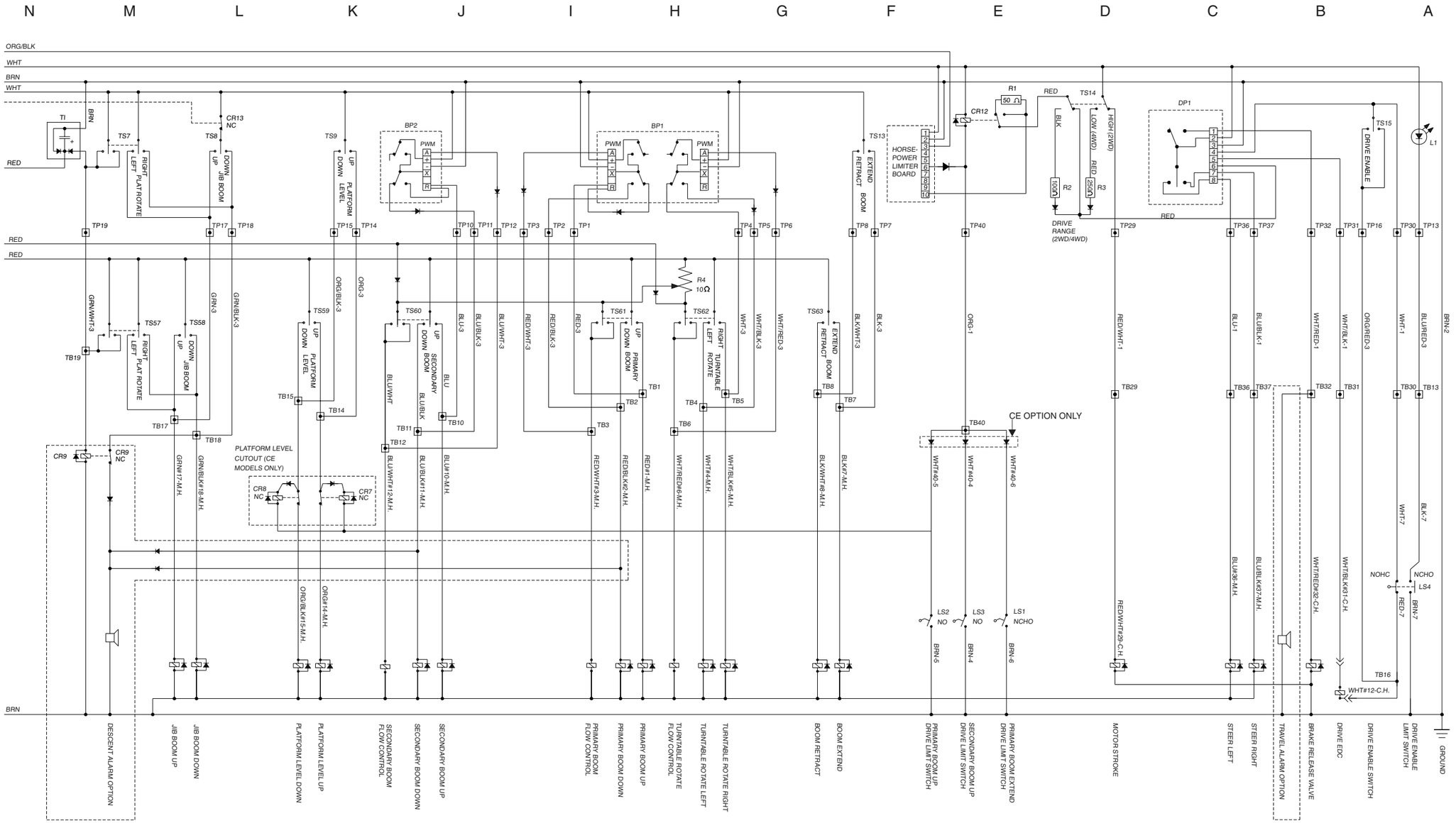


Electrical Schematic, Z-45/25J Perkins Models (before serial number 16304)

NOTE:

1) The connection to TP24 is for units without the generator option.
2) The foot switch power is connected to both white wires without the lift/drive selector option.
3) All switches and contacts are shown with the boom in the stowed position and the key switch off.

Electrical Schematic, Z-45/25J Perkins Models (before serial number 16304)

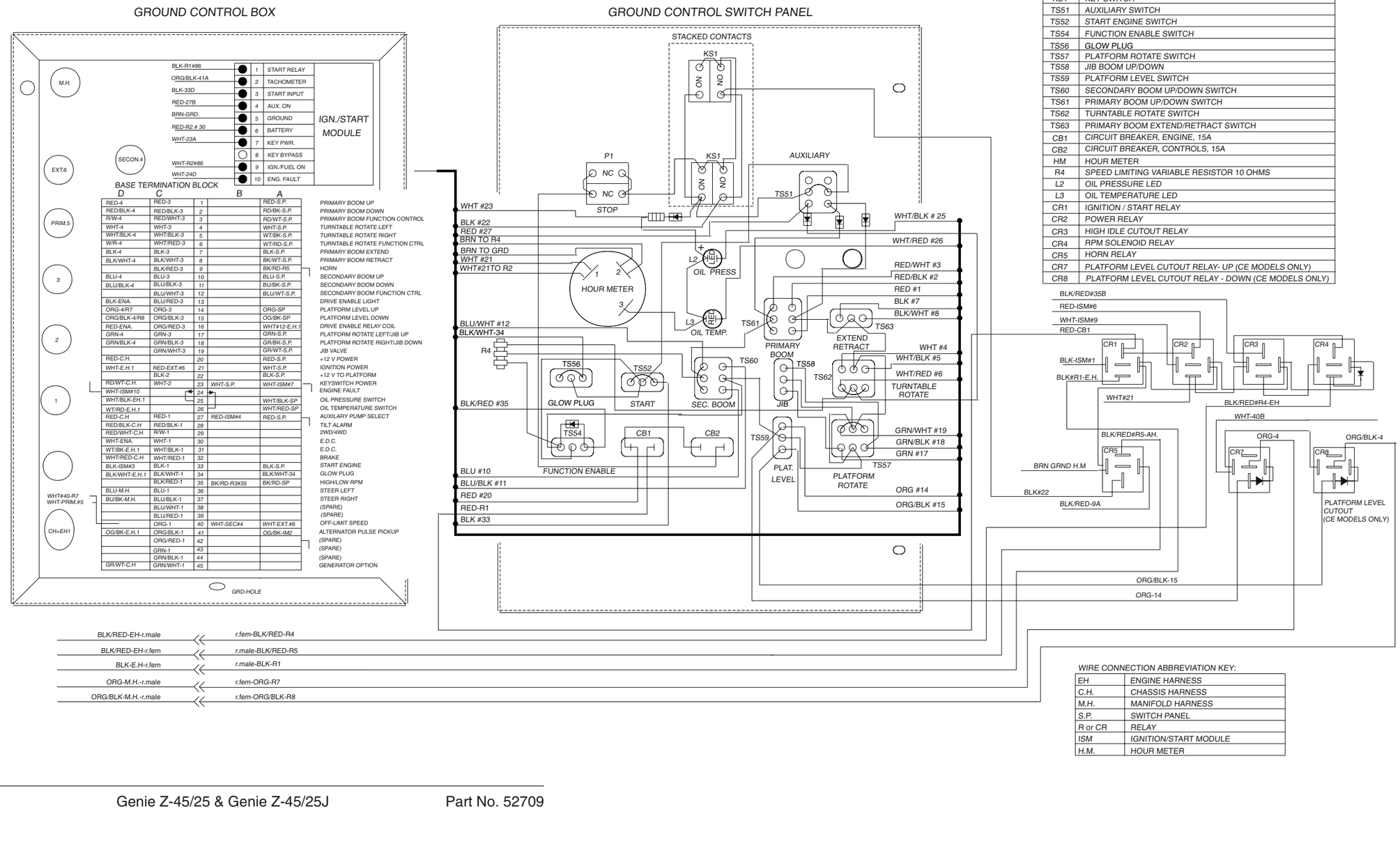


Electrical Schematic, Z-45/25J Perkins Models (before serial number 16304)



Ground Control Box Wiring Diagram- Z-45/25J Perkins Models (before serial number 16304)

Ground Control Box Wiring Diagram- Z-45/25J Perkins Models (before serial number 16304)

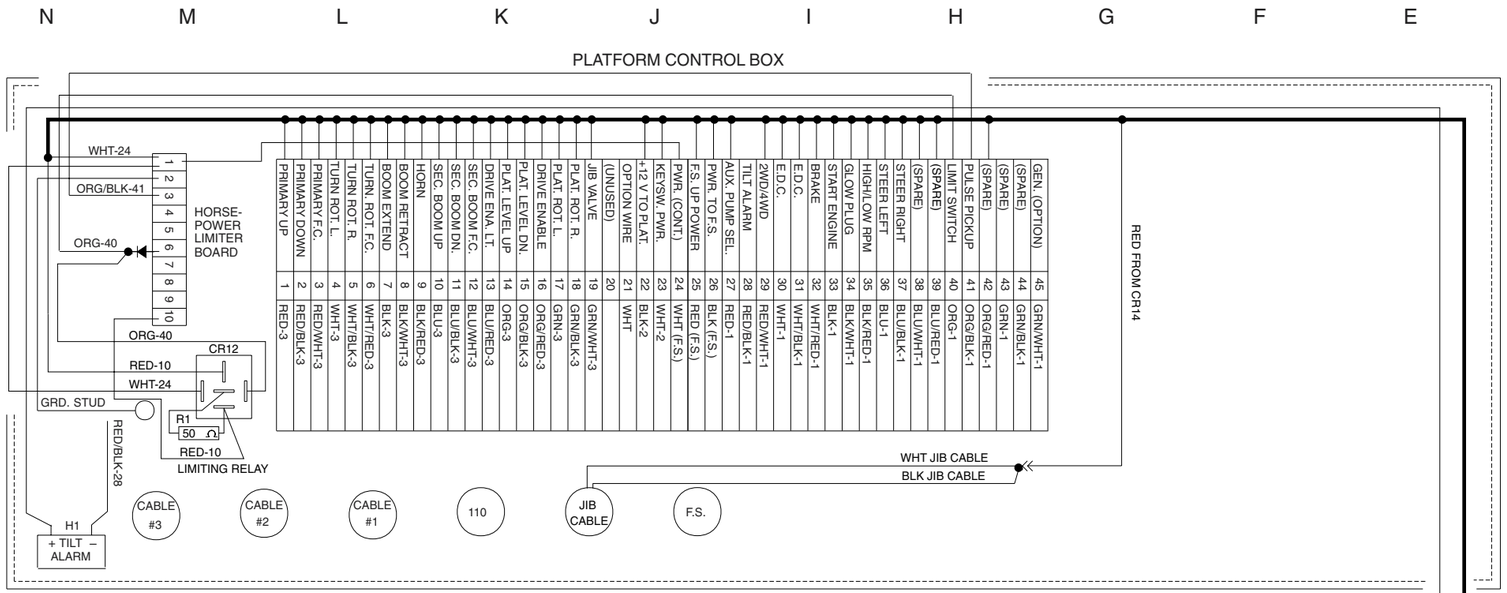


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

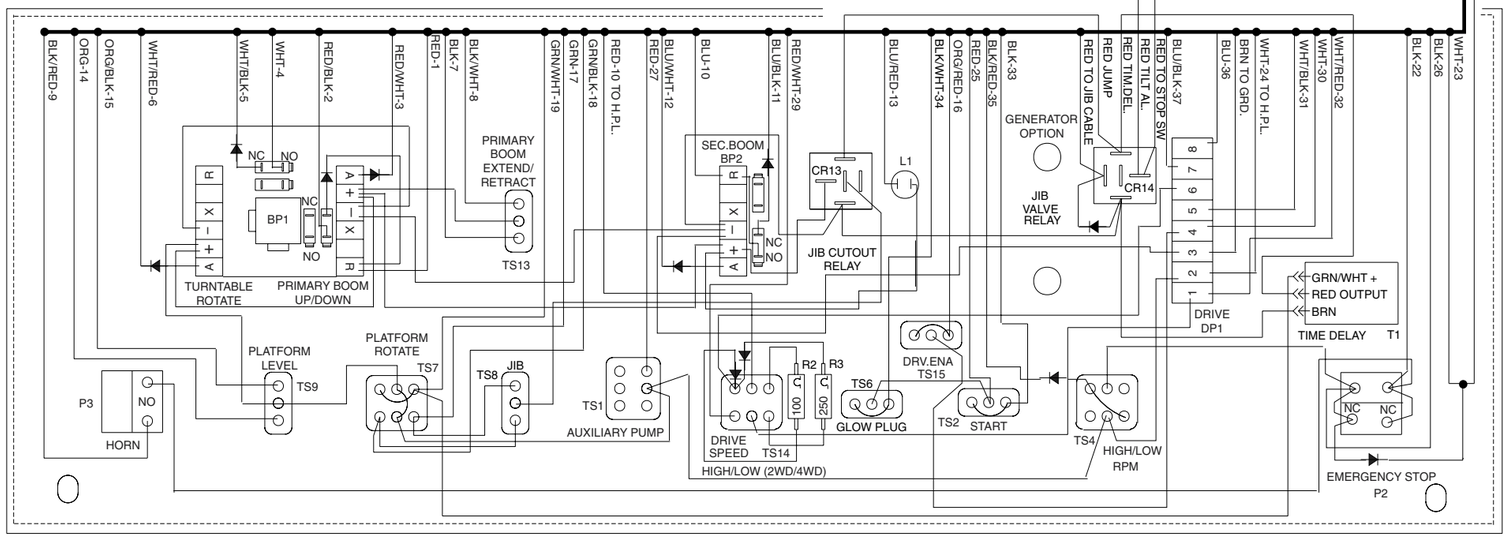
WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25J Perkins Models (before serial number 16304)



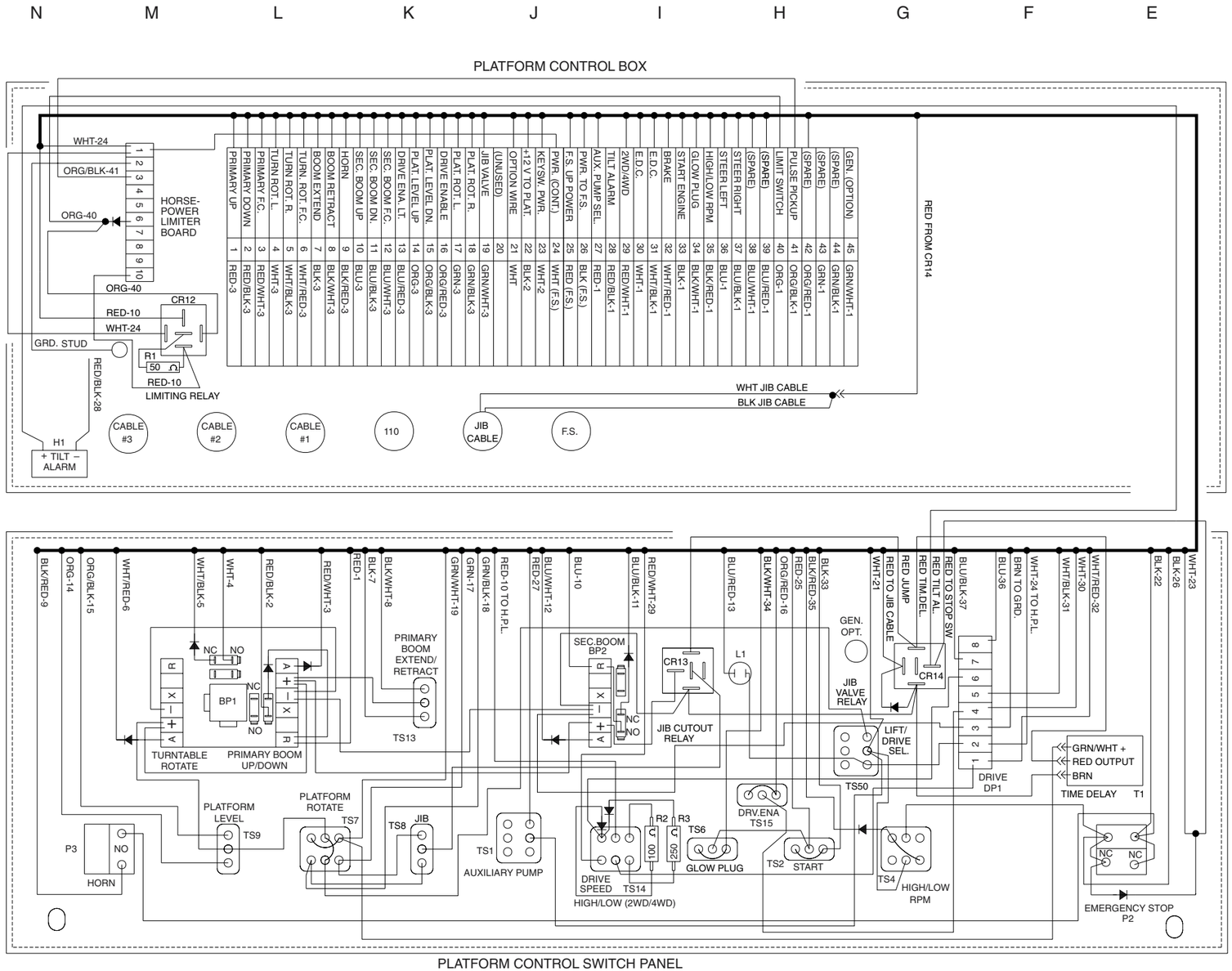
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
L3	CHECK ENGINE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOM UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM



PLATFORM CONTROL SWITCH PANEL

Platform Control Box Wiring Diagram- Z-45/25J Perkins Models (before serial number 16304)

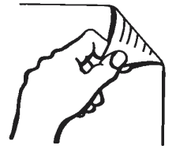
Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25J Perkins Models (before serial number 16304)



LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOM UP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS50	LIFT/DRIVE SELECT SWITCH
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOM UP/DOWN , TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

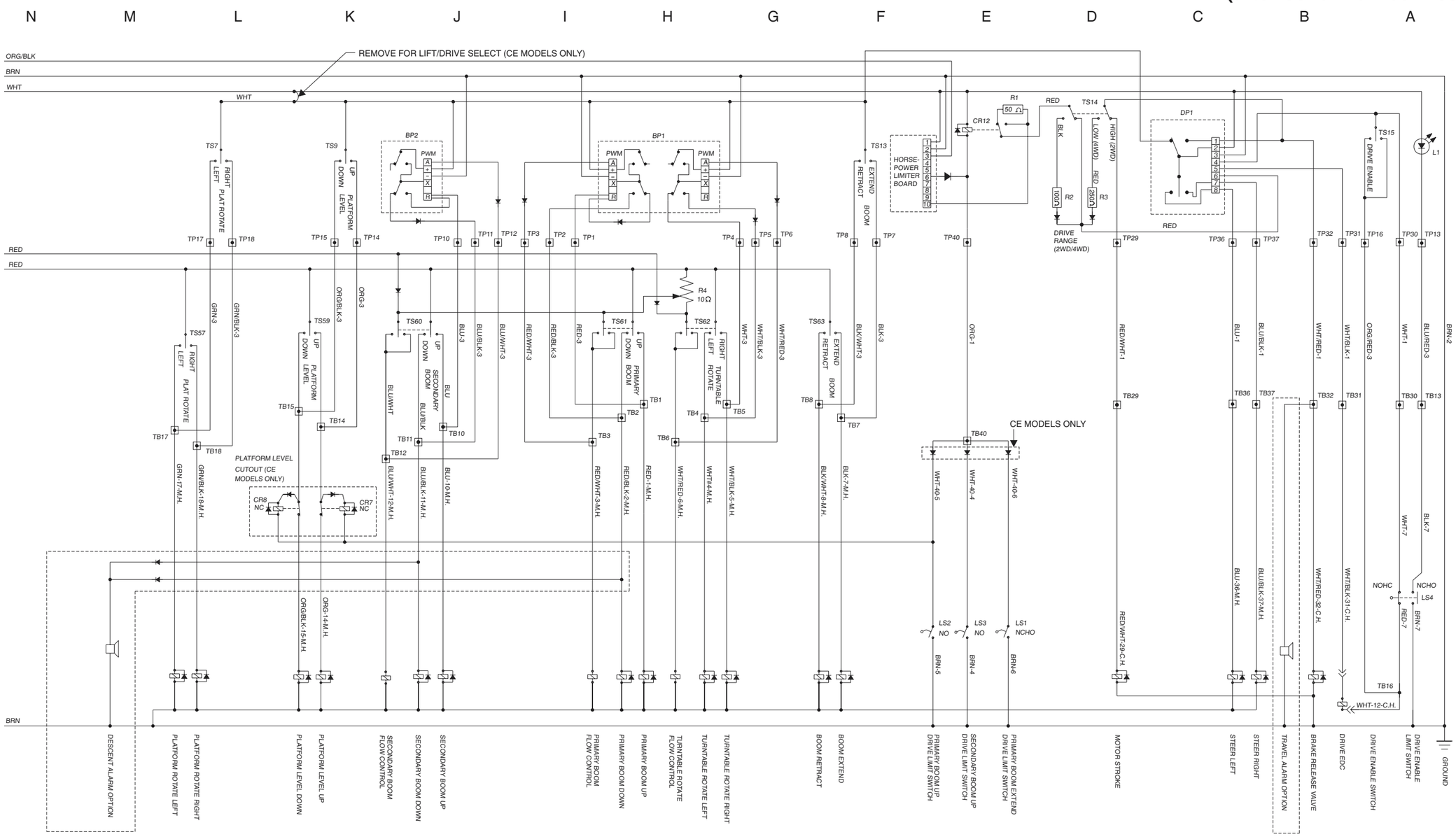
Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25J Perkins Models (before serial number 16304)





Electrical Schematic, Z-45/25 Perkins Models (after serial number 16303)

Electrical Schematic, Z-45/25 Perkins Models (after serial number 16303)

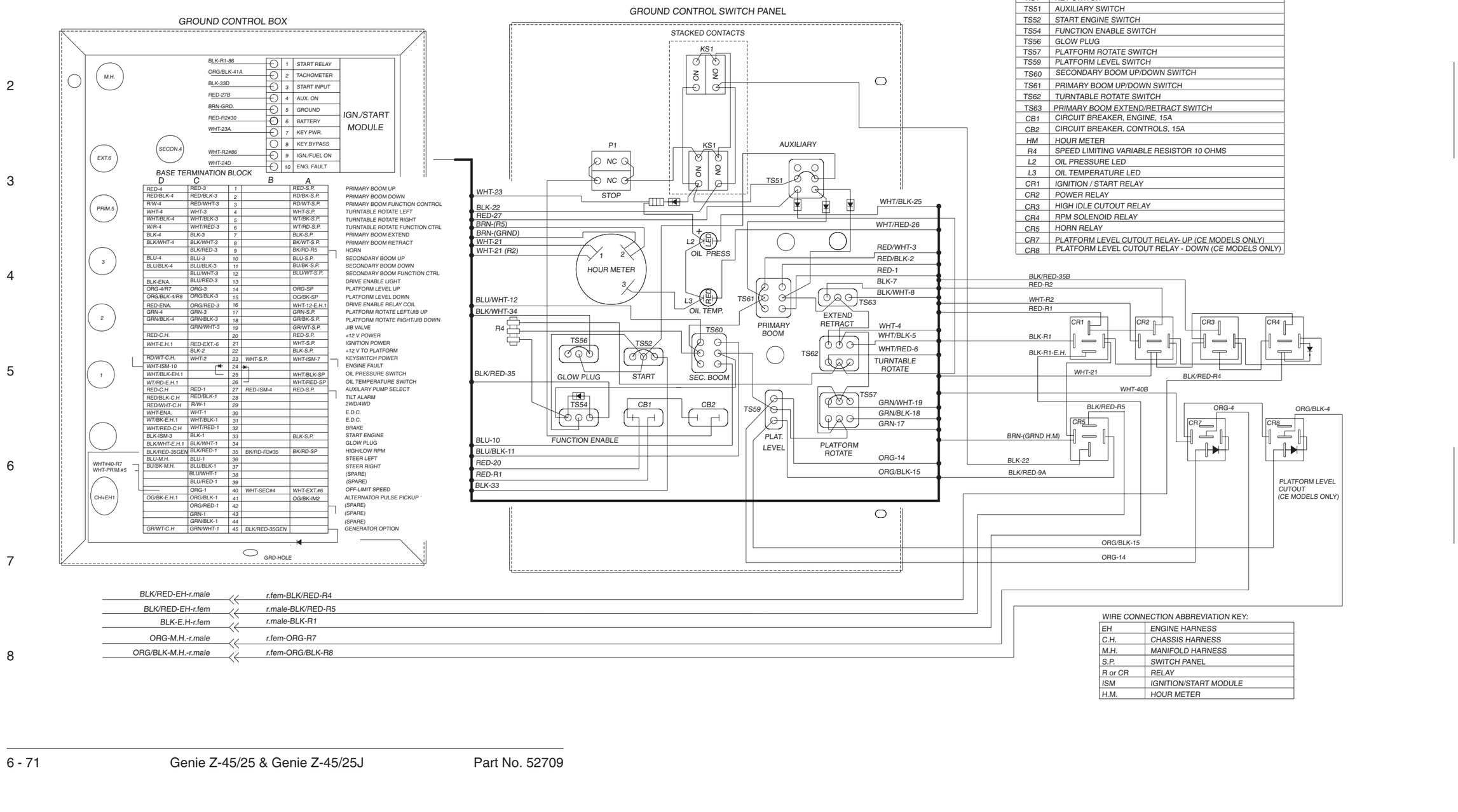


Electrical Schematic, Z-45/25 Perkins Models (after serial number 16303)



Ground Control Box Wiring Diagram- Z-45/25 Perkins Models (after serial number 16303)

Ground Control Box Wiring Diagram- Z-45/25 Perkins Models (after serial number 16303)



D	C		B	A	
RED-4	RED-3	1		RED-S.P.	PRIMARY BOOM UP
RED/BLK-4	RED/BLK-3	2		RD/BK-S.P.	PRIMARY BOOM DOWN
R/W-4	RED/WHT-3	3		RD/WT-S.P.	PRIMARY BOOM FUNCTION CONTROL
WHT-4	WHT-3	4		WHT-S.P.	TURNTABLE ROTATE LEFT
WHT/BLK-4	WHT/BLK-3	5		WT/BK-S.P.	TURNTABLE ROTATE RIGHT
W/R-4	WHT/RED-3	6		WT/RD-S.P.	TURNTABLE ROTATE FUNCTION CTRL
BLK-4	BLK-3	7		BLK-S.P.	PRIMARY BOOM EXTEND
BLK/WHT-4	BLK/WHT-3	8		BK/WT-S.P.	PRIMARY BOOM RETRACT
	BLK/RED-3	9		BK/RD-R5	HORN
BLU-4	BLU-3	10		BLU-S.P.	SECONDARY BOOM UP
BLU/BLK-4	BLU/BLK-3	11		BU/BK-S.P.	SECONDARY BOOM DOWN
	BLU/WHT-3	12		BLU/WT-S.P.	SECONDARY BOOM FUNCTION CTRL
BLK-ENA.	BLU/RED-3	13			DRIVE ENABLE LIGHT
ORG-4/R7	ORG-3	14		ORG-SP	PLATFORM LEVEL UP
ORG/BLK-4/R8	ORG/BLK-3	15		OG/BK-SP	PLATFORM LEVEL DOWN
RED-ENA.	ORG/RED-3	16		WHT-12-E.H.1	DRIVE ENABLE RELAY COIL
GRN-4	GRN-3	17		GRN-S.P.	PLATFORM ROTATE LEFT/JIB UP
GRN/BLK-4	GRN/BLK-3	18		GR/BK-S.P.	PLATFORM ROTATE RIGHT/JIB DOWN
	GRN/WHT-3	19		GR/WT-S.P.	JIB VALVE
RED-C.H.		20		RED-S.P.	+12 V POWER
WHT-E.H.1	RED-EXT.-6	21		WHT-S.P.	IGNITION POWER
	BLK-2	22		BLK-S.P.	+12 V TO PLATFORM
RD/WT-C.H.	WHT-2	23	WHT-S.P.	WHT-ISM-7	KEYSWITCH POWER
WHT-ISM-10		24			ENGINE FAULT
WHT/BLK-EH.1		25		WHT/BLK-SP	OIL PRESSURE SWITCH
WT/RD-E.H.1		26		WHT/RED-SP	OIL TEMPERATURE SWITCH
RED-C.H	RED-1	27	RED-ISM-4	RED-S.P.	AUXILARY PUMP SELECT
RED/BLK-C.H	RED/BLK-1	28			TILT ALARM
RED/WHT-C.H	R/W-1	29			2WD/4WD
WHT-ENA.	WHT-1	30			E.D.C.
WT/BK-E.H.1	WHT/BLK-1	31			E.D.C.
WHT/RED-C.H	WHT/RED-1	32			BRAKE
BLK-ISM-3	BLK-1	33		BLK-S.P.	START ENGINE
BLK/WHT-E.H.1	BLK/WHT-1	34			GLOW PLUG
BLK/RED-35GEN	BLK/RED-1	35	BK/RD-R3#35	BK/RD-SP	HIGH/LOW RPM
BLU-M.H.	BLU-1	36			STEER LEFT
BU/BK-M.H.	BLU/BLK-1	37			STEER RIGHT
	BLU/WHT-1	38			(SPARE)
	BLU/RED-1	39			(SPARE)
	ORG-1	40	WHT-SEC#4	WHT-EXT.#6	OFF-LIMIT SPEED
OG/BK-E.H.1	ORG/BLK-1	41		OG/BK-IM2	ALTERNATOR PULSE PICKUP
	ORG/RED-1	42			(SPARE)
	GRN-1	43			(SPARE)
	GRN/BLK-1	44			(SPARE)
GR/WT-C.H	GRN/WHT-1	45	BLK/RED-35GEN		GENERATOR OPTION

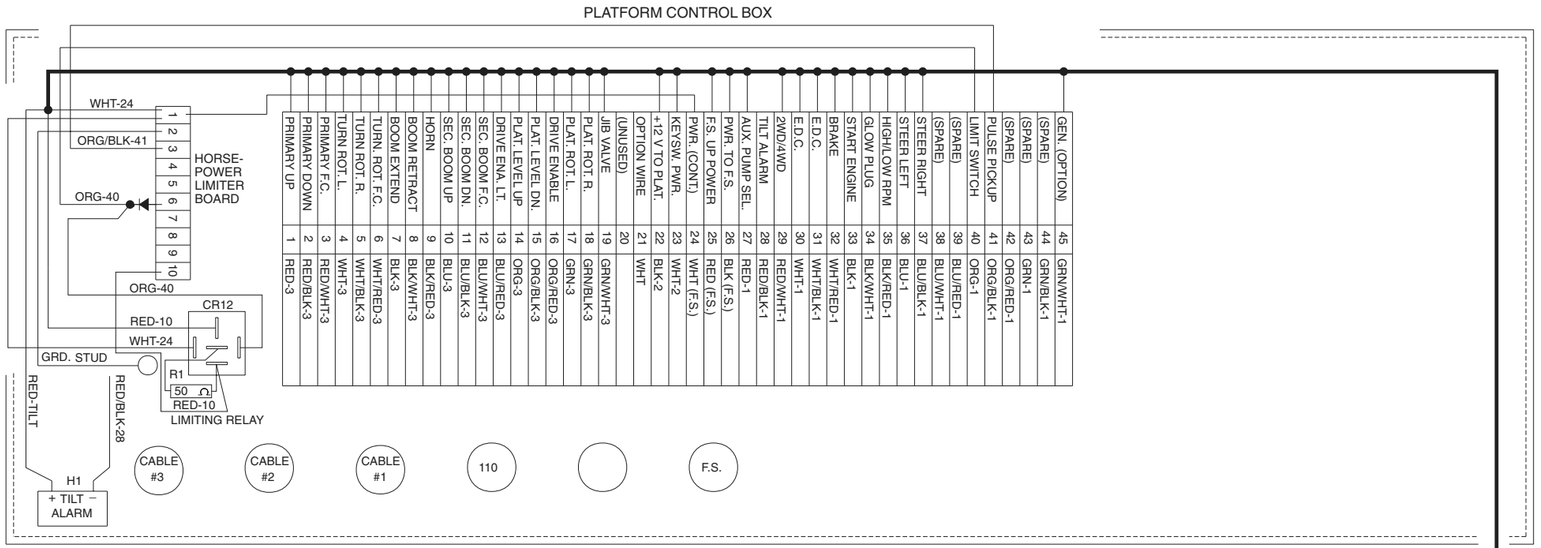
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

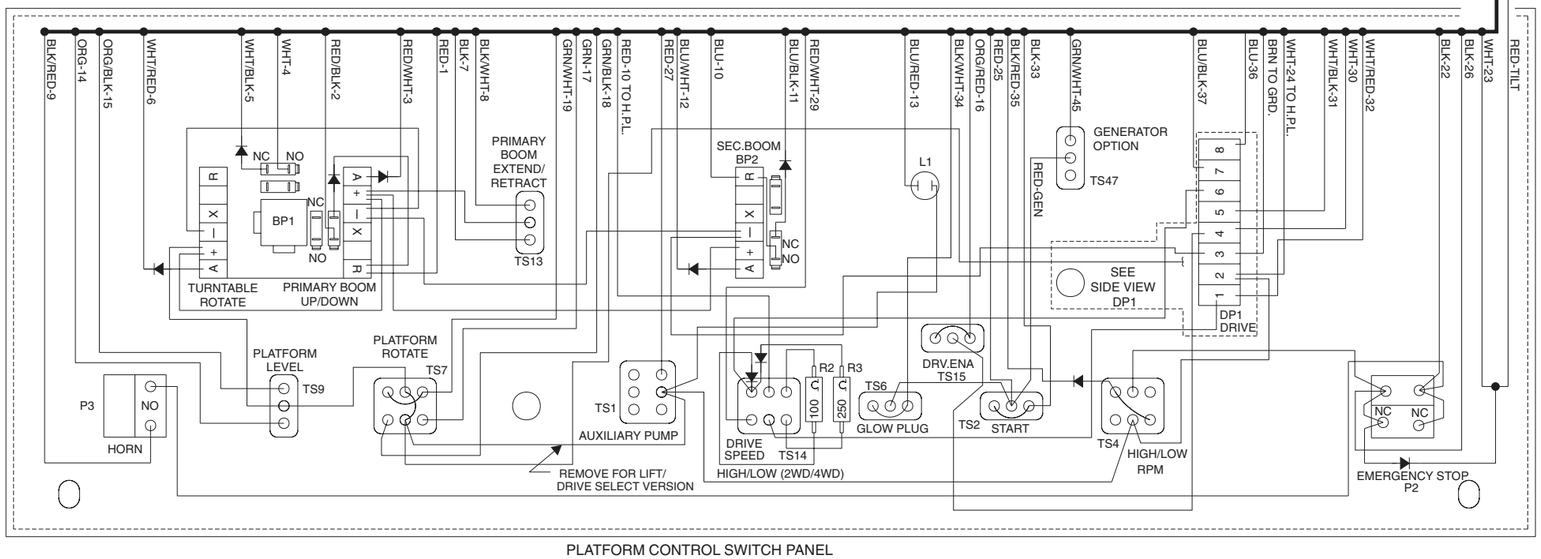
WIRE CONNECTION ABBREVIATION KEY:

EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25 Perkins Models (after serial number 16303)

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

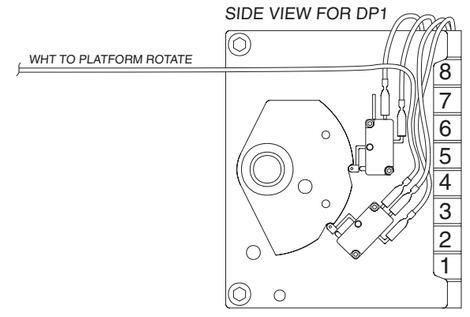




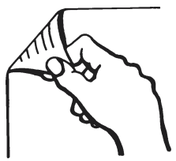
PLATFORM CONTROL SWITCH PANEL

COMPONENT INDEX

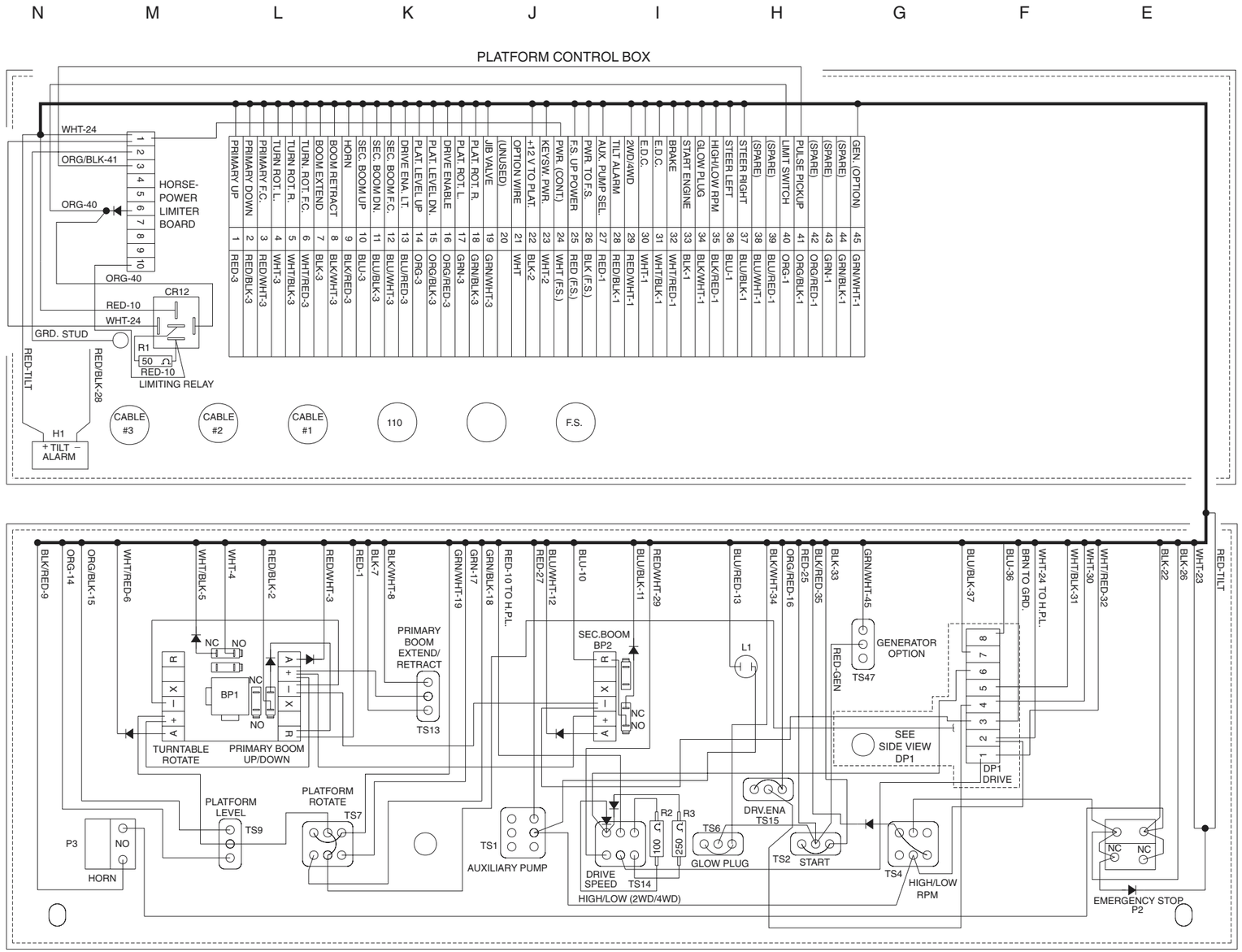
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS47	GENERATOR SWITCH (OPTION)
R1	EFI RESISTOR (FORD AND PERKINS ONLY)
R2	LOW SPEED RESISTOR
R3	LOW SPEED RESISTOR
L1	DRIVE ENABLE LED
BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DOWN,TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
H1	TILT ALARM



Platform Control Box Wiring Diagram- Z-45/25 Perkins Models (after serial number 16303)

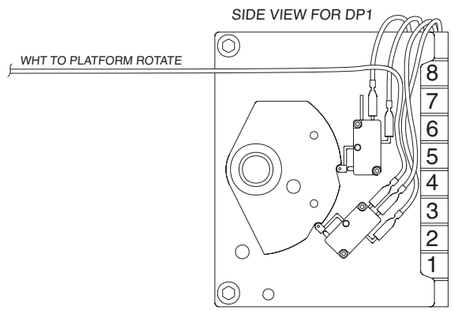


Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25 Perkins Models (after serial number 16303)



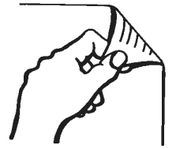
COMPONENT INDEX

P2	*EMERGENCY STOP BUTTON*
P3	*HORN SWITCH*
TS1	*AUXILIARY SWITCH*
TS2	*START ENGINE SWITCH*
TS3	*FUEL SELECT SWITCH*
TS6	*GLOW PLUG OPTION (DIESEL ONLY)*
TS7	*PLATFORM ROTATE SWITCH*
TS9	*PLATFORM LEVEL SWITCH*
TS10	*SECONDARY BOOM UP/DOWN SWITCH*
TS11	*PRIMARY BOOM UP/DOWN SWITCH*
TS12	*TURNTABLE ROTATE SWITCH*
TS13	*PRIMARY BOOM EXTEND/RETRACT SWITCH*
TS47	*GENERATOR SWITCH (OPTION)*
R1	*EFI RESISTOR (FORD AND PERKINS ONLY)*
R2	*LOW SPEED RESISTOR*
R3	*LOW SPEED RESISTOR*
L1	*DRIVE ENABLE LED*
BP1	*BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOM UP/DN,TURNTABLE ROTATE*
BP2	*BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN*
CR12	*EFI RELAY (FORD AND PERKINS ONLY)*
DP1	*DRIVE PROPORTIONAL JOYSTICK*
H.P.L.	*HORSEPOWER LIMITER BOARD*
H1	*TILT ALARM*



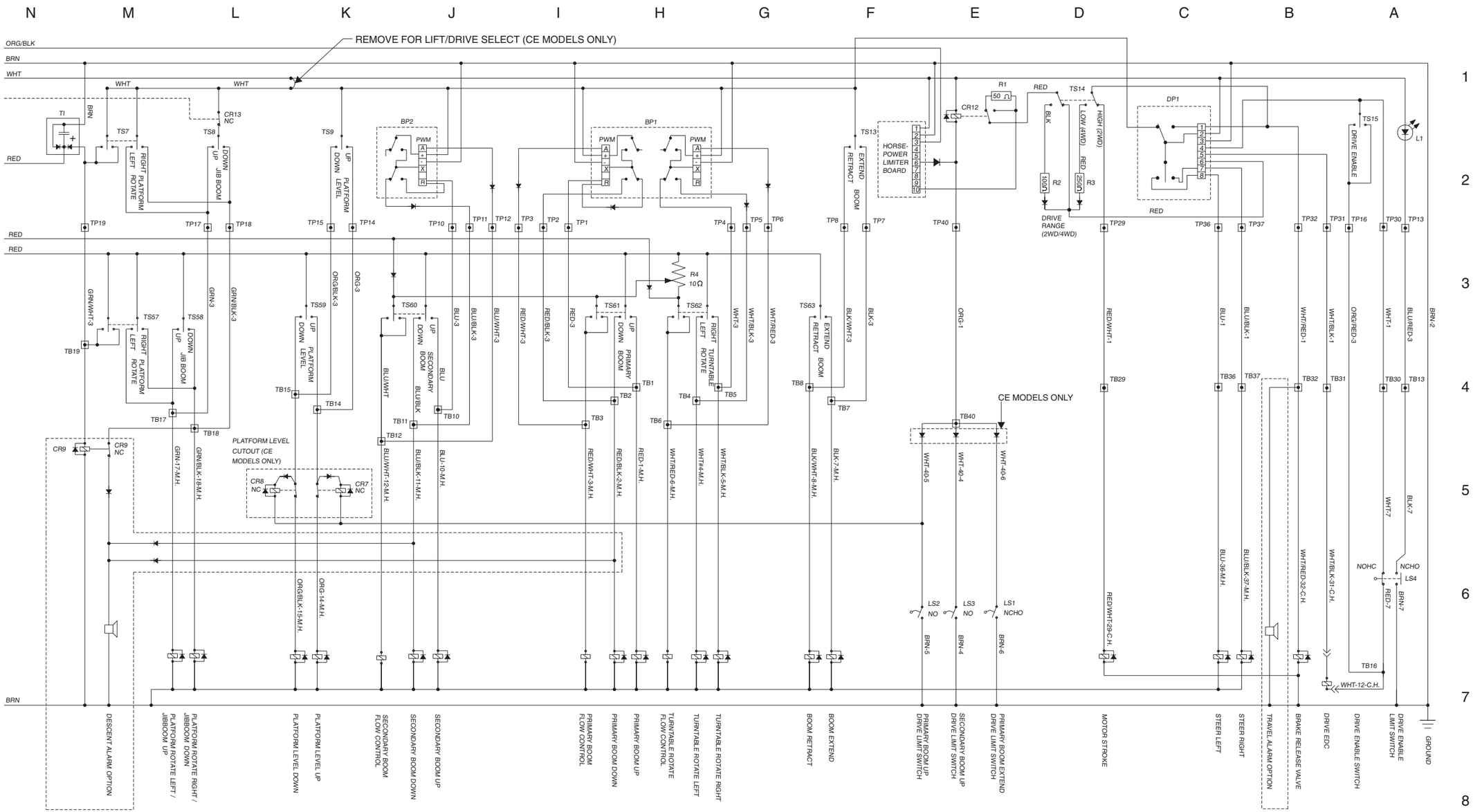
Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25 Perkins Models (after serial number 16303)





Electrical Schematic, Z-45/25J Perkins Models (after serial number 16303)

Electrical Schematic, Z-45/25J Perkins Models (after serial number 16303)

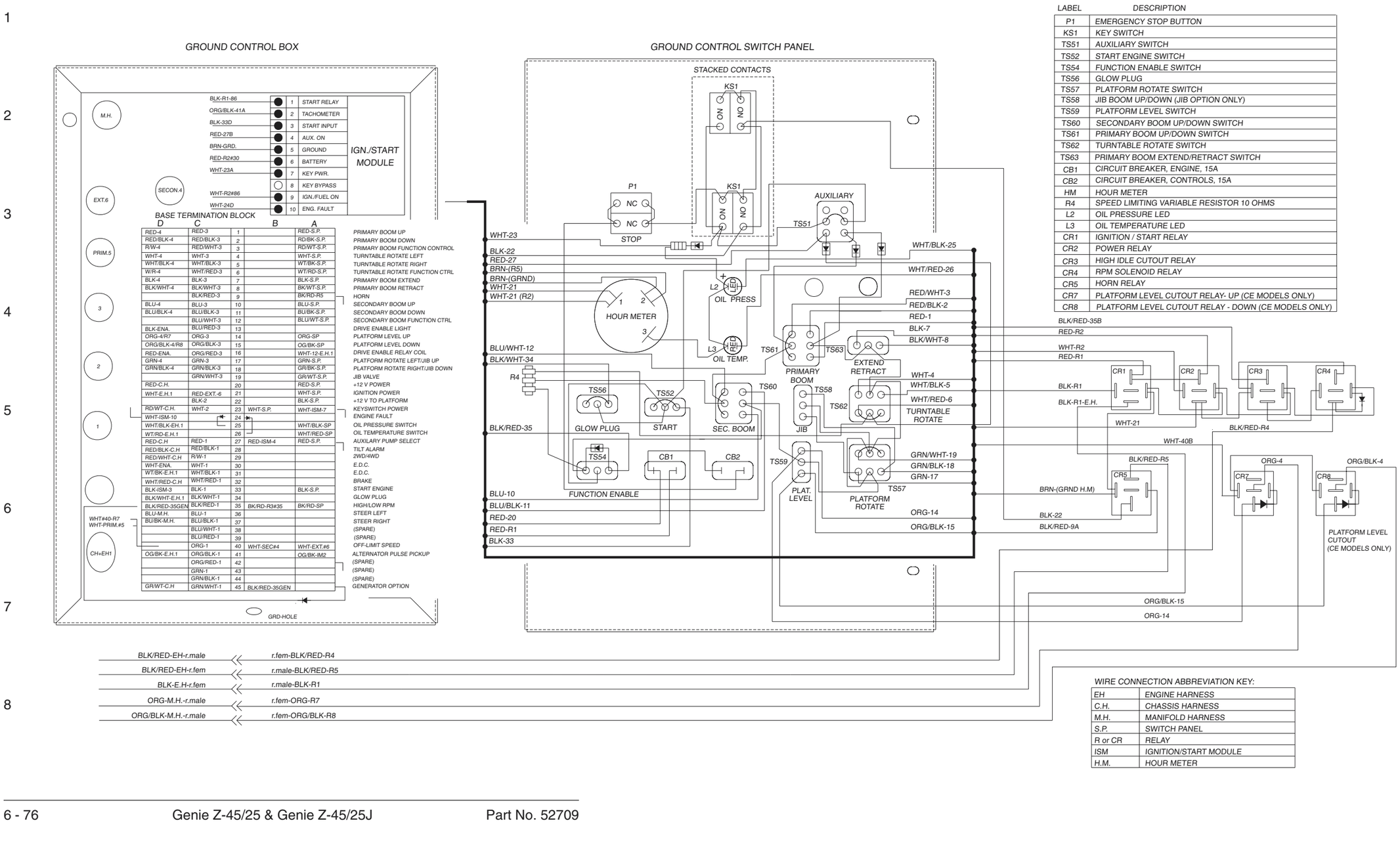


Electrical Schematic, Z-45/25J Perkins Models (after serial number 16303)



Ground Control Box Wiring Diagram- Z-45/25J Perkins Models (after serial number 16303)

Ground Control Box Wiring Diagram- Z-45/25J Perkins Models (after serial number 16303)

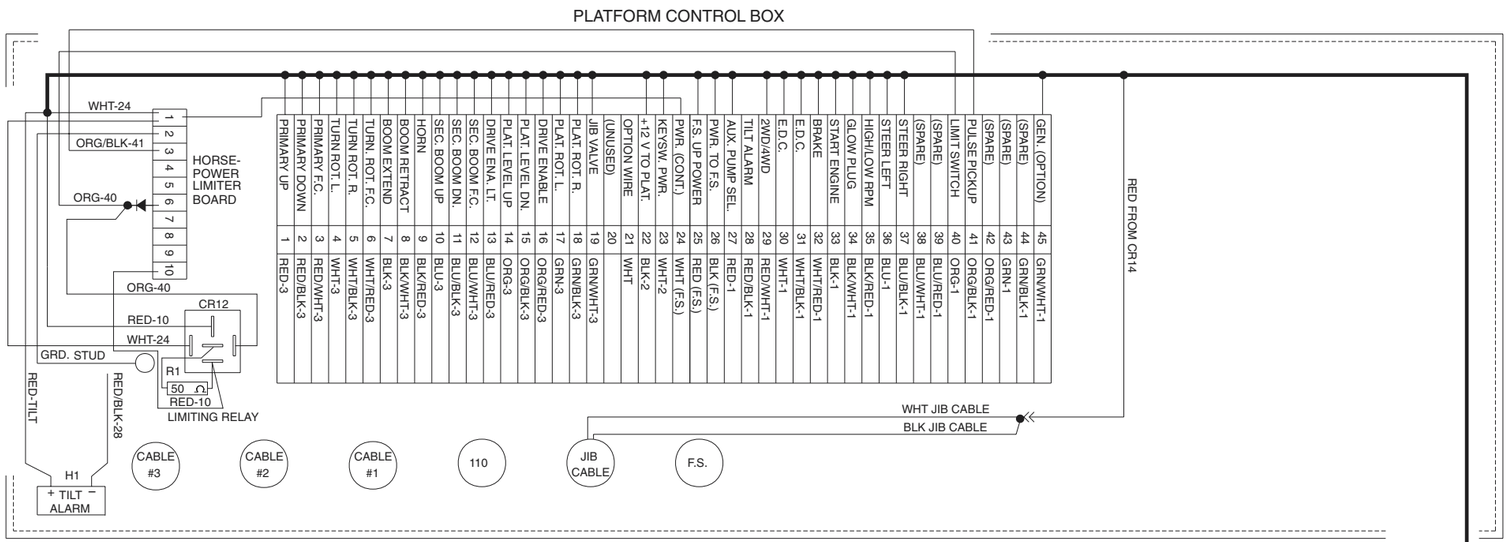


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	START ENGINE SWITCH
TS54	FUNCTION ENABLE SWITCH
TS56	GLOW PLUG
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM UP/DOWN (JIB OPTION ONLY)
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
HM	HOUR METER
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
L2	OIL PRESSURE LED
L3	OIL TEMPERATURE LED
CR1	IGNITION / START RELAY
CR2	POWER RELAY
CR3	HIGH IDLE CUTOUT RELAY
CR4	RPM SOLENOID RELAY
CR5	HORN RELAY
CR7	PLATFORM LEVEL CUTOUT RELAY- UP (CE MODELS ONLY)
CR8	PLATFORM LEVEL CUTOUT RELAY - DOWN (CE MODELS ONLY)

WIRE CONNECTION ABBREVIATION KEY:

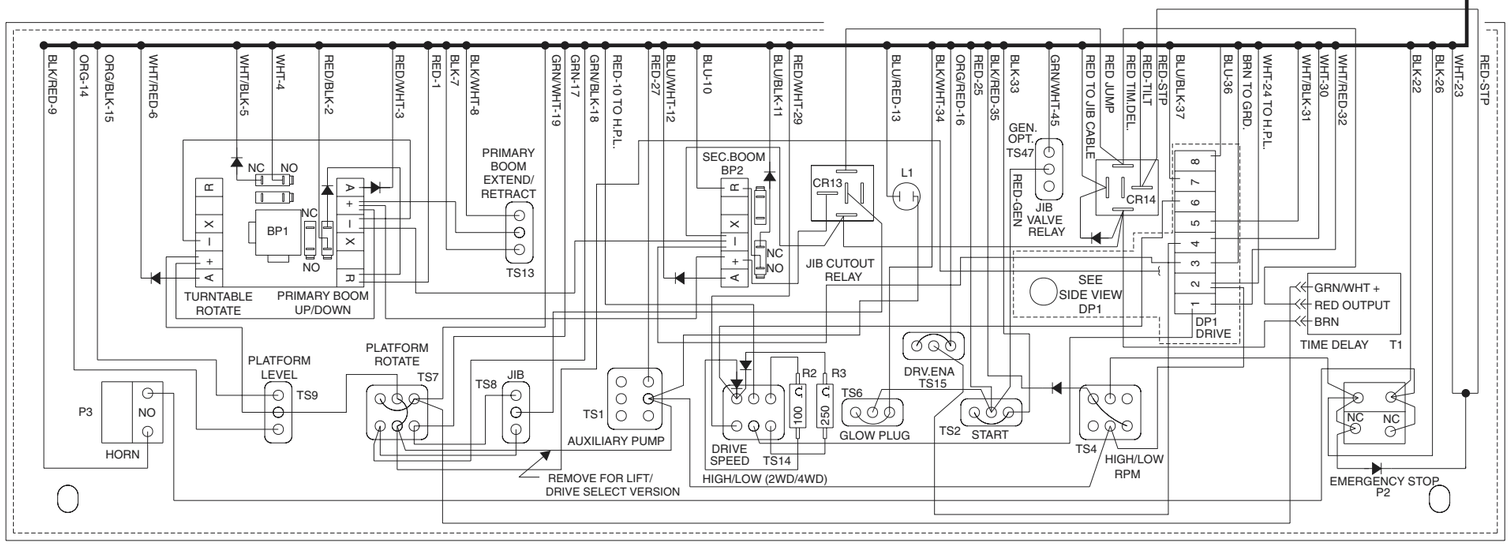
EH	ENGINE HARNESS
C.H.	CHASSIS HARNESS
M.H.	MANIFOLD HARNESS
S.P.	SWITCH PANEL
R or CR	RELAY
ISM	IGNITION/START MODULE
H.M.	HOUR METER

Platform Control Box Wiring Diagram- Z-45/25J Perkins Models (after serial number 16303)



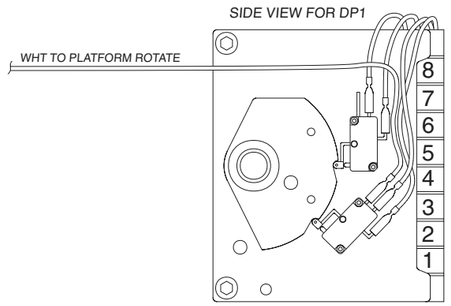
COMPONENT INDEX

P2	*EMERGENCY STOP BUTTON*
P3	*HORN SWITCH*
TS1	*AUXILIARY SWITCH*
TS2	*START ENGINE SWITCH*
TS6	*GLOW PLUG OPTION*
TS7	*PLATFORM ROTATE SWITCH*
TS8	*JIB UP/DOWN*
TS9	*PLATFORM LEVEL SWITCH*
TS10	*SECONDARY BOOM UP/DOWN SWITCH*
TS11	*PRIMARY BOOM UP/DOWN SWITCH*
TS12	*TURNTABLE ROTATE SWITCH*
TS13	*PRIMARY BOOM EXTEND/RETRACT SWITCH*
TS47	*GENERATOR SWITCH (OPTION)*
R1	*EFI RESISTOR (FORD AND PERKINS ONLY)*
R2	*LOW SPEED RESISTOR*
R3	*LOW SPEED RESISTOR*
L1	*DRIVE ENABLE LED*
BP1	*BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOMUP/DOWN,TURNTABLE ROTATE*
BP2	*BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN*
CR12	*EFI RELAY (FORD AND PERKINS ONLY)*
CR13	*JIB CUTOUT RELAY*
CR14	*JIB VALVE RELAY*
DP1	*DRIVE PROPORTIONAL JOYSTICK*
H.P.L.	*HORSEPOWER LIMITER BOARD*
T1	*TIME DELAY*
	TILT ALARM

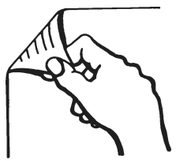


PLATFORM CONTROL SWITCH PANEL

SIDE VIEW FOR DP1



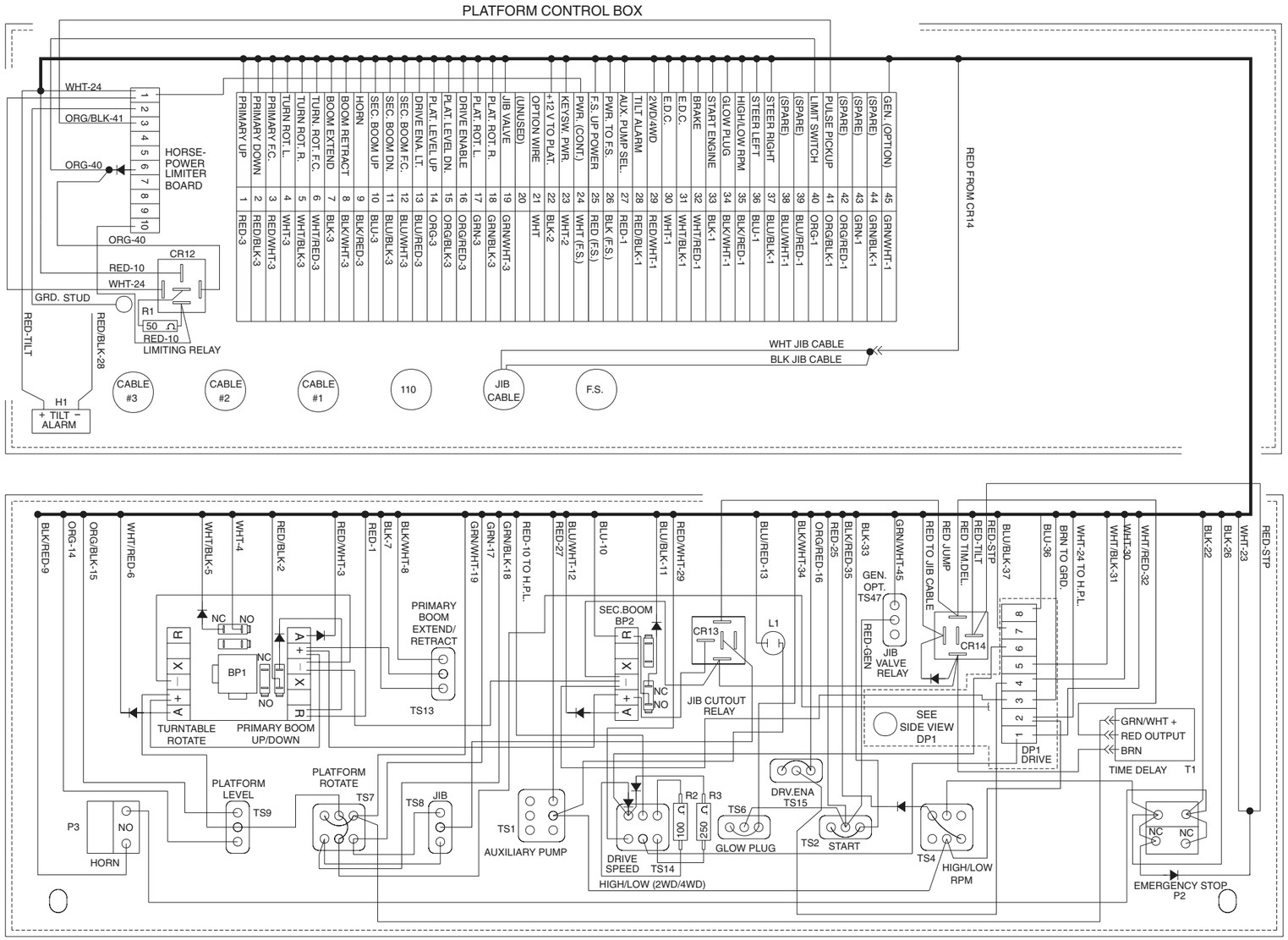
Platform Control Box Wiring Diagram- Z-45/25J Perkins Models (after serial number 16303)



Platform Control Box Wiring Diagram- Lift/Drive SelectOption, Z-45/25J Perkins Models (after serial number 16303)

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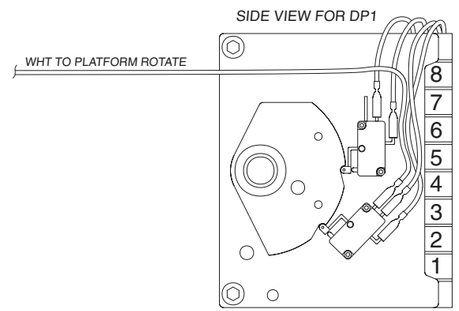
1 2 3 4 5 6 7 8



COMPONENT INDEX

P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS6	GLOW PLUG OPTION (DIESEL ONLY)
TS7	PLATFORM ROTATE SWITCH
TS8	JIB BOOMUP/DOWN
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
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R1	EFI RESISTOR (FORD AND PERKINS ONLY)
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R3	LOW SPEED RESISTOR
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BP1	BOOM PROPORTIONAL JOYSTICK: PRIMARY BOOMUP/DOWN,TURNTABLE ROTATE
BP2	BOOM PROPORTIONAL JOYSTICK: SECONDARY BOOM UP/DOWN
CR12	EFI RELAY (FORD AND PERKINS ONLY)
CR13	JIB CUTOUT RELAY
CR14	JIB VALVE RELAY
DP1	DRIVE PROPORTIONAL JOYSTICK
H.P.L.	HORSEPOWER LIMITER BOARD
T1	TIME DELAY
H1	TILT ALARM

PLATFORM CONTROL SWITCH PANEL



Platform Control Box Wiring Diagram- Lift/Drive Select Option, Z-45/25J Perkins Models (after serial number 16303)

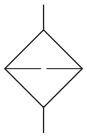
Platform Control Box Wiring Diagram- Load Sensor Option, All Models (after serial number 16303)

Platform Control Box Wiring Diagram- Load Sensor Option, All Models (after serial number 16303)

BILL OF MATERIALS

PART NUMBER	DESCRIPTION
54904	WIRE ASSY FOOTSWITCH, SERV LOOP
54905	WIRE ASSY LOADSENSE, ORANGE LED
54906	WIRE ASSY FTSWTCH/LDSENSOR, PWR
54907	WIRE ASSY, LDSENSE, LED, GROUND
54908	WIRE ASSY LDSENS/FS, WHITE JUMP
54909	WIRE ASSY LDSENSE, BROWN, GROUND
32335	LED,RED 12V LARGE
48716	DECAL, LABEL, LOAD SENSOR
56765	LOAD CELL BENDING TYPE
56766	MODULE,LOAD SENSE,1/12V RELAY

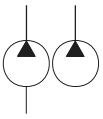
Hydraulic Symbols Legend



Filter



Fixed displacement pump



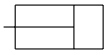
Two stage, fixed displacement pump



Bi-directional motor



Pump prime mover engine



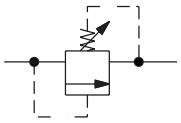
Double acting cylinder



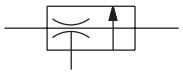
Orifice with size



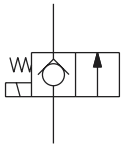
Check valve



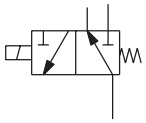
Relief valve



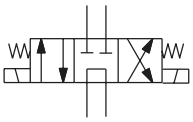
Priority flow divider



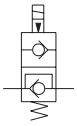
Solenoid operated dump valve



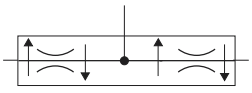
Solenoid operated 2 pos., 3 way, directional valve



Solenoid operated 3 pos., 4 way, directional valve



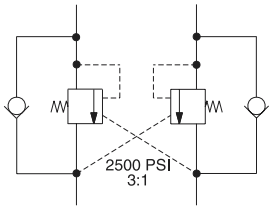
Solenoid operated 2 pos., 2 way, N.O. Poppet valve



Flow divider/combiner



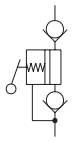
Shuttle valve



Counterbalance valve



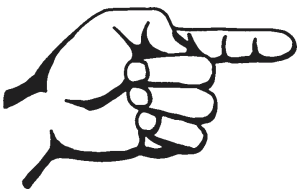
2 pos.2 way, directional valve



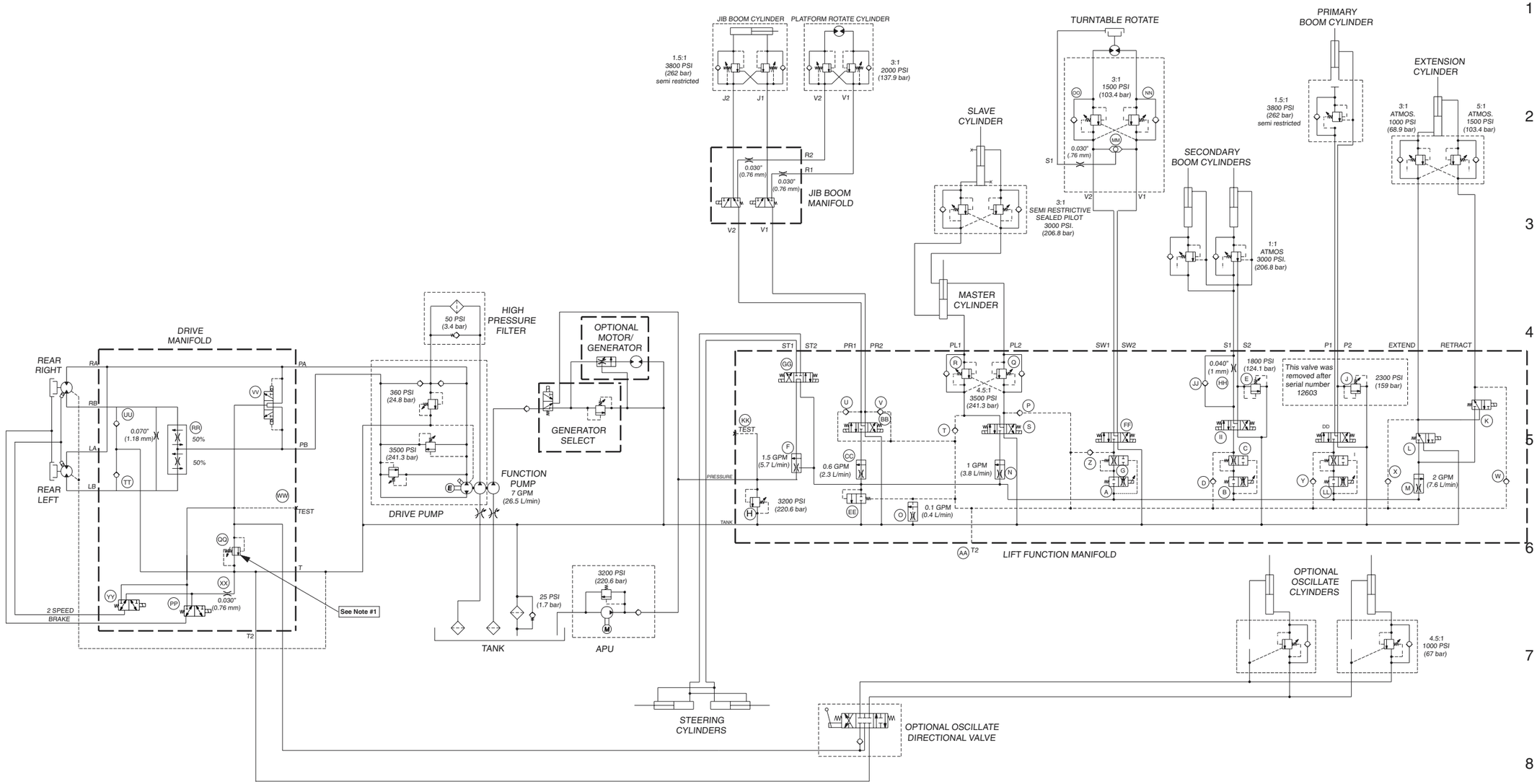
Brake release hand pump



Brake



2WD Hydraulic Schematic

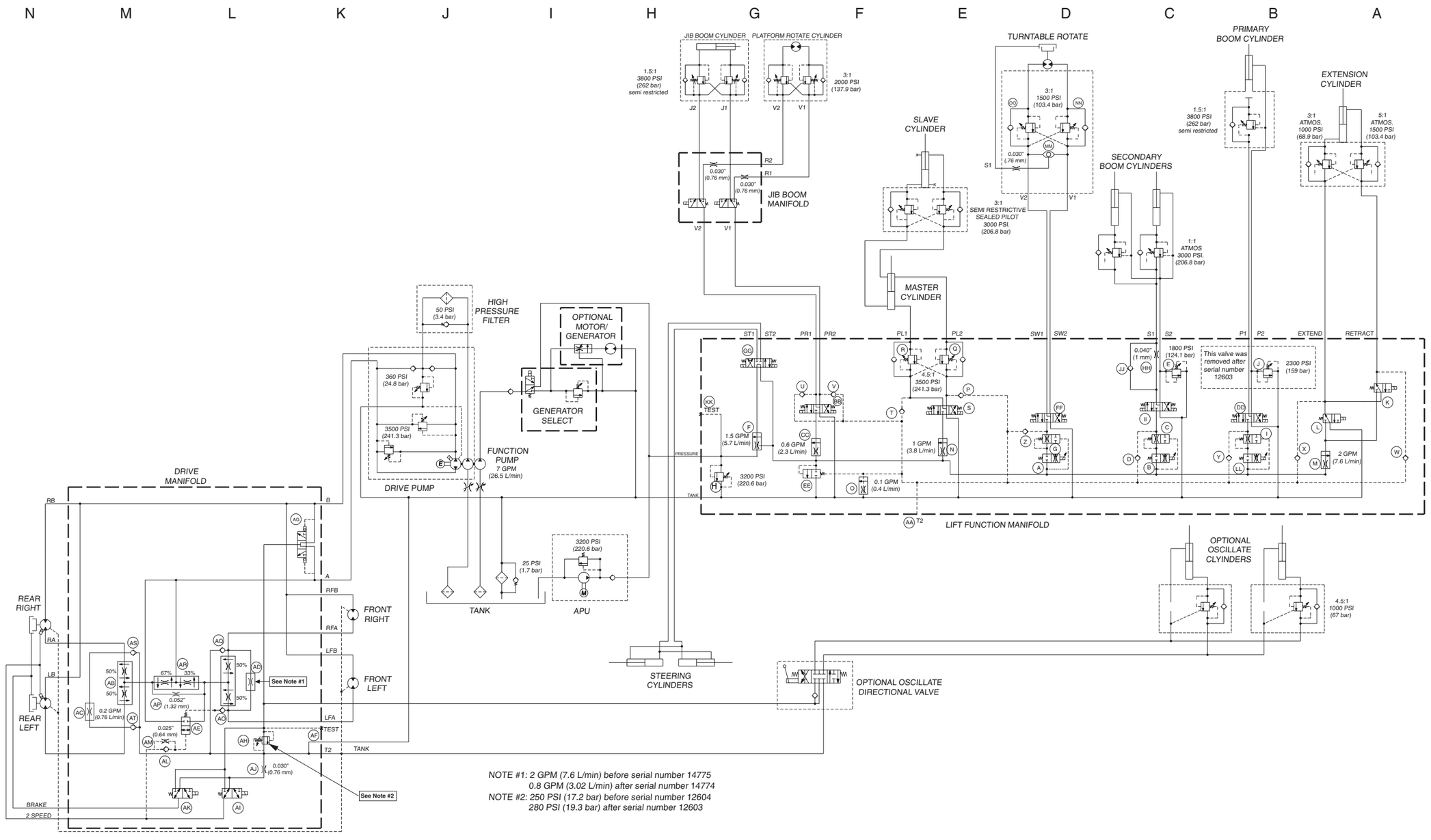


NOTE #1: 250 PSI (17.2 bar) before serial number 12604
280 PSI (19.3 bar) after serial number 12603

2WD Hydraulic Schematic



4WD Hydraulic Schematic



NOTE #1: 2 GPM (7.6 L/min) before serial number 14775
0.8 GPM (3.02 L/min) after serial number 14774
NOTE #2: 250 PSI (17.2 bar) before serial number 12604
280 PSI (19.3 bar) after serial number 12603

4WD Hydraulic Schematic



Repair Procedures



Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie Z-45/25 & Genie Z-45/25J 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 stowed position
  - · Turntable rotated with the boom between the non-steering wheels
  - · Turntable secured with the turntable rotation lock
  - · 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.

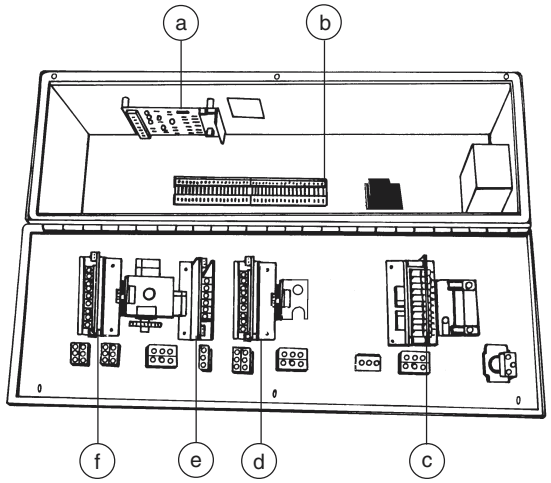
NOTICE Green—used to indicate operation or maintenance information.

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

Platform Controls

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 terminal strip
- c drive proportional controller
- d secondary boom proportional controller
- e primary boom proportional controller
- f turntable rotate proportional controller

Primary Boom Up/Down Controller Adjustments

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

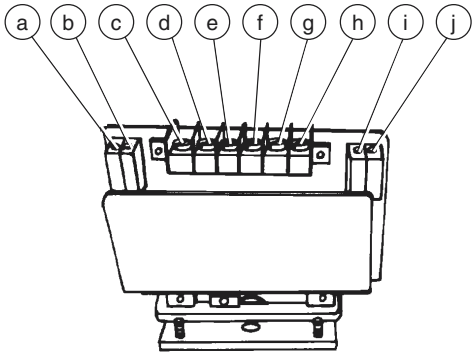
NOTICE Do not adjust the joystick controllers unless the static battery voltage is above 12V DC and the alternator is operating properly with 13.6 to 14.5V DC output.

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 potentiameter (max out trimpot)
- High range trim potentiameter (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 rimpot)

1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls. Do not start the engine.

2 Open the platform control box lid and locate the primary boom up/down controller.



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

3 Set the preliminary ramp rate: Turn the ramp rate trimpot adjustment screw counterclockwise 15 turns or until you hear a repeated click.

4 Connect the red (+) lead from a volt meter to the “A” terminal on the controller printed circuit board. Connect the black (-) lead to ground.

5 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 2.85V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

6 Set the hi range: 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 hi range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

7 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 5.5V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

8 Start the engine and move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).

9 Start a timer and record how long it takes for the primary boom to fully raise. Adjust the hi range trimpot to achieve a 24 to 27 second cycle time. Turn the hi range trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.

10 Start a timer and record how long it takes for the boom to fully lower. Adjust the lo range trimpot to achieve an 32 to 37 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 12-2, *Valve Adjustments - Function Manifold.*

11 Turn the engine OFF.

12 Pull out the Emergency Stop button to the ON position.

PLATFORM CONTROLS

13 Press down the foot switch and then move the control handle all the way to the UP position. Record the maximum voltage reading.

14 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.

15 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	2.85V DC
Primary boom up - hi range	6.5V DC
Cycle time	24 to 27 seconds
Primary boom down - lo range	5.5V DC
Cycle time	32 to 37 seconds
Ramp rate	3 to 4 seconds

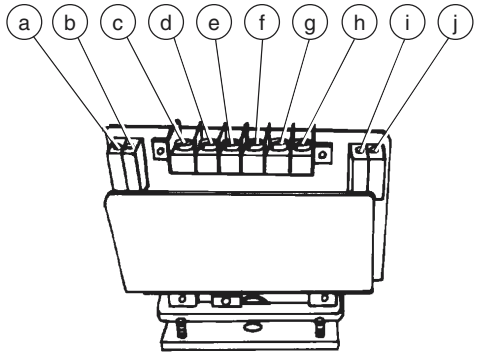
Secondary Boom Up/Down Controller Adjustments

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

NOTICE Do not adjust the joystick 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 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls. Do not start the engine.

2 Open the platform control box lid and locate the secondary boom up/down controller.



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

3 Set the preliminary ramp rate: Turn the ramp rate trimpot adjustment screw counterclockwise 15 turns or until you hear a repeated click.

4 Connect the red (+) lead from a volt meter to the “A” terminal on the controller printed circuit board. Connect the black (-) lead to ground.

5 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 2.85V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

6 Set the hi range: 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 hi range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

7 Set the lo range: Press down the foot switch, then move the control handle all the way to the DOWN position. Adjust the voltageto 5.5V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

8 Start the engine and move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).

9 Start a timer and record how long it takes for the secondary boom to fully raise. Adjust the max-out trimpot to achieve a 23 to 27 second cycle time. Turn the hi range trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.

10 Start a timer and record how long it takes for the secondary boom to fully lower. Adjust the dual range trimpot to achieve an 23 to 27 second cycle time. Turn the hi 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 12-2, *Valve Adjustments - Function Manifold.*

11 Turn the engine off.

12 Pull out the Emergency Stop button to the ON position.

PLATFORM CONTROLS

13 Press down the foot switch and then move the control handle all the way to the UP position. Record the maximum voltage reading.

14 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.

15 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.

Secondary boom up/down specifications	
Threshold	2.85V DC
Secondary boom up - hi range	6.5V DC
Cycle time	23 to 27 seconds
Secondary boom down - lo range	5.5V DC
Cycle time	40 seconds
Ramp rate	3 to 4 seconds

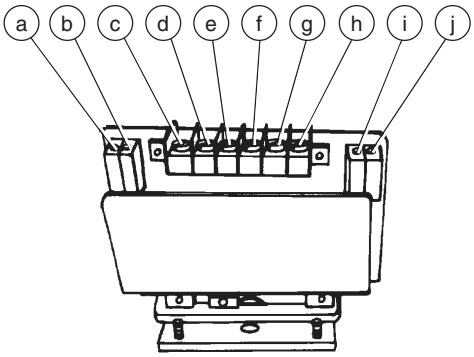
Turntable Rotation Controller Adjustments

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

NOTICE Do not adjust the joystick 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 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls. Do not start the engine.

2 Open the platform control box lid and locate the turntable rotation controller. Refer to the platform control box illustration, page 7-2.



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

3 Set the preliminary ramp rate: Turn the ramp rate trimpot adjustment screw counterclockwise 15 turns or until you hear a repeated click.

4 Connect the red (+) lead from a volt meter to the “A” terminal on the controller printed circuit board. Connect the black (-) lead to ground.

5 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 2.85V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

6 Set the hi range: 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 5.5V DC. Turn the hi range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

7 Start the engine and move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol). Rotate the turntable to the FULL RIGHT position.

8 Start a timer and record how long it takes the turntable to rotate to the FULL LEFT position. Adjust the max-out trimpot to achieve a 73 to 78 second cycle time. Turn the hi range trimpot adjustment screw clockwise to increase the speed or counterclockwise to decrease the speed.

9 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.

Turntable rotation specifications

Threshold	2.85V DC
Turntable rotation - hi range	5.5V DC
Cycle time	73 to 78 seconds
Ramp rate	5 seconds

PLATFORM CONTROLS

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.

How to Adjust the Horsepower Limiter Board

NOTICE The engine rpm must be correct before performing this procedure. See Maintenance Procedure A-22, *Check and Adjust the Engine RPM,* for Perkins Diesel Models, OR see B-10 for Ford and Deutz Engine Models.

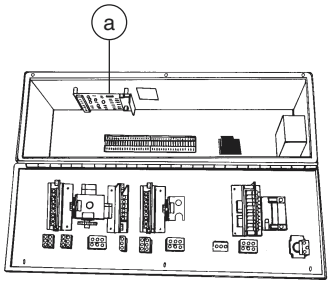
NOTICE Do not adjust the horsepower limiter board unless the static battery voltage is above 12V DC and the alternator is operating properly with 12.5 to 14.5V DC output.

NOTICE **Ford models:** Perform this procedure in gasoline mode.

1 Remove the fasteners from the platform control box lid.

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

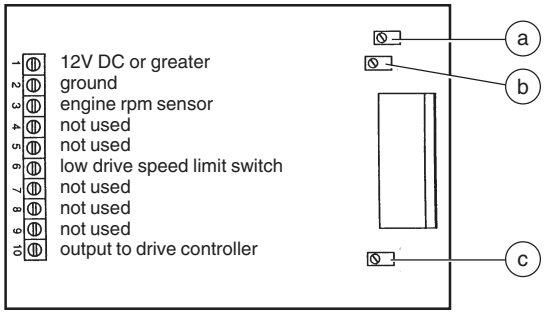
⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.



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 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

4 Start the engine from the platform controls.

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

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

"A" potentiometer specifications - all models	
Voltage setting	9 to 10V DC

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

8 Press down the foot switch and then adjust the "C" potentiometer to obtain a 0.1V DC to 0.5V DC voltage reading.

9 Move the engine idle control 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 primary boom above horizontal.

PLATFORM CONTROLS

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 (see specifications below). Turn the "B" potentiometer counterclockwise to decrease voltage or clockwise to increase voltage.

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

Drive speed specifications

Stowed position drive speed: All models	distance: 40 ft/12.2 m 40 ft/5.7 sec 12.2 m/5.7 sec
Drive speed, boom raised or extended, Standard Base Models	0.6 mph 1 km/h 40 ft/45 sec 12.2 m/45 sec
Drive speed, boom raised or extended, Narrow Base Models	0.36 mph 0.58 km/h 40 ft/79 sec 12.2 m/79 sec

1-3 Foot Switch

How to Test the Foot Switch

NOTICE Perform this procedure with the keyswitch in the OFF position.

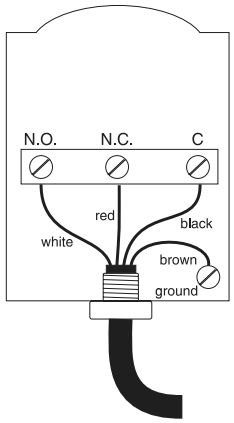
1 Remove the foot switch cover plate fasteners from the platform.

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 terminal combination listed and check for continuity.



Test	Desired result
N.C. to C	continuity (zero Ω)
N.C. to N.O.	no continuity (infinite Ω)
C to N.O.	no continuity (infinite Ω)

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

Test	Desired result
N.C. to C	no continuity (infinite Ω)
N.C. to N.O.	no continuity (infinite Ω)
C to N.O.	continuity (zero Ω)

1-4 Toggle Switches

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

How to Test a Toggle Switch

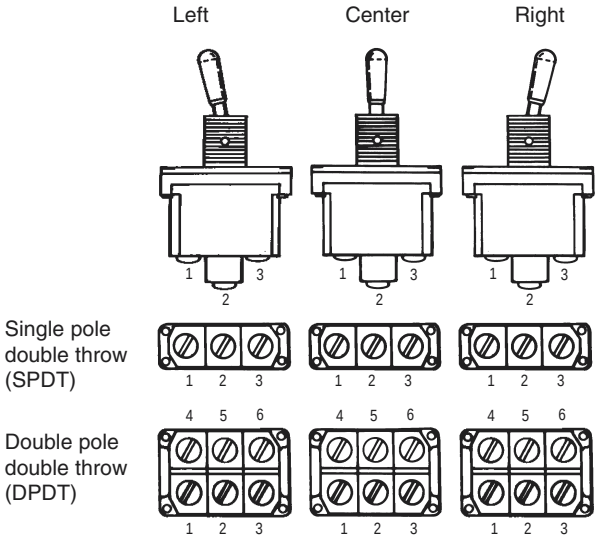
NOTICE Continuity is the equivalent of 0 to 3 ohms. A simple continuity tester may not accurately test the switch.

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

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

PLATFORM CONTROLS

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



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

Platform Components

2-1 Platform

How to Remove the Platform

1 Remove the foot switch cover plate from the platform.

2 Remove the foot switch guard mounting fasteners from the platform.

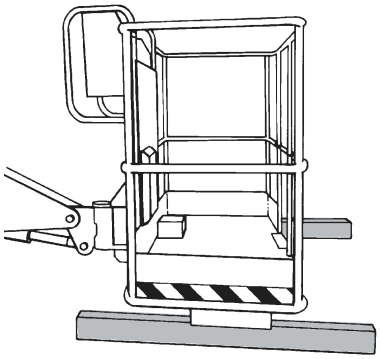
3 Remove the footswitch and guard through the back of the platform through the access hole and set it aside.

4 Remove the platform control box mounting fasteners. Then 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.

5 Raise the primary boom slightly and place blocks under the platform. Then lower the primary boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.



6 Remove the platform mounting fasteners and remove the platform from the machine.

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

PLATFORM COMPONENTS

2-2
Platform Leveling Slave Cylinder

The slave cylinder and the rotator pivot are the two primary supports for the platform. The slave cylinder keeps the platform level through the entire range of 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 Platform Leveling Slave Cylinder

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

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

1 **Z-45/25J Models:** Extend the primary boom until the slave cylinder barrel-end pivot pin is accessible.

2 Raise the primary boom slightly and place blocks under the platform for support.

3 Lower the primary boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.

4 **Z-45/25J Models:** Tag, disconnect and plug the hydraulic hoses from the slave cylinder at the union located near the jib/rotate manifold and connect them together using a connector. 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.

Z-45/25 Models: Tag, disconnect and plug the hydraulic hoses from the slave cylinder and connect the hoses together using a connector. Cap the fittings on the cylinder. Then pull the slave cylinder hoses out through the primary extension boom.

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

5 Remove the pin retaining fastener from the slave cylinder rod-end pivot pin. Do not remove the pin.

6 **Z-45/25J Models:** Remove the external snap rings from the barrel-end pivot pin.

Z-45/25 Models: Remove the pin retaining fastener from the slave cylinder barrel-end pivot pin. Do not remove the pin.

7 Support the slave cylinder with a lifting device.

8 **Z-45/25J Models:** Support the jib boom bell crank with a suitable lifting device.

9 Use a soft metal drift to drive the rod-end pivot pin out.

⚠WARNING Crushing hazard. The jib boom bell crank may fall when the slave cylinder rod-end pivot pin is removed if it is not properly supported.

CAUTION Component damage hazard. The slave cylinder rod may become damaged if it is allowed to fall if it is not properly supported by the lifting device.

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

11 Carefully pull the cylinder out of the primary boom.

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 primary boom to a horizontal position.

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

2-3 Platform Rotator

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

How to Remove the Platform Rotator

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

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

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

PLATFORM COMPONENTS

2 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.

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

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

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

⚠CAUTION Crushing hazard. The platform mounting weldment may become unbalanced and fall if it is not properly supported.

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

Z-45/25J Models:

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

7 Support the jib boom and jib boom leveling arms with a overhead crane.

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

⚠CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if it is not properly supported.

Z-45/25 Models:

6 Support the rod end of the platform leveling slave cylinder.

7 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin and the rotator pivot pin.

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

⚠CAUTION Crushing hazard. The platform rotator may become unbalanced and fall if it is not properly supported.

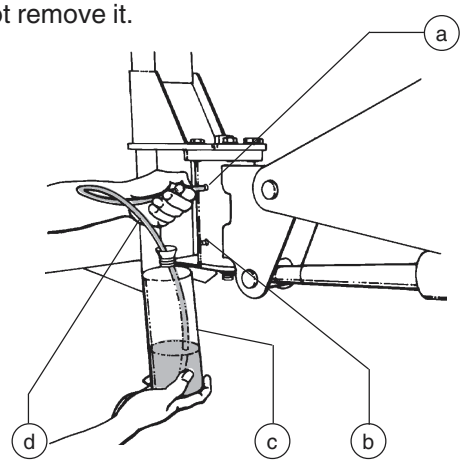
How to Bleed the Platform Rotator

NOTICE This procedure will require two people. Do not start the engine. Use auxiliary power for all machine functions in this procedure.

1 Move the function enable toggle switch to either side and activate the platform rotate switch to the right then the left through two platform rotation cycles, then hold the switch to the RIGHT position until the platform is fully rotated to the right.

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

3 Open the top bleed valve on the rotator, but do not remove it.



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

4 Move the function enable toggle switch to either side and hold the platform rotate switch to the LEFT position until the platform is fully rotated. Continue holding the switch until air stops coming out of the bleed valve. Then close the bleed valve.

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

5 Connect the clear hose to the bottom bleed valve and open the valve. Do not remove the bleed valve.

6 Move the function enable toggle switch to either side and hold the platform rotate switch to the RIGHT position until the platform is fully rotated. Continue holding the switch until air stops coming out of the bleed valve. Then 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 left and inspect the bleed valves for leaks.

Jib Boom Components, Z-45/25J Models

3-1
Jib Boom, Z-45/25J Models

How to Remove the Jib Boom

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

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

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

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

3 Remove the hose and cable cover from the side of the jib boom.

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

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

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

6 Support the barrel end of the cylinder with a suitable lifting device.

7 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin.

8 Use a soft metal drift to remove the pin and let the cylinder hang down.

9 Remove the pin retaining fastener from the jib boom pivot pin. Use a soft metal drift to remove the pin, then remove the jib boom from the primary boom bellcrank.

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

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

11 Slide both of the jib boom leveling arms off of the jib boom cylinder rod-end pivot pin.

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

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

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

3-2
Jib Boom Lift Cylinder, Z-45/25J Models

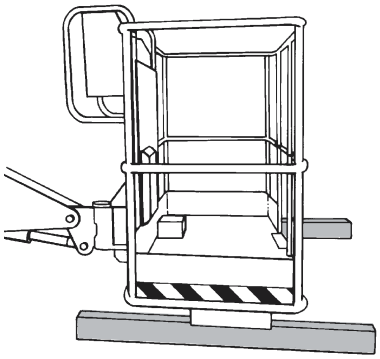
How to Remove the Jib Boom Lift Cylinder

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. Then lower the jib boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.



JIB BOOM COMPONENTS, Z-45/25J MODELS

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

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

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

4 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Then lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.

5 Support the jib boom lift cylinder with a lifting device.

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

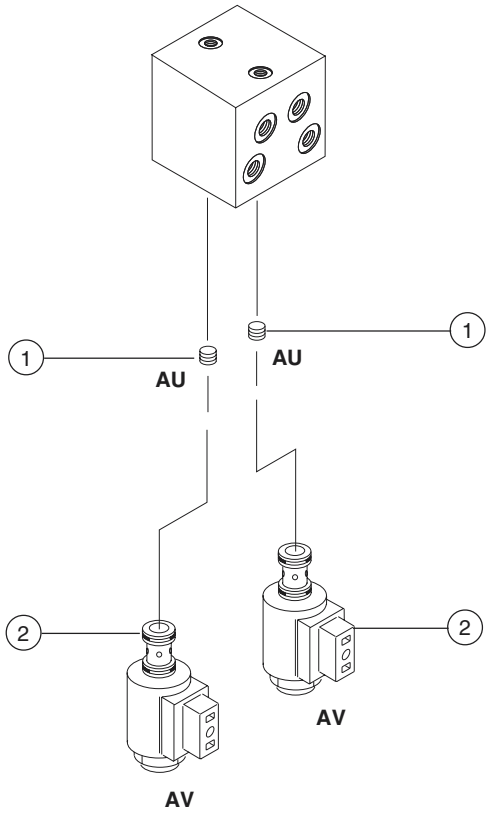
7 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

8 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 may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

3-3
Jib Boom / Platform Rotate Manifold Components, Z-45/25J Models

1 Orifice, 0.030 inch (0.76 mm) ..... AU ..... Platform rotate circuit
2 Solenoid valve, 2 position 3 way ..... AV ..... Platform rotate/jib boom select ..... 8-10 ft-lbs (11-14 Nm)



Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm

Valve Coil Resistance Specifications

Valve coil specification	
2 position 3 way valve (schematic item AV)	5 to 7Ω

Primary Boom Components

4-1
Plastic Cable Track

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

How to Remove the Cable Track, Z-45/25 Models

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

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

2 Open the platform control box.

3 Label and disconnect each wire of the cables that enter the platform control box.

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

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

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

6 Raise the primary boom to a horizontal position.

7 Tag, disconnect and plug the platform rotator hydraulic hoses at the union located above the primary boom lift cylinder. Cap the fittings on the unions.

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

8 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located on 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.

9 Tag, disconnect and plug the hydraulic hoses from the platform leveling master 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.

10 Tag and disconnect the hydraulic hoses from the platform leveling slave cylinder 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.

11 Pull the four hydraulic hoses toward the platform to clear the rod end of the primary boom lift cylinder.

12 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 may become unbalanced and fall when it is removed from the machine.

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

14 Attach a strap from an overhead crane to the cable track.

15 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.

16 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

17 Remove the cable track from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The cable track may become unbalanced and fall if it is not properly attached to the overhead crane.

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

PRIMARY BOOM COMPONENTS

How to Remove the Cable Track, Z-45/25J Models

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 control box mounting fasteners.

2 Remove the foot switch access hole cover plate fasteners. Remove the cover plate.

3 Remove the foot switch mounting fasteners from the platform.

4 Remove the foot switch through the back of the platform through the access hole and set it aside.

5 Remove the platform control box and set it aside.

6 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located on 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.

7 Tag and disconnect the hydraulic hoses from the platform leveling slave cylinder at the union and connect them together using a connector. 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.

8 Tag, disconnect and plug the hydraulic hoses from the jib boom/platform rotate manifold. Cap the fittings on the manifold.

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

9 Tag, disconnect and plug the platform rotator hydraulic hoses at the union located above the primary boom lift cylinder. Cap the fittings on the unions.

⚠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 Tag, disconnect and plug the hydraulic hoses from the platform leveling master 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.

11 Raise the boom to a horizontal position.

12 Remove the hose and cable cover from the side of the jib boom.

13 Remove the hose clamp on the primary boom bellcrank.

14 Place blocks 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 may become unbalanced and fall when it is removed from the machine.

15 Attach a lifting strap from an overhead 5 ton (4,536 kg) capacity crane to the platform end of the primary boom for support. Do not lift it.

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

17 Support the rod end of the primary boom lift cylinder with a lifting device.

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

19 Raise the primary boom slightly with the overhead crane to relieve the pressure on the primary boom lift cylinder rod-end pivot pin.

20 Use a soft metal drift to remove the primary boom lift cylinder rod-end pivot pin.

⚠WARNING Crushing hazard. The primary boom lift cylinder may become unbalanced and fall if it is not properly supported by the lifting device.

PRIMARY BOOM COMPONENTS

21 Lower the rod end of the primary boom lift cylinder approximately 12 inches (30.5 cm).

22 Pull all of the hoses and cables out and away from the mounting ears for the rod end of the primary boom lift cylinder.

23 Raise the rod end of the primary boom lift cylinder back into position and install the rod-end pivot pin. Then install the pin retaining fastener.

24 Attach a strap from an overhead crane to the cable track.

25 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.

26 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

27 Remove the cable track from the machine and place it on a structure capable of supporting it.

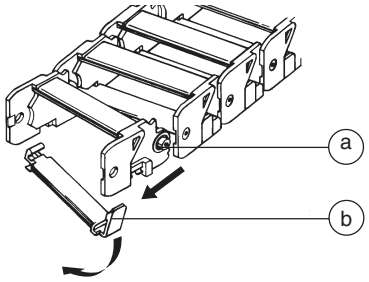
⚠WARNING Crushing hazard. The cable track may become unbalanced and fall if it is not properly attached to the overhead crane.

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

How to Repair the Primary Boom Cable Track

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

NOTICE A 7 link repair section of cable track is available through the Genie Industries Service Parts Department (Genie part number 58919).



a link separation point
b lower clip

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

2 To remove a single link, open the lower clip and then use a screw driver to pry the link to the side.

3 Repeat steps 1 and 2 for each link.

4-2 Primary Boom

How to Shim the Primary Boom

1 Extend the primary boom until the wear pads are accessible.

2 Measure each wear pad.

NOTICE Replace the pad if it is less than 9/16 inch (14.3 mm) thick. If the pad is more than 9/16 inch (14.3 mm) thick, shim as necessary.

3 Loosen the wear pad mounting fasteners.

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

5 Tighten the mounting fasteners.

6 Extend and retract the primary boom through an entire cycle. Check for tight spots that may cause binding or scraping of the boom.

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

How to Remove the Primary Boom

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

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

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

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

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

PRIMARY BOOM COMPONENTS

3 **Z-45/25 Models:** Remove the platform leveling slave cylinder. See 2-2, *How to Remove the Platform Leveling Slave Cylinder.*

Z-45/25J Models: Remove the jib boom. See 3-1, *How to Remove the Jib Boom.*

4 Remove the cable track. See 4-1, *How to Remove the Cable Track.*

5 Raise the primary boom to a horizontal position.

6 Remove the hose and cable cover from the upper mid-pivot.

7 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin. Then lower the cylinder and let it hang down.

CAUTION Component damage hazard. When lowering the master cylinder down, be sure not to damage the master cylinder hoses or fittings.

8 Locate the primary boom drive speed limit switch inside of the upper mid-pivot.

9 Remove the primary boom drive speed limit switch mounting fasteners. Do not disconnect the wiring.

10 Locate the primary boom extension drive speed limit switch inside of the extension boom.

11 Remove the primary boom extension drive speed limit switch mounting fasteners. Do not disconnect the wiring.

12 Pull the limit switch and the wiring out of the extension tube and move it out of the way.

13 Tag, disconnect and plug the primary boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

14 Remove the hose clamp at the pivot end of the boom.

15 Attach a 5 ton (4,536 kg) overhead crane to the center point of the primary boom.

16 Attach a similar lifting device to the primary boom lift cylinder.

17 Place support blocks under the primary boom lift cylinder.

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

⚠WARNING Crushing hazard. The boom lift cylinder and primary boom will fall unless they are properly supported.

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

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

21 Remove the primary boom pivot pin with a soft metal drift, then carefully remove the primary boom from the machine and place it on a structure capable of supporting it.

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

How to Disassemble the Primary Boom

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

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

2 Place blocks under the barrel end of the primary boom extension cylinder for support.

3 Remove the pin retaining fastener from the extension cylinder barrel-end pivot pin at the pivot end of the primary boom. Use a soft metal drift to remove the pin.

4 Remove and label the location of the wear pads from the platform end of the primary boom.

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

5 Support and slide the extension tube out of the boom tube.

⚠WARNING Crushing hazard. The primary boom extension tube may 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 pin 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. Place the extension cylinder on blocks for support.

⚠WARNING Crushing hazard. The extension cylinder may become unbalanced and fall when it is removed from primary boom extension tube if it is not properly supported.

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

PRIMARY BOOM COMPONENTS

4-3
Primary Boom Lift Cylinder

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

How to Remove the Primary Boom Lift Cylinder

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

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

1 Raise the primary boom until the primary boom is horizontal.

2 Raise the secondary boom until the primary boom lift cylinder barrel-end pivot pin is above the turntable covers.

3 Attach a 5 ton (5000 kg) overhead crane to the primary boom for support. Do not lift the boom.

4 Support the rod end and the barrel end of the primary boom lift cylinder with a second overhead crane or similar lifting device.

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

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

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

⚠WARNING The primary boom will fall if it is not properly supported when the primary boom rod-end pivot pin is removed.

7 Place a support block across both turntable covers under the primary boom lift cylinder.

8 **Z-45/25J Models:** Lower the lift cylinder onto the block. Protect the cylinder rod from damage.

⚠WARNING Crushing hazard. The primary boom lift cylinder may fall if it is not properly supported.

9 Remove the primary boom lift cylinder barrel-end pivot pin retaining fasteners. Do not remove the pin.

10 Use a slide hammer to remove the barrel-end pivot pin. Carefully remove the primary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder may become unbalanced and fall if it is not properly supported and secured to the lifting device.

4-4
Primary Boom Extension Cylinder

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

How to Remove the Primary Boom Extension Cylinder

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

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

1 Raise the primary boom to a horizontal position.

2 Extend the primary boom until the primary boom extension cylinder rod-end pivot pin is accessible in the primary boom extension tube.

3 Remove the hose and cable guard from the upper pivot.

4 Tag, disconnect and plug the primary boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

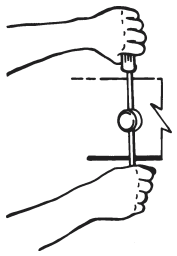
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Remove the external snap rings from the extension cylinder rod-end pivot pin (at the platform end). Use a soft metal drift to remove the pin.

6 Remove the barrel-end pivot pin retaining fasteners.

PRIMARY BOOM COMPONENTS

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



8 Support and slide the extension cylinder out of the upper pivot.

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

CAUTION Component damage hazard. Be careful not to damage the counterbalance valves on the primary boom extension cylinder when removing the cylinder from the primary boom.

CAUTION Component damage hazard. Hoses and cables can be damaged if the primary boom extension cylinder is dragged across them.

NOTICE Note the length of the cylinder after removal. The cylinder must be at the same length for installation.

4-5 Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It's 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 primary 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 Raise the secondary boom until both the rod-end and barrel-end pivot pins on the master cylinder are accessible.

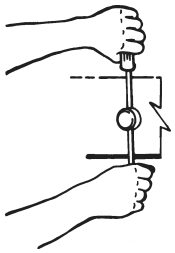
2 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the cylinder.

⚠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.

3 Attach overhead crane or similar lifting device to the master cylinder.

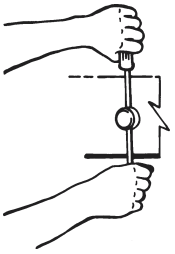
4 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin. Do not remove the pin.

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



6 Remove the pin retaining fastener from the rod-end pivot pin.

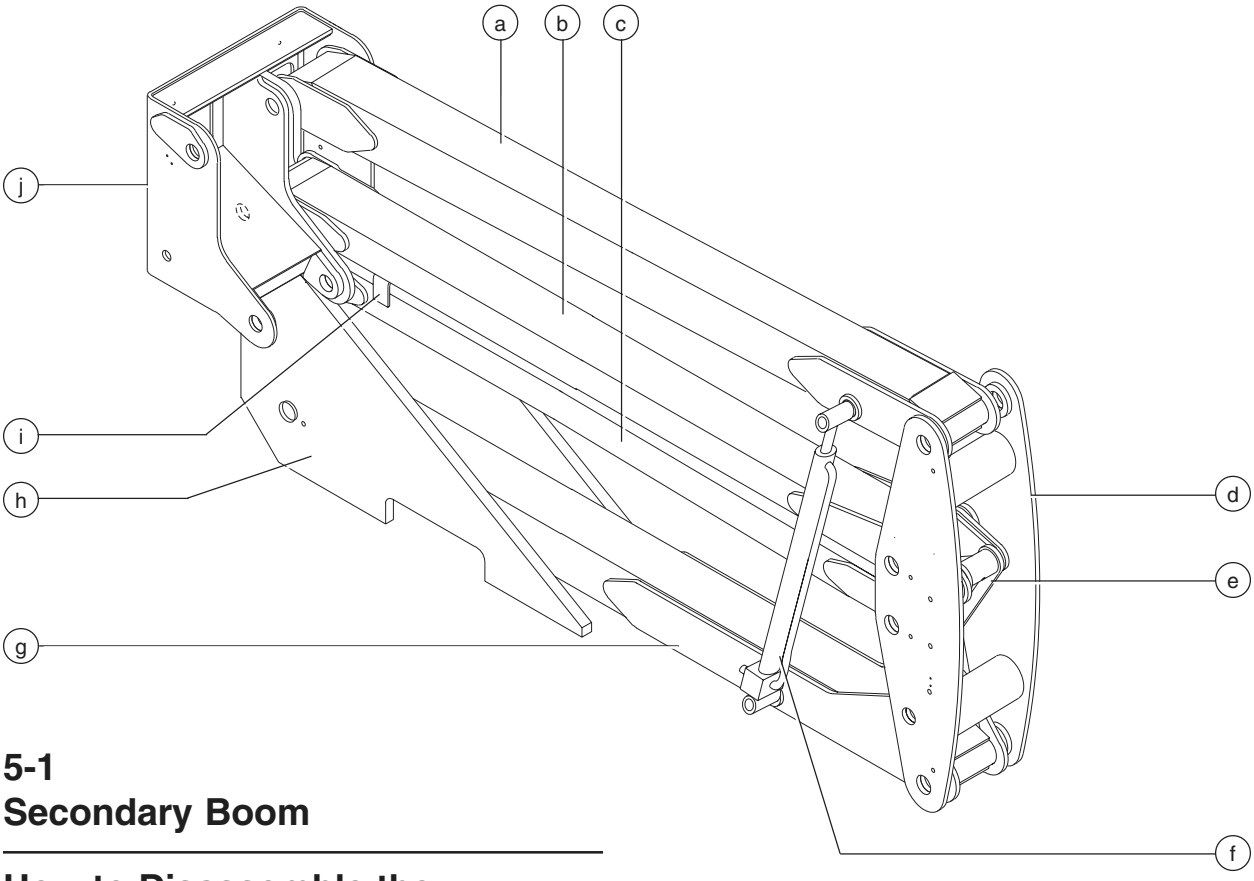
7 Place a rod through the rod-end pivot pin and twist to remove the pin.



8 Remove the master cylinder from the machine.

⚠WARNING Crushing hazard. The master cylinder may become unbalanced and fall if it is not properly attached to the overhead crane.

Secondary Boom Components



Secondary Boom components
- a upper secondary boom (number 1 arm)
- b upper tension link (number 2 arm)
- c lower tension link (number 3 arm)
- d lower mid-pivot
- e compression link
- f secondary boom lift cylinder (2)
- g lower secondary boom (number 4 arm)
- h turntable pivot
- i boom rest
- j upper mid-pivot

5-1 Secondary Boom

How to Disassemble the Secondary Boom

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

Follow the disassembly steps to the point required to complete the repair. Then re-assemble the secondary boom by following the disassembly steps in reverse order.

SECONDARY BOOM COMPONENTS

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

2 **Z-45/25J Models:** Remove the jib boom. See 3-1, *How to Remove the Jib Boom.*

3 Remove the primary boom. See 3-2, *How to Remove the Primary Boom*.

4 Remove the master cylinder. See 4-5, *How to Remove the Master Cylinder*.

5 Attach a lifting strap from an overhead crane to to the lug on the rod end of the primary boom lift cylinder. Then raise the primary boom lift cylinder with the crane, to a vertical position.

6 Tag, disconnect and plug the hydraulic hoses at the primary boom lift cylinder.

7 Remove the pin retaining fastener from the primary boom lift cylinder barrel-end pivot pin.

8 Use a slide hammer to remove the pin. Remove the primary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The primary boom lift cylinder may become unbalanced and fall if it is not properly supported by the overhead crane.

9 Tag, disconnect and plug the hydraulic hoses on both of the secondary boom lift cylinders.

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

10 Remove the pin retaining fasteners from both sides of the secondary boom lift cylinder rod-end pivot pin and barrel-end pivot pin. Do not remove the pins.

11 Attach a strap from an overhead crane to the lug on the rod end of one of the secondary boom lift cylinders for support. Do not apply any lifting pressure.

12 Use a soft metal drift to drive the barrel-end pivot pin half way out. Lower the barrel end of the secondary boom lift cylinder and let it hang down.

13 Use a soft metal drift to drive the rod-end pivot pin half way out.

14 Remove the secondary boom lift cylinder from the machine.

15 Repeat steps 10 through 13 for the other secondary boom lift cylinder.

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

CAUTION Component damage hazard. When removing a secondary boom lift cylinder from the machine, be careful not to damage the counterbalance valve at the barrel end of the cylinder.

16 Attach a lifting strap from an overhead crane to the upper mid-pivot for support. Do not lift it.

17 Attach a lifting strap from a second overhead crane to the number 1 arm at the mid-point between the upper and lower mid-pivots.

SECONDARY BOOM COMPONENTS

18 Remove the pin retaining fasteners from the number 1 arm pivot pins at the lower mid-pivot and the upper mid-pivot. Do not remove the pins.

19 Use a soft metal drift to drive both pins out.

20 Remove the number 1 arm from the machine.

⚠WARNING Crushing hazard. The number 1 arm may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

⚠CAUTION Crushing hazard. The upper mid-pivot may fall when the number 1 arm is removed from the machine if it is not properly supported by the overhead crane.

21 Using the overhead crane attached to upper mid-pivot, raise the secondary boom assembly approximately 30 inches (76 cm).

22 Insert a 4 x 4 x 11 inch (10.2 x 10.2 x 28 cm) block between the number 2 arm and the boom rest. Then lower the secondary boom assembly onto the block.

⚠WARNING Crushing hazard. The secondary boom assembly may fall if it is not properly supported by the 4 x 4 x 11 inch (10.2 x 10.2 x 28cm) block.

23 Locate the 4 cables that enter the platform control box. Number each cable and its entry location at the platform control box.

24 Open the platform control box.

25 Label and disconnect each wire of the cables that enter the platform control box.

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

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

27 Pull all of the cables and hoses out through the upper mid-pivot.

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

28 Remove the hose and cable covers from the top of the number 2 arm.

29 Pull all of the hoses and cables out of the upper mid-pivot and out through the lower mid-pivot. Lay the hoses and cables on the ground.

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

30 Remove the pin retaining fastener from the number 2 arm pivot pin at the upper mid-pivot. Use a soft metal drift to remove the pin.

31 Remove the upper mid-pivot from the machine.

⚠WARNING Crushing hazard. The upper mid-pivot may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

SECONDARY BOOM COMPONENTS

32 Attach the lifting strap from an overhead crane to the number 2 arm at the upper mid-pivot end.

33 Raise the number 2 arm slightly and remove the 4 x 4 x 11 inch (10.2 x 10.2 x 28 cm) block.

34 Lower the number 2 arm onto the boom rest pad.

35 Insert a 4 x 4 x 8 1/2 inch (10.2 x 10.2 x 21.6 cm) block between the number 3 arm and the number 4 arm at the lower mid-pivot end.

36 Attach a lifting strap from the overhead crane to the lower mid-pivot for support. Do not lift it.

37 Remove the pin retaining fasteners from the number 2, 3 and 4 arm pivot pins at the lower mid-pivot. Do not remove the pins.

38 Use a soft metal drift to drive each pin out. Then remove the lower mid-pivot from the secondary boom assembly.

⚠WARNING Crushing hazard. The lower mid-pivot may become unbalanced and fall when it is removed from the secondary boom assembly if it is not properly supported by the overhead crane.

39 Attach the lifting strap from an overhead crane to the center point of the number 2 arm for support. Do not lift it.

40 Remove the pin retaining fasteners from both compression link pivot pins. Do not remove the pins.

41 Use a soft metal drift to remove the lower compression link pivot pin at the number 3 arm.

42 Support the compression link with an appropriate lifting device.

43 Use a soft metal drift to remove the upper compression link pivot pin from the number 2 arm. Remove the compression link from the machine.

⚠WARNING Crushing hazard. The number 2 arm may fall when the compression link is disconnected from the number 2 arm if it is not properly supported by the overhead crane.

⚠CAUTION Crushing hazard. The compression link may fall if it is not properly supported when it is removed from the secondary boom assembly.

44 Remove the number 2 arm from the machine.

⚠WARNING Crushing hazard. The number 2 arm may become unbalanced and fall when it is removed from the secondary boom assembly if it is not properly supported by the overhead crane.

45 Remove the upper and lower hose and cable covers from the number 3 arm.

46 Pull all of the cables and hoses from the number 3 arm and lay them over the turntable counterweight.

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

SECONDARY BOOM COMPONENTS

47 Open the ground controls side turntable cover.

48 Remove the fuel tank. See 13-1, *How to Remove the Fuel Tank.*

49 Remove the retaining fastener from the ground control box and function manifold pivot plate.

50 Lower the ground control box and function manifold pivot plate to access the number 3 arm pivot pin.

51 Attach the lifting strap from the overhead crane to the centerpoint of the number 3 arm for support. Do not lift it.

52 Remove the mounting fasteners from the cover located in the boom storage area to access the number 3 and number 4 arm pivot pin retaining fasteners at the turntable pivot.

53 Remove the pin retaining fasteners from the number 3 arm at the turntable pivot. Do not remove the pin.

54 Use a slide hammer to remove the number 3 arm pivot pin from the turntable pivot through the access hole behind the ground control box.

55 Remove the number 3 arm from the machine.

⚠WARNING Crushing hazard. The number 3 arm may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead crane.

56 Remove the secondary boom drive speed limit switch mounting fasteners from the number 4 arm at the mid-pivot end. Do not disconnect the wiring.

57 Remove the pin retaining fasteners from the number 4 arm at the turntable pivot. Do not remove the pin.

58 Attach a lifting strap from the overhead crane to the center point of the number 4 arm. Do not lift it.

59 Use a slide hammer to remove the number 4 arm from the turntable pivot through the ground controls side bulkhead.

60 Remove the number 4 arm from the machine.

⚠WARNING Crushing hazard. The number 4 arm may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead crane.

5-2
Secondary Boom Lift Cylinders

There are two secondary boom lift cylinders incorporated in the structure of the secondary boom assembly. These cylinders operate in parallel and require hydraulic pressure to extend and retract. Each secondary boom lift cylinder is equipped with a counterbalance valve to prevent movement in the event of a hydraulic line failure.

How to Remove a Secondary Boom Lift Cylinder

⚠WARNING 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.

1 Lower the secondary boom to the stowed position.

2 Raise the primary boom so that it is above the secondary boom lift cylinder rod-end pivot pin.

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

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

4 Remove the pin retaining fasteners from the secondary boom lift cylinder rod-end pivot pin and barrel-end pivot pin. Do not remove the pins.

5 Attach a strap from an overhead crane to the lug on the rod end of the secondary boom lift cylinder for support. Do not apply any lifting pressure.

6 Use a soft metal drift to drive the barrel-end pivot pin half way out. Lower the barrel end of the secondary boom lift cylinder and let it hang down.

7 Use a soft metal drift to drive the rod-end pivot pin half way out.

8 Remove the secondary boom lift cylinder from the machine.

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

CAUTION Component damage hazard. When removing a secondary boom lift cylinder from the machine, be careful not to damage the counterbalance valve at the barrel end of the cylinder.

Turntable Covers

6-1 Turntable Covers

How to Remove a Turntable Cover

1 Raise the turntable cover. Support and secure the open cover to an overhead crane or forklift. Do not lift it.

CAUTION Component damage hazard. Protect the cover from damage by using carpet or padding on the crane or fork lift forks.

2 **Engine side cover:** Remove the upper and lower retaining clips from the gas strut.

3 **Engine side cover:** Gently pry the strut pivot sockets off of the ball studs and remove the strut. Protect the strut cylinder rod from damage.

4 **Engine side cover:** Mark the location of the hinge on the support bracket on the cover to ensure proper cover alignment during installation.

Ground controls side cover: Mark the location of the hinge on the cover to ensure proper cover alignment during installation.

5 **Engine side cover:** Remove the cover hinge fasteners that fasten the hinge to the support bracket on the cover.

Ground controls side cover: Remove the cover hinge fasteners that fasten the hinge to the cover.

6 Carefully lift and remove the cover from the machine.

⚠WARNING Crushing hazard. The turntable cover may become unbalanced and fall if it is not properly supported and secured to a appropriate lifting device.

⚠WARNING Bodily injury hazard. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

NOTICE Alignment adjustments may be necessary when a new cover is installed.

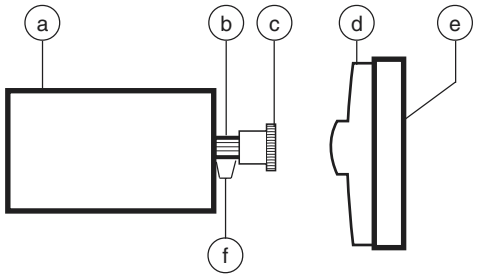
Deutz Engine F3L 1011F

7-1 RPM Adjustment

Refer to Maintenance Procedures, B-10, *Check and Adjust the Engine RPM- Ford and Deutz Diesel Models.*

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 pump coupler
d flex plate with raised spline
e engine flywheel
f 7/16 inch 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.

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 7/16 inch (11 mm) gap between the pump coupler and pump end plate.

3 Apply Loctite® removable thread sealant 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 ENGINE F3L 1011F

7-3 Oil Temperature and Oil Pressure Switches

The oil temperature switch is a normally open switch that closes at approximately 220° F (104° C). When the switch closes, the engine will shut off to prevent damage and will not start until the temperature drops below the switch point. An over-temperature indicator light at the ground controls should turn on when the switch closes.

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

The oil pressure switch is a normally closed switch that opens at approximately 15 psi (1 bar). If the oil pressure drops below the switch point, the switch opens and shuts off the engine to prevent damage. A low oil pressure indicator light at the ground controls should turn on when the switch opens.

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

How to Remove the Oil Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Remove the safety pin (if equipped) from the engine pivot plate latch.

NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

3 **Oil temperature switch:** Remove the fasteners from the engine side cover, then remove the cover.

4 Disconnect the wiring from the desired switch.

5 Remove the switch from the engine block, and then install the new switch. Do not over tighten.

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may result in severe burns

NOTICE Always use pipe thread sealant when installing a switch.

Oil temperature switch specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		$^{13}/_{16}$ inch
Temperature switch point		220° F (104° C)

Oil pressure switch specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		$1\text{-}^{1}/_{16}$ inch
Oil pressure switch point	15 psi	1 bar

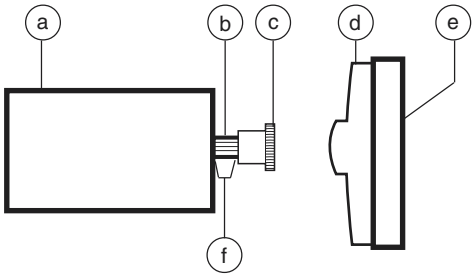
Perkins 104-22 Engine

8-1 RPM Adjustment

Refer to Maintenance Procedures, A-22, *Check and Adjust the Engine RPM.*

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 coupler
d flex plate with raised spline
e flywheel
f 1/16 inch (1.5 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.

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 1/16 inch (1.5 mm) gap between the pump coupler and pump end plate.

3 Apply Loctite® removable thread sealant 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.

PERKINS 104-22 ENGINE

8-3 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 221º F (105º 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.

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

The engine oil pressure gauge is an electrical gauge. The engine oil presure 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.

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

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 result in severe burns.

NOTICE Always use pipe thread sealant when installing a sending unit.

Water temperature sending unit specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		7/8 inch
Temperature switch point		221° F (105° C)

Oil pressure sending unit specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		7/8 inch
Oil pressure switch point	4.2 psi	0.3 bar

Ford LRG-425 EFI Engine

9-1 Timing Adjustment

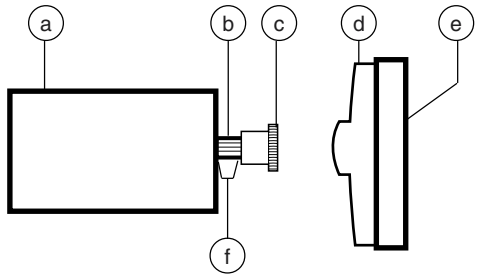
NOTICE The ignition timing is controlled by the ECM and can only be adjusted by re-programming the ECM. If timing adjustment or service is required, please contact Genie Industries Service Department OR your local Ford dealer.

9-2 RPM Adjustment

Refer to Maintenance Procedures, B-10, *Check and Adjust the Engine RPM- Ford and Deutz Diesel Models*.

9-3 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 (1.5 mm) 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.

FORD LRG-425 EFI ENGINE

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 (1.5 mm) gap between the pump coupler and pump end plate.1

3 Apply Loctite® removable thread sealant 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.

9-4 Water Temperature and Oil Pressure Switches

The water temperature switch is a normally open switch that closes at approximately 230° F (112° C). When the switch closes, the engine will shut off to prevent damage and will not start until the temperature drops below the switch point. The check engine light will turn on. See Repair Procedure 10-5, *How to Retrieve Engine Fault Codes.*

CAUTION Component damage hazard. Do not continue to run the engine with the check engine light on.

The oil pressure switch is a normally closed switch that opens at approximately 3 to 5 psi (0.21 to 0.34 bar). If the oil pressure drops below the switch point, the switch opens and shuts off the engine to prevent damage. The check engine light will turn on. See Repair Procedure 10-5, *How to Retrieve Engine Fault Codes.*

CAUTION Component damage hazard. Do not continue to run the engine with the check engine light on.

How to Remove the Water Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Open the engine side turntable cover and locate the water temperature and oil pressure switches.

2 Disconnect the wiring from the desired switch.

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

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may result in severe burns

NOTICE Always use pipe thread sealant when installing a switch.

Water temperature switch specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		$^{13}/_{16}$ inch
Temperature switch point		230° F (112° C)

Oil pressure switch specifications		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		1-$^{1}/_{16}$ inch
Oil pressure switch point	3-5 psi	0.21-0.34 bar

Ground Controls

10-1 Control Relays

Relays used for single function switching are single pole double throw (SPDT) relays.

How to Test a Single Pole Double Throw Relay

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

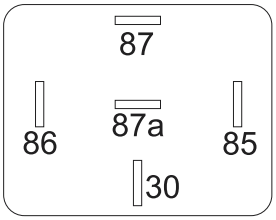
1 Label and then disconnect all the wiring from the relay to be tested.

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	75 to 85Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

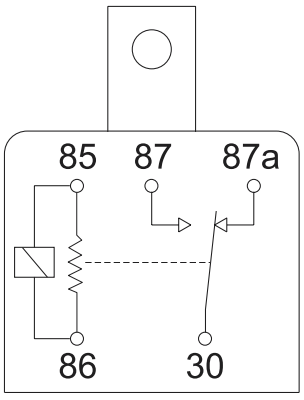
3 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

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



terminal no. 87a - N.C.
terminal no. 85 - ground
terminal no. 30 - common
terminal no. 86 - coil
terminal no. 87 - N.O.

Control Relay Schematic



10-2 Toggle Switches

See 1-5, *Toggle Switches*.

10-3 Wago® Components

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in 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.

GROUND CONTROLS

10-4 Engine Fault Codes - Ford Models

How to Retrieve Engine Fault Codes

When a 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 Locate the run/test toggle switch located on the left side 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.

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 10-5, *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 5 minutes.

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

3 Connect the negative battery cable to the battery.

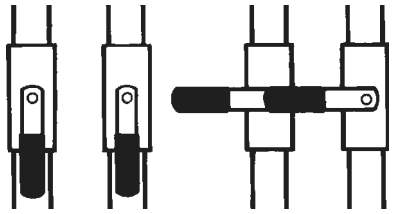
Hydraulic Pumps

11-1 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 Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable, then close the valves.



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.

11-2
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.

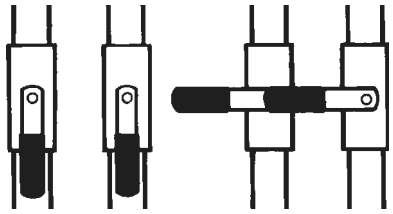
How to Remove the Drive Pump

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 Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable, then close the valves.



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 pump with a lifting device and remove the two drive pump mounting fasteners.

5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

HYDRAULIC PUMPS

6 Remove the drive pump from the machine.

CAUTION Component damage hazard. The hydraulic pump may become unbalanced and fall if it is not properly supported.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

How to Prime the Pump

1 Connect a 0 to 600 psi (0 to 41 bar) pressure gauge to the test port on the drive pump.

2 Remove the safety pin (if equipped) from the engine pivot plate latch.

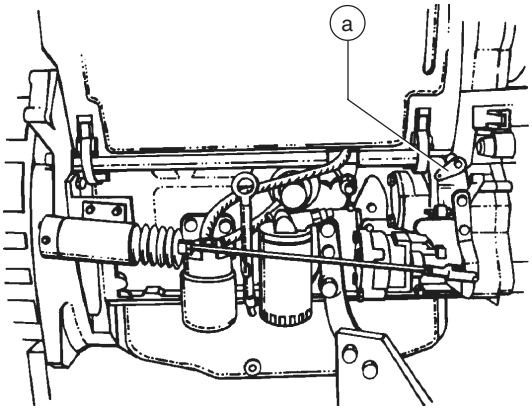
NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

4 **Ford models:** Close the valve on the LPG tank then disconnect the hose from the tank. Then move the fuel select switch to the LPG position.

Perkins Diesel models: Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

Deutz Diesel models: Hold the manual fuel shutoff valve clockwise to the CLOSED position.



a manual fuel shutoff valve

5 Have another person crank the engine with the starter motor for 15 seconds, wait 15 seconds, then crank the engine an additional 15 seconds or until the pressure reaches 320 psi (22 bar).

6 Ford **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.

7 Start the engine from the ground controls and check for hydraulic leaks.



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Manifolds

12-1
Function Manifold Components

The function manifold is located next to the hydraulic tank underneath the ground controls side cover.

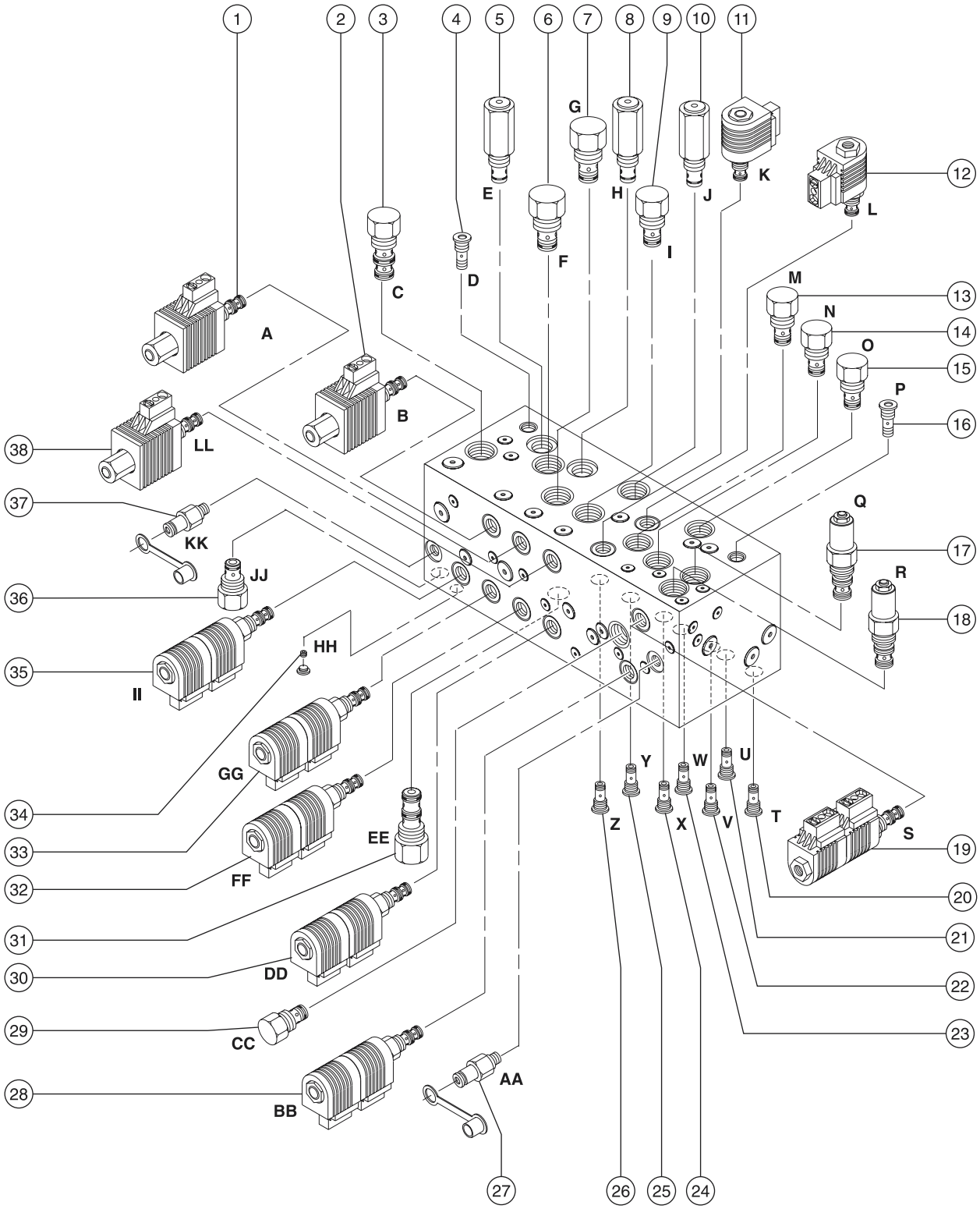
Index No.	Description	Schematic Item	Function	Torque
1	Proportional solenoid valve	A	Turntable rotate left/right	10-12 ft-lbs (14-16 Nm)
2	Proportional solenoid valve	B	Secondary boom up/down	10-12 ft-lbs (14-16 Nm)
3	Flow regulator valve	C	Secondary boom up/down (prevents overflowing the proportional valve)	10-12 ft-lbs (14-6 Nm)
4	Check valve	D	Differential sensing circuit, secondary boom up/down	11-13 ft-lbs (15-18 Nm)
5	Relief valve, 1800 psi (124 bar)	E	Secondary boom down	25-30 ft-lbs (34-41 Nm)
6	Priority flow regulator valve, 1.5 gpm (5.7 L/min)	F	Steer left/right circuit	10-12 ft-lbs (14-16 Nm)
7	Flow regulator valve	G	Turntable rotate left/right (prevents overflowing the proportional valve)	10-12 ft-lbs (14-6 Nm)
8	Relief valve, 3200 psi (220.6 bar)	H	System relief	35-40 ft-lbs (47-54 Nm)
9	Flow regulator valve	I	Primary boom up/down (prevents overflowing the proportional valve)	10-12 ft-lbs (14-6 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)

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MANIFOLDS

Function Manifold Components, continued

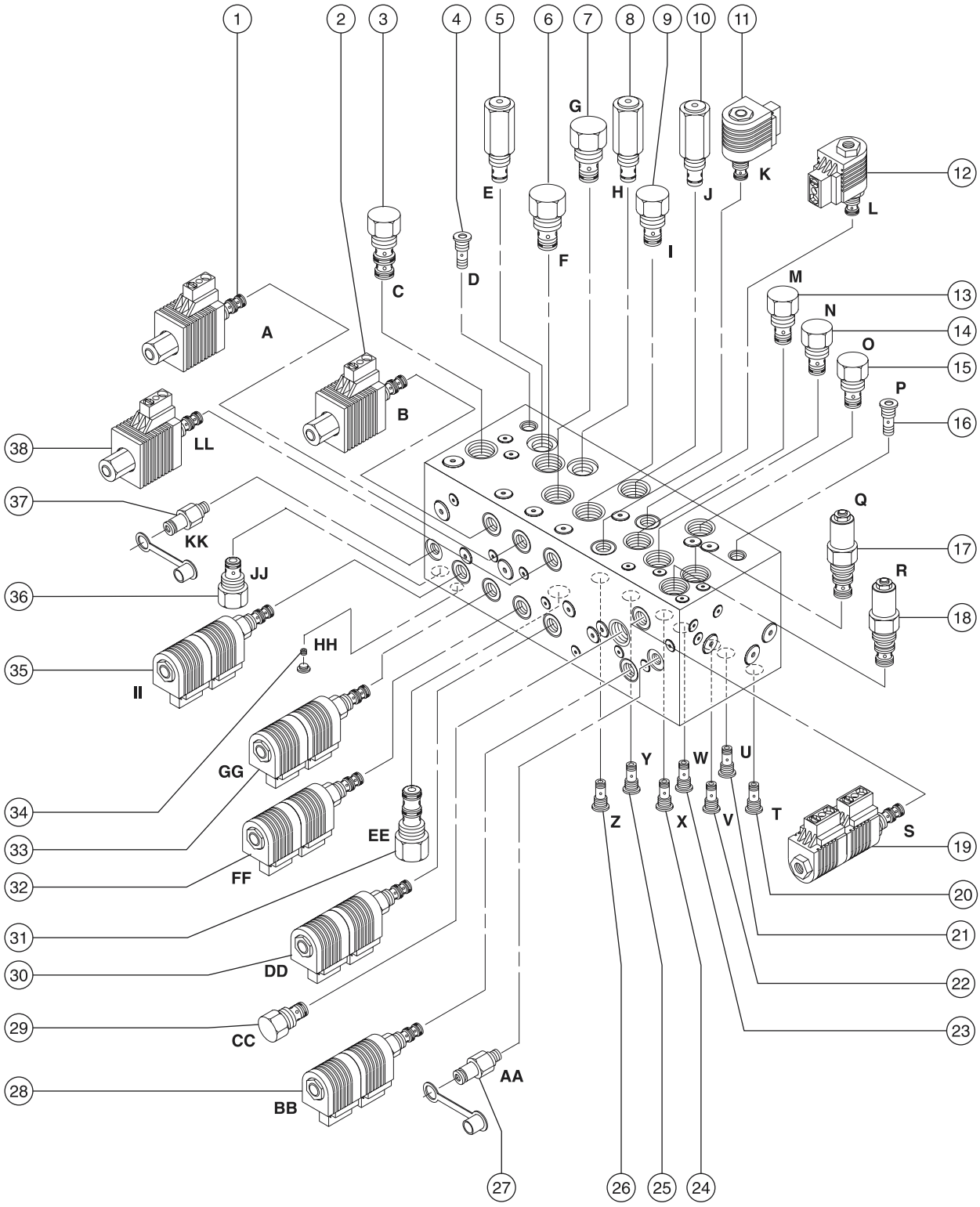
Index No.	Description	Schematic Item	Function	Torque
10	Relief valve, 2300 psi (158.6 bar)	J	Primary boom down	25-30 ft-lbs (34-41 Nm)
11	Solenoid valve, 2 position 3 way	K	Primary boom retract	25-30 ft-lbs (34-41 Nm)
12	Solenoid valve, 2 position 3 way	L	Primary boom extend	25-30 ft-lbs (34-41 Nm)
13	Flow regulator valve, 2 gpm (7.6 L/min)	M	Primary boom extend/retract circuit	10-12 ft-lbs (14-16 Nm)
14	Flow regulator valve, 1 gpm (3.8 L/min)	N	Platform level circuit	10-12 ft-lbs (14-16 Nm)
15	Flow regulator valve, 0.1 gpm (0.38 L/min)	O	Bleeds off check valves in differential sensing circuits to tank	10-12 ft-lbs (14-16 Nm)
16	Check valve	P	Differential sensing circuit, platform level down	11-13 ft-lbs (15-18 Nm)
17	Counterbalance valve	Q	Platform level down	35-40 ft-lbs (47-54 Nm)
18	Counterbalance valve	R	Platform level up	35-40 ft-lbs (47-54 Nm)
19	Solenoid valve, 3 position 4 way	S	Platform level up/down	25-30 ft-lbs (34-41 Nm)
20	Check valve	T	Differential sensing circuit, platform level up	11-13 ft-lbs (15-18 Nm)
21	Check valve	U	Differential sensing circuit, jib boom up/platform rotate left	11-13 ft-lbs (15-18 Nm)
22	Check valve	V	Differential sensing circuit, jib boom down/platform rotate right	11-13 ft-lbs (15-18 Nm)
23	Check valve	W	Differential sensing circuit, primary boom retract	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)

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MANIFOLDS

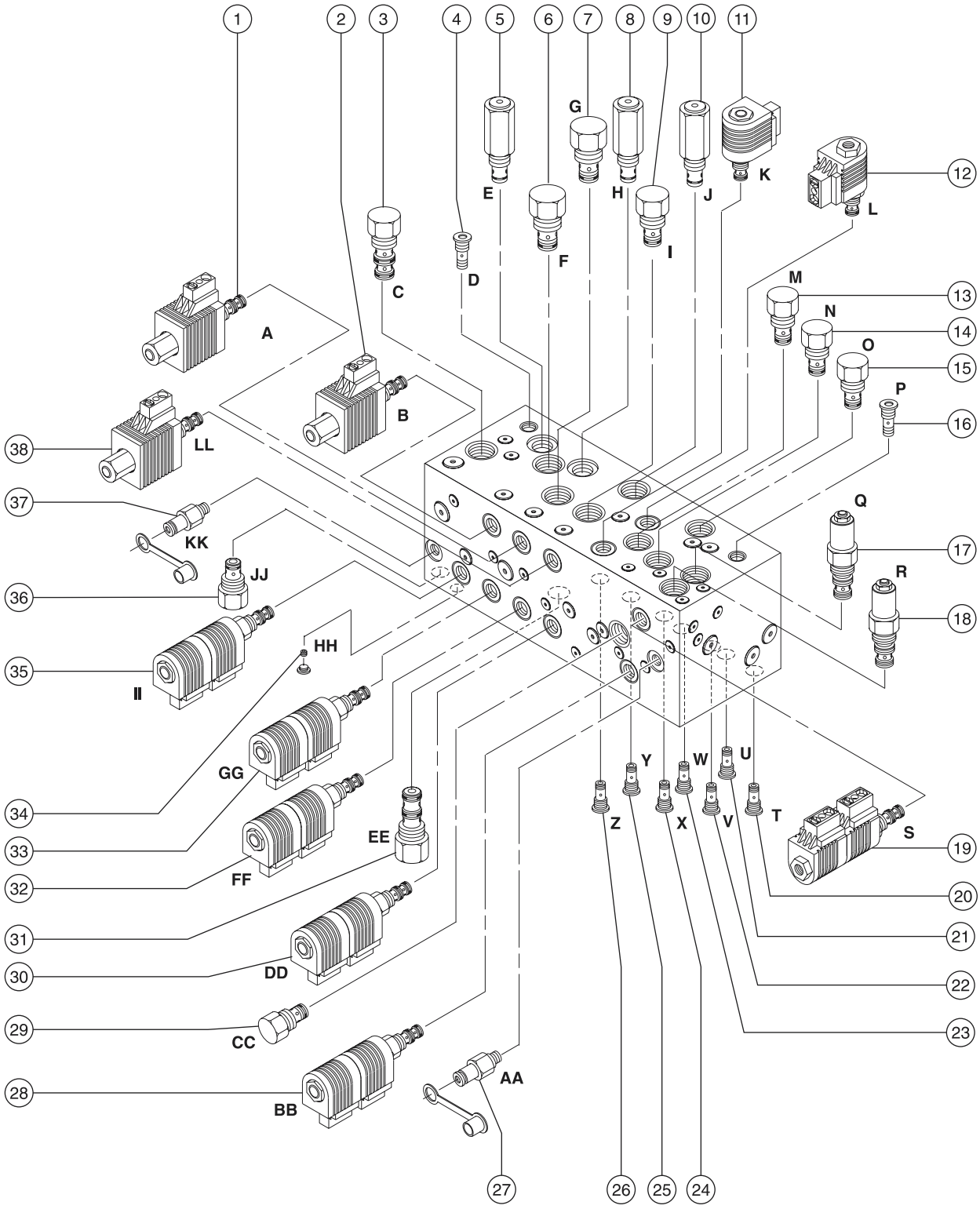
Function Manifold Components, continued

Index No.	Description	Schematic Item	Function	Torque
24	Check valve	X	Differential sensing circuit, primary boom extend	11-13 ft-lbs (15-18 Nm)
25	Check valve	Y	Differential sensing circuit, primary boom up/down	11-13 ft-lbs (15-18 Nm)
26	Check valve	Z	Differential sensing circuit, turntable rotate left/right	11-13 ft-lbs (15-18 Nm)
27	Diagnostic nipple	AA	Testing	
28	Solenoid valve, 3 position 4 way	BB	Jib boom up/down and platform rotate left/right	25-30 ft-lbs (34-41 Nm)
29	Flow regulator valve, 0.6 gpm (2.3 L/min)	CC	Jib boom up/down and platform rotate left/right	25-30 ft-lbs (34-41 Nm)
30	Solenoid valve, 3 position 4 way	DD	Primary boom up/down	25-30 ft-lbs (34-41 Nm)
31	Differential sensing valve	EE	Meters flow to functions	10-12 ft-lbs (14-16 Nm)
32	Solenoid valve, 3 position 4 way	FF	Turntable rotate left/right	25-30 ft-lbs (34-41 Nm)
33	Solenoid valve, 3 position 4 way	GG	Steer left/right	25-30 ft-lbs (34-41 Nm)
34	Orifice, 0.040 in (1 mm)	HH	Secondary boom circuit	
35	Solenoid valve, 3 position 4 way	II	Secondary boom up/down	25-30 ft-lbs (34-41 Nm)
36	Check valve	JJ	Secondary boom circuit	10-12 ft-lbs (14-16 Nm)
37	Diagnostic nipple	KK	Testing port	
38	Proportional solenoid valve	LL	Primary boom up/down	10-12 ft-lbs (14-16 Nm)

Plug Torque Specifications

Description	Hex size	Torque
SAE No. 2	1/8	50 in-lbs (6 Nm)
SAE No. 4	3/16	13 ft-lbs (18 Nm)
SAE No. 6	1/4	18 ft-lbs (24 Nm)

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KK
LL

MANIFOLDS

12-2 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 (item 37) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the HIGH IDLE position 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	3200 psi 220.6 bar

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item 8).

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

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

6 Repeat steps 2 through 5 and recheck relief valve pressure.

How to Adjust the Primary Boom Down Relief Valve (before serial number 11819)

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 (item 37) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the HIGH IDLE position and activate and hold the primary boom down switch with the primary boom fully lowered. Observe the pressure reading on the pressure gauge.

Primary boom down relief valve specifications

Pressure	2300 psi 158.6 bar

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item 10).

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

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

6 Repeat steps 2 through 5 and recheck relief valve pressure.

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 5000 psi (0 to 345 bar) pressure gauge to the test port (item 37) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the HIGH IDLE position and activate and hold the secondary boom down switch with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge.

Secondary boom down relief valve specifications	
Pressure	1800 psi 124 bar

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item 5).

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

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

6 Repeat steps 2 through 5 and recheck relief valve pressure.

Valve Coil Resistance Specifications

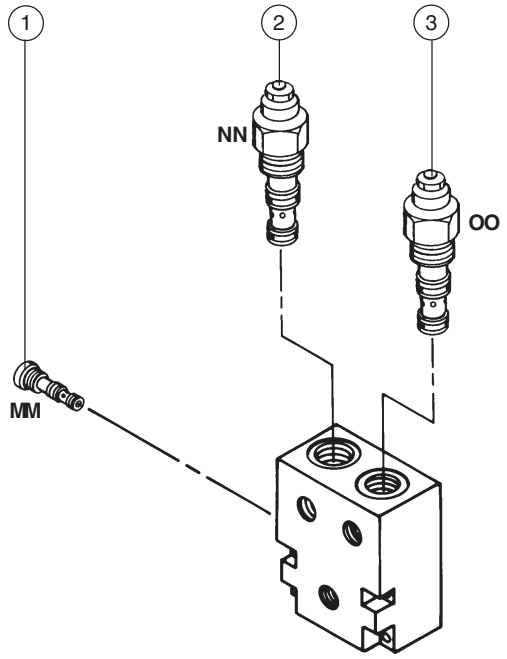
Valve coil specifications	
Proportional solenoid valve, 12V (schematic items A, B and LL)	4 to 5Ω
3 position 4 way directional valve, 10V (schematic items S, BB, DD, FF, GG and II)	5 to 7Ω
2 position 3 way solenoid valve, 10V (schematic items K and L)	5 to 7Ω

MANIFOLDS

12-3
Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor located in the boom storage compartment.

Index No.	Description	Schematic Item	Function	Torque
1	Shuttle valve 2 position 3 way	MM	Turntable rotation brake release	10-13 ft-lbs (14-18 Nm)
2	Counterbalance valve	NN	Turntable rotate right	35-40 ft-lbs (47-54Nm)
3	Counterbalance valve	OO	Turntable rotate left	35-40 ft-lbs (47-54Nm)



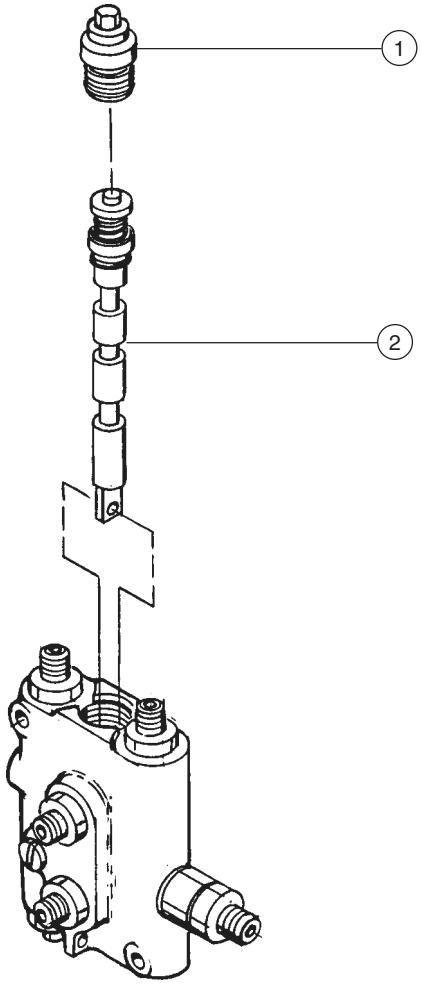
Plug Torque Specifications

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)

12-4
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 (27-33 Nm)
2	Spool valve	Directional control	



MANIFOLDS

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.

⚠WARNING 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 and the non-steer axle covers.

5 Place a "bubble type" level across the drive chassis non-steer end. Check to be sure the drive chassis is completely level.

6 To level the drive chassis, start the engine and loosen the lock nuts on both sides of the urethane cushions.

7 Push up or pull down on the threaded rod until the machine is completely level.

8 Verify that the ground and drive chassis are completely level.

9 Tighten the nuts on both sides of the urethane springs until they are snug. Then tighten the locknuts.

10 Check to be sure the drive chassis is completely level.

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, repeat steps 6 through 10 OR consult Genie Industries Service Department.

MANIFOLDS



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MANIFOLDS

12-5
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	Solenoid valve, 2 position 3 way	PP	Braking	10-12 ft-lbs (14-16 Nm)
2	Relief valve, 250 psi (17.2 bar)	QQ	Charge pressure circuit	10-12 ft-lbs (14-16 Nm)
3	Flow divider/combiner valve	RR	Controls flow to drive motors in forward and reverse	25-30 ft-lbs (34-41 Nm)
4	Orifice, 0.070 in (1.78 mm)	SS	Drive circuit	
5	Check valve	TT	Drive circuit	25-30 ft-lbs (34-41 Nm)
6	Check valve	UU	Drive circuit	25-30 ft-lbs (34-41 Nm)
7	Shuttle valve, 3 position 3 way	VV	Charge pressure circuit that directs 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)
8	Diagnostic fitting	WW	Testing	
9	Orifice, 0.030 in (0.76 mm)	XX	Brake and 2-speed circuit	
10	Solenoid valve, 2 position 3 way	YY	2-speed motor shift	10-12 ft-lbs (14-16 Nm)

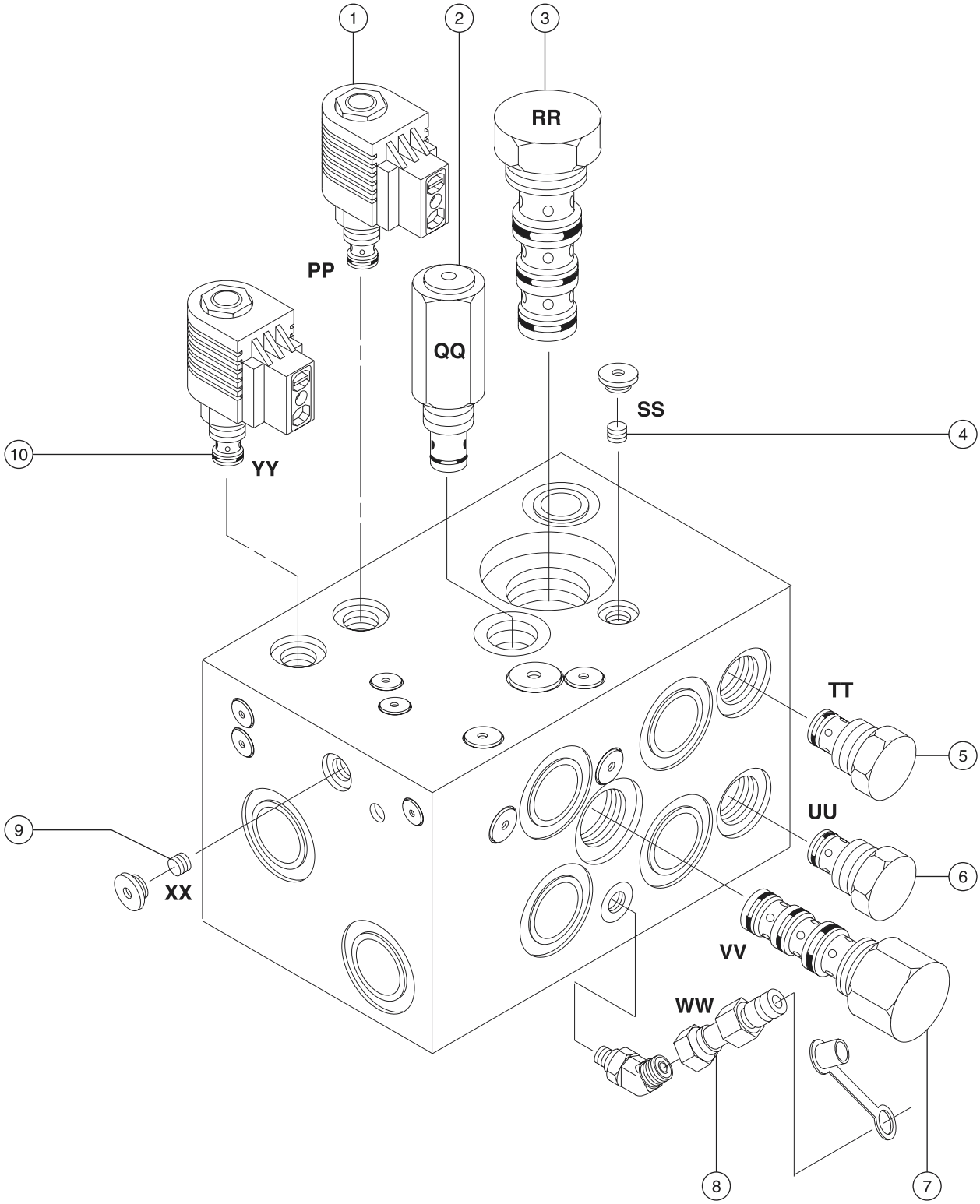
Plug Torque Specifications

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

Valve Coil Resistance Specifications

Valve coil specifications	
2 position 3 way solenoid valve, 10V (schematic item PP and YY)	5 to 7Ω

MANIFOLDS



MANIFOLDS

12-6
Valve Adjustments, 2WD 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 test port (item 8) 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 and remove the cap (item 2).

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

6 Restart the engine. Drive the machine in either direction and recheck the valve pressure.

7 Repeat steps 2 through 6 until the specified charge pressure is achieved.

8 Turn the engine off, then remove the pressure gauge.



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MANIFOLDS

12-7
4WD Drive Manifold Components

The drive manifold is mounted inside the drive chassis at the non-steer end.

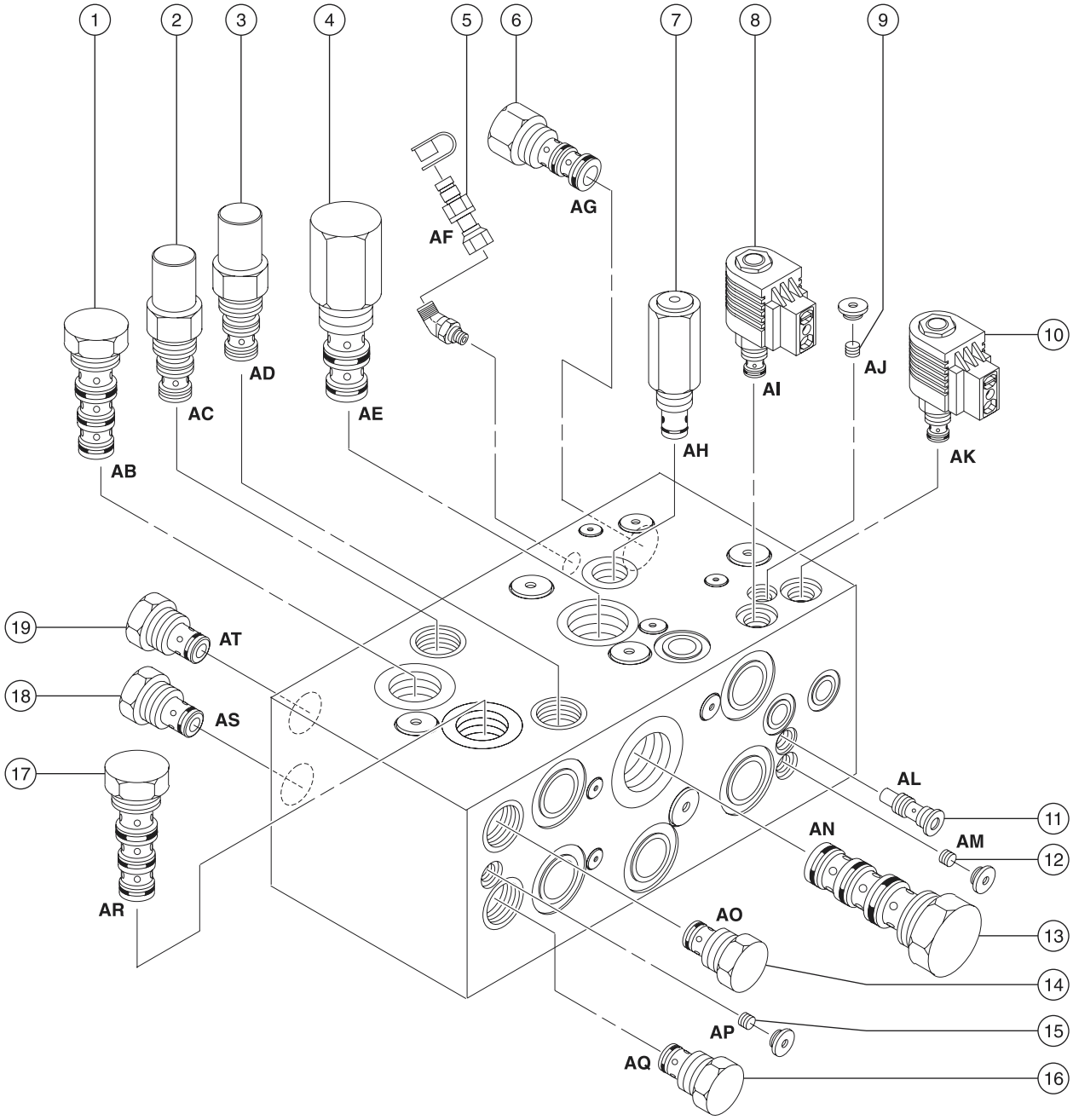
Index No.	Description	Schematic Item	Function	Torque
1	Flow divider/combiner valve	AB	Controls flow to non-steer end drive motors in forward and reverse	25-30 ft-lbs (34-41 Nm)
2	Bi-directional flow control valve, 0.2 gpm (0.8 L/min)	AC	Non-steer end drive motor circuit	25-30 ft-lbs (34-41 Nm)
3	Bi-directional flow control valve, 2 gpm (7.6 L/min)	AD	Steer end drive motor circuit	25-30 ft-lbs (34-41 Nm)
4	Directional control valve	AE	2 speed motor shift circuit/ High speed bypass	10-12 ft-lbs (14-16 Nm)
5	Diagnostic fitting	AF	Testing	
6	Shuttle valve, 3 position 3 way	AG	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)
7	Relief valve, 250 psi (17.2 bar)	AH	Charge pressure circuit	10-12 ft-lbs (14-16 Nm)
8	Solenoid valve, 2 position 3 way	AI	2-speed motor shift	10-12 ft-lbs (14-16 Nm)
9	Orifice, 0.030 inch (0.76 mm)	AJ	Brake and 2-speed circuit	
10	Solenoid valve, 2 position 3 way	AK	Braking	10-12 ft-lbs (14-16 Nm)
11	Check valve	AL	2 speed motor shift circuit	10-12 ft-lbs (14-16 Nm)
12	Orifice, 0.025 inch (0.64 mm)	AM	2 speed motor shift circuit	
13	Flow divider/combiner valve	AN	Controls flow to flow divider/combiner valves 1 and 18	25-30 ft-lbs (34-41 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)
SAE No. 10	9/16	55 ft-lbs (75 Nm)

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MANIFOLDS

4WD Drive Manifold Components, continued

Index No.	Description	Schematic Item	Function	Torque
14	Check valve	AO	Steer end drive motor circuit	10-12 ft-lbs (14-16 Nm)
15	Orifice, 0.052 in (1.32 mm)	AP	Drive circuit	
16	Check valve	AQ	Steer end drive motor circuit	10-12 ft-lbs (14-16 Nm)
17	Flow divider/combiner valve	AR	Controls flow to steer end drive motors in forward and reverse	25-30 ft-lbs (34-41 Nm)
18	Check valve	AS	Non-steer end drive motor circuit	10-12 ft-lbs (14-16 Nm)
19	Check valve	AT	Non-steer end drive motor circuit	10-12 ft-lbs (14-16 Nm)

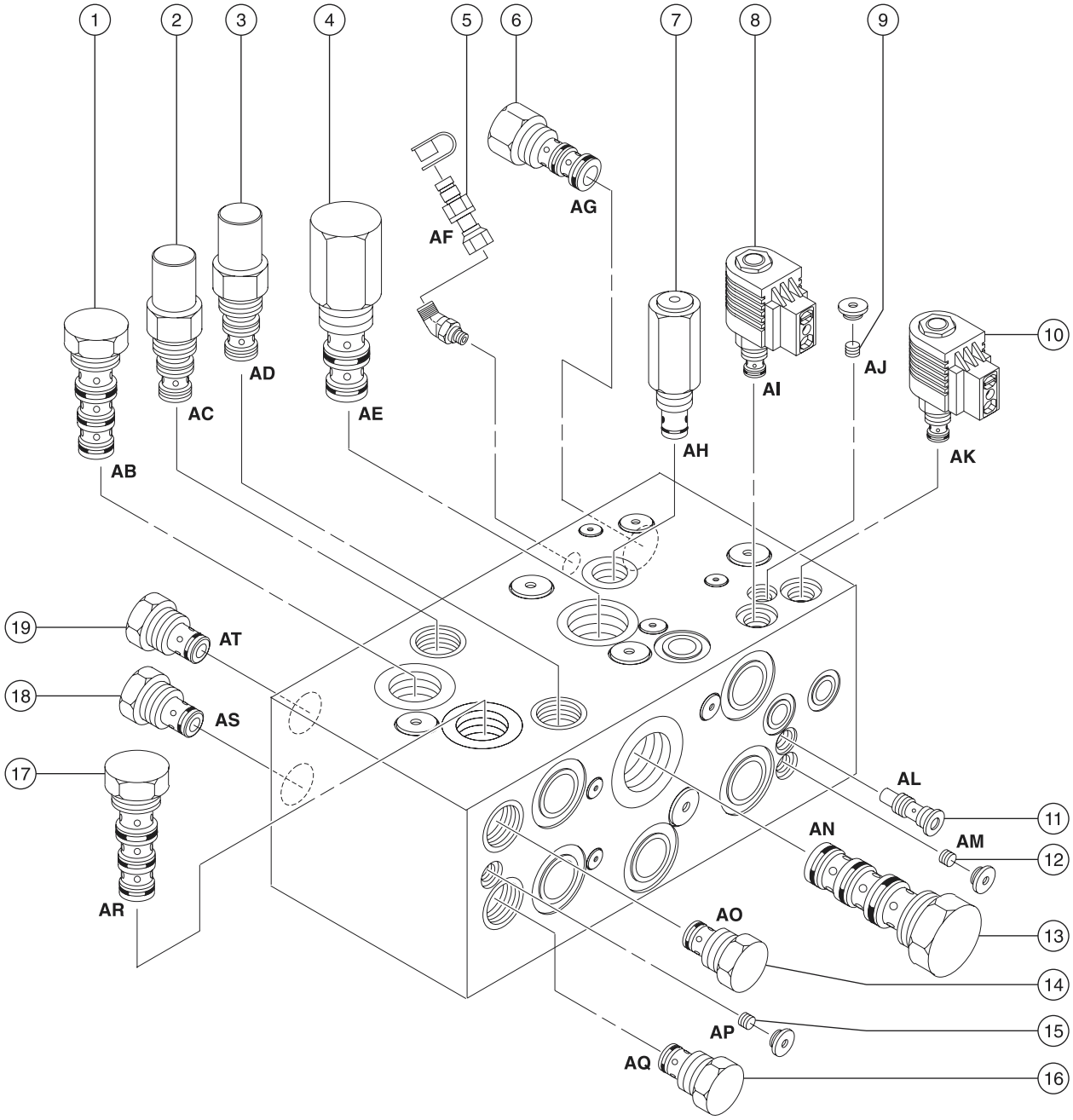
Plug Torque Specifications

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

Valve Coil Resistance Specifications

Valve coil specifications	
2 position 3 way solenoid valve, 10V (schematic items AI and AK)	5 to 7Ω

MANIFOLDS


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MANIFOLDS

12-8
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 test port (item 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 17.2 bar

4 Turn the engine off. Hold the charge pressure relief valve and remove the cap (index 7).

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

6 Restart the engine. Drive the machine in either direction and recheck the valve pressure.

7 Repeat steps 2 through 6 until the specified charge pressure is achieved.

8 Turn the engine off, then remove the pressure gauge.

Fuel and Hydraulic Tanks

13-1 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.

All models:

1 Disconnect, drain and plug the supply and return fuel hoses. Cap the fuel return fitting on the fuel tank.

2 Remove the mounting fasteners from the top and bottom of the fuel tank.

3 Remove the fuel tank from the machine.

13-2 Hydraulic Tank

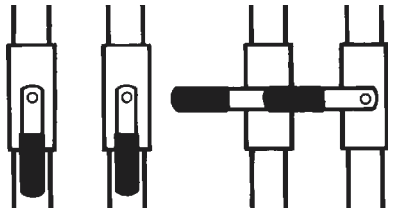
The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply lines and has an external return line filter mounted to the engine side bulkhead. The hydraulic return filter incorporates a filter 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 Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable, then close the valves.



FUEL AND HYDRAULIC TANKS

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

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 below.

5 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.

6 Disconnect and plug the return filter hydraulic hose at the hydraulic tank. Cap the fitting on the tank.

7 Disconnect and plug the supply hose for the auxiliary power unit through the access hole underneath the turntable. Cap the fitting on the hydraulic tank.

8 Support the hydraulic tank with an appropriate lifting device.

9 Remove the hydraulic tank mounting fasteners.

10 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank may become unbalanced and fall if it is not properly supported by the lifting device.

Hydraulic Specification	
Hydraulic fluid capacity All models	24 gallons 91 liters



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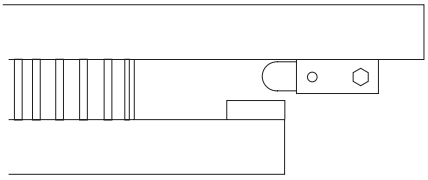
Turntable Rotation Components

14-1
Rotation Hydraulic Motor

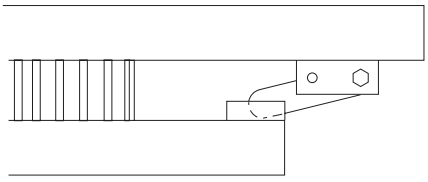
How to Remove the Rotation Hydraulic Motor

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 Open the engine pivot plate latch and swing the engine out and away from the machine to access the turntable rotation motor.

3 Tag, disconnect and plug the hydraulic hoses from the turntable rotation motor manifold. Cap the fittings on the manifold.

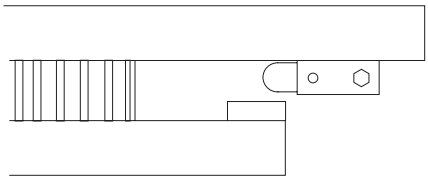
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4 Remove the turntable rotation motor mounting fasteners, then remove the motor from the brake.

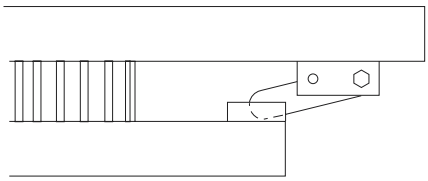
5 Remove the turntable rotation motor from the machine.

How to Remove the Turntable Rotation Brake

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



Unlocked position



Locked position

2 Open the engine pivot plate latch and swing the engine out and away from the machine to access the turntable rotation motor and brake.

3 Tag, disconnect and plug the hydraulic hoses from the turntable rotation motor manifold and the brake. Cap the fittings on the manifold and 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.

4 Remove the turntable rotation motor mounting fasteners, then remove the motor from the brake.

5 Remove the turntable rotation motor from the machine.

6 Remove the brake mounting bolts, and then remove the turntable rotation brake from the machine.

2WD Steering Axle Components

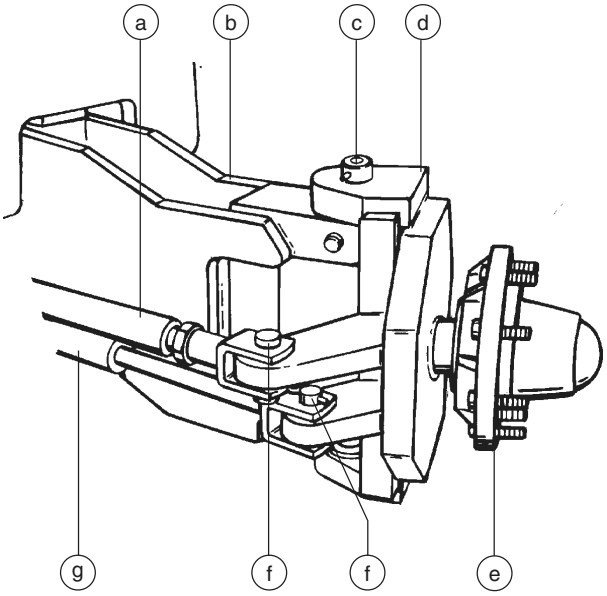
15-1
Yoke and Hub

How to Remove the Yoke and Hub

The yoke installation utilizes bushings in the axle and a thrust washer that may require periodic replacement.

1 Remove the cotter pin from the steering cylinder rod-end clevis pin and remove the cotter pin from the tie rod clevis pin. Remove the clevis pins.

NOTICE Always use a new cotter pin when installing a clevis pin.



a tie rod
b steer 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 then center a lifting jack of ample capacity under the steering axle.

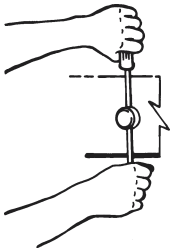
4 Raise the machine 6 inches (15 cm) and place blocks under the chassis for support.

5 Remove the lug nuts. Then remove the tire and wheel assembly.

6 Remove the pin retaining fasteners from the yoke pivot pins. Do not remove the pins.

7 Support and secure the yoke/hub assembly to a lifting jack.

8 Place a rod through the upper yoke pivot pin and twist to remove the 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 supported and secured to the lifting jack.

Torque specifications

Lug nut torque, dry	125 ft-lbs	169.5 Nm
Lug nut torque, lubricated	94 ft-lbs	127.4 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 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 castle nut.

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

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

7 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.

2WD STEERING AXLE COMPONENTS

How to Install the Hub and Bearings

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

1 Be sure that both bearings are packed with clean, fresh 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 castle nut.

7 Tighten the castle nut to 35 ft-lbs (47 Nm) to seat the bearing.

8 Loosen the castle nut, then re-tighten to 8 ft-lbs (11 Nm).

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

10 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to 125 ft-lbs (169.5 Nm).

15-2 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 cotter pin from the rod-end clevis pin of the steer cylinder. Remove the clevis pin.

3 Remove the cotter pin from the barrel-end clevis pin of the steer cylinder then remove the clevis pin.

NOTICE Always use a new cotter pin when installing a clevis pin.

4 Remove the steering cylinder from the machine.

15-3 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.

4WD Steering Axle Components

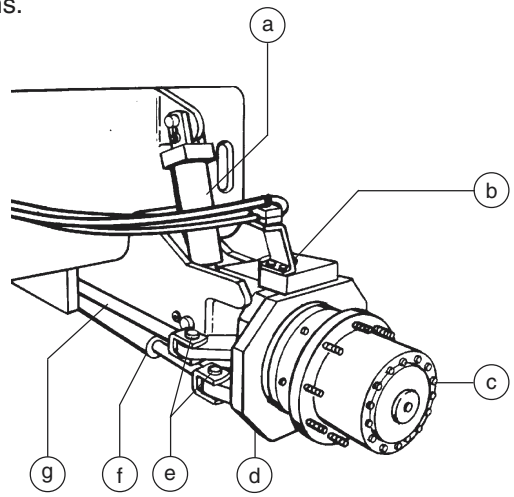
16-1
Yoke and Hub

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 cotter pin from the steering cylinder rod-end clevis pin and remove the cotter pin from the tie rod clevis pin. Remove the clevis pins.



a oscillate cylinder
b yoke pivot pin
c drive hub
d yoke
e pivot pin
f steer cylinder
g tie rod

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

3 Block the non-steering wheels, and then center a lifting jack of ample capacity under the steering axle.

4 Raise the machine 6 inches (15 cm) and place blocks under the chassis for support.

5 Remove the lug nuts, then remove the tire and wheel assembly.

6 Tag, disconnect and plug the hydraulic hoses from the drive motor. Cap the fittngs 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.

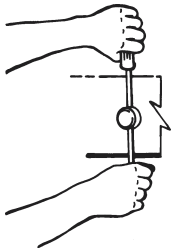
7 Remove the drive motor mounting fasteners.

8 Slide the drive motor shaft out of the drive hub and then remove the drive motor from the machine.

9 Remove the pin retaining fasteners from the upper and lower yoke pivot pins. Do not remove the pins.

10 Support the yoke/drive hub assembly with a lifting jack. Secure the yoke/drive hub assembly to the lifting jack.

11 Place a rod through the upper yoke pivot pin and twist to remove the 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 supported and secured to the lifting jack.

12 Place the yoke/drive hub assembly on a flat surface with the drive hub facing down.

4WD STEERING AXLE COMPONENTS

13 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,		
dry	125 ft-lbs	169.5 Nm
lubricated	94 ft-lbs	127.4 Nm
Drive hub mounting bolts,		
dry	120 ft-lbs	163 Nm
lubricated	90 ft-lbs	122 Nm
Drive motor mounting bolts,		
dry	75 ft-lbs	102 Nm
lubricated	56 ft-lbs	76 Nm

16-2 Steering Cylinders

How to Remove a Steering Cylinder

This procedure is the same as the 2WD procedure. See repair procedure 15-2, *How to Remove a Steering Cylinder*.

16-3 Tie Rod

How to Remove the Tie Rod

This procedure is the same as the 2WD procedure. See Repair Procedure 15-3, *How to Remove the Tie Rod*.

Oscillating Axle Components

17-1 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 line failure. The valves are not adjustable.

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 may 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 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.

2 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.

3 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.

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

⚠CAUTION Crushing hazard. The oscillate cylinder may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

5 Remove the cylinder from the machine.

Non-steering Axle Components

18-1
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 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 then remove the drive motor from the machine.

Torque specifications

Drive motor mounting bolts	75 ft-lbs	102 Nm

18-2
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 18-1, *How to Remove a Drive Motor*.

2 Tag, disconnect and plug the hydraulic hose from the brake. Then remove the hydraulic fitting and the bleed valve.

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

4 Center a lifting jack of ample capacity under the non-steering axle. Raise the machine approximately 6 inches (15 cm) and place blocks under the drive 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 non-steer axle.

8 Remove the drive hub from the non-steer axle.

⚠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,		
dry	125 ft-lbs	169.5 Nm
lubricated	94 ft-lbs	127.4 Nm
Drive hub mounting bolts,		
dry	120 ft-lbs	163 Nm
lubricated	90 ft-lbs	122 Nm
Drive motor mounting bolts,		
dry	75 ft-lbs	102 Nm
lubricated	56 ft-lbs	76 Nm

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