Genie®
A TEREX BRAND

Service Manual

Serial Number Range

Z™-60/34

from Z60-4001

Part No. 75861
Rev E2
June 2015

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the *Genie Z-60/34 Operator's Manual* before attempting any maintenance or repair procedure.

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

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

Compliance

Machine Classification
Group B/Type 3 as defined by ISO 16368

Machine Design Life
Unrestricted with proper operation, inspection and scheduled maintenance.

Technical Publications

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

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

Contact Us:

http://www.genielift.com
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Serial Number Information

Genie offers the following Service Manuals for these models:

Title	Part No.
Z-60/34 Service Manual (before serial number 1090)	30105
Z-60/34 Service Manual (from serial number 1090 to 4000)	52856

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Revision History

Revision	Date	Section	Procedure / Schematic Page / Description
E	9/2013	New Printing	
E1	6/2015	Introduction	TOC, Checklist B Procedures
		Maintenance	Inspection Report
E2	6/2015	Maintenance	Inspection Report C-6 and C-7

REFERENCE EXAMPLES:

2-1_Section 2_Specifications Page #.
3-3_Section 3_Maintenance Procedure Page #.
4-48_Section 4_Repair Procedure Page #.
Section 5_Fault Codes.
6-5_Section 6_Schematic Page #.

Electronic Version

Click on any procedure or page number highlighted in blue to view the update.

REVISION HISTORY, CONTINUED

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2-1_Section 2_Specifications Page #.
3-3_Section 3_Maintenance Procedure Page #.
4-48_Section 4_Repair Procedure Page #.
Fault Codes_Section 5.
6-5_Section 6_Schematic Page #.

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INTRODUCTION

Serial Number Legend

A TEREX BRAND

Model: Z-60/34
Serial number: Z6006-12345
Model year: 2006 **Manufacture date:** 01/05/06
Electrical schematic number: ES0423
Machine unladen weight:

Rated work load (including occupants): 500 lb / 227 kg
Maximum number of platfrm occupants: 2
Maximum allowable side force : 150 lb / 670 N
Maximum allowable inclination of the chassis:
0 deg
Maximum wind speed : 28 mph/ 12.5 m/s
Maximum platform height : 60 ft 4 in/ 18.3 m
Maximum platform reach : 34 ft / 10.4 m
Gradeability: N/A
Country of manufacture: USA
This machine complies with:
ANSI A92.5-
CAN B.354.4-

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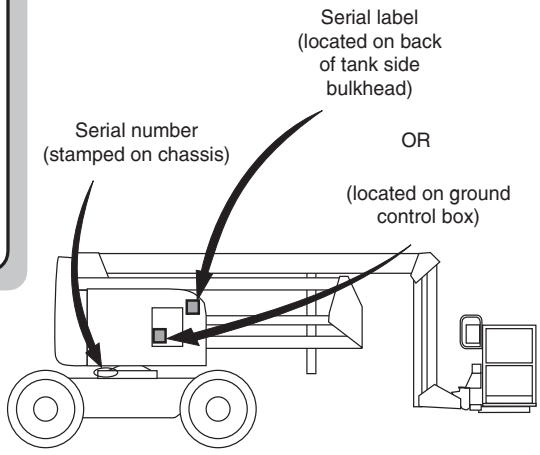
PN - 77055

Z60 06 - 12345

Model

Sequence number

Model year



Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie Z-60/34 Operator's Manual* will result in death or serious injury.

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

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

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

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

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



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



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

Workplace Safety



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



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



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



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



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



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

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Specifications

Machine Specifications

Tires and wheels	
Tire size (Rough terrain)	385-19.5
Tire size (Hi-flotation)	41/18LL x 22.5
Tire ply rating (Rough terrain)	16
Tire ply rating (Hi-flotation)	14
Tire weight, new foam-filled (minimum) (Rough terrain)	425 lbs 193 kg
Overall tire diameter (Rough terrain)	40.1 in 102 cm
Overall tire diameter (Hi-flotation tires)	41 in 104 cm
Tire pressure (air-filled tires) (Rough terrain)	70 psi 4.8 bar
Tire pressure (air-filled tires) (Hi-flotation tires)	60 psi 4.1 bar
Wheel lugs	9 @ 5/8 -18

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

Lug nut torque (before serial number 4551)	
Flanged or tapered lug nut, dry	170 ft-lbs 230 Nm
Flanged or tapered lug nut, lubricated	130 ft-lbs 176 Nm

Lug nut torque (after serial number 4550)	
Flanged lug nut, dry	240 ft-lbs 325 Nm
Flanged lug nut, lubricated	180 ft-lbs 244 Nm
Tapered lug nut, dry	170 ft-lbs 230 Nm
Tapered lug nut, lubricated	130 ft-lbs 176 Nm

Fluid capacities	
Fuel tank	20 gallons 75.7 liters
LPG tank	33.5 pounds 15.2 kg
Hydraulic tank	45 gallons 170 liters
Hydraulic system (including tank)	55 gallons 208.2 liters
Drive hubs (before serial number 4551)	17 fl oz 0.5 liters
Drive hubs (after serial number 4550)	20 fl oz 0.59 liters
Turntable rotation drive hub	8 fl oz 0.24 liters

Drive hub oil type:
SAE 90 multipurpose hypoid gear oil API service classification GL5

SPECIFICATIONS

Performance Specifications

Drive speeds	
Stowed	40 ft / 7.9-8.5 sec 12.2 m / 7.9-8.5 sec
Raised or Extended position	40 ft / 42-48 sec 12.2 m / 42-48 sec
Gradeability	See Operator's Manual
Braking distance, maximum	
High range on paved surface	3 to 4 ft 0.9 to 1.2 m

Boom function speeds, maximum from platform controls	
Jib boom up	20 to 25 seconds
Jib boom down	15 to 20 seconds
Primary boom up	35 to 45 seconds
Secondary boom up	40 to 50 seconds
Primary boom down	50 to 60 seconds
Secondary boom down	35 to 45 seconds
Primary Boom extend	12 to 22 seconds
Primary Boom retract	15 to 25 seconds
Turntable rotate, 360° boom fully stowed	130 to 140 seconds
Turntable rotate, 360° boom raised or extended	170 to 180 seconds
Platform level (ANSI / AUS) (10° range of motion)	3 to 5 seconds
Platform level (CE) (10° range of motion)	20 to 22 seconds
Platform rotate, 160°	9 to 15 seconds

Hydraulic Oil Specifications

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

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

Optional fluids	
Biodegradable	Petro Canada Environ MV46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Chevron Aviation A Eni ARNICA 32

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

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

Note: Use Shell Tellus S2 V 46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

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

SPECIFICATIONS

Hydraulic Component Specifications

Drive pump (before serial number 4551)	
Type:	bi-directional, variable displacement piston pump
Displacement per revolution, variable, 2WD models	0 to 1.70 cu in 0 to 28 cc
Displacement per revolution, variable, 4WD models	0 to 2.74 cu in 0 to 45 cc
Flow rate @ 2500 rpm, 2WD models	0 to 18.5 gpm 0 to 70.0 L/min
Flow rate @ 2500 rpm, 4WD models	0 to 30.1 gpm 0 to 113.9 L/min
Drive pressure, maximum, 2WD models	4200 psi 290 bar
Drive pressure, maximum, 4WD models	3625 psi 250 bar

Drive pump (after serial number 4550)	
Type:	bi-directional, variable displacement piston pump
Displacement per revolution, variable, 4WD models	0 to 2.8 cu in 0 to 46 cc
Flow rate @ 2500 rpm	0 to 28 gpm 106 L/min
Drive pressure, maximum	3625 psi 250 bar

Charge pump (before serial number 4551)	
Type:	fixed displacement gear pump
Displacement, 2WD models	0.37 cu in 6.1 cc
Displacement, 4WD models	0.51 cu in 8.4 cc
Flow rate @ 2500 rpm, 2WD models	4 gpm 15.1 L/min
Flow rate @ 2500 rpm, 4WD models	5.5 gpm 20.8 L/min
Charge pressure @ 2500 rpm Neutral position	250 psi 17.2 bar

Charge pump (after serial number 4550)	
Type:	gerotor pump
Displacement	0.85 cu in 13.9 cc
Flow rate @ 2500 rpm	9 gpm 34.1 L/min
Charge pressure @ 2500 rpm Neutral position	310 psi 21.4 bar

Function pump (before serial number 4551)	
Type	gear, pressure balanced
Displacement	1.37 cu in 22.5 cc
Flow rate @ 2500 rpm	14.8 gpm 56 L/min

Function pump (after serial number 4550)	
Type	gear, pressure balanced
Displacement	1.04 cu in 17 cc
Flow rate @ 2500 rpm	10.69 gpm 40.5 L/min

SPECIFICATIONS

Oscillation pump (after serial number 4550)	
Type	gear, fixed displacement
Displacement	0.37 cu in 6 cc
Auxiliary pump	
Type	gear, fixed displacement
Displacement - static	0.151 gpm 2.47 L/min
Auxiliary pump relief pressure	2400 psi 165 bar
Function manifold	
System relief valve pressure	2600 psi 179.3 bar
Primary boom down relief valve pressure	1800 psi 124 bar
Secondary boom down relief valve pressure	1600 psi 110 bar
Steer flow regulator	3.5 gpm 13.2 L/min
Boom extend	2600 psi 179.3 bar
Oscillate pressure	750 psi 51.7 bar
Jib boom / platform rotate flow regulator	1.5 gpm 5. 7 L/min
2WD Traction manifold	
Hot oil relief pressure (before serial number 4461)	300 psi 20.7 bar
Hot oil relief pressure (after serial number 4460)	280 psi 19.3 bar
4WD Traction manifold	
Hot oil relief pressure (before serial number 10154)	250 psi 17.2 bar
Hot oil relief pressure (after serial number 10153)	280 psi 19.3 bar

Brakes	
Brake release pressure	174 psi 12 bar
Drive motors, 4WD and 2WD models (before serial number 4551)	
Displacement per revolution high speed	1.71 cu in 28 cc
Displacement per revolution low speed	.87 cu in 14.2 cc
Drive motors, 4WD models (after serial number 4550)	
Displacement per revolution, high speed	0.79 cu in 13 cc
Displacement per revolution, low speed	1.83 cu in 30 cc
Drive motors, 2WD models (after serial number 4550)	
Displacement per revolution, high speed	1.28 cu in 20.9 cc
Displacement per revolution, low speed	2.14 cu in 35 cc
Hydraulic filters	
High pressure filter	Beta $_3 \geq 200$
High pressure filter bypass pressure	102 psi 7 bar
Medium pressure filter	Beta $_3 \geq 200$
Medium pressure filter bypass pressure	51 psi 3.5 bar
Hydraulic tank return filter	10 micron with 25 psi / 1.7 bar bypass
Drive motor case drain return filter	Beta $10 \geq 2$

SPECIFICATIONS

Manifold Component Specifications

Plug torque	
SAE No. 2	36 in-lbs / 4.1 Nm
SAE No. 4	10 ft-lbs / 13.6 Nm
SAE No. 6	14 ft-lbs / 19 Nm
SAE No. 8	38 ft-lbs / 51.5 Nm
SAE No. 10	41 ft-lbs / 55.6 Nm
SAE No. 12	56 ft-lbs / 75.9 Nm

SPECIFICATIONS

Ford LRG-425 EFI Engine

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	70 @ 2500 rpm
Continuous	60 @ 2500 rpm
Gross intermittent	52 kW @ 2500 rpm
Continuous	44.7 kW @ 2500 rpm
Firing order	1 - 3 - 4 - 2
Low idle	1600 rpm
Frequency	396.8 Hz
High idle	2500 rpm
Frequency	620 Hz
Compression ratio	9.4:1
Compression pressure (approx.) Pressure (psi) of lowest cylinder must be at least 75% of highest cylinder	
Valve clearances - collapsed tappet	0.035 to 0.055 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)	4.5 quarts 4.3 liters

Oil viscosity requirements

Unit ships with 5W-30 oil.
Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.

Oil pressure switch specifications	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	3-5 psi 0.21-0.34 bar

Starter motor	
Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Current draw, no load	70A
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

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

Electronic fuel pump	
Fuel pressure, static	64 psi 4.4 bar
Fuel flow rate	0.58 gpm 2.18 L/min

SPECIFICATIONS

Ignition System	
Spark plug type (before serial number 4546)	Motorcraft AWSF-52-C
Spark plug type (after serial number 4545)	Motorcraft AGSF-32-FM
Spark plug gap	0.042 to 0.046 inches 1.07 to 1.17 mm
Spark plug torque	5-10 ft-lbs 7-14 Nm
Engine coolant	
Capacity	11.5 quarts 10.9 liters
Coolant temperature switch	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	230° F 112° C
Alternator	
Output	95A, 13.8V DC

SPECIFICATIONS

Ford DSG-423 EFI Engine

Displacement	140.4 cu in 2.3 liters
Number of cylinders	4
Bore & stroke	3.44 x 3.7 inches 87.5 x 94 mm
Horsepower	
Continuous horsepower	59 @ 2500 rpm
Peak horsepower	69 @ 2500 rpm
Continuous horsepower	44 kW @ 2500 rpm
Peak horsepower	51 kW @ 2500 rpm
Firing order	1 - 3 - 4 - 2
Low function idle (computer controlled)	1600 rpm
Frequency	53.3 Hz
High function idle (computer controlled)	2500 rpm
Frequency	83.3 Hz
Compression ratio	9.7:1
Compression pressure (approx.) Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder	
Lubrication system	
Oil pressure (at operating temperature @ 2500 rpm)	29 to 39 psi 2 to 2.7 bar
Oil capacity (including filter)	4 quarts 3.8 liters
Oil viscosity requirements	
Unit ships with 5-W20 oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.	
Electronic fuel pump	
Fuel pressure, static	64 psi 4.4 bar
Fuel flow rate	0.43 gpm 1.6 L/min
Fuel requirement	
For fuel requirements, refer to the engine Operator's Manual on your machine.	
Ignition system	
Spark plug type	Motorcraft AGSF-32-FEC
Spark plug gap	0.049 to 0.053 inches 1.244 to 1.346 mm
Engine coolant	
Capacity	10 quarts 9.5 liters
Cylinder head temperature sending unit	
Fault code set temperature	280°F 138°C
Engine shut-down temperature	300°F 149°C
Starter motor	
Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Alternator	
Output	95A, 13.8V DC
Battery	
Type	12V DC, Group 31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes
Torque	
Flywheel bolts	83 ft-lbs

SPECIFICATIONS

Ford MSG-425 EFI Engine

Displacement	152.5 cu in 2.5 liters
Number of cylinders	4
Bore & stroke	3.50 x 3.94 inches 89 x 100 mm
Horsepower	
Continuous horsepower	60 @ 2500 rpm
Continuous horsepower	44.7 kW @ 2500 rpm
Firing order	1 - 3 - 4 - 2
Idle speed (computer controlled)	1000 rpm
Low function idle (computer controlled)	1600 rpm
High function idle (computer controlled)	2500 rpm
Governor	Electronic
Compression ratio	9.7:1
Compression pressure (approx.) Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder	

Lubrication system	
Oil pressure (at operating temperature @ 2500 rpm)	29 to 39 psi 2 to 2.7 bar
Oil capacity (including filter)	6.7 quarts 6.4 liters
Oil switch pressure point	7-9 psi 0.48 to 0.62 bar

Electronic fuel pump	
Fuel pressure, static	60 psi 4.14 bar
Fuel flow rate	0.43 gpm 1.6 L/min

Ignition system	
Spark plug type	Motorcraft AGSF-32-FEC
Spark plug gap	0.049 to 0.053 inches 1.244 to 1.346 mm

Engine coolant	
Capacity	10 quarts 9.5 liters
Operating pressure	13-18 psi
Normal operating temperature	205° F

Cylinder head temperature sending unit	
Fault code set temperature	280°F 138°C
Engine shut-down temperature	300°F 149°C

Ford MSG-425 Engine, continued

Starter motor	
Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Alternator	
Output	95A, 13.8V DC
Battery	
Type	12V DC, Group 31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

SPECIFICATIONS

Deutz Engine F4L 1011F

Displacement	166.7 cu in 2.732 liters
Number of cylinders	4
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	56 @ 3000 rpm 42 kW @ 3000 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle Frequency	1500 rpm 313 Hz
High idle Frequency	2300 rpm 479.9 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure (hot @ 2000 rpm)	60 to 70 psi 4.1 to 4.8 bar
Oil capacity (including filter)	11 quarts 10.5 liters
Oil viscosity requirements	
Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.	

Injection system	
Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	
For fuel requirement, refer to the engine Operator's Manual on your machine.	
Alternator output	60A, 14V
Starter motor	
Current draw, no load	90A
Brush length, new	0.7480 in 19mm
Brush length, minimum	0.5 in 12.7 mm
Battery	
Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

SPECIFICATIONS

Deutz F3L 1011F Engine

Displacement	125 cu in 2.05 liters
Number of cylinders	3
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	43 @ 2800 rpm 32 kW @ 2800 rpm
Firing order	1 - 2 - 3
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle Frequency	1500 rpm 313 Hz
High idle Frequency	2300 rpm 479.9 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure	26 to 87 psi 1.8 to 6.0 bar
Oil capacity (including filter)	8.5 quarts 8 liters
Oil viscosity requirements	
Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.	
Injection system	
Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	
For fuel requirement, refer to the engine Operator's Manual on your machine.	
Alternator output	55A, 14V
Starter motor	
Current draw, no load	90A
Brush length, new	0.7480 in 19 mm
Brush length, minimum	0.5 in 12.7 mm
Battery	
Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

SPECIFICATIONS

Deutz F3L 2011 Engine
Deutz D2011L03i Engine

Displacement	142 cu in 2.33 liters
Number of cylinders	3
Bore and stroke	3.7 x 4.4 inches 94 x 112 mm
Horsepower	
Net intermittent	48.7 @ 2800 rpm
Net continuous	46.2 @ 2800 rpm
Net intermittent	36 kW @ 2800 rpm
Net continuous	34.5 kW @ 2800 rpm
Firing order	1 - 2 - 3
Low idle	1500 rpm
Frequency	313 Hz
High idle	2500 rpm
Frequency	521.7 Hz
Compression ratio	19:1
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, hot @ 2000 rpm	40-60 psi 2.8 to 4.1 bar
Oil capacity (including filter) **(Deutz F3L2011 Engine)**	8.5 quarts 8 liters
Oil capacity (including filter) **(Deutz D2011Lo3i Engine)**	9.5 quarts 9 liters
Oil viscosity requirements	
Unit ships with 15-W40 oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.	
Oil temperature switch	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	220° F 104° C
Oil pressure switch	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point **(Deutz F3L2011 Engine)**	7 psi .5 bar
Oil pressure switch point **(Deutz D2011L03i Engine)**	22 psi 1.5 bar

SPECIFICATIONS

Fuel injection system	
Injection pump make	Bosch
Injection pump pressure, maximum	15000 psi 1034 bar
Injector opening pressure	3046 psi 210 bar

Fuel requirement
For fuel requirement, refer to the engine Operator's Manual on your machine.

Starter motor	
Current draw, normal load	140-200A
Brush length, new	0.72 in 18.5 mm
Brush length, minimum	0.27 in 7 mm

Battery	
Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Alternator output	60A @ 14V DC
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

SPECIFICATIONS

Perkins 404-22 Engine

Displacement	134 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 @ 2800 rpm
continuous	41 @ 2800 rpm
gross intermittent	37.3 kW @ 2800 rpm
continuous	31 kW @ 2800 rpm
Firing order	1 - 3 - 4 - 2
Low idle Frequency	1300 rpm 200.4 Hz
Low idle with generator option Frequency	1500 rpm 231.3 Hz
High idle Frqunecy	2500 rpm 385.4 Hz
Compression ratio	22.4:1
Compression pressure Pressure (psi) of lowest cylinder must be within 50 psi / 3.45 bar of highest cylinder	426 psi 29.4 bar
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.008 in 0.2 mm
Exhaust	0.008 in 0.2 mm

Lubrication system	
Oil pressure, hot (at 2000 rpm)	40 to 60 psi 2.8 to 4.1 bar
Oil capacity (including filter)	9.4 quarts to 11.2 quarts 8.9 liters to 10.6 liters
Oil viscosity requirements	
Unit ships with 15-W40 oil. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the engine Operator's Manual on your machine.	
Oil pressure sending unit	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	14.2 psi 1 bar
Fuel injection system	
Injection pump make	Zexel
Injection pressure	2133 psi 147 bar
Fuel requirement	
For fuel requirement, refer to the engine Operator's Manual on your machine.	
Alternator output	65A @ 13.8V DC
Fan belt deflection	3/8 to ½ in 9 to 12 mm
Starter motor	
Current draw, normal load	140-200A
Brush length, new	0.7480 in 19 mm
Brush length, minimum	0.5 in 12.7 mm

SPECIFICATIONS

Battery	
Type	12V, Group 31
Quantity	1
Cold cranking ampere	1000A
Reserve capacity @ 25A rate	200 minutes
Coolant temperature sending unit	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	221° F 105° C

Machine Torque Specifications

Platform rotator	
1-8 center bolt, dry	640 ft-lbs 868 Nm
1-8 center bolt, Gr 5, lubricated	480 ft-lbs 651 Nm
3/8 -16 bolts, Gr 8, lubricated *(use blue thread-locking compound)	35 ft-lbs* 47 Nm
Drive motor and hubs	
Drive hub mounting bolts, lubricated (before serial number 4569 and after 5572) *(use blue thread-locking compound)	160 ft-lbs* 217Nm
Drive hub mounting bolts, lubricated (between serial number 4569 and 5572) *(use blue thread-locking compound)	173 ft-lbs* 235 Nm
Drive motor mounting bolts, dry (before serial number 4551)	75 ft-lbs 101.6 Nm
Drive motor mounting bolts, lubricated (before serial number 4551)	57 ft-lbs 77.3 Nm
Drive motor mounting bolts, dry (after serial number 4550)	49 ft-lbs 66.4 Nm
Drive motor mounting bolts, lubricated (after serial number 4550)	37 ft-lbs 50.1 Nm
Turntable bearing	
Turntable bearing mounting bolts, lubed	180 ft-lbs 244 Nm
Turntable rotate assembly	
Turntable motor mounting bolts *(use blue thread-locking compound)	160 ft-lbs* 217 Nm

SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

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

Seal-Lok™ Fittings
(hose end - ORFS)

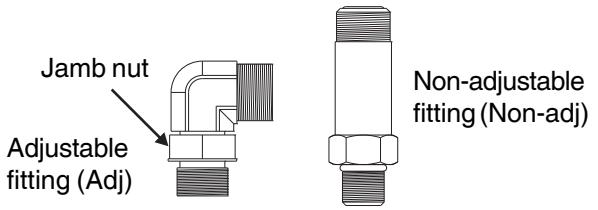
SAE Dash size	Torque
-4	10 ft-lbs / 13.6 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 Nm

JIC 37° Fittings
(swivel nut or hose connection)

SAE Dash size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 1/4
-8	3/4-16	1
-10	7/8-14	1
-12	1 1/16-12	1
-16	1 5/16-12	1
-20	1 5/8-12	1
-24	1 7/8-12	1

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)
(all types)

SAE Dash size	Torque
-4	14 ft-lbs / 19 Nm
-6	23 ft-lbs / 31.2 Nm
-8	36 ft-lbs / 54.2 Nm
-10	62 ft-lbs / 84 Nm
-12	84 ft-lbs / 114 Nm
-16	125 ft-lbs / 169.5 Nm
-20	151 ft-lbs / 204.7 Nm
-24	184 ft-lbs / 249.5 Nm



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

SAE Dash size		Torque
-4	ORFS / 37° (Adj)	15 ft-lbs / 20.3 Nm
	ORFS (Non-adj)	26 ft-lbs / 35.3 Nm
	37° (Non-adj)	22 ft-lbs / 30 Nm
-6	ORFS (Adj / Non-adj)	35 ft-lbs / 47.5 Nm
	37° (Adj / Non-adj)	29 ft-lbs / 39.3 Nm
-8	ORFS (Adj / Non-adj)	60 ft-lbs / 81.3 Nm
	37° (Adj / Non-adj)	52 ft-lbs / 70.5 Nm
-10	ORFS (Adj / Non-adj)	100 ft-lbs / 135.6 Nm
	37° (Adj / Non-adj)	85 ft-lbs / 115.3 Nm
-12	(All types)	135 ft-lbs / 183 Nm
-16	(All types)	200 ft-lbs / 271.2 Nm
-20	(All types)	250 ft-lbs / 339 Nm
-24	(All types)	305 ft-lbs / 413.5 Nm

Torque Procedure

Seal-Lok™ fittings

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

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

2 Lubricate the O-ring before installation.

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

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

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

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

JIC 37° fittings

1 Align the tube flare (hex nut) against the nose of the fitting body (body hex fitting) and tighten the hex nut to the body hex fitting to hand-tight, approximately 30 in-lbs / 3.4 Nm.

2 Make a reference mark on one of the flats of the hex nut, and continue it on to the body hex fitting with a permanent ink marker. Refer to Figure 1.

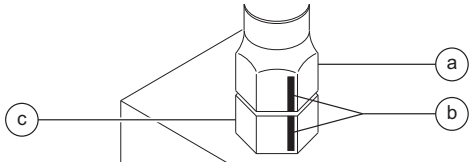


Figure 1

a hex nut
b reference mark
c body hex fitting

3 Working clockwise on the body hex fitting, make a second mark with a permanent ink marker to indicate the proper tightening position. Refer to Figure 2.

Note: Use the *JIC 37° Fittings* table on the previous page to determine the correct number of flats for the proper tightening position.

Note: The marks indicate that the correct tightening positions have been determined. Use the second mark on the body hex fitting to properly tighten the joint after it has been loosened.

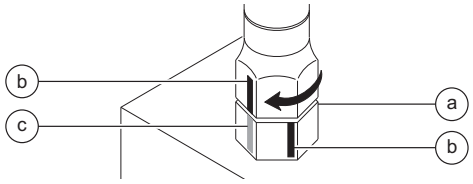


Figure 2

a body hex fitting
b reference mark
c second mark

4 Tighten the hex nut until the mark on the hex nut is aligned with the second mark on the body hex fitting.

5 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

SPECIFICATIONS

SAE FASTENER TORQUE CHART

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

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

METRIC FASTENER TORQUE CHART

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

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

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.
- ☑ Use only Genie approved replacement parts.
- ☑ Machines that have been out of service for a period longer than three months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Turntable secured with the turntable rotation lock
  - Key switch in the off position with the key removed
  - Wheels chocked
  - All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety 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 Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

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

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

Note: Used to indicate operation or maintenance information

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

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

Note: 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 motor, pump or engine will be required to perform this procedure.



Indicates that a warm motor or pump will be required to perform this procedure.



Indicates that dealer service is required to perform this procedure.

Pre-delivery Preparation Report

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

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

Maintenance Schedule

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

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

Maintenance Inspection Report

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

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

Pre-Delivery Preparation

Fundamentals

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

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

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

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

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

Instructions

Use the operator's manual on your machine.

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

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

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

Legend

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

Comments

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

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

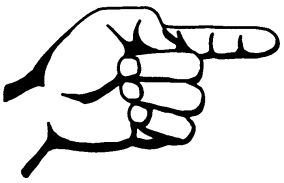
Inspector company

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133192 Rev D



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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

☐	**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.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Checklist A		Y	N	R
A-1	Inspect the manuals and decals			
A-2	Pre-operation inspection			
A-3	Function tests			
A-4	Engine maintenance - all models			
Perform after 40 hours:				
A-5	30 Day Service			
Perform every 40 hours:				
A-6	Filter condition indicator			
Perform after first 50 hours:				
A-7	Engine maintenance - Deutz and Ford models			
Perform every 50 hours:				
A-8	Engine maintenance- Perkins models			
Perform every 100 hours:				
A-9	Fuel filter/water separator - Deutz models			
A-10	Engine maintenance - Ford models			
A-11	Rotation bearing			
Perform after first 125 hours:				
A-12	Engine maintenance - Deutz 1011F models			
Perform after first 150 hours:				
A-13	Drive hub oil			
Perform every 200 hours:				
A-14	Engine maintenance - Ford models			

Checklist B		Y	N	R
B-1	Battery			
B-2	Electrical wiring			
B-3	Air filter element			
B-4	Key switch			
B-5	Engine maintenance - Deutz and Perkins models			
B-6	Exhaust system			
B-7	Oil cooler and fins- Deutz models			
B-8	Tires, wheels and lug nut torque			
B-9	Drive hub maintenance			
B-10	Brake configuration			
B-11	Engine idle select			
B-12	Fuel select - Ford models			
B-13	Ground control			
B-14	Directional valve linkage			
B-15	Platform self-leveling			
B-16	Drive brakes			
B-17	Drive speed - stowed position			
B-18	Drive speed - raised position			
B-19	Hydraulic oil analysis			
B-20	Alarm package			
B-21	Fuel and hydraulic cap venting systems			
Perform every 400 hours:				
B-22	Engine maintenance - Ford models			

Comments

MAINTENANCE INSPECTION REPORT

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of 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.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Checklist C		**Y**	**N**	**R**
C-1	Engine maintenance - Deutz and Perkins models			
C-2	Platform overload (if equipped)			
C-3	Platform overload (if equipped)			
C-4	Air filter element - Deutz and Perkins models			
C-5	Fuel inline strainer - Deutz models			
C-6	Check engine rpm			
Perform every 800 hours:				
C-7	Engine maintenance - Ford models			

Checklist D		**Y**	**N**	**R**
D-1	Boom wear pads			
D-2	Turntable bearing bolts			
D-3	Free-wheel configuration			
D-4	Drive hub oil			
D-5	Engine maintenance- Deutz and Perkins models			
D-6	Hydraulic filters			
D-7	Turntable bearing wear			

Checklist E		**Y**	**N**	**R**
E-1	Hydraulic oil			
E-2	Steer axle wheel bearings, 2WD models			
Perform every 2000 hours:				
E-3	Engine maintenance - Deutz and Perkins models			
Perform every 3000 hours:				
E-4	Engine maintenance - Deutz and Perkins models			
Perform every 4 years:				
E-5	Engine maintenance - Ford models			
Perform every 5000 hours:				
E-6	Engine maintenance - Deutz models			
Perform every 6000 hours:				
E-7	Engine maintenance - Deutz			
Perform every 12,000 hours:				
E-8	Engine maintenance - Deutz models			

Comments

Checklist A Procedures

A-1
Inspect the Manuals and Decals

Genie specifications require that this procedure be performed daily.

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

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

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

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

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

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

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

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

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

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

Note: Contact your authorized Genie distributor or Genie if replacement manuals or decals are needed.

CHECKLIST A PROCEDURES

A-2
Perform Pre-operation Inspection

Genie specifications require that this procedure be performed daily.

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

Complete information to perform this procedure is available in the Operator's Manual on your machine.

A-3
Perform Function Tests

Genie specifications require that this procedure be performed daily.

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

Complete information to perform this procedure is available in the Operator's Manual on your machine.

A-4
Perform Engine Maintenance




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

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	84794

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

Ford models

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792
Ford DSG 423 EFI Operator Handbook	
Genie part number	119488
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST A PROCEDURES

A-5
Perform 30 Day Service



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

1 Perform the following maintenance procedures:

- A-11 Grease the Turntable Bearing and Rotate Gear
- B-8 Inspect the Tires, Wheels and Lug Nut Torque
- B-9 Check the Drive Hub Oil Level and Fastener Torque
- D-2 Check the Turnable Rotation Bearing Bolts
- D-6 Replace the Hydraulic Filter Elements

A-6
Check the High Pressure Hydraulic Filter Condition Indicator (if equipped)

Genie specifications require that this procedure be performed every 40 hours of operation.

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 ground control side turntable cover.

2 Start the engine from the ground controls.

3 Change the engine idle to high rpm (rabbit symbol).

4 Visually inspect the filter condition indicator.

⊙ Result: The filter condition indicator should be operating with the plunger in the green area. If the indicator displays the plunger in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. Refer to Maintenance Procedure, *Replace the Hydraulic Filter Elements.*

A-7
Perform Engine Maintenance - Deutz and Ford Models




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

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	84794

Ford models

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792
Ford DSG 423 EFI Operator Handbook	
Genie part number	119488
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST A PROCEDURES

A-8
Perform Engine Maintenance - Perkins Models

Engine specifications require that this procedure be performed every 50 hours.

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

A-9
Inspect the Fuel Filter/Water Separator - Deutz Models

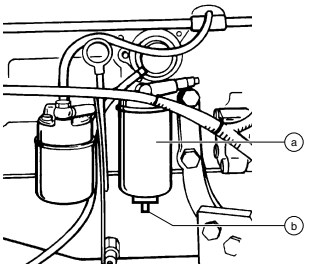
Genie specifications require that this procedure be performed every 100 hours or monthly, whichever comes first.

Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and/or hard starting, and continued use may result in component damge. Extremely dirty conditions may require this procedure be performed 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.

Note: Perform this procedure with the engine off.

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



a fuel filter
b drain plug

2 Clean up any fuel that may have spilled.

3 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.

A-10
Perform Engine Maintenance - Ford Models

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

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792
Ford DSG 423 EFI Operator Handbook	
Genie part number	119488
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST A PROCEDURES

A-11
Grease the Turntable Rotation Bearing and Rotate Gear



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

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

1 Raise the boom enugh to access the turntable gearing.

2 Locate the grease fitting on the platform end of the engine side bulkhead.

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

4 Apply grease to each tooth of the drive gear, located under the turntable.

Grease type

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

A-12
Perform Engine Maintenance - Deutz 1011F Models



Engine specifications require that this procedure be performed after the first 125 hours.

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual (*Deutz part number 0297 9683).

Deutz 1011F Operation Manual
Genie part number 52883

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

A-13
Replace the Drive Hub Oil

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

Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the torque hub oil after the first 150 hours of use may cause the machine to perform poorly and continued use may cause component damage.

Before serial number 4551

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

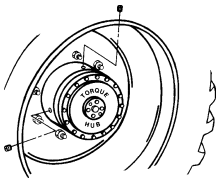
2 Remove both plugs and drain the oil into a suitable container.

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

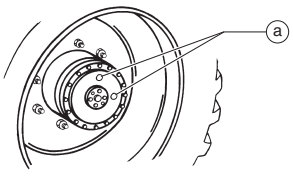
4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Refer to Specifications, *Machine Specifications.*

5 Install the plugs. Use pipe thread sealant on units with pipe plugs.

6 Repeat steps 1 through 5 for all the other drive hubs.



models with pipe plugs



a drive hub plugs

After serial number 4550

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs (b) is at the lowest point. See illustration A.

2 Remove both plugs and drain the oil into a suitable container.

3 Drive the machine until one plug (a) is just above horizontal. See illustration B.

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

5 Apply pipe thread sealant to the plugs. Install the plugs.

6 Repeat steps 1 through 4 for all the other drive hubs.

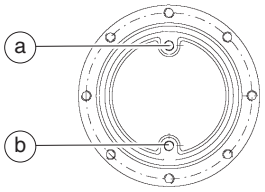


Illustration A

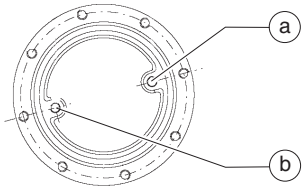


Illustration B

CHECKLIST A PROCEDURES

A-14
Perform Engine Maintenance - Ford Models



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

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792
Ford DSG 423 EFI Operator Handbook	
Genie part number	119488
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

Checklist B Procedures

B-1
Inspect the Battery



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

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

⚠WARNING Electrocution/burn 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.

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

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

4 Be sure that the battery separator wire connections are tight (if equipped).

5 Fully charge the battery(s) and allow the battery(s) to rest at least 6 hours.

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

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

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

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 or higher. The battery is fully charged. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 8.

8 Perform an equalizing charge OR fully charge the battery(s) and allow the battery(s) to rest at least 6 hours.

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

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

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

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

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

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

12 Install the vent caps and neutralize any electrolyte that may have spilled using baking soda.

CHECKLIST B PROCEDURES

B-2
Inspect the Electrical Wiring



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

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

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

1 Open the engine side turntable cover.

2 Remove the engine tray retaining fasteners located under the engine tray. Swing the engine tray out and away from the machine and secure it from moving.

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

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

- Engine wiring harness

4 Inspect for a liberal coating of dielectric grease in the following locations:

- Between the ground and platform controls
- Between the ground and drive controls
- All harness connectors
- Level sensor

5 Open the turntable cover at the ground control side of the machine.

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 Inspect for a liberal coating of dielectric grease in all connections between the ECM and the platform controls.

12 Swing the engine back to its original position and install the engine pivot plate retaining fasteners.

⚠WARNING Crushing hazard. Failure to install the fasteners into the engine tray to secure it from moving could result in death or serious injury.

B-3
Inspect the Air Filter

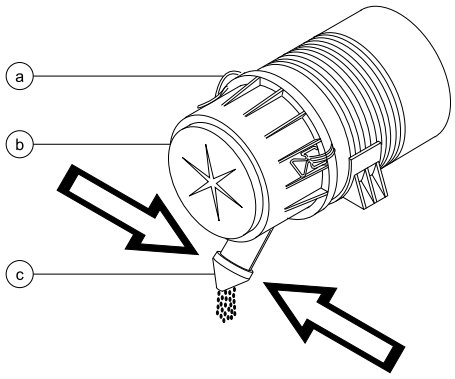
Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first. Perform this procedure more often if dusty conditions exist.

Maintaining the 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.

Note: Perform this procedure with the engine off.

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

2 Inspect the dust discharge valve. If the valve shows any signs of damage, replace the valve.



a clamp
b canister end cap
c dust discharge valve

3 Disconnect the latches and remove the end cap of the air cleaner canister.

4 Remove the filter element.

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

6 Clean the filter using dry compressed air. Blow out from inside to outside. Check filter gasket for damage.

7 Re-install the filter element, or if there are any signs of loss of filtration, replace the element.

8 Install the end cap onto the canister. Secure the clamps.

Note: Be sure the dust discharge valve is pointing down.

CHECKLIST B PROCEDURES

B-4
Test the Key Switch

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

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

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

2 Turn the key switch to ground control, start the engine and then turn the key switch to **platform control**.

3 Check all machine function from the **ground controls**.

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

4 Turn the key switch to ground control.

5 Check all machine function from the **platform controls**.

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

6 Turn the key switch to the off position.

⊙ Result: The engine should stop and no functions should operate.

B-5
Perform Engine Maintenance - Deutz and Perkins Models




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

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual (*Deutz part number 0297 9683).

Deutz 1011F Operation Manual	
Genie part number	52883

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

B-6
Check the Exhaust System



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

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

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

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

1 Remove the engine tray retaining fasteners located under the engine tray. Swing the engine tray out and away from the machine and secure it from moving.

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

2 Be sure that all nuts and bolts are tight.

3 Inspect all welds for cracks.

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

5 Swing the engine back to its original position and install the engine pivot plate retaining fasteners.

⚠WARNING Crushing hazard. Failure to install the fasteners into the engine tray to secure it from moving could result in death or serious injury.

B-7
Check the Oil Cooler and Cooling Fins - Deutz Models



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

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

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

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

Oil cooler

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving.

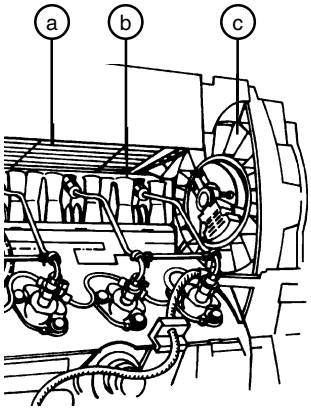
⚠WARNING Crushing hazard. Failure to secure the engine pivot plate from moving could result in death or serious injury.

2 Remove the fasteners from the engine side cover, and remove the cover.

3 Inspect the oil cooler for leaks and physical damage.

4 Clean the oil cooler of debris and foreign material.

CHECKLIST B PROCEDURES



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

Cooling and fan blower fins

5 Inspect the fan blower fins for physical damage.

6 Clean the fan blower fins of debris and foreign material.

7 Inspect the head cooling passages and fins for physical damage or foreign material, using a flashlight.

8 Clean the cylinder head cooling passages of debris and foreign material.

9 Install the engine side cover.

10 Swing the engine back to its original position and install the engine pivot plate retaining fasteners. Tighten the pivot fastener.

⚠WARNING Crushing hazard. Failure to install the fasteners into the engine tray to secure it from moving could result in death or serious injury.

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

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

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

⚠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.

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

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

2 Check each wheel for damage, bends and cracks.

3 Check each lug nut for proper torque. Refer to Specifications, *Machine Torque Specifications*.

Models with air-filled tires:

4 Check pressure in each air-filled tire. Add air as necessary. Refer to Specifications, *Machine Specifications*.

B-9
Check the Drive Hub Oil Level and Fastener Torque

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

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

Drive Hub (before serial number 4551)

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.

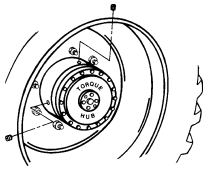
⊙ Result: The oil level should be even with the bottom of the side plug hole.

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

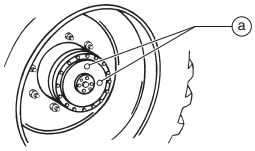
4 Install the plug(s) in the drive hub. Use pipe thread sealant on units with pipe plugs.

5 Check the torque of the drive hub mounting fasteners. Refer to Specifications, *Machine Torque Specifications.*

6 Repeat this procedure for each drive hub.



models with pipe plugs



a drive hub plugs

Drive Hub (after serial number 4550)

1 Drive the machine until one plug is just above horizontal. See illustration B.

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

3 Apply pipe thread sealant to the plugs. Install the plugs.

4 Check the torque of the drive hub mounting fasteners. Refer to Specifications, *Machine Torque Specifications.*

5 Repeat this procedure for each drive hub.

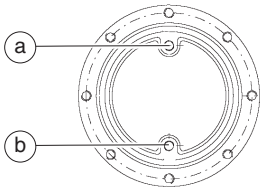


Illustration A

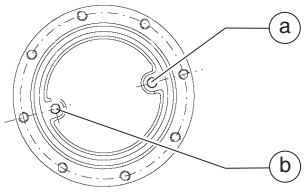


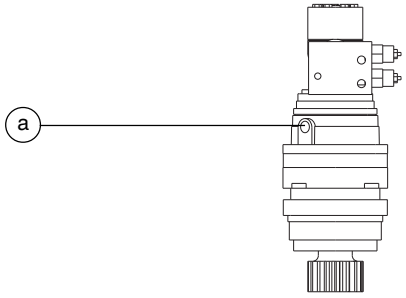
Illustration B

CHECKLIST B PROCEDURES

Turntable rotate drive hub (all models)

1 Remove the plug located on the side of the hub and check the oil level.

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



turntable drive hub
a plug

2 If necessary, add oil until the oil level is even with the bottom of the plug hole.

3 Apply pipe thread sealant to the plug, and install the plug in the drive hub.

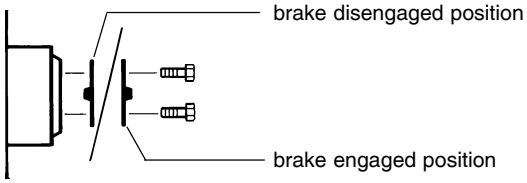
4 Check the torque of the turntable drive hub mounting fasteners. Refer to Specifications, *Machine Torque Specifications.*

B-10 Confirm the Proper Brake Configuration

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

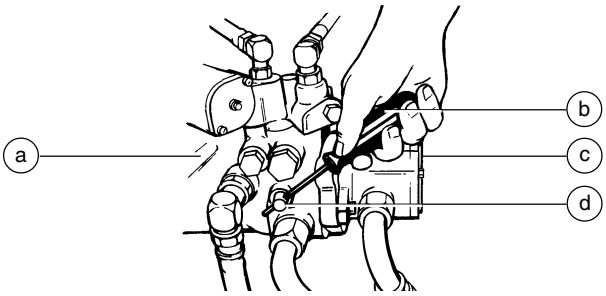
Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

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



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

Note: The free-wheel valve is located on the bottom of the drive pump.



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

Note: The free-wheel valve should always remain closed.

B-11
Test the Engine Idle Select

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

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

Foot switch activated low idle (turtle symbol) allows the operator to control individual boom functions.

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

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

2 Start the engine from the ground controls then move and hold the function enable/rpm select toggle switch to the high idle (rabbit symbol).

⊙ Result: The engine should change to high idle.

3 Release the function enable/rpm select toggle switch.

⊙ Result: The engine should return to low idle.

4 Turn the key switch to platform controls.

5 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.

6 Press down the foot switch.

⊙ Result: The engine should change to high idle.

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

⊙ Result: The engine should change to low idle.

B-12
Test the Fuel Select Operation - Ford Models



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

The ability to select and switch between gasoline and LPG fuels as needed is essential to safe machine operation. A fuel selection can be made 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.

Note: 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. 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.

CHECKLIST B PROCEDURES

B-13
Test the Ground Control Override

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

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

1 Push in the platform red Emergency Stop button to the off position.

2 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

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

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

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

1 Remove the drive chassis cover from the non-steer end 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

B-15
Test the Platform Self-leveling

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

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

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

1 Start the engine from the ground controls and lower the boom to the stowed position.

2 Hold the function enable toggle switch to either side and adjust the platform to a level position using the platform level toggle switch.

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

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

CHECKLIST B PROCEDURES

B-16
Test the Drive Brakes

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

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

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to Maintenance Procedure, *Confirm the Proper Brake Configuration*.

Note: 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 symbol), 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. Refer to Specifications, *Performance Specifications.*

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

B-17
Test the Drive Speed - Stowed Position

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

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

Note: 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 symbol), then lower the boom into the stowed position.

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

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

6 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Specifications, *Performance Specifications.*

B-18
Test the Drive Speed - Raised or Extended Position

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

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

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

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

2 Start the engine from the platform controls.

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

4 Raise the boom above horizontal.

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

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

7 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Specifications, *Peformance Specifications.*

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

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

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

11 Continue at top speed and note the time when the machine reference point crosses the finish line. Refer to Specifications, *Performance Specifications.*

CHECKLIST B PROCEDURES

B-19
Perform Hydraulic Oil Analysis



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

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

Note: 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.**
Refer to Maintenance Procedure, *Test or Replace the Hydraulic Oil.*

B-20
Test the Alarm Package (if equipped) and the Descent Alarm

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

Note: The descent alarm is standard, beginning with serial number 7270.

The alarm package includes:

- Travel alarm
- Flashing beacons

Alarms and beacons are installed to alert operators and ground personnel of machine proximity and motion. The alarm package is installed on the turntable rear cover. Beacons are installed on both turntable covers.

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

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

⊙ Result: Both flashing beacons should be on and flashing.

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

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

3 Move the function enable/rpm select toggle switch to either side and activate the jib boom toggle switch in the down position, hold for a moment and then release it.

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

4 Turn the key switch to platform controls.

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

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

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

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

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

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

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

B-21
Inspect the Fuel and Hydraulic Tank Cap Venting Systems



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

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

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

Gasoline/LPG models (before serial number 7924) and Diesel models (all):

Note: Perform this procedure with the engine off.

1 Remove the cap from the fuel tank.

2 Check for proper venting.

Note: When checking for positive fuel tank cap venting, air should pass freely through the cap.

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

⊗ Result: Air is not passing through the fuel tank cap. Clean or replace the cap. Proceed to step 3.

CHECKLIST B PROCEDURES

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

4 Install the fuel tank cap onto the fuel tank.

All models:

5 Remove the breather cap from the hydraulic tank.

6 Check for proper venting.

⊙ Result: Air should pass through the breather cap. Proceed to step 8.

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

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

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

8 Install the breather cap onto the hydraulic tank.

B-22
Perform Engine Maintenance - Ford Models




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

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792
Ford DSG 423 EFI Operator Handbook	
Genie part number	119488
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

Checklist C Procedures

C-1
Perform Engine Maintenance - Deutz and Perkins Models



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

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

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual (*Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	84794

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST C PROCEDURES

C-2
Grease the Platform Overload Mechanism (if equipped)



Genie specifications require that this procedure be performed every 500 hours or 6 months, whichever comes first. Perform this procedure more often if dusty conditions exist.

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

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

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

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

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



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

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

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

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

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

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

Note: Failure to remove all weight, tools and accessories from the platform will result in an incorrect test.

CHECKLIST C PROCEDURES

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

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

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

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

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

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

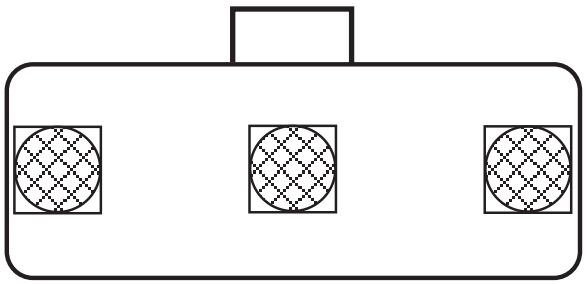


Illustration 1

6 Using a suitable lifting device, place an additional 50 lbs / 23 kg of weight onto the platform.

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

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

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

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

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

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

Note: There may be a two second delay before the overload indicator lights flash and the alarm sounds.

CHECKLIST C PROCEDURES

8 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

9 Turn the key switch to ground control.

10 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

11 Activate the auxiliary power toggle switch.

Note: The engine will turn off when the auxiliary power is activated.

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

⊙ Result: All ground control functions should operate.

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

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

Note: There may be an two second delay before the overload indicator lights and alarm turn off.

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

⊙ Result: All ground control functions should operate normally.

15 Turn the key switch to platform control.

16 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate.

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

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

CHECKLIST C PROCEDURES

C-4
Replace the Engine Air Filter Element - Deutz and Perkins Models



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

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

1 Open the evacuator valve located on the air cleaner cap by squeezing the sides together with your fingers.

2 Disconnect the latches on the air cleaner cap. Remove the end cap from the air cleaner canister.

3 Remove the filter element.

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

5 Install the new filter element.

6 Install the end cap on the canister and re-connect the latches.

Note: Be sure the evacuator valve is pointing down.

C-5
Replace the In-line Fuel Strainer - Deutz Models



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

Replacing the diesel fuel strainer 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.

⚠DANGER Explosion/burn 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.

Note: Perform this procedure with the engine off.

1 Put on protective clothing and eye wear.

2 Locate the inline strainer above the throttle actuator solenoid.

4 Place a suitable container under the filter.

5 Loosen the clamp holding the strainer to the engine mount. Loosen the clamps securing the fuel lines to the strainer. Remove and replace.

CHECKLIST C PROCEDURES

C-6
Check and Adjust the Engine RPM

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

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

Note: This procedure will require two people.

Ford Models

Note: 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 Product Support OR your local Ford dealer.

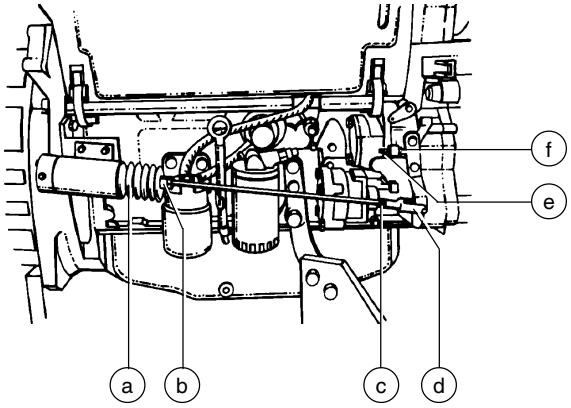
Deutz Models

1 Connect a tachometer to the engine. Start the engine from the ground controls. Refer to Specifications*, Engine Specifications.*

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 re-check the rpm.

3 Move the function enable/rpm select toggle switch to the high idle (rabbit symbol) position at the ground controls. Refer to Specifications*, Engine Specifications.*



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

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

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

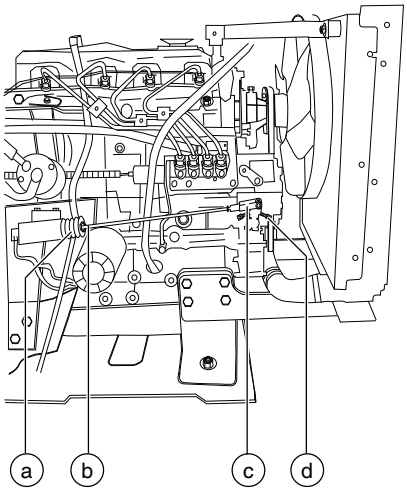
Note: Be sure the solenoid fully retracts when activating high idle.

Perkins Models

1 Connect a tachometer to the engine. Start the engine from the ground controls. Refer to Specifications, *Engine Specifications*.

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

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



a solenoid boot
b high idle adjustment nut
c clevis
d low idle lock nut and adjustment screw

3 Move the function enable toggle switch to the high idle (rabbit symbol) position. Refer to Specifications , *Engine Specifications*.

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

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

Note: Be sure the solenoid fully retracts when activating high idle.

C-7
Perform Engine Maintenance - Ford Models

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

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

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792

Ford DSG 423 EFI Operator Handbook	
Genie part number	119488

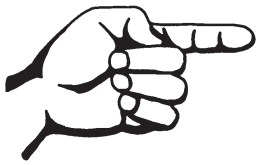
Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST C PROCEDURES



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Checklist D Procedures

D-1
Check the Boom Wear Pads



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

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

1 Measure each wear pad. Replace the wear pad once it reaches the minimum allowable thickness. If the wear pad is still within specification, shim as necessary to obtain minimum clearance with zero binding.

2 Start the engine from the ground controls.

3 Raise the end of the primary boom to a comfortable working height (chest high), then extend the boom 1 foot / 30 cm.

The minimum shim clearance for primary boom wear pads is 0.070 inch / 1.8 mm and the maximum allowable shim clearance is 0.188 inch / 4.8 mm.

Primary boom wear pad specifications	Minimum
Top and side wear pads (extension end of boom)	3/8 inch 9.5 mm
Bottom wear pads (extension end of boom)	1/2 inch 12.7 mm
Top and bottom wear pads (pivot end of boom)	1/2 inch 12.7 mm
Side wear pads (pivot end of boom)	3/8 inch 9.5 mm

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

Note: Always maintain squareness between the outer and inner boom tubes.

CHECKLIST D PROCEDURES

D-2

Check the Turntable Rotation Bearing Bolts

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

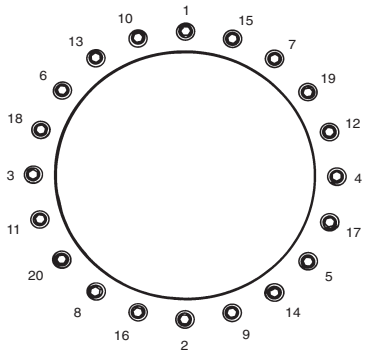
Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

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

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

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

2 Turn the engine off.



Bolt torque sequence

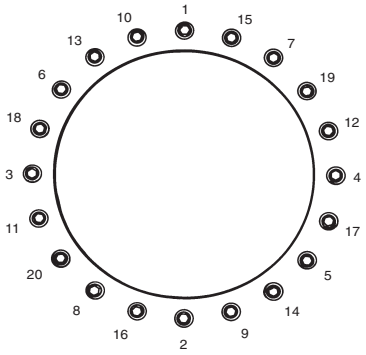
3 Be sure that each turntable mounting bolt is torqued in sequence to specifications. Refer to Specifications, *Machine Torque Specifications.*

4 Start the engine from the ground controls.

5 Raise the boom and remove the safety chock.

6 Lower the boom to the stowed position.

7 Check to ensure that each lower bearing mounting bolt under the drive chassis is torqued in sequence to specifications. Refer to Specifications, *Machine Torque Specifications.*



Bolt torque sequence

D-3

Check the Free-wheel Configuration

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

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

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

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

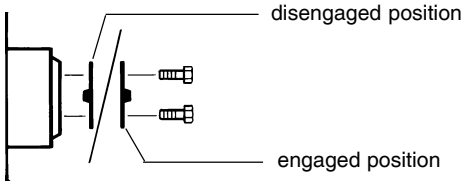
Non-steer Wheels: All Models

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

2 Center a lifting jack of sufficient 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.

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



5 Manually rotate each non-steer wheel.

⊙ Result: Each non-steer 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.

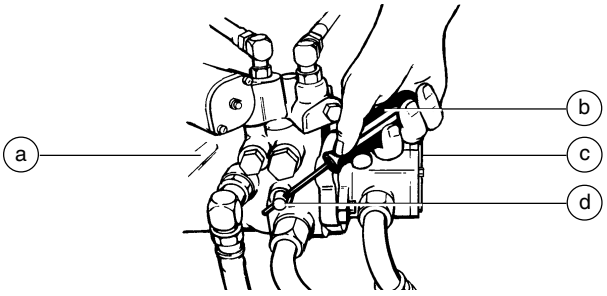
CHECKLIST D PROCEDURES

All Models:

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

Note: The free-wheel valve is located on the bottom of the drive pump.

Note: The free-wheel valve should always remain closed.



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

D-4
Replace the Drive Hub Oil

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

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

Before serial number 4551

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

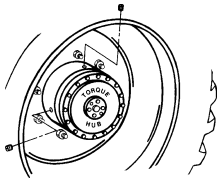
2 Remove both plugs and drain the oil into a suitable container.

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

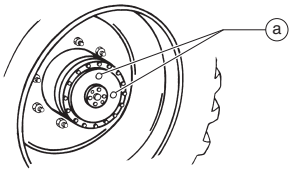
4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Refer to Specifications, *Machine Specifications.*

5 Install the plugs. Use pipe thread sealant on units with pipe plugs.

6 Repeat steps 1 through 5 for all the other drive hubs.



models with pipe plugs



a drive hub plugs

CHECKLIST D PROCEDURES

After serial number 4550

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point. See illustration A.

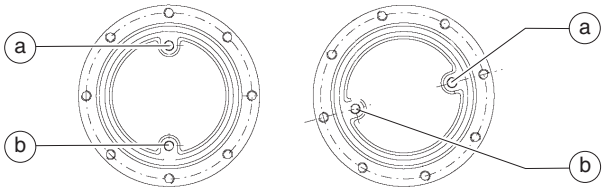
2 Remove both plugs and drain the oil into a suitable container.

3 Drive the machine until one plug is just above horizontal. See illustration B.

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

5 Apply pipe thread sealant to the plugs. Install the plugs.

6 Repeat steps 1 through 4 for all the other drive hubs.

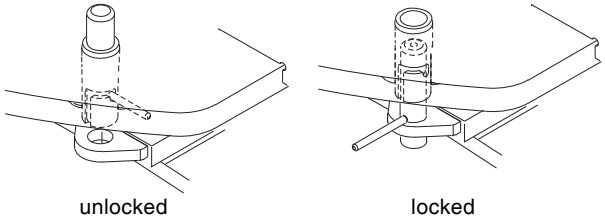


Turntable Rotate Drive Hub:

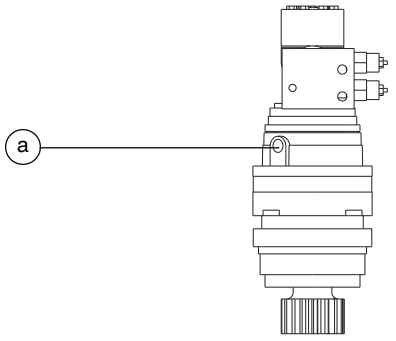
Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the secondary boom until the platform end of the lower secondary boom arm is approximately 8 feet / 2.4 m off the ground.

2 Secure the turntable from rotating with the turntable rotation lock pin.



3 Tag, disconnect and plug the hydraulic hoses from the turntable rotate drive motor. Cap the fittings on the drive motor.



turntable drive hub
a plug

4 Attach a suitable lifting device to the lifting eyes located near the drive motor.

CHECKLIST D PROCEDURES

5 Remove the drive hub mounting bolts. Carefully remove the turntable rotate drive hub assembly from the machine.Illustration A
Illustration B

⚠WARNING Crushing hazard. The turntable rotate drive hub assembly could become unbalanced and fall if not properly supported by the lifting device.

6 Remove the plug from the side of the drive hub. Drain the oil from the hub into a suitable container.

7 Install the drive hub assembly onto the machine. Torque the drive hub mounting bolts to specification. Refer to Specifications, *Machine Torque Specifications.*

8 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plug. Install the plug.

D-5
Perform Engine Maintenance - Deutz and Perkins Models



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

Deutz models

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual (*Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	84794

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

D-6
Replace the Hydraulic Filter Elements



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

Replacement of the hydraulic filters 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 filters be replaced more often.

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

Note: Perform this procedure with the engine off.

Hydraulic return filter

1 Open the ground controls side turntable cover and locate the hydraulic return filter housing on top of the hydraulic tank.

2 Remove the filter element from the filter housing.

3 Install the new filter element into the filter housing.

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

Medium and high pressure filter

Note: The medium pressure filter is for the charge pump and the high pressure filter (if equipped) is for all machine functions except the drive circuit and oscillating axle circuit.

10 Open the engine side turntable cover and locate the medium pressure filter mounted to the engine tray.

11 Place a suitable container under each filter.

12 Remove the filter housings by using a wrench on the nut provided on the bottom of the housings.

13 Remove the filter elements from the housings.

14 Inspect the housing seals and replace them if necessary.

15 Install the new filter elements into the housings and tighten them securely.

16 Clean up any oil that may have spilled during the installation procedure.

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

18 Start the engine from the ground controls.

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

CHECKLIST D PROCEDURES

D-7
Inspect for Turntable Bearing Wear

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

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

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

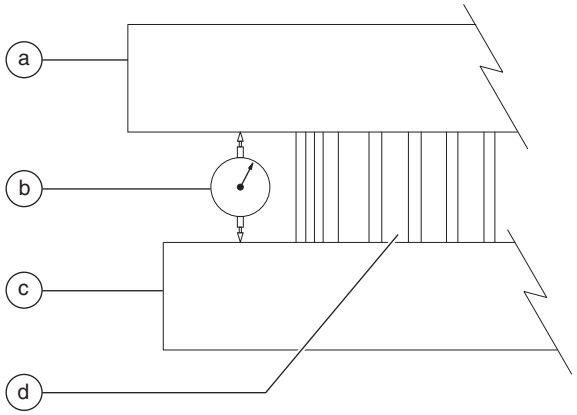
1 Grease the turntable bearing. Refer to Maintenance Procedure, *Grease the Turntable Bearing and Rotate Gear.*

2 Torque the turntable bearing bolts to specification. Refer to Maintenance Procedure, *Check the Turntable Rotation Bearing Bolts.*

3 Start the machine from the ground controls and raise the boom to full height. Do not extend the boom.

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

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



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

5 At the dial indicator, adjust it to "zero" the indicator.

6 Fully extend the boom and lower to a horizontal position.

7 Note the reading on the dial indicator.

⊙ Result: The measurement is less than 0.047 inch / 1.2 mm. The bearing is good.

⊠ Result: The measurement is more than 0.047 inch / 1.2 mm. The bearing is worn and needs to be replaced.

8 Fully retract the boom and raise the boom to full height. Visually inspect the the dial indicator to be sure the needle returns to the "zero" position.

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

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

11 Lower the boom to the stowed position and turn the machine off.

12 Remove the dial indicator from the machine.

Checklist E Procedures

E-1
Test or Replace the Hydraulic Oil

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

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

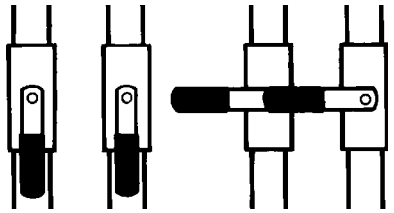
Note: Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

Note: 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 (if equipped). 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 (if equipped).

3 **Models with hydraulic tank shut-off valves:** Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.



NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shut-off 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 Remove the drain plug and completely drain the tank into a suitable container. Refer to Specifications, *Machine Specifications.*

5 Tag, disconnect and plug the two suction hoses and supply hose for the auxiliary pump from the hydraulic tank. Cap the fittings on the tank.

Note: The hoses can be accessed through the access hole under the turntable.

6 Disconnect and plug the return filter hydraulic hose at the return filter. Cap the fitting on the filter housing.

7 Remove the ground controls side turntable cover.

8 Support the hydraulic tank with an appropriate lifting device.

9 Remove the hydraulic tank mounting fasteners.

CHECKLIST E PROCEDURES

10 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if not properly supported when removed from the machine.

11 Remove the hydraulic return filter housing mounting fasteners. Remove the hydraulic return filter housing from the hydraulic tank.

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

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

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

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

16 Install the hydraulic return filter housing onto the hydraulic tank.

17 Install the hydraulic tank onto the machine.

18 Install the two suction hoses to the suction strainers.

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

20 **Models with hydraulic tank shut-off valves:** Open the two hydraulic tank valves at the hydraulic tank.

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.

23 Prime the pump. Refer to Repair Procedure, *How to Prime the Pump.*

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

CHECKLIST E PROCEDURES

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



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

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

1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steering wheels. Center a lifting jack under the steer axle.

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

4 Remove the lug nuts. Remove the tire and wheel assembly.

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

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

Skip to step 10 if there is no movement.

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

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

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

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

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

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

⊠ Result: If there is side to side or up and down movement, continue to step 11 and replace the wheel bearings with new ones.

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

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

11 Remove the castle nut.

12 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

13 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.

14 Pack both bearings with clean, fresh grease.

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

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

Note: Always replace the bearing grease seal when removing the hub.

17 Slide the hub onto the yoke spindle.

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

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

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

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

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

E-3
Perform Engine Maintenance - Deutz 1011F and Perkins Models

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

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

Deutz 1011F models

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz 1011F Operation Manual	
Genie part number	52883

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Swing the engine tray out and away from the machine and secure it from moving.

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

CHECKLIST E PROCEDURES

E-4
Perform Engine Maintenance - Deutz and Perkins Models



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

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

Required maintenance procedures and additional engine information are available in the *Deutz 1011F Operation Manual (*Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	84794

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

Perkins models

Required maintenance procedures and additional engine information are available in the *Perkins 404C-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404C-22 Operation Manual	
Genie part number	94890

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST E PROCEDURES

E-5
Perform Engine Maintenance - Ford Models



Engine specifications require that this procedure be performed every 4 years.

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302) or the *Ford DSG-423 EFI Operator Handbook* (EDI part number 1060020) or the *Ford MSG-425 EFI Operator Handbook* (Ford part number 1020010).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792

Ford DSG 423 EFI Operator Handbook	
Genie part number	119488

Ford MSG-425 EFI Operator Handbook	
Genie part number	215322

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

E-6
Perform Engine Maintenance - Deutz 2011 Models



Engine specifications require that this procedure be performed every 5000 hours.

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

Required maintenance procedures and additional engine information are available in the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 2011 Operation Manual	
Genie part number	84794

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

CHECKLIST E PROCEDURES

E-7
Perform Engine Maintenance - 2011 Deutz Models



Engine specifications require that this procedure be performed every 6000 hours.

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

Required maintenance procedures and additional engine information are available in the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 2011 Operation Manual	
Genie part number	84794

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

E-8
Perform Engine Maintenance - Deutz 2011 Models



Engine specifications require that this procedure be performed every 12,000 hours.

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

Required maintenance procedures and additional engine information are available in the *Deutz 2011 Operation Manual (*Deutz part number 0297 9929).

Deutz 2011 Operation Manual	
Genie part number	84794

To access the engine:

1 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray. Swing the engine tray out and away from the machine and secure it from moving

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

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-60/34 Operator's Manual* on your machine.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Use only Genie approved replacement parts.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - Machine parked on a flat, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steering wheels
  - Turntable secured with the turntable rotation lock pin
  - Key switch in the off position with the key removed
  - Wheels chocked
  - All external AC power supply disconnected from the machine

About This Section

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

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

Symbols Legend



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

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

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

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

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

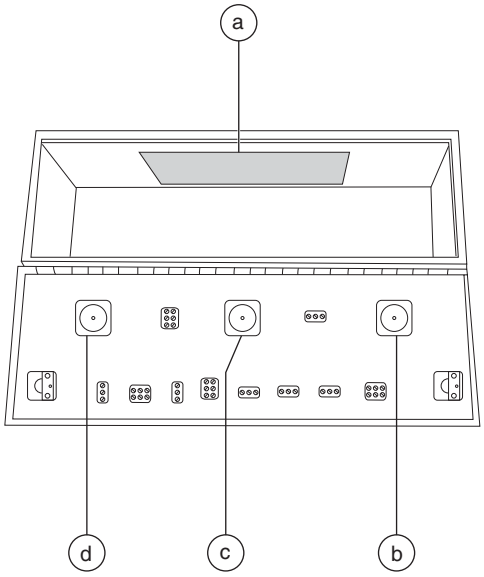
⊙ Indicates that a specific result is expected after performing a series of steps.

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

Platform Controls

The platform control box contains one printed circuit board. The ALC-500 circuit board inside the platform control box controls all proportional machine functions from the platform. The joystick controllers at the platform controls utilize Hall Effect technology and require no adjustment. The operating parameters of the joysticks are stored in memory at the ECM circuit board at the platform controls. If a joystick error occurs or if a joystick is replaced, it will need to be calibrated before that particular machine function will operate. Refer to Repair Procedure, *How to Calibrate a Joystick.*

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



a ALC-500 circuit board
b drive/steer joystick controller
c secondary boom up/down joystick controller
d primary boom up/down and turntable rotate left/right joystick controller

1-1 ALC-500 Circuit Board

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

Note: When the ALC-500 circuit board is replaced, the joystick controllers will need to be calibrated. Refer to Repair Procedure, *How to Calibrate a Joystick.*

How to Remove the ALC-500 Circuit Board

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Remove the platform control box lid retaining fasteners. Open the control box lid.

3 Locate the ALC-500 circuit board mounted to the inside of the platform control box.

4 Attach a grounded wrist strap to the ground screw inside the platform control box.

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

5 Carefully disconnect the wire connectors from the circuit board.

6 Remove the ALC-500 circuit board mounting fasteners.

7 Carefully remove the ALC-500 circuit board from the platform control box.

1-2 Joysticks

How to Calibrate a Joystick

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

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

Note: Perform this procedure with the engine off.

1 Open the platform control box.

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

3 Turn the key switch to platform control. Do not start the engine.

4 Select a joystick to calibrate.

5 Disconnect the wire harness connector from the joystick for approximately 10 seconds or until the alarm sounds. Connect the wire harness connector to the joystick.

6 Move the joystick full stroke in either direction and hold for 5 seconds.

7 Return the joystick to the neutral position, pause for a moment, then move the joystick full stroke in the opposite direction. Hold for 5 seconds.

⊙ Result: The alarm should sound indicating successful joystick calibration.

⊠ Result: The alarm does not sound. Check the electrical connections or replace the joystick.

8 Repeat this procedure for each joystick controlled machine function including the thumb rocker steer switch.

Note: No machine fuction should operate while performing the joystick calibration procedure.

How to Adjust the Joystick Max-out Setting

The max-out setting of a joystick controls the maximum speed of a joystick-controlled machine function. Whenever a hydraulic cylinder, drive motor or hydraulic pump is replaced, the max-out setting should be adjusted to maintain optimum performance. The max-out settings on the joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

Note: Perform this procedure with the boom in the stowed position.

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

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the red Emergency Stop button to the off position at the platform controls.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

PLATFORM CONTROLS

7 Momentarily activate the drive enable toggle switch in the right direction 4 times.

⊙ Result: There should be a pause and the alarm should sound 4 times indicating that the machine is in max-out calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Start a timer and activate the machine function that needs to be adjusted. Record the time it takes for that function to complete a full cycle (ie; boom up).

10 Compare the machine function time with the times in Specifications, *Performance Specifications* to determine whether the function time needs to increase or decrease.

11 While the joystick is activated, adjust the max-out setting to achieve the proper function cycle time. Momentarily move the drive enable toggle switch to the right to increase the time or momentarily move the drive enable toggle switch to the left to decrease the time.

Note: Each time the drive enable toggle switch is momentarily moved, the time will change 2%.

12 Repeat steps 9 through 11 for each joystick controlled machine function.

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

Note: Do not operate any machine function during the 10 second waiting time.

How to Adjust the Joystick Ramp Rate Setting

The ramp rate setting of a joystick controls the time at which it takes for the joystick to reach maximum output, when moved out of the neutral position. The ramp rate settings of a joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

Note: Perform this procedure with the boom in the stowed position.

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

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the red Emergency Stop button to the off position at the platform controls.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 6 times.

⊙ Result: There should be a pause and the alarm should sound 6 times indicating that the machine is in ramp rate calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Start a timer and simultaneously move the joystick in either direction full stroke. Note how long it takes the function to reach maximum speed. This is the ramp rate.

10 Compare the function ramp rate time with the table below and determine whether the ramp rate time needs to increase or decrease.

11 While the joystick is activated, set the ramp rate. Momentarily move the drive enable toggle switch in the right direction to increase the time or momentarily move the drive enable toggle switch in the left direction to decrease the time.

Note: Each time the drive enable toggle switch is momentarily moved, the time will change in 5% increments.

12 Repeat steps 9 through 11 for each joystick controlled machine function.

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

Note: Do not operate any machine function during the 10 second waiting time.

Ramp rate (factory settings)	
Primary boom up/down	
accelerate	3 seconds
decelerate	1 second
Secondary boom up/down	
accelerate	2 seconds
decelerate	1 second
Turntable rotate	
accelerate	2 seconds
decelerate	0.5 second
Drive	
accelerate	2 seconds
decelerate to neutral	0.5 second
decelerate, change of direction	0.5 second
decelerate, coasting	0.75 second
decelerate, braking	1.5 seconds
decelerate, shift from low to high speed 2WD and 4WD models	1.75 seconds
decelerate, shift from high to low speed 2WD models	1 second
decelerate, shift from high to low speed 4WD models	3.5 seconds

PLATFORM CONTROLS

How to Adjust the Joystick Threshold Setting

The threshold setting of a joystick is the minimum output at which a function proportional valve can open and allow the function to operate.

Note: Perform this procedure with the boom in the stowed position.

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

2 Turn the key switch to platform control. Do not start the engine.

3 Push in the red Emergency Stop button to the off position at the platform controls.

4 Do not press down the foot switch.

5 Move and hold the drive enable toggle switch in the right position and pull out the red Emergency Stop button to the on position.

6 When the alarm sounds, release the drive enable toggle switch.

7 Momentarily activate the drive enable toggle switch in the right direction 8 times.

⊙ Result: There should be a pause and the alarm should sound 8 times indicating that the machine is in threshold calibration mode.

8 Start the engine from the platform controls and press down the foot switch.

9 Select a boom function joystick to set the threshold.

10 Slowly move the joystick off center in either direction just until the function begins to move.

11 Slowly move the joystick back to the neutral position. Just before the function stops moving, move the drive enable toggle switch to either side to set the threshold.

⊙ Result: The alarm should sound indicating a successful calibration.

12 Repeat steps 9 through 11 for each boom joystick-controlled machine function (boom up/down, boom extend/retract and turntable rotate).

13 Return the joystick to the neutral position and wait for approximately 10 seconds.

⊙ Result: The alarm should sound indicating that the settings have been saved in memory.

Note: Do not operate any machine function during the 10 second waiting time.

Platform Components

2-1 Platform

How to Remove the Platform

1 Remove the cable clamps from the top of the platform mounting weldment.

2 Remove the clamp from the platform mounting weldment that holds the power to platform cable.

3 Remove the mounting fasteners from the power to platform outlet box bracket. Lay the outlet box and bracket assembly off to the side.

4 Remove the foot switch mounting fasteners.

5 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.

6 Tag and disconnect the foot switch wiring from the foot switch. Remove the cable from the back of the platform.

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

7 Remove the platform control box mounting fasteners. Lower the control box and set it aside.

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

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

8 Support and secure the platform to an appropriate lifting device.

9 Remove the platform mounting fasteners and remove the platform from the machine.

⚠WARNING Crushing hazard. The platform could become unstable and fall when it is removed from the machine if 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.

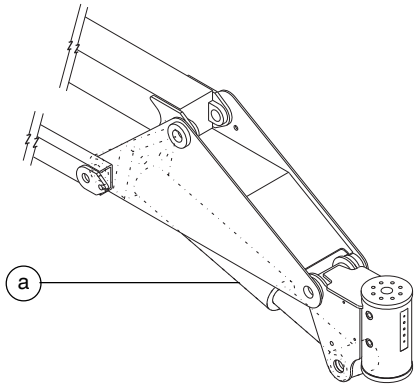
How to Remove the Platform Leveling Slave Cylinder

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

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Adjust the platform to a level position.

2 Raise the jib boom slightly and place blocks under the platform for support.



a platform slave cylinder

3 Lower the jib boom until the platform is resting on the blocks just enough to support the platform.

Note: Do not rest the entire weight of the boom on the blocks.

4 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.

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

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

6 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. Protect the cylinder rod from damage.

8 Use a soft metal drift to remove the rod-end pivot pin.

⚠WARNING Crushing hazard. The platform will fall, if not properly supported, when the slave cylinder rod-end pivot pin is removed.

NOTICE Component damage hazard. The slave cylinder rod may become damaged if not properly supported when the pin is removed.

9 Use a soft metal drift and remove the barrel-end pin.

10 Carefully remove the cylinder from the platform leveling assembly.

How to Bleed the Slave Cylinder

Note: Do not start the engine. Use auxiliary power for this procedure.

1 Connect a hydraulic hose between the two test ports at the barrel end of the slave cylinder.

2 Raise the jib boom to a horizontal position.

3 Activate auxiliary power and move the platform level switch up and down through two platform leveling cycles to remove any air that might be in the system.

4 Remove the hydraulic hose from the test ports. Move the platform level switch up and down through a platform leveling cycle and inspect the test ports for leaks.

4 Activate auxiliary power and hold the platform

2-3 Platform Rotator

How to Bleed the Platform Rotator

Note: This procedure will require two people. Do not start the engine. Use auxiliary power for this procedure.

1 Move the function enable toggle switch to either side and activate the platform rotate toggle 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 Place a suitable container underneath the platform rotator.

3 Open the top bleed screw on the rotator, but do not remove it.

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

PLATFORM COMPONENTS

4 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the left position until the platform is fully rotated to the left. Continue holding the toggle switch until air stops coming out of the bleed screw. Close the bleed screw.

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

5 Open the bottom bleed screw on the rotator, but do not remove it.

⚠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 Move the function enable toggle switch to either side and hold the platform rotate toggle switch to the right position until the platform is fully rotated to the right. Continue holding the toggle switch until air stops coming out of the bleed screw. Close the bleed screw.

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

7 Clean up any hydraulic oil that may have spilled.

8 Rotate the platform fully in both directions and inspect the bleed screws for leaks.

2-4 Platform Overload System

The platform overload system is designed to prevent the machine from continuing to operate when the load in the platform exceeds maximum rated capacity. Refer to the machine serial label for maximum capacity information.

If maximum platform capacity is exceeded, the alarm will sound at the platform controls and the platform overload indicator lights will flash at both the ground and platform controls. The ground and platform controls will become disabled. Before normal machine operation can continue, the excess load will need to be removed from the platform.

If the excess load cannot be removed or if the operator at the platform controls is unable to correct the overloaded condition, another person at the ground controls can operate the machine using auxiliary power. There will be limited control of boom functions from the ground controls when using auxiliary power. Auxiliary power can be used to correct the overloaded platform condition in order to resume normal, safe operation of the machine.

Note: Even though platform and ground controls are disabled when an overloaded condition is detected, the engine will continue to run. If the engine is shut off in an overloaded condition, it will not be possible to re-start the engine until the overloaded condition is corrected.

How to Calibrate the Platform Overload System (if equipped)



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground control.

11 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

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

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

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

13 Test all machine functions from the ground controls.

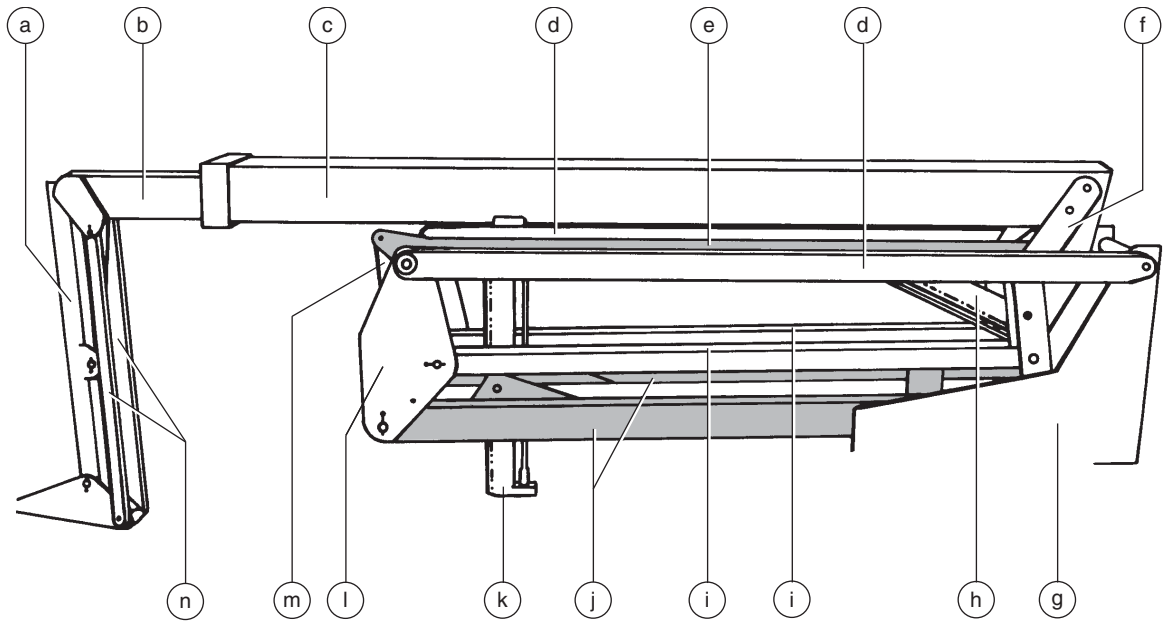
⊙ Result: All ground control functions should operate normally.

14 Turn the key switch to platform control.

15 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate normally.

Boom Components



a jib boom
b extension boom
c primary boom
d lower tension link
e upper secondary boom
f upper pivot
g turntable bulkhead
h primary boom lift cylinder
i lower leveling link
j lower secondary boom
k secondary boom lift cylinder
l mid-pivot
m connecting link
n jib boom leveling link

Jib Boom Components

3-1
Jib Boom

How to Remove the Jib Boom

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the platform. Refer to Repair Procedure, *How to Remove the Platform.*

2 Remove the platform mounting weldment, the platform leveling slave cylinder and the platform rotator. Refer to Repair Procedure, *How to Remove the Platform Leveling Slave Cylinder.*

3 Support the platform pivot weldment with an appropriate lifting device.

4 Remove the pin retaining fasteners from the platform pivot weldment to jib boom pivot pin. Use a soft metal drift to remove the pin. Remove the platform pivot weldment from the jib boom.

⚠CAUTION Crushing hazard. The platform pivot weldment may become unbalanced and fall when removed from the machine if not properly supported.

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

7 Tag, disconnect and plug the hydraulic hoses from the jib boom manifold. Cap the fittings on the manifold.

8 Tag and disconnect the wiring from the jib boom 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 Pull the hydraulic hoses up through the jib boom lift cylinder mounting bracket.

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

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

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

12 Use a soft metal drift to remove the jib boom lift cylinder barrel-end pivot pin.

13 Remove the pin retaining fasteners from the jib boom pivot pin. Use a soft metal drift to remove the pin.

14 Remove the jib boom from the primary boom.

⚠WARNING Crushing hazard. The jib boom could become unbalanced and fall if not properly supported when removed from the machine.

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

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

17 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

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

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

3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Raise the jib boom slightly and place blocks under the platform mounting weldment for support. Lower the jib boom until the platform is resting on the blocks.

Note: Do not rest the entire weight of the boom on the blocks.

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

3 Remove the pin retaining fasteners from the platform leveling slave cylinder barrel-end pivot pin. Do not remove the pin.

4 Remove both of the jib boom leveling links from the machine.

JIB BOOM COMPONENTS

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 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

7 Remove the pin retaining fasteners from the jib boom lift cylinder barrel-end pivot pin.

8 Use a soft metal drift to remove the barrel-end pivot pin.

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

⚠WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall if not properly supported when removed from the machine.

Primary Boom Components

4-1
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

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *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.

Note: Do not rest the entire weight of the boom on the blocks.

2 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.

3 Disconnect the cables from the platform control box.

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

4 Tag, disconnect and plug the hydraulic hoses from the platform leveling slave cylinder. Cap the fittings on the slave cylinder.

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

5 Pull the slave cylinder hydraulic hoses out of the protective sheath.

6 Tag and disconnect the wiring from the jib boom/platform rotate manifold.

7 Remove the cable clamp from the platform rotator.

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

9 Tag, disconnect and plug the hydraulic hoses from the jib boom/platform rotate manifold. Cap the fittings on the jib boom/platform rotate manifold.

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

10 Remove the hose clamps from the top of the jib boom.

11 Remove the hose and cable clamp from the primary boom at the pivot end.

12 Remove the retaining fastener from the cable track tube at the platform end of the primary

extension boom.

13 Remove the fasteners from the side panel on the lower cable track, then remove the panel. Pull all of the cables out of the channel.

14 Place blocks between the lower cable track and the upper cable track tube and secure them together.

⚠WARNING Crushing hazard. If the lower cable track and upper cable track tube are not properly secured together, the cable track could become unbalanced and fall when removed from the machine.

15 Attach a lifting strap from an overhead crane to the cable track.

16 Remove the cable track guide fasteners from the platform end of the primary boom.

17 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

18 Remove the cable track from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The cable track could become unbalanced and fall if not properly attached to the overhead crane.

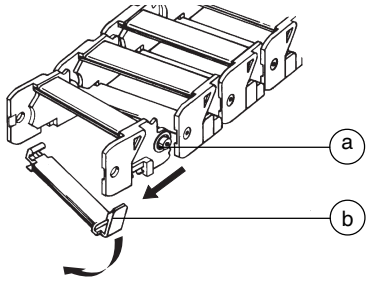
NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

NOTICE Component damage hazard. The primary boom cable track can be damaged if it is twisted.

How to Repair the Primary Boom Cable Track

NOTICE Component damage hazard. The primary boom cable track can be damaged if it is twisted.

Note: A 7 link repair section of cable track is available through the Genie Industries Service Parts Department.



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 screwdriver to pry the link to the side.

3 Repeat steps 1 and 2 for each link.

4-2
Primary Boom

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.

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the platform.
Refer to Repair Procedure, *How to Remove the Platform*.

2 Remove the platform rotator and platform mounting weldment.

3 Remove the jib boom.
Refer to Repair Procedure, *How to Remove the Jib Boom*.

4 Remove cable track.
See Repair Procedure, *How to Remove the Cable Track*.

5 Remove the hose and cable clamp from the upper mid-pivot.

6 Remove the primary boom drive speed limit switch from the upper pivot. Do not disconnect the wiring.

7 Remove the primary extension boom drive speed limit switch mounted on the inside of the pivot end of the primary boom. Do not disconnect the wiring.

8 At the engine side of the upper pivot, remove the retaining fasteners from the master cylinder rod-end pivot pin. Use a slide hammer to remove the pin.

9 Pull the master cylinder back and secure it from moving.

10 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

11 Attach a 5 ton / 5,000 kg overhead crane to the center point of the primary boom. Lift the primary boom enough to access the primary boom lift cylinder rod-end pivot pin.

12 Attach a similar lifting device to the primary boom lift cylinder.

13 Place a 24 inch / 60 cm long block of wood across the lower secondary boom leveling links to support the primary boom lift cylinder.

PRIMARY BOOM COMPONENTS

14 Remove the pin retaining fasteners from the primary boom lift cylinder rod-end pivot pin.

15 Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The primary boom lift cylinder and the primary boom will fall if they are not properly supported when the pin is removed.

16 Lower the rod end of the primary boom lift cylinder onto the support block placed across the lower secondary boom leveling links.

17 Remove the pin retaining fasteners from the primary boom pivot pin.

18 Use a soft metal drift to remove the primary boom pivot pin. Remove the primary boom and place it on a structure capable of supporting it.

⚠DANGER Crushing hazard. The boom could become unbalanced and fall if not properly supported when the pin is removed.

How to Disassemble the Primary Boom

Note: Complete disassembly of the primary boom is only necessary if the primary tube must be replaced. The extension cylinder can only be removed after removing the extension boom from the primary boom. Refer to Repair Procedure, *How to Remove the Primary Boom Extension Cylinder*.

1 Remove the primary boom. Refer to Repair Procedure, *How to Remove the Primary Boom*.

2 Place blocks under the extension cylinder for support.

3 Remove the cotter pin from the extension cylinder barrel-end pivot pin.

4 Use a soft metal drift to remove the pin.

5 Remove and label the wear pads from the platform end of the primary boom.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

6 Support and slide the extension boom and extension cylinder out of the platform end of the primary boom.

⚠WARNING Crushing hazard. The primary boom extension tube could become unbalanced and fall when removed from the primary boom tube if not properly supported.

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

7 Remove the external snap rings from the extension cylinder rod-end pivot pins.

8 Use a soft metal drift to remove the pins.

9 Support and slide the extension cylinder out of the platform end of the extension boom.

10 Remove and label the wear pads from the extension boom.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

4-3
Primary Boom Lift Cylinder

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 result in death or serious injury and significant component damage. Dealer service is strongly recommended.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

2 Attach a 5 ton / 5,000 kg overhead crane to the primary boom for support. Do not lift the boom.

3 Place a 24 inch / 60 cm long block of wood across the lower secondary boom leveling links to support the primary boom lift cylinder.

4 Support the rod end of the primary boom lift cylinder with an appropriate lifting device.

5 Remove the pin retaining fasteners from the primary boom lift cylinder rod-end pivot pin.

6 Remove the pin using a soft metal drift.

7 Lower the rod end of the cylinder onto the block that was placed on the lower secondary boom leveling links.

8 Lower the primary boom onto the boom rest.

PRIMARY BOOM COMPONENTS

9 Raise the secondary boom enough to access the primary boom lift cylinder barrel-end pivot pin.

10 Tag, disconnect and plug the hydraulic hoses from the primary boom lift cylinder. Cap the fittings on the cylinder.

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

11 Place another 24 inch / 60 cm long block of wood across the lower secondary boom leveling links to support the primary boom lift cylinder.

12 Support the barrel end of the primary boom lift cylinder with an appropriate lifting device.

13 Remove the pin retaining fasteners from the primary boom lift cylinder barrel-end pivot pin.

14 Use a soft metal drift to remove the pin .

⚠WARNING Crushing hazard. The primary boom lift cylinder may fall if not properly supported when removed from the machine.

15 Lower the barrel end of the cylinder onto the block that was placed on the lower secondary boom leveling links.

16 Lower the secondary boom onto the boom rest.

17 Carefully pull the lift cylinder toward the platform end of the secondary boom.

18 Support and secure the cylinder to an appropriate lifting device.

19 Remove the cylinder from the machine.

⚠WARNING Crushing hazard. The primary boom lift cylinder may fall if not properly supported when removed from the machine.

4-4
Primary Boom Extension Cylinder

The primary boom extension cylinder extends and retracts the primary boom extension tube. It can only be removed after removing the extension boom assembly. The 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.

Note: Perform this procedure with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the platform.
Refer to Repair Procedure, *How to Remove the Platform.*

2 Remove the jib boom. Refer Repair Procedure, *How to Remove the Jib Boom*.

3 Extend the extension boom approximately 5 feet / 1.5 m.

4 Tag, disconnect and plug the extension cylinder hydraulic hoses from the extension cylinder. Cap the fittings on the cylinder.

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

5 Remove the cotter pin from the extension cylinder barrel-end pivot pin.

6 Remove the pin using a soft metal drift.

7 Support the extension boom and remove the wear pads from the primary boom.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

8 Slide the extension boom out using a suitable pulling device until the extension boom wear pads are just visible.

⚠WARNING Crushing hazard. The extension boom could become unbalanced and fall when removed from the primary boom if not properly supported.

9 Support the extension boom at the primary boom end with a suitable lifting device.

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

10 Remove the extension boom from the primary boom.

⚠WARNING Crushing hazard. The extension boom could become unbalanced and fall when removed from the primary boom if not properly supported.

11 Remove the external snap rings from the extension cylinder rod-end pivot pins.

12 Remove the pins using a soft metal drift.

13 Support and slide the extension cylinder out of the extension boom.

⚠WARNING Crushing hazard. The extension cylinder could become unbalanced and fall when removed from the extension boom if not properly supported.

NOTICE 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.

PRIMARY BOOM COMPONENTS

How to Replace the Extension Cylinder Upper Counterbalance Valve

Note: This procedure will require two people.

Note: Adjust the primary boom to a horizontal position before performing this procedure.

1 Using auxiliary power, raise the secondary boom until the counterweight end of the primary boom is just above the counterweight.

2 Using a suitable lifting device, support the secondary boom assembly. Do not lift it.

3 Extend the extension boom approximately 1 foot / 0.3 m. Turn the machine off.

4 Remove the cotter pin from the extension cylinder barrel-end pivot pin.

5 Use a soft metal drift and remove the pin.

6 Support the barrel end of the extension cylinder with a pry bar or other suitable tool. Have another person use auxiliary power to retract the extension cylinder until it clears the platform leveling master cylinder (approximately 6 inches / 15 cm).

7 Allow the extension cylinder to rest on the bottom of the boom tube.

8 Loosen the lock nut on the valve and bleed the pressure from the counterbalance valve by turning the external adjustment screw clockwise.

9 Remove the counterbalance valve from the cylinder.

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

10 Install the new counterbalance valve and torque the valve to 35-40 ft-lbs / 47-54 Nm.

11 Clean up any hydraulic oil that may have spilled.

12 Support the barrel end of the extension cylinder with a pry bar or other suitable tool. Have another person use auxiliary power to extend the extension cylinder until the pivot pin bore aligns with the pin bore of the boom tube.

13 Use a soft metal drift and install the pin.

14 Install a new cotter pin into the extension cylinder barrel-end pivot pin.

PRIMARY BOOM COMPONENTS

4-5 Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed circuit hydraulic loop that keeps the platform level through the entire range of boom motion. The master cylinder is located inside the upper mid-pivot at the base of 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.

Note: Perform this procedure with the boom in the stowed position.

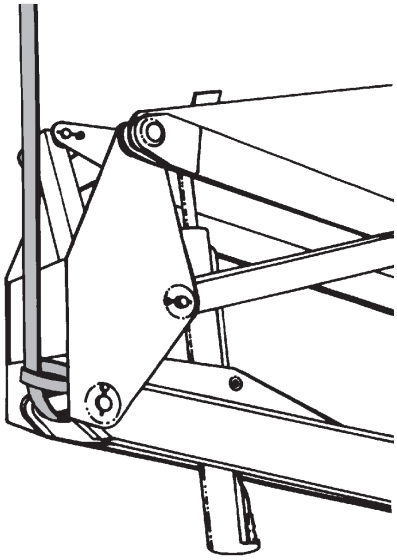
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the pin retaining fasteners from the master cylinder rod-end pivot pin.

2 use a soft metal drift to remove the pins.

3 Raise the secondary boom until the upper mid-pivot is above the turntable covers.

4 Attach the lifting strap from an overhead crane to the platform end of the lower secondary boom arm for support. Do not apply any lifting pressure.



5 Tag, disconnect and plug the hydraulic hoses from the 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.

6 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.

7 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin.

8 Use a soft metal drift to remove the pins.

9 Lower the master cylinder down and out of the upper pivot and remove it from the machine.

⚠WARNING Crushing hazard. The master cylinder could become unbalanced and fall if not properly supported when removed from the machine.

Secondary Boom Components

5-1
Secondary Boom

How to Disassemble the Secondary Boom

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Follow the disassembly steps to the point required to complete the repair. Then re-assemble the secondary boom by following the disassembly steps in reverse order.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

Remove the primary boom. Refer to Repair Procedure, *How to Remove the Primary Boom*.

2 Remove all four pin retaining fasteners from the two lower tension link pivot pins. Do not remove the pins.

3 Attach a lifting strap from an overhead crane at the center of the lower tension link on the engine side of the machine.

4 Remove the engine side lower tension link from the machine.

5 Repeat this step for the ground controls side lower tension link.

⚠WARNING Crushing hazard. The tension link could become unbalanced and fall if not properly supported when removed from the machine.

6 Remove the pin retaining fasteners from the connecting link at the upper secondary boom.

7 Remove the pin using a soft metal drift.

8 Attach a securing strap from the upper pivot to tension link pivot pin mounting tube on the turntable bulkhead, to prevent the upper pivot from moving.

Attach a 5 ton / 5,000 kg overhead crane to the center of the upper secondary boom.

10 Remove the mounting fasteners from the secondary boom lift cylinder rod-end pivot pin mounting bracket.

11 Remove the pin retaining fasteners from both upper pivot to upper secondary boom pivot pins. Use a soft metal drift to remove the pins.

⚠WARNING Crushing hazard. The upper mid-pivot may fall when the pins are removed if the upper mid-pivot is not properly secured.

12 Remove the pin retaining fasteners from the lower mid-pivot to upper secondary boom pivot pin.

SECONDARY BOOM COMPONENTS

13 Remove the lower mid-pivot to upper secondary boom pivot pin using a soft metal drift, and remove the upper secondary boom from the machine.

⚠WARNING Crushing hazard. The upper secondary boom may become unbalanced and fall if not properly supported when it is removed from the machine.

14 Remove both turntable covers.

15 Remove the two engine pivot plate retaining bolts. Then swing the engine out away from the machine and secure it from moving.

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

16 Disconnect the battery cables.

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

17 Remove the battery hold down fasteners, and remove the battery.

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

18 **Gasoline/LPG models:** Remove the mounting fasteners from the ECM mounted to the engine side bulkhead cover.

19 Remove the mounting fasteners from both of the turntable bulkhead covers, and remove both turntable bulkhead covers.

20 Remove the hydraulic tank. Refer to Maintenance Procedure, *Test or Replace the Hydraulic Oil.*

21 Attach a lifting strap from an overhead crane to the lug on the primary boom lift cylinder, then lift the primary boom lift cylinder to a vertical position.

22 Tag, disconnect and plug the primary boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

23 Remove the pin retaining fasteners from the primary boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pins, and remove the primary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The primary boom lift cylinder could become unbalanced and fall if not properly supported when removed from the machine.

24 Tag, disconnect and plug the secondary 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.

SECONDARY BOOM COMPONENTS

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

26 Remove the pin retaining fasteners from the secondary boom lift cylinder pivot pins.

Remove the pins using a slide hammer, and remove the secondary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The secondary boom lift cylinder could become unbalanced and fall if not properly supported when removed from the machine.

27 Attach a securing strap from the mid-pivot to the lower secondary boom, to prevent the mid-pivot from moving.

28 Number each electrical cable and its entry location at the platform control box.

29 Disconnect the cables from the platform control box.

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

31 Tag, disconnect and plug the platform rotator and slave cylinder hydraulic hoses at the union, located near the upper pivot.

⚠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.

32 Remove the hose and cable covers from both of the lower secondary boom leveling links.

33 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.

34 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.

35 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin.

36 Remove the pin using a soft metal drift, and remove the master cylinder from the machine.

⚠WARNING Crushing hazard. The master cylinder could become unbalanced and fall if not properly supported when removed from the machine.

37 Attach a lifting strap from an overhead crane to the upper pivot, and remove the securing strap from the mid-pivot.

38 Pull all of the hoses and cables out of the upper mid-pivot.

NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

39 Remove the secondary boom drive limit switch mounting fasteners from the lower secondary boom. Do not disconnect the wiring.

40 Pull all of the hoses and cables out of the mid-pivot and lay them off to the side.

NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

SECONDARY BOOM COMPONENTS

41 Place blocks under each of the lower leveling links for support at the turntable bulkhead end.

42 Remove the pin retaining fasteners from both of the upper pivot to lower leveling link pivot pins.

43 Use a soft metal drift to remove the pins, and remove the upper pivot from the machine.

⚠WARNING Crushing hazard. The upper pivot could become unbalanced and fall if not properly supported when removed from the machine.

44 Attach a lifting strap from an overhead crane to the center of the engine side lower leveling link.

45 Remove the pin retaining fasteners from the engine side lower leveling link pivot pin at the mid-pivot.

46 Use a soft metal drift to remove the pins, and remove the engine side lower leveling link from the machine.

⚠WARNING Crushing hazard. The engine side lower leveling link could become unbalanced and fall if not properly supported when removed from the machine.

47 Attach a lifting strap from an overhead crane to the center of the ground controls side lower leveling link.

48 Remove the pin retaining fasteners from the ground controls side lower leveling link pivot pin at the mid-pivot.

49 Remove the pin using a soft metal drift, and remove the ground controls side lower leveling link from the machine.

⚠WARNING Crushing hazard. The ground controls side lower leveling link could become unbalanced and fall if not properly supported when removed from the machine.

50 Attach a lifting strap from an overhead crane to the connecting link.

51 Remove the pin retaining fasteners from the connecting link pivot pin at the lower secondary boom.

52 Use a soft metal drift to remove the pins, and remove the connecting link from the machine.

⚠WARNING Crushing hazard. The connecting link could become unbalanced and fall if not properly supported when removed from the machine.

53 Attach a 5 ton / 5,000 kg overhead crane to the mid-pivot.

54 Remove the pin retaining fasteners from the lower secondary boom pivot pin at the mid-pivot.

55 Use a soft metal drift to remove the pins, and remove the mid-pivot from the machine.

⚠WARNING Crushing hazard. The mid-pivot could become unbalanced and fall if not properly supported when removed from the machine.

56 Remove the hose and cable covers from the lower secondary boom.

57 Attach a 5 ton / 5,000 kg overhead crane to the center point of the lower secondary boom.

58 Remove the pin retaining fasteners from the lower secondary boom pivot pin at the turntable bulkhead.

59 Use a soft metal drift to remove the pins, and remove the lower secondary boom from the machine.

⚠WARNING Crushing hazard. The lower secondary boom could become unbalanced and fall if not properly supported when removed from the machine.

SECONDARY BOOM COMPONENTS

5-2
Secondary Boom Lift Cylinder

The secondary boom lift cylinder raises and lowers the secondary boom. The secondary boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Secondary Boom Lift Cylinder

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

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

2 Tag, disconnect and plug the secondary 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 mounting fasteners from the secondary boom lift cylinder rod-end pivot pin mounting bracket.

4 Remove the retaining fasteners from the secondary boom lift cylinder pivot pins.

5 Remove the pins using a slide hammer, and remove the cylinder from the machine.

⚠WARNING Crushing hazard. The secondary boom lift cylinder could become unbalanced and fall if not properly supported when removed from the machine.

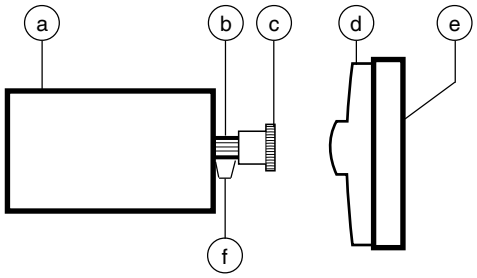
Engines

6-1 RPM Adjustment

Refer to Maintenance Procedure, *Check and Adjust the Engine RPM.*

6-2 Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.



a pump
b pump shaft
c pump coupler
d flex plate with raised spline
e engine flywheel
f 0.18 inch / 4.6 mm gap - Deutz Models
0.070 inch / 1.8 mm gap - Perkins Models
0.0625 inch / 1.5 mm gap - Ford LRG-425
0.080 inch / 2 mm gap - Ford DSG-423

How to Remove the Flex Plate

Deutz models:

1 Remove the tailpipe bracket mounting fasteners from the engine bell housing.

2 Support the drive pump assembly with an appropriate lifting device.

3 Remove all of the engine bell housing fasteners.

4 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

5 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

ENGINES

Ford LRG-425 EFI models:

1 Disconnect the electrical connector for the oxygen sensor at the tailpipe. Do not remove the oxygen sensor.

2 Remove the engine oil dipstick fasteners from the muffler bracket. Remove the dipstick from the engine.

3 Remove the muffler retaining fasteners from the exhaust pipe.

4 Support the muffler and bracket assembly with an overhead crane or other suitable lifting device.

5 Remove the muffler bracket mounting fasteners. Carefully remove the muffler and bracket assembly from the engine.

6 Support the engine with a suitable lifting device. Do not lift it.

7 Remove the engine plate to vibration isolator fasteners.

8 Remove the engine mounting plate to bell housing fasteners.

9 Raise the engine slightly to take the weight off of the engine mounting plate.

10 Slide the engine mounting plate towards the pump as far as it will go.

11 Support the drive pump assembly with an appropriate lifting device.

12 Remove all of the engine bell housing fasteners.

13 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

14 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

Ford DSG-423 and MSG-425 models:

1 Disconnect the electrical connectors from both oxygen sensors at the tailpipe and exhaust manifold. Do not remove the oxygen sensors.

2 Remove the exhaust pipe fasteners at the muffler.

3 Support the muffler and bracket assembly with a suitable lifting device.

4 Remove the muffler bracket mounting fasteners from the bell housing. Carefully remove the muffler and bracket assembly from the engine.

5 Support the engine with an overhead crane or other suitable lifting device. Do not lift it.

6 Remove the engine mounting plate to bell housing fasteners.

7 Raise the engine slightly using the overhead crane and place a block of wood under the oil pan for support.

8 Support the drive pump assembly with an overhead crane or other suitable lifting device. Do not apply any lifting pressure.

9 Remove all of the engine bell housing retaining fasteners.

10 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

11 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

Perkins models:

1 Remove the fuel filter/water separator mounting fasteners.

2 Remove the fuel filter/water separator and lay it to the side. Do not disconnect the hoses.

3 Support the drive pump assembly with an appropriate lifting device.

4 Remove all of the engine bell housing fasteners.

5 Carefully pull the pump and bell housing assembly away from the engine and secure it from moving.

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

6 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

How to Install the Flex Plate

1 Install the flex plate onto the engine flywheel with the raised spline towards the pump.

2 Apply Loctite® removable thread sealant to the screws. Torque the flex plate in a star pattern using the following values.

Ford models:

Before serial number 7924: Torque the flex plate mounting bolts in sequence to 24 ft-lbs / 32 Nm.
After serial number 7923: Torque the flex plate mounting bolts in sequence to 20 ft-lbs / 27 Nm.

Deutz models:

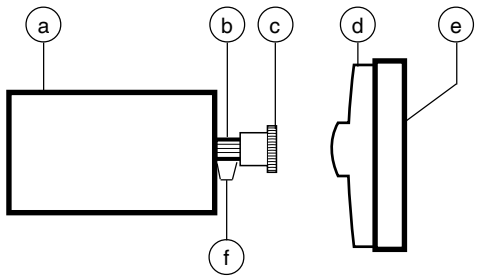
Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38 Nm.

Perkins models:

Before serial number 8050: Torque the flex plate mounting bolts in sequence to 49 ft-lbs / 66 Nm.
After serial number 8049: Torque the flex plate mounting bolts in sequence to 14 ft-lbs / 19.1 Nm.

ENGINES

3 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between coupler and pump end plate for your engine.



a pump
b pump shaft
c pump coupler
d flex plate with raised spline
e engine flywheel
f 0.18 inch / 4.6 mm gap - Deutz Models
0.070 inch / 1.8 mm gap - Perkins Models
0.0625 inch / 1.5 mm gap - Ford LRG-425
0.080 inch / 2 mm gap - Ford DSG-423

4 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 61 ft-lbs / 83 Nm.

5 Install the pump and bell housing assembly.

Ford LRG-425 models:

Before serial number 4545: Torque the bell housing mounting bolts in sequence to 23 ft-lbs / 31 Nm.

After serial number 4544: Torque the bell housing mounting bolts labeled "C" in sequence to 47 ft-lbs / 63 Nm. Torque the bell housing mounting bolts labeled "B" in sequence to 61 ft-lbs / 83 Nm.

Ford DSG-423 and MSG-425 models:

Torque the bell housing mounting bolts labeled "A" and "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "C" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "A" and "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "C" to 70 ft-lbs / 95 Nm.

Deutz models:

Before serial number 4608: Torque the bell housing mounting bolts in sequence to 28 ft-lbs / 38 Nm.

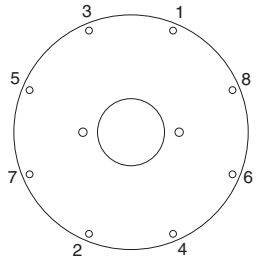
After serial number 4607: Torque the bell housing mounting bolts in sequence to 47 ft-lbs / 63 Nm.

Perkins models:

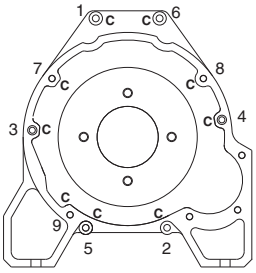
Torque the bell housing mounting bolts labeled "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "A" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "A" to 70 ft-lbs / 95 Nm.

NOTICE Component damage hazard. When installing the pump, do not force the pump coupler into the flexplate or damage to the pump shaft seal may occur.

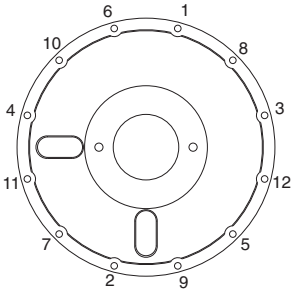
NOTICE Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.



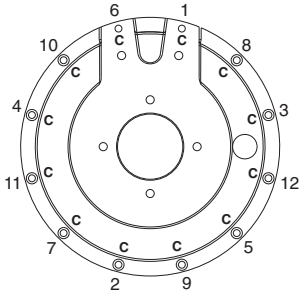
Ford LRG 425 models
(before serial number 4545)



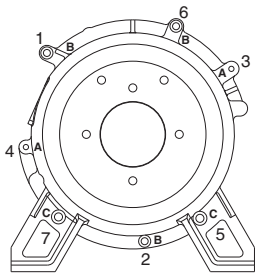
Ford LRG 425 models
(after serial number 4544)



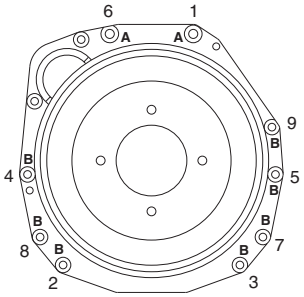
Deutz 1011 models
(before serial number 4608)



Deutz 2011 models
(after serial number 4607)



Ford DSG 423 models
Ford MSG 425 models



Perkins models

6-3
Engine Fault Codes - Ford Models

How to Retrieve Engine Fault Codes

Ford models:

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.

Refer to Fault Codes Section, *How to Retrieve Engine Fault Codes.* Use the Fault Code Charts to aid in identifying the fault.

Hydraulic Pumps

7-1 Function Pump

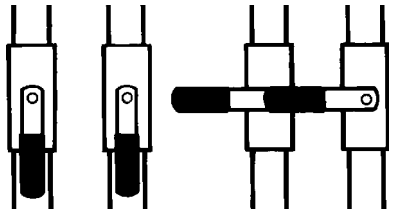
How to Remove the Function Pump

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 **Models without hydraulic tank shut-off valves:** Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. Refer to Specifications, *Machine Specifications*.

Models with hydraulic tank shut-off valves: Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.

NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shut-off 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.



open closed

2 Tag, disconnect and plug the function 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.

Models without hydraulic tank shut-off valves:

NOTICE Component damage hazard. Be sure to fill the hydraulic tank to specification and prime the pump after installing the pump.

Models with hydraulic tank shut-off valves:

NOTICE Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

7-2 Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electro-proportional controller, 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 Sauer Hydraulics center. Call Genie Product Support to locate your local authorized service center.

How to Remove the Drive Pump

NOTICE 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.

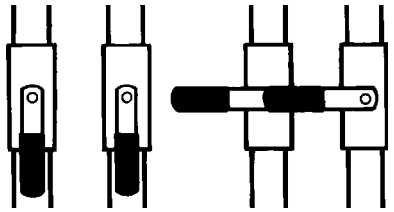
Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Disconnect the electrical connection at the electro-proportional controller located on the drive pump.

2 **Models without hydraulic tank shut-off valves:** Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

Models with hydraulic tank shut-off valves: Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.

NOTICE Component damage hazard. The engine must not be started with the hydraulic tank shut-off 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 function pumps. Cap the fittings on the pumps.

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

HYDRAULIC PUMPS

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.

6 Remove the drive pump from the machine.

NOTICE Component damage hazard. The hydraulic pump may become unbalanced and fall if not properly supported.

NOTICE Component damage hazard. When installing the pump, do not force the pump coupler into the flexplate or damage to the pump shaft seal may occur.

Models without hydraulic tank shut-off valves:

NOTICE Component damage hazard. Be sure to fill the hydraulic tank to specification and prime the pump after installing the pump.

Models with hydraulic tank shut-off valves:

NOTICE 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 Remove the engine tray retaining fasteners located under the engine tray. Loosen the pivot fastener located at the platform end of the engine tray.

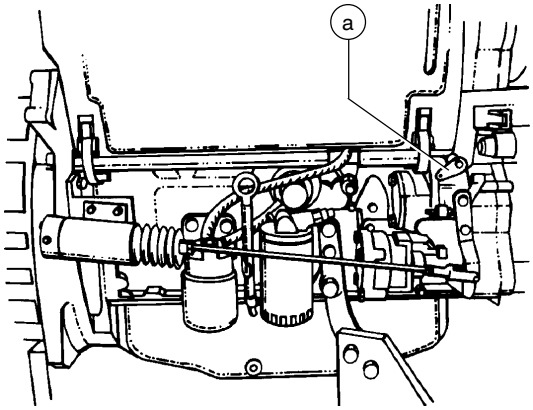
2 Swing the engine tray out and away from the machine.

3 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.

4 **Ford models:** Close the valve on the LPG tank then disconnect the hose from the tank. Move the fuel select switch to the LPG position.

Perkins models: Disconnect the engine wiring harness from the fuel solenoid at the injector pump.

Deutz 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. Move the fuel select switch to the gasoline position.

Perkins models: Connect the engine wiring harness to the fuel solenoid.

Deutz models: Release the manual fuel shutoff valve.

7 Start the engine from the ground controls and check for hydraulic leaks.

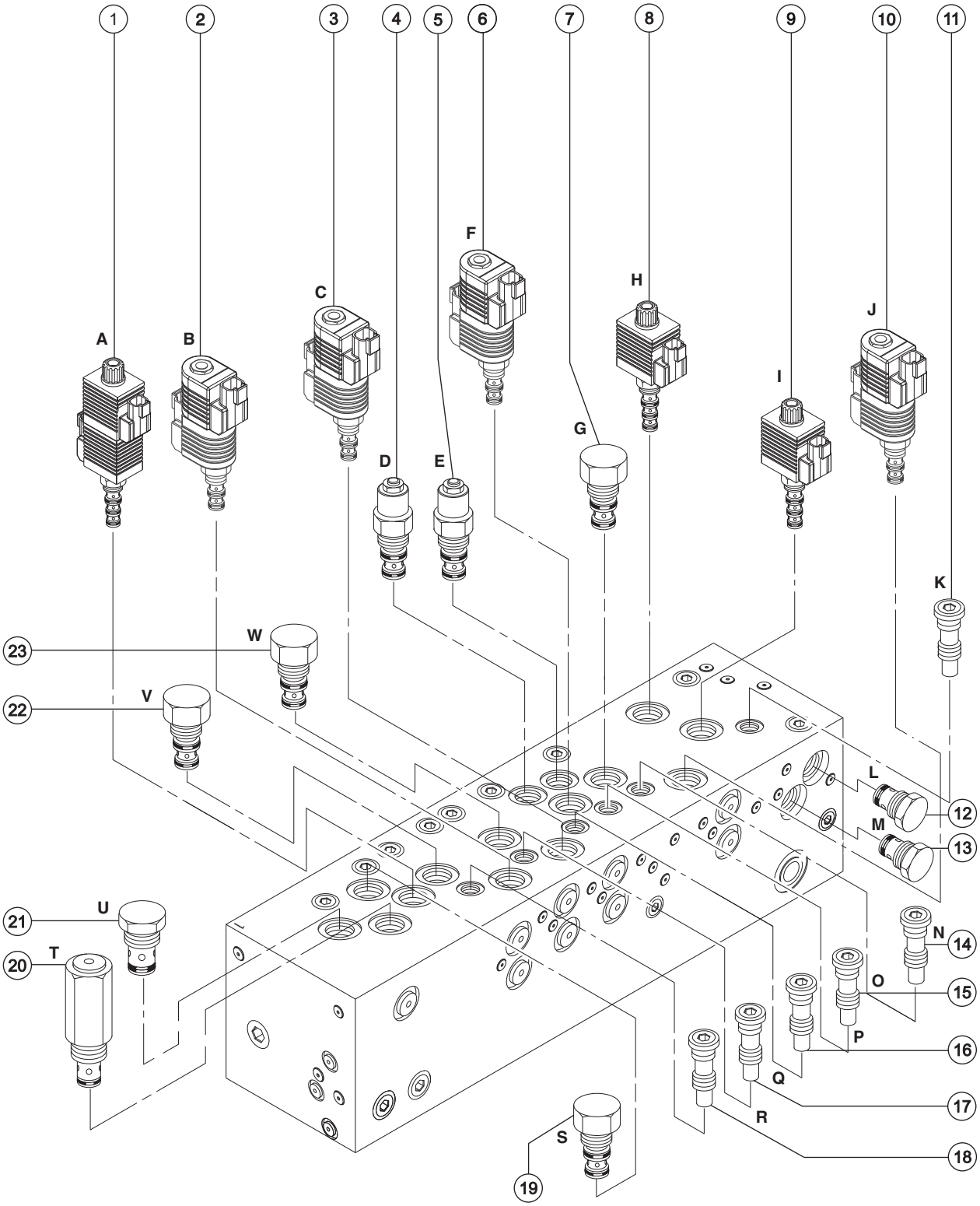
Manifolds

8-1
Function Manifold Components - View 1 (before serial number 4461)

The function manifold is located behind the ground control box.

Index No.	Schematic Description	Item	Function	Torque
1	Solenoid valve, 3 position 4 way	A	Steer left/right	30-35 ft-lbs / 41-47 Nm
2	Solenoid valve, 3 position 4 way	B	Secondary boom up/down	26-30 ft-lbs / 35-41 Nm
3	Solenoid valve, 3 position 4 way	C	Primary boom up/down	26-30 ft-lbs / 35-41 Nm
4	Counterbalance valve, 500 psi / 34.4 bar	D	Platform level up/down and motion control	30-35 ft-lbs / 41-47 Nm
5	Counterbalance valve, 500 psi / 34.4 bar	E	Platform level up/down and motion control	30-35 ft-lbs / 41-47 Nm
6	Solenoid valve, 3 position 4 way	F	Platform level up/down	26-30 ft-lbs / 35-41 Nm
7	Differential sensing valve, 150 psi / 10.3 bar	G	Turntable rotate left/right	30-35 ft-lbs / 41-47 Nm
8	Solenoid valve, 2 position 3 way	H	Boom extend	30-35 ft-lbs / 41-47 Nm
9	Solenoid valve, 2 position 3 way	I	Boom retract	30-35 ft-lbs / 41-47 Nm
10	Solenoid valve, 3 position 4 way	J	Turntable rotate left/right	20-25 ft-lbs / 27-34 Nm
11	Check valve	K	Boom extend	10-12 ft-lbs / 14-16 Nm
12	Check valve	L	Jib boom select	20-25 ft-lbs / 27-34 Nm
13	Flow regulator valve, 0.1 gpm / 0.37 L/min	M	Flow control	26-30 ft-lbs / 35-41 Nm
14	Check valve	N	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm
15	Check valve	O	Platform level up	10-12 ft-lbs / 14-16 Nm
16	Check valve	P	Platform level down	10-12 ft-lbs / 14-16 Nm
17	Check valve	Q	Primary boom up/down	10-12 ft-lbs / 14-16 Nm
18	Check valve	R	Secondary boom up/down	10-12 ft-lbs / 14-16 Nm
19	Flow regulator valve, 3.5 gpm / 13.2 L/min	S	Steer left/right	30-35 ft-lbs / 41-47 Nm
20	Relief valve, 2400 psi / 165.4 bar	T	System relief	30-35 ft-lbs / 41-47 Nm
21	Check valve, 50 psi / 3.45 bar	U	Pressure in from drive pump	30-35 ft-lbs / 41-47 Nm
22	Differential sensing valve	V	Secondary boom up/down	30-35 ft-lbs / 41-47 Nm
23	Differential sensing valve	W	Primary boom up/down	30-35 ft-lbs / 41-47 Nm

MANIFOLDS


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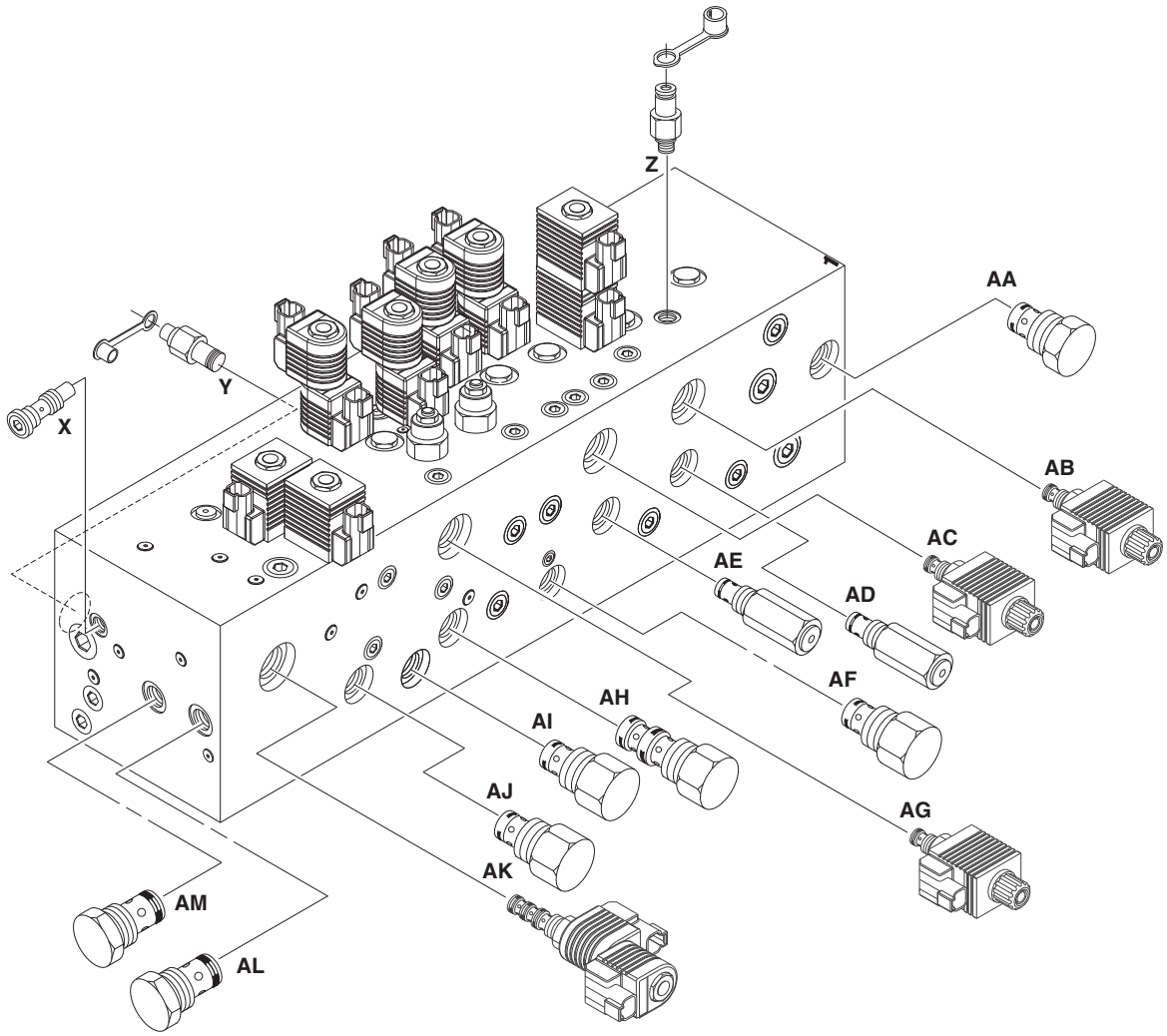
MANIFOLDS

8-2
Function Manifold Components - View 2 (before serial number 4461)

The function manifold is located behind the ground control box.

Index No.	Schematic Description	Item	Function	Torque
1	Valve check	X	Boom retract	10-12 ft-lbs / 14-16 Nm
2	Diagnostic nipple	Y	Testing	
3	Diagnostic nipple	Z	Testing	
4	Check valve, 30 psi / 2.1 bar	AA	To tank	30-35 ft-lbs / 41-47 Nm
5	Proportional solenoid valve	AB	Secondary boom down	20-25 ft-lbs / 27-34 Nm
6	Proportional solenoid valve	AC	Primary boom down	20-25 ft-lbs / 27-34 Nm
7	Relief valve, 1600 psi / 110.3 bar	AD	Secondary boom up/down	20-25 ft-lbs / 27-34 Nm
8	Relief valve, 1800 psi / 124.1 bar	AE	Primary boom up/down	20-25 ft-lbs / 27-34 Nm
9	Free flow needle valve	AF	Platform level	20-25 ft-lbs / 27-34 Nm
10	Proportional solenoid valve	AG	Turntable rotate left/right	20-25 ft-lbs / 27-34 Nm
11	Differential sensing valve	AH	Function pressure control	30-35 ft-lbs / 41-47 Nm
12	Flow regulator valve, 5 gpm / 18.9 L/min	AI	Boom extend retract	30-35 ft-lbs / 41-47 Nm
13	Flow regulator valve, 1 gpm / 3.8 L/min	AJ	Jib select	20-25 ft-lbs / 27-34 Nm
14	Solenoid valve, 3 position 4 way	AK	Jib up/down and platform rotate left/right	26-30 ft-lbs / 35-41 Nm
15	Check valve	AL	Jib select	20-25 ft-lbs / 27-34 Nm
16	Check valve	AM	Jib select	20-25 ft-lbs / 27-34 Nm

MANIFOLDS



MANIFOLDS

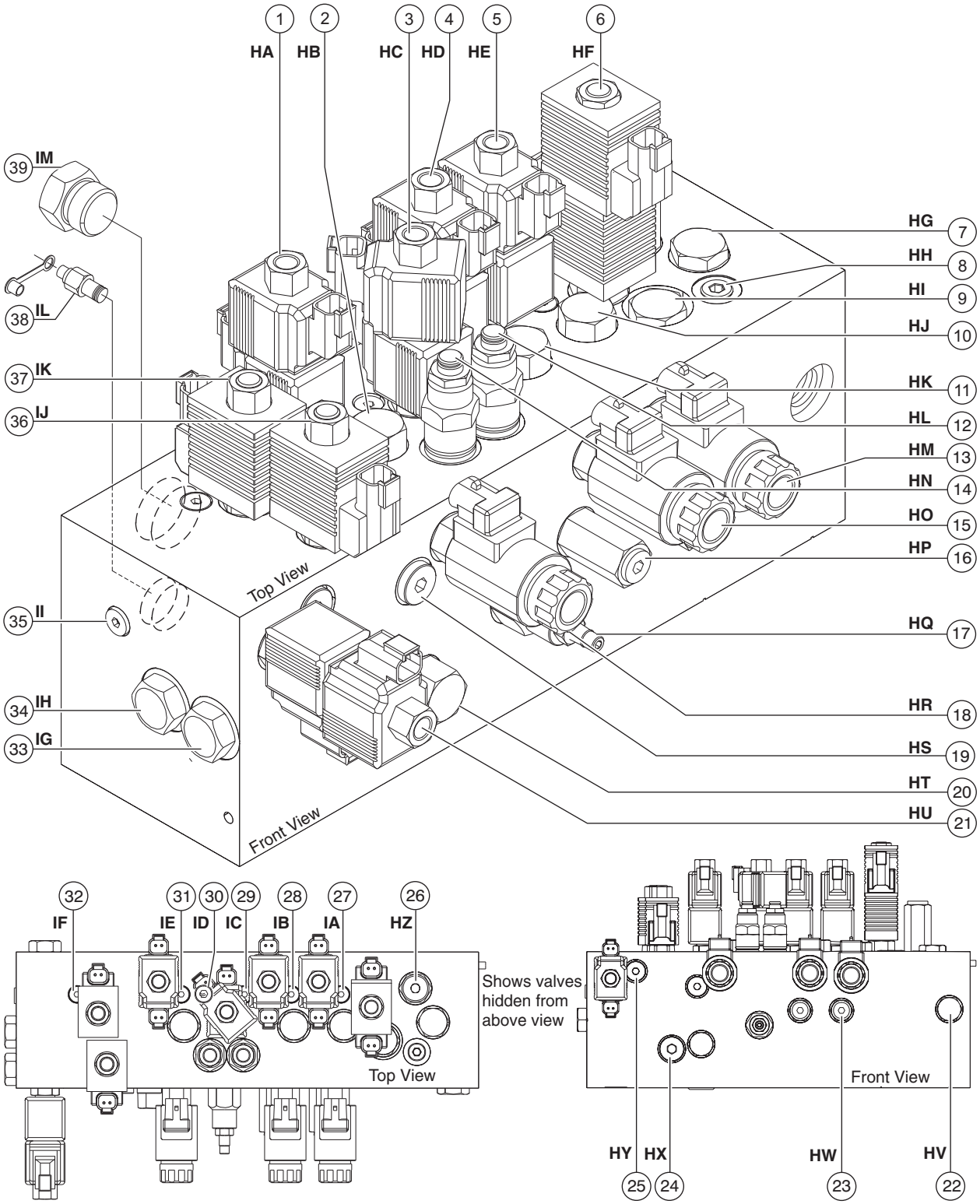
8-3
Function Manifold Components from serial number 4461)

The function manifold is located behind the ground control box.

Index No.	Schematic Description	Item	Function	Torque
1	Solenoid valve, 3 position 4 way	HA	Turntable rotate left/right	33-37 ft-lbs / 45-50 Nm
2	Differential sensing valve, 150 psi / 10.3 bar	HB	Turntable rotate left/right	30-35 ft-lbs / 41-47 Nm
3	Solenoid valve, 3 position 4 way	HC	Platform level up/down	33-37 ft-lbs / 45-50 Nm
4	Solenoid valve, 3 position 4 way	HD	Primary boom up/down	33-37 ft-lbs / 45-50 Nm
5	Solenoid valve, 3 position 4 way	HE	Secondary boom up/down	33-37 ft-lbs / 45-50 Nm
6	Solenoid valve, 3 position 4 way	HF	Steer left/right	30-35 ft-lbs / 41-47 Nm
7	Check valve, 50 psi / 3.45 bar	HG	Pressure in from drive pump	30-35 ft-lbs / 41-47 Nm
8	Diagnostic nipple	HH	Testing	
9	Flow regulator valve, 3.5 gpm / 13.2 L/min	HI	Steer left/right	30-35 ft-lbs / 41-47 Nm
10	Differential sensing valve	HJ	Secondary boom up/down	30-35 ft-lbs / 41-47 Nm
11	Differential sensing valve	HK	Primary boom up/down	30-35 ft-lbs / 41-47 Nm
12	Counterbalance valve, 500 psi / 34.4 bar	HL	Platform level up/down and motion control	30-35 ft-lbs / 41-47 Nm
13	Proportional solenoid valve	HM	Secondary boom down	20-25 ft-lbs / 27-34 Nm
14	Counterbalance valve, 500 psi / 34.4 bar	HN	Platform level up/down and motion control	30-35 ft-lbs / 41-47 Nm
15	Proportional solenoid valve	HO	Primary boom down	20-25 ft-lbs / 27-34 Nm
16	Relief valve, 1800 psi / 124.1 bar	HP	Primary boom up/down	20-25 ft-lbs / 27-34 Nm
17	Free flow needle valve	HQ	Platform level	30-35 ft-lbs / 41-47 Nm
18	Proportional solenoid valve	HR	Turntable rotate left/right	20-25 ft-lbs / 27-34 Nm
19	Flow regulator valve, 0.1 gpm / 0.37 L/min	HS	Flow control	20-25 ft-lbs / 27-34 Nm
20	Differential sensing valve	HT	Function pressure control	30-35 ft-lbs / 41-47 Nm

This parts list continues. Please turn the page.

MANIFOLDS


1 HA
2 HB
3 HC
4 HD
5 HE
6 HF
39 IM
38 IL
37 IK
36 IJ
35 II
34 IH
33 IG
HG 7
HH 8
HI 9
HJ 10
HK 11
HL 12
HM 13
HN 14
HO 15
HP 16
HQ 17
HR 18
HS 19
HT 20
HU 21
Top View
Front View
32 IF
31 IE
30 ID
29 IC
28 IB
27 IA
26 HZ
Top View
Shows valves hidden from above view
Front View
HY 25
HX 24
HW 23
HV 22

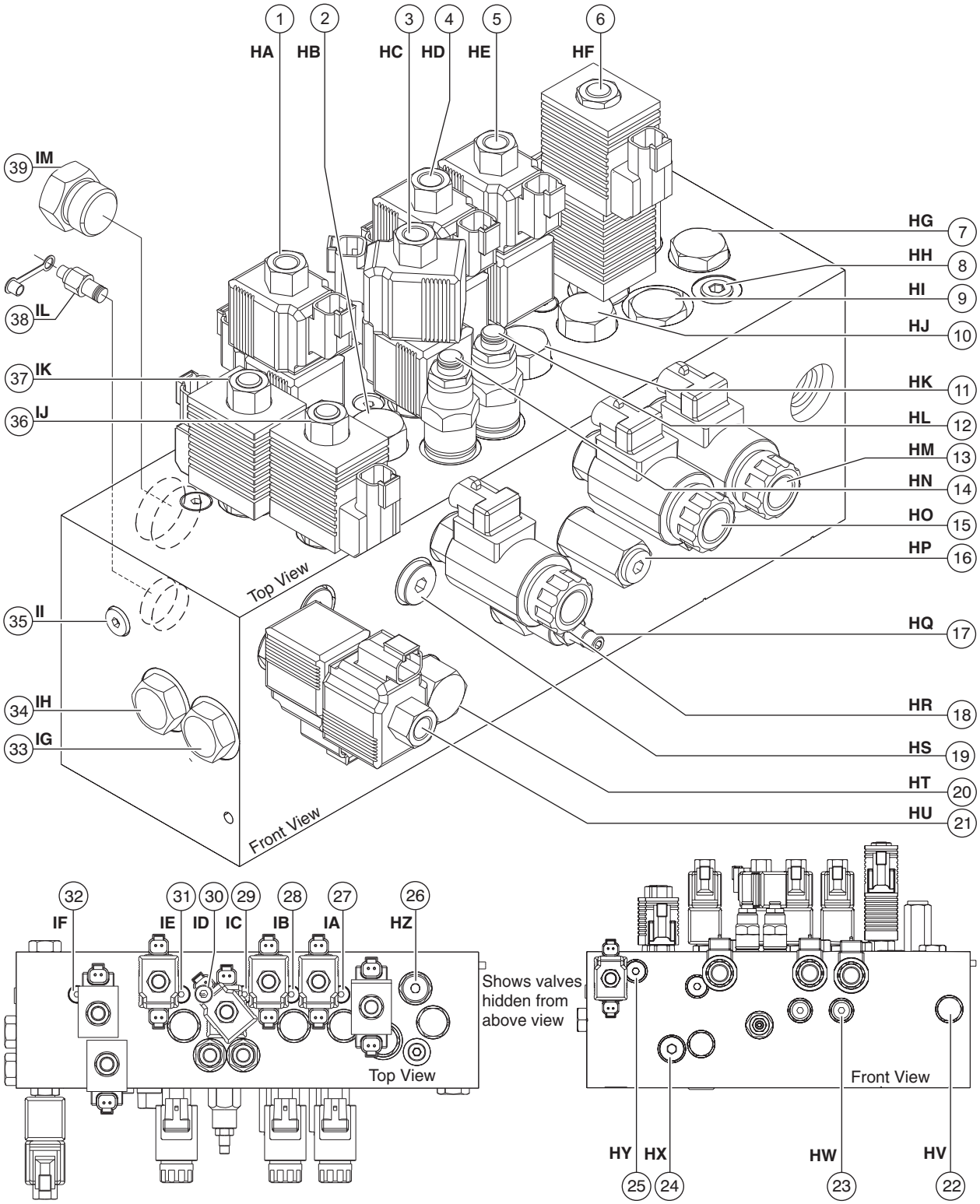
MANIFOLDS

8-3
Function Manifold Components, continued
(from serial number 4461)

The function manifold is located behind the ground control box.

Index No.	Schematic Description	Item	Function	Torque
21	Solenoid valve, 3 position 4 way	HU	Jib up/down and platform rotate left/right	33-37 ft-lbs / 45-50 Nm
22	Check valve, 30 psi / 2.1 bar	HV	To tank	30-35 ft-lbs / 41-47 Nm
23	Relief valve, 1600 psi / 110.3 bar	HW	Secondary boom up/down	20-25 ft-lbs / 27-34 Nm
24	Flow regulator valve, 5 gpm / 18.9 L/min	HX	Boom extend retract	30-35 ft-lbs / 41-47 Nm
25	Flow regulator valve, 1.5 gpm / 5.6 L/min	HY	Jib select	20-25 ft-lbs / 27-34 Nm
26	Relief valve, 2600 psi / 180 bar	HZ	System relief	30-35 ft-lbs / 41-47 Nm
27	Check valve	IA	Secondary boom up/down	8-10 ft-lbs / 11-14 Nm
28	Check valve	IB	Primary boom up/down	8-10 ft-lbs / 11-14 Nm
29	Check valve	IC	Platform level down	8-10 ft-lbs / 11-14 Nm
30	Check valve	ID	Platform level up	8-10 ft-lbs / 11-14 Nm
31	Check valve	IE	Turntable rotate left/right	8-10 ft-lbs / 11-14 Nm
32	Check valve	IF	Boom extend	8-10 ft-lbs / 11-14 Nm
33	Check valve	IG	Jib select	20-25 ft-lbs / 27-34 Nm
34	Check valve	IH	Jib select	20-25 ft-lbs / 27-34 Nm
35	Valve check	II	Boom retract	10-12 ft-lbs / 14-16 Nm
36	Solenoid valve, 2 position 3 way	IJ	Boom extend	30-35 ft-lbs / 41-47 Nm
37	Solenoid valve, 2 position 3 way	IK	Boom retract	30-35 ft-lbs / 41-47 Nm
38	Diagnostic nipple	IL	Testing	
39	Check valve	IM	Jib boom select	20-25 ft-lbs / 27-34 Nm

MANIFOLDS


1 HA
2 HB
3 HC
4 HD
5 HE
6 HF
39 IM
38 IL
37 IK
36 IJ
35 II
34 IH
33 IG
HG 7
HH 8
HI 9
HJ 10
HK 11
HL 12
HM 13
HN 14
HO 15
HP 16
HQ 17
HR 18
HS 19
HT 20
HU 21
Top View
Front View
32 IF
31 IE
30 ID
29 IC
28 IB
27 IA
26 HZ
Top View
Shows valves hidden from above view
Front View
HY 25
HX 24
HW 23
HV 22

MANIFOLDS

8-4 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

Note: Perform this procedure with the boom in the stowed position.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold.
(Item Z before serial number 4461)
(Item IL after serial number 4460)

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the retract switch with the boom fully retracted.

4 Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Component Specifications.*

5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap.
(item T before serial number 4461)
(item HZ after serial number 4460)

6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

7 Repeat steps 2 through 5 and re-check relief valve pressure.

8 Remove the pressure gauge.

How to Adjust the Primary Boom Down Relief Valve

Note: Perform this procedure with the boom in the stowed position.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold.
(Item Z before serial number 4461)
(Item IL after serial number 4460)

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the primary boom down switch with the primary boom fully lowered.

4 Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Component Specifications.*

5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap.
(item AE before serial number 4461)
(item HP after serial number 4460)

6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

7 Repeat steps 2 through 5 and re-check relief valve pressure.

8 Remove the pressure gauge.

How to Adjust the Secondary Boom Down Relief Valve

Note: Perform this procedure with the boom in the stowed position.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item Z) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the secondary boom down switch with the secondary boom fully lowered.

4 Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Component Specifications.*

5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap.
(item AD before serial number 4461)
(item HW after serial number 4460)

6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

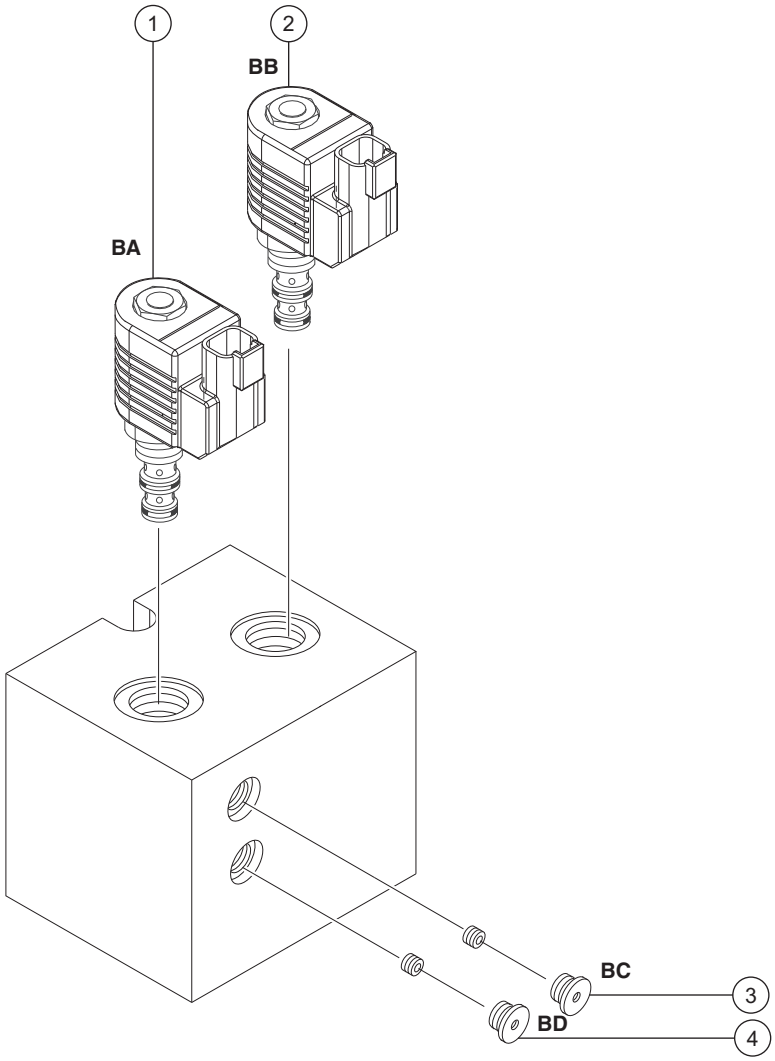
7 Repeat steps 2 through 5 and re-check relief valve pressure.

8 Remove the pressure gauge.

MANIFOLDS

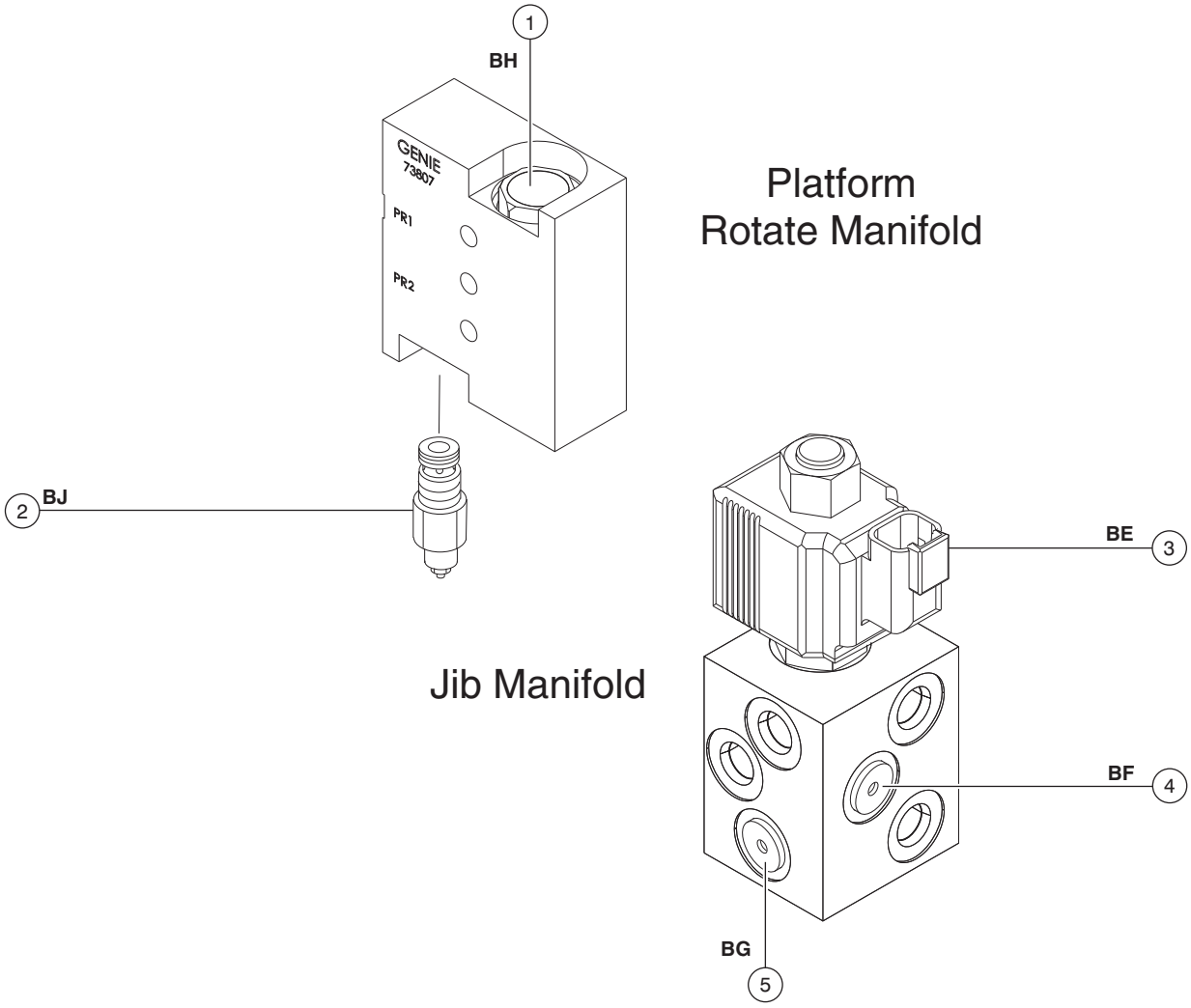
8-5
Jib Boom / Platform Rotate Manifold Components (before serial number 4461)

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	BA	Platform rotate	20-25 ft-lbs / 27-34 Nm
2	Solenoid valve, 2 position 2 way	BB	Jib boom up/down	20-25 ft-lbs / 27-34 Nm
3	Orifice, 0.031 inch / 0.787 mm	BC	Platform rotate circuit	
4	Orifice, 0.031 inch / 0.787 mm	BD	Platform rotate circuit	



8-6
Jib Boom / Platform Rotate Manifold Components (from serial number 4461 to serial number 10425)

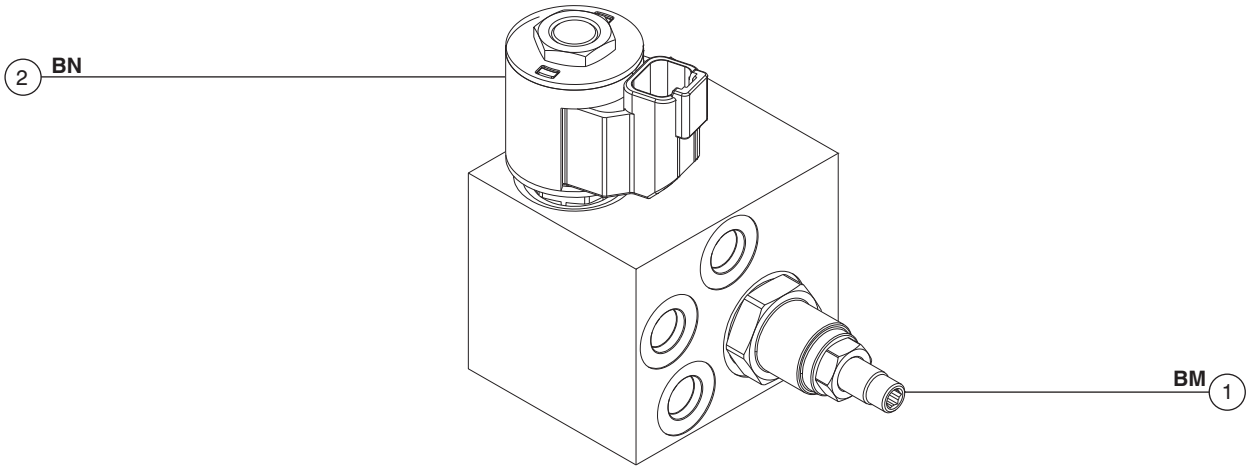
Index No.	Description	Schematic Item	Function	Torque
3	Counterbalance valve	BH	Platform rotate left	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	BJ	Platform rotate right	35-40 ft-lbs / 47-54 Nm
3	Solenoid valve, 2 position 2 way	BE	Platform rotate Jib boom up/down	20-25 ft-lbs / 27-34 Nm
4	Orifice, 0.030 inch / 0.762 mm	BF	Platform rotate circuit	
5	Orifice, 0.030 inch / 0.762 mm	BF	Platform rotate circuit	



MANIFOLDS

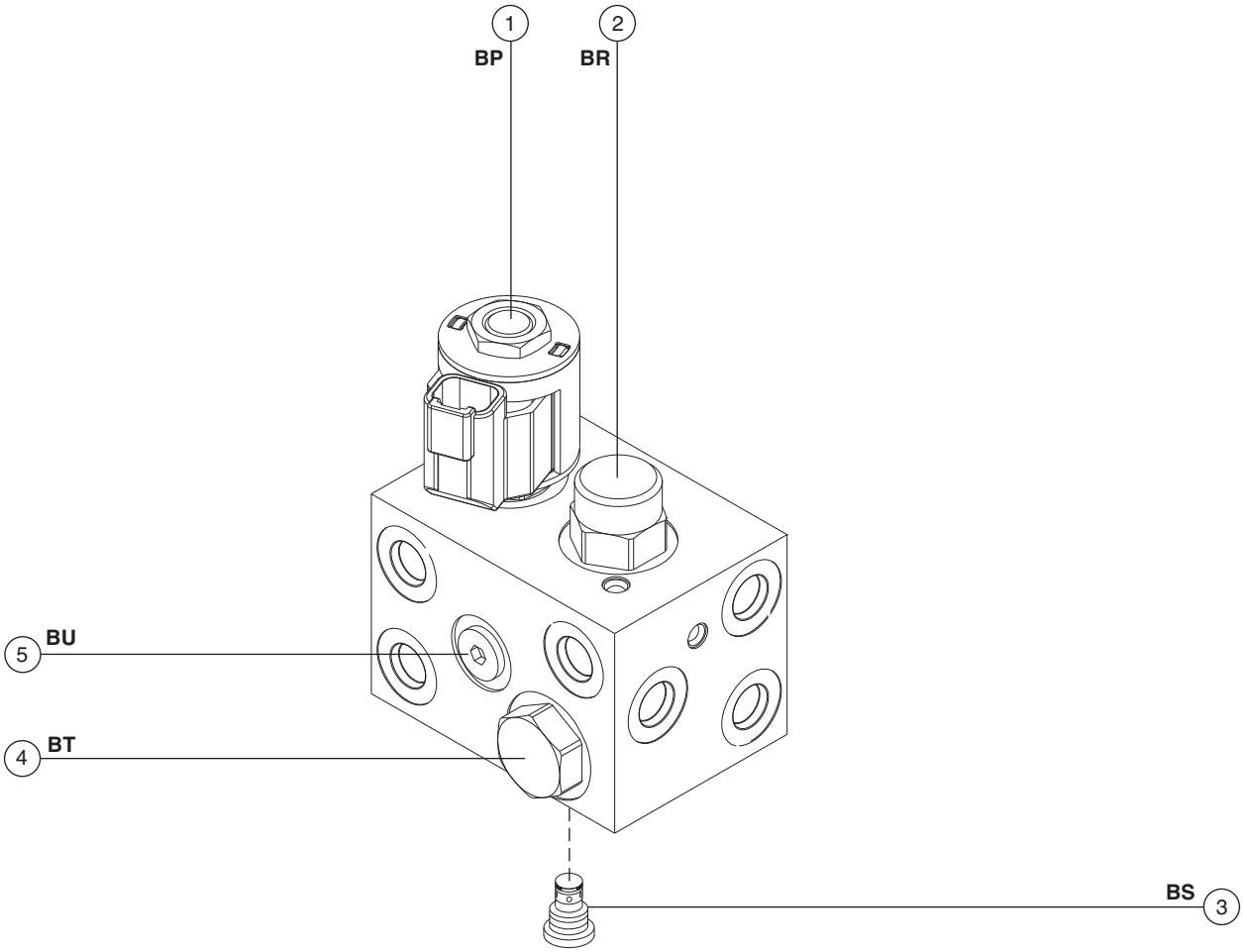
8-7
Jib Boom / Platform Rotate Manifold Components (from serial number 10426 to serial number 11003)

Index No.	Description	Schematic Item	Function	Torque
3	Counterbalance valve	BH	Platform rotate left	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	BJ	Platform rotate right	35-40 ft-lbs / 47-54 Nm
3	Solenoid valve, 2 position 2 way	BE	Platform rotate Jib boom up/down	20-25 ft-lbs / 27-34 Nm
4	Orifice, 0.030 inch / 0.762 mm	BF	Platform rotate circuit	
5	Orifice, 0.030 inch / 0.762 mm	BF	Platform rotate circuit	



8-8
Jib Boom / Platform Rotate Manifold Components (from serial number 11004 to serial number 11477)

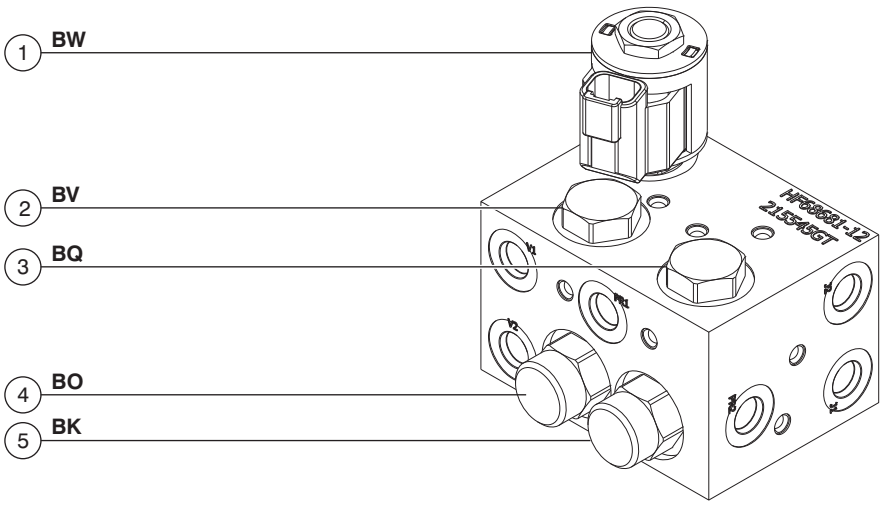
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	BP	Jib boom up/down	19-21 ft-lbs / 25.8 - 28.6 Nm
2	Flow control valve	BR	Platform rotate	19-21 ft-lbs / 25.8 - 28.6 Nm
3	Check valve	BS	One way flow	12-14 ft-lbs / 16.3-19 Nm
4	Load shuttle valve	BT	Controls direction of flow	19-21 ft-lbs / 25.8 - 28.6 Nm
5	Check valve	BU	One way flow	12-14 ft-lbs / 16.3-19 Nm

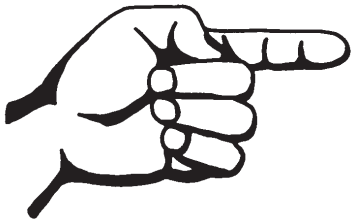


MANIFOLDS

8-9
Jib Boom / Platform Rotate Manifold Components (from serial number 11478)

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	BW	Jib boom up/down	19-21 ft-lbs / 25.8 - 28.6 Nm
2	Check valve	BV	One way flow	19-21 ft-lbs / 25.8 - 28.6 Nm
3	Check valve	BQ	One way flow	19-21 ft-lbs / 25.8 - 28.6 Nm
4	Flow control valve	BO	Platform rotate	19-21 ft-lbs / 25.8 - 28.6 Nm
5	Flow control valve	BK	Platform rotate	19-21 ft-lbs / 25.8 - 28.6 Nm





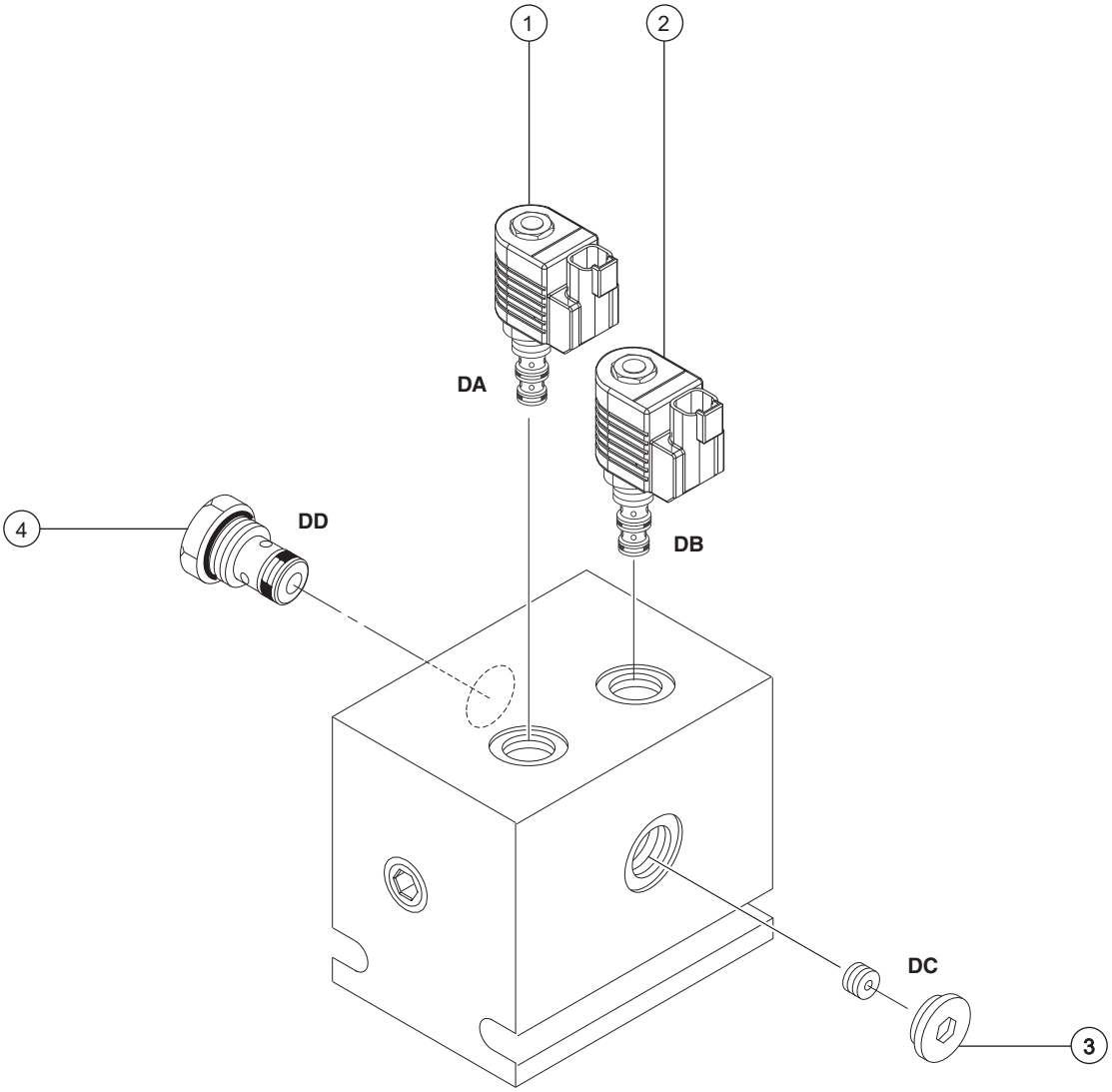
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MANIFOLDS

8-10
Brake / Two Speed Manifold Components (before serial number 4461)

The brake / Two speed manifold is mounted on the engine side bulkhead..

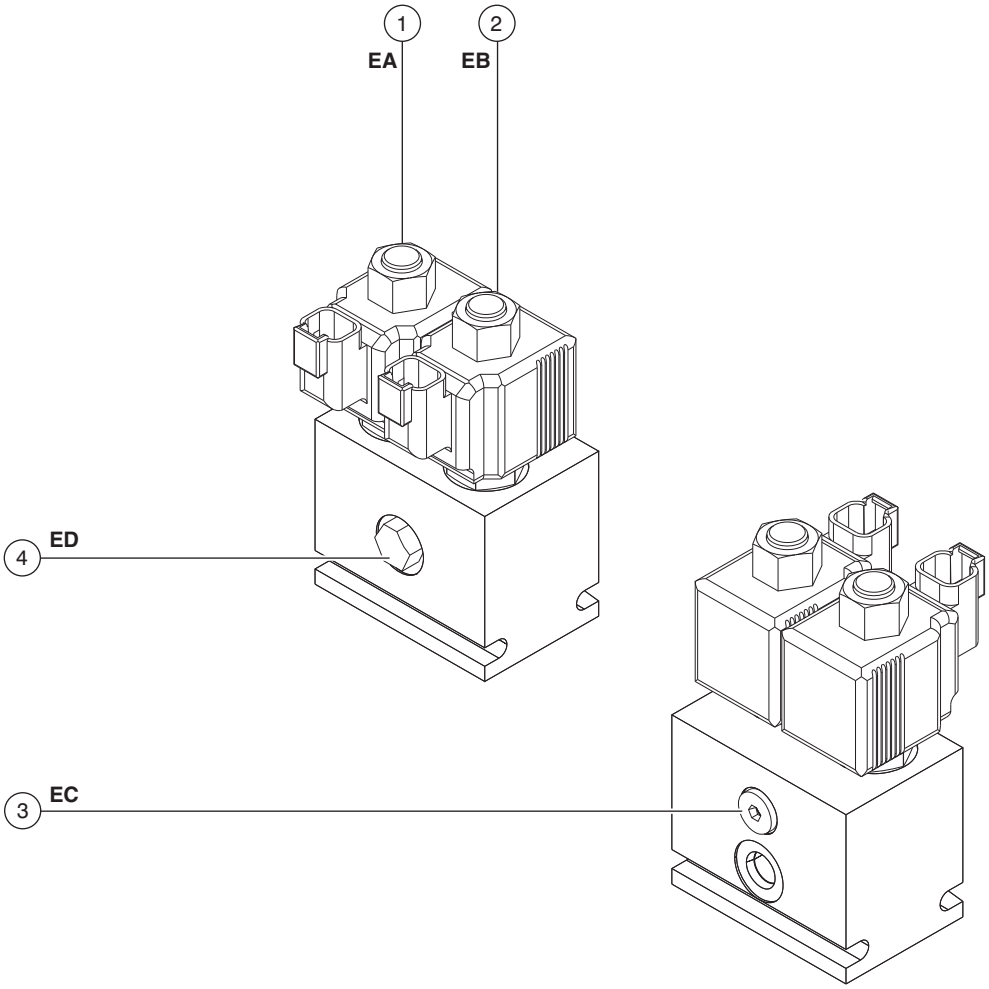
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	DA	Releases brakes	20-25 ft-lbs / 37-34 Nm
2	Solenoid valve, 2 position 3 way	DB	2 speed motor shift	20-25 ft-lbs / 37-34 Nm
3	Orifice, 0.042 inch / 1.066 mm	DC	Controls flow to tank	
4	Check valve	DD	One way flow	10-12 ft-lbs / 14-16 Nm



8-11
Brake / Two Speed Manifold Components (from serial number 4461)

The brake / Two speed manifold is mounted on the engine side bulkhead.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	EA	Releases brakes	47-52 ft-lbs / 64-70 Nm
2	Solenoid valve, 2 position 3 way	EB	2 speed motor shift	47-52 ft-lbs / 64-70 Nm
3	Check valve	EC	One way flow	8-10 ft-lbs / 11-14 Nm
4	Orifice, 0.042 inch / 1.066 mm	ED	Controls flow to tank	



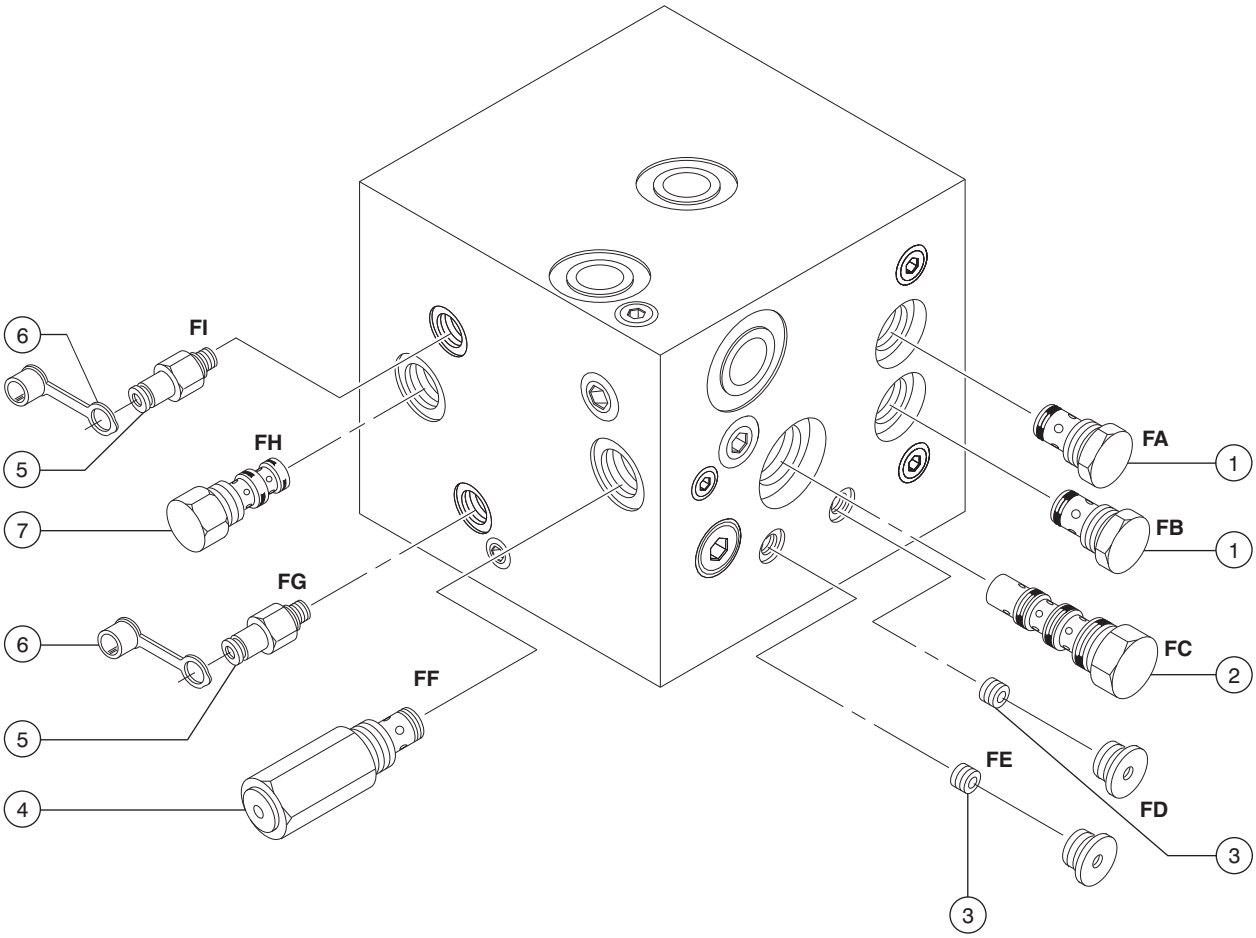
MANIFOLDS

8-12
Traction Manifold Components, 2WD (before serial number 4551)

The 2WD traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve	FA	Divider bypass circuit	30-35 ft-lbs / 41-47 Nm
2	Check valve	FB	Divider bypass circuit	30-35 ft-lbs / 41-47 Nm
3	Flow Divider / Combiner Valve	FC	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 120-133 Nm
4	Orifice, 0.079 in / 2.01 mm	FD	Drive circuit	
5	Orifice, 0.079 in / 2.01 mm	FE	Drive circuit	
6	Relief valve, 300 psi / 20.6 bar	FF	Charge pressure circuit	20-25 ft-lbs / 27-34 Nm
7	Diagnostic nipple	FG	Testing	
8	Shuttle valve, 3 position 3 way	FH	Charge pressure, hot oil shuttle	30-35 ft-lbs / 41-47 Nm
9	Diagnostic nipple	FI	Testing	

MANIFOLDS



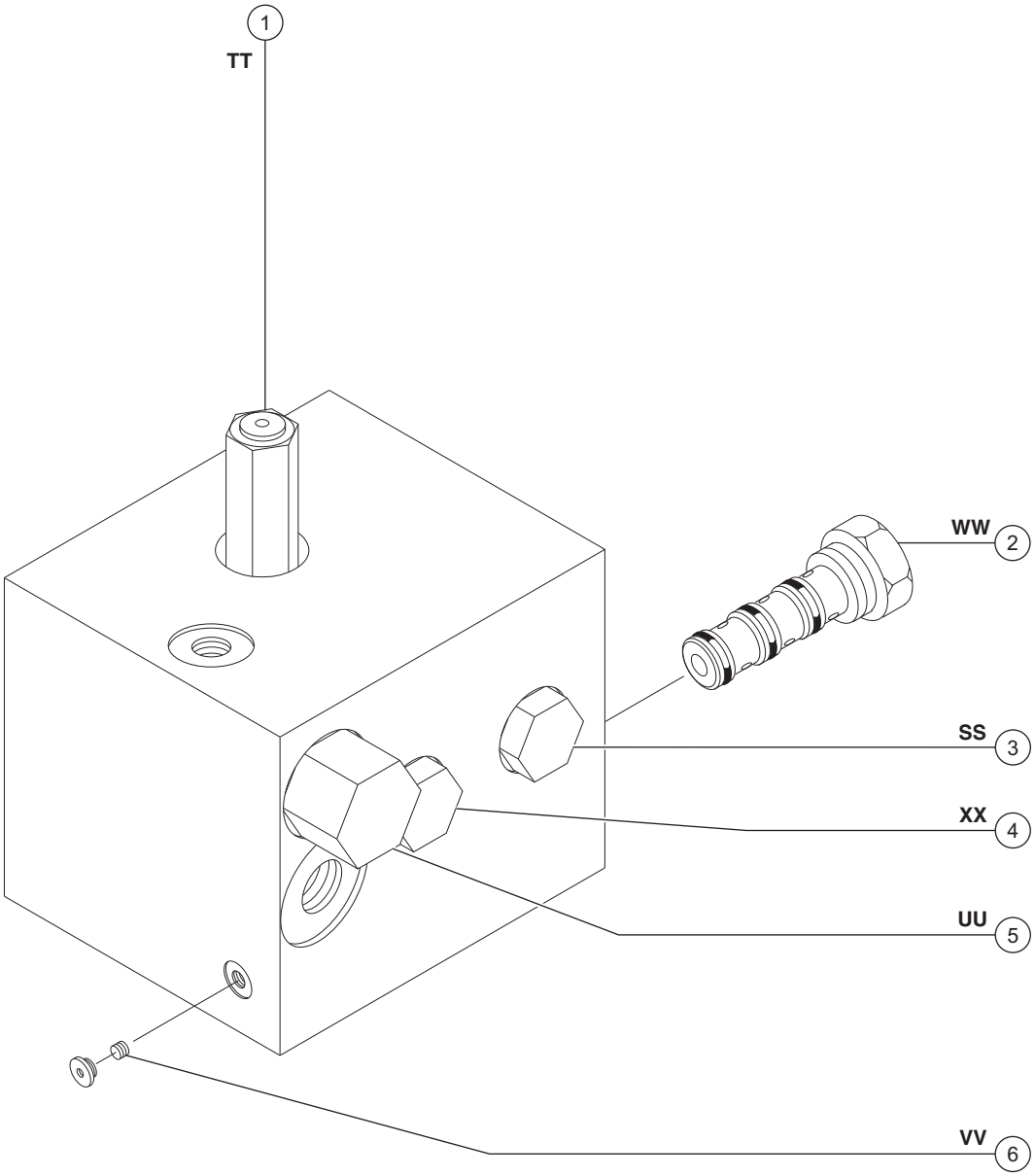
MANIFOLDS

8-13
Traction Manifold Components, 2WD (from serial number 4551)

The 2WD traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Relief Valve, 280 psi / 19.3 bar	TT	Charge pressure circuit	30-35 ft-lbs / 41-47 Nm
2	Flow Divider / Combiner Valve	WW	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 120-133 Nm
3	Check Valve, 5 psi / 0.34 bar	SS	Drive circuit	30-35 ft-lbs / 41-47 Nm
4	Check Valve, 5 psi / 0.34 bar	XX	Drive circuit	30-35 ft-lbs / 41-47 Nm
5	Shuttle Valve, 3 position 3 way	UU	Controls flow to drive motors in forward and reverse	50-55 ft-lbs / 67-73 Nm
6	Orifice Plug, 0.07 inch / 1.78 mm	VV	Equalizes flow across flow divider/combiner valve C	

MANIFOLDS



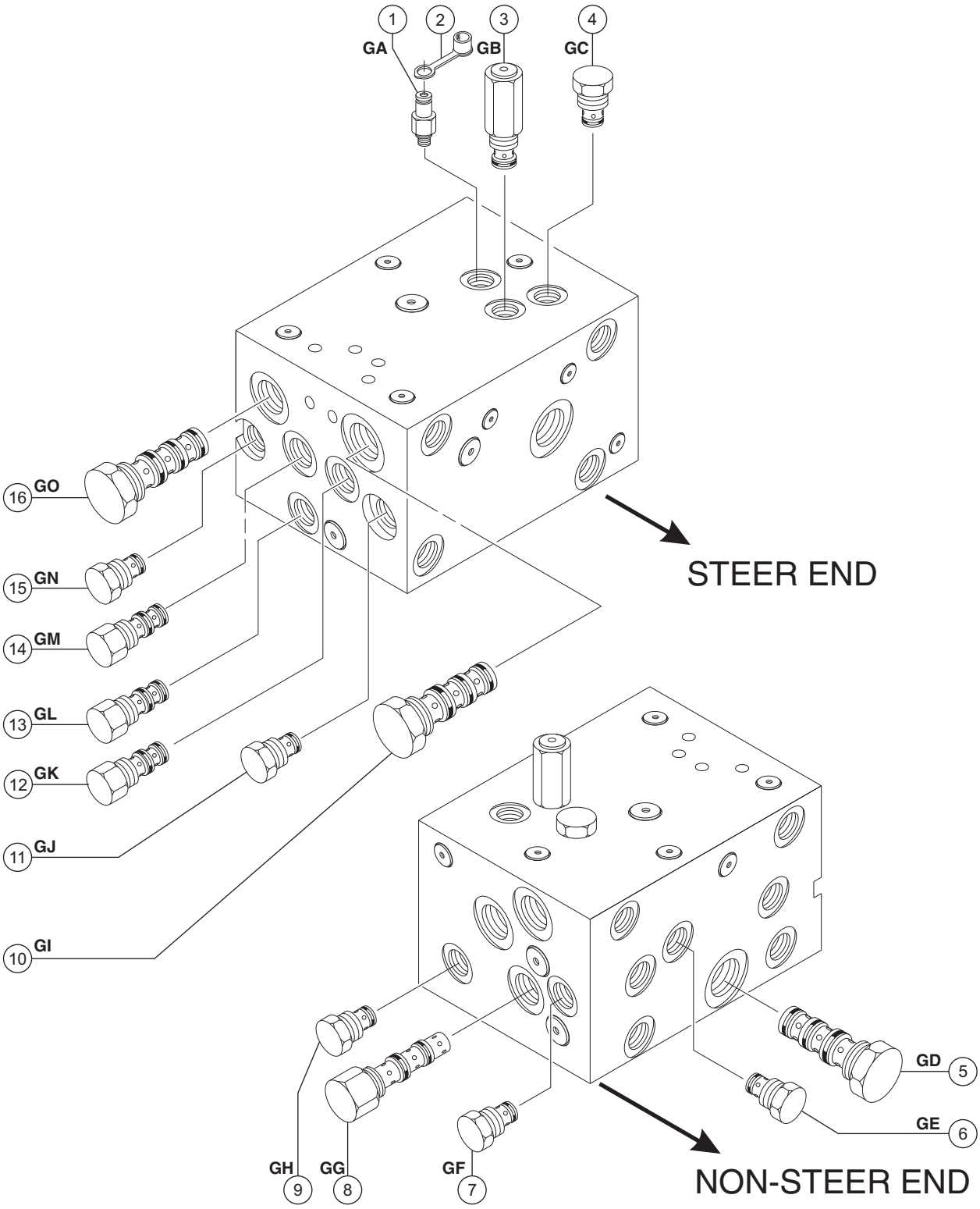
MANIFOLDS

8-14
Traction Manifold Components, 4WD (before serial number 10154)

The 4WD traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Diagnostic fitting	GA	Testing	
2	Relief valve, 250 psi / 17.2 bar	GB	Charge pressure circuit	20-25 ft-lbs / 27-34 Nm
3	Check valve, 5 psi / 0.34 bar	GC	Drive motor anti-cavitation	20-25 ft-lbs / 27-34 Nm
4	Flow divider/combiner valve	GD	Controls flow to flow divider/combiner valves GI and GO	90-100 ft-lbs / 120-133 Nm
5	Check valve, 5 psi / 0.34 bar	GE	Drive motor anti-cavitation	20-25 ft-lbs / 27-34 Nm
6	Check valve, 5 psi / 0.34 bar	GF	Drive motor anti-cavitation	30-35 ft-lbs / 41-47 Nm
7	Shuttle valve	GG	Charge pressure circuit that gets hot oil out of low pressure side of drive pump	50-55 ft-lbs / 67-73 Nm
8	Check valve, 5 psi / 0.34 bar	GH	Drive motor anti-cavitation	30-35 ft-lbs / 41-47 Nm
9	Flow divider/combiner valve	GI	Controls flow from steer end drive motors in forward and reverse	90-100 ft-lbs / 120-133 Nm
10	Check valve, 5 psi / 0.34 bar	GJ	Drive motor anti-cavitation	20-25 ft-lbs / 27-34 Nm
11	Flow regulator valve, 2 gpm / 7.6 L/min	GK	Equalizes pressure on both sides of flow divider/combiner valve GI	30-35 ft-lbs / 41-47 Nm
12	Flow regulator valve, 2 gpm / 7.6 L/min	GL	Equalizes pressure on both sides of flow divider/combiner valve	30-35 ft-lbs / 41-47 Nm
13	Flow regulator valve, 2 gpm / 7.6 L/min	GM	Equalizes pressure on both sides of flow divider/combiner valve GO	30-35 ft-lbs / 41-47 Nm
14	Check valve, 5 psi / 0.34 bar	GN	Drive motor anti-cavitation	20-25 ft-lbs / 27-34 Nm
15	Flow divider/combiner valve	GO	Controls flow from non-steer end drive motors in forward and reverse	90-100 ft-lbs / 120-133 Nm

MANIFOLDS


1
2
3
4
GA
GB
GC
16 GO
15 GN
14 GM
13 GL
12 GK
11 GJ
10 GI
STEER END
GD 5
GE 6
GH 9
GG 8
GF 7
NON-STEER END

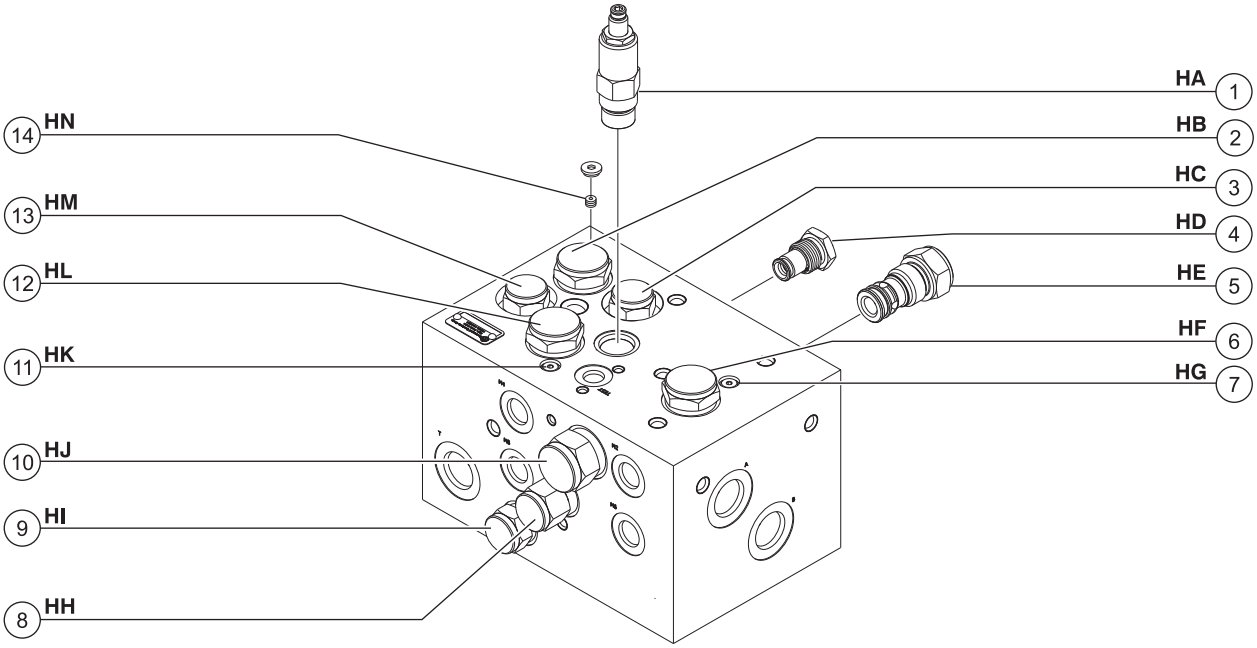
MANIFOLDS

8-15
Traction Manifold Components, 4WD (from serial number 10154)

The 4WD traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 280 psi / 19.3 bar	HA	Charge pressure circuit	55-60 ft-lbs / 74-81 Nm
2	Flow divider/combiner valve	HB	Controls flow to non-steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
3	Check valve	HC	Steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm
4	Check valve	HD	Non-steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm
5	Check valve	HE	Non-steer end drive motor circuit	80-90 ft-lbs / 108-122 Nm
6	Flow divider/combiner valve	HF	Controls flow to flow divider/combiner valves 2 and 13	80-90 ft-lbs / 108-122 Nm
7	Orifice, 0.040 inch / 1 mm	HG	Equalizes pressure on both sides of flow divider/combiner valve 6	
8	Shuttle valve, 3 position 3 way	HH	Charge pressure circuit that directs hot oil out of low pressure side of drive pump	55-60 ft-lbs / 95-100 Nm
9	Check valve	HI	Steer end drive motor circuit	55-60 ft-lbs / 95-100 Nm
10	Check valve	HJ	Steer end drive motor circuit	80-90 ft-lbs / 108-122 Nm
11	Orifice, 0.040 inch / 1 mm	HK	Equalizes pressure on both sides of flow divider/combiner valve 13	
12	Flow divider/combiner valve	HL	Controls flow to steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
13	Check valve	HM	Non-steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm
14	Orifice, 0.040 inch / 1 mm	HN	Equalizes pressure on both sides of flow divider/combiner valve 2	

MANIFOLDS



MANIFOLDS

8-16 Valve Adjustments, Traction Manifolds

How to Adjust the Hot Oil Shuttle Relief Valve

Note: The pressure differential between the charge pump relief valve (located in the drive pump) and the hot oil shuttle relief valve (located in the drive manifold) is necessary to return hot oil from the closed loop drive circuit to the hydraulic tank for cooling. This pressure differential must be maintained at 40 psi / 14.5 bar.

Note: The following procedure will require two people.

1 Open the engine side turntable cover and connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the diagnostic nipple on the drive pump.

2 Start the engine from the platform controls and allow the engine to run at high idle. Note the pressure reading on the pressure gauge.

3 Turn the engine off and connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the diagnostic nipple located on the traction manifold.

Note: The traction manifold is located under the non-steer end chassis cover.

4 Start the engine from the platform controls and drive the machine slowly in the forward direction. Note the pressure reading on the pressure gauge.

5 Turn the engine off, and remove the hot oil shuttle relief valve cap.

2WD Traction Manifold
(item FF before serial number 4551)
(item TT after serial number 4550)

4WD Traction Manifold
(item GB).

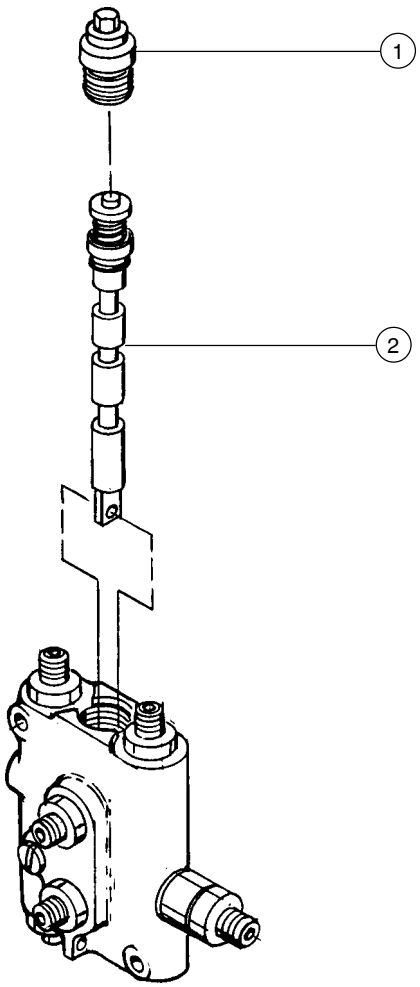
6 Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

6 Repeat steps 4 and 5 until the pressure reading on the guage is 40 psi / 2.8 bar less than the pressure reading at the pump.

8-17
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

8-18
Directional Valve Linkage

How to Set Up the Oscillate Directional Valve

Note: Adjustment of the oscillate 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 could compromise the stability of the machine resulting in the machine tipping over.

3 Check the tire pressure in all four tires and add air if needed to meet specification.

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

4 Remove the drive chassis cover from the non-steer end of the drive chassis.

5 Place a "bubble type" level across the drive chassis non-steer end. Check to be sure the drive chassis is completely level.

6 Remove the heim joint retaining fastener from the axle.

7 To level the drive chassis, start the engine and 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 Adjust the heim joint until the hole lines up with the retaining fastener hole in the axle.

10 Install the heim joint to the axle and tighten the jam nut.

11 Check to be sure the drive chassis is completely level.

12 Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

Note: 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 11 OR consult Genie Industries Service Department.

8-19
Valve Adjustments - Oscillate Relief Valve

How to Adjust the Oscillate Relief Valve Pressure

Note: The following procedure will require two people.

1 Remove the drive chassis cover from the non-steer end of the drive chassis.

2 Connect a 0 to 2000 psi / 0 to 150 bar pressure gauge to the diagnostic nipple located near the oscillate directional valve.

3 Disconnect the directional valve linkage, by removing the heim joint and retaining fastener from the axle.

4 Start the engine from the ground controls. Move the engine idle toggle switch to the high idle position.

5 With the engine running in high rpm, manually activate the valve and observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Component Specifications*.

7 Locate the relief valve (figure a) on the directional valve.

8 Loosen the jam nut.

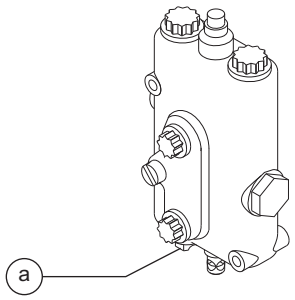
9 Adjust the valve. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Tighten the jam nut.

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

10 Manually activate the valve again to confirm the valve pressure.

11 Turn the engine off, remove the pressure gauge and assemble the directional valve linkage.

12 Install the cover on the non-steer end of the drive chassis.



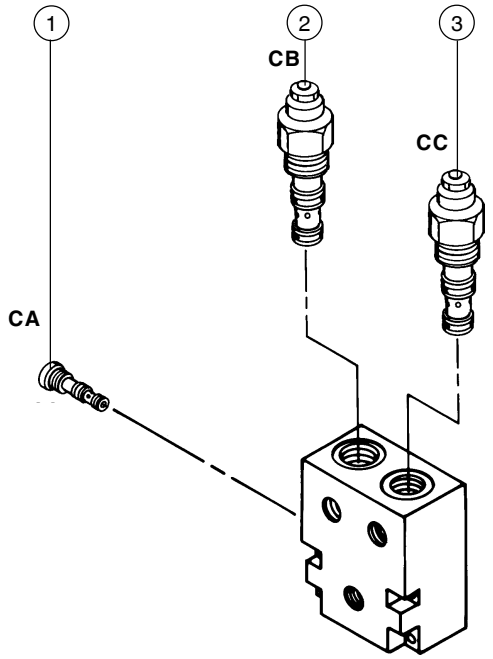
a relief valve

MANIFOLDS

8-20
Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor located in the boom storage compartment.

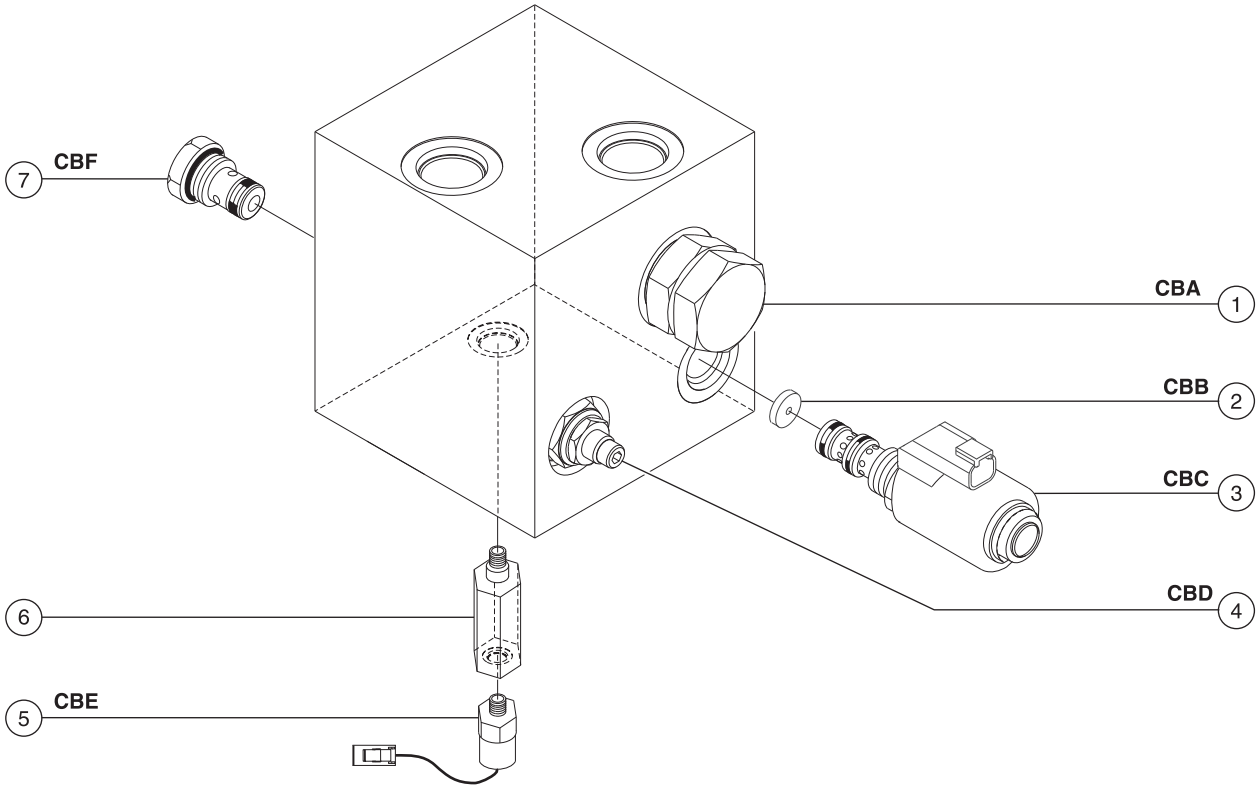
Index No.	Description	Schematic Item	Function	Torque
1	Shuttle valve 2 position 3 way	CA	Turntable rotation brake release	10-13 ft-lbs / 14-18 Nm
2	Counterbalance valve	CB	Turntable rotate right	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	CC	Turntable rotate left	35-40 ft-lbs / 47-54 Nm



8-21
Oil Diverter Manifold Components (welder option)

The oil diverter manifold is mounted to the hydraulic generator located in the engine compartment.

Index No.	Description	Schematic Item	Function	Torque
1	Pilot Operated Directional valve, 2 position 3 way	CBA	Activates generator	80-90 ft-lbs / 108-122 Nm
2	Orifice disc, 0.031 inch / 0.79 mm	CBB	Delays shift to drive	35-40 ft-lbs / 47-54 Nm
3	Solenoid valve, 2 position 3 way	CBC	Pilot valve to diverter	35-40 ft-lbs / 47-54 Nm
4	Relief valve, 280 psi @ 3.5 gpm / 19.3 bar @ 13.2 L/min	CBD	Charge pressure circuit	35-40 ft-lbs / 47-54 Nm
5	Pressure switch 200 psi / 18.6 bar	CBE	Generator relay switch	16 ft-lbs / 22 Nm
6	Connector fitting			11 ft-lbs / 15 Nm
7	Check valve	CBF	Prevents oil flowing into generator	35-40 ft-lbs / 47-54 Nm



MANIFOLDS

8-22
Valve Coils

How to Test a Coil

A properly functioning coil provides an electromagnetic force which operates the solenoid valve. Critical to normal operation is continuity within the coil. Zero resistance or infinite resistance indicates the coil has failed.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance decreases below specification, amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

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

Note: If the machine has been in operation, allow the coil to cool at least 3 hours before performing this test.

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance using a multimeter set to resistance (Ω). Refer to the Valve Coil Resistance Specification table.

⊠ Result: If the resistance is not within the adjusted specification, plus or minus 10%, replace the coil.

Valve Coil Resistance Specifications

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

Description	Specification
Proportional solenoid valve, 12V DC (schematic items AB, AC and AG)	6.3 Ω
Solenoid valve, 2 Position, 3 Way, 10V DC (schematic items H, I)	6.3 Ω
Solenoid valve, 3 Position, 4 Way, 10V DC (schematic items A, B, C, F, J, AK)	6.3 Ω
Proportional solenoid valve, 12V DC (schematic items HM, HO and HR)	3.7 Ω
Solenoid valve, 2 Position, 3 Way 10V DC (schematic items IJ, IK)	6.3 Ω
Solenoid valve, 3 Position, 4 Way 10V DC (schematic items HA, HC, HD, HE, HU)	5 Ω
Solenoid valve, 3 Position, 4 Way 10V DC (schematic items HF)	6.3 Ω
Solenoid valve, 2 Position, 3 Way, 10V DC (schematic items BA, BB, DA, DB)	6.3 Ω
Solenoid valve, 2 Position, 3 Way, 10V DC (schematic items BE, EA, EB)	5 Ω
Solenoid valve, 2 Position, 3 Way, 12V DC (schematic items BP, BW)	8 Ω

How to Test a Coil Diode

Genie incorporates spike-suppressing diodes in all of its directional valve coils except proportional valves and coils with a metal case. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

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

1 Test the coil for resistance. See *How to Test a Coil.*

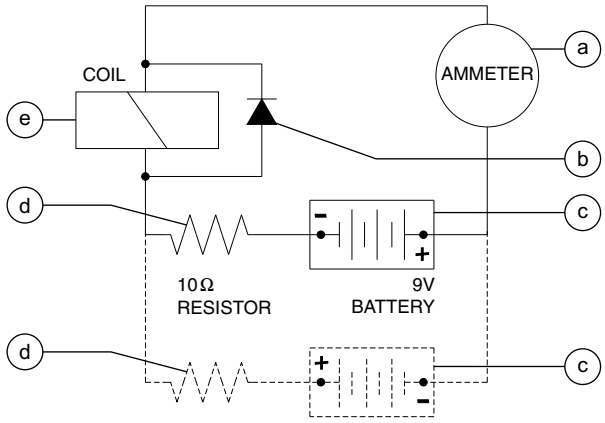
2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

Resistor, 10Ω
Genie part number 27287

Note: The battery should read 9V DC or more when measured across the terminals.

3 Set a multimeter to read DC current.

Note:The multimeter, when set to read DC current, should be capable of reading up to 800 mA.



a multimeter or ammeter
b diode
c 9V DC battery
d 10Ω resistor
e coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

4 Connect the negative lead to the other terminal on the coil.

Note: If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V DC battery. Note and record the current reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

⊙ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Turntable Rotation Components

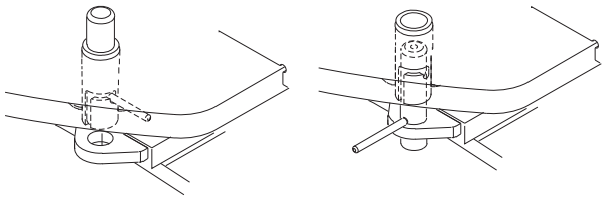
9-1
Turntable Rotation Assembly

How to Remove the Turntable Rotation Assembly

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

Note: Perform this procedure with the machine on a firm and level surface.

1 Raise the secondary boom until the platform end of the lower secondary boom arm is approximately 8 feet / 2.4 m off the ground.



unlocked locked

2 Secure the turntable from rotating with the turntable rotation lock.

⚠WARNING Crushing hazard. The machine could tip over when the turntable rotation assembly is removed if the turntable rotation lock is not in the locked position.

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 Attach a lifting strap from an overhead crane or other suitable lifting device to the turntable rotator assembly.

5 Remove the turntable rotation assembly mounting fasteners.

6 Carefully remove the turntable rotation assembly from the machine.

⚠WARNING Crushing hazard. The turntable rotation assembly could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

Axle Components

10-1
Hub and Bearings, 2WD Models

How to Remove the Hub and Bearings, 2WD Models

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 steer axle.

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

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

4 Remove the lug nuts. Remove the tire and wheel assembly.

5 Remove the dust cap, cotter pin and castle nut.

Note: 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.

8 Remove the rear bearing.

How to Install the Hub and Bearings, 2WD Models

Note: 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.

NOTICE Component damage hazard. 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 158 ft-lbs / 214 Nm to seat the bearing.

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

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

9 Install a new cotter pin. Bend the cotter pin to secure the castle nut.

Note: Always use a new cotter pin when installing a castle nut.

10 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Sepecifications, *Machine Specifications.*

AXLE COMPONENTS

10-2
Oscillate 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

Note: Perform this procedure on a firm, level surface with the boom in the stowed position.

Note: When removing a hose assembly or fitting, the O-ring (if equipped) on the fitting and/or the hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications*.

1 Rotate the turntable until the boom is between the steer tires.

2 Remove the fasteners from drive chassis cover at the steer end. Remove the cover.

3 Tag, disconnect and plug the oscillating axle cylinder hydraulic hoses. Cap the fittings on the oscillate cylinder.

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

4 Remove the pin retaining fasteners from the rod-end pivot pin.

5 Use a soft metal drift to remove the pin.

6 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.

7 Remove the pin retaining fasteners from the barrel-end pivot pin.

8 Use a soft metal drift to remove the pin.

⚠CAUTION Crushing hazard. The oscillate cylinder may become unbalanced and fall if not properly supported when removed from the machine.

9 Remove the oscillate cylinder from the machine.

⚠WARNING Crushing hazard. The oscillate cylinder could become unbalanced and fall if not properly supported when it is removed from the machine.

Generators

11-1
Adjustments - Hydraulic Generator

How to Adjust the 3000/3500W Generator Voltage (prior to serial number 10283)

⚠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.

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

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

1 Disconnect all electrical tools from the machine.

2 Start the engine from the platform controls.

3 Press the generator select switch.

4 Connect an electrical tool, which does not draw more than 15A, to the electrical outlet at the platform controls and run the tool at full speed.

5 Connect the positive and negative leads from a multimeter of sufficient capacity to the electrical outlet at the generator.

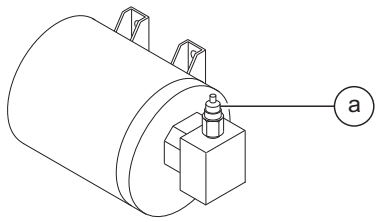
Note: The multimeter, when set to read AC voltage, should be capable of reading up to 125V AC.

⊙ Result: The reading on the multimeter should be 112 to 118V AC.

⊠ Result: If the reading on the multimeter is not 112 to 118V AC, proceed to step 6.

6 Turn the key switch to the off position.

7 Use a wrench to loosen the jam nut and adjust the generator flow regulator valve (item AM).



a flow regulator

8 Adjust the hex socket screw. Turn it clockwise to increase the voltage or counterclockwise to decrease the voltage. Tighten the jam nut while holding the adjustment screw in place.

NOTICE Component damage hazard. Failure to adjust the generator as instructed may result in damage to the generator or other electrical equipment. Do not adjust the generator to other than specified.

9 Repeat steps 2 through 5 to confirm the generator AC voltage.

How to Purge the Hydraulic Line on the MTE Generator (from serial number 10283)

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

Note: This procedure should be performed if the hydaulic line to the generator has been removed.

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

1 Locate the blue purge wire with the male spade connector from the MTE generator harness.

2 Connect a jumper wire of sufficient length from the positive battery terminal to the spade connector on the purge wire.

3 Start the engine and turn on the generator. Allow the generator to run for three minutes.

4 Turn off the generator and turn off the engine.

5 Remove the jumper wire from the positive battery terminal and disconnect from the purge wire.

6 Start the engine and turn on the generator. Using a digital multimeter check the voltage at the outlet.

⊙ Result: The generator produces a voltage ±10% of rated output. The generator is ready for use.

⊠ Result: The generator output voltage is outside the ±10% voltage range. Repeat the procedure beginning with step 2.

Fault Codes



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-60/34 Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate fault code thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

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

Note: Perform all troubleshooting on a firm level surface.

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

FAULT CODES

Fault Code Chart - Control System

How to Retrieve Control System Fault Codes

Note: At least one fault code is present when the alarm at the platform controls produces two short beeps every 30 seconds for 10 minutes.

Note: Perform this procedure with the engine off, the key switch turned to platform controls and the red Emergency Stop button pulled out to the on position at both the ground and platform controls.

1 Open the platform control box lid.

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

2 Locate the red and yellow fault LEDs on the ALC-500 circuit board inside the platform control box. Do not touch the circuit board.

NOTICE Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. If the circuit board does need to be handled, maintain firm contact with a metal part of the machine that is grounded at all times when handling the printed circuit board OR use a grounded wrist strap.

3 **Determine the error source:** The red LED indicates the error source and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the red LED is flashing the code, the yellow LED will be on solid.

4 **Determine the error type:** The yellow LED indidates the error type and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

Note: When the yellow LED is flashing the code, the red LED will be on solid.

5 Use the fault code table on the following pages to aid in troubleshooting the machine by pinpointing the area or component affected.

FAULT CODES

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
21	Boom 1 Joystick (primary boom up/down)	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Function is inoperative until joystick is calibrated. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
22	Boom 1 directional valves	21	Fault	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
23	Boom 1 flow control valve	12 15	Value too high Value too low	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds
		18	Just calibrated		Self-clearing. (transient)
31	Boom 2 Joystick (secondary boom up/down or primary boom extend/retract)	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
		18	Just calibrated	Initiate 1 second beep of alarm.	Self-clearing. (transient)
32	Boom 2 directional valves	21	Fault	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.

Continued on next page

FAULT CODES

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
33	Boom 2 flow control valve	12 15	Value too high Value too low	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds
		18	Just calibrated		Self-clearing. (transient)
41	Turntable rotate joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
42	Turntable rotate directional valves	21	Fault	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
43	Turntable rotate flow control valve	12 15	Value too high Value too low	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds.
		18	Just calibrated		Self-clearing. (transient)
44	Drive enable toggle switch	21	Fault	Drive enable function is inoperative.	Cycle power off, then on and problem should be corrected.

FAULT CODES

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
51	Drive joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
53	Drive flow valve (EDC)	12 15	Value too high Value too low	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds
		18	Just calibrated		Self-clearing. (transient)
54	Drive brake valve	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
55	High speed drive motor Valve	21	Fault	Motor speed frozen in the low state. Alarm sounds indicating fault.	Power up controller with problem corrected.
61	Steer joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate Joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
62	Steer directional valves	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.

FORD LRG-425 FAULT CODES

Ford LRG-425 EFI Engine

How to Retrieve Ford Engine 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.

Note: Perform this procedure with the key switch in the off position.

1 Open the ground controls side cover and locate the run/test toggle switch on the side of the ground control box.

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

3 Quickly activate and release the start toggle switch/button. Do not start the engine.

4 Move and hold the run/test toggle switch to the test 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.

Note: Before the fault codes are displayed, the check engine light will blink a code 123 three times. After the fault codes, the check engine light will blink a code 123 three times again indicating the end of the stored codes.

Note: If any fault codes are present, the ECM will blink a three digit code three times for each code stored in memory. It will blink the first digit of a three digit code, pause, blink the second digit, pause, and then blink the third digit. For example: the check engine light blinks 5 consecutive times, blinks 3 times and then 1 time. That would indicate code 531.

Note: 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. Refer to, *How to Clear Engine Fault Codes from the ECM.*

How to Clear Engine Fault Codes from the ECM

Note: 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/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Connect the negative battery cable to the battery.

FORD LRG-425 FAULT CODES

Code	Problem	Cause	Solution
111	Closed Loop Multiplier High (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks.	Repair wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks.
112	HO2S Open/Inactive (Bank 1)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.	Repair wiring and/or connections OR replace sensor.
113	HO2S Open/Inactive (Bank 2)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.	
114	Post-cat oxygen sensor open	The post cat Heated Oxygen Sensor wiring and/or connections are open or shorted OR sensor is cold, non-responsive or inactive for 60 seconds or longer.	Repair wiring and/or connections OR replace the post cat oxygen sensor.
121	Closed Loop Multiplier High (Gasoline)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel pressure is low OR the fuel injectors need cleaning or replacing.	Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.
122	Closed Loop Multiplier Low (Gasoline)	MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck open OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.	Adjust or replace sensors OR clean or repair fuel injectors.
124	Closed Loop Multiplier Low (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR fuel quality is poor OR fuel system components may be faulty.	Repair wiring and/or connections OR replace sensor OR replace fuel OR test and repair the fuel system components.
133	Gasoline cat monitor	There are exhaust leaks OR the catalyst system efficiency is below the acceptable level.	Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.
134	LPG cat monitor		
135	NG cat monitor		
141	Adaptive Lean Fault - High Limit (Gasoline)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum or exhaust leaks OR one or more fuel injectors faulty or stuck closed OR fuel quality is poor OR fuel pressure is too low.	Repair heated oxygen sensor wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.
142	Adaptive Rich Fault - Low Limit (Gasoline)	MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck closed OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.	Adjust or replace sensors OR clean or repair fuel injectors.
143	Adaptive Learn High (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel quality is poor OR fuel system components may be faulty.	Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR replace fuel OR test and repair the fuel system components.
144	Adaptive Learn Low (LPG)	Engine wire harness may have an intermittent short to 5V DC or 12V DC OR fuel system components may be faulty.	Repair short in engine wire harness OR test and repair the fuel system components.

FORD LRG-425 FAULT CODES

Code	Problem	Cause	Solution
161	System Voltage Low	Battery is faulty OR alternator is not charging OR battery supply wiring to ECM is open or shorted.	Replace battery OR repair alternator OR repair battery supply wiring to ECM.
162	System Voltage High	Alternator is overcharging the battery when engine RPM is greater than 1500 rpm.	Repair or replace the alternator.
211	IAT High Voltage	IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too cold.	Repair wiring and/or connections OR replace sensor OR direct warmer air into air intake.
212	IAT Low Voltage	IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too hot.	Repair wiring and/or connections OR replace sensor OR direct cooler air into air intake.
213	IAT Higher Than Expected (1)	Air intake temperature is greater than 200° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.	Check air intake system for damage and proper routing of air intake components OR replace the IAT sensor.
214	IAT Higher Than Expected (2)	Air intake temperature is greater than 210° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.	
215	Oil Pressure Low	Faulty oil pressure sensor OR sensor wiring and/or connections open or shorted OR engine oil level too low.	Replace oil pressure sensor OR repair sensor wiring and/or connections OR fill engine oil level to specification.
221	CHT/ECT High Voltage	Engine cooling system is malfunctioning OR sensor wires and/or connections open or shorted OR sensor is faulty.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor.
222	CHT/ECT Low Voltage	Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
223	CHT Higher Than Expected (1)	Coolant temperature at the cylinder head is 240° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	
224	CHT Higher Than Expected (2)	Coolant temperature at the cylinder head is 250° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	
231	MAP High Pressure	Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.	Repair wiring and/or connections to sensor OR replace MAP sensor.
232	MAP Low Voltage	Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.	
234	BP High Pressure	MAP sensor is faulty OR ECM is faulty.	Replace MAP sensor OR replace the ECM.
235	BP Low Pressure	MAP sensor is faulty OR ECM is faulty.	
242	Crank Sync Noise	Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.
243	Never Crank Synced At Start	Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	
244	Camshaft Sensor Loss	Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	

FORD LRG-425 FAULT CODES

Code	Problem	Cause	Solution
245	Camshaft Sensor Noise	Camshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.
253	Knock Sensor Open	Knock sensor wiring and/or connections open or shorted OR sensor is faulty.	Repair wiring and/or connections to knock sensor OR replace knock sensor.
254	Excessive Knock Signal	Knock sensor wiring and/or connections open or shorted OR there is excessive engine vibration OR sensor is faulty.	Check for excessive engine vibration OR repair wiring and/or connections to knock sensor OR replace knock sensor.
311	Injector Driver #1 Open	Open wiring and/or connections to fuel injector #1 OR fuel injector #1 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #1 OR replace fuel injector #1 OR replace the ECM.
312	Injector Driver #1 Shorted	Wiring and/or connections to fuel injector #1 is shorted OR fuel injector #1 is faulty OR ECM is faulty.	
313	Injector Driver #2 Open	Open wiring and/or connections to fuel injector #2 OR fuel injector #2 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #2 OR replace fuel injector #2 OR replace the ECM.
314	Injector Driver #2 Shorted	Wiring and/or connections to fuel injector #2 is shorted OR fuel injector #2 is faulty OR ECM is faulty.	
315	Injector Driver #3 Open	Open wiring and/or connections to fuel injector #3 OR fuel injector #3 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #3 OR replace fuel injector #3 OR replace the ECM.
316	Injector Driver #3 Shorted	Wiring and/or connections to fuel injector #3 is shorted OR fuel injector #3 is faulty OR ECM is faulty.	
321	Injector Driver #4 Open	Open wiring and/or connections to fuel injector #4 OR fuel injector #4 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #4 OR replace fuel injector #4 OR replace the ECM.
322	Injector Driver #4 Shorted	Wiring and/or connections to fuel injector #4 is shorted OR fuel injector #4 is faulty OR ECM is faulty.	
351	Fuel Pump Loop Open or High Side Short to Ground	Open wiring and/or connections to fuel pump OR fuel pump power shorted to ground OR fuel pump is faulty.	Repair wiring and/or connections to fuel pump OR replace fuel pump.
352	Fuel Pump High Side Shorted to Power	Wiring and/or connections to fuel pump shorted to power OR fuel pump is faulty.	
353	MegaJector Delivery Pressure Higher Than Expected	Fuel pressure too high OR LPG lockoff not opening completely OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.	Check fuel pressure OR repair LPG lockoff OR repair the line between the MegaJector and carburetor OR repair engine cooling system OR replace the MegaJector.
354	MegaJector Delivery Pressure Lower Than Expected	Fuel pressure too low OR LPG lockoff not opening completely OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.	
355	MegaJector Communication Lost	The ECM doesn't get any response from the MegaJector, or an incorrect response for 500ms period or longer.	Check CAN circuits for continuity and shorts to power or ground and for continuity and repair as necessary OR replace the MegaJector.
361	MegaJector Voltage Supply High	The MegaJector detects voltage greater than 18 volts for 5 seconds anytime the engine is cranking or running.	Repair charging system OR replace the MegaJector.
362	MegaJector Voltage Supply Low	The MegaJector detects voltage less than 9.5 volts for 5 seconds anytime the engine is cranking or running.	Repair VBAT power or ground circuit to ECM and MegaJector OR replace battery OR repair charging system OR replace the MegaJector.

FORD LRG-425 FAULT CODES

Code	Problem	Cause	Solution
363	MegaJector Internal Actuator Fault Detection	The MegaJector detects an internal fault. Open or short in power, ground or CAN circuits.	Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.
364	MegaJector Internal Circuitry Fault Detection	The MegaJector detects an internal circuitry failure. Open or short in power, ground or CAN circuits.	
365	MegaJector Internal Communication Fault Detection	The MegaJector detects an internal communications failure. Open or short in power, ground or CAN circuits.	
411	Coil Driver #1 Open	Open wiring and/or connections to ignition coil #1 OR ignition coil #1 is faulty.	Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.
412	Coil Driver #1 Shorted	Wiring and/or connections to ignition coil #1 shorted OR ignition coil #1 is faulty	
413	Coil Driver #2 Open	Open wiring and/or connections to ignition coil #2 OR ignition coil #2 is faulty.	Repair wiring and/or connections to ignition coil #2 OR replace ignition coil #2.
414	Coil Driver #2 Shorted	Wiring and/or connections to ignition coil #2 shorted OR ignition coil #2 is faulty	
511	FPP1 High Voltage	Not used.	If this fault appears on your machine, contact the Genie Industries Service Department.
512	FPP1 Low Voltage		
513	FPP1 Higher than IVS Limit		
514	FPP1 Lower than IVS Limit		
521	FPP2 High Voltage		
522	FPP2 High Voltage		
531	TPS1 (Signal Voltage) High	The #1 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #1 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #1.
532	TPS1 (Signal Voltage) Low		
533	TPS2 (Signal Voltage) High	The #2 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #2 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #2.
534	TPS2 (Signal Voltage) Low		
535	TPS1 Higher than TPS2	The throttle position sensor wiring and/or connections for either TPS1 or TPS2 open or shorted OR there is a poor system ground connection OR one or both throttle position sensors are faulty.	Be sure engine harness wiring and connections are in place and secure OR repair wiring and/or connections to one or both TPS sensors OR replace one or both TPS sensors.
536	TPS1 Lower than TPS2		
537	Throttle Unable to Open	Governor actuator is stuck closed OR wiring and/or connections open or shorted OR governor actuator is faulty.	Repair wiring and/or connections to governor actuator OR replace the governor actuator.
538	Throttle Unable to Close	Governor actuator is stuck open OR wiring and/or connections open or shorted OR governor actuator is faulty.	
545	Governor Interlock Failure	Engine harness wiring and/or connections open or shorted OR there is a poor system ground connection OR ECM is faulty.	Repair wiring and/or connections in engine harness OR replace the ECM.

FORD LRG-425 FAULT CODES

Code	Problem	Cause	Solution
551	Max Governor Speed Override	ECM needs to be re-programmed OR throttle is sticking open OR there are air leaks between the throttle body and cylinder head.	Re-program ECM OR repair binding throttle operation OR repair any air leaks between the throttle body and cylinder head.
552	FPP1 Low Voltage		
553	FPP1 Higher than IVS Limit		
611	COP Failure	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
612	Invalid Interrupt		
613	A/D Loss		
614	RTI 1 Loss		
615	Flash Checksum Invalid		
616	RAM Failure		
631	External 5V DC Ref Lower than Expected	Engine harness wiring and/or connections open or shorted to ground OR there is a faulty engine sensor OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts OR locate and troubleshoot or repair faulty engine sensor OR replace ECM.
632	External 5V DC Ref Higher than Expected		
655	RTI2 Loss	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
656	RTI3 Loss		

FORD DSG-423 FAULT CODES

Ford DSG-423 EFI Engine

How to Retrieve Ford Engine 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.

Note: Perform this procedure with the key switch in the off position.

1 Open the ground controls side cover and locate the run/test toggle switch on the side of the ground control box.

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

3 Quickly activate and release the start toggle switch/button. Do not start the engine.

4 Move and hold the run/test toggle switch to the test 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.

Note: Before the fault codes are displayed, the check engine light will blink a code 123 three times. After the fault codes, the check engine light will blink a code 123 three times again indicating the end of the stored codes.

Note: If any fault codes are present, the ECM will blink a three digit code three times for each code stored in memory. It will blink the first digit of a three digit code, pause, blink the second digit, pause, and then blink the third digit. For example: the check engine light blinks 5 consecutive times, blinks 3 times and then 1 time. That would indicate code 531.

Note: 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. Refer to, *How to Clear Engine Fault Codes from the ECM.*

How to Clear Engine Fault Codes from the ECM

Note: 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/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Connect the negative battery cable to the battery.

FORD DSG-423 FAULT CODES

Code	Description
111	CL (closed loop) high LPG
112	EGO open / lazy pre-cat 1
113	EGO open / lazy pre-cat 2/post-cat 1
114	EGO open / lazy post-cat 1
115	EGO open / lazy post-cat 2
121	CL (closed loop) high gasoline bank 1
122	CL (closed loop) low gasoline bank 1
124	CL (closed loop) low LPG
133	Gasoline catalyst monitor 1
134	LPG catalyst monitor
141	AL (adaptive learning) high gasoline bank 1
142	AL (adaptive learning) low gasoline bank 1
143	AL (adaptive learning) high LPG
144	AL (adaptive learning) low LPG
161	Battery voltage high
162	Battery voltage low
163	AUX analog PD1 high
164	AUX analog PD1 low
165	AUX analog PU3 high
166	AUX analog PU3 low
167	AUX analog PUD1 high
168	AUX analog PUD1 low
171	AUX analog PUD2 high
172	AUX analog PUD2 low
173	AUX analog PUD3 high
174	AUX analog PUD3 low
181	AUX DIG1 high
182	AUX DIG1 low
183	AUX DIG2 high
184	AUX DIG2 low
185	AUX DIG3 high
186	AUX DIG3 low
211	IAT (intake air temperature) high voltage
212	IAT (intake air temperature) low voltage
213	IAT (intake air temperature) higher than expected 1
214	IAT (intake air temperature) higher than expected 2
215	Oil pressure low
221	ECT/CHT (engine/cylinder head temp) high voltage
222	ECT/CHT (engine/cylinder head temp) low voltage
223	CHT higher than expected 1
224	CHT higher than expected 2
225	ECT higher than expected 1
226	ECT higher than expected 2
231	MAP (manifold absolute pressure) high pressure
232	MAP (manifold absolute pressure) low pressure
234	BP (barometric pressure) high pressure
235	BP (barometric pressure) low pressure
242	Crank sync noise
243	Never crank synced at start
244	Cam loss
245	Cam sync noise
246	Crank loss
253	Knock 1-2 sensor open 1
254	Knock 1-2 excessive signal 1

FORD DSG-423 FAULT CODES

Code	Description
261	FP (fuel pressure) high voltage
262	FP (fuel pressure) low voltage
271	FT (fuel temperature) gasoline high voltage
272	FT (fuel temperature) gasoline low voltage
273	FT (fuel temperature) gaseous fuel high voltage
274	FT (fuel temperature) gaseous fuel low voltage
311	Injector loop open OR low-side short to ground 1
312	Injector coil shorted 1
313	Injector loop open OR low-side short to ground 2
314	Injector coil shorted 2
315	Injector loop open OR low-side short to ground 3
316	Injector coil shorted 3
321	Injector loop open OR low-side short to ground 4
322	Injector coil shorted 4
351	FPump motor loop open OR high-side shorted to ground
352	Fpump motor high-side shorted to power
353	EPR delivery pressure higher than expected
354	EPR delivery pressure lower than expected
355	EPR comm lost
359	Fuel run-out longer than expected
361	EPR voltage supply high
362	EPR voltage supply low
363	EPR internal actuator fault detection
364	EPR internal circuitry fault detection
365	EPR internal comm fault detection
411	Primary loop open OR low-side short to ground 1
412	Primary coil shorted 1
413	Primary loop open OR low-side short to ground 2
414	Primary coil shorted 2
415	Primary loop open OR low-side short to ground 3
416	Primary coil shorted 3
421	Primary loop open OR low-side short to ground 4
422	Primary coil shorted 4

Code	Description
531	TPS1 (throttle position sensor) high voltage
532	TPS1 (throttle position sensor) low voltage
533	TPS2 (throttle position sensor) high voltage
534	TPS2 (throttle position sensor) low voltage
535	TPS1 (throttle position sensor) higher than TPS2
536	TPS1 (throttle position sensor) lower than TPS2
537	Unable to reach higher TPS (throttle position sensor)
538	Unable to reach lower TPS (throttle position sensor)
539	TPS 1-2 simultaneous voltages
541	AUX analog PU1 high
542	AUX analog PU1 low
543	AUX analog PU2 high
544	AUX analog PU2 low
551	Max govern speed override
552	Fuel rev limit
553	Spark rev limit
611	COP failure
612	Invalid interrupt
613	A/D loss
614	RTI 1 loss
615	Flash checksum invalid

FORD DSG-423 FAULT CODES

Code	Description
616	RAM failure
631	5VE1 low voltage
632	5VE1 high voltage
633	5VE2 high voltage
634	5VE2 low voltage
635	5VE1-5VE2 simultaneous out-of-range
641	Rx inactive
642	Rx noise
643	Invalid packet format
644	Shutdown request
646	CAN Tx failure
647	CAN Rx failure
648	CAN address conflict failure
655	RTI 2 loss
656	RTI 3 loss
711	Relay control ground short
712	Relay coil open
713	Relay coil short to power
714	Fpump relay control ground short
715	Fpump relay coil open
716	Fpump relay coil short to power
721	Start relay control ground short
722	Start relay coil open
723	Start relay coil short to power
731	PWM1-gauge1 open / ground short
732	PWM1-gauge1 short to power
733	PWM2-gauge2 open / ground short
734	PWM2-gauge2 short to power
735	PWM3-gauge3 open / ground short
736	PWM3-gauge3 short to power
741	PWM4 open / ground short
742	PWM4 short to power
743	PWM5 open / ground short

Code	Description
744	PWM5 short to power
761	MIL (malfunction indicator light) control ground short
762	MIL (malfunction indicator light) open
763	MIL (malfunction indicator light) control short to power
771	Tach output ground short
772	Tach output short to power
1629	J1939 TSC1 message receipt lost
1630	J1939 ETC message receipt lost

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford DSG-423 EFI Service Manual* (EDI part number 1060040). Genie part number 119494.

Ford DSG 423 EFI Operator Handbook
Genie part number 119488

FORD MSG-425 FAULT CODES

Ford MSG-425 Engine Fault Codes

How to Retrieve Ford Engine 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.

Note: Perform this procedure with the key switch in the off position.

1 Locate the run/test toggle switch on the side of the ground control box.

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

3 Quickly activate and release the start toggle switch/button. Do not start the engine.

4 Move and hold the run/test toggle switch to the test 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.

Note: Before the fault codes are displayed, the check engine light will blink a code 1-6-5-4 three times. After the fault codes, the check engine light will blink a code 1-6-5-4 three times again indicating the end of the stored codes.

Note: If any fault codes are present, the ECM will blink a three digit code three times for each code stored in memory. It will blink the first digit of a three digit code, pause, blink the second digit, pause, and then blink the third digit. For example: the check engine light blinks 5 consecutive times, blinks 3 times and then 1 time. That would indicate code 531.

Note: 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. Refer to, *How to Clear Engine Fault Codes from the ECM.*

How to Clear Engine Fault Codes from the ECM

Note: 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/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Connect the negative battery cable to the battery.

FORD MSG-425 FAULT CODES

Code	Description
16	Never crank synced at start
91	FP low voltage
92	FP high voltage
107	MAP Low Voltage
108	MAP High Pressure
111	IAT higher than expected 1
112	IAT low voltage
113	IAT high voltage
116	ECT higher than expected 1
117	ECT/CHT Low Voltage
118	ECT/CHT High Voltage
121	TPS1 lower than TPS2
122	TPS1 low voltage
123	TPS1 high voltage
127	IAT higher than expected 2
129	BP low pressure
134	EGO open/lazy pre-cat 1
140	EGO open/lazy post-cat 1
154	EGO open/lazy pre-cat 2/post-cat 1
160	EGO open/lazy post-cat 2
171	AL high gasoline bank1
172	AL low gasoline bank1

Code	Description
174	AL high gasoline bank2
175	AL low gasoline bank2
182	FT Gasoline Low Voltage
183	FT Gasoline High Voltage
187	FT Gaseaous fuel low voltage
188	FT Gaseaous fuel high voltage
217	ECT higher than expected 2
219	Max govern speed override
221	TPS1 higher than TPS2
222	TPS2 low voltage
223	TPS2 high voltage
236	TIP Active
237	TIP Low Voltage
238	TIP High Voltage
261	Injector Loop Open or Low-side short to Ground
262	Injector Coil Shorted
264	Injector Loop Open or Low-side short to Ground
265	Injector Coil Shorted
267	Injector Loop Open or Low-side short to Ground

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

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162067

FORD MSG-425 FAULT CODES

Code	Description
268	Injector Coil Shorted
270	Injector Loop Open or Low-side short to Ground
271	Injector Coil Shorted
273	Injector Loop Open or Low-side short to Ground
274	Injector Coil Shorted
276	Injector Loop Open or Low-side short to Ground
277	Injector Coil Shorted
279	Injector Loop Open or Low-side short to Ground
280	Injector Coil Shorted
282	Injector Loop Open or Low-side short to Ground
283	Injector Coil Shorted
285	Injector Loop Open or Low-side short to Ground
286	Injector Coil Shorted
288	Injector Loop Open or Low-side short to Ground
289	Injector Coil Shorted

Code	Description
301	Emissions/catalyst damaging misfire
302	Emissions/catalyst damaging misfire
303	Emissions/catalyst damaging misfire
304	Emissions/catalyst damaging misfire
305	Emissions/catalyst damaging misfire
306	Emissions/catalyst damaging misfire
307	Emissions/catalyst damaging misfire
308	Emissions/catalyst damaging misfire
326	Knock 1 Excessive Signal
327	Knock 1 sensor Open
331	Knock 2 Excessive Signal
332	Knock 2 sensor Open
336	Crank sync noise
337	Crank loss
341	Cam sync noise
342	Cam loss
420	Gasoline cat monitor
430	Gasoline cat monitor
524	Oil pressure low
562	Battery Voltage Low
563	Battery Voltage High

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

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Genie part number
162067

FORD MSG-425 FAULT CODES

Code	Description
601	Flash checksum invalid
604	RAM failure
606	COP failure
615	Start relay coil open
616	Start relay control ground short
617	Start relay coil short to power
627	Fpump relay coil open
628	FPump motor loop open or high-side shorted to ground
628	Fpump relay control ground short
629	FPump motor high-side shorted to power
629	Fpump relay coil short to power
642	5VE1 low voltage
643	5VE1 high voltage
650	MIL open
652	5VE2 low voltage
653	5VE2 high voltage
685	Relay Coil Open
686	Relay Control ground short
687	Relay coil short to power
1111	Fuel rev limit
1112	Spark rev limit
1121	FPP1/2 simultaneous voltages out of range
1122	FPP1/2 do not match each other or the IVS
1151	CL high LPG
1152	CL low LPG
1153	CL high NG
1154	CL low NG
1155	CL high gasoline bank1
1156	CL low gasoline bank1
1157	CL high gasoline bank2
1158	CL low gasoline bank2
1161	AL high LPG
1162	AL low LPG
1163	AL high NG
1164	AL low NG
1165	LPG cat monitor
1166	NG cat monitor
1171	Megajector delivery pressure higher than expected
1172	Megajector delivery pressure lower than expected
1173	Megajector comm lost
1174	Megajector voltage supply high
1175	Megajector voltage supply low
1176	Megajector internal actuator fault detection

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

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Genie part number
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FORD MSG-425 FAULT CODES

Code	Description
1177	Megajector internal circuitry fault detection
1178	Megajector internal comm fault detection
1311	Misfire detected
1312	Misfire detected
1313	Misfire detected
1314	Misfire detected
1315	Misfire detected
1316	Misfire detected
1317	Misfire detected
1318	Misfire detected
1511	AUX analog PU1 high
1512	AUX analog PU1 low
1513	AUX analog PU2 high
1514	AUX analog PU2 low
1515	AUX analog PD1 high
1516	AUX analog PD1 low
1517	AUX analog PU3 high
1518	AUX analog PU3 low
1521	CHT higher than expected 1
1522	CHT higher than expected 2
1531	IVS/Brake/Trans-Park interlock failure

Code	Description
1541	AUX analog PUD1 high
1542	AUX analog PUD1 low
1543	AUX analog PUD2 high
1544	AUX analog PUD2 low
1545	AUX analog PUD3 high
1551	AUX DIG1 high
1552	AUX DIG1 low
1553	AUX DIG2 high
1554	AUX DIG2 low
1555	AUX DIG3 high
1556	AUX DIG3 low
1561	AUX analog PD2 high
1562	AUX analog PD2 low
1563	AUX analog PD3 high
1564	AUX analog PD3 low
1611	5VE 1/2 simultaneous out of range
1612	RTI 1 loss
1613	RTI 2 loss
1614	RTI 3 loss
1615	A/D loss
1616	Invalid interrupt
1621	Rx Inactive
1622	Rx Noise

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

Ford MSG-425/DSG-423 EFI Diagnostic Manual
Genie part number
162067

FORD MSG-425 FAULT CODES

Code	Description
1623	Invalid Packet Format
1624	Shutdown Request
1625	Shutdown Request
1626	CAN Tx failure
1627	CAN Rx failure
1628	CAN addresss conflict failure
1629	J1939 TSC1 message receipt lost
1630	J1939 ETC message receipt lost
1631	PWM1-Gauge1 open / ground short
1632	PWM1-Gauge1 short to power
1633	PWM2-Gauge2 open /ground short
1634	PWM2-Gauge2 short to power
1635	PWM3-Gauge3 open / ground short
1636	PWM3-Gauge3 short to power
1641	Buzzer control ground short
1642	Buzzer open
1643	Buzzer control short to power
1644	MIL control ground short
1645	MIL control short to power
2111	Unable to reach lower TPS
2112	Unable to reach higher TPS
2115	FPP1 higher than IVS limit
2116	FPP2 higher than IVS limit

Code	Description
2120	FPP1 invalid voltage and FPP2 disagrees with IVS
2121	FPP1 lower than FPP2
2122	FPP1 high voltage
2123	FPP1 low voltage
2125	FPP2 invalid voltage and FPP1 disagrees with IVS
2126	FPP1 higher than FPP2
2127	FPP2 low voltage
2128	FPP2 high voltage
2130	IVS stuck at-idle, FPP1/2 match
2131	IVS stuck off-idle, FPP1/2 match
2135	TPS1/2 simultaneous voltages out of range
2139	FPP1 lower than IVS limit
2140	FPP2 lower than IVS limit
2229	BP high pressure
2300	Primary Loop Open or Low-side Short to Ground
2301	Primary Coil Shorted
2303	Primary Loop Open or Low-side Short to Ground
2304	Primary Coil Shorted
2306	Primary Loop Open or Low-side Short to Ground
2307	Primary Coil Shorted

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

Ford MSG-425/DSG-423 EFI Diagnostic Manual
Genie part number
162067

FORD MSG-425 FAULT CODES

Code	Description
2309	Primary Loop Open or Low-side Short to Ground
2310	Primary Coil Shorted
2312	Primary Loop Open or Low-side Short to Ground
2313	Primary Coil Shorted
2315	Primary Loop Open or Low-side Short to Ground
2316	Primary Coil Shorted
2318	Primary Loop Open or Low-side Short to Ground
2319	Primary Coil Shorted
2321	Primary Loop Open or Low-side Short to Ground
2322	Primary Coil Shorted
2618	Tach output ground short
2619	Tach output short to power

For further engine fault code troubleshooting and diagnostic information, refer to the *Ford MSG-425/Ford DSG-423 EFI Diagnostic Manual* (EDI part number 1080030).

Ford MSG-425/DSG-423 EFI Diagnostic Manual
Genie part number
162067

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 in the appropriate operator's manual on your machine.
- ☑ 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.

Electrical Schematics

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

Hydraulic Schematics

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

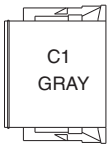
Wire Connector Legend

CABLE #1

C1 DT06-12SC

COLOR	CIRCUIT NO.	PIN NO.
RD	C27AUX	1
RD/BK	C28TTA	2
RD/WH	C29MS	3
WH	C30FWD	4
WH/BK	C31REV	5
WH/RD	C32BRK	6
BK	C33STR	7
BK/WH	C34SA	8
BK/RD	C35RPM	9
BL	C36SCC	10
BL/BK	C37SCW	11
BL/WH	C132PLI	12

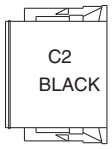
C1



C2 DT06-12SD

COLOR	CIRCUIT NO.	PIN NO.
BL/RD	OPTION	1
OR	C40LS1	2
OR/BK	C41RPM	3
OR/RD	P134PWR	4
GR	C46HRN	5
GR/BK	JDALARM	6
GR/WH	C45GEN	7
	NC	8
	NC	9
	NC	10
	NC	11
	NC	12

C2

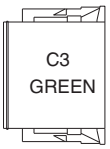


CABLE #3

C3 DT06-12SA

COLOR	CIRCUIT NO.	PIN NO.
RD	C1PBU	1
RD/BK	C2PBD	2
RD/WH	C3PBF	3
WH	C4TRL	4
WH/BK	C5TRR	5
WH/RD	C6TRF	6
BK	C7PBE	7
BK/WH	C8PBR	8
BK/RD	DLITE	9
BL	C10SBU	10
BL/BK	C11SBD	11
BL/WH	C12SBF	12

C3



A

C4 DT06-12SB

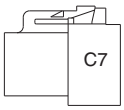
COLOR	CIRCUIT NO.	PIN NO.
BL/RD	C13DRE	1
OR	C14PLU	2
OR/BK	C15PLD	3
OR/RD	C133PLA	4
GR	C17JU	5
GR/BK	C18JD	6
GR/WH	C19JSV	7
	NC	8
	NC	9
	NC	10
	NC	11
	NC	12

C4



C7: DTP06-4S

COLOR	CIRCUIT NO.	PIN NO.
BK	P22BAT	1
WH	P23SWBAT	2
BRN	BATGND	3
	N/C	4

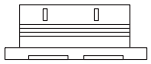


C7



FUNCTION HARNESS

	CIRCUIT NO.	COLOR
	C1PBU	RD-3
	C129DA	RD/BK-3
	C3PBF	RD/WH-3
	C2PBD	RD/BK
	C5TRR	WH/BK-3
	C6TRF	WH/RD-3
	C7PBE	BK-3
	C8PBR	BK/WH-3
	LS PWR	BL/WH-3
	C13DRE	BL/WH-3
	C134PWR	RD-3
	C14PLU	OR-3
	C15PLD	OR/BK-3
	C17JU	GR-3
	C18JD	GR/BK-3
	P23BATSR	RD
	C27AUX	RD-1
	C28TTA	RD/BK
	C36STCC	BL-1
	C37STC	BL/BK-1
	C40LS1	OR-1
	R43HRN	BK
	C45GEN	GR/WH-1
	C32TA	WH/RD-1
	C32BRK	WH/RD-1
	P23FB	RD



C5-GROUND BOX

PIN NO.	CIRCUIT NO.	FORD ENGINE	DEUTZ ENGINE	PERKINS ENGINE
1				
2	C41RPM	OR/BK	OR/BK	OR/BK
3	C107AF	WH	WH	WH
4	C45GEN	GR/WH	GR/WH	GR/WH
5	R33STR	BK	BK(14)	BK(14)
6	C27AUX	RD		
7	-	-	-	
8	C21IGN-FEH16A	WH		
9	C128RPM-FEH306	BK/RD	BK/RD	BK/RD
10	C39LP-FEH674	BL/RD		
11	VSW	WH		
12	C127TST	GR		
13	C108ESL-C24TSPS	BL/WH	WH	WH
14	C26TSR	WH/RD	WH/RD	WH/RD
15				
16	C25PS	WH/BK	WH/BK	WH/BK
17	C21IGN-FEH16A	WH		
18				
19				
20	C31REV	WH/BK	WH/BK	WH/BK
21	C30FWD	WH	WH	WH
22	C34SA		BK/WH	BK/WH
23	C32BRK	WH/RD	WH/RD	WH/RD
24	C29MS	RD/WH	RD/WH	RD/WH

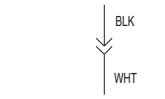
12VDC TO PLATFORM

C9 FS DT04-4P

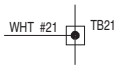
COLOR	CIRCUIT NO.	PIN NO.
BK	P22BAT	1
WH	P24BAT	2
RD	P25BAT	3
	N/C	4



Electrical Symbols Legend



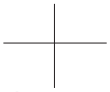
Quick disconnect terminal



T-circuits connect at terminal


T-circuits connect

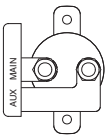

Connection no terminal


Circuits crossing no connection

Diode



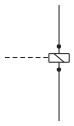
Battery



Battery separator



Circuit breaker with amperage


Coil solenoid or relay



Horn or alarm



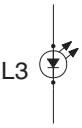
Flashing beacon



Gauge



Hour meter

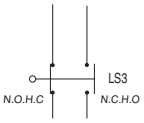


LED

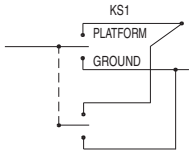


Fuse with amperage

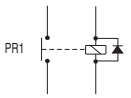

Starting aid: glow plug or flame ignitor



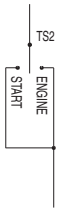
Limit switch



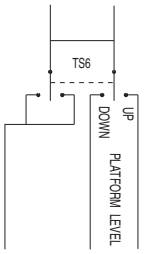
Key switch



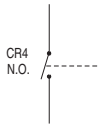
Power relay



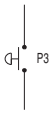
Toggle switch SPDT



Toggle switch DPDT



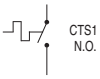
Control relay contact normally open



Horn button normally open



Oil temperature switch normally open

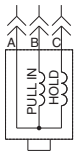


Coolant temperature switch normally open



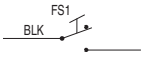
Oil pressure switch normally closed


Gauge sending unit

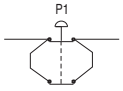


Fuel or RPM solenoid


Coil



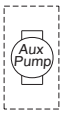
Foot switch



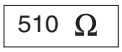
Emergency Stop button normally closed



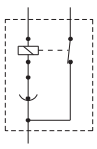
Hydraulic oil cooling fan



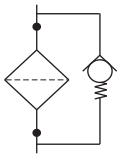
Auxiliary pump



Resistor with ohm value


Tilt sensor

Hydraulic Symbols Legend



Filter with bypass valve relief setting



Pump fixed displacement



Pump bi-directional, variable displacement



Motor bi-directional



Motor 2-speed, bi-directional



Pump prime mover (engine or motor)



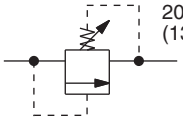
Double acting cylinder



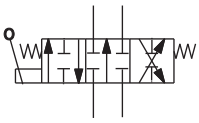
Orifice with size



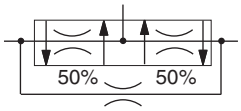
Check valve



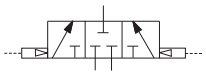
Relief valve with pressure setting



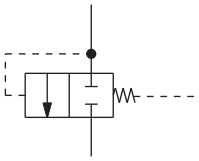
Directional valve (mechanically activated)



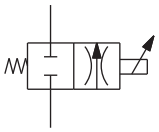
Flow divider/combiner valve with pressure balancing orifice and flow percentages



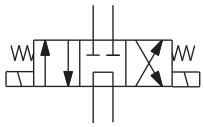
Pilot operated 3 position, 3 way, shuttle valve



Differential sensing valve



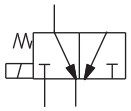
Solenoid operated proportional valve



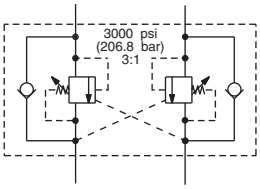
Solenoid operated 3 position, 4 way, directional valve



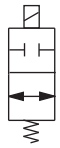
Priority flow regulator valve



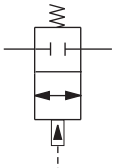
Solenoid operated 2 position, 3 way, directional valve



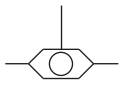
Counterbalance valve with pressure and pilot ratio



2 position, 2 way solenoid valve



Directional valve pilot operated 2 position, 2 way



2 position, 3 way, shuttle valve



Hydraulic oil cooler



Brake

Electrical Abbreviations Legend

Item	Description
B	**Battery**
B1	Engine Start - 12V DC
C	**Connector**
C7	Power to platform, 12v cable connector
C9	Footswitch input connector
C54	Options connector
CB	**Circuit Breaker**
CB1	Circuit breaker, engine, 15a
CB2	Circuit breaker, controls, 15a
CB7	Circuit breaker, controls, 10a Engine throttle solenoid
CR	**Control Relay**
CR1	Start relay
CR2	Ingition power relay
CR4	High idle relay
CR5	Horn relay
CR13	Jib relay (jib option)
CR14	Jib relay (jib option)
CR17	Hydraulic oil cooling fan (option)
CR23	Drive light enable
CR27	Brake circuit relay (lift/drive option)
CR30	Limit switch relay (lift/drive option)
CR76	Load sense aux recovery (AS models)
CR51	Aircraft package (option)
G	**Gauge**
G1	Battery Charge Indicator
G2	Engine oil pressure
G3	Engine coolant temp.
G4	Engine oil temp.
G6	Hour meter

Item	Description
H	**Horn or Alarm**
H1	Tilt/load sense alarm
H4	Descent (ground)
H6	Load sense (ground)
JC	**Joystick**
JC1	Boom proportional joystick: secondary boom up/down
JC2	Boom proportional joystick: primary up/down, turntable rotate
JC3	Drive proportional joystick
KS	**Keyswitch**
KS1	Key switch
L	**LED or Light**
L1	Drive enable led
L2	Check engine led
L4	Platform overload led (ce only)
L29	Drive lights
L48	Tilt alarm led (ansi/csa only)
LS	**Limit Switch**
LS1	Primary boom extend
LS2	Primary boom up
LS3	Drive enable
LS4	Secondary boom up
LS18	CE limit switch

Electrical Abbreviations Legend

Item	Description
M	**Motor**
M2	Auxiliary pump
M3	Engine starter
M4	Fuel pump
P	**Button**
P1	Red emergency stop button
P2	Emergency stop button
P3	Horn Button
P4	Function enable button
PR	**Power Relay**
PR1	Auxiliary pump (m2)
PR2	Engine starter (m3)
PR3	Starting aid / glow plugs
PR4	Function pump (m5)
R	**Resistor**
R4	Speed limiting variable resistor 20 ohms
R14	Up/down speed resister 7.5 ohms
SW	**Switch**
SW2	Engine oil pressure
SW3	Engine oil tempurature

Item	Description
TS	**Toggle Switch**
TS1	Auxiliary pump switch
TS2	Start engine switch
TS3	Fuel select switch (ford efi only)
TS4	Hi/low rpm switch
TS6	Glow plug switch
TS7	Platform rotate switch
TS8	Jib rotate switch (jib option)
TS9	Platform level switch
TS13	Primary boom extend/retract switch
TS14	Drive speed switch
TS15	Drive enable switch
TS43	Heater switch (option)
TS46	Proximity kill switch (option)
TS47	Generator switch (option)
TS51	Auxiliary pump toggle switch
TS52	Engine start toggle switch
TS53	Fuel select toggle switch
TS54	Rpm select toggle switch
TS56	Glow plug toggle switch
TS57	Platform rotate toggle switch
TS58	Jib boom up/down toggle switch (option)
TS59	Platform level up/down toggle switch
TS60	Secondary boom up/down toggle switch
TS61	Primary boom up/down toggle switch
TS62	Turntable rotate toggle switch
TS63	Primary boom extend/retract toggle switch
TS64	Run/test toggle switch (Ford)
TS74	Run/test toggle switch (Deutz)

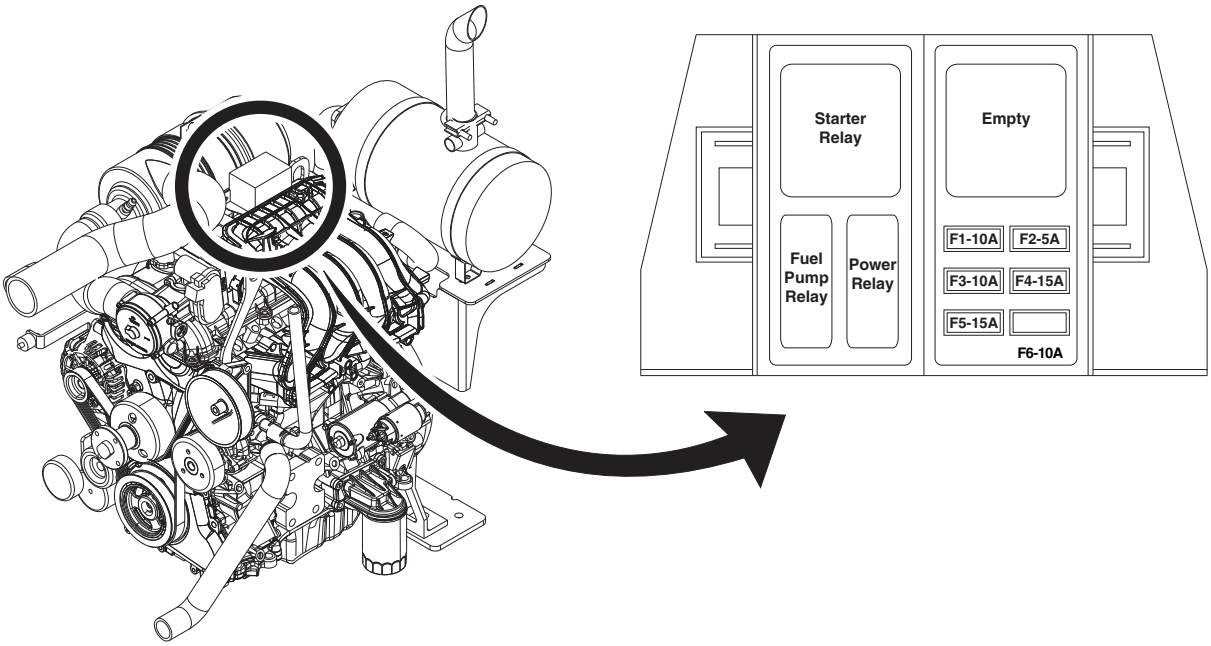
Electrical Abbreviations Legend

Item	Description
U	Module
U1	Ignition start module
U4	EDC - drive pump
U13	Alc 500 joystick controller card
U18	Control module
U33	Load sense module
U34	Time delay relay - 2 seconds, 10A
U35	Time delay relay
U38	Time delay relay
U39	J1939 Ground Control Box Display
X	ALC500 connectors
X101	ALC500 power connector
X101	ALC500 input/out connectors
X102	ALC500 input/out connectors
X103	ALC500 input/out connectors
X104	ALC500 input/out connectors
X105	ALC500 input/out connectors
X106	ALC500 input/out connectors
X107	ALC500 input/out connectors
X108	ALC500 input/out connectors
X109	ALC500 input/out connectors
X1-4	Circuit splice

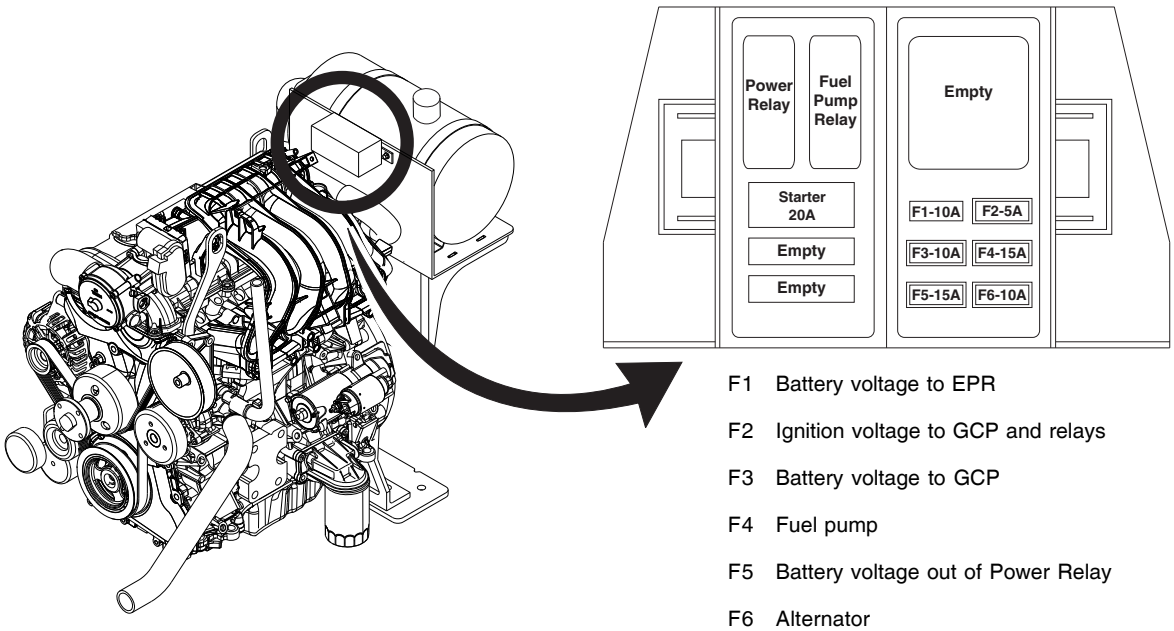
Wire Color Legend	
Item	Description
BL	Blue
BK	Black
BR	Brown
GN	Green
OR	Orange
PP	Purple
RD	Red
WH	White
YL	Yellow
BL/RD	Blue/Red
BL/WH	Blue/White
BK/RD	Black/Red
OR/WH	Orange/White
RD/BK	Red/Black
RD/WH	Red/White
WH/BL	White/Blue
WH/BK	White/Black
WH/RD	White/Red
WH/YL	White/Yellow
YL/BK	Yellow/Black

Ford Engine Relay Layout

Ford DSG-423



Ford MSG-425 EFI



F1 Battery voltage to EPR

F2 Ignition voltage to GCP and relays

F3 Battery voltage to GCP

F4 Fuel pump

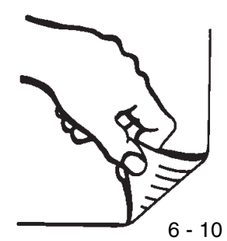
F5 Battery voltage out of Power Relay

F6 Alternator

Diesel Electrical Schematic - View 1

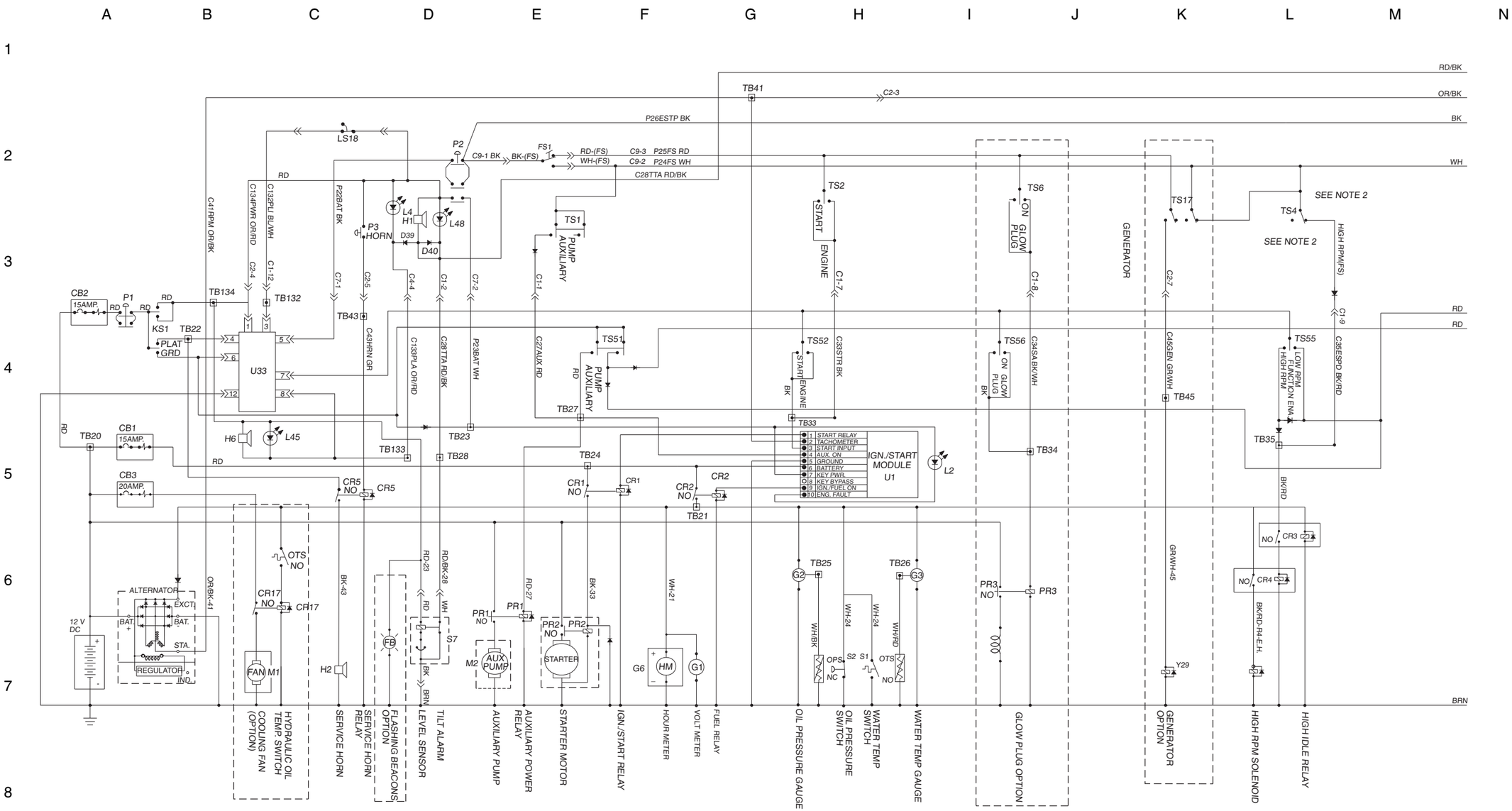
(before serial number 4496)





Diesel Electrical Schematic - View 1

(before serial number 4496)



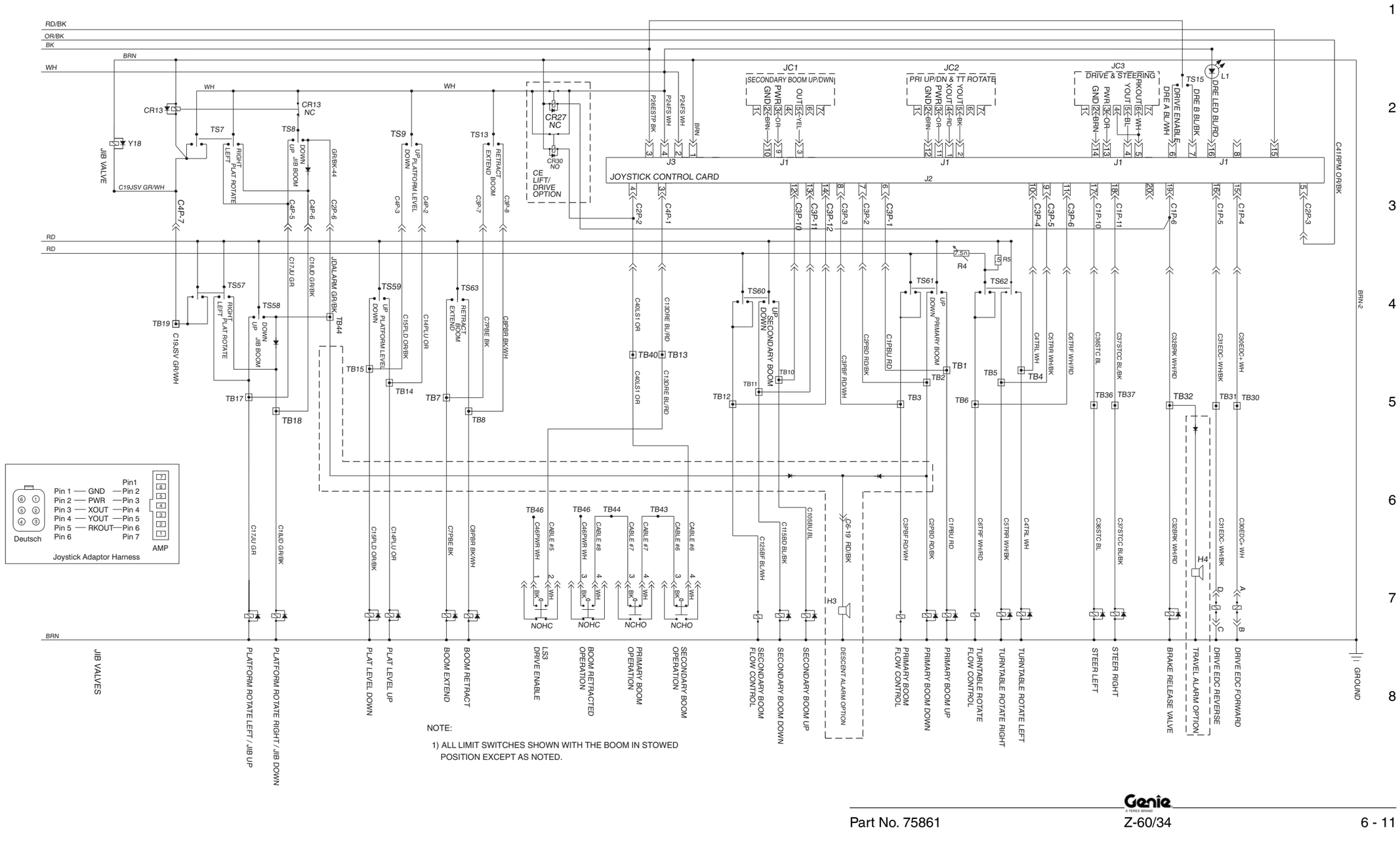
NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

2) THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION.

Diesel Electrical Schematic - View 2

(before serial number 4496)

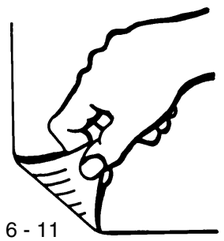


NOTE:

1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

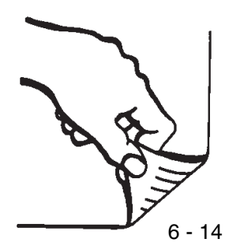
Diesel Electrical Schematic - View 2

(before serial number 4496)

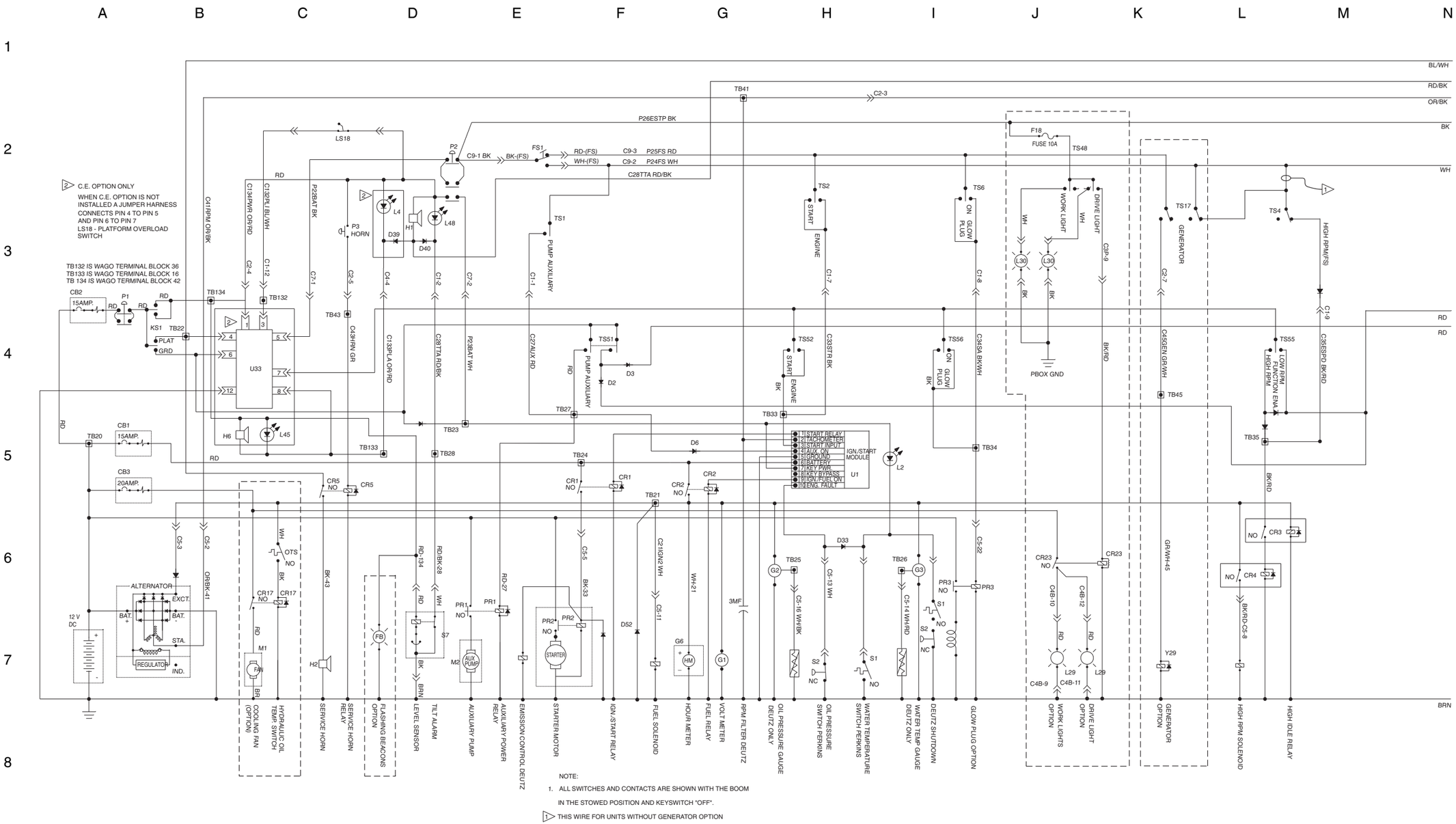


Diesel Electrical Schematic - View 1
(from serial number 4496 to serial number 5325)





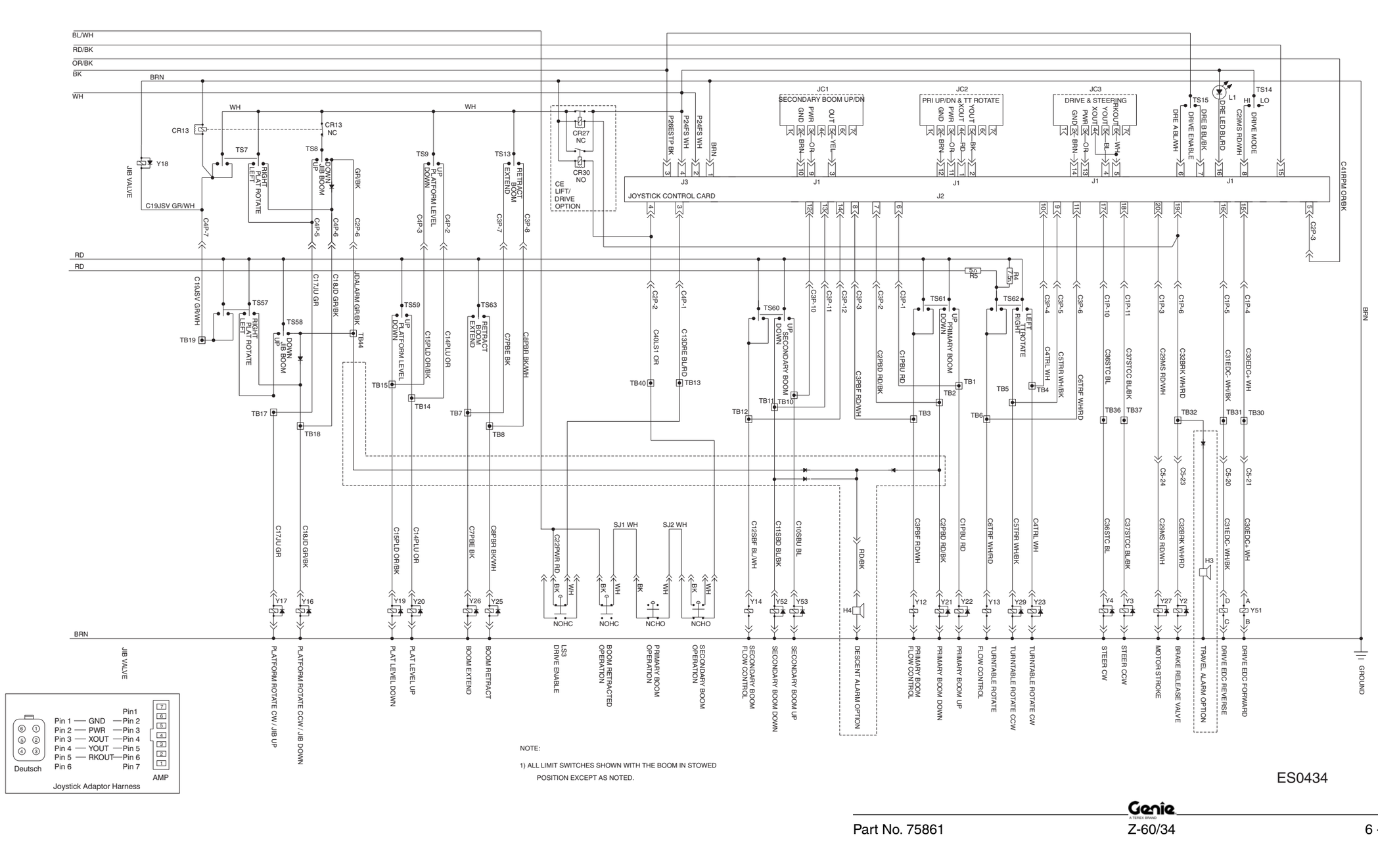
Diesel Electrical Schematic - View 1
(from serial number 4496 to serial number 5325)



NOTE:
1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

1 THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION

Diesel Electrical Schematic - View 2
(from serial number 4496 to serial number 5325)

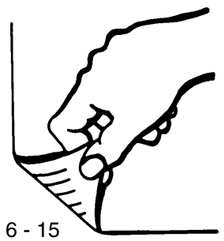


NOTE:

1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

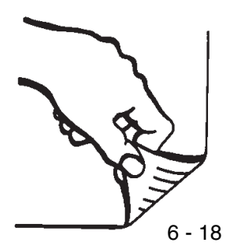
ES0434

Diesel Electrical Schematic - View 2
(from serial number 4496 to serial number 5325)

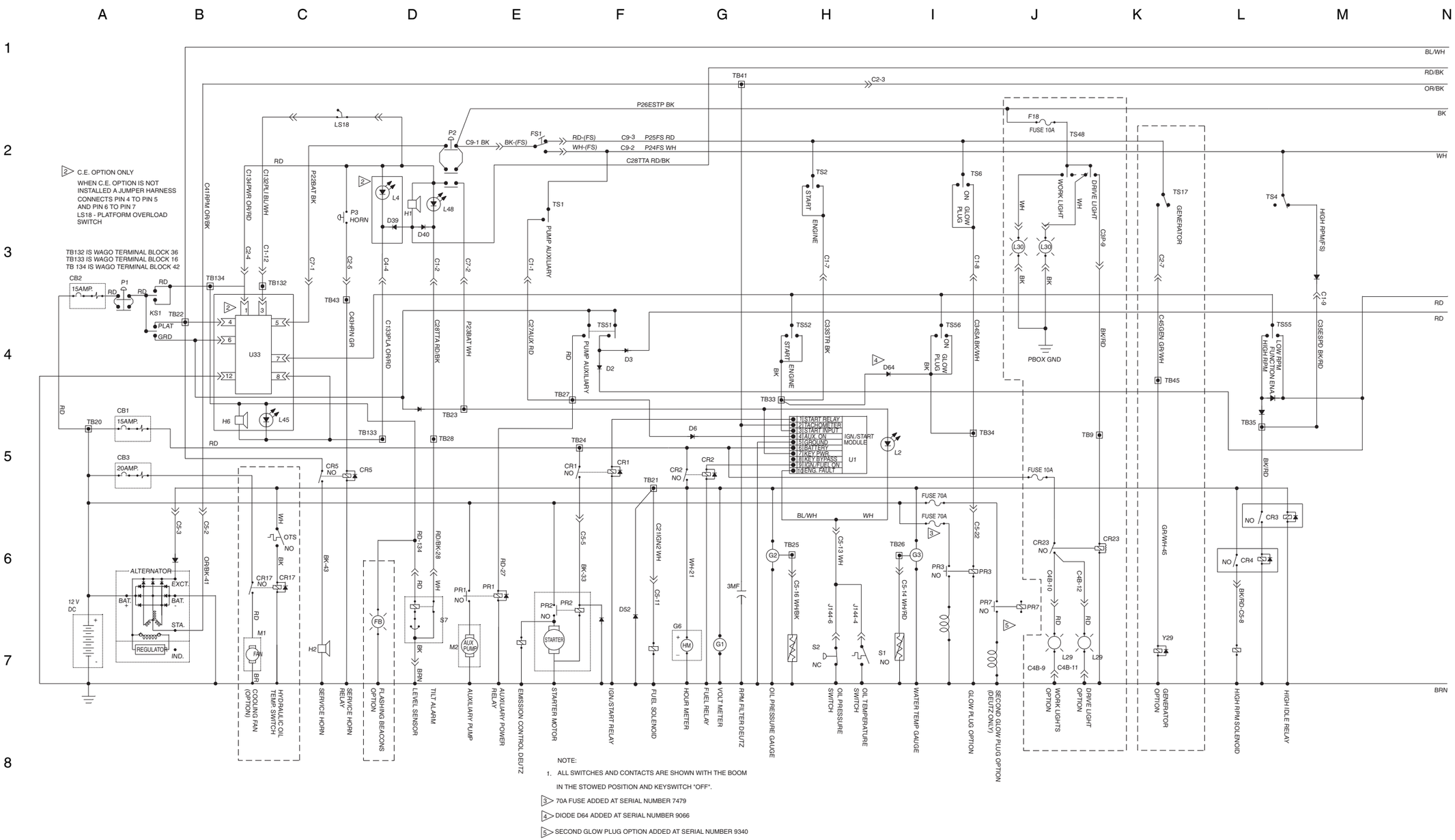


Diesel Electrical Schematic - View 1
(from serial number 5326 to serial number 9798)





Diesel Electrical Schematic - View 1
(from serial number 5326 to serial number 9798)



NOTE:

1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

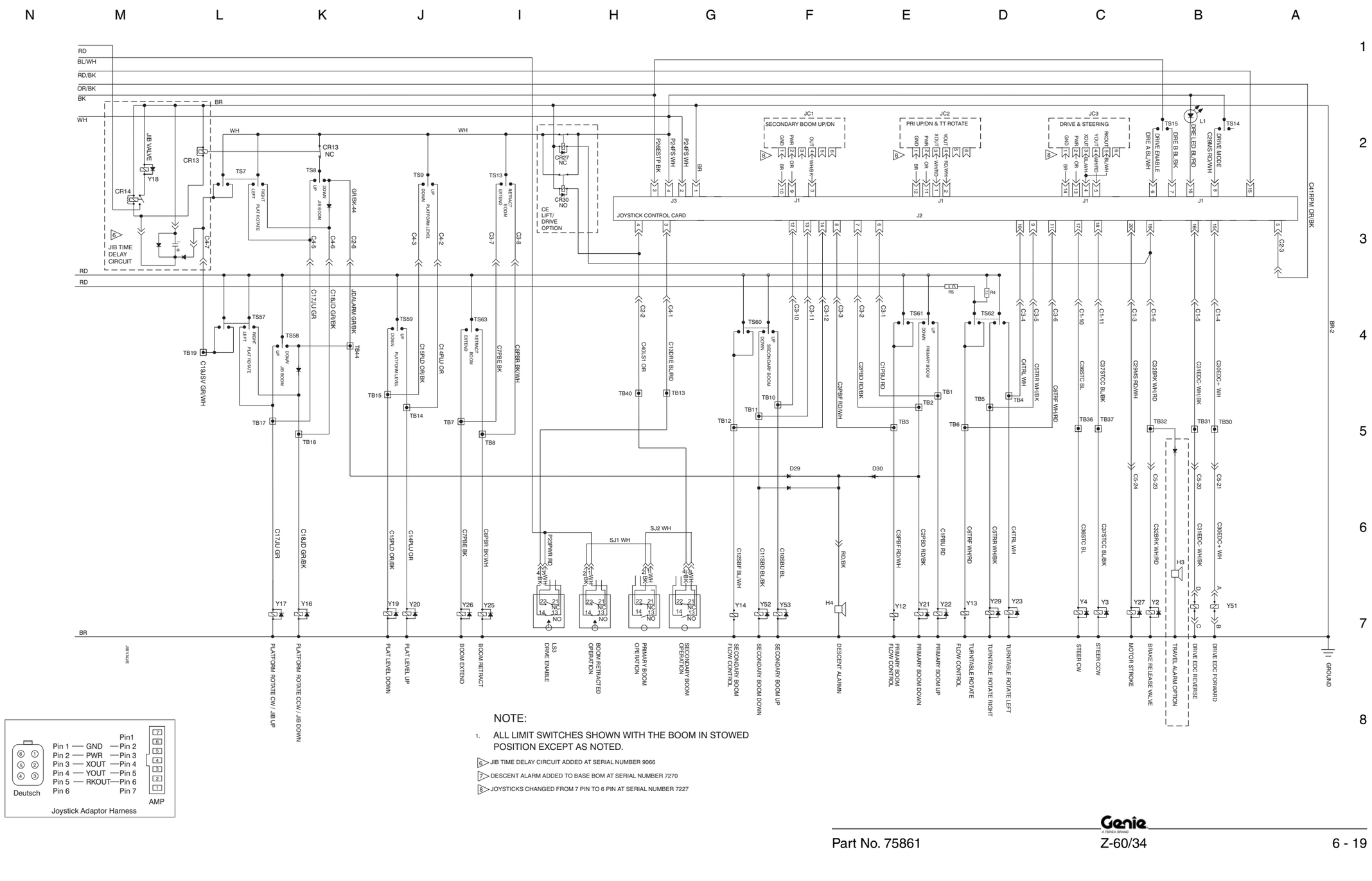
3 > 70A FUSE ADDED AT SERIAL NUMBER 7479

4 > DIODE D64 ADDED AT SERIAL NUMBER 9066

45 > SECOND GLOW PLUG OPTION ADDED AT SERIAL NUMBER 9340

Diesel Electrical Schematic - View 2

(from serial number 5326 to serial number 9798)



NOTE:

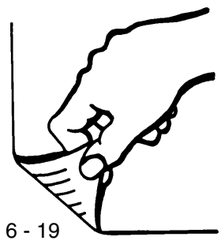
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

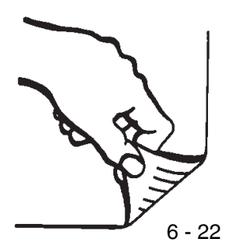
8 JOYSTICKS CHANGED FROM 7 PIN TO 6 PIN AT SERIAL NUMBER 7227

Diesel Electrical Schematic - View 2
(from serial number 5326 to serial number 9798)



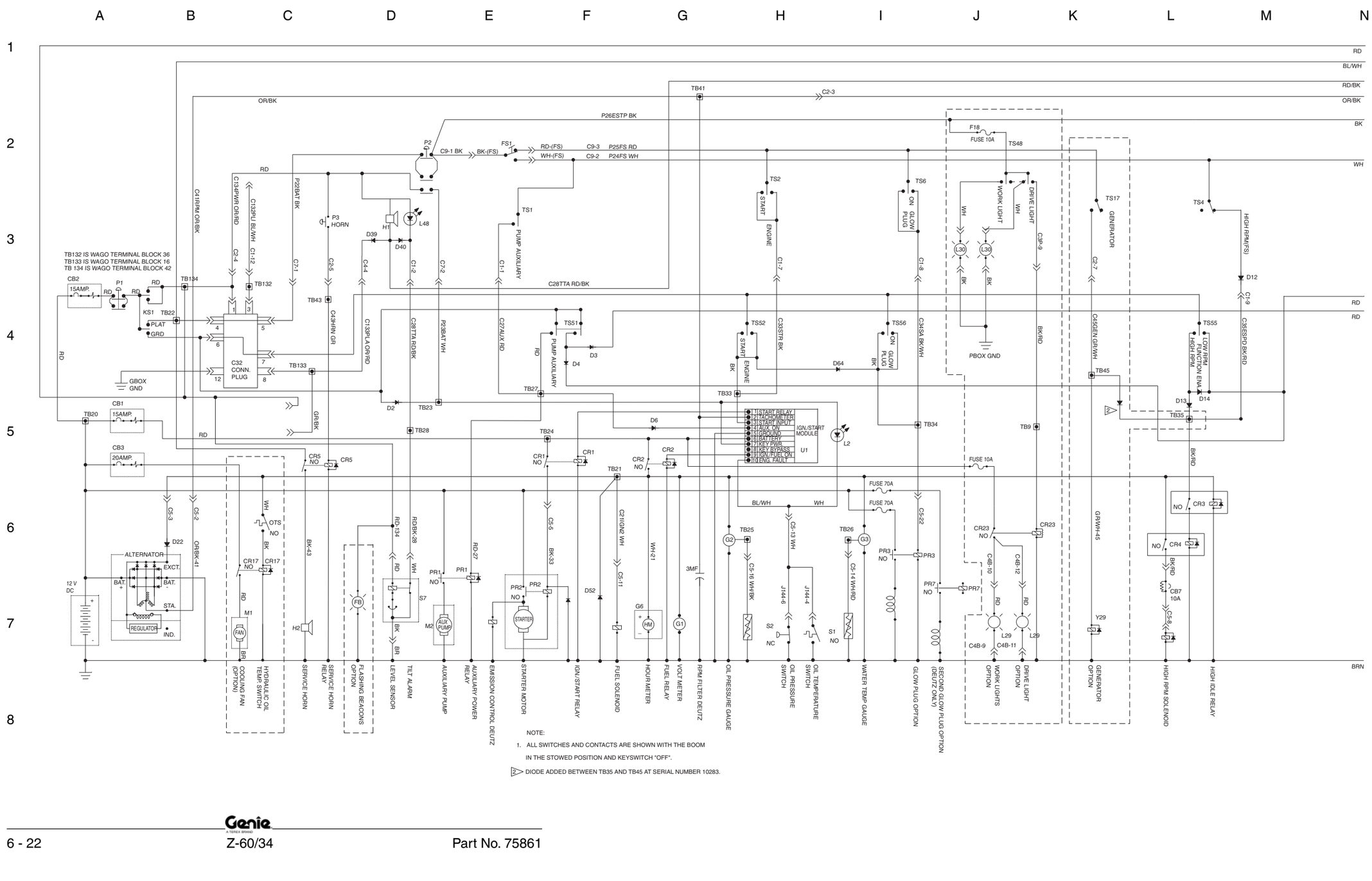
Diesel Electrical Schematic, ANSI / CSA - View 1
(from serial number 9799 to serial number 10387)



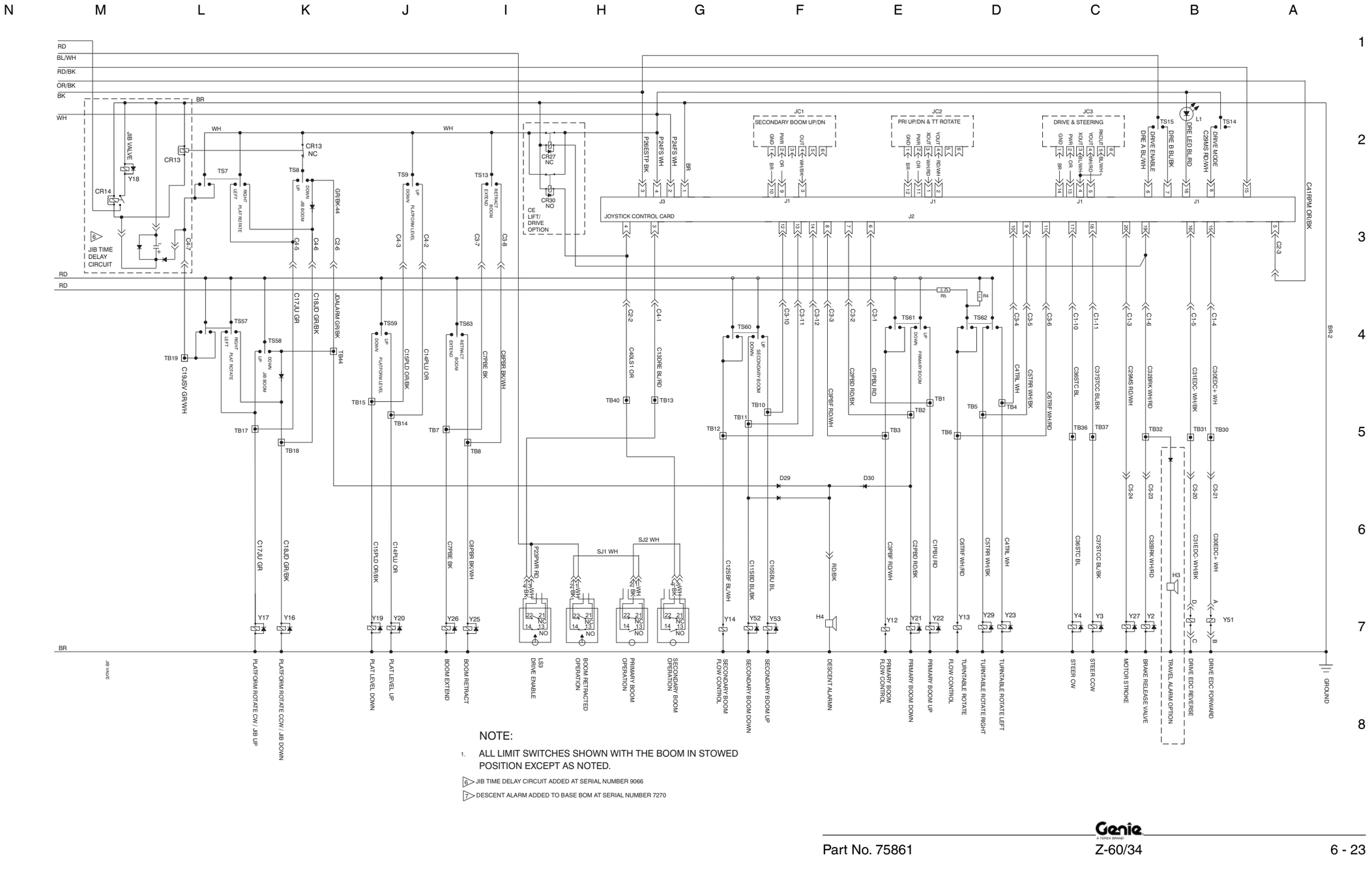


Diesel Electrical Schematic, ANSI / CSA - View 1

(from serial number 9799 to serial number 10387)



Diesel Electrical Schematic, ANSI / CSA - View 2
(from serial number 9799 to serial number 10387)



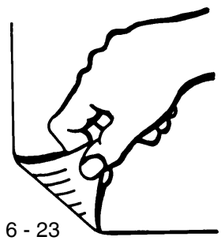
NOTE:

1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

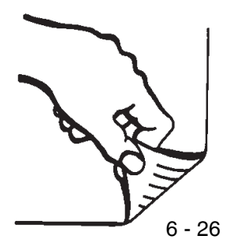
7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

Diesel Electrical Schematic, ANSI / CSA - View 2
(from serial number 9799 to serial number 10387)

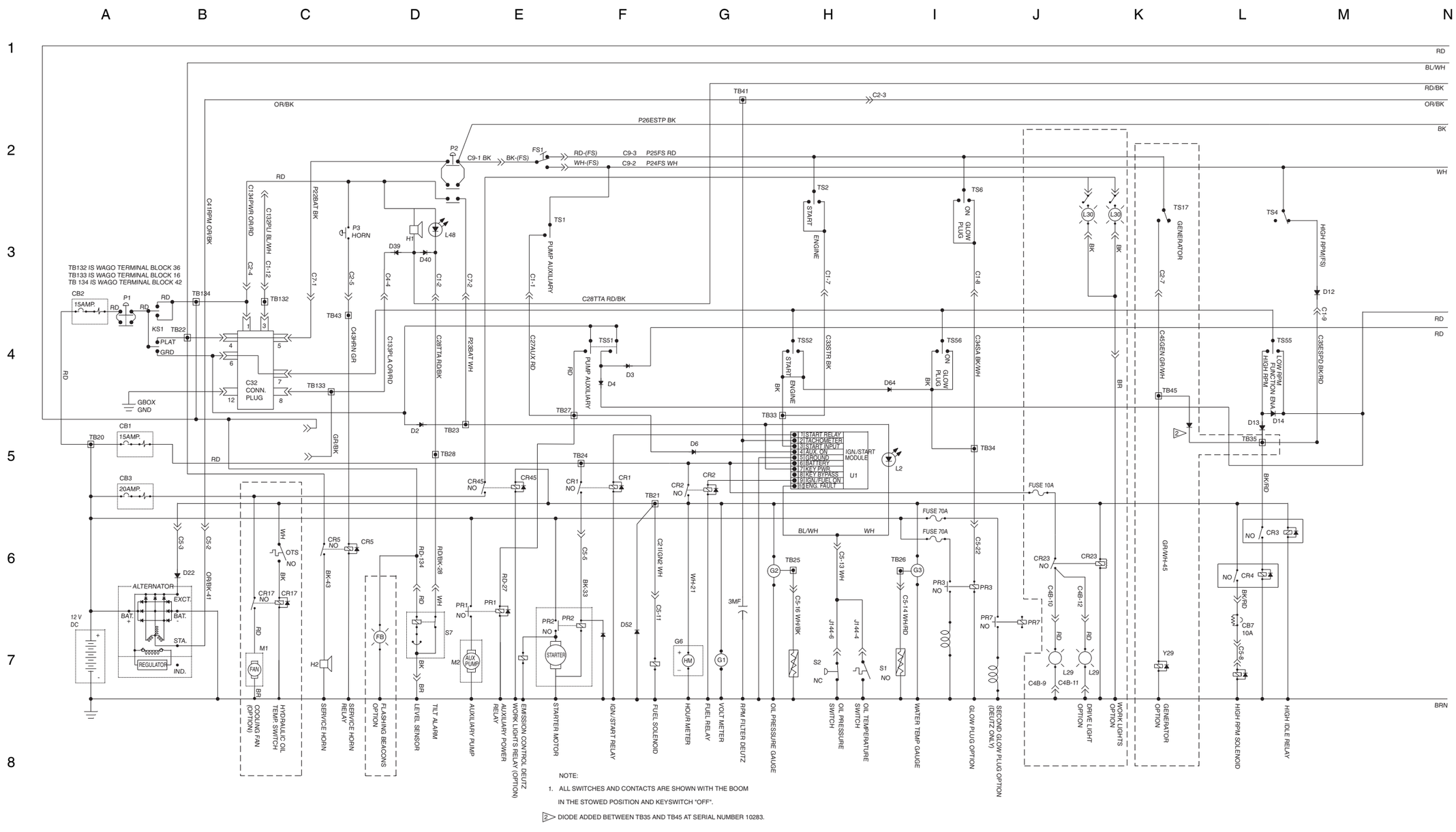


Diesel Electrical Schematic ANSI / CSA - View 1
(from serial number 10388)

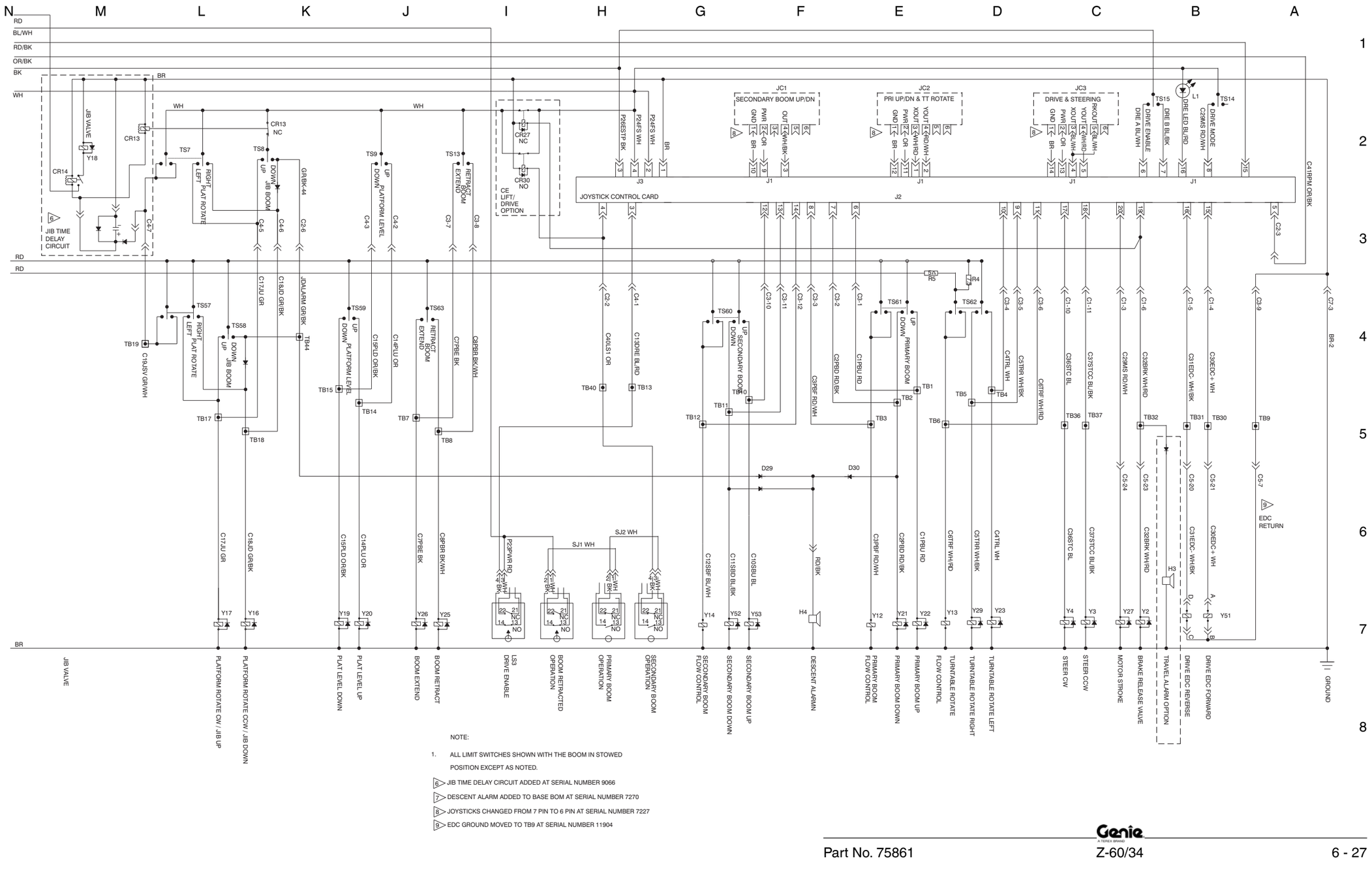




Diesel Electrical Schematic ANSI / CSA - View 1
(from serial number 10388)



Diesel Electrical Schematic ANSI / CSA - View 2
(from serial number 10388)



NOTE:

1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

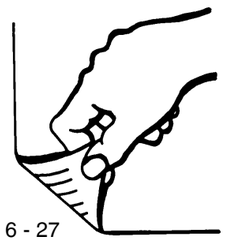
6 > JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 > DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

8 > JOYSTICKS CHANGED FROM 7 PIN TO 6 PIN AT SERIAL NUMBER 7227

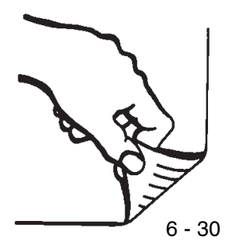
9 > EDC GROUND MOVED TO TB9 AT SERIAL NUMBER 11904

Diesel Electrical Schematic ANSI/CSA - View 2
(from serial number 10388)



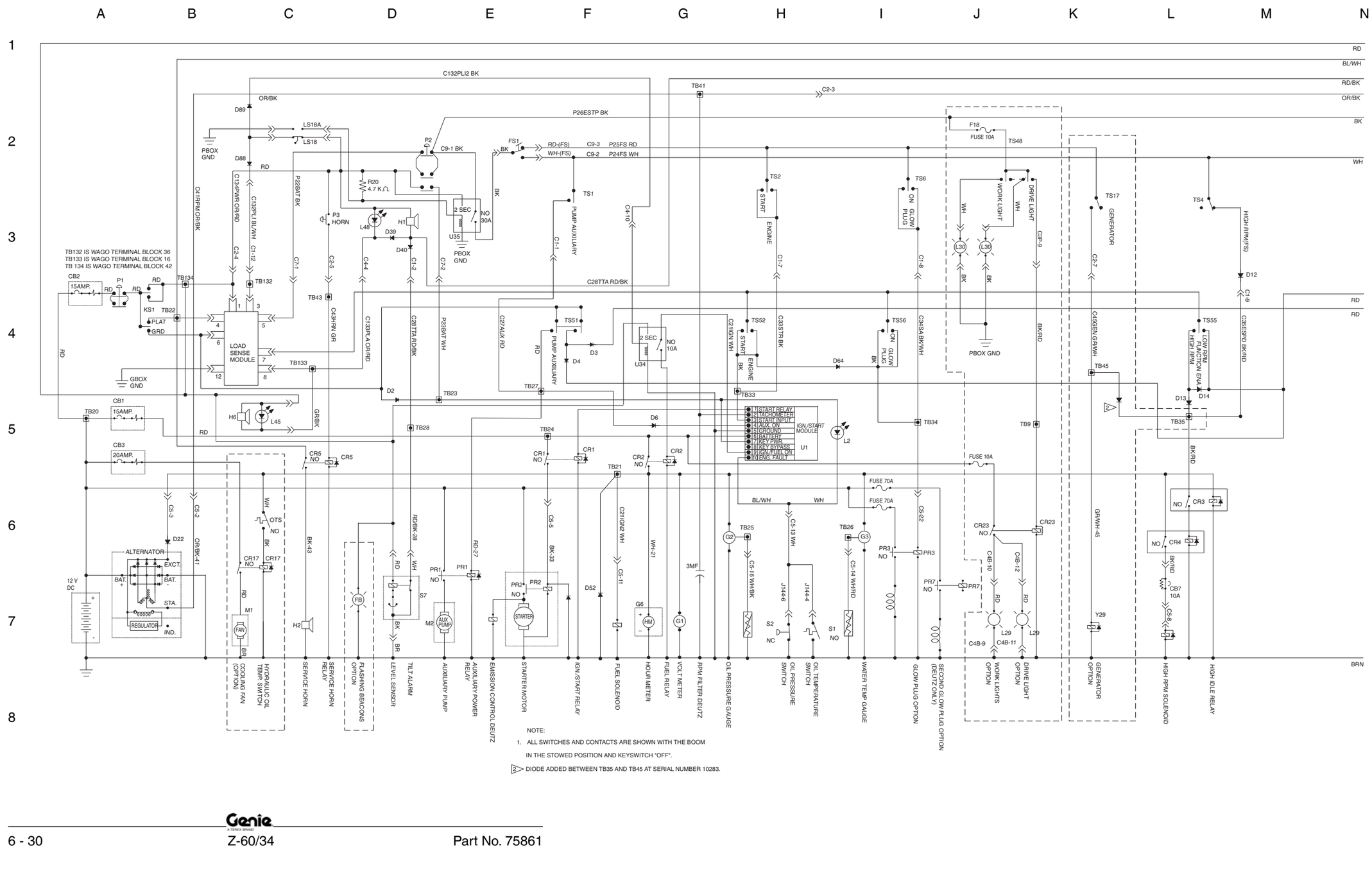
Diesel Electrical Schematic, CE - View 1
(from serial number 9799 to serial number 10387)





Diesel Electrical Schematic, CE - View 1

(from serial number 9799 to serial number 10387)

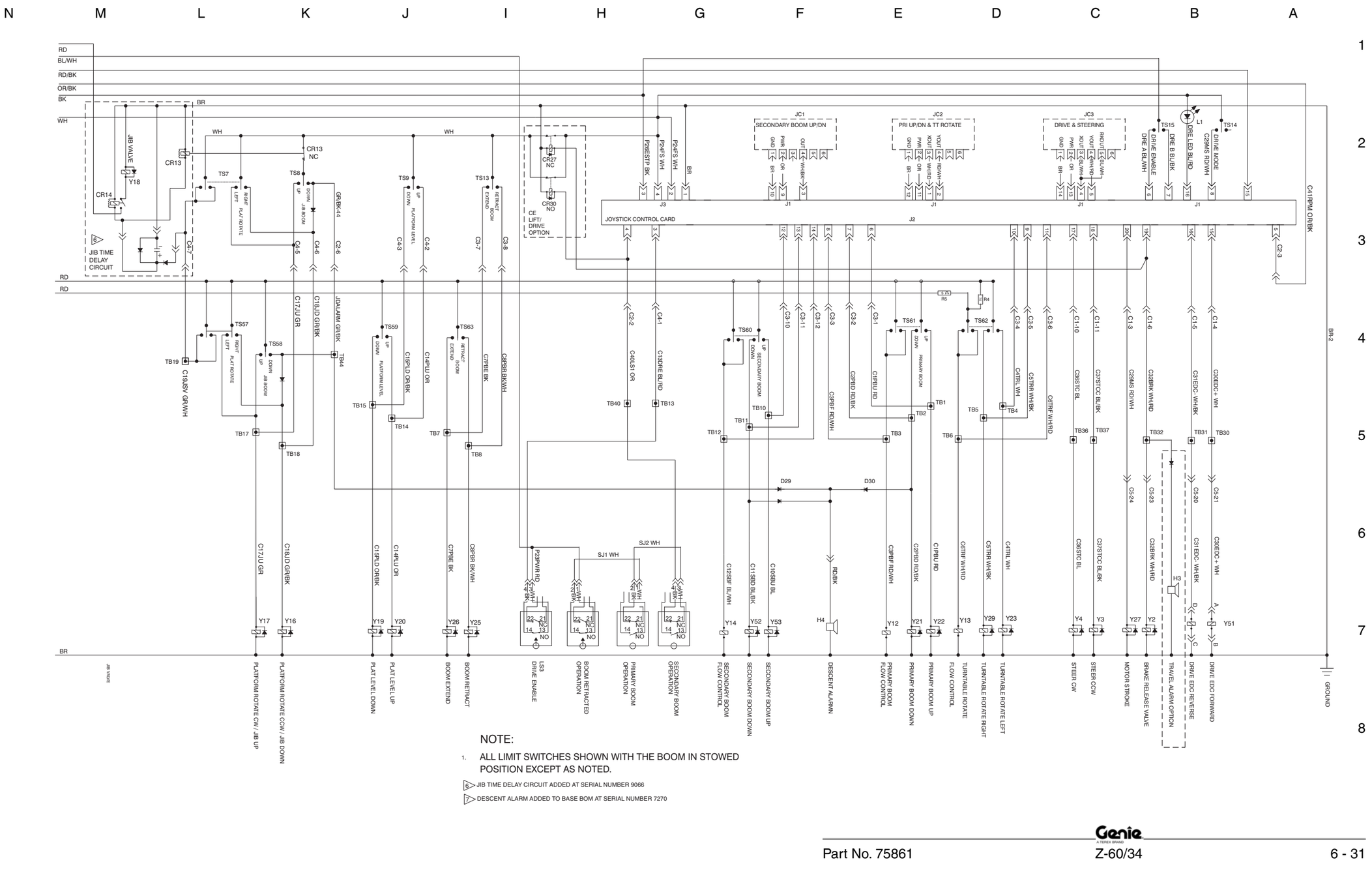


NOTE:

1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

A DIODE ADDED BETWEEN TB35 AND TB45 AT SERIAL NUMBER 10283.

Diesel Electrical Schematic, CE - View 2
(from serial number 9799 to serial number 10387)



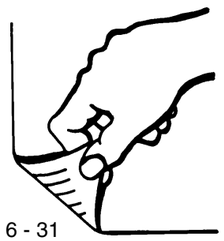
NOTE:

1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

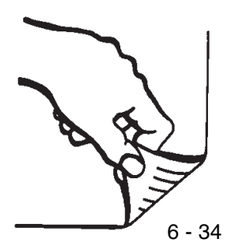
7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

Diesel Electrical Schematic, CE - View 2
(from serial number 9799 to serial number 10387)

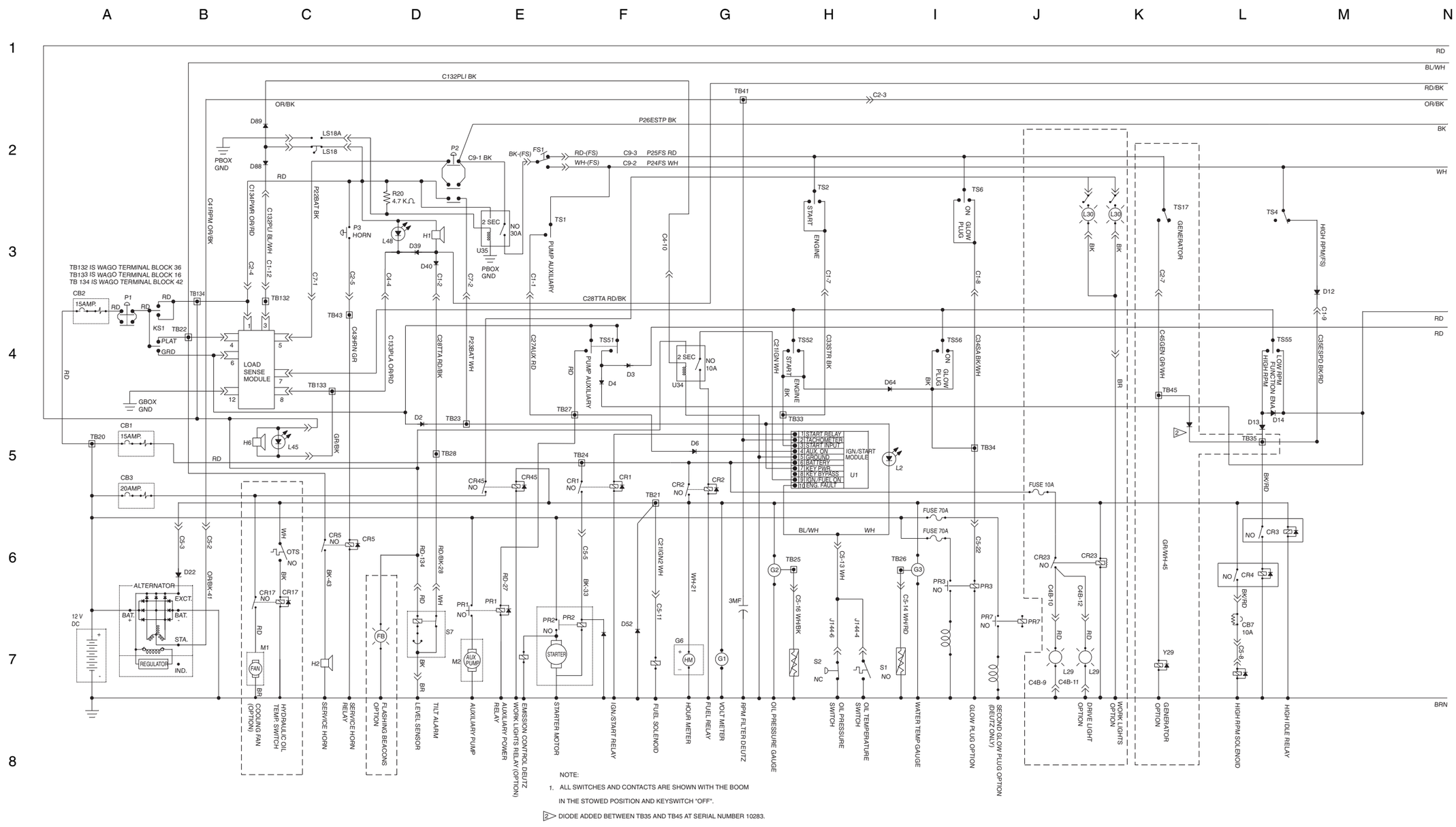


Diesel Electrical Schematic, CE - View 1
(from serial number 10388)





Diesel Electrical Schematic, CE - View 1
(from serial number 10388)

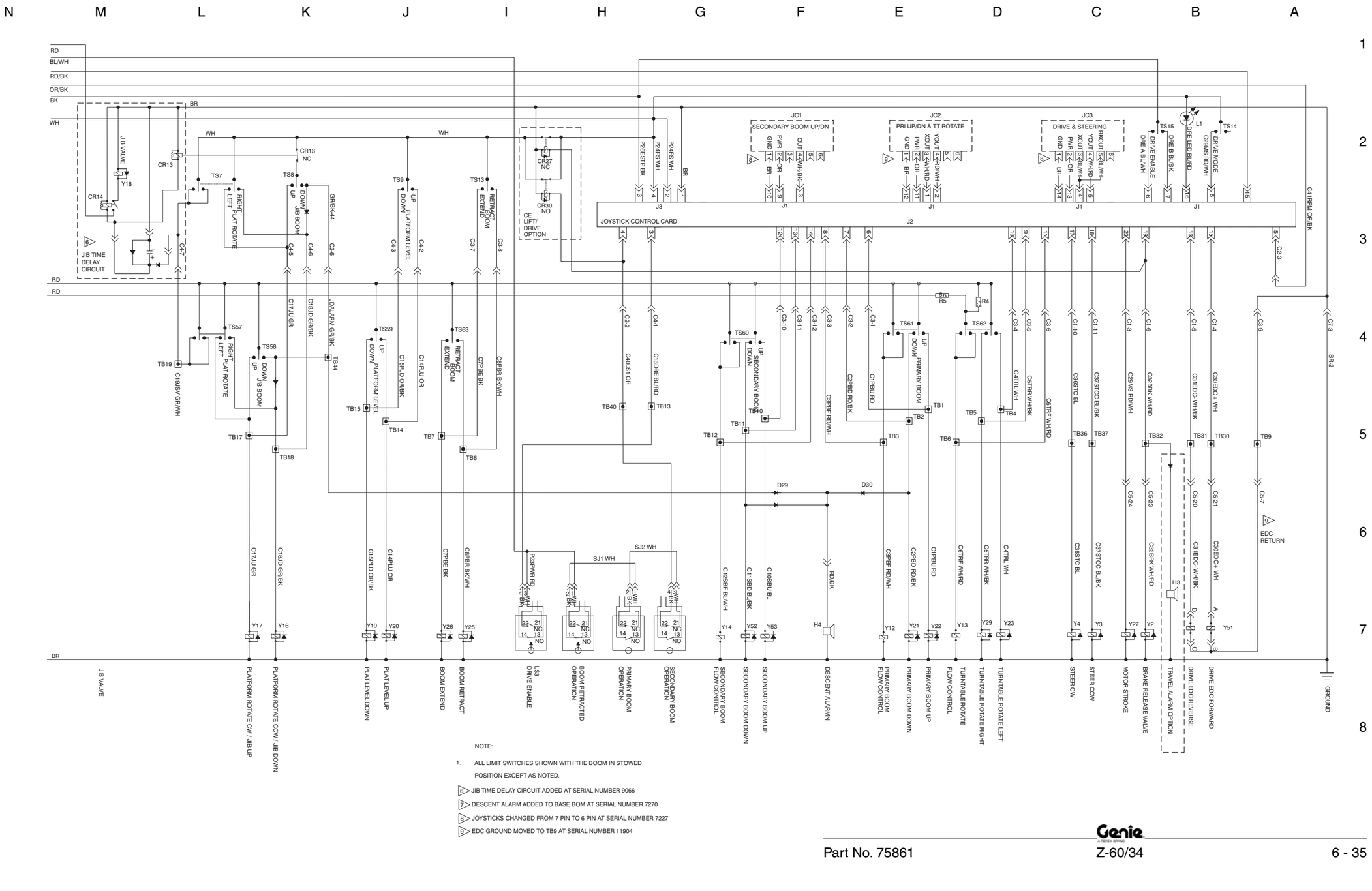


NOTE:

1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

A DIODE ADDED BETWEEN TB35 AND TB45 AT SERIAL NUMBER 10283.

Diesel Electrical Schematic, CE - View 2
(from serial number 10388)



NOTE:

1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

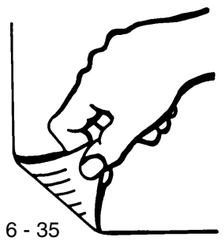
6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

8 JOYSTICKS CHANGED FROM 7 PIN TO 6 PIN AT SERIAL NUMBER 7227

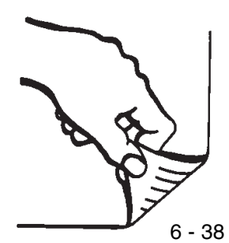
9 EDC GROUND MOVED TO TB9 AT SERIAL NUMBER 11904

Diesel Electrical Schematic, CE - View 2
(from serial number 10388)

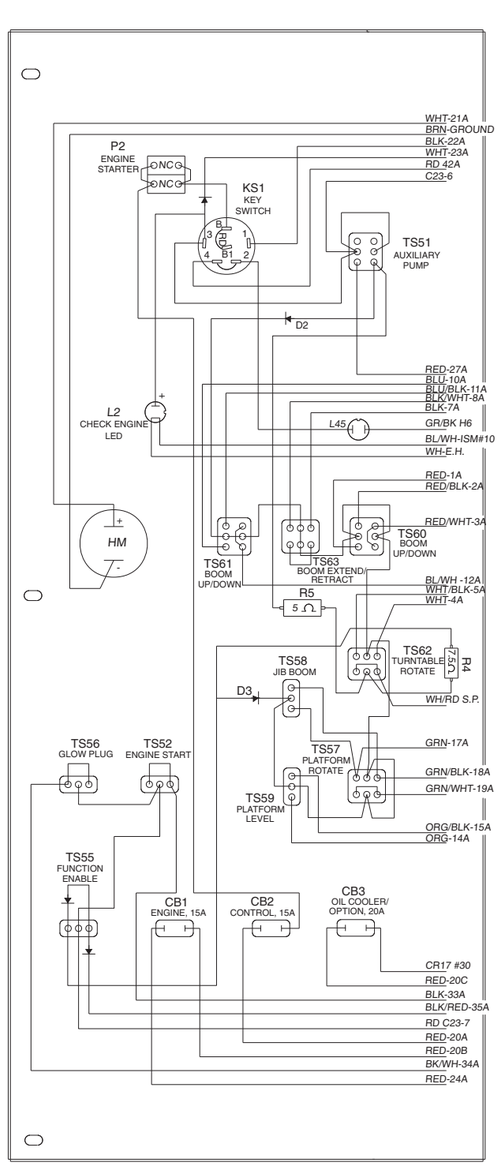


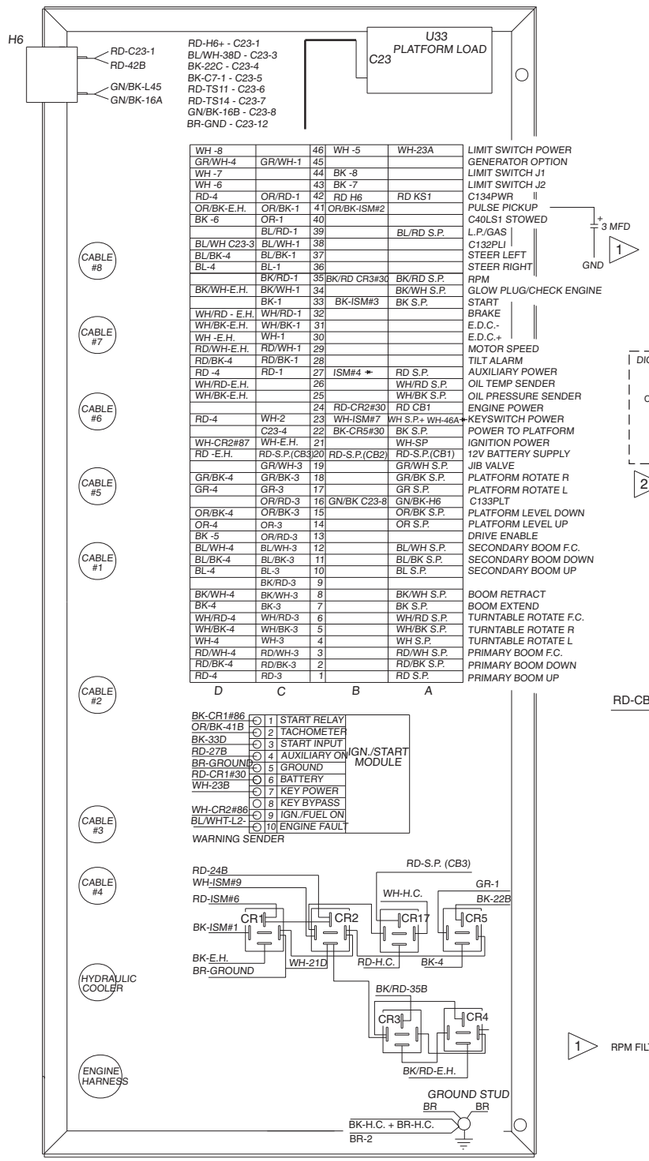
Diesel Ground Control Box Wiring Diagram
(before serial number 5716)



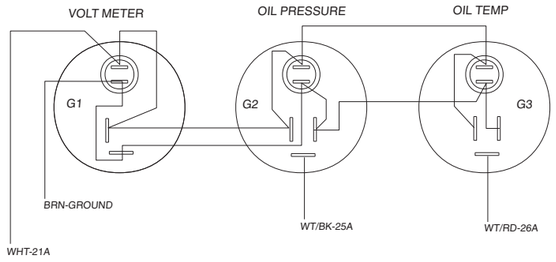


Diesel Ground Control Box Wiring Diagram
(before serial number 5716)

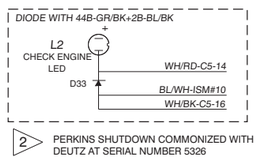




WH -8		46	WH -5	WH-23A	LIMIT SWITCH POWER
GR/WH-4	GR/WH-1	45			GENERATOR OPTION
WH -7		44	BK -8		LIMIT SWITCH J1
WH -6		43	BK -7		LIMIT SWITCH J2
RD-4	OR/RD-1	42	RD H6	RD KS1	C134PWR
OR/BK-E.H.	OR/BK-1	41	OR/BK-ISM#2		PULSE PICKUP
BK -6	OR-1	40			C40LS1 STOWED
	BL/RD-1	39		BL/RD S.P.	L.P./GAS
BL/WH C23-3	BL/WH-1	38			C132PLI
BL/BK-4	BL/BK-1	37			STEER LEFT
BL-4	BL-1	36			STEER RIGHT
	BK/RD-1	35	BK/RD CR3#30	BK/RD S.P.	RPM
BK/WH-E.H.	BK/WH-1	34		BK/WH S.P.	GLOW PLUG/CHECK ENGINE
	BK-1	33	BK-ISM#3	BK S.P.	START
WH/RD - E.H.	WH/RD-1	32			BRAKE
WH/BK-E.H.	WH/BK-1	31			E.D.C.-
WH -E.H.	WH-1	30			E.D.C.+
RD/WH-E.H.	RD/WH-1	29			MOTOR SPEED
RD/BK-4	RD/BK-1	28			TILT ALARM
RD -4	RD-1	27	ISM#4 →	RD S.P.	AUXILIARY POWER
WH/RD-E.H.		26		WH/RD S.P.	OIL TEMP SENDER
WH/BK-E.H.		25		WH/BK S.P.	OIL PRESSURE SENDER
		24	RD-CR2#30	RD CB1	ENGINE POWER
RD-4	WH-2	23	WH-ISM#7	WH S.P.+ WH-46A	KEYSWITCH POWER
	C23-4	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-CR2#87	WH-E.H.	21		WH-SP	IGNITION POWER
RD -E.H.	RD-S.P.(CB3)	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-3	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-3	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-3	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-3	16	GN/BK C23-8	GN/BK-H6	C133PLT
OR/BK-4	OR/BK-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-3	14		OR S.P.	PLATFORM LEVEL UP
BK -5	OR/RD-3	13			DRIVE ENABLE
BL/WH-4	BL/WH-3	12		BL/WH S.P.	SECONDARY BOOM F.C.
BL/BK-4	BL/BK-3	11		BL/BK S.P.	SECONDARY BOOM DOWN
BL-4	BL-3	10		BL S.P.	SECONDARY BOOM UP
	BK/RD-3	9			
BK/WH-4	BK/WH-3	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-3	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-3	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-3	5		WH/BK S.P.	TURNTABLE ROTATE R
WH-4	WH-3	4		WH S.P.	TURNTABLE ROTATE L
RD/WH-4	RD/WH-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-3	2		RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-3	1		RD S.P.	PRIMARY BOOM UP

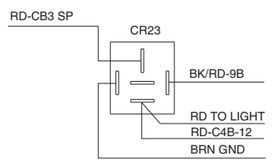


PERKINS SHUTDOWN ONLY



2 PERKINS SHUTDOWN COMMONIZED WITH DEUTZ AT SERIAL NUMBER 5326

DRIVE LIGHT OPTION RELAY

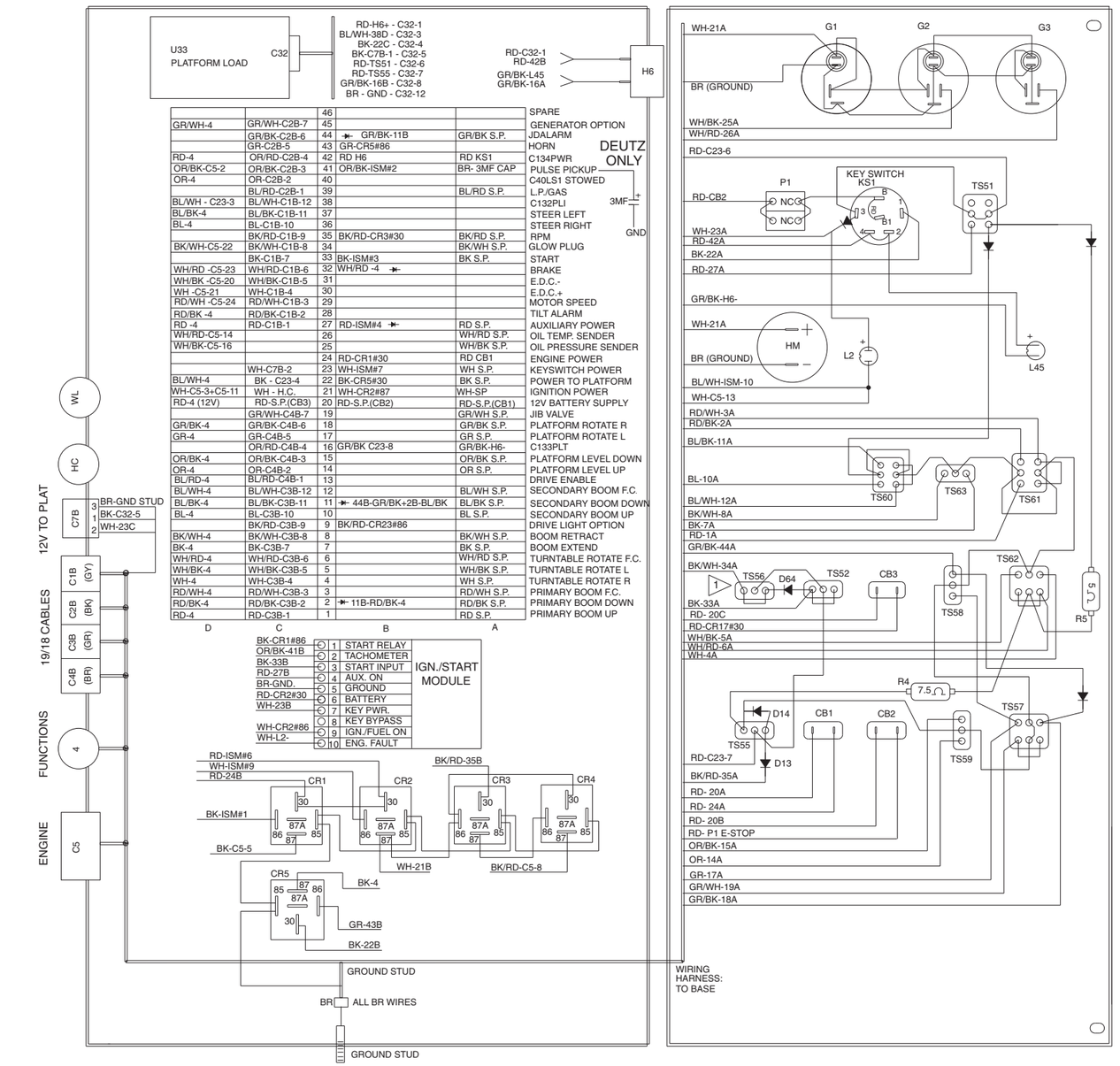




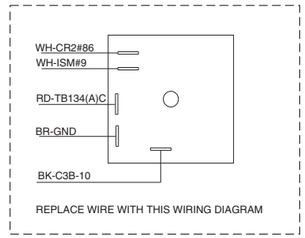
1 RPM FILTER ADDED AT SERIAL NUMBER 4461

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS55	FUNCTION ENABLESWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROL, 15A
CB3	CIRCUIT BREAKER, HYD COOLER, 20A
HM	HOUR METER
R4	RESISTOR, 7.5 OHM, TURN. ROT. FUNC.
R5	RESISTOR, 5 OHM, TURN. AUX. FUNC.
G1	VOLT METER GAGE
G2	OIL PRESSURE GAGE
G3	WATER TEMP. GAGE
H2	SERVICE HORN
H3	TRAVEL BUZZER
H4	DESCENT BUZZER
CR1	IGN/START RELAY
CR2	IGN./POWER RELAY
CR3	HIGH IDLE (RPM) CUTOUT RELAY
CR4	RPM RELAY
CR5	SERVICE HORN RELAY
CR17	HYDRAULIC COOLER FAN RELAY
CR18	CE PLATFORM LEVEL RELAY
H6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED
V33	PLATFORM OVERLOAD MODULE
LS1 (CABLE#6)	PRIMARY BOOM STOWED LIMIT SWITCH
LS2 (CABLE#5)	DRIVE ENABLE LIMIT SWITCH
LS3 (CABLE#7)	BOOM RETRACTED LIMIT SWITCH
LS4 (CABLE#8)	SECONDARY BOOM STOWED LIMIT SWITCH
(CABLE#1)	TO PLATFORM C-BOX, TERMINAL 27-46
(CABLE#2)	TO PLATFORM C-BOX, TERMINAL 22-23
(CABLE#3)	TO PLATFORM C-BOX, TERMINAL 1-19
(CABLE#4)	TO FUNCTION MANIFOLD
PR1	AUXILARY POWER RELAY
PR2	GLOW PLUG POWER RELAY

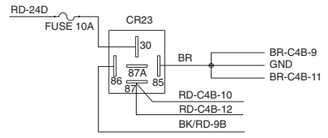
Diesel Ground Control Box Wiring Diagram
(from serial number 5716 to serial number 9798)



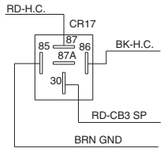
LOAD SENSE OPTION - TIMER RELAY



DRIVE LIGHT OPTION RELAY



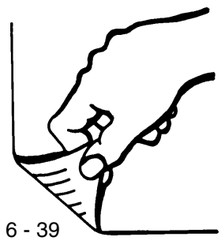
HYDRAULIC OIL COOLER OPTION RELAY



1 DIODE D64 ADDED AT SERIAL NUMBER 9066

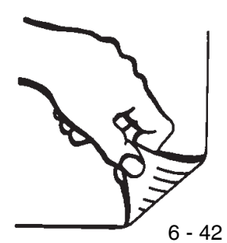
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS56	GLOW PLUG SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROL, 15A
CB3	CIRCUIT BREAKER, OPTION, 20A
HM	HOUR METER
R4	RESISTOR, 7.5 OHM, TURN. ROT. FUNC.
R5	RESISTOR, 5 OHM, TURN. AUX. FUNC.
G1	VOLT METER GAGE
G2	OIL PRESSURE GAGE
G3	WATER TEMP. GAGE
H2	SERVICE HORN
H3	TRAVEL BUZZER
H4	DESCENT BUZZER
CR1	IGN/START RELAY
CR2	IGN./POWER RELAY
CR3	HIGH IDLE (RPM) CUTOUT RELAY
CR4	RPM RELAY
CR5	SERVICE HORN RELAY
CR17	HYDRAULIC COOLER FAN RELAY
CR23	DRIVE LIGHT OPTION RELAY
H6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED
U33	PLATFORM OVERLOAD MODULE
L2	CHECK ENGINE LED
C1B	TO PLATFORM C-BOX, TERMINAL 27-38
C2B	TO PLATFORM C-BOX, TERMINAL 39-45
C3B	TO PLATFORM C-BOX, TERMINAL 1-12
C4B	TO PLATFORM C-BOX, TERMINAL 13-19
C5	ENGINE HARNESS
C7B	TO PLATFORM C-BOX, TERMINAL 22-23
PR1	AUXILARY POWER RELAY
PR2	GLOW PLUG POWER RELAY

Diesel Ground Control Box Wiring Diagram
(from serial number 5716 to serial number 9798)

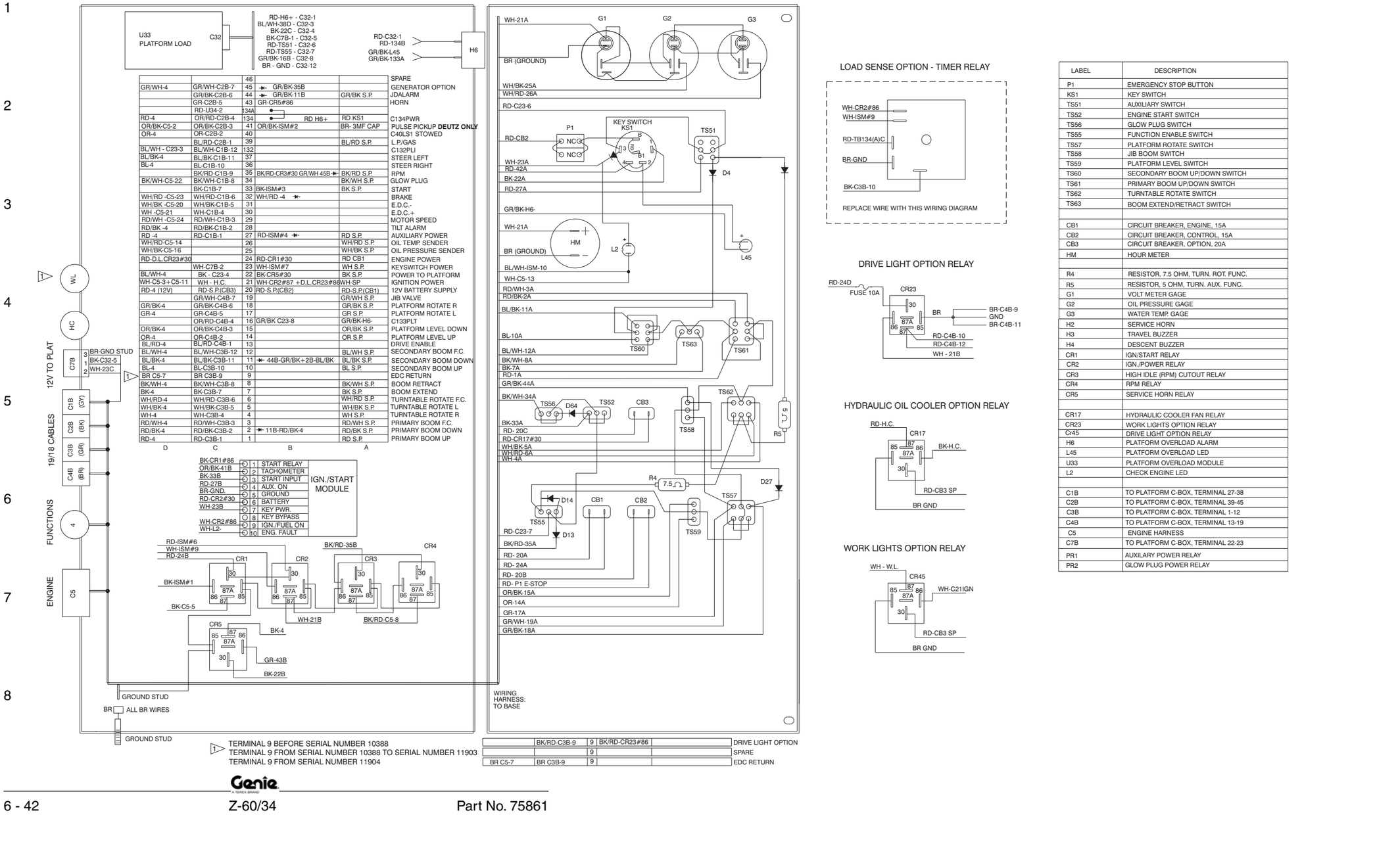


Diesel Ground Control Box Wiring Diagram
(from serial number 9799)





Diesel Ground Control Box Wiring Diagram
(from serial number 9799)



		46			SPARE
GR/WH-4	GR/WH-C2B-7	45	GR/BK-35B		GENERATOR OPTION
	GR/BK-C2B-6	44	GR/BK-11B	GR/BK S.P.	JDALARM
	GR-C2B-5	43	GR-CR5#86		HORN
	RD-U34-2	134A			
RD-4	OR/RD-C2B-4	134	RD H6+	RD KS1	C134PWR
OR/BK-C5-2	OR/BK-C2B-3	41	OR/BK-ISM#2	BR- 3MF CAP	PULSE PICKUP **DEUTZ ONLY**
OR-4	OR-C2B-2	40			C40LS1 STOWED
	BL/RD-C2B-1	39		BL/RD S.P.	L.P/GAS
BL/WH - C23-3	BL/WH-C1B-12	132			C132PLI
BL/BK-4	BL/BK-C1B-11	37			STEER LEFT
BL-4	BL-C1B-10	36			STEER RIGHT
	BK/RD-C1B-9	35	BK/RD-CR3#30 GR/WH 45B	BK/RD S.P	RPM
BK/WH-C5-22	BK/WH-C1B-8	34		BK/WH S.P.	GLOW PLUG
	BK-C1B-7	33	BK-ISM#3	BK S.P.	START
WH/RD -C5-23	WH/RD-C1B-6	32	WH/RD -4		BRAKE
WH/BK -C5-20	WH/BK-C1B-5	31			E.D.C.-
WH -C5-21	WH-C1B-4	30			E.D.C.+
RD/WH -C5-24	RD/WH-C1B-3	29			MOTOR SPEED
RD/BK -4	RD/BK-C1B-2	28			TILT ALARM
RD -4	RD-C1B-1	27	RD-ISM#4	RD S.P.	AUXILIARY POWER
WH/RD-C5-14		26		WH/RD S.P.	OIL TEMP. SENDER
WH/BK-C5-16		25		WH/BK S.P.	OIL PRESSURE SENDER
RD-D.L.CR23#30		24	RD-CR1#30	RD CB1	ENGINE POWER
	WH-C7B-2	23	WH-ISM#7	WH S.P.	KEYSWITCH POWER
BL/WH-4	BK - C23-4	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-C5-3+C5-11	WH - H.C.	21	WH-CR2#87 +D.L.CR23#86	WH-SP	IGNITION POWER
RD-4 (12V)	RD-S.P.(CB3)	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-C4B-7	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-C4B-6	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-C4B-5	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-C4B-4	16	GR/BK C23-8	GR/BK-H6-	C133PLT
OR/BK-4	OR/BK-C4B-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-C4B-2	14		OR S.P.	PLATFORM LEVEL UP
BL/RD-4	BL/RD-C4B-1	13			DRIVE ENABLE
BL/WH-4	BL/WH-C3B-12	12		BL/WH S.P.	SECONDARY BOOM F.C
BL/BK-4	BL/BK-C3B-11	11	44B-GR/BK+2B-BL/BK	BL/BK S.P.	SECONDARY BOOM DOWN
BL-4	BL-C3B-10	10		BL S.P.	SECONDARY BOOM UP
BR C5-7	BR C3B-9	9			EDC RETURN
BK/WH-4	BK/WH-C3B-8	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-C3B-7	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-C3B-6	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-C3B-5	5		WH/BK S.P.	TURNTABLE ROTATE L
WH-4	WH-C3B-4	4		WH S.P.	TURNTABLE ROTATE R
RD/WH-4	RD/WH-C3B-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-C3B-2	2	11B-RD/BK-4	RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-C3B-1	1		RD S.P.	PRIMARY BOOM UP
D	C	B		A	

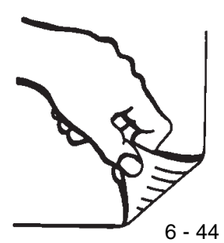
	BK/RD-C3B-9	9	BK/RD-CR23#86		DRIVE LIGHT OPTION
		9			SPARE
BR C5-7	BR C3B-9	9			EDC RETURN

1 TERMINAL 9 BEFORE SERIAL NUMBER 10388
TERMINAL 9 FROM SERIAL NUMBER 10388 TO SERIAL NUMBER 11903
TERMINAL 9 FROM SERIAL NUMBER 11904

LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS56	GLOW PLUG SWITCH
TS55	FUNCTION ENABLE SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROL, 15A
CB3	CIRCUIT BREAKER, OPTION, 20A
HM	HOUR METER
R4	RESISTOR, 7.5 OHM, TURN. ROT. FUNC.
R5	RESISTOR, 5 OHM, TURN. AUX. FUNC.
G1	VOLT METER GAGE
G2	OIL PRESSURE GAGE
G3	WATER TEMP. GAGE
H2	SERVICE HORN
H3	TRAVEL BUZZER
H4	DESCENT BUZZER
CR1	IGN/START RELAY
CR2	IGN./POWER RELAY
CR3	HIGH IDLE (RPM) CUTOUT RELAY
CR4	RPM RELAY
CR5	SERVICE HORN RELAY
CR17	HYDRAULIC COOLER FAN RELAY
CR23	WORK LIGHTS OPTION RELAY
Cr45	DRIVE LIGHT OPTION RELAY
H6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED
U33	PLATFORM OVERLOAD MODULE
L2	CHECK ENGINE LED
C1B	TO PLATFORM C-BOX, TERMINAL 27-38
C2B	TO PLATFORM C-BOX, TERMINAL 39-45
C3B	TO PLATFORM C-BOX, TERMINAL 1-12
C4B	TO PLATFORM C-BOX, TERMINAL 13-19
C5	ENGINE HARNESS
C7B	TO PLATFORM C-BOX, TERMINAL 22-23
PR1	AUXILARY POWER RELAY
PR2	GLOW PLUG POWER RELAY

Diesel Platform Control Box Wiring Diagram
(before serial number 7227)

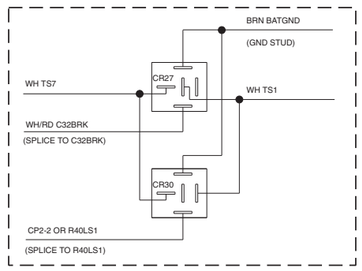


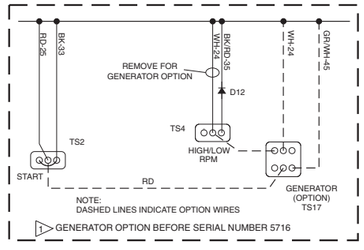


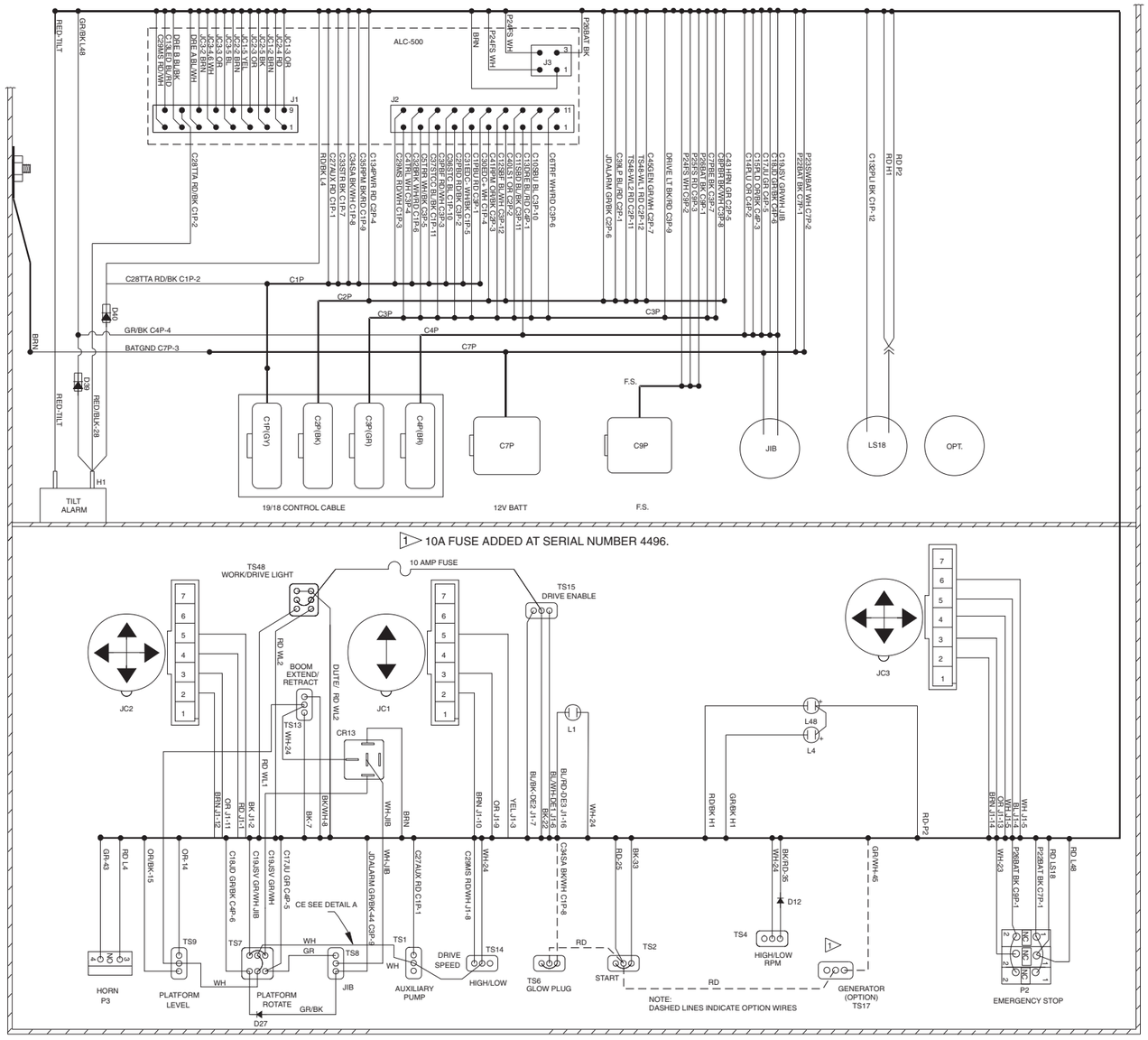
Diesel Platform Control Box Wiring Diagram
(before serial number 7227)

	COMPONENT INDEX
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
JC1	BOOM SECONDARY JOYSTICK:
JC3	DRIVE PROPORTIONAL JOYSTICK
L1	DRIVE ENABLE LED
L4	C.E. PLATFORM LED
L48	TILT ALARM LED
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)
TS4	HI/LO RPM SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS14	DRIVE SPEED SWITCH
TS15	DRIVE ENABLE SWITCH
TS17	GENERATOR OPTION
TS48	WORK/DRIVE LIGHT (OPTION)

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM







Diesel Platform Control Box Wiring Diagram
(from serial number 7227 to serial number 9065)

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

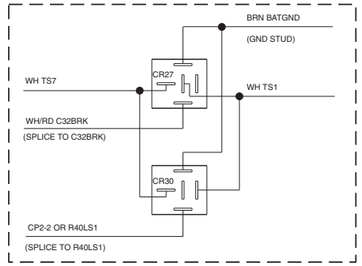
COMPONENT INDEX

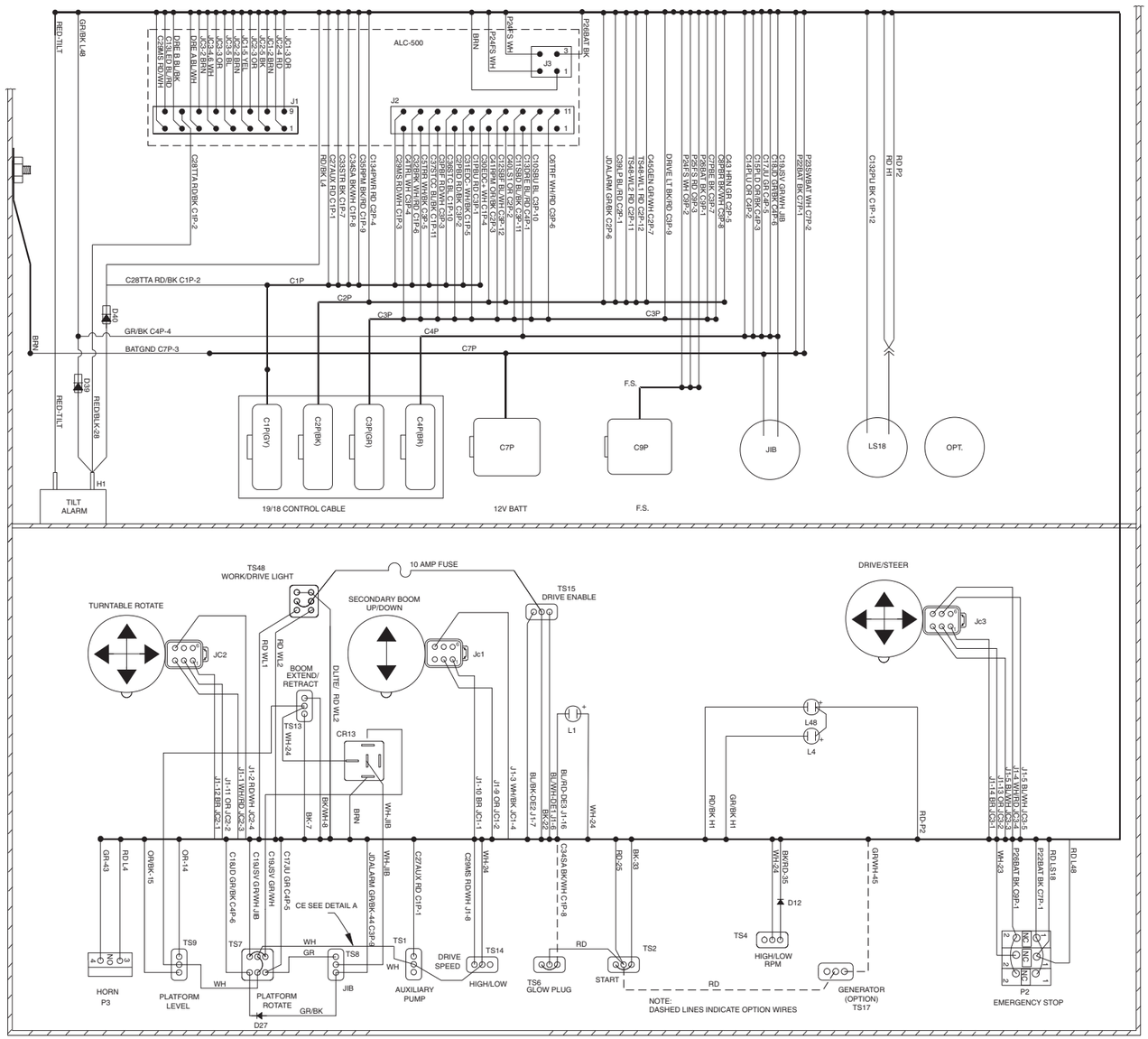
JC1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB DELAY RELAY

COMPONENT INDEX

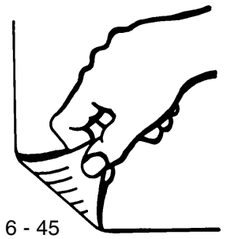
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
JC1	BOOM SECONDARY JOYSTICK:
JC3	DRIVE PROPORTIONAL JOYSTICK
L1	DRIVE ENABLE LED
L4	C.E. PLATFORM LED
L48	TILT ALARM LED
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)
TS4	HI/LO RPM SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS14	DRIVE SPEED SWITCH
TS15	DRIVE ENABLE SWITCH
TS17	GENERATOR OPTION
TS48	WORK/DRIVE LIGHT (OPTION)

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM



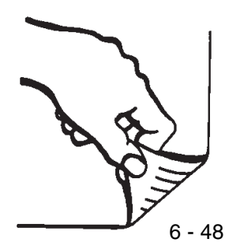


Diesel Platform Control Box Wiring Diagram
(from serial number 7227 to serial number 9065)



Diesel Platform Control Box Wiring Diagram
(from serial number 9066 to serial number 9696)



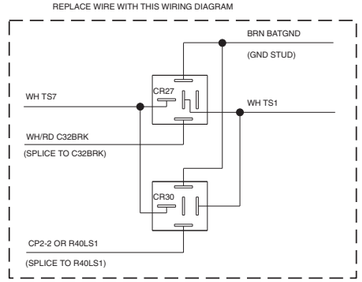


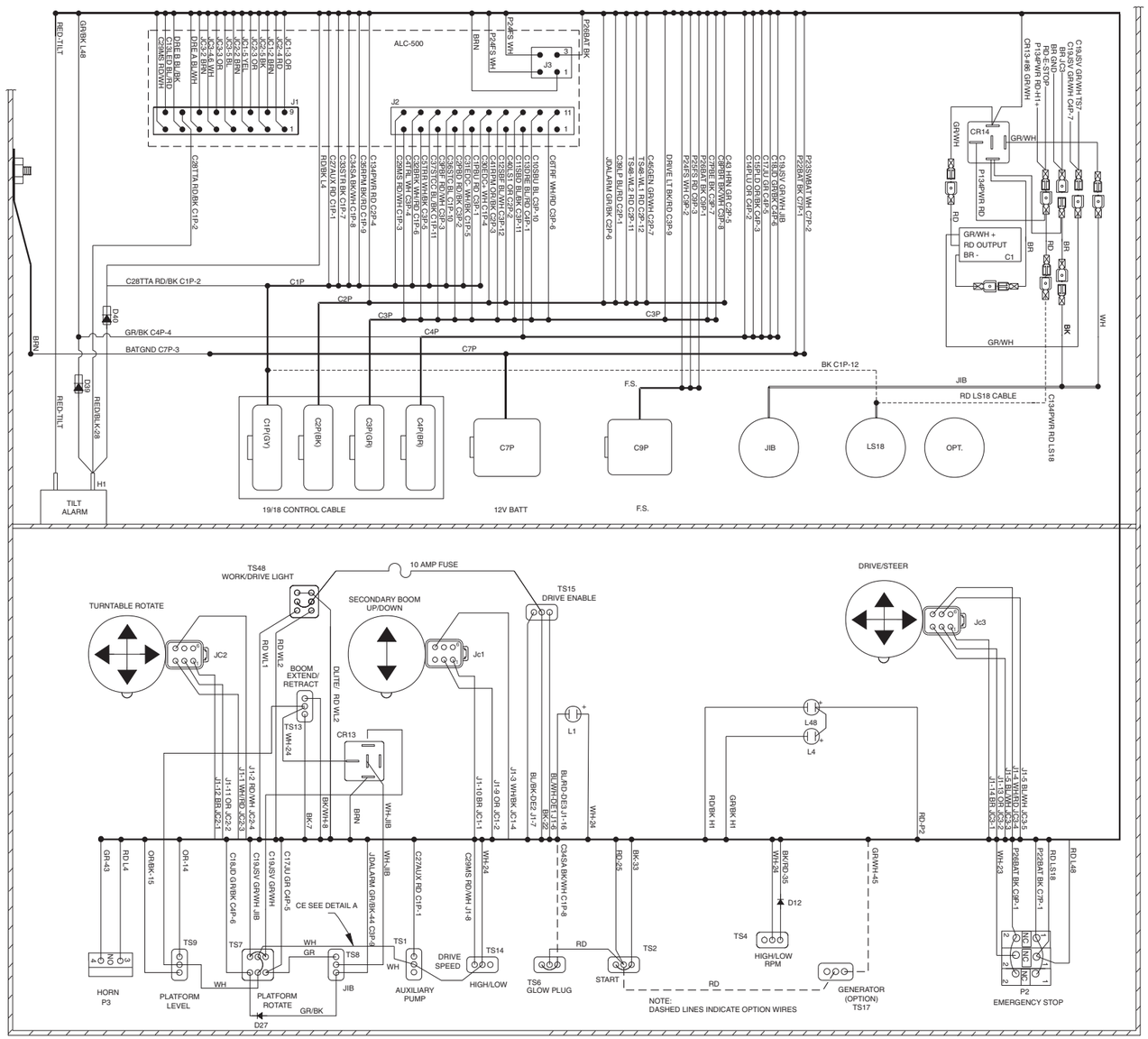
Diesel Platform Control Box Wiring Diagram
(from serial number 9066 to serial number 9696)

COMPONENT INDEX	
JC1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB DELAY RELAY

COMPONENT INDEX	
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
JC1	BOOM SECONDARY JOYSTICK:
JC3	DRIVE PROPORTIONAL JOYSTICK
L1	DRIVE ENABLE LED
L4	C.E. PLATFORM LED
L48	TILT ALARM LED
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)
TS4	HI/LO RPM SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS14	DRIVE SPEED SWITCH
TS15	DRIVE ENABLE SWITCH
TS17	GENERATOR OPTION
TS48	WORK/DRIVE LIGHT (OPTION)

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM





Diesel Platform Control Box Wiring Diagram
(from serial number 9697)

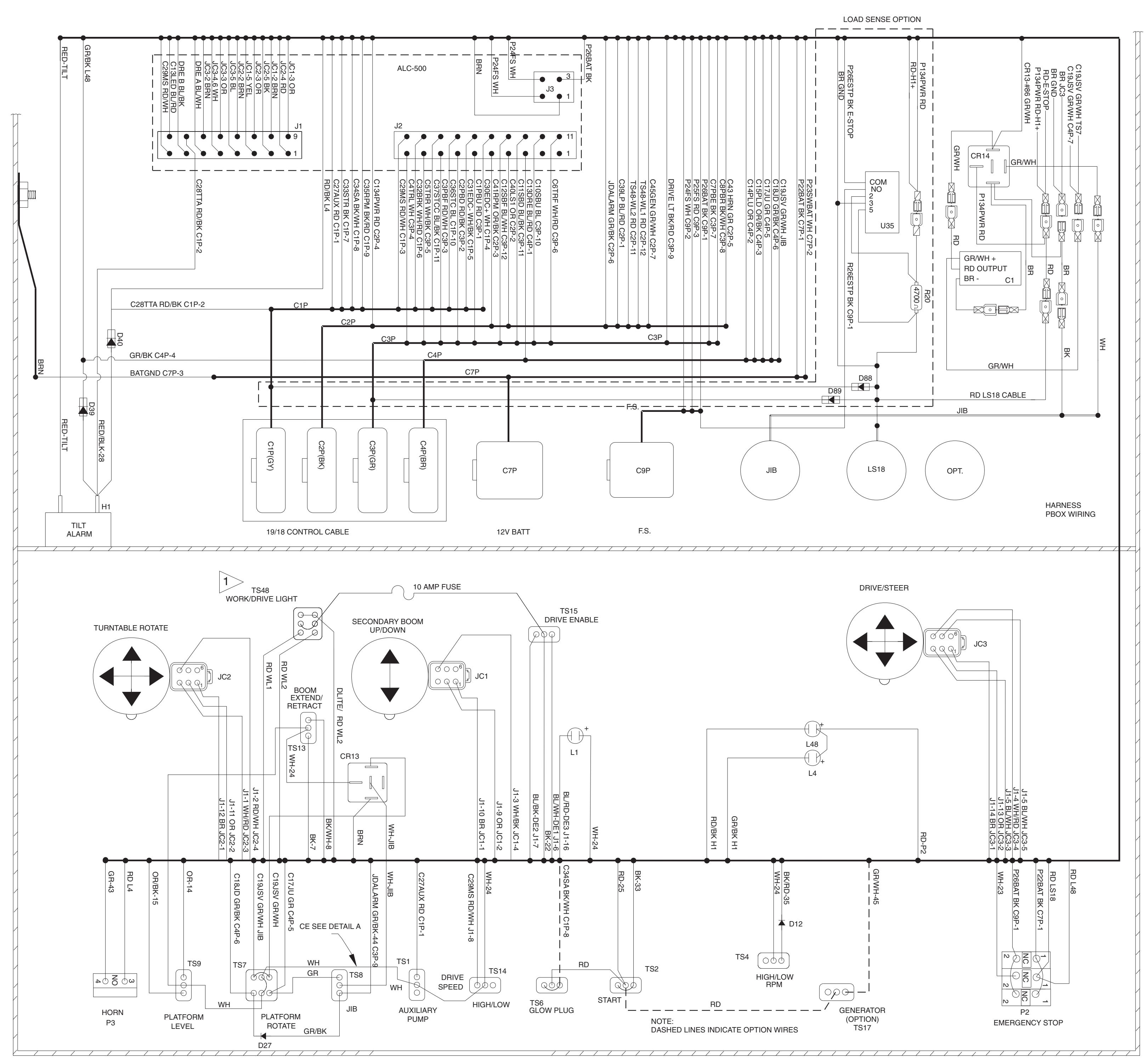
N M L K J I H G F E D C B A

COMPONENT INDEX

JC1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB DELAY RELAY

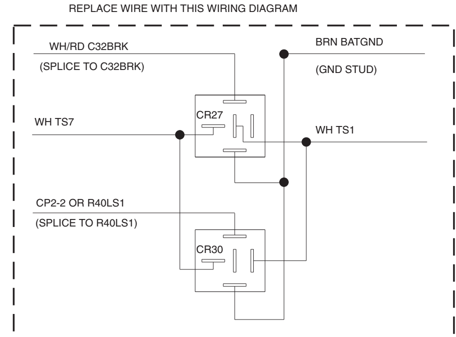
COMPONENT INDEX

JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
JC1	BOOM SECONDARY JOYSTICK:
JC3	DRIVE PROPORTIONAL JOYSTICK
L1	DRIVE ENABLE LED
L4	C.E. PLATFORM LED
L48	TILT ALARM LED
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)
TS4	HI/L0 RPM SWITCH
TS6	GLOW PLUG OPTION
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS14	DRIVE SPEED SWITCH
TS15	DRIVE ENABLE SWITCH
TS17	GENERATOR OPTION
TS48	WORK/DRIVE LIGHT (OPTION)



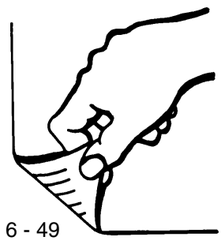
1 2 3 4 5 6 7 8

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM



1 WORK LIGHT OPTION REMOVED FROM PLATFORM BOX AT SERIAL NUMBER 10388

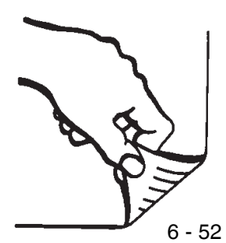
Diesel Platform Control Box Wiring Diagram
(from serial number 9697)



Ford Electrical Schematic - View 1

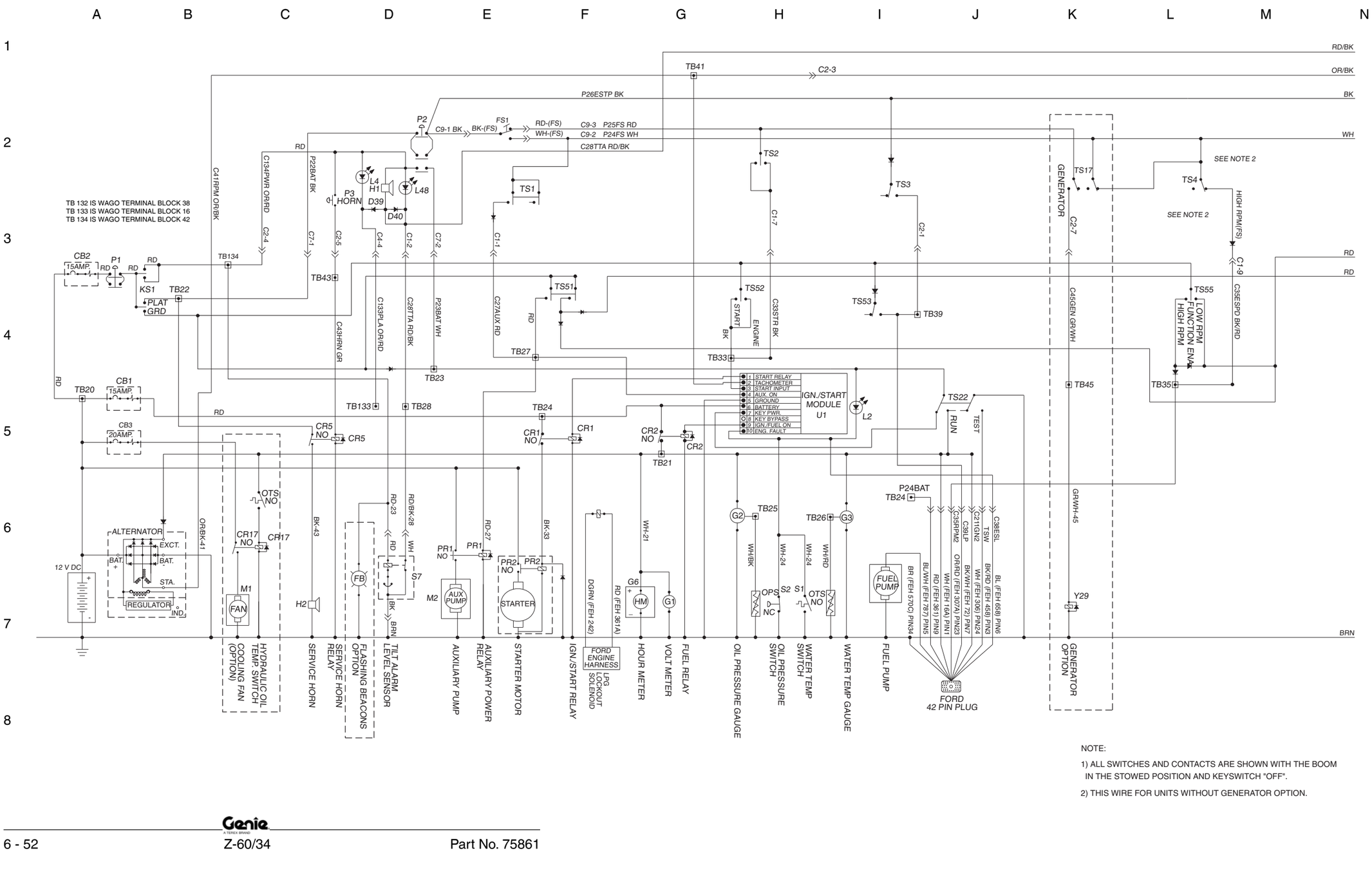
(before serial number 4546)





Ford Electrical Schematic - View 1

(before serial number 4546)



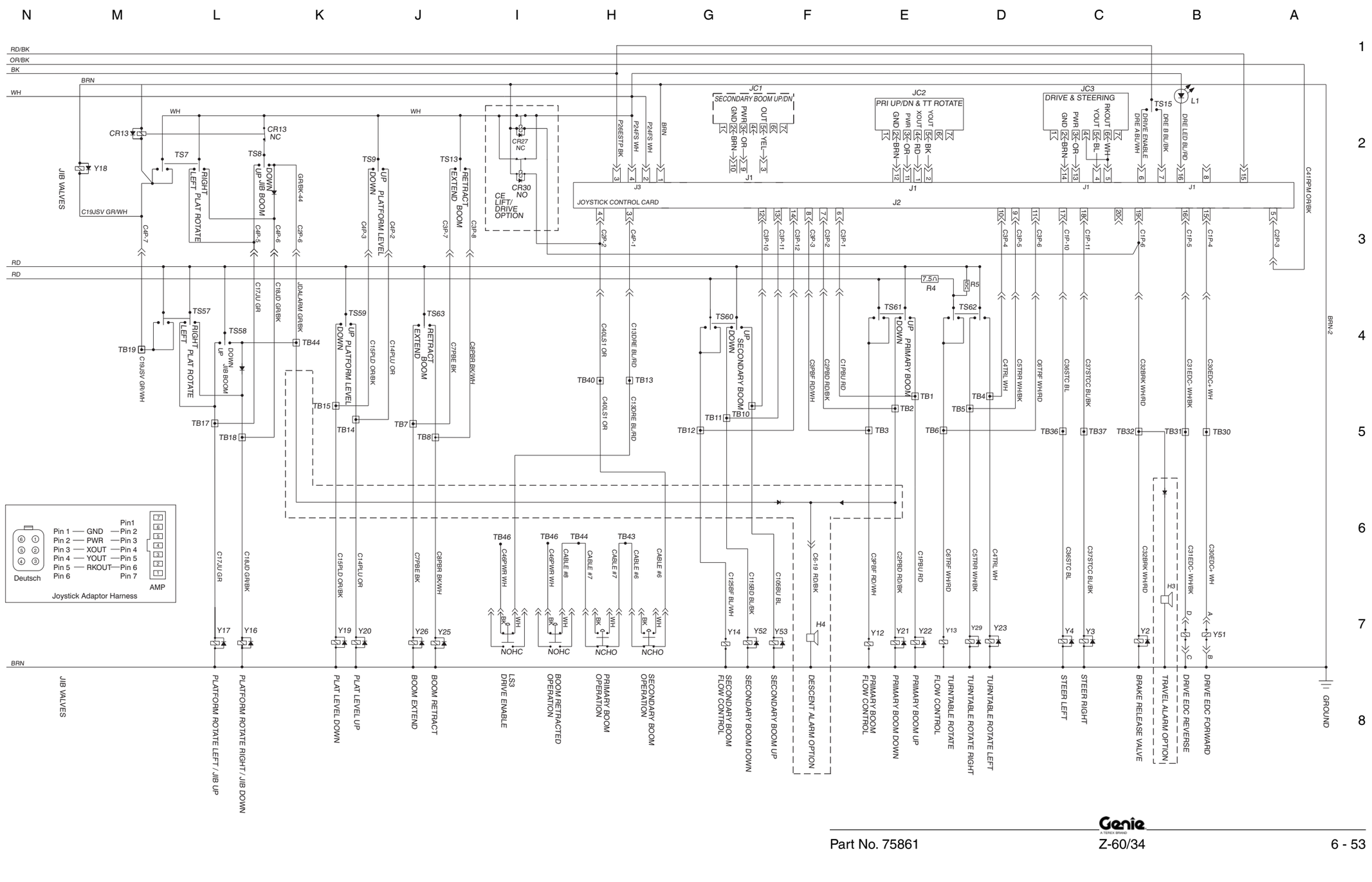
NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

2) THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION.

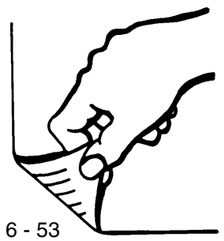
Ford Electrical Schematic - View 2

(before serial number 4546)



Ford Electrical Schematic - View 2

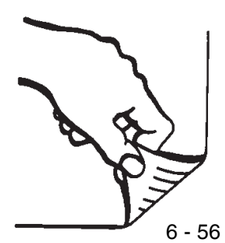
(before serial number 4546)



Ford Electrical Schematic - View 2

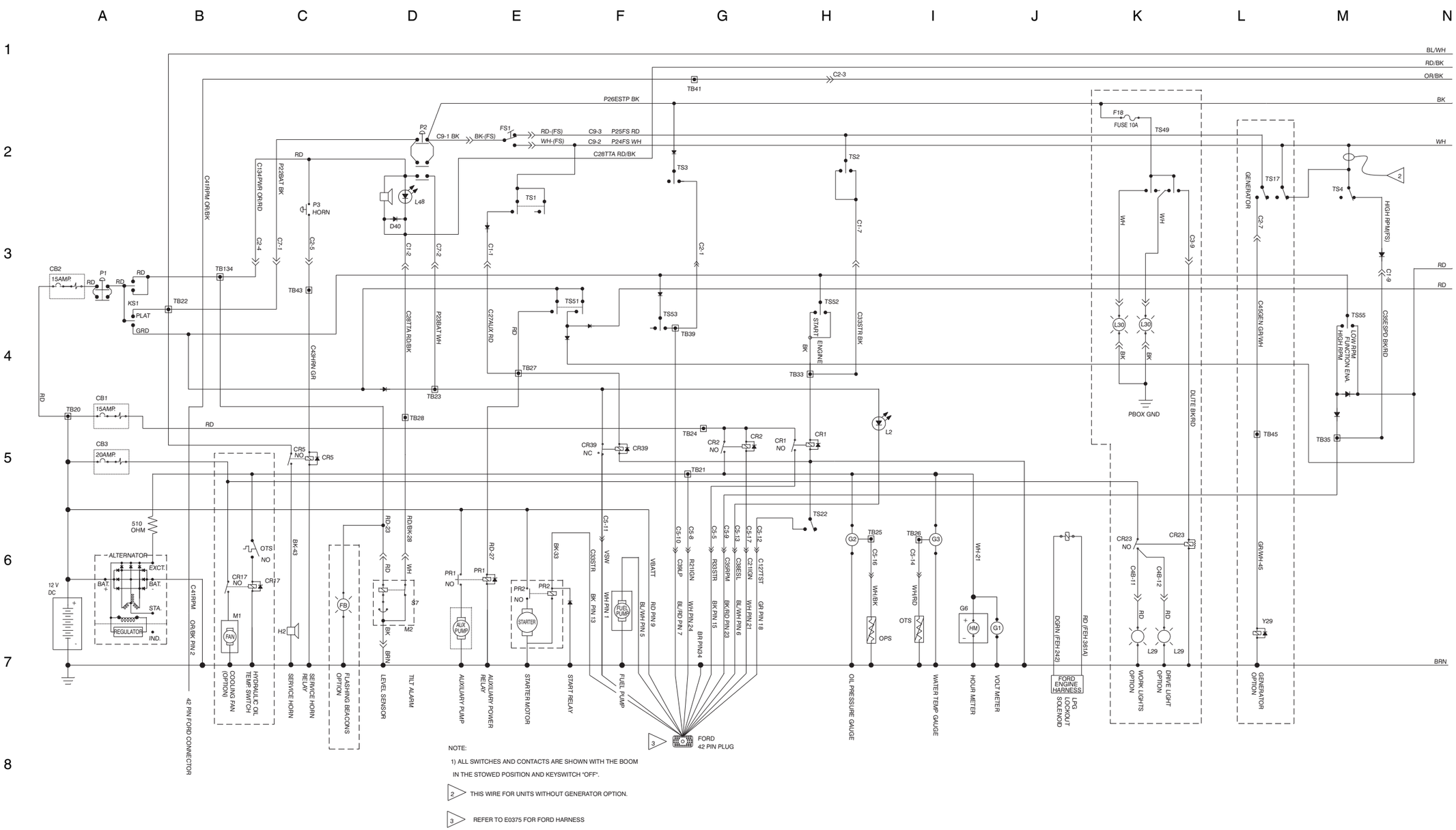
(from serial number 4546 to serial number 5715)





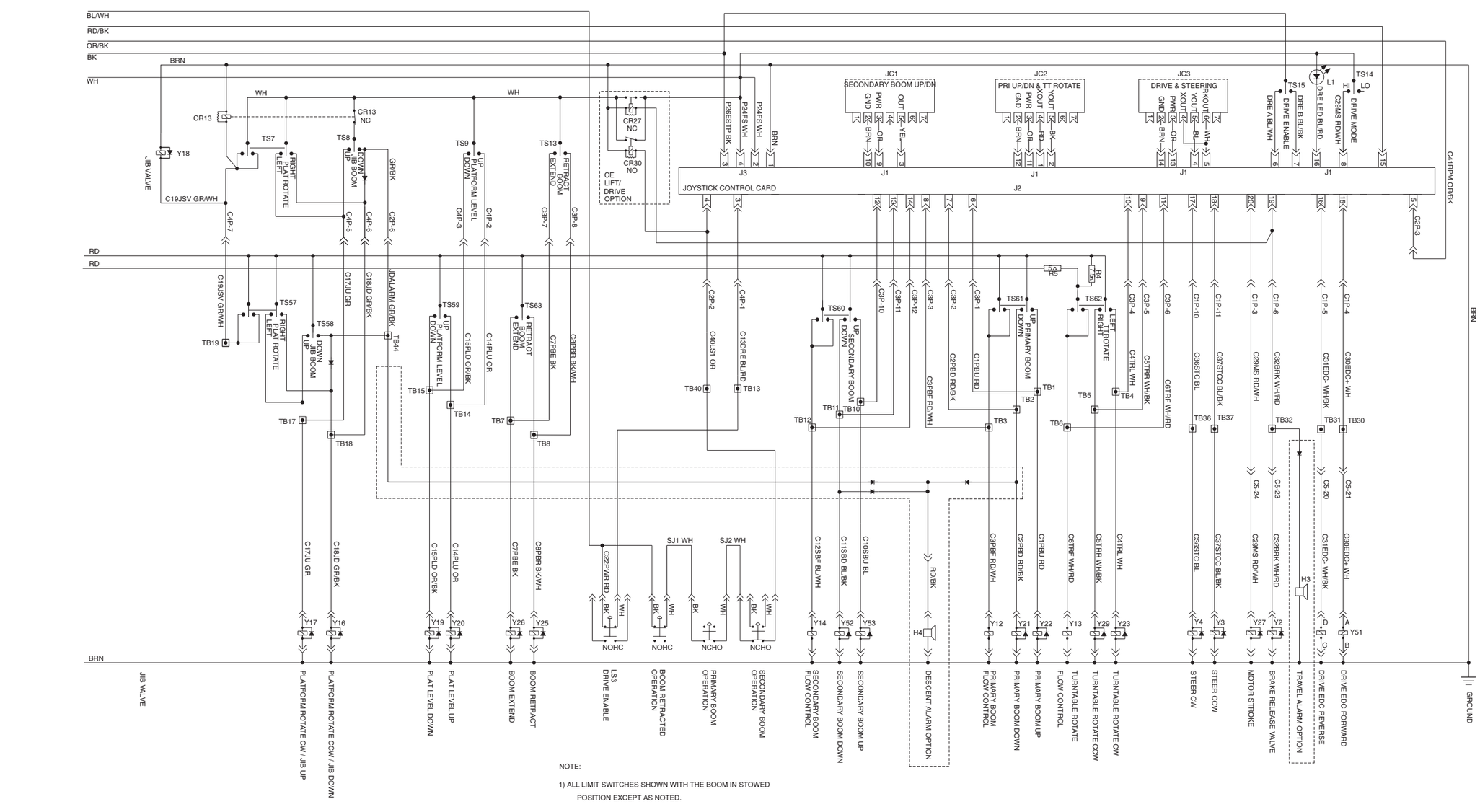
Ford Electrical Schematic - View 1

(from serial number 4546 to serial number 5715)



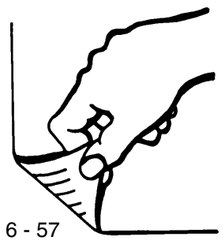
Ford Electrical Schematic - View 2

(from serial number 4546 to serial number 5715)



Ford Electrical Schematic - View 2

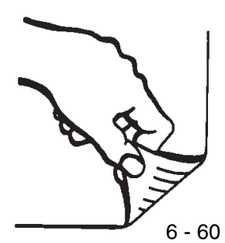
(from serial number 4546 to serial number 5715)



Ford Electrical Schematic - View 1

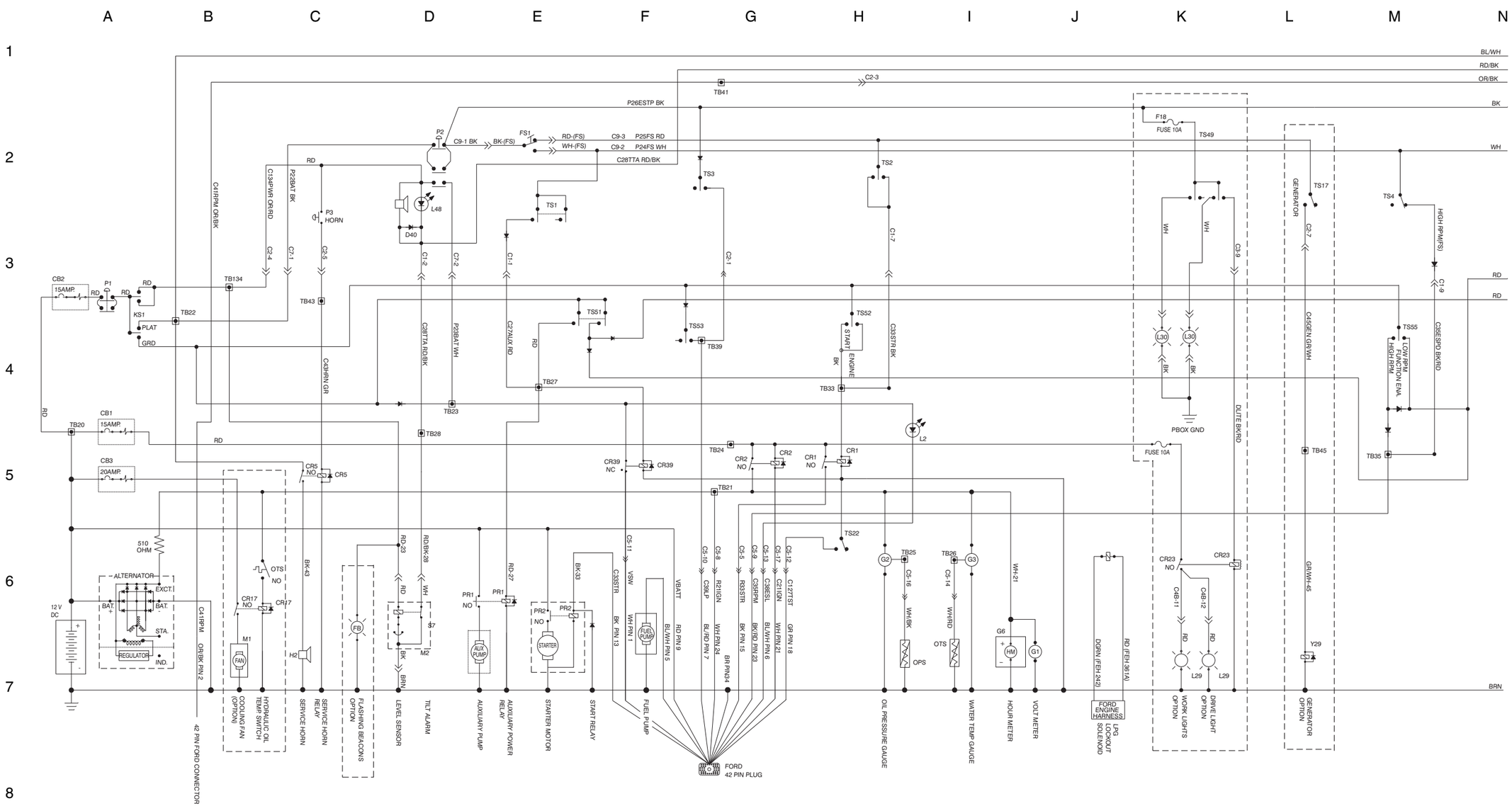
(from serial number 5716 to serial number 6315)





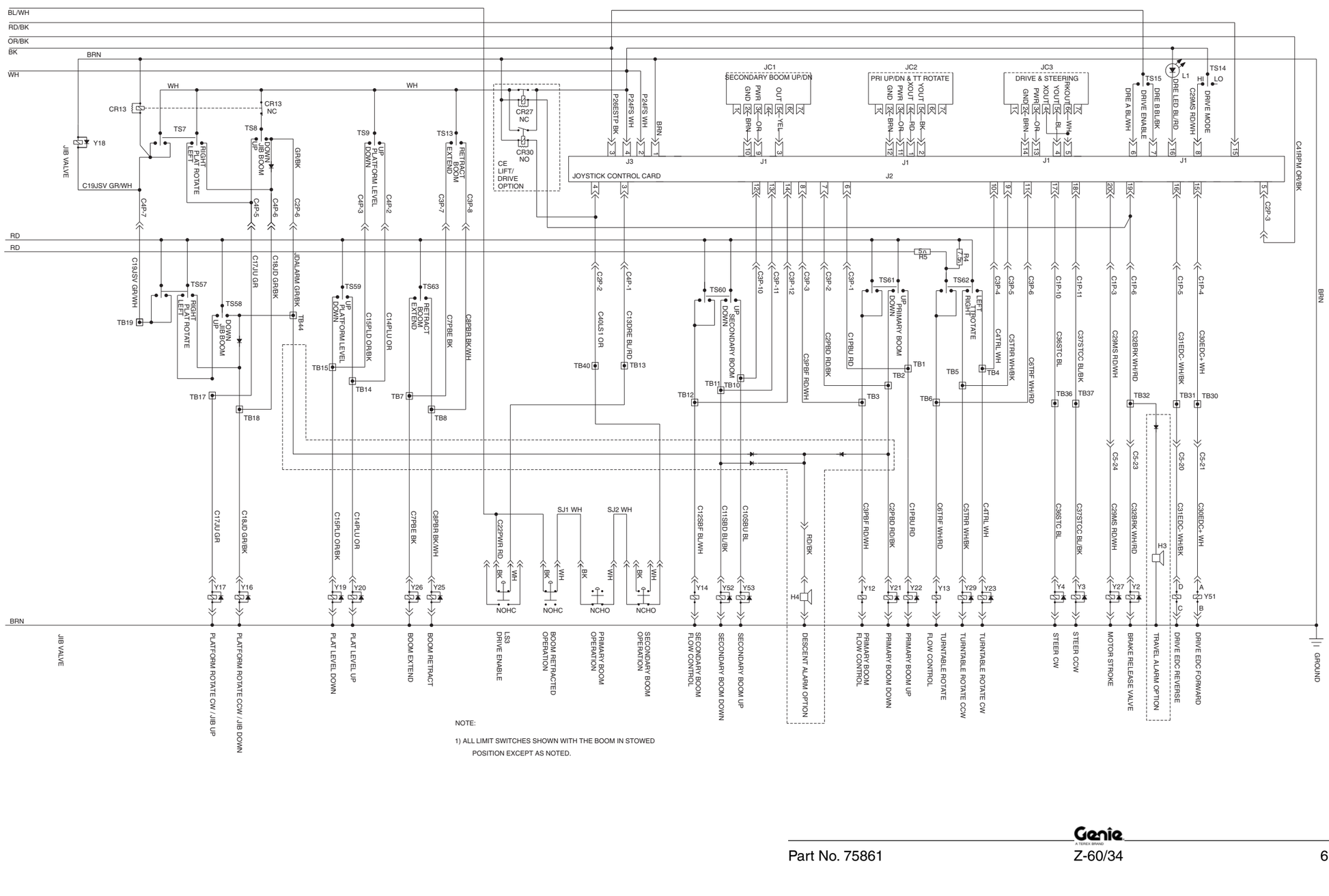
Ford Electrical Schematic - View 1

(from serial number 5716 to serial number 6315)



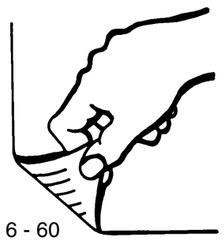
Ford Electrical Schematic - View 2

(from serial number 5716 to serial number 6315)



Ford Electrical Schematic - View 2

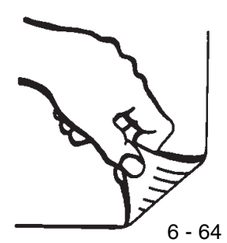
(from serial number 5716 to serial number 6315)



Ford Electrical Schematic - View 1

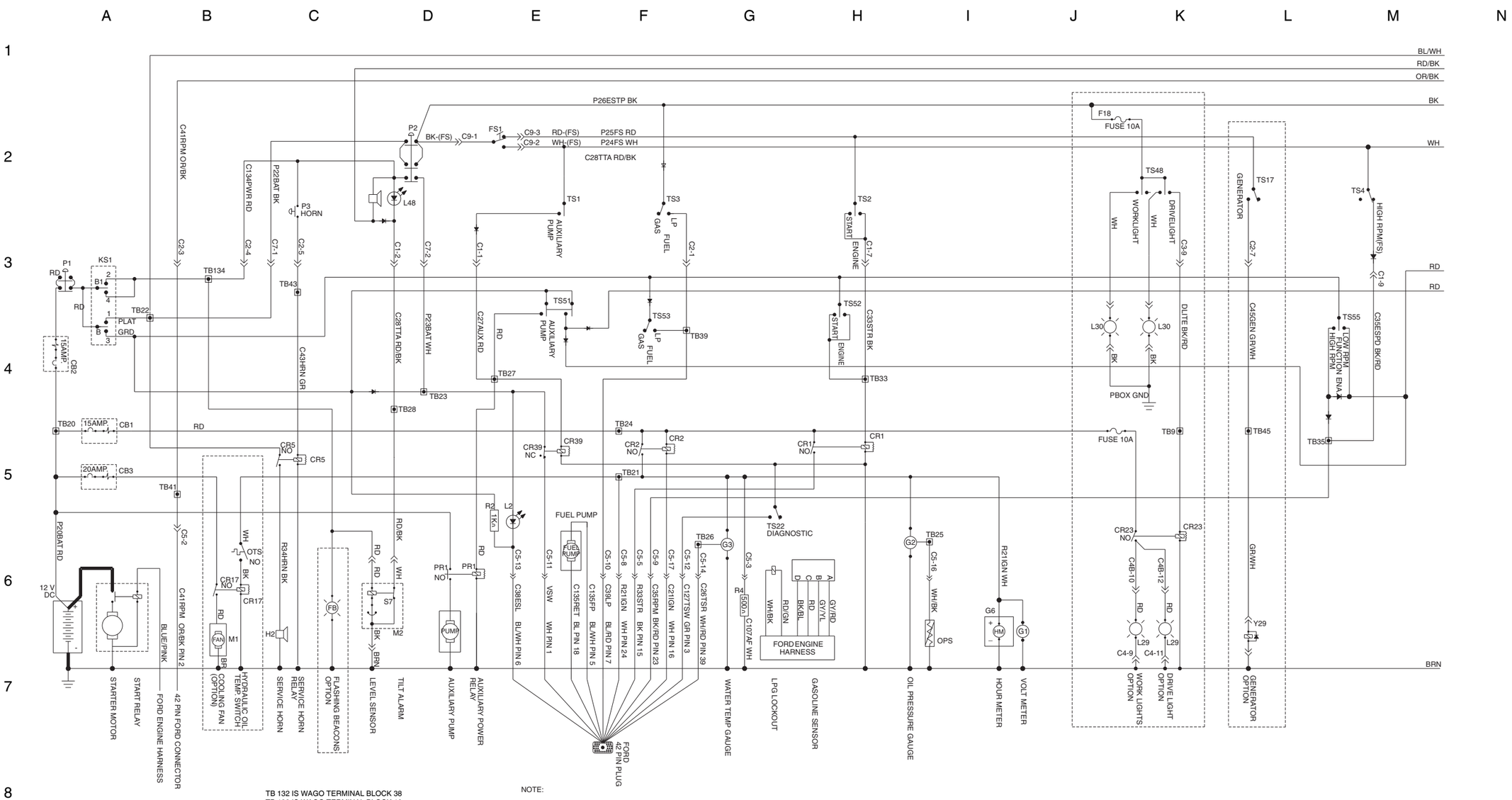
(from serial number 6316 to serial number 7226)





Ford Electrical Schematic - View 1

(from serial number 6316 to serial number 7226)



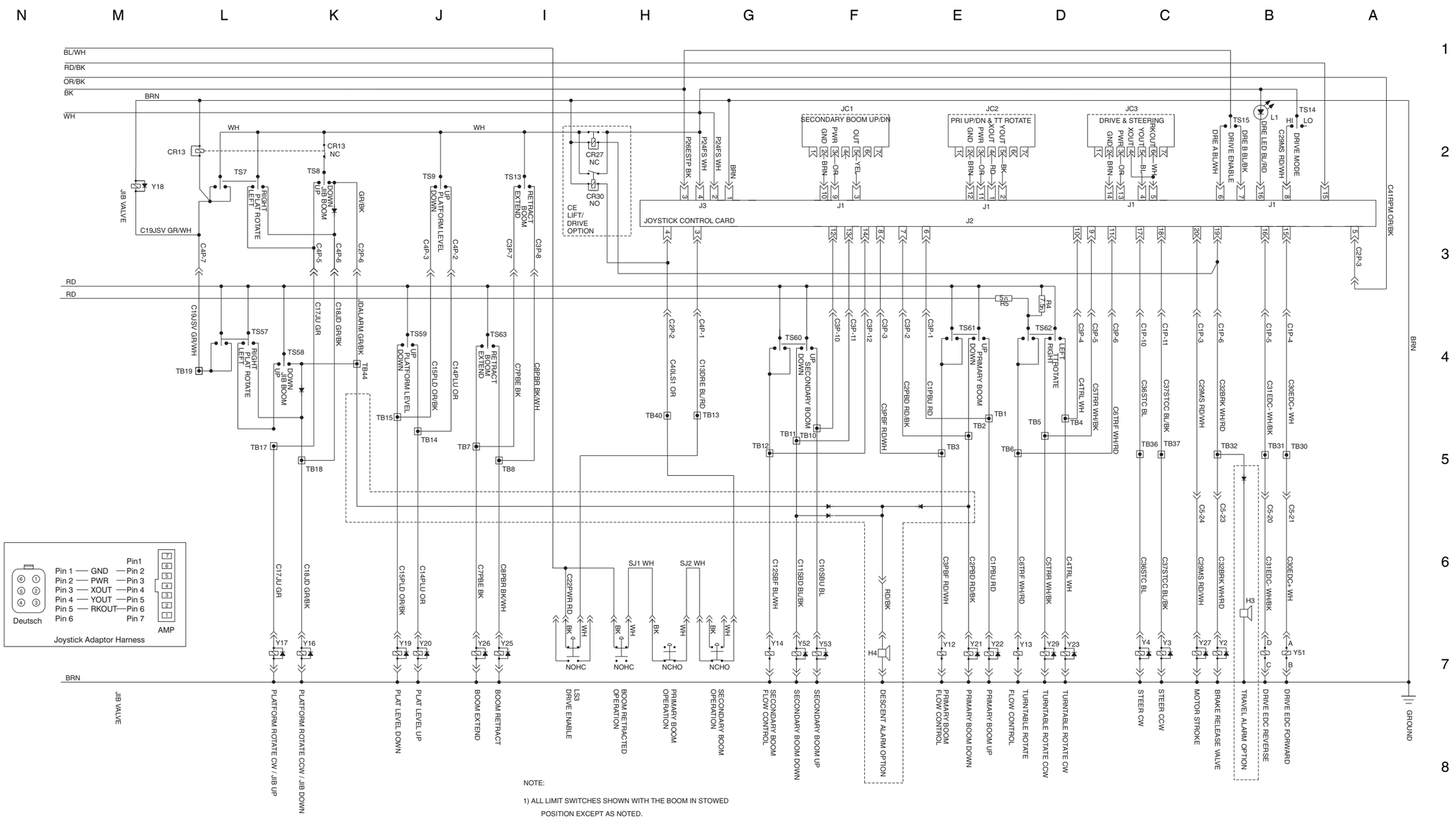
TB 132 IS WAGO TERMINAL BLOCK 38
TB 133 IS WAGO TERMINAL BLOCK 16
TB 134 IS WAGO TERMINAL BLOCK 42

NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Ford Electrical Schematic - View 2

(from serial number 6316 to serial number 7226)

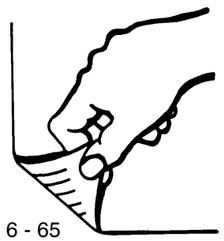


NOTE:

1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

Ford Electrical Schematic - View 2

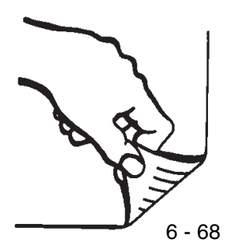
(from serial number 6316 to serial number 7226)



Ford Electrical Schematic - View 1

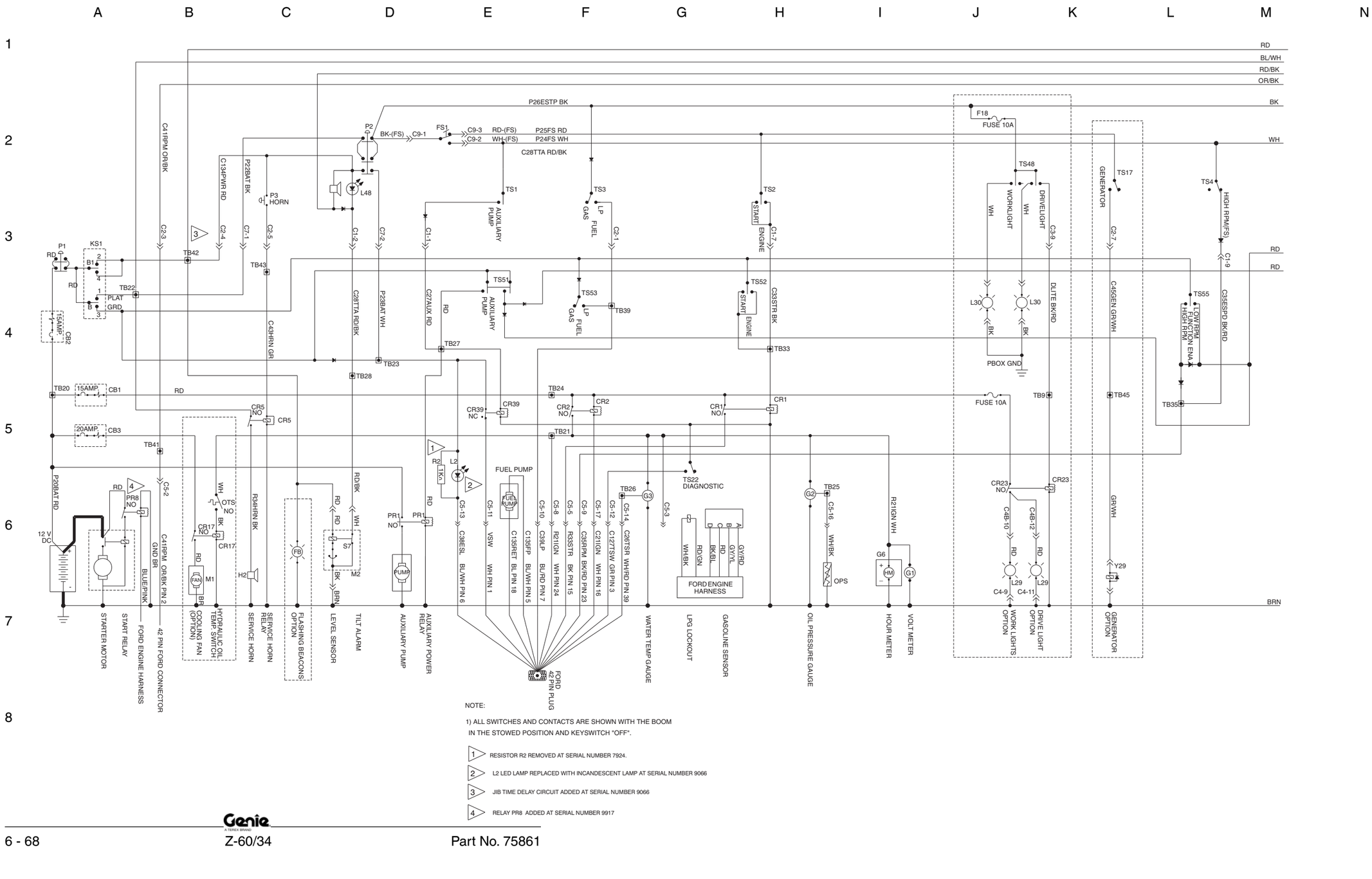
(from serial number 7227 to serial number 10387)





Ford Electrical Schematic - View 1

(from serial number 7227 to serial number 10387)



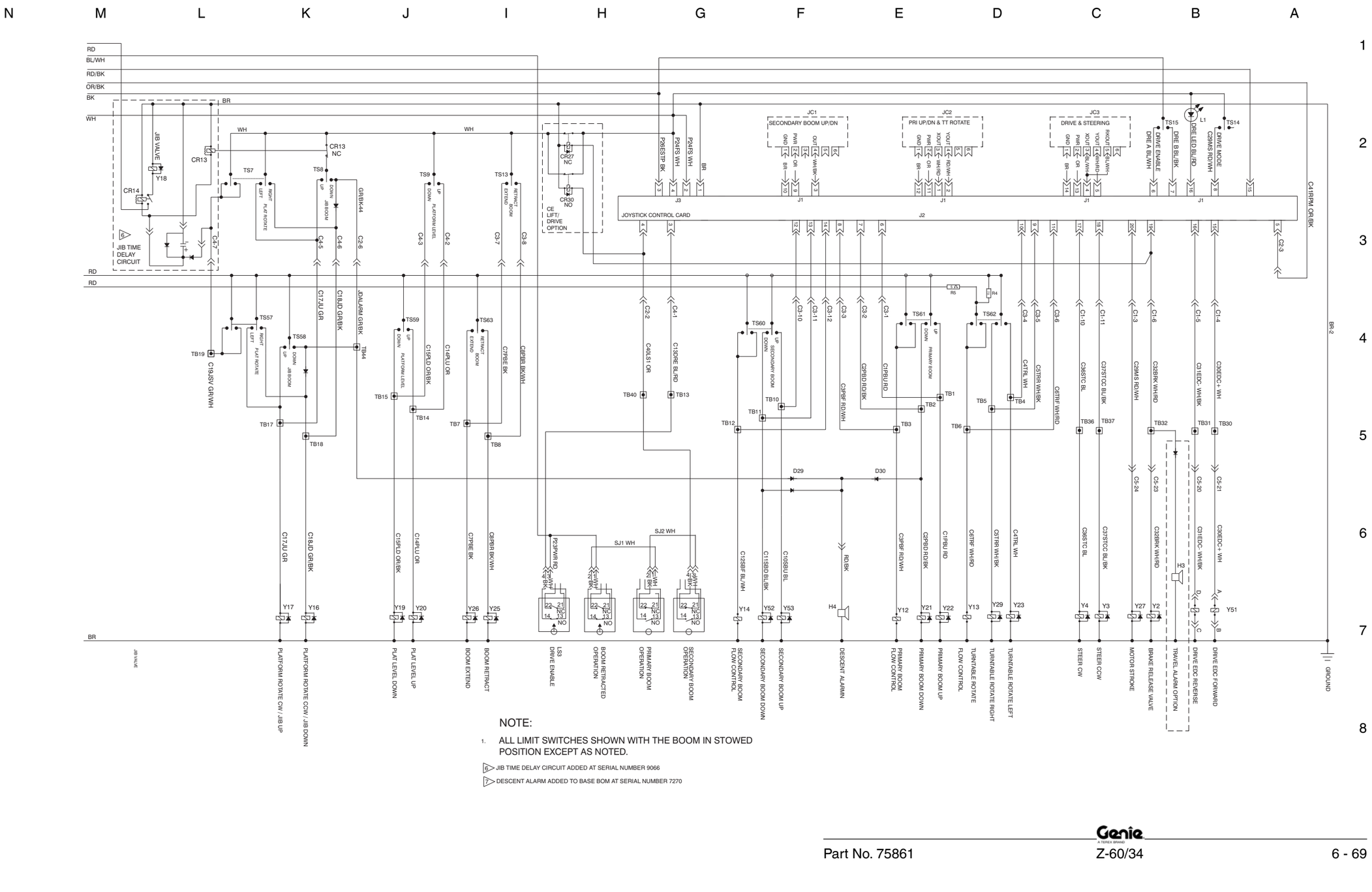
NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

1. RESISTOR R2 REMOVED AT SERIAL NUMBER 7924.
2. L2 LED LAMP REPLACED WITH INCANDESCENT LAMP AT SERIAL NUMBER 9066
3. JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066
4. RELAY PR8 ADDED AT SERIAL NUMBER 9917

Ford Electrical Schematic - View 2

(from serial number 7227 to serial number 10387)



NOTE:

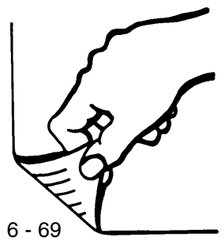
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

Ford Electrical Schematic - View 2

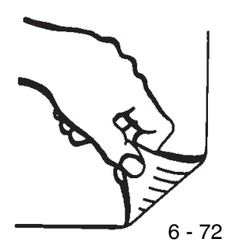
(from serial number 7227 to serial number 10387)



Ford Electrical Schematic, ANSI / CSA - View 1

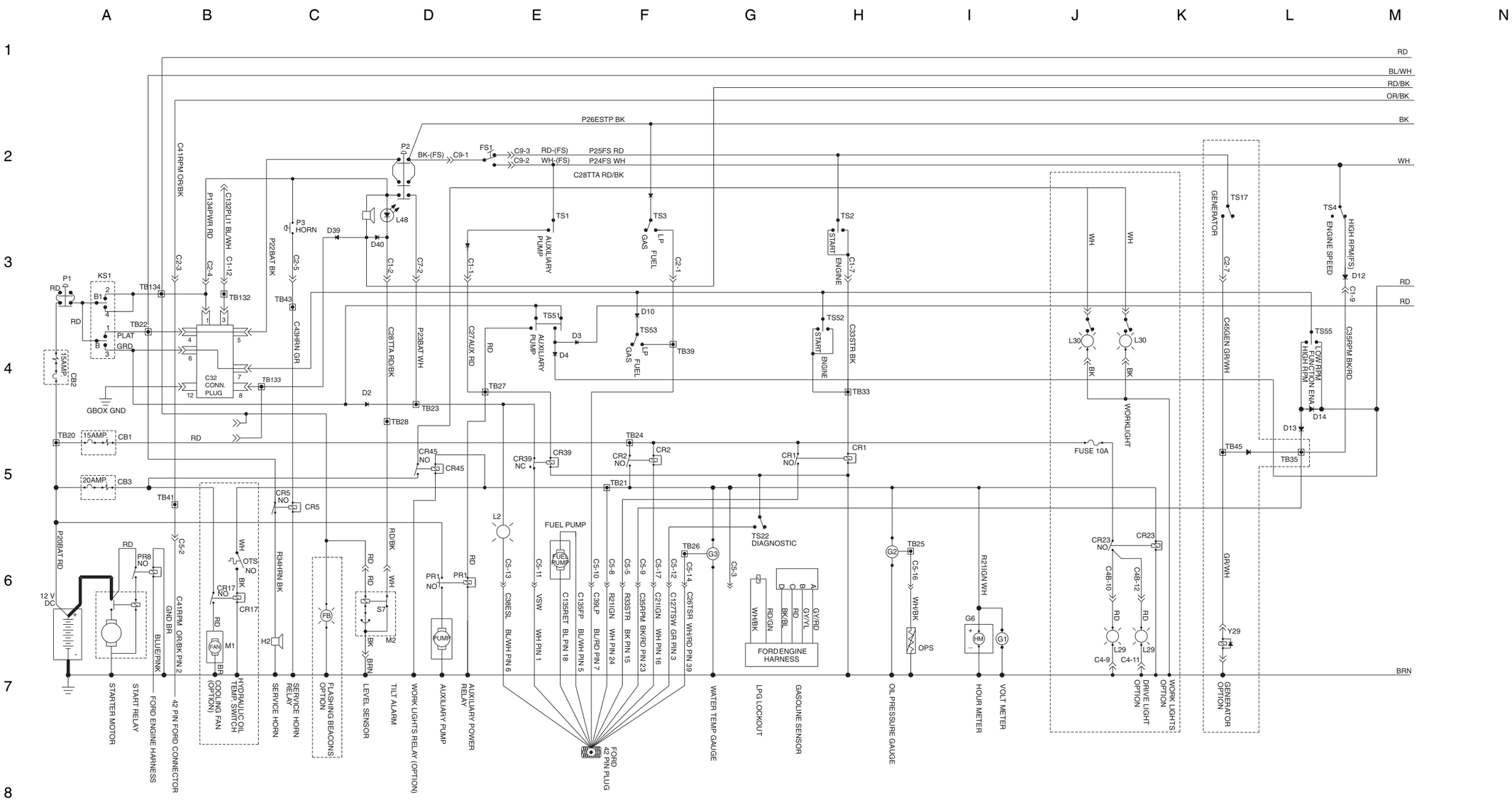
(from serial number 10388 to serial number 11788)





Ford Electrical Schematic, ANSI / CSA - View 1

(from serial number 10388 to 11788)

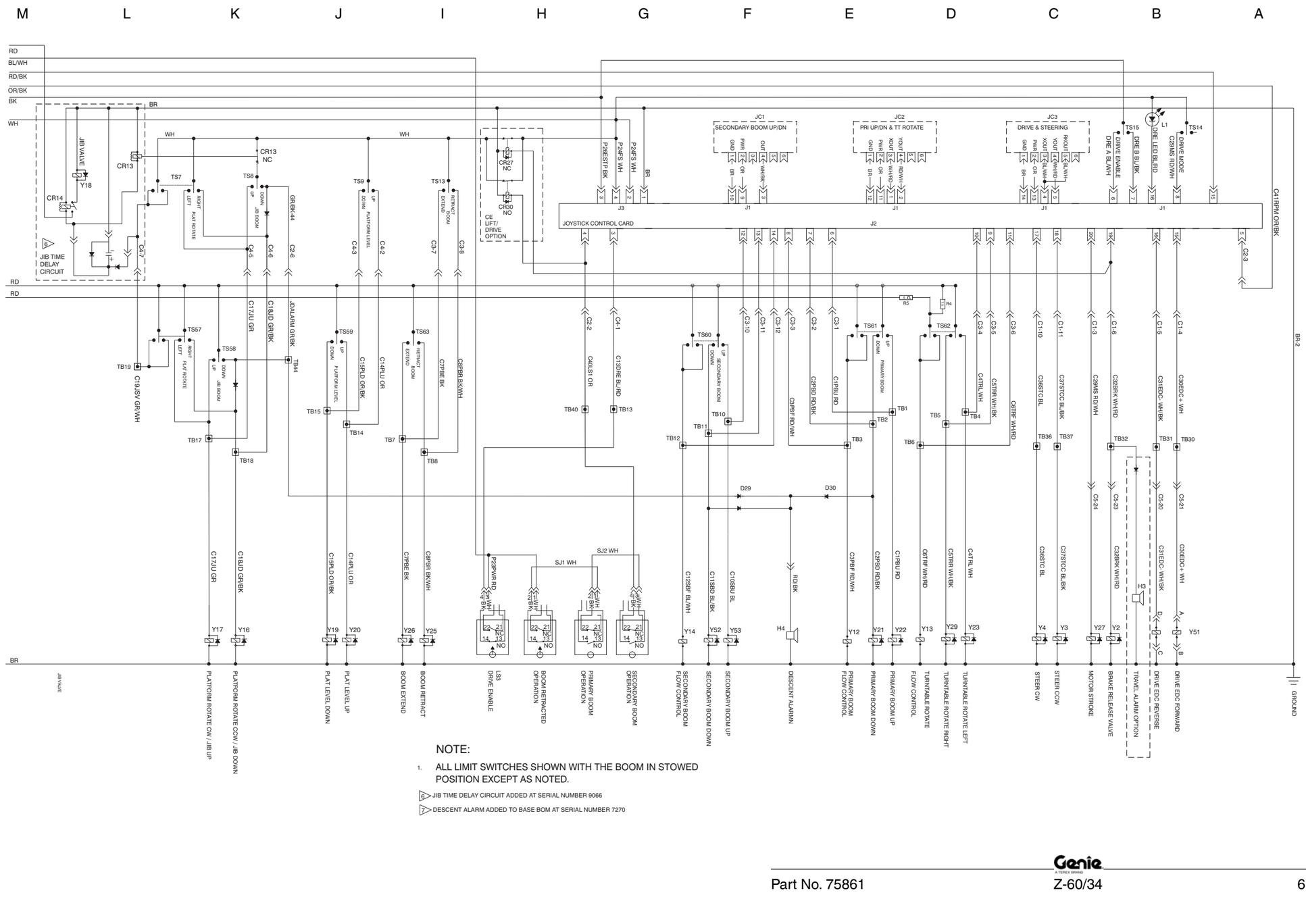


NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Ford Electrical Schematic, ANSI / CSA - View 2

(from serial number 10388 to 11788)



NOTE:

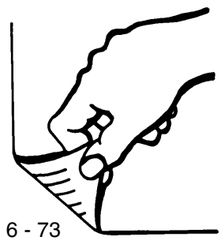
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

Ford Electrical Schematic, ANSI / CSA - View 2

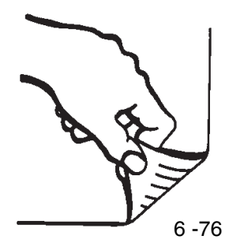
(from serial number 10388 to serial number 11788)



Ford Electrical Schematic, ANSI / CSA - View 1

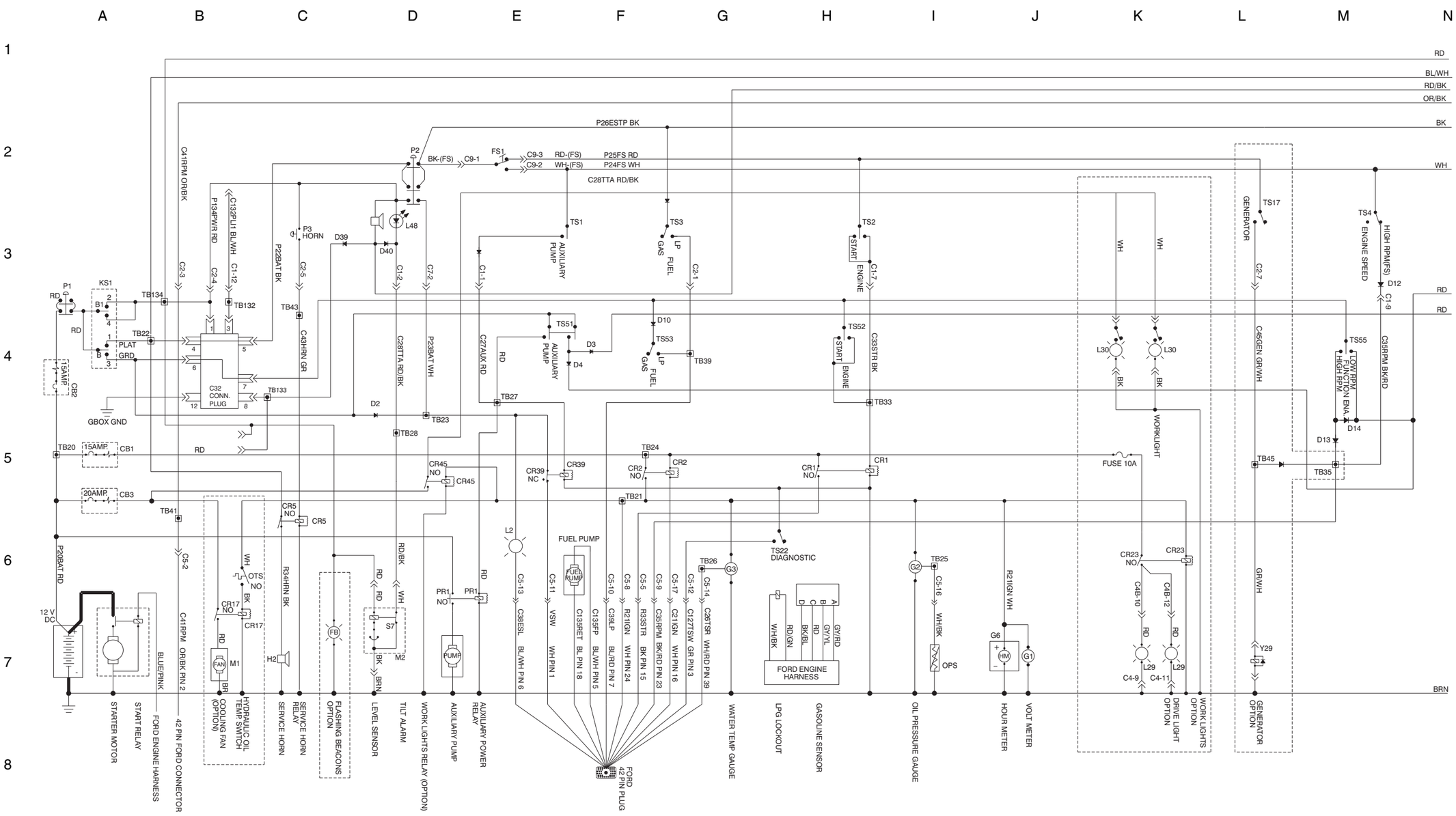
(from serial number 11789)





Ford Electrical Schematic, ANSI / CSA - View 1

(from serial number 11789)

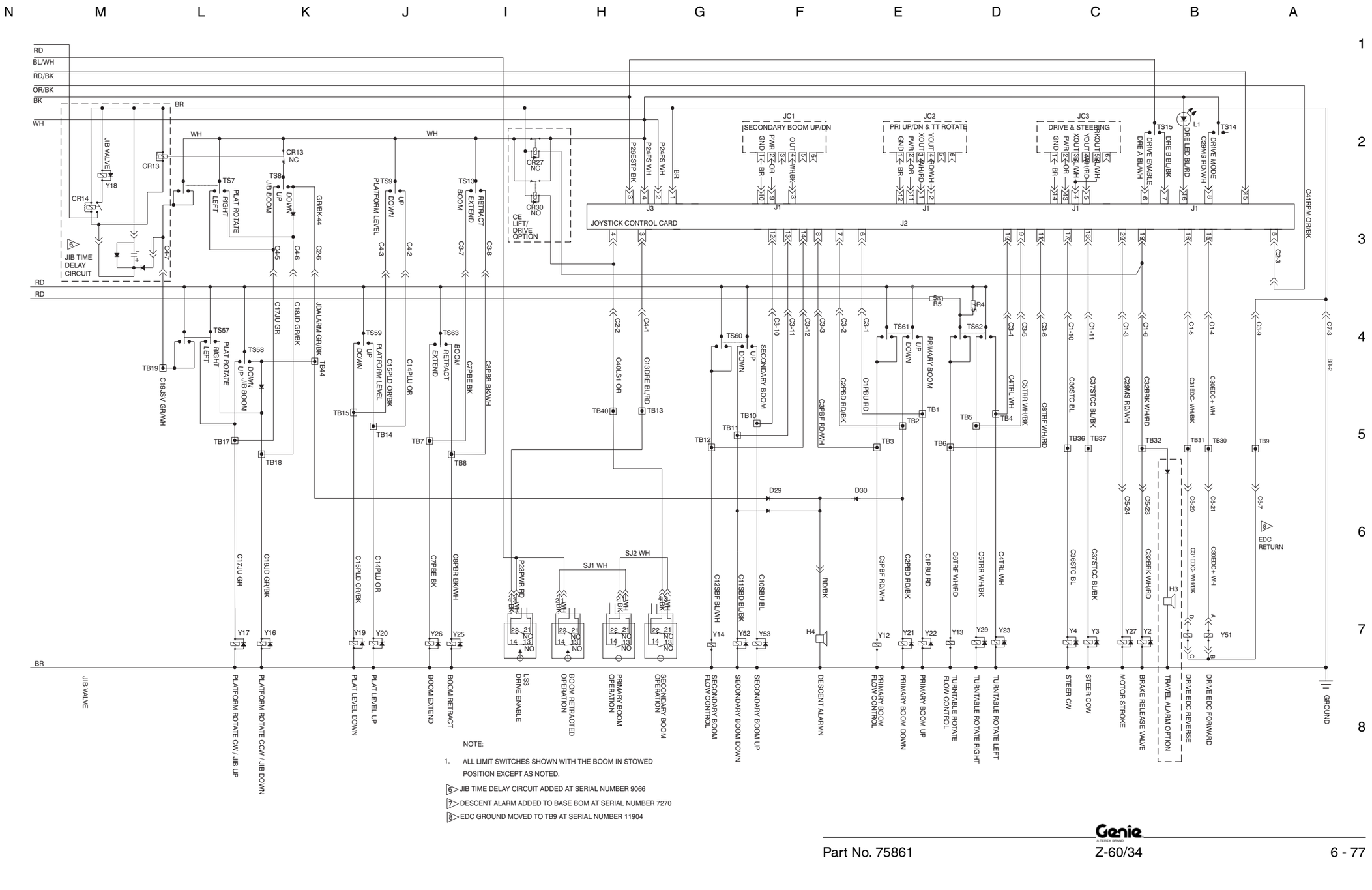


NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Ford Electrical Schematic, ANSI / CSA - View 2

(from serial number 11789)



NOTE:

1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

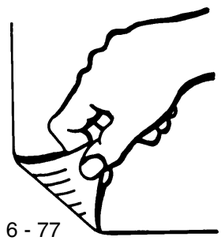
(5) JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

(7) DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

(8) EDC GROUND MOVED TO TB9 AT SERIAL NUMBER 11904

Ford Electrical Schematic, ANSI / CSA - View 2

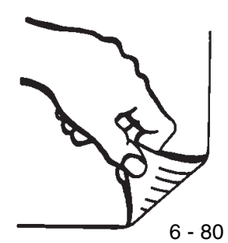
(from serial number 11789)



Ford Electrical Schematic, CE - View 1

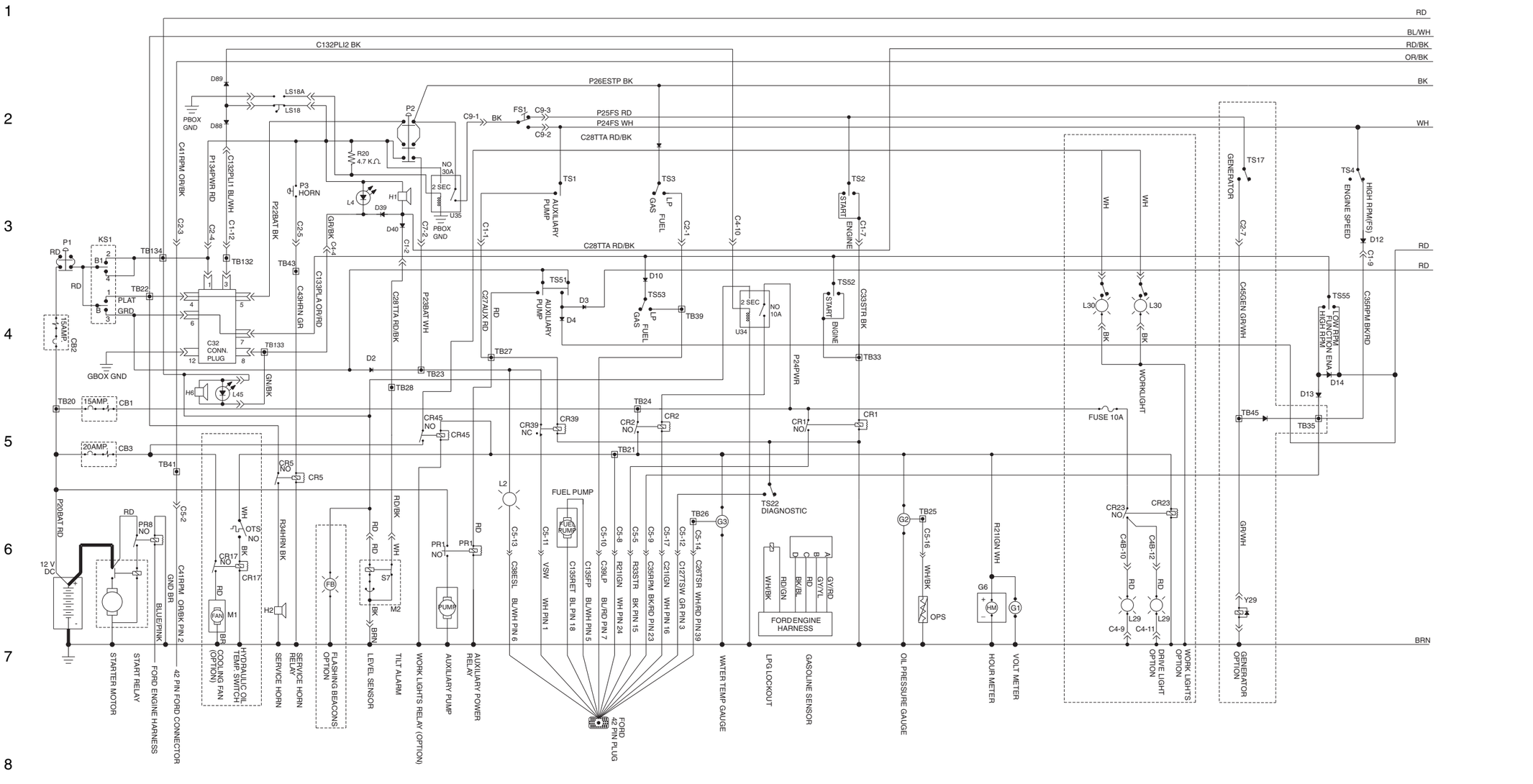
(from serial number 10388 to serial number 11788)





Ford Electrical Schematic, CE - View 1

(from serial number 10388 to serial number 11788)

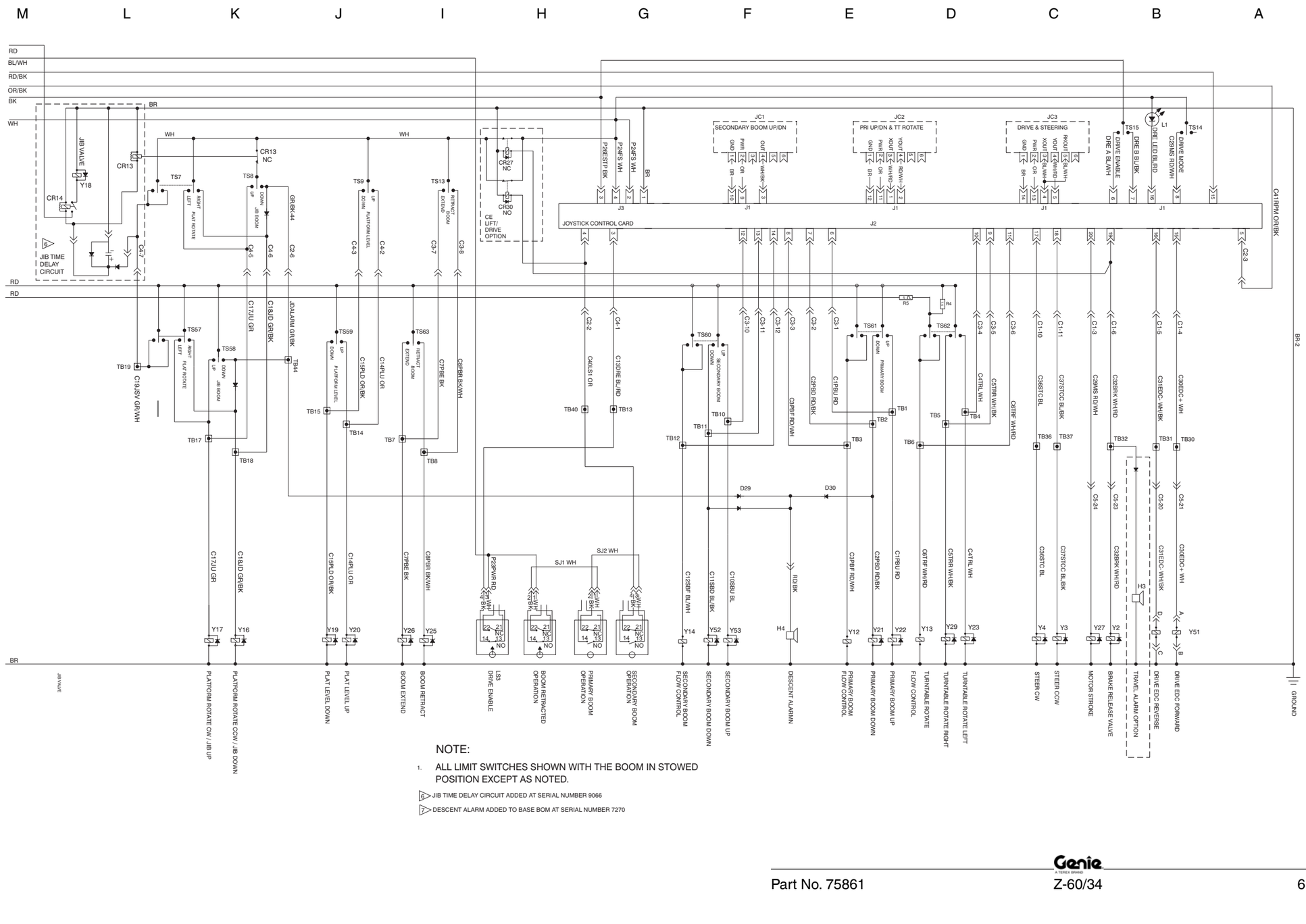


NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Ford Electrical Schematic, CE - View 2

(from serial number 10388 to serial number 11789)



NOTE:

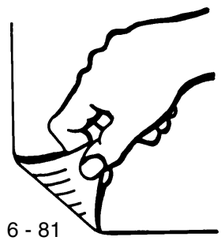
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

6 JIB TIME DELAY CIRCUIT ADDED AT SERIAL NUMBER 9066

7 DESCENT ALARM ADDED TO BASE BOM AT SERIAL NUMBER 7270

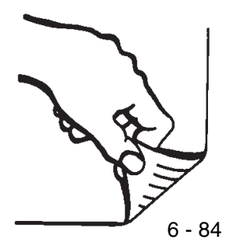
Ford Electrical Schematic, CE - View 2

(from serial number 10388 to serial number 11788)



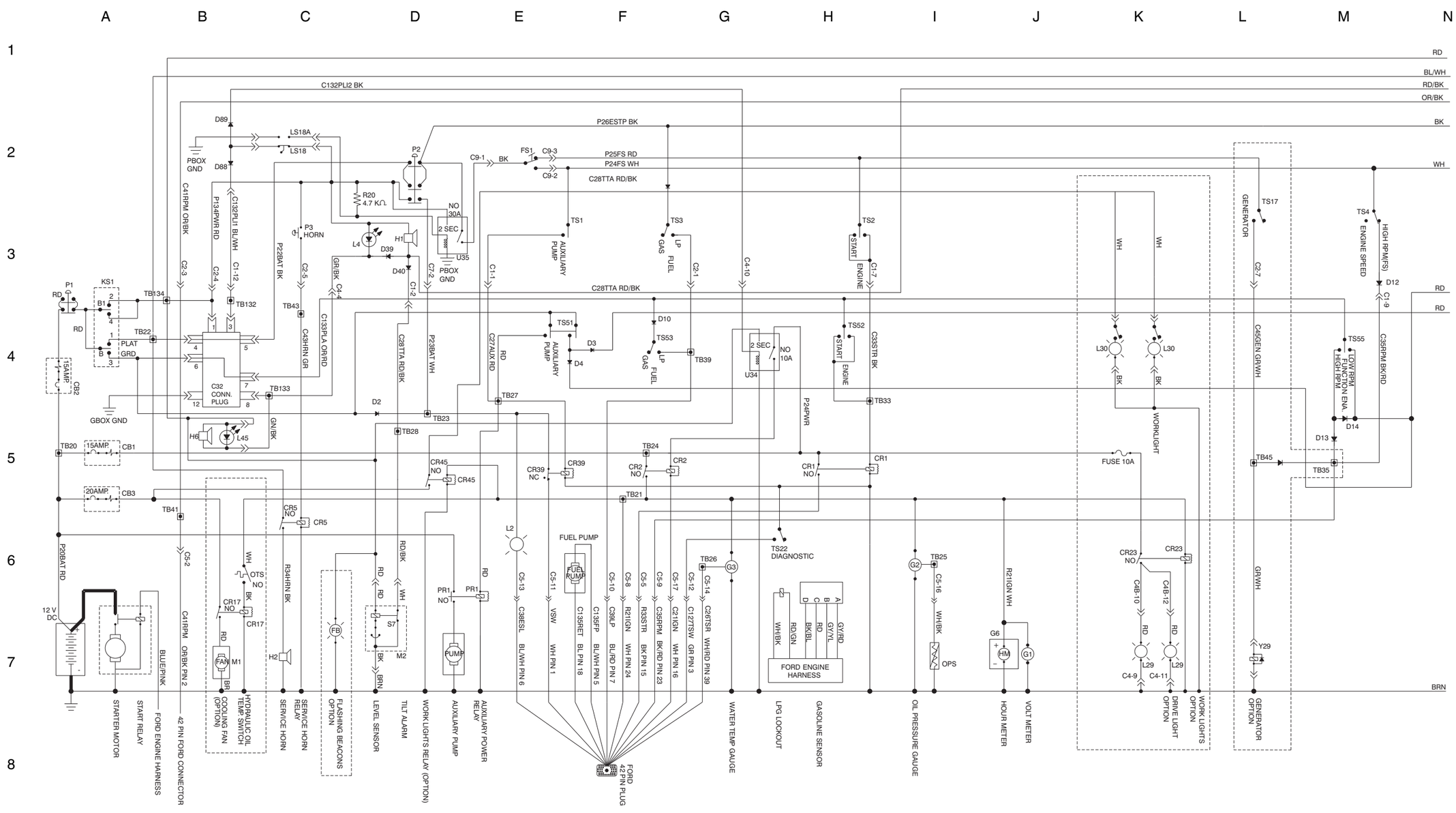
Ford Electrical Schematic, CE - View 1
(from serial number 11789)





Ford Electrical Schematic, CE - View 1

(from serial number 11789)



NOTE:

1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Ford Electrical Schematic, CE - View 2

(from serial number 11789)

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

1

2

3

4

5

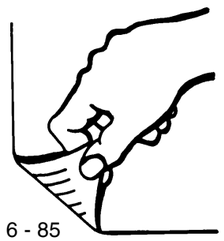
6

7

8

Ford Electrical Schematic, CE - View 2

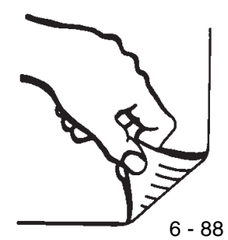
(from serial number 11789)



Ford Ground Control Box Wiring Diagram

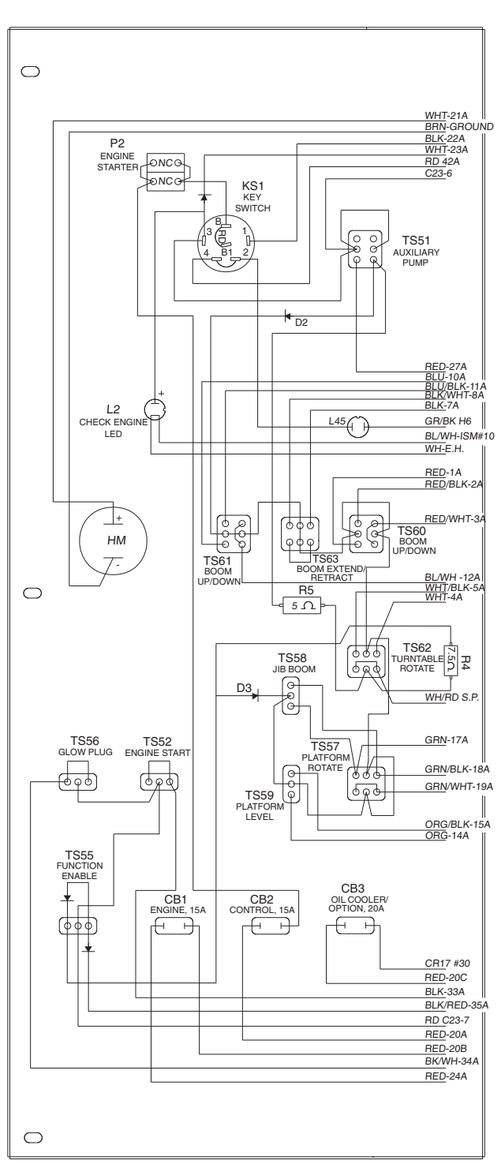
(before serial number 4546)

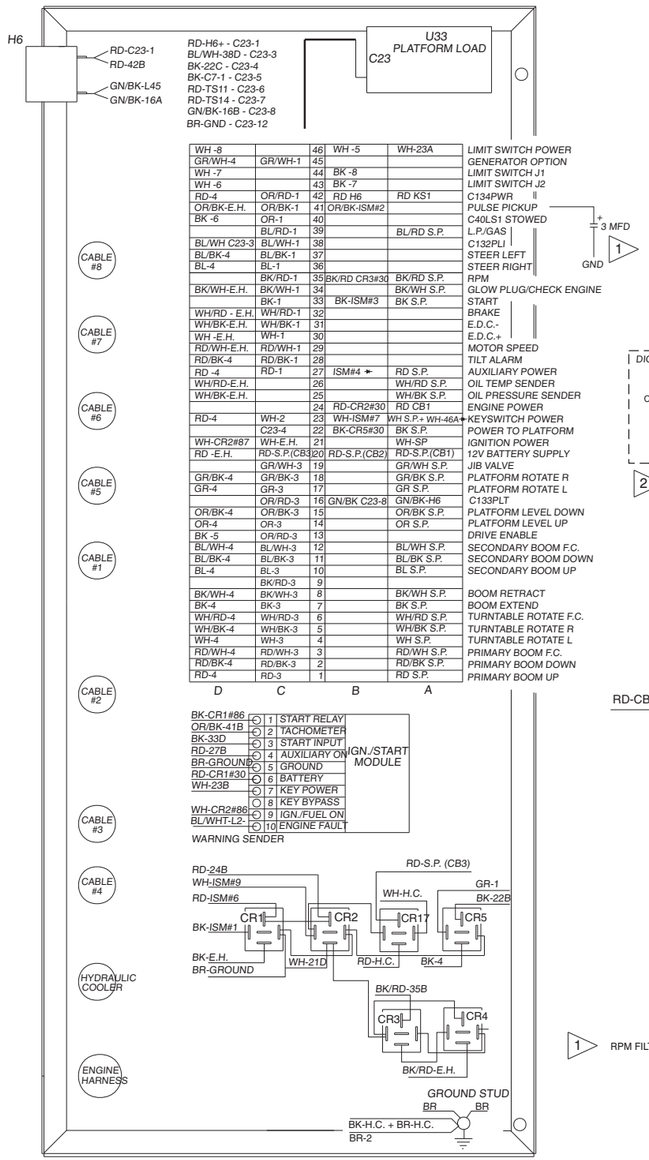




Ford Ground Control Box Wiring Diagram

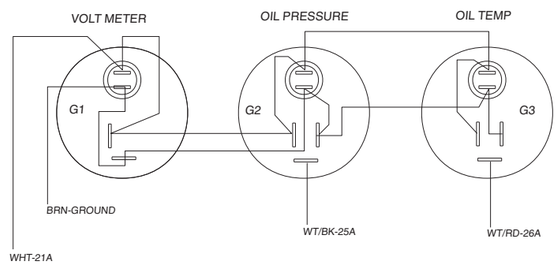
(before serial number 4546)





WH -8		46	WH -5	WH-23A	LIMIT SWITCH POWER
GR/WH-4	GR/WH-1	45			GENERATOR OPTION
WH -7		44	BK -8		LIMIT SWITCH J1
WH -6		43	BK -7		LIMIT SWITCH J2
RD-4	OR/RD-1	42	RD H6	RD KS1	C134PWR
OR/BK-E.H.	OR/BK-1	41	OR/BK-ISM#2		PULSE PICKUP
BK -6	OR-1	40			C40LS1 STOWED
	BL/RD-1	39		BL/RD S.P.	L.P./GAS
BL/WH C23-3	BL/WH-1	38			C132PLI
BL/BK-4	BL/BK-1	37			STEER LEFT
BL-4	BL-1	36			STEER RIGHT
	BK/RD-1	35	BK/RD CR3#30	BK/RD S.P.	RPM
BK/WH-E.H.	BK/WH-1	34		BK/WH S.P.	GLOW PLUG/CHECK ENGINE
	BK-1	33	BK-ISM#3	BK S.P.	START
WH/RD - E.H.	WH/RD-1	32			BRAKE
WH/BK-E.H.	WH/BK-1	31			E.D.C.-
WH -E.H.	WH-1	30			E.D.C.+
RD/WH-E.H.	RD/WH-1	29			MOTOR SPEED
RD/BK-4	RD/BK-1	28			TILT ALARM
RD -4	RD-1	27	ISM#4 →	RD S.P.	AUXILIARY POWER
WH/RD-E.H.		26		WH/RD S.P.	OIL TEMP SENDER
WH/BK-E.H.		25		WH/BK S.P.	OIL PRESSURE SENDER
		24	RD-CR2#30	RD CB1	ENGINE POWER
RD-4	WH-2	23	WH-ISM#7	WH S.P.+ WH-46A+	KEYSWITCH POWER
	C23-4	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-CR2#87	WH-E.H.	21		WH-SP	IGNITION POWER
RD -E.H.	RD-S.P.(CB3	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-3	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-3	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-3	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-3	16	GN/BK C23-8	GN/BK-H6	C133PLT
OR/BK-4	OR/BK-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-3	14		OR S.P.	PLATFORM LEVEL UP
BK -5	OR/RD-3	13			DRIVE ENABLE
BL/WH-4	BL/WH-3	12		BL/WH S.P.	SECONDARY BOOM F.C.
BL/BK-4	BL/BK-3	11		BL/BK S.P.	SECONDARY BOOM DOWN
BL-4	BL-3	10		BL S.P.	SECONDARY BOOM UP
	BK/RD-3	9			
BK/WH-4	BK/WH-3	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-3	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-3	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-3	5		WH/BK S.P.	TURNTABLE ROTATE R
WH-4	WH-3	4		WH S.P.	TURNTABLE ROTATE L
RD/WH-4	RD/WH-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-3	2		RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-3	1		RD S.P.	PRIMARY BOOM UP
D	C	B		A	

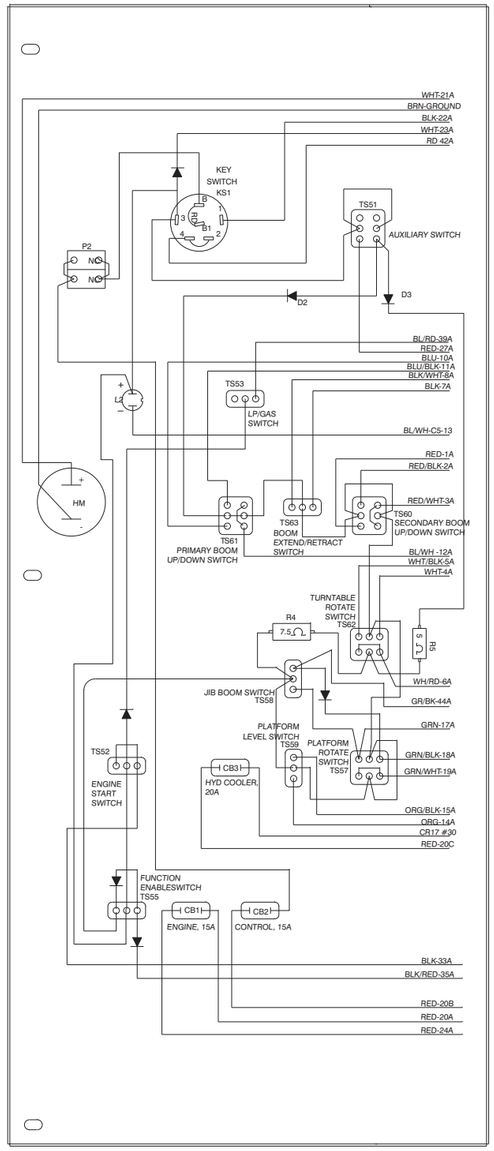
BK-CR1#86	1	START RELAY
OR/BK-41B	2	TACHOMETER
BK-33D	3	START INPUT
RD-27B	4	AUXILIARY ON
BR-GROUND	5	GROUND
RD-CR1#30	6	BATTERY
WH-23B	7	KEY POWER
	8	KEY BYPASS
WH-CR2#86	9	IGN./FUEL ON
BL/WHT-L2-	10	ENGINE FAULT

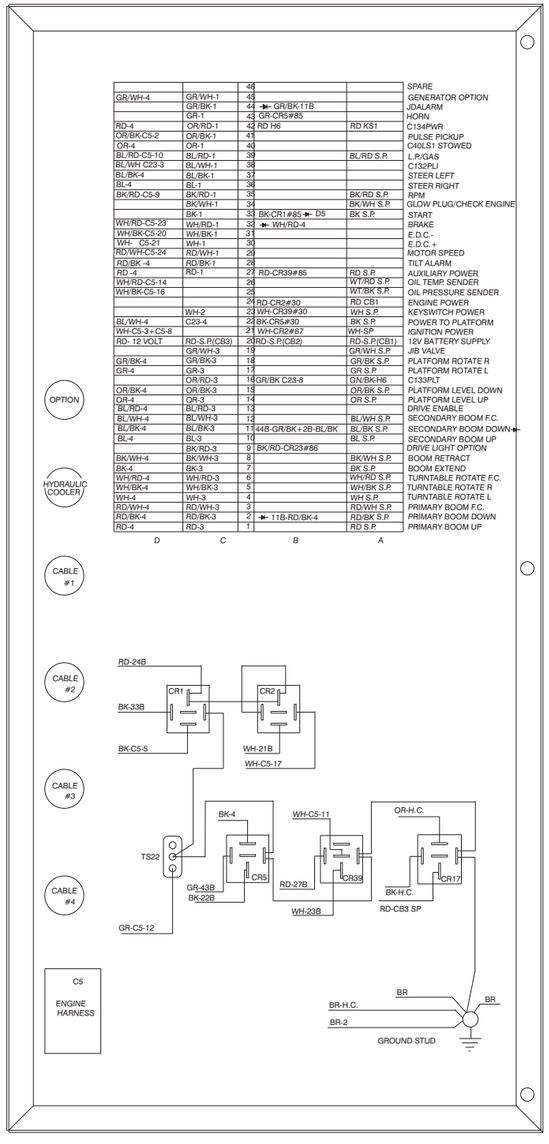


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS55	FUNCTION ENABLESWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
TS64	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROL, 15A
CB3	CIRCUIT BREAKER, HYD COOLER, 20A
HM	HOUR METER
R4	RESISTOR, 7.5 OHM, TURN. ROT. FUNC.
R5	RESISTOR, 5 OHM, TURN. AUX. FUNC.
G1	VOLT METER GAGE
G2	OIL PRESSURE GAGE
G3	WATER TEMP. GAGE
H2	SERVICE HORN
H3	TRAVEL BUZZER
H4	DESCENT BUZZER
CR1	IGN/START RELAY
CR2	IGN./POWER RELAY
CR3	HIGH IDLE (RPM) CUTOUT RELAY
CR4	RPM RELAY
CR5	SERVICE HORN RELAY
CR17	HYDRAULIC COOLER FAN RELAY
CR18	CE PLATFORM LEVEL RELAY
H6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED
V33	PLATFORM OVERLOAD MODULE
LS1 (CABLE#6)	PRIMARY BOOM STOWED LIMIT SWITCH
LS2 (CABLE#5)	DRIVE ENABLE LIMIT SWITCH
LS3 (CABLE#7)	BOOM RETRACTED LIMIT SWITCH
LS4 (CABLE#8)	SECONDARY BOOM STOWED LIMIT SWITCH
(CABLE#1)	TO PLATFORM C-BOX, TERMINAL 27-46
(CABLE#2)	TO PLATFORM C-BOX, TERMINAL 22-23
(CABLE#3)	TO PLATFORM C-BOX, TERMINAL 1-19
(CABLE#4)	TO FUNCTION MANIFOLD
PR1	AUXILARY POWER RELAY
PR2	GLOW PLUG POWER RELAY

Ford Ground Control Box Wiring Diagram

(from serial number 4546 to serial number 5715)

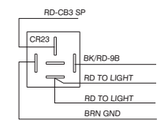


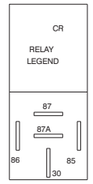


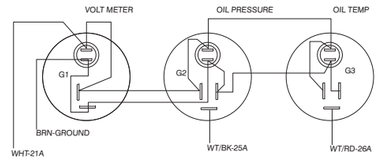
		46		SPARE
GR/WH-4	GR/WH-1	45		GENERATOR OPTION
	GR/BK-1	44	→ GR/BK-11B	J3ALARM
	GR-1	43	GR-CR5#85	HORN
RD-4	OR/RD-1	42	RD H6	RD KS1	C134PWR
OR/BK-C5-2	OR/BK-1	41			PULSE PICKUP
OR-4	OR-1	40			C40LS1 STOWED
BL/RD-C5-10	BL/RD-1	39		BL/RD S.P.	L.P/GAS
BL/WH C23-3	BL/WH-1	38			C132PLI
BL/BK-4	BL/BK-1	37			STEER LEFT
BL-4	BL-1	36			STEER RIGHT
BK/RD-C5-9	BK/RD-1	35		BK/RD S.P.	RPM
	BK/WH-1	34		BK/WH S.P.	GLOW PLUG/CHECK ENGINE
	BK-1	33	BK-CR1#85 → D5	BK S.P.	START
WH/RD-C5-23	WH/RD-1	32	→ WH/RD-4		BRAKE
WH/BK-C5-20	WH/BK-1	31			E.D.C.-
WH- C5-21	WH-1	30			E.D.C.+
RD/WH-C5-24	RD/WH-1	29			MOTOR SPEED
RD/BK -4	RD/BK-1	28			TILT ALARM
RD -4	RD-1	27	RD-CR39#85	RD S.P.	AUXILIARY POWER
WH/RD-C5-14		26		WT/RD S.P.	OIL TEMP SENDER
WH/BK-C5-16		25		WT/BK S.P.	OIL PRESSURE SENDER
		24	RD-CR2#30	RD CB1	ENGINE POWER
	WH-2	23	WH-CR39#30	WH S.P.	KEYSWITCH POWER
BL/WH-4	C23-4	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-C5-3+ C5-8		21	WH-CR2#87	WH-SP	IGNITION POWER
RD- 12 VOLT	RD-S.P.(CB3)	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-3	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-3	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-3	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-3	16	GR/BK C23-8	GN/BK-H6	C133PLT
OR/BK-4	OR/BK-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-3	14		OR S.P.	PLATFORM LEVEL UP
BL/RD-4	BL/RD-3	13			DRIVE ENABLE
BL/WH-4	BL/WH-3	12		BL/WH S.P.	SECONDARY BOOM F.C.
BL/BK-4	BL/BK-3	11	44B-GR/BK+2B-BL/BK	BL/BK S.P.	SECONDARY BOOM DOWN →
BL-4	BL-3	10		BL S.P.	SECONDARY BOOM UP
	BK/RD-3	9	BK/RD-CR23#86		DRIVE LIGHT OPTION
BK/WH-4	BK/WH-3	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-3	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-3	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-3	5		WH/BK S.P.	TURNTABLE ROTATE R
WH-4	WH-3	4		WH S.P.	TURNTABLE ROTATE L
RD/WH-4	RD/WH-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-3	2	→ 11B-RD/BK-4	RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-3	1		RD S.P.	PRIMARY BOOM UP

D C B A

DRIVE LIGHT OPTION RELAY



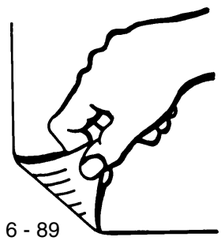




LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS53	LP/GAS SWITCH
TS55	FUNCTION ENABLESWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB BOOM SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
TS22	RUN/TEST SWITCH
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROL, 15A
CB3	CIRCUIT BREAKER, HYD COOLER, 20A
HM	HOUR METER
R4	RESISTOR, 7.5 OHM, TURN. ROT. FUNC.
R5	RESISTOR, 5 OHM, TURN. AUX. FUNC.
G1	VOLT METER GAGE
G2	OIL PRESSURE GAGE
G3	WATER TEMP. GAGE
H2	SERVICE HORN
H3	TRAVEL BUZZER
H4	DESCENT BUZZER
CR1	IGN/START RELAY
CR2	IGN./POWER RELAY
CR5	SERVICE HORN RELAY
CR39	AUX FUNCTION
CR17	HYDRAULIC COOLER FAN RELAY
H6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED
U33	PLATFORM OVERLOAD MODULE
(CABLE#1)	TO PLATFORM C-BOX, TERMINAL 27-46
(CABLE#2)	TO PLATFORM C-BOX, TERMINAL 22-23
(CABLE#3)	TO PLATFORM C-BOX, TERMINAL 1-19
(CABLE#4)	TO FUNCTION MANIFOLD
PR1	AUXILARY POWER RELAY
PR2	GLOW PLUG POWER RELAY

Ford Ground Control Box Wiring Diagram

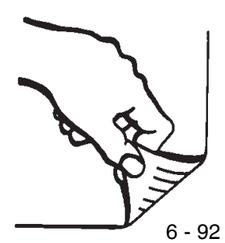
(from serial number 4545 to serial number 5715)



Ford Ground Control Box Wiring Diagram

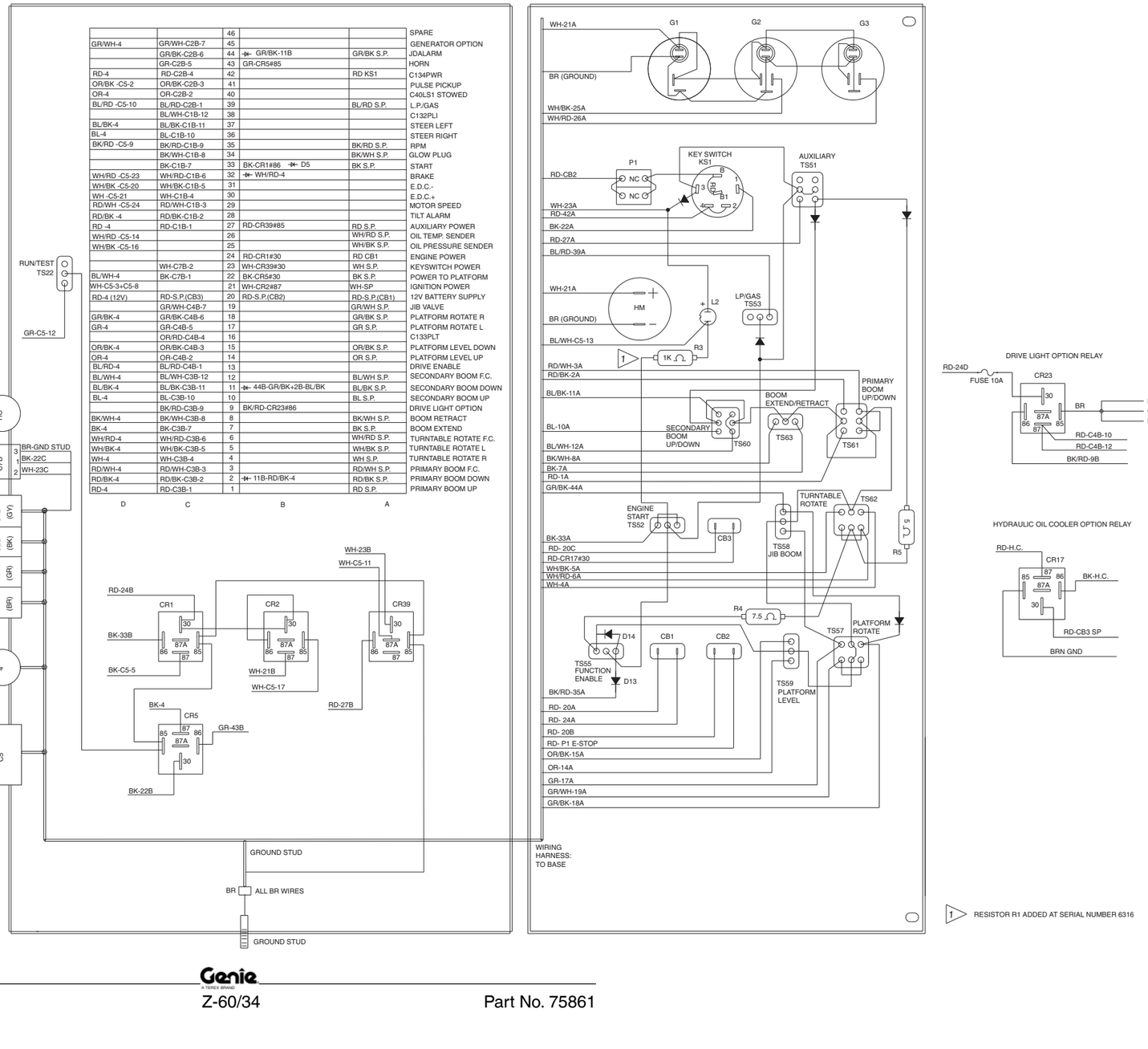
(from serial number 5716 to serial number 7226)





Ford Ground Control Box Wiring Diagram

(from serial number 5716 to serial number 7226)



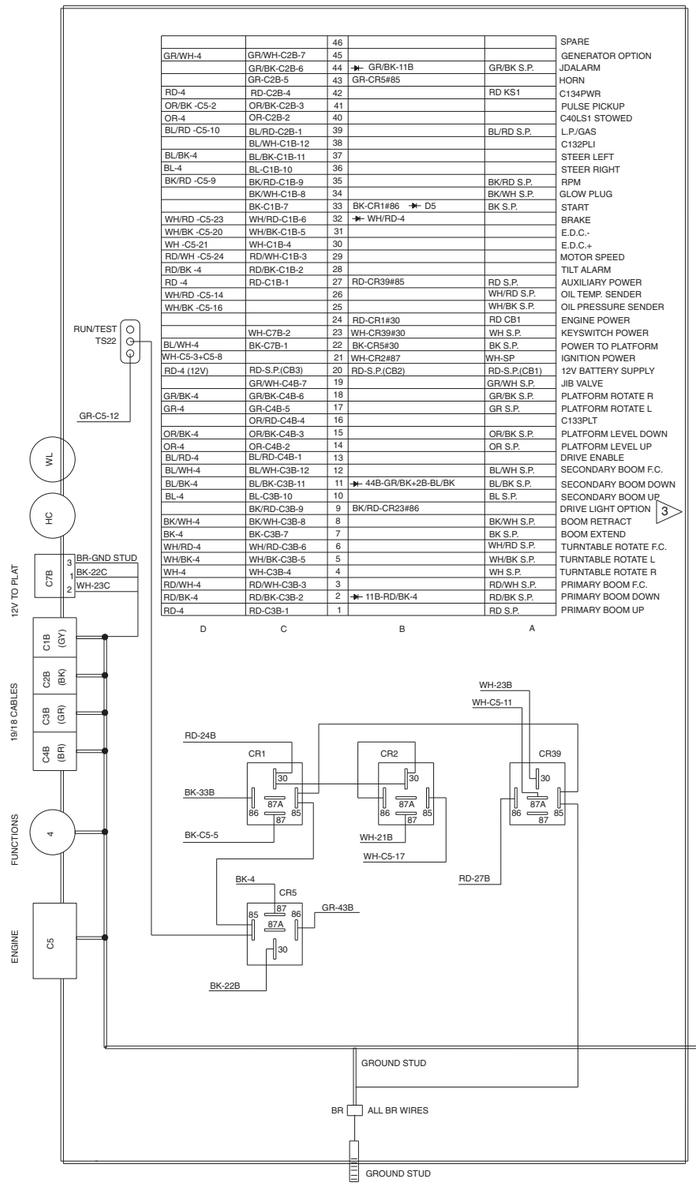
		46			SPARE
GR/WH-4	GR/WH-C2B-7	45			GENERATOR OPTION
	GR/BK-C2B-6	44	GR/BK-11B	GR/BK S.P.	JDALARM
	GR-C2B-5	43	GR-CR5#85		HORN
RD-4	RD-C2B-4	42		RD KS1	C134PWR
OR/BK -C5-2	OR/BK-C2B-3	41			PULSE PICKUP
OR-4	OR-C2B-2	40			C40LS1 STOWED
BL/RD -C5-10	BL/RD-C2B-1	39		BL/RD S.P.	L.P./GAS
	BL/WH-C1B-12	38			C132PLI
BL/BK-4	BL/BK-C1B-11	37			STEER LEFT
BL-4	BL-C1B-10	36			STEER RIGHT
BK/RD -C5-9	BK/RD-C1B-9	35		BK/RD S.P.	RPM
	BK/WH-C1B-8	34		BK/WH S.P.	GLOW PLUG
	BK-C1B-7	33	BK-CR1#86 D5	BK S.P.	START
WH/RD -C5-23	WH/RD-C1B-6	32	WH/RD-4		BRAKE
WH/BK -C5-20	WH/BK-C1B-5	31			E.D.C.-
WH -C5-21	WH-C1B-4	30			E.D.C.+
RD/WH -C5-24	RD/WH-C1B-3	29			MOTOR SPEED
RD/BK -4	RD/BK-C1B-2	28			TILT ALARM
RD -4	RD-C1B-1	27	RD-CR39#85	RD S.P.	AUXILIARY POWER
WH/RD -C5-14		26		WH/RD S.P.	OIL TEMP. SENDER
WH/BK -C5-16		25		WH/BK S.P.	OIL PRESSURE SENDER
		24	RD-CR1#30	RD CB1	ENGINE POWER
	WH-C7B-2	23	WH-CR39#30	WH S.P.	KEYSWITCH POWER
BL/WH-4	BK-C7B-1	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-C5-3+C5-8		21	WH-CR2#87	WH-SP	IGNITION POWER
RD-4 (12V)	RD-S.P.(CB3)	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-C4B-7	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-C4B-6	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-C4B-5	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-C4B-4	16			C133PLT
OR/BK-4	OR/BK-C4B-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-C4B-2	14		OR S.P.	PLATFORM LEVEL UP
BL/RD-4	BL/RD-C4B-1	13			DRIVE ENABLE
BL/WH-4	BL/WH-C3B-12	12		BL/WH S.P.	SECONDARY BOOM F.C.
BL/BK-4	BL/BK-C3B-11	11	44B-GR/BK+2B-BL/BK	BL/BK S.P.	SECONDARY BOOM DOWN
BL-4	BL-C3B-10	10		BL S.P.	SECONDARY BOOM UP
	BK/RD-C3B-9	9	BK/RD-CR23#86		DRIVE LIGHT OPTION
BK/WH-4	BK/WH-C3B-8	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-C3B-7	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-C3B-6	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-C3B-5	5		WH/BK S.P.	TURNTABLE ROTATE L
WH-4	WH-C3B-4	4		WH S.P.	TURNTABLE ROTATE R
RD/WH-4	RD/WH-C3B-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-C3B-2	2	11B-RD/BK-4	RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-C3B-1	1		RD S.P.	PRIMARY BOOM UP
D	C	B		A	

DESCRIPTION	LABEL
EMERGENCY STOP BUTTON	P1
KEY SWITCH	KS1
AUXILIARY SWITCH	TS51
ENGINE START SWITCH	TS52
LP/GAS SWITCH	TS53
FUNCTION ENABLE SWITCH	TS55
PLATFORM ROTATE SWITCH	TS57
JIB BOOM SWITCH	TS58
PLATFORM LEVEL SWITCH	TS59
SECONDARY BOOM UP/DOWN SWITCH	TS60
PRIMARY BOOM UP/DOWN SWITCH	TS61
TURNTABLE ROTATE SWITCH	TS62
BOOM EXTEND/RETRACT SWITCH	TS63
RUN/TEST SWITCH	TS22
CIRCUIT BREAKER, ENGINE, 15A	CB1
CIRCUIT BREAKER, CONTROL, 15A	CB2
CIRCUIT BREAKER, OPTION, 20A	CB3
HOUR METER	HM
RESISTOR, 1K OHM/2W, #104333	R3
RESISTOR, 7.5 OHM, TURN. ROT. FUNC.	R4
RESISTOR, 5 OHM, TURN. AUX. FUNC.	R5
VOLT METER GAGE	G1
OIL PRESSURE GAGE	G2
WATER TEMP. GAGE	G3
SERVICE HORN	H2
TRAVEL BUZZER	H3
DESCENT BUZZER	H4
IGN/START RELAY	CR1
IGN./POWER RELAY	CR2
HIGH IDLE (RPM) CUTOUT RELAY	CR3
RPM RELAY	CR4
SERVICE HORN RELAY	CR5
AUX FUNCTION	CR39
HYDRAULIC COOLER FAN RELAY	CR17
DRIVE LIGHT OPTION RELAY	CR23
CHECK ENGINE LED #110395	L2
TO PLATFORM C-BOX, TERMINAL 27-38	C1B
TO PLATFORM C-BOX, TERMINAL 39-45	C2B
TO PLATFORM C-BOX, TERMINAL 1-12	C3B
TO PLATFORM C-BOX, TERMINAL 13-19	C4B
ENGINE HARNESS	C5
TO PLATFORM C-BOX, TERMINAL 22-23	C7B
AUXILARY POWER RELAY	PR1
GLOW PLUG POWER RELAY	PR2

Ford Ground Control Box Wiring Diagram

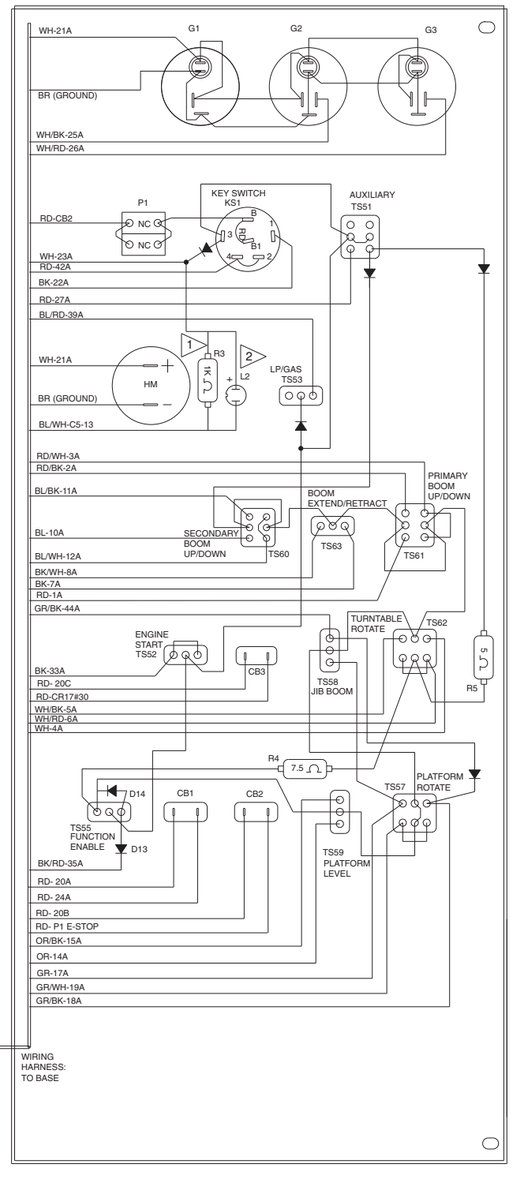
(from serial number 7227 to serial number 9798)

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

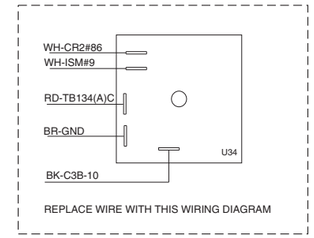


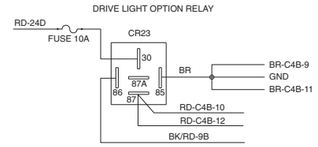
		46			SPARE
GR/WH-4	GR/WH-C2B-7	45			GENERATOR OPTION
	GR/BK-C2B-6	44	GR/BK-11B	GR/BK S.P.	JDALARM
	GR-C2B-5	43	GR-CR5#85		HORN
RD-4	RD-C2B-4	42		RD KS1	C134PWR
OR/BK -C5-2	OR/BK-C2B-3	41			PULSE PICKUP
OR-4	OR-C2B-2	40			C40LS1 STOWED
BL/RD -C5-10	BL/RD-C2B-1	39		BL/RD S.P.	L.P./GAS
	BL/WH-C1B-12	38			C132PLI
BL/BK-4	BL/BK-C1B-11	37			STEER LEFT
BL-4	BL-C1B-10	36			STEER RIGHT
BK/RD -C5-9	BK/RD-C1B-9	35		BK/RD S.P.	RPM
	BK/WH-C1B-8	34		BK/WH S.P.	GLOW PLUG
	BK-C1B-7	33	BK-CR1#86 D5	BK S.P.	START
WH/RD -C5-23	WH/RD-C1B-6	32	WH/RD-4		BRAKE
WH/BK -C5-20	WH/BK-C1B-5	31			E.D.C.-
WH -C5-21	WH-C1B-4	30			E.D.C.+
RD/WH -C5-24	RD/WH-C1B-3	29			MOTOR SPEED
RD/BK -4	RD/BK-C1B-2	28			TILT ALARM
RD -4	RD-C1B-1	27	RD-CR39#85	RD S.P.	AUXILIARY POWER
WH/RD -C5-14		26		WH/RD S.P.	OIL TEMP. SENDER
WH/BK -C5-16		25		WH/BK S.P.	OIL PRESSURE SENDER
		24	RD-CR1#30	RD CB1	ENGINE POWER
	WH-C7B-2	23	WH-CR39#30	WH S.P.	KEYSWITCH POWER
BL/WH-4	BK-C7B-1	22	BK-CR5#30	BK S.P.	POWER TO PLATFORM
WH-C5-3+C5-8		21	WH-CR2#87	WH-SP	IGNITION POWER
RD-4 (12V)	RD-S.P.(CB3)	20	RD-S.P.(CB2)	RD-S.P.(CB1)	12V BATTERY SUPPLY
	GR/WH-C4B-7	19		GR/WH S.P.	JIB VALVE
GR/BK-4	GR/BK-C4B-6	18		GR/BK S.P.	PLATFORM ROTATE R
GR-4	GR-C4B-5	17		GR S.P.	PLATFORM ROTATE L
	OR/RD-C4B-4	16			C133PLT
OR/BK-4	OR/BK-C4B-3	15		OR/BK S.P.	PLATFORM LEVEL DOWN
OR-4	OR-C4B-2	14		OR S.P.	PLATFORM LEVEL UP
BL/RD-4	BL/RD-C4B-1	13			DRIVE ENABLE
BL/WH-4	BL/WH-C3B-12	12		BL/WH S.P.	SECONDARY BOOM F.C.
BL/BK-4	BL/BK-C3B-11	11	44B-GR/BK+2B-BL/BK	BL/BK S.P.	SECONDARY BOOM DOWN
BL-4	BL-C3B-10	10		BL S.P.	SECONDARY BOOM UP
	BK/RD-C3B-9	9	BK/RD-CR23#86		DRIVE LIGHT OPTION 3
BK/WH-4	BK/WH-C3B-8	8		BK/WH S.P.	BOOM RETRACT
BK-4	BK-C3B-7	7		BK S.P.	BOOM EXTEND
WH/RD-4	WH/RD-C3B-6	6		WH/RD S.P.	TURNTABLE ROTATE F.C.
WH/BK-4	WH/BK-C3B-5	5		WH/BK S.P.	TURNTABLE ROTATE L
WH-4	WH-C3B-4	4		WH S.P.	TURNTABLE ROTATE R
RD/WH-4	RD/WH-C3B-3	3		RD/WH S.P.	PRIMARY BOOM F.C.
RD/BK-4	RD/BK-C3B-2	2	11B-RD/BK-4	RD/BK S.P.	PRIMARY BOOM DOWN
RD-4	RD-C3B-1	1		RD S.P.	PRIMARY BOOM UP

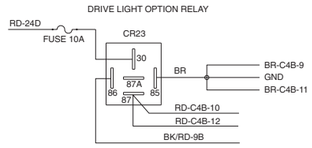
D C B A

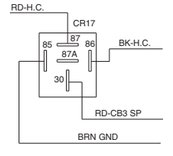


LOAD SENSE OPTION - TIMER RELAY









DESCRIPTION	LABEL
EMERGENCY STOP BUTTON	P1
KEY SWITCH	KS1
AUXILIARY SWITCH	TS51
ENGINE START SWITCH	TS52
LP/GAS SWITCH	TS53
FUNCTION ENABLE SWITCH	TS55
PLATFORM ROTATE SWITCH	TS57
JIB BOOM SWITCH	TS58
PLATFORM LEVEL SWITCH	TS59
SECONDARY BOOM UP/DOWN SWITCH	TS60
PRIMARY BOOM UP/DOWN SWITCH	TS61
TURNTABLE ROTATE SWITCH	TS62
BOOM EXTEND/RETRACT SWITCH	TS63
RUN/TEST SWITCH	TS22
CIRCUIT BREAKER, ENGINE, 15A	CB1
CIRCUIT BREAKER, CONTROL, 15A	CB2
CIRCUIT BREAKER, OPTION, 20A	CB3
HOUR METER	HM
RESISTOR, 1K OHM/2W, #104333	R3
RESISTOR, 7.5 OHM, TURN. ROT. FUNC.	R4
RESISTOR, 5 OHM, TURN. AUX. FUNC.	R5
VOLT METER GAGE	G1
OIL PRESSURE GAGE	G2
WATER TEMP. GAGE	G3
SERVICE HORN	H2
TRAVEL BUZZER	H3
DESCENT BUZZER	H4
IGN/START RELAY	CR1
IGN./POWER RELAY	CR2
HIGH IDLE (RPM) CUTOUT RELAY	CR3
RPM RELAY	CR4
SERVICE HORN RELAY	CR5
AUX FUNCTION	CR39
HYDRAULIC COOLER FAN RELAY	CR17
DRIVE LIGHT OPTION RELAY	CR23
CHECK ENGINE LED/INCANDESCENT LAMP	L2
TO PLATFORM C-BOX, TERMINAL 27-38	C1B
TO PLATFORM C-BOX, TERMINAL 39-45	C2B
TO PLATFORM C-BOX, TERMINAL 1-12	C3B
TO PLATFORM C-BOX, TERMINAL 13-19	C4B
ENGINE HARNESS	C5
TO PLATFORM C-BOX, TERMINAL 22-23	C7B
AUXILARY POWER RELAY	PR1
GLOW PLUG POWER RELAY	PR2

1 RESISTOR R3 REMOVED AT SERIAL NUMBER 7924

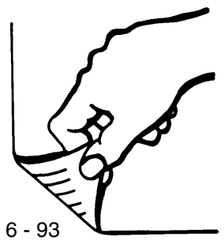
2 LED 2 CHANGED TO INCANDESCENT LAMP AT SERIAL NUMBER 9066

3 DRIVE LIGHT OPTION MOVED AT SERIAL NUMBER 10388

1 2 3 4 5 6 7 8

Ford Ground Control Box Wiring Diagram

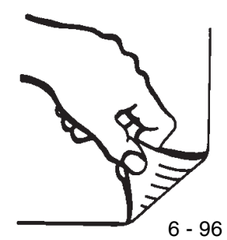
(from serial number 7227 to serial number 9798)



Ford Ground Control Box Wiring Diagram

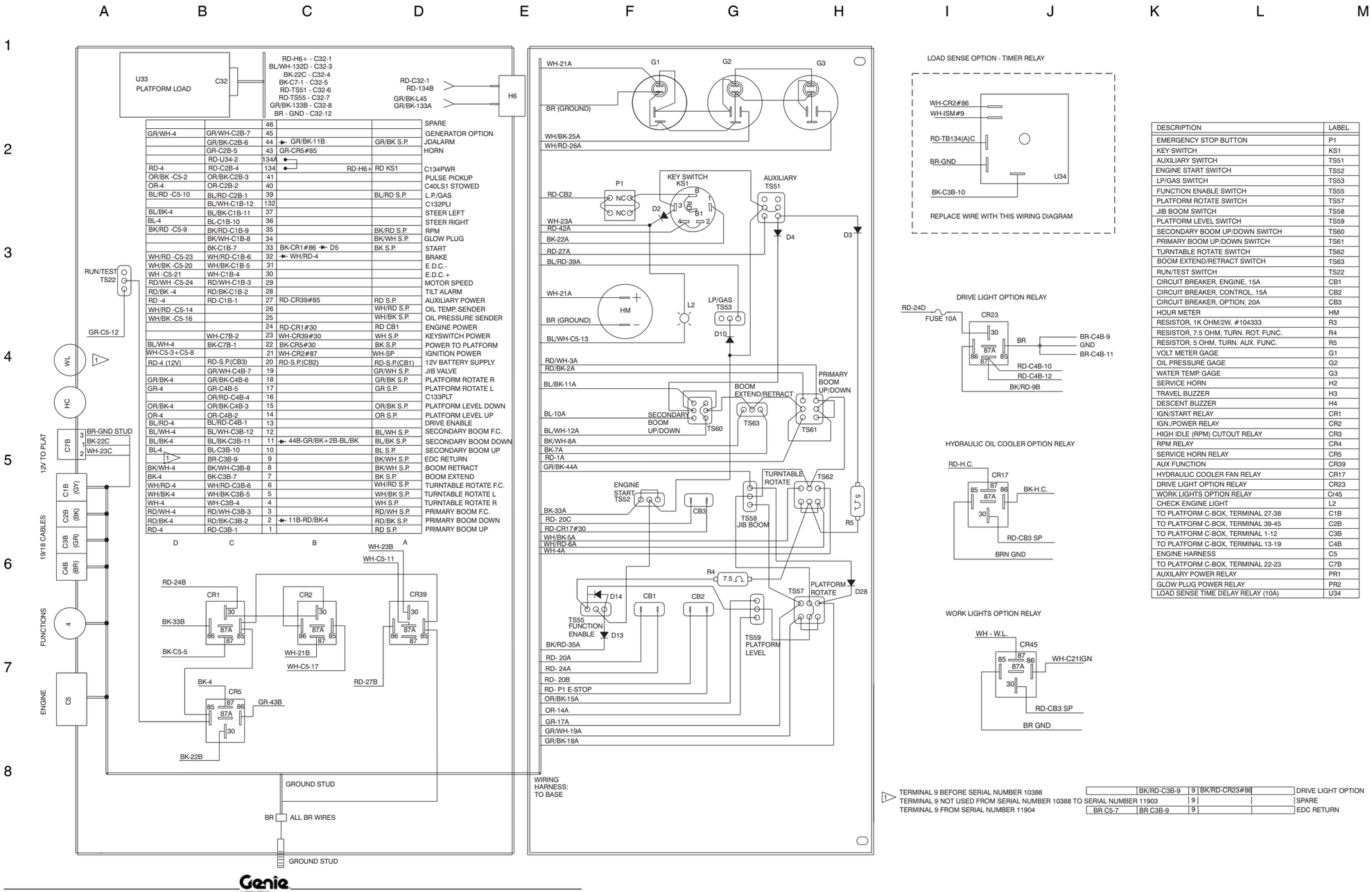
(from serial number 9799)





Ford Ground Control Box Wiring Diagram

(from serial number 9799)



DESCRIPTION	LABEL
EMERGENCY STOP BUTTON	P1
KEY SWITCH	KS1
AUXILIARY SWITCH	TS51
ENGINE START SWITCH	TS52
LP/GAS SWITCH	TS53
FUNCTION ENABLE SWITCH	TS55
PLATFORM ROTATE SWITCH	TS57
JIB BOOM SWITCH	TS58
PLATFORM LEVEL SWITCH	TS59
SECONDARY BOOM UP/DOWN SWITCH	TS60
PRIMARY BOOM UP/DOWN SWITCH	TS61
TURNTABLE ROTATE SWITCH	TS62
BOOM EXTEND/RETRACT SWITCH	TS63
RUN/TEST SWITCH	TS22
CIRCUIT BREAKER, ENGINE, 15A	CB1
CIRCUIT BREAKER, CONTROL, 15A	CB2
CIRCUIT BREAKER, OPTION, 20A	CB3
HOUR METER	HM
RESISTOR, 1K OHM/2W, #104333	R3
RESISTOR, 7.5 OHM, TURN. ROT. FUNC.	R4
RESISTOR, 5 OHM, TURN. AUX. FUNC.	R5
VOLT METER GAGE	G1
OIL PRESSURE GAGE	G2
WATER TEMP. GAGE	G3
SERVICE HORN	H2
TRAVEL BUZZER	H3
DESCENT BUZZER	H4
IGN/START RELAY	CR1
IGN./POWER RELAY	CR2
HIGH IDLE (RPM) CUTOUT RELAY	CR3
RPM RELAY	CR4
SERVICE HORN RELAY	CR5
AUX FUNCTION	CR39
HYDRAULIC COOLER FAN RELAY	CR17
DRIVE LIGHT OPTION RELAY	CR23
WORK LIGHTS OPTION RELAY	Cr45
CHECK ENGINE LIGHT	L2
TO PLATFORM C-BOX, TERMINAL 27-38	C1B
TO PLATFORM C-BOX, TERMINAL 39-45	C2B
TO PLATFORM C-BOX, TERMINAL 1-12	C3B
TO PLATFORM C-BOX, TERMINAL 13-19	C4B
ENGINE HARNESS	C5
TO PLATFORM C-BOX, TERMINAL 22-23	C7B
AUXILARY POWER RELAY	PR1
GLOW PLUG POWER RELAY	PR2
LOAD SENSE TIME DELAY RELAY (10A)	U34

1 TERMINAL 9 BEFORE SERIAL NUMBER 10388
TERMINAL 9 NOT USED FROM SERIAL NUMBER 10388 TO SERIAL NUMBER 11903
TERMINAL 9 FROM SERIAL NUMBER 11904

	BK/RD-C3B-9	9	BK/RD-CR23#86		DRIVE LIGHT OPTION
		9			SPARE
BR C5-7	BR C3B-9	9			EDC RETURN

Ford Platform Control Box Wiring Diagram

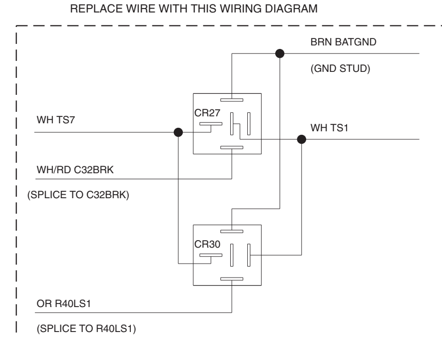
(before serial number 7227)

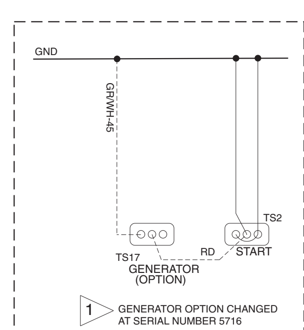
N M L K J I H G F E D C B A

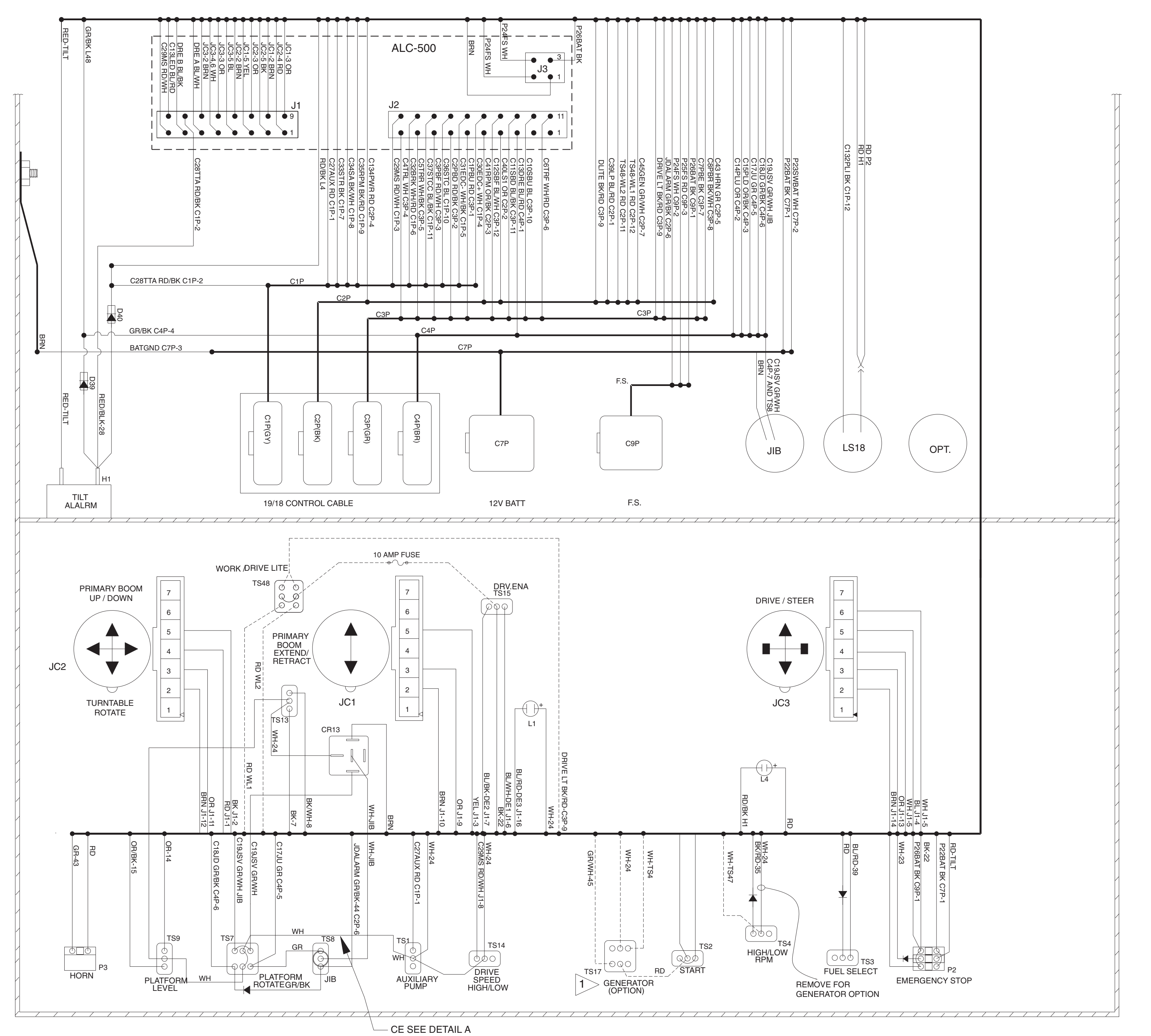
COMPONENT INDEX

		PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE	62390
JC1	BOOM SECONDARY JOYSTICK:	62391
JC3	DRIVE PROPORTIONAL JOYSTICK	75565
L1	DRIVE ENABLE LED	56298
P2	EMERGENCY STOP BUTTON	66812, 94506
P3	HORN SWITCH	66813, 66816
TS1	AUXILIARY SWITCH	42730
TS2	START ENGINE SWITCH	13037
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)	56457
TS4	HI/L0 RPM SWITCH	13038
L4	CHASSIS TILT LED	56298
TS7	PLATFORM ROTATE SWITCH	16397
TS8	JIB UP/DOWN SWITCH	13037
TS9	PLATFORM LEVEL SWITCH	13037
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH	13037
TS15	DRIVE ENABLE SWITCH	13037
TS17	SWITCH TOGGLE SPDT 2POS MNT	56457
TS48-9	WORK/DRIVE LIGHT (OPTION)	27378

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM

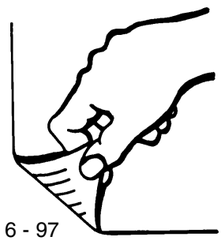






Ford Platform Control Box Wiring Diagram

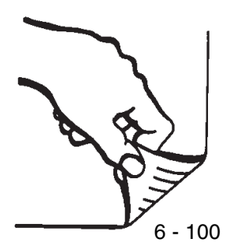
(before serial number 7227)



Ford Platform Control Box Wiring Diagram

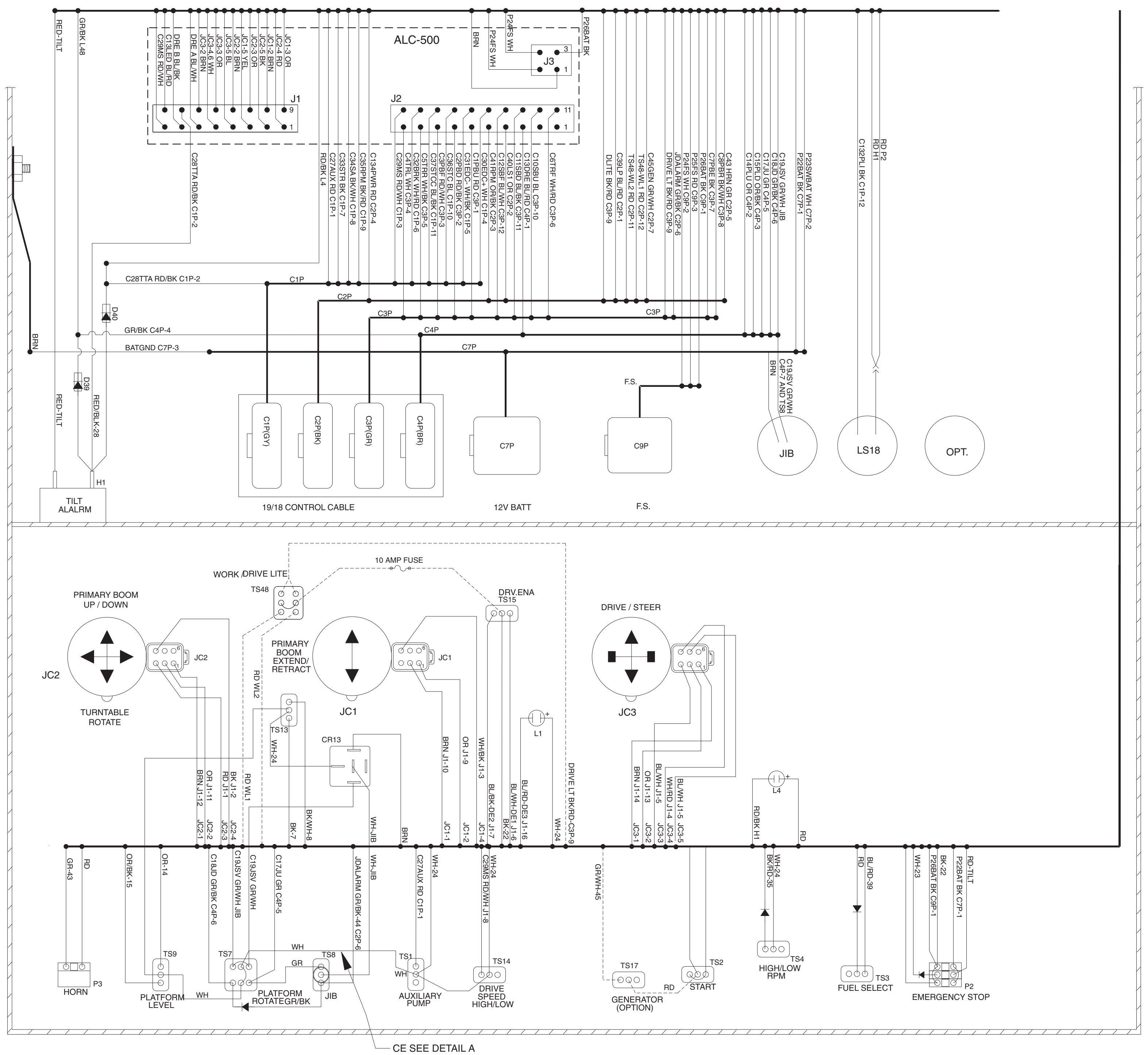
(from serial number 7227 to serial number 9065)





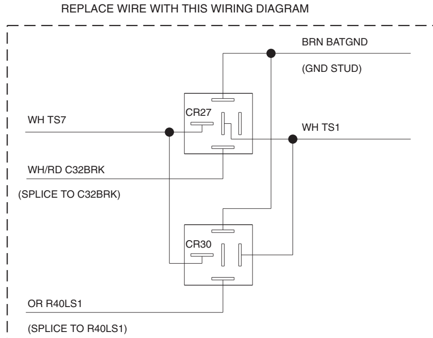
Ford Platform Control Box Wiring Diagram

(from serial number 7227 to serial number 9065)



	COMPONENT INDEX	PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE	62390
JC1	BOOM SECONDARY JOYSTICK:	62391
JC3	DRIVE PROPORTIONAL JOYSTICK	75565
L1	DRIVE ENABLE LED	56298
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P3	HORN SWITCH	66813, 66816
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TS9	PLATFORM LEVEL SWITCH	13037
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH	13037
TS15	DRIVE ENABLE SWITCH	13037
TS17	SWITCH TOGGLE SPDT 2POS MNT	56457
TS48-9	WORK/DRIVE LIGHT (OPTION)	27378

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM



Ford Platform Control Box Wiring Diagram

(from serial number 9066 to serial number 9798)

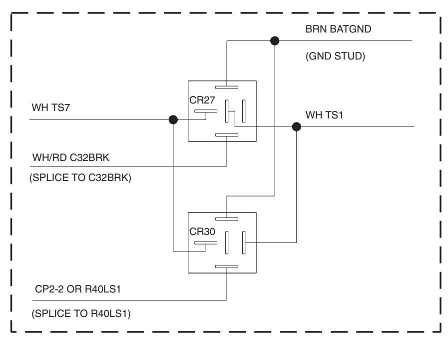
N M L K J I H G F E D C B A

COMPONENT INDEX

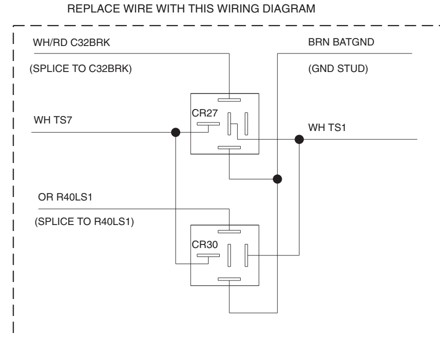
H1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB TIME DELAY RELAY

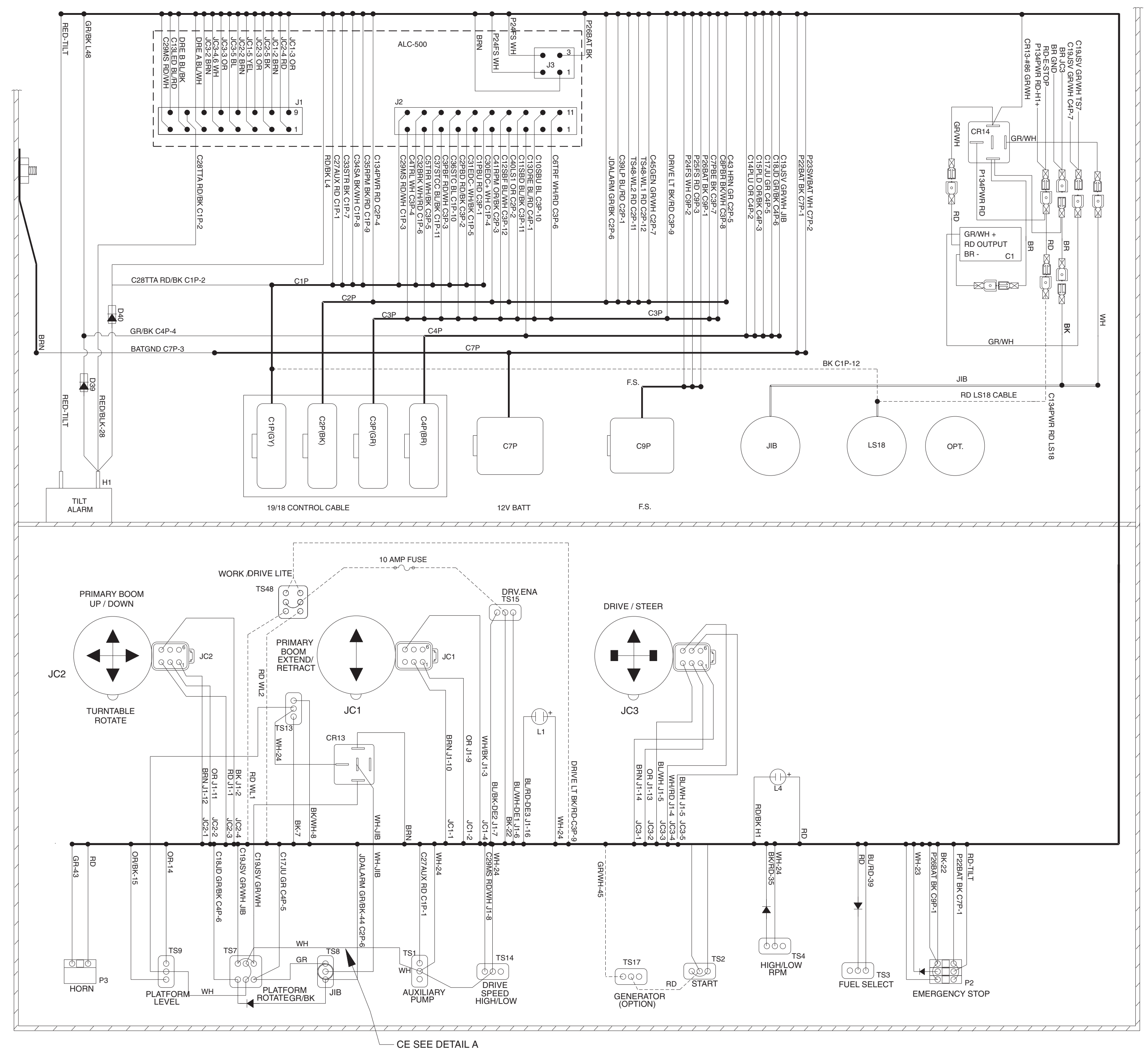
COMPONENT INDEX		PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE	62390
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TS9	PLATFORM LEVEL SWITCH	13037
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH	13037
TS15	DRIVE ENABLE SWITCH	13037
TS17	SWITCH TOGGLE SPDT 2POS MNT	56457
TS48-9	WORK/DRIVE LIGHT (OPTION)	27378

DETAIL A: LIFT/DRIVE OPTION BEFORE SERIAL NUMBER 9697
REPLACE WIRE WITH THIS WIRING DIAGRAM



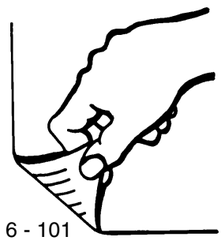
DETAIL A: LIFT/DRIVE OPTION FROM SERIAL NUMBER 9697
REPLACE WIRE WITH THIS WIRING DIAGRAM





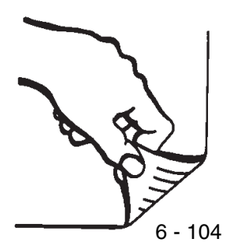
Ford Platform Control Box Wiring Diagram

(from serial number 9066 to serial number 9798)



Ford Platform Control Box Wiring Diagram
(from serial number 9799 to 11788)





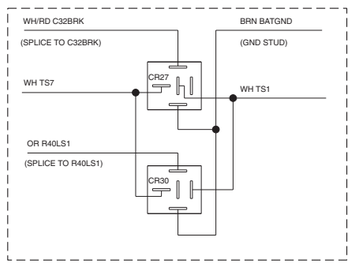
Ford PlatformControl Box Wiring Diagram

(from serial number 9799 to 11788)

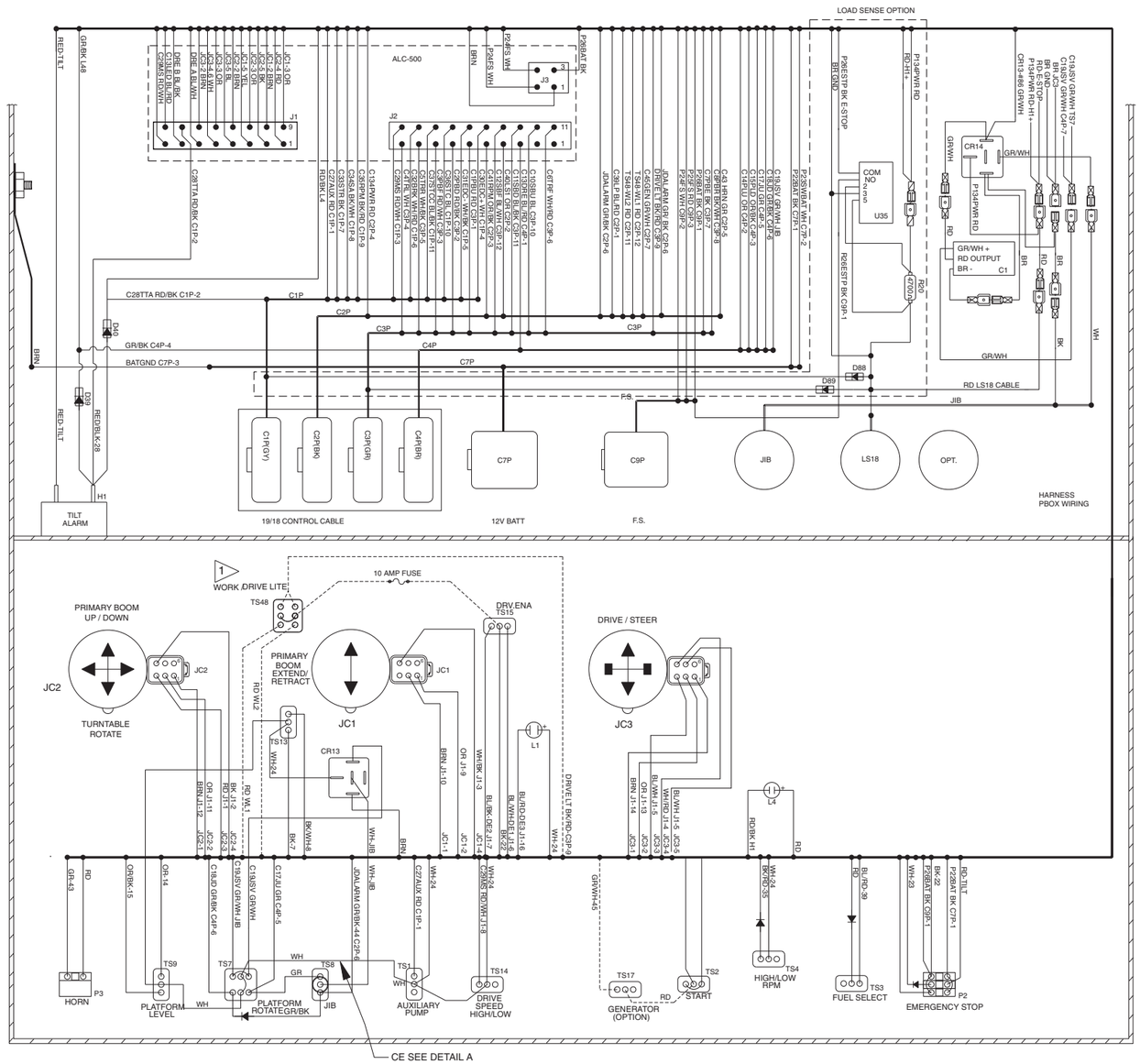
COMPONENT INDEX	
H1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB TIME DELAY RELAY

	COMPONENT INDEX	PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE	62390
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TS17	SWITCH TOGGLE SPDT 2POS MNT	56457
TS48-9	WORK/DRIVE LIGHT (OPTION)	27378

DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM



1 WORK LIGHT OPTION REMOVED FROM PLATFORM BOX AT SERIAL NUMBER 10388



Ford PlatformControl Box Wiring Diagram

(from serial number 11789)

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

1 2 3 4 5 6 7 8

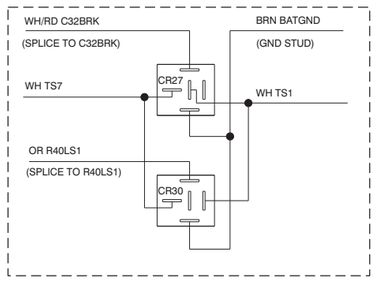
COMPONENT INDEX

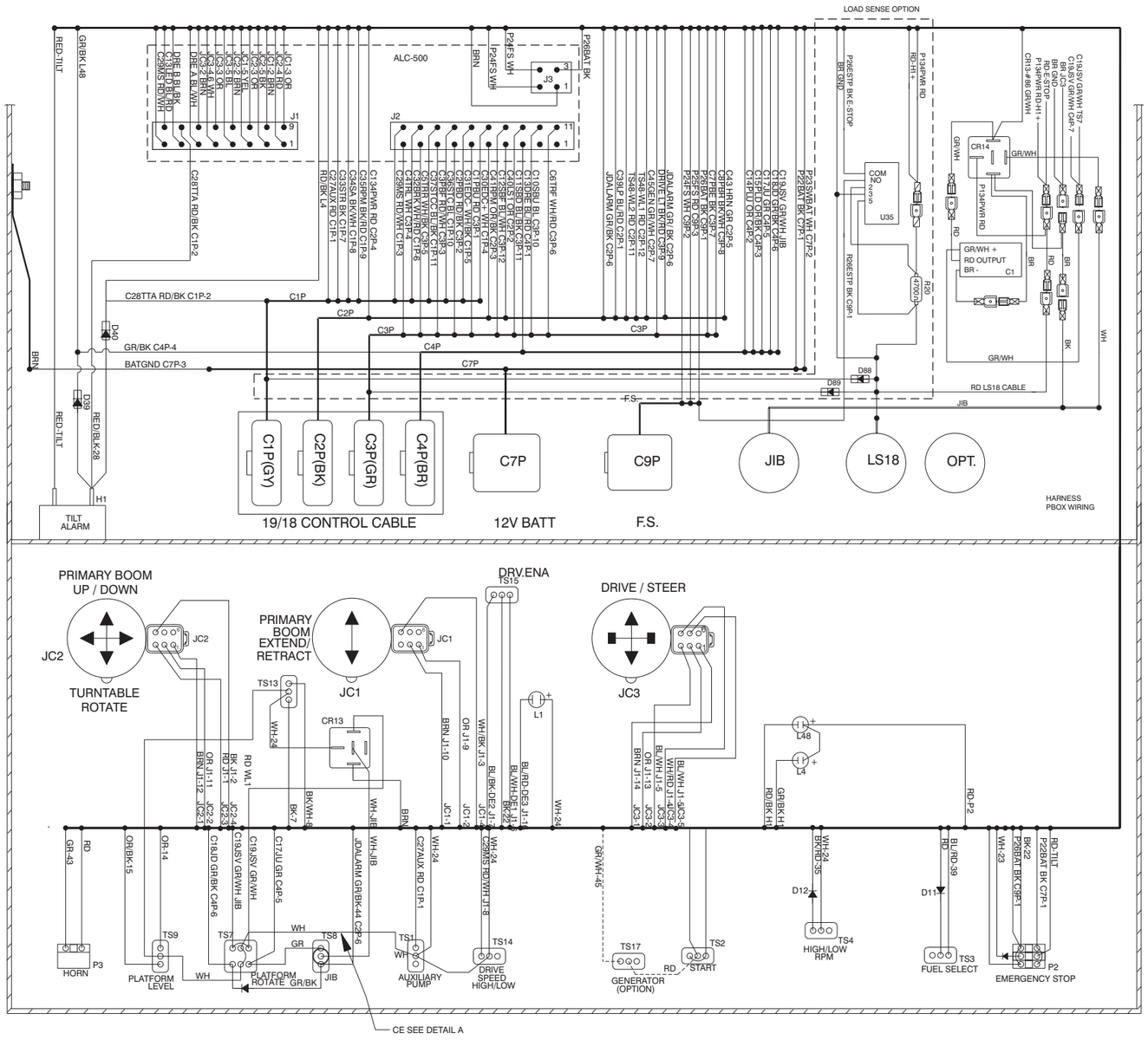
H1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB TIME DELAY RELAY

COMPONENT INDEX

JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE
JC1	BOOM SECONDARY JOYSTICK:
JC3	DRIVE PROPORTIONAL JOYSTICK
L1	DRIVE ENABLE LED
P2	EMERGENCY STOP BUTTON
P3	HORN SWITCH
TS1	AUXILIARY SWITCH
TS2	START ENGINE SWITCH
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)
TS4	HI/LO RPM SWITCH
L4	CHASSIS TILT LED
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH
TS15	DRIVE ENABLE SWITCH
TS17	SWITCH TOGGLE SPDT 2POS MNT
TS48-9	WORK/DRIVE LIGHT (OPTION)

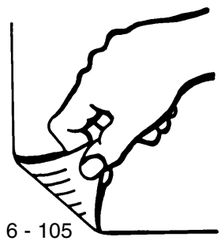
DETAIL A: LIFT/DRIVE OPTION
REPLACE WIRE WITH THIS WIRING DIAGRAM





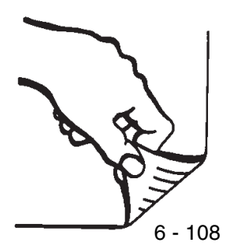
Ford PlatformControl Box Wiring Diagram

(from serial number 11789)



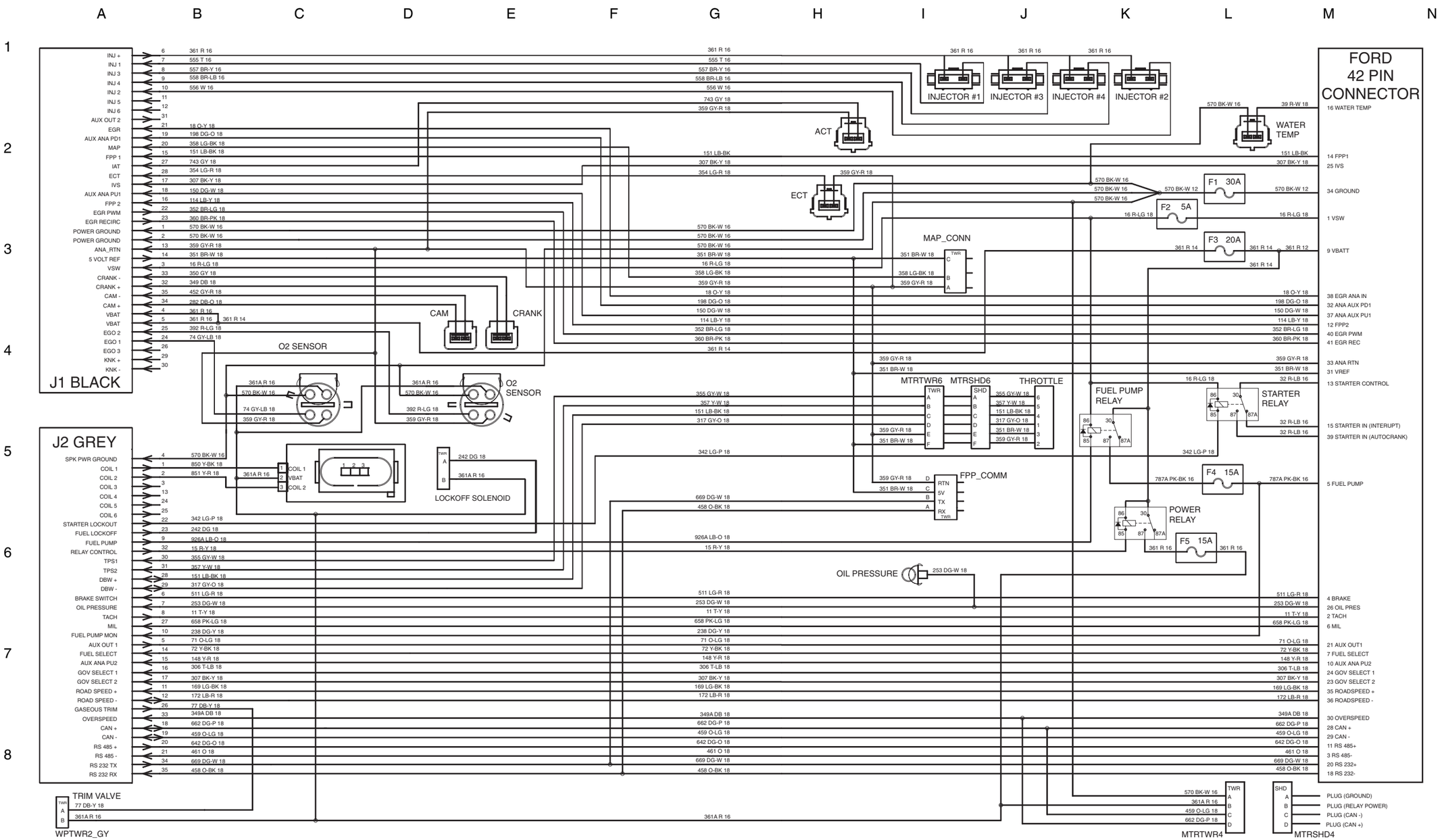
Engine Wire Harness
Ford LRG-425 EFI Models





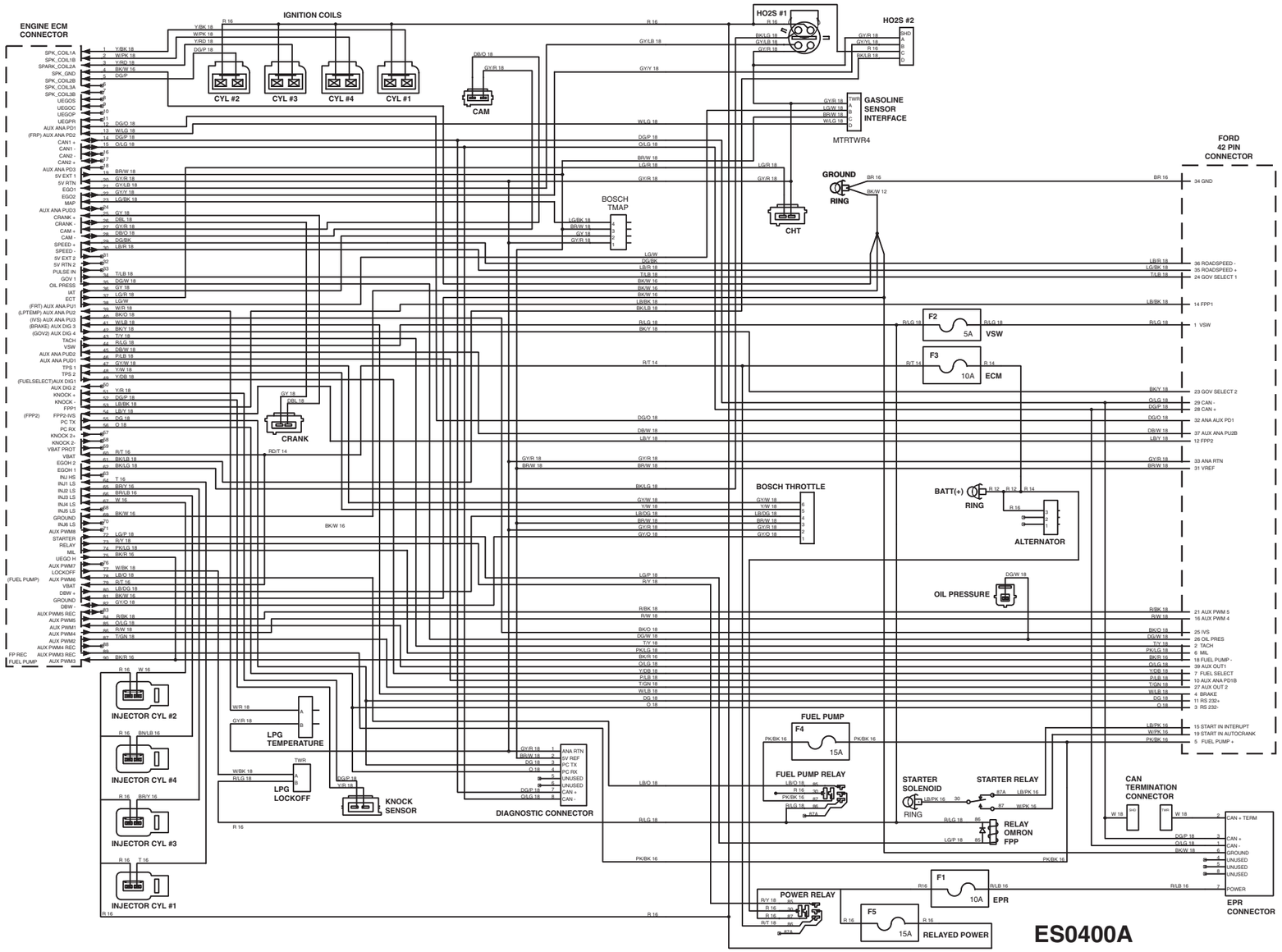
Engine Wire Harness

Ford LRG-425 EFI Models



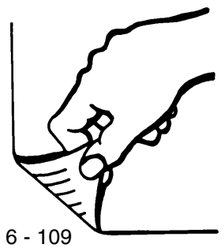
Engine Wire Harness

Ford DSG-423 EFI Models (before serial number 6810)



Engine Wire Harness

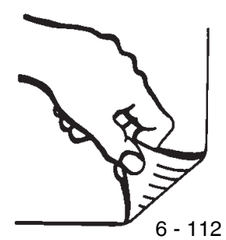
Ford DSG-423 EFI Models (before serial number 6810)



Engine Wire Harness

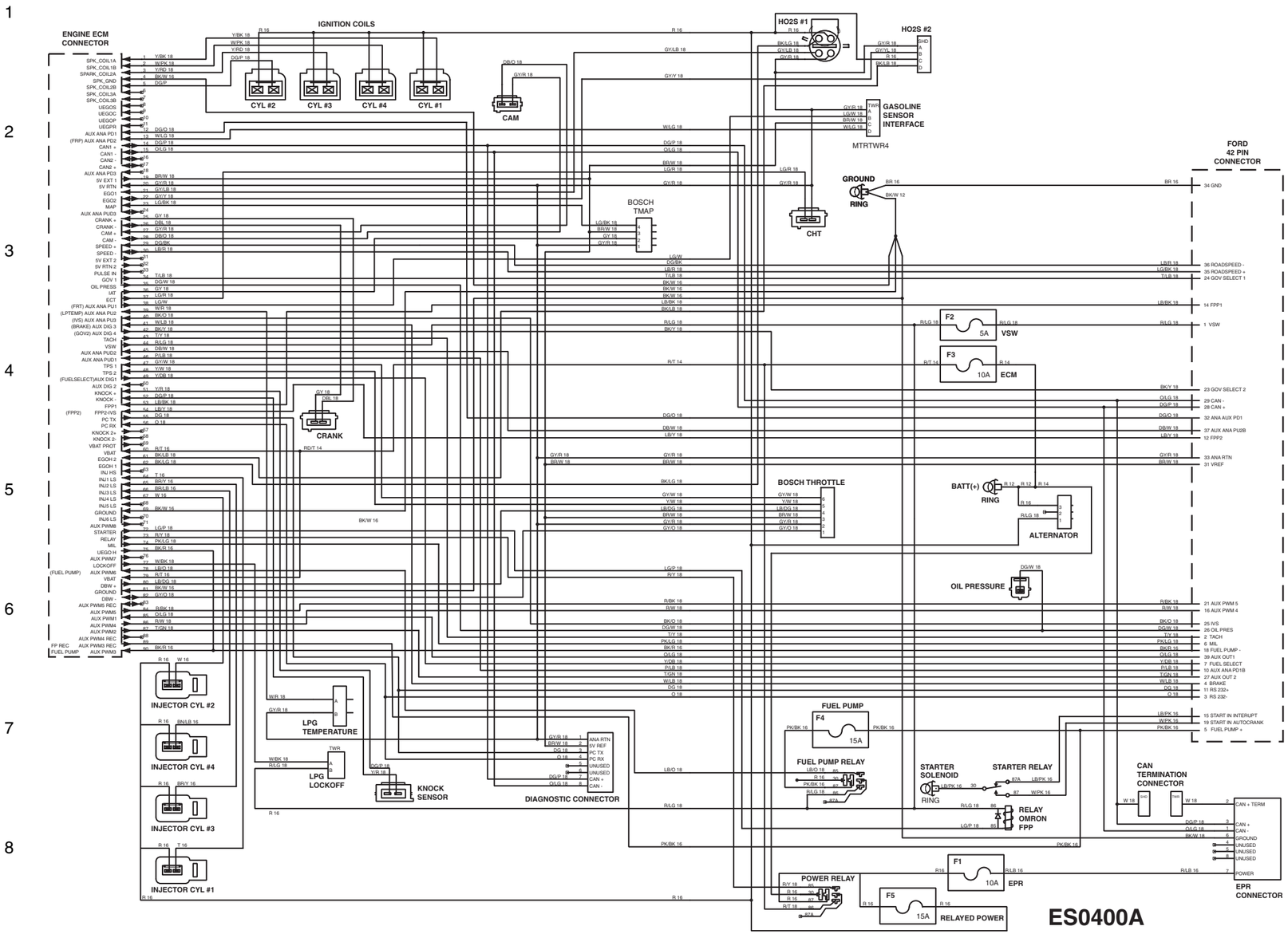
Ford DSG-423 Models (from serial number 6810 to serial number 11788)





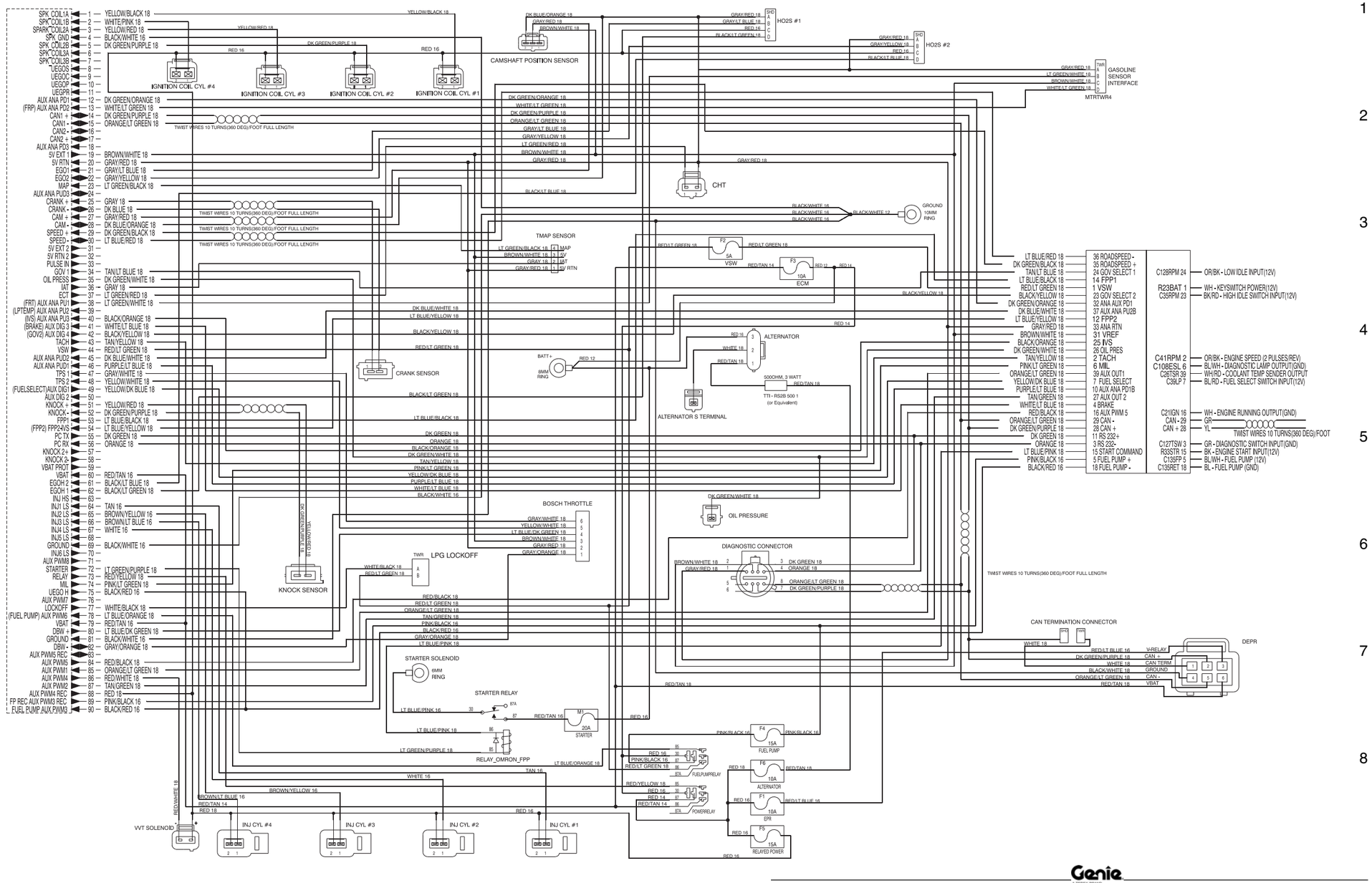
Engine Wire Harness

Ford DSG-423 Models (from serial number 6810 to serial number 11788)



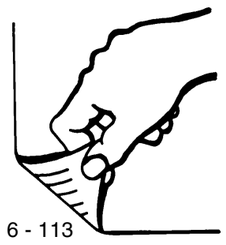
Engine Wire Harness

Ford MSG-425 Models (from serial number 11789)



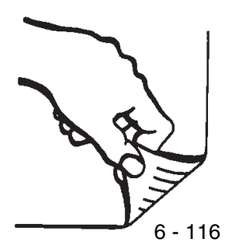
Engine Wire Harness

Ford MSG-425 Models (from serial number 11789)

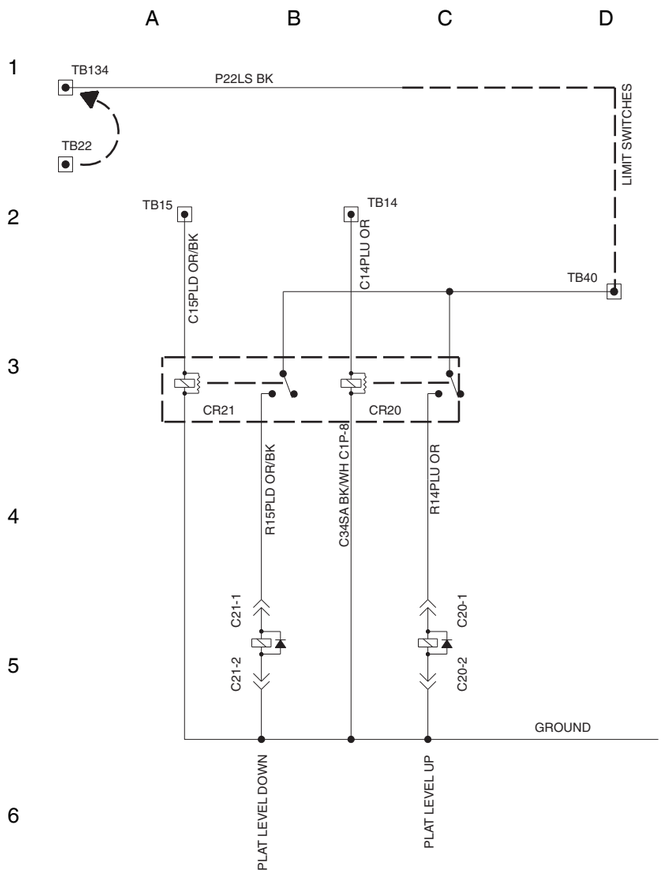


Electrical Schematic - CTE Option
(before serial number 9697)

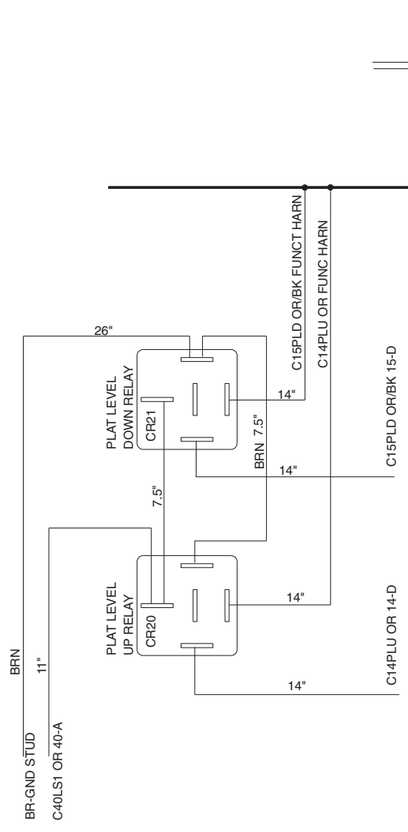


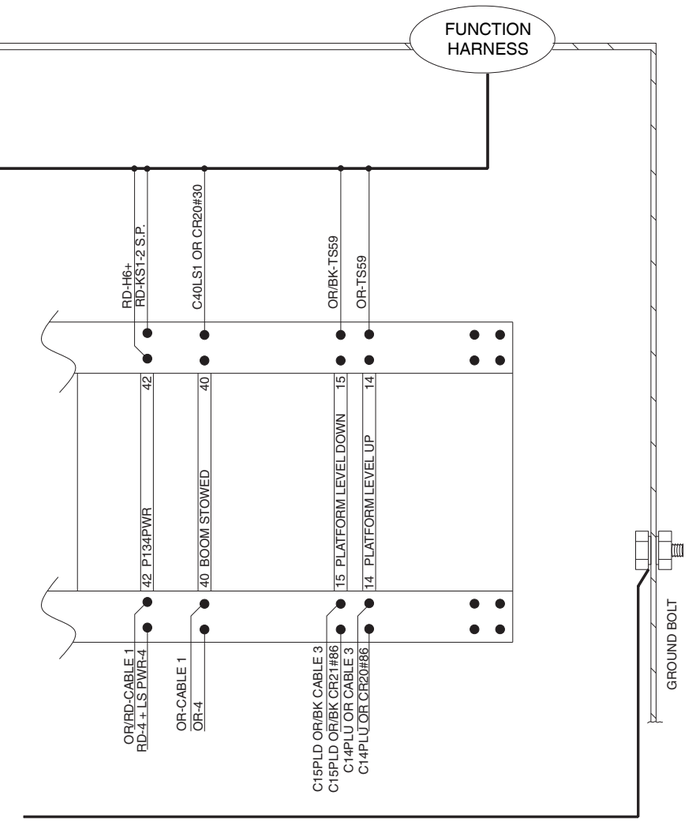


Electrical Schematic - CTE Option
(before serial number 9697)



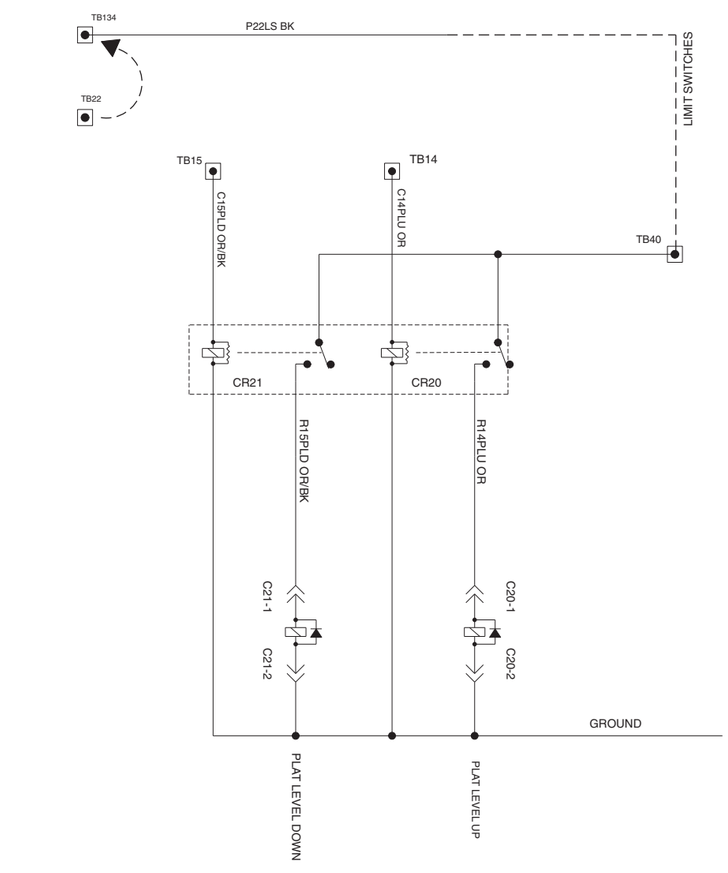
SCHEMATIC - PLATFORM LEVEL CUTOUT



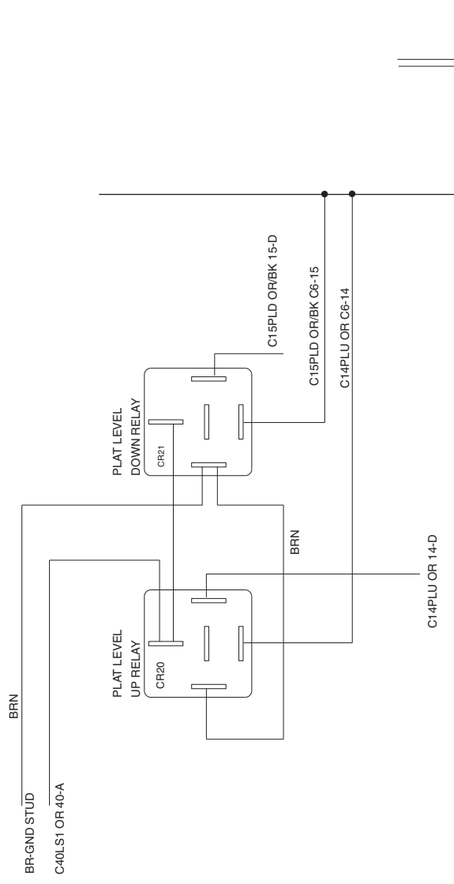


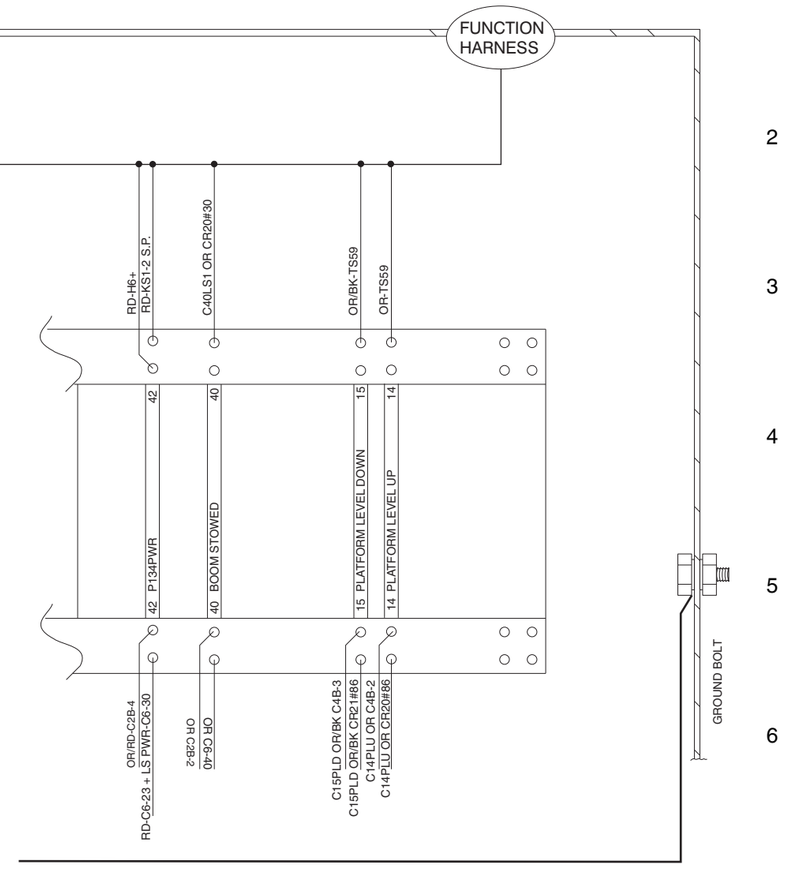
WIRING DIAGRAM

Electrical Schematic - CTE Option
(from serial number 9697)



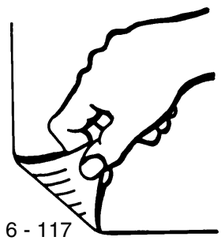
SCHEMATIC - PLATFORM LEVEL CUTOUT





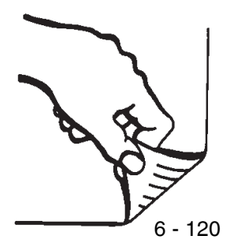
WIRING DIAGRAM

Electrical Schematic - CTE Option
(from serial number 9697)

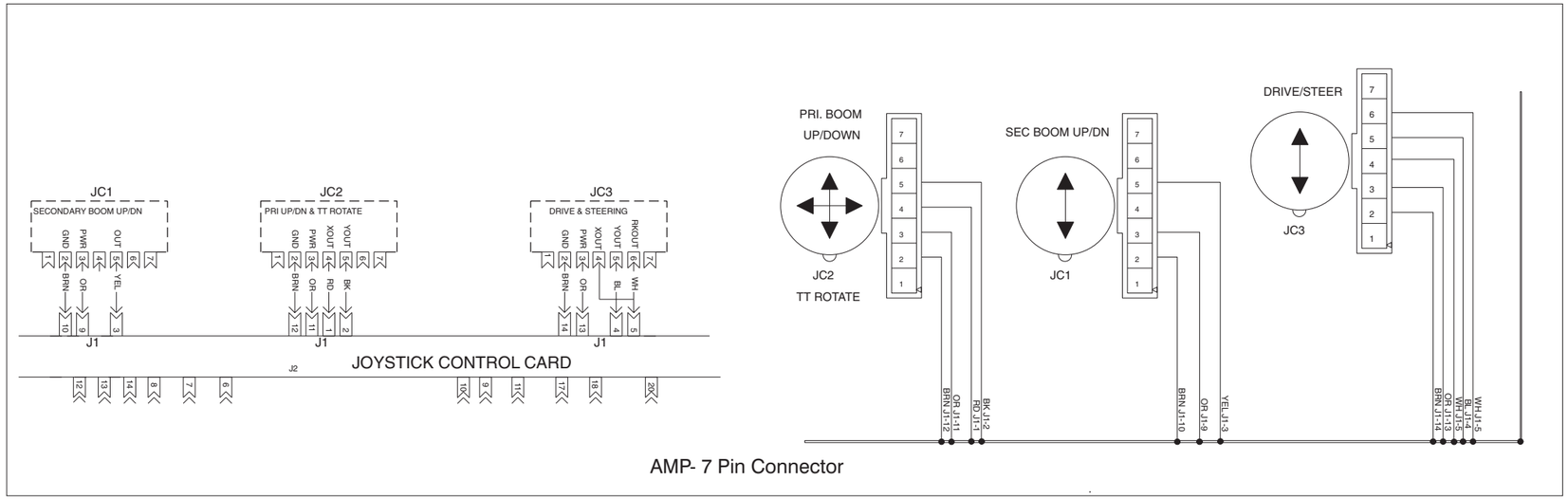


Joystick Connector Diagram

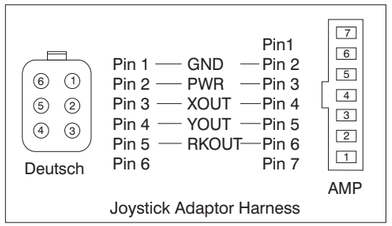


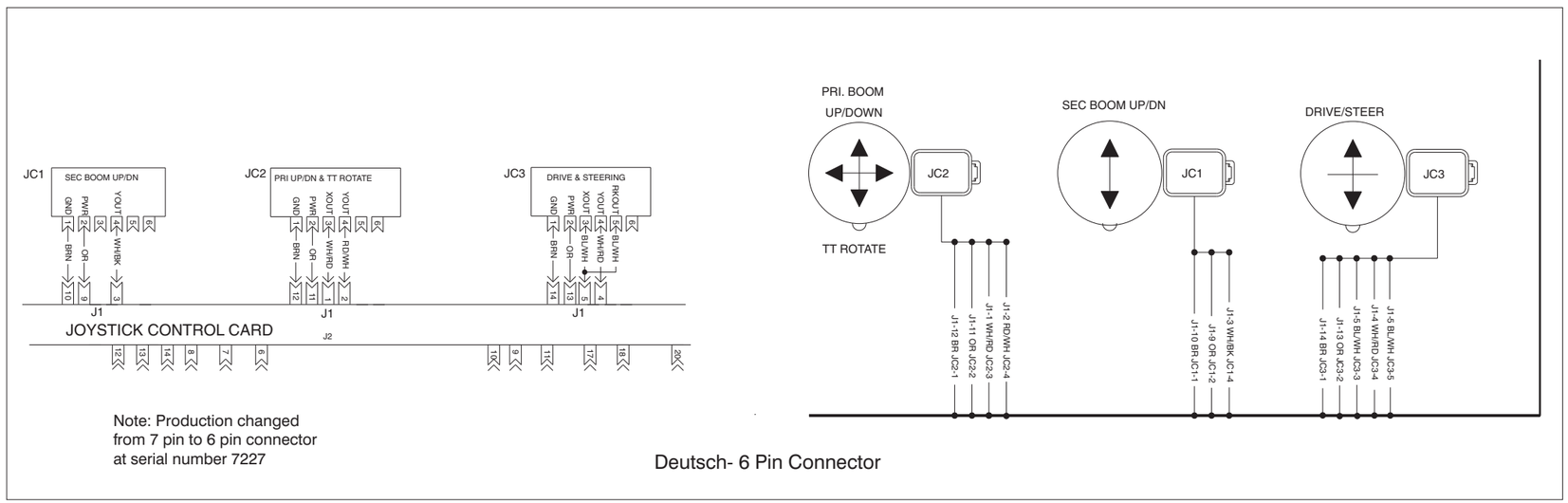


Joystick Connector Diagram



AMP- 7 Pin Connector





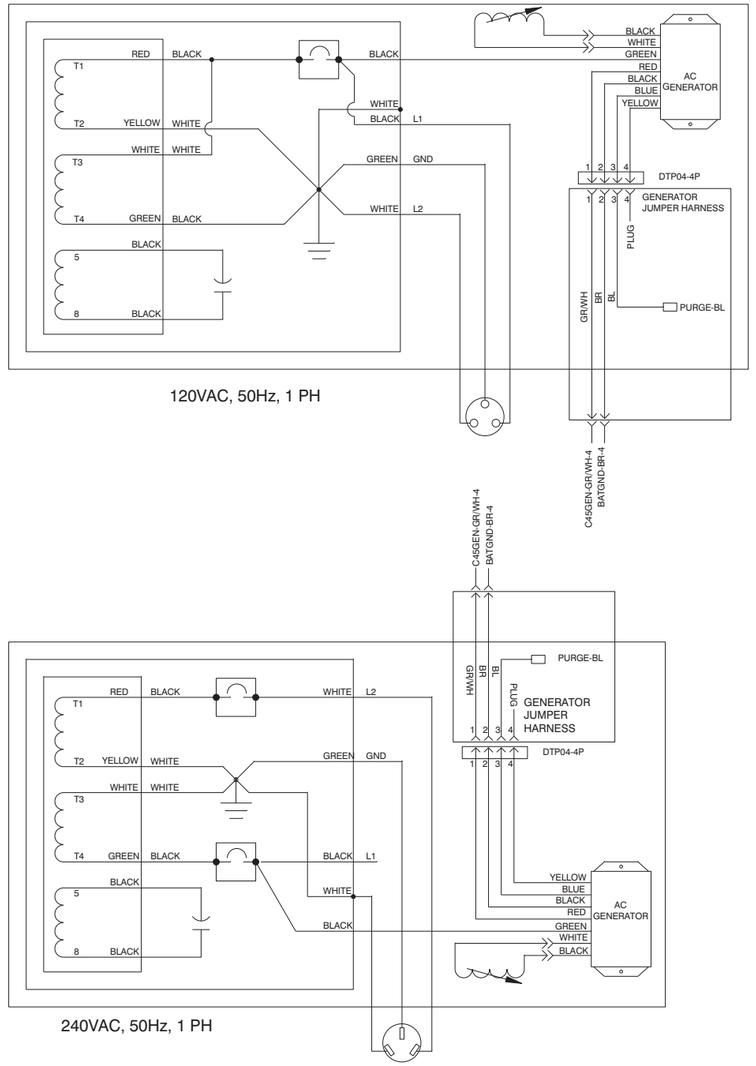
Note: Production changed from 7 pin to 6 pin connector at serial number 7227

Deutsch- 6 Pin Connector

Hydraulic Generator Options
(from serial number 10283)

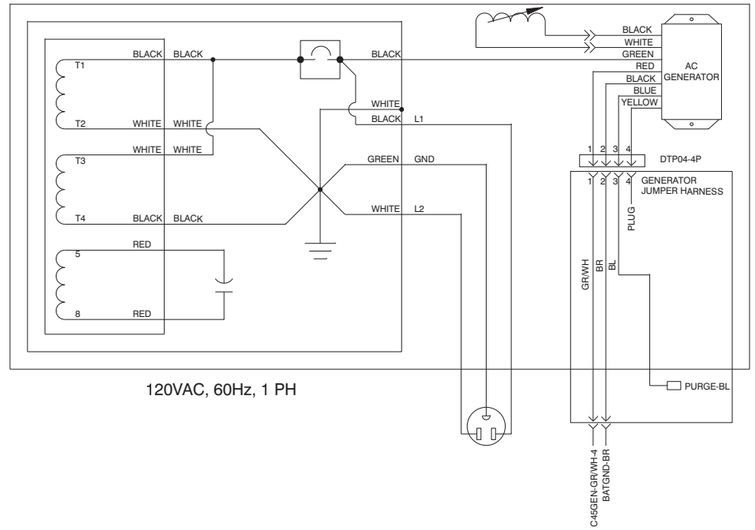
N M L K J I H G F E D C B A

1



120VAC, 50Hz, 1 PH

240VAC, 50Hz, 1 PH



120VAC, 60Hz, 1 PH

2

3

4

5

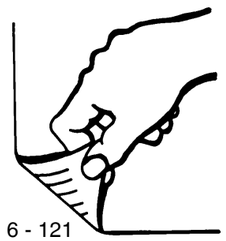
6

SCHEMATIC - MTE HYDRUALIC GENERATOR OPTIONS

7

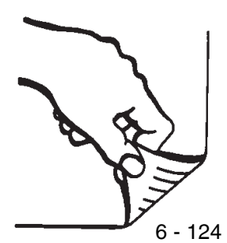
8

Hydraulic Generator Options
(from serial number 10283)

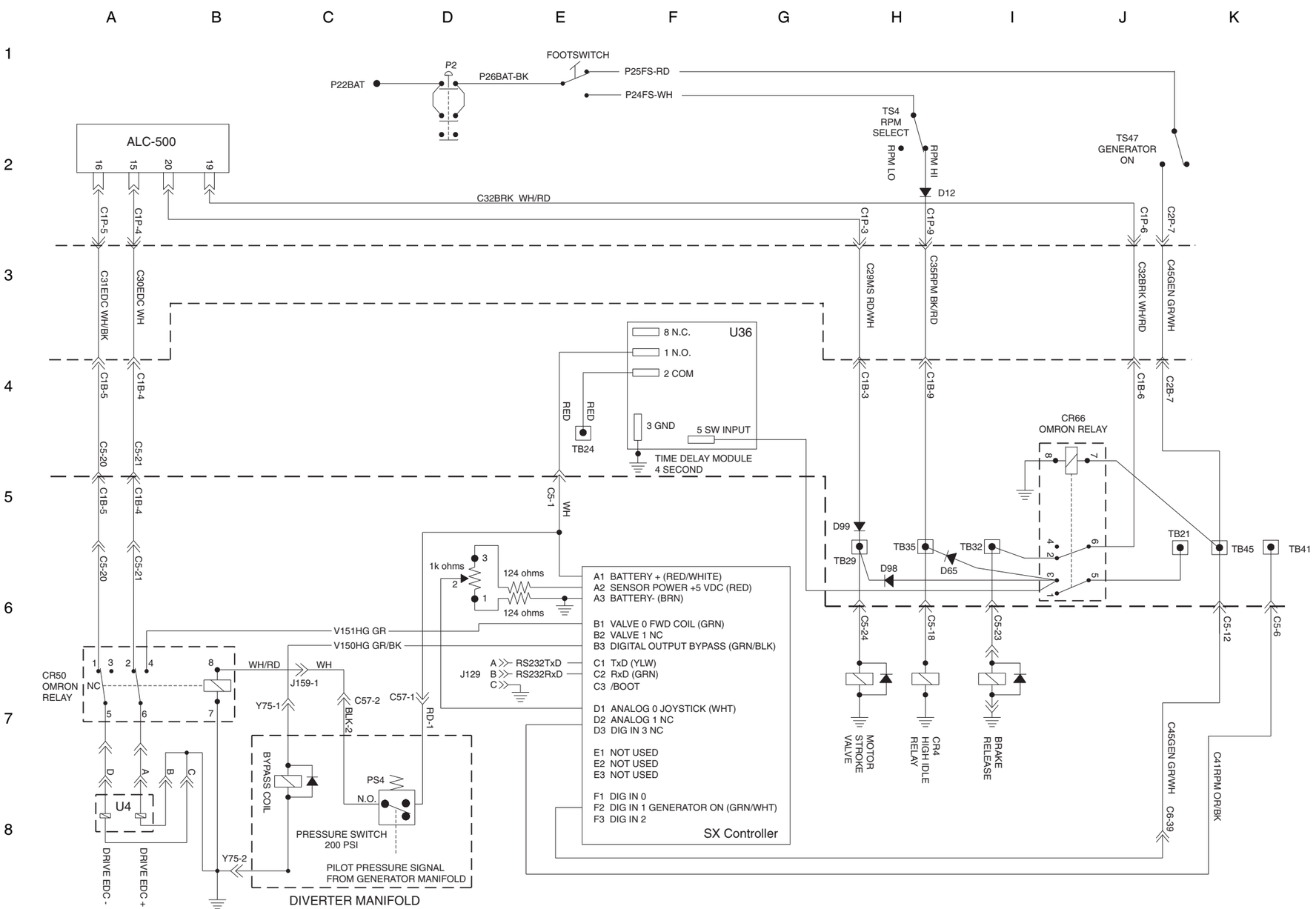


Electrical Schematic - Welder Option

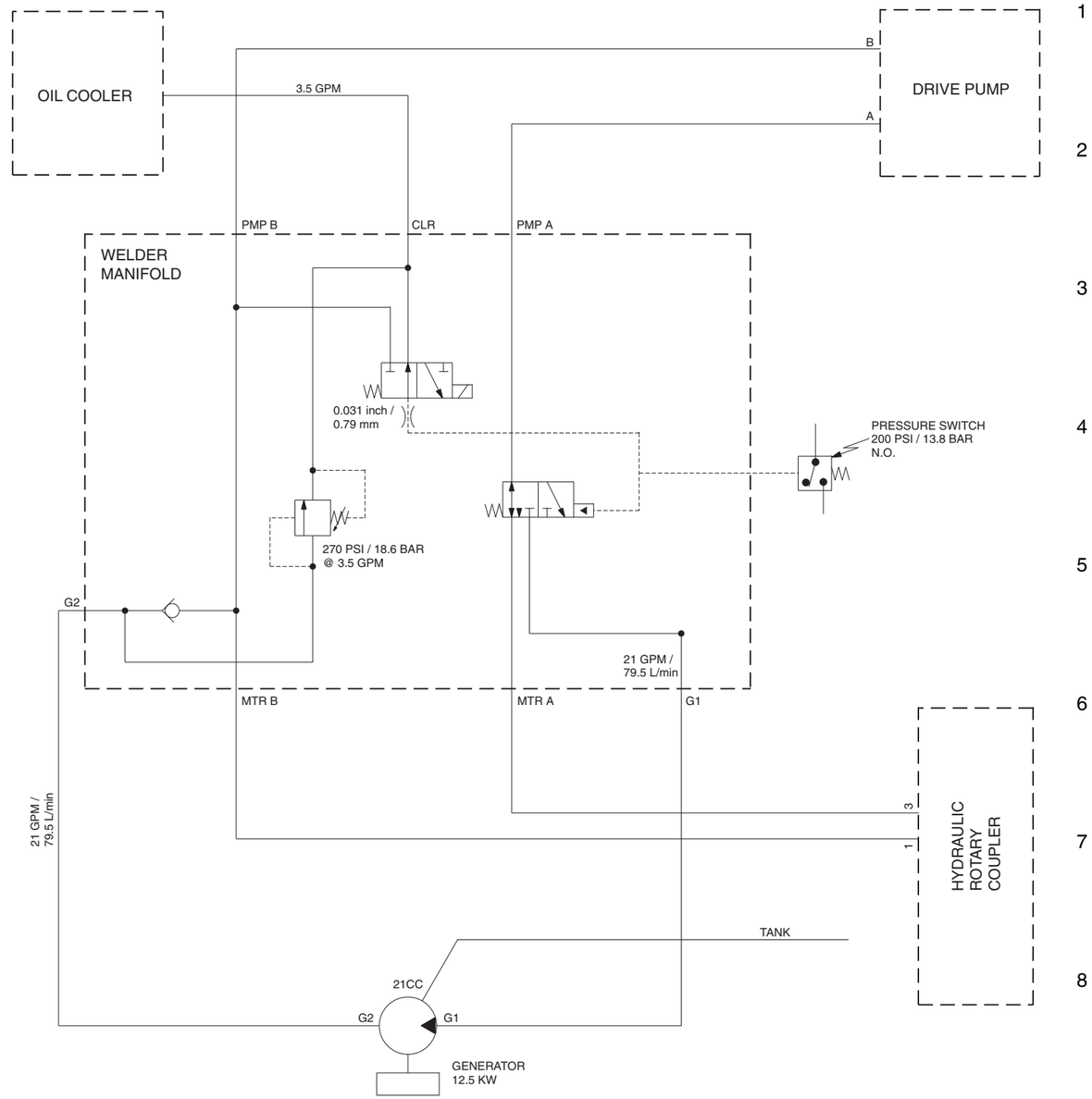




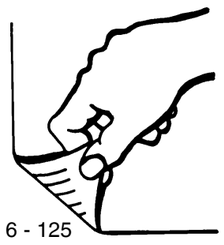
Electrical Schematic - Welder Option



Hydraulic Schematic - Welder Option



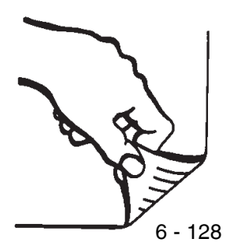
Hydraulic Schematic - Welder Option



Hydraulic Schematic - 2WD Models

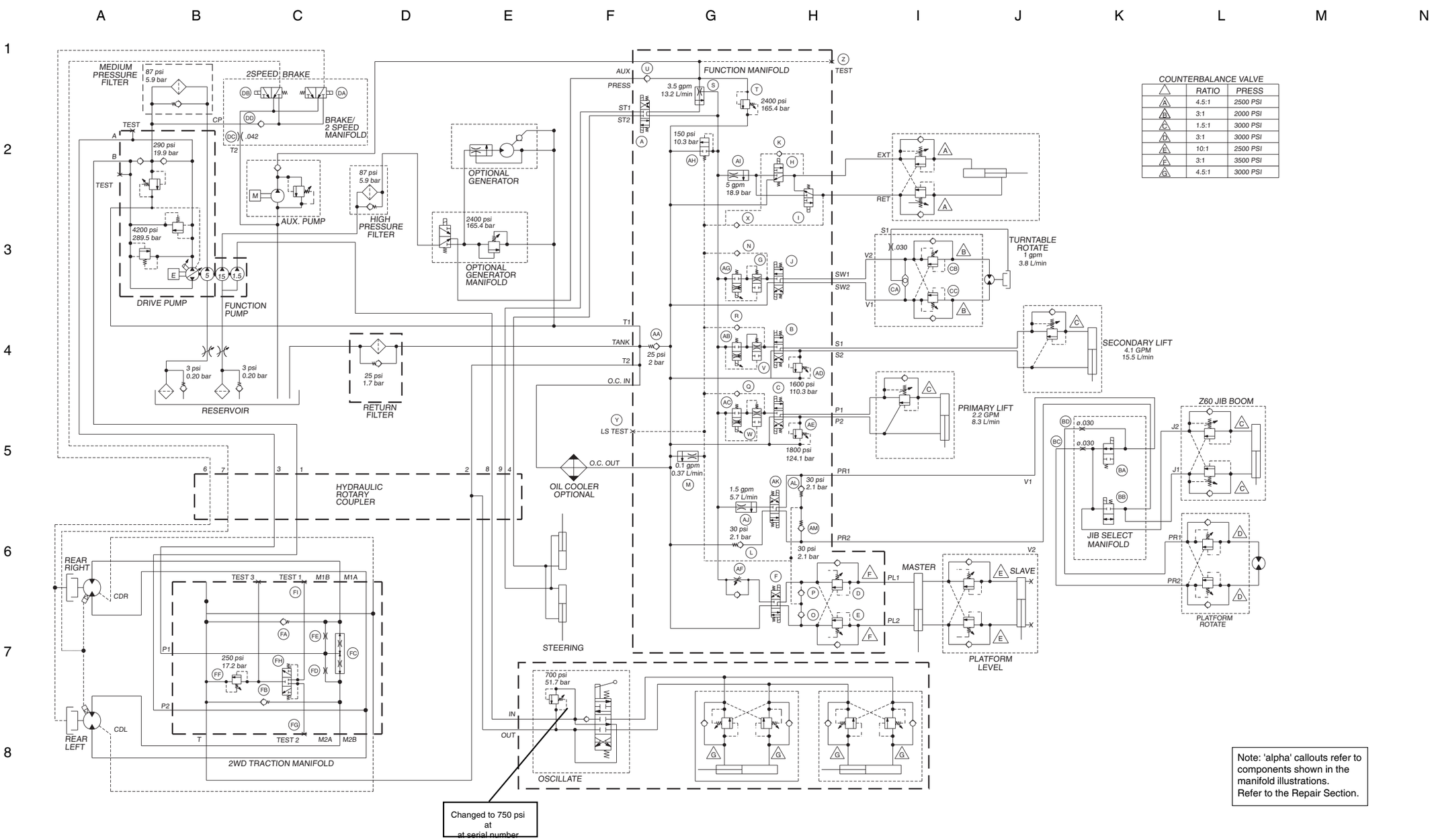
(before serial number 4461)





Hydraulic Schematic - 2WD Models

(before serial number 4461)



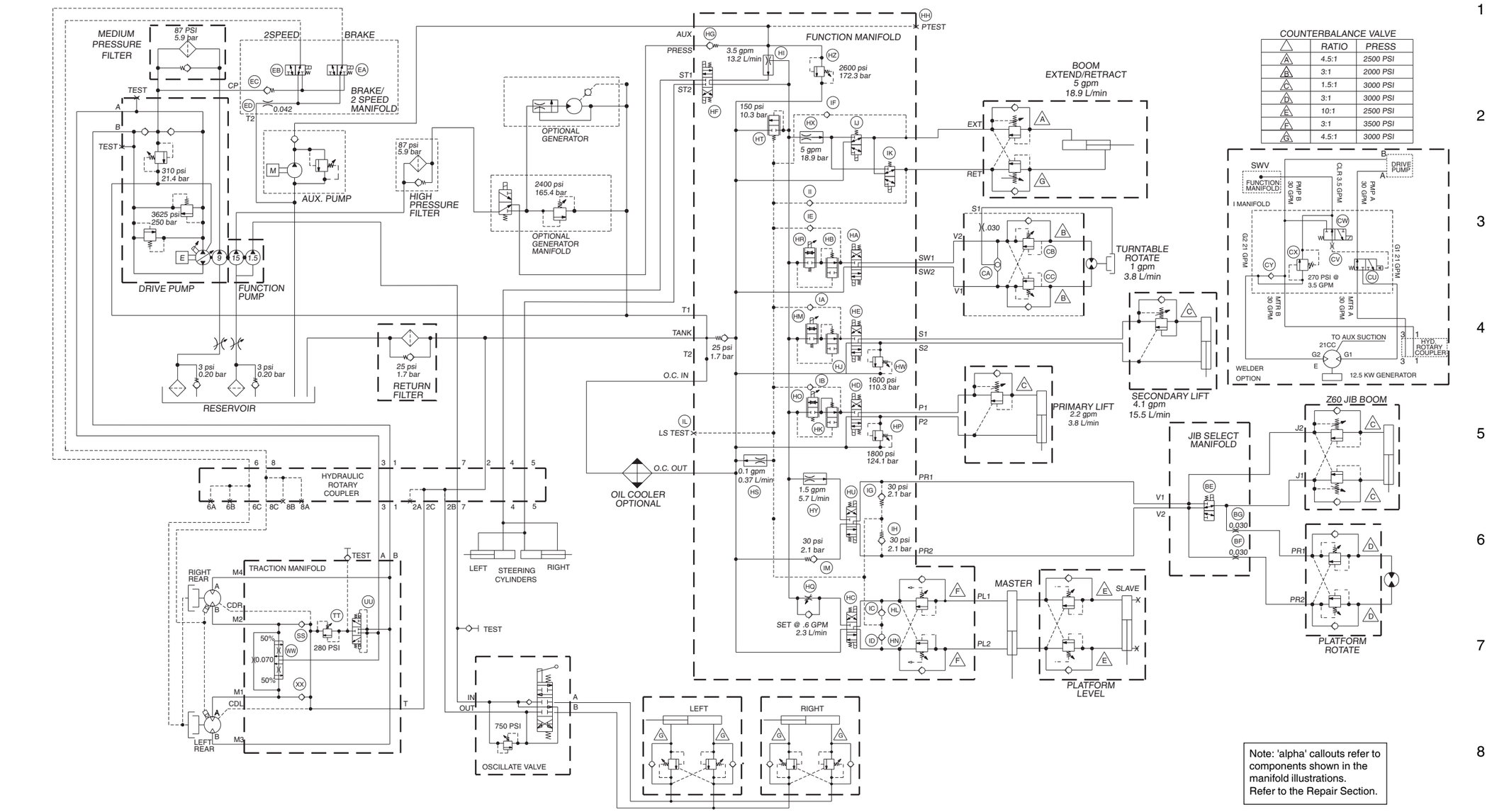
COUNTERBALANCE VALVE		
△	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

Changed to 750 psi at at serial number 11003

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

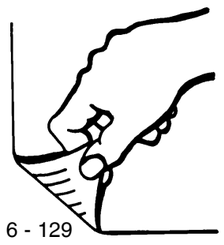
Hydraulic Schematic - 2WD Models

(from serial number 4461 to serial number 10282)



Hydraulic Schematic - 2WD Models

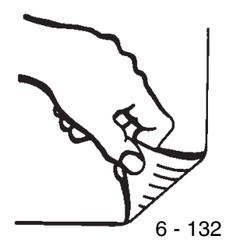
(from serial number 4461 to serial number 10282)



Hydraulic Schematic - 2WD Models

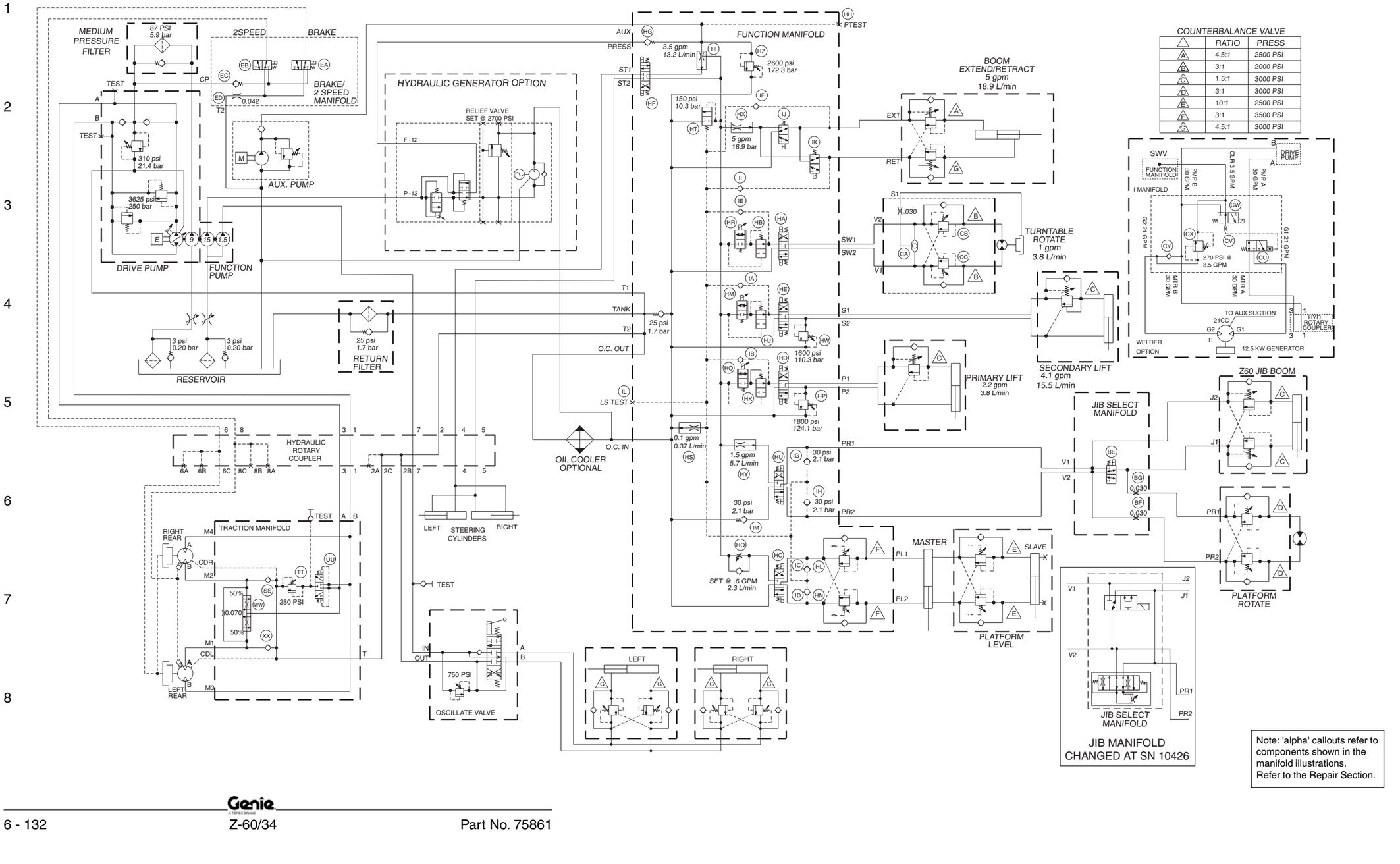
(from serial number 10283 to serial number 11003)





Hydraulic Schematic - 2WD Models

(from serial number 10283 to 11003)



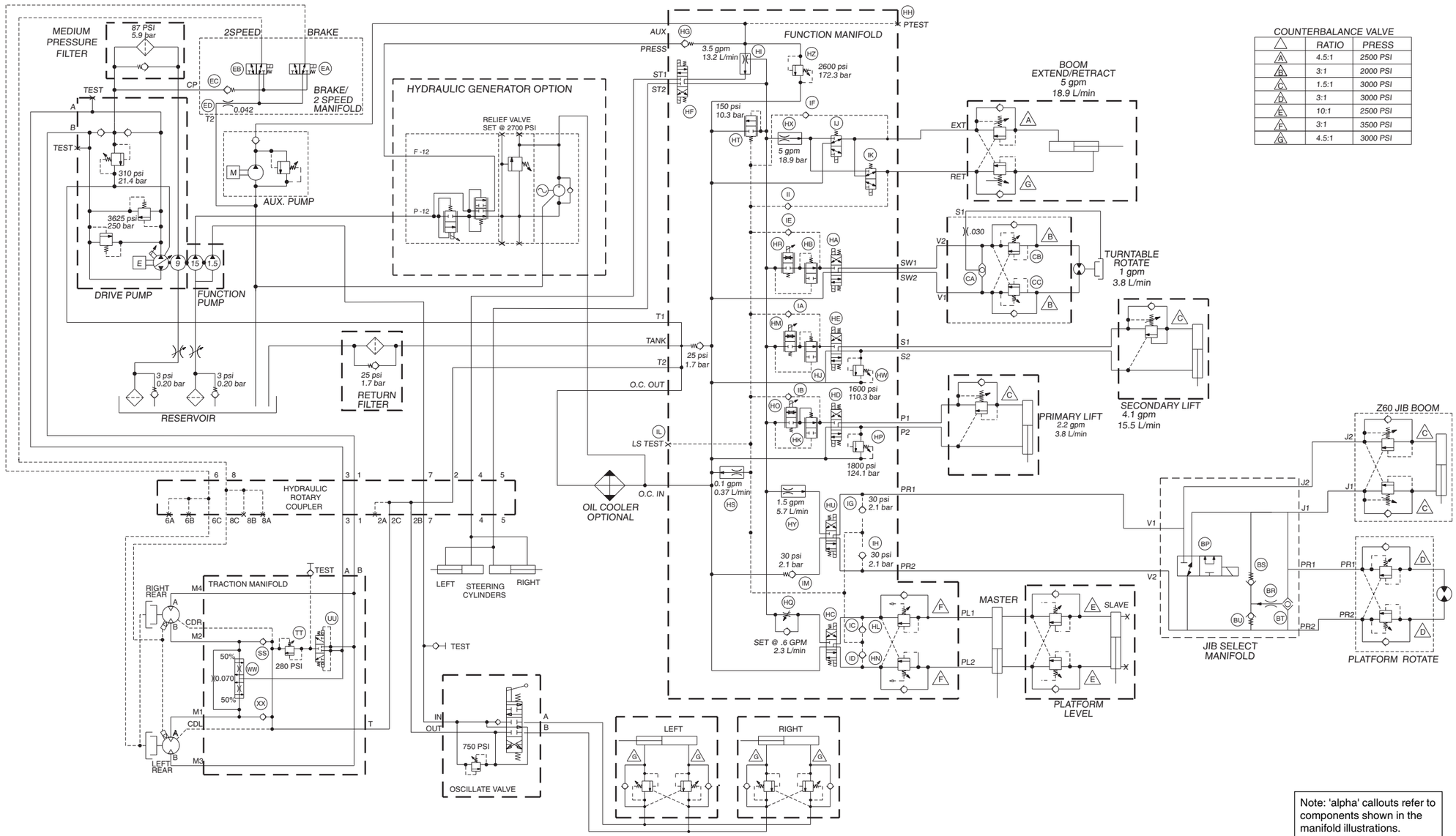
Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

Hydraulic Schematic - 2WD Models

(from serial number 11004 to 11477)

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

1 2 3 4 5 6 7 8



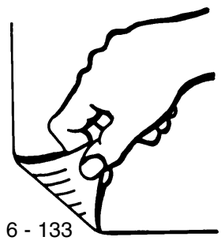
COUNTERBALANCE VALVE

	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

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

Hydraulic Schematic - 2WD Models

(from serial number 11004 to 11477)



Hydraulic Schematic - 2WD Models

(from serial number 11478)

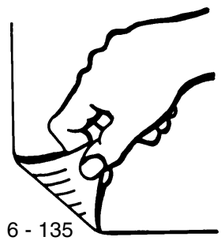
N M L K J I H G F E D C B A

1 2 3 4 5 6 7 8

COUNTERBALANCE VALVE		
	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

Hydraulic Schematic - 2WD Models

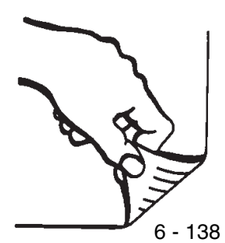
(from serial number 11478)



Hydraulic Schematic - 4WD Models

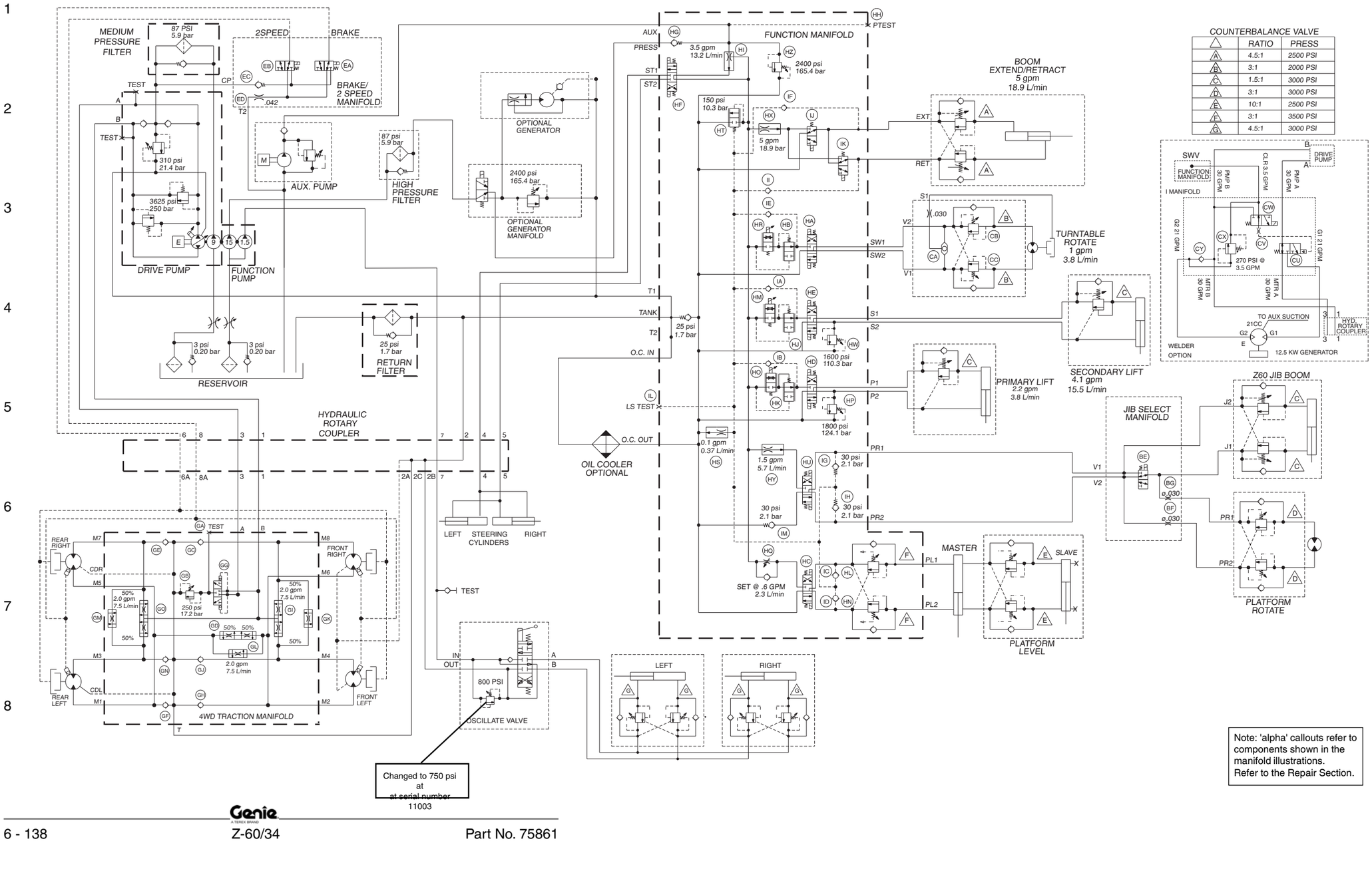
(before serial number 4461)





Hydraulic Schematic - 4WD Models

(before serial number 4461)



	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

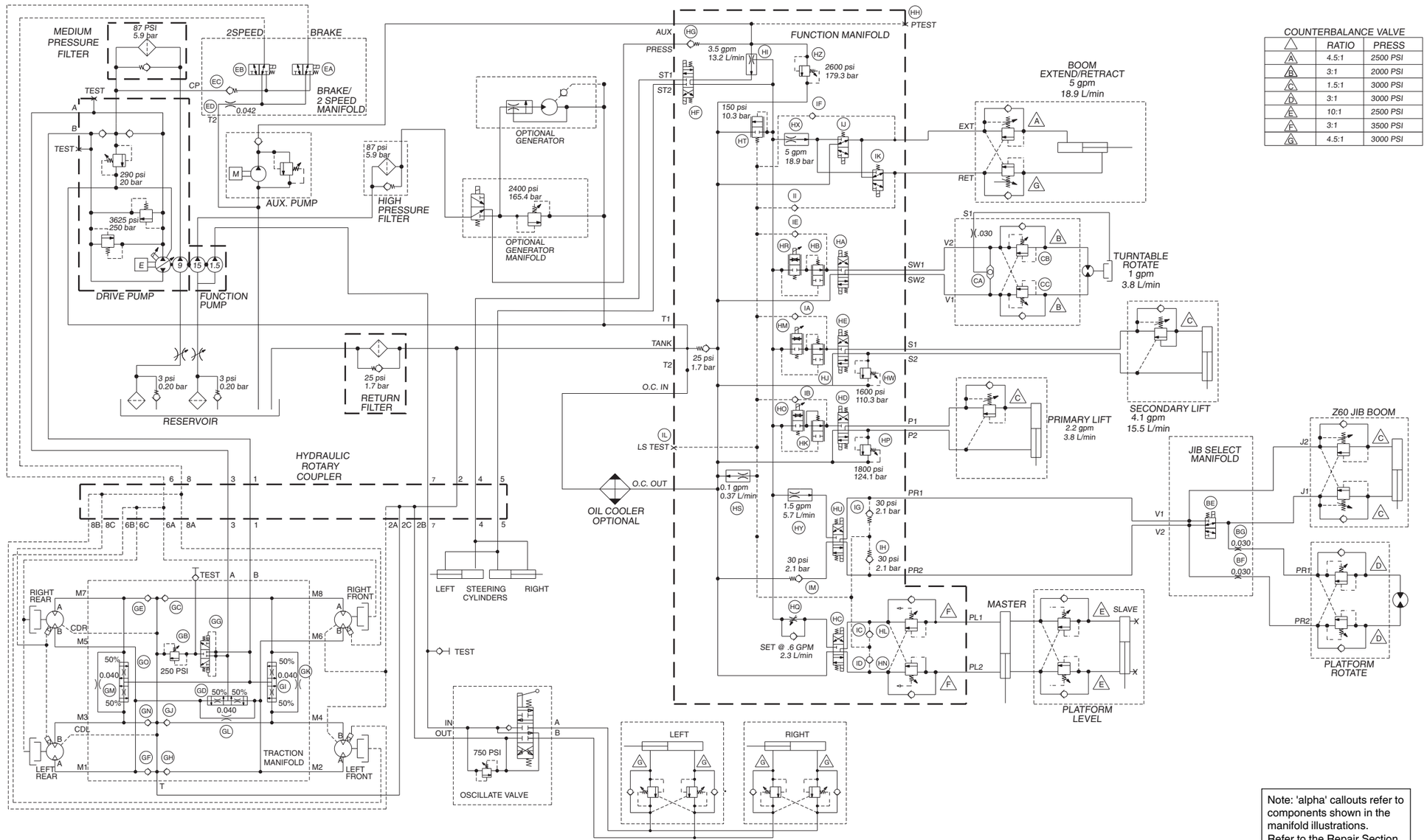
Note: 'alpha' callouts refer to components shown in the manifold illustrations.
Refer to the Repair Section.

Hydraulic Schematic - 4WD Models

(from serial number 4461 to serial number 10282)

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

1 2 3 4 5 6 7 8



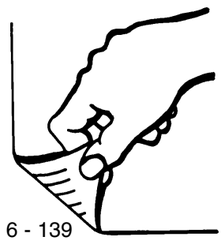
COUNTERBALANCE VALVE

	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

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

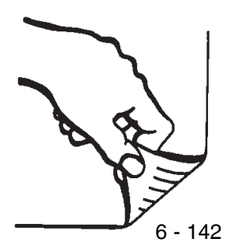
Hydraulic Schematic - 4WD Models

(from serial number 4461 to serial number 10282)



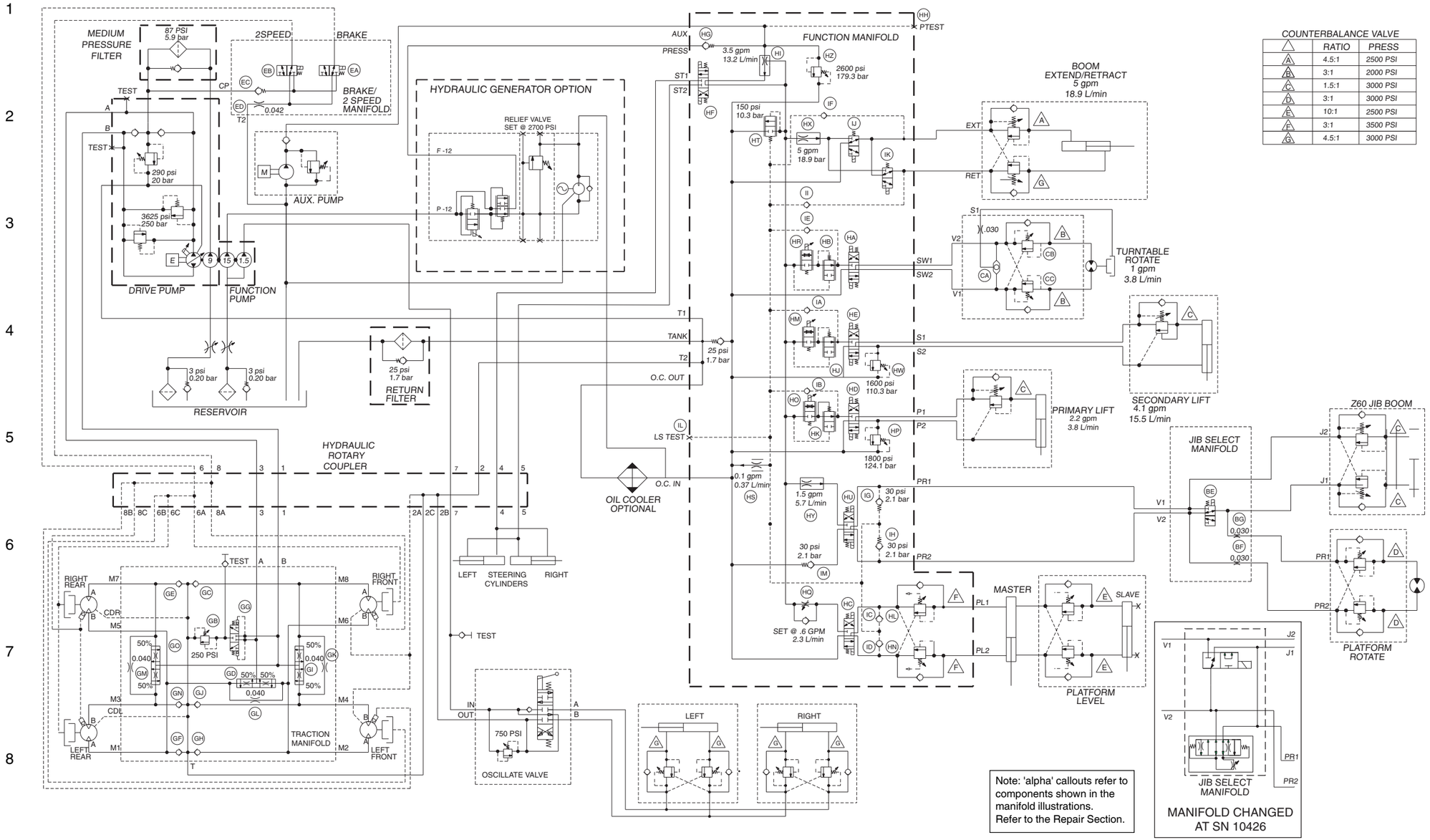
Hydraulic Schematic - 4WD Models
(from serial number 10283 to serial number 11003)





Hydraulic Schematic - 4WD Models

(from serial number 10283 to serial number 11003)



COUNTERBALANCE VALVE		
△	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

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

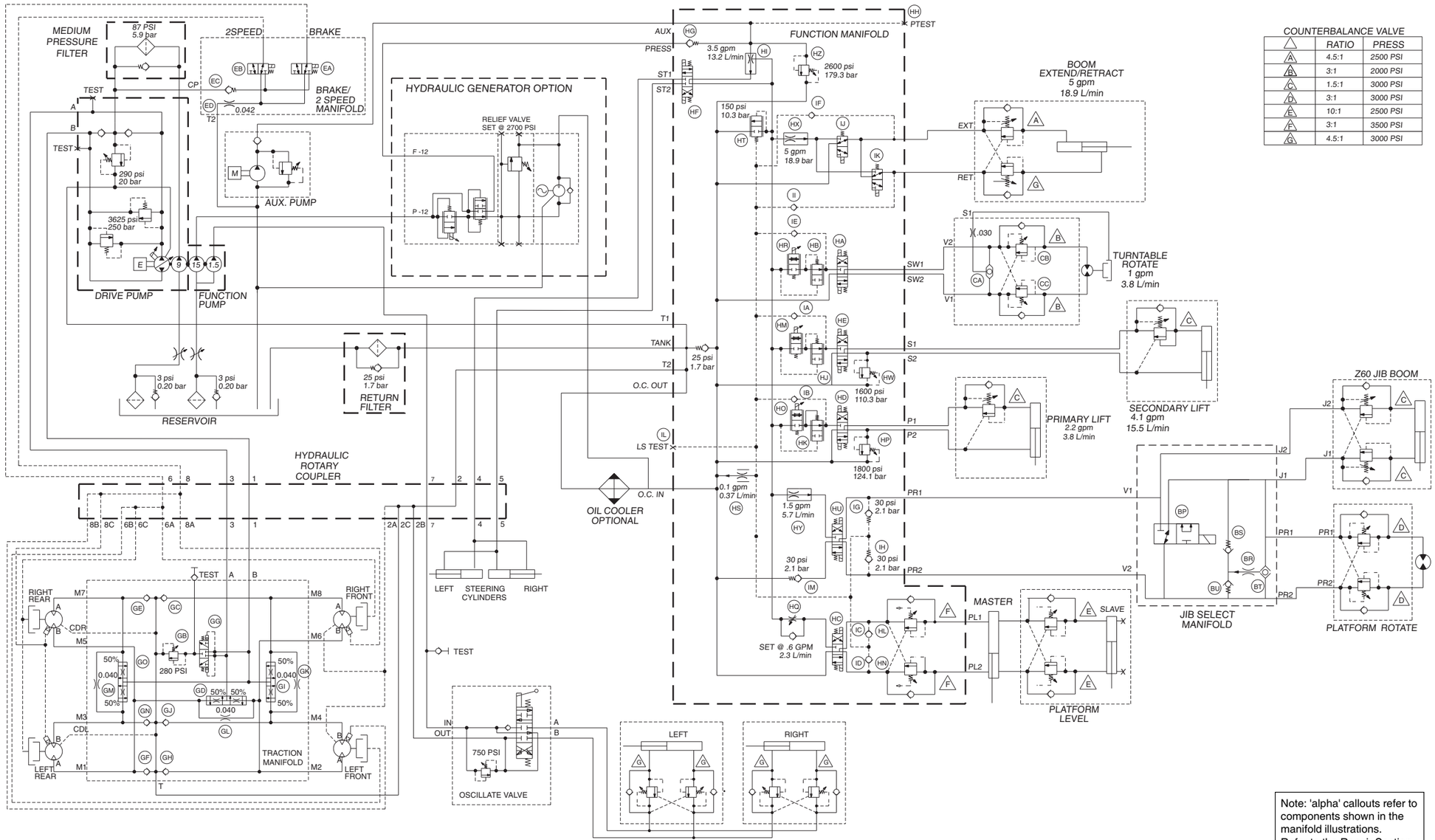
MANIFOLD CHANGED AT SN 10426

Hydraulic Schematic - 4WD Models

(from serial number 11004 to 11477)

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

1 2 3 4 5 6 7 8

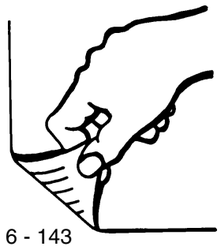


COUNTERBALANCE VALVE

	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

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

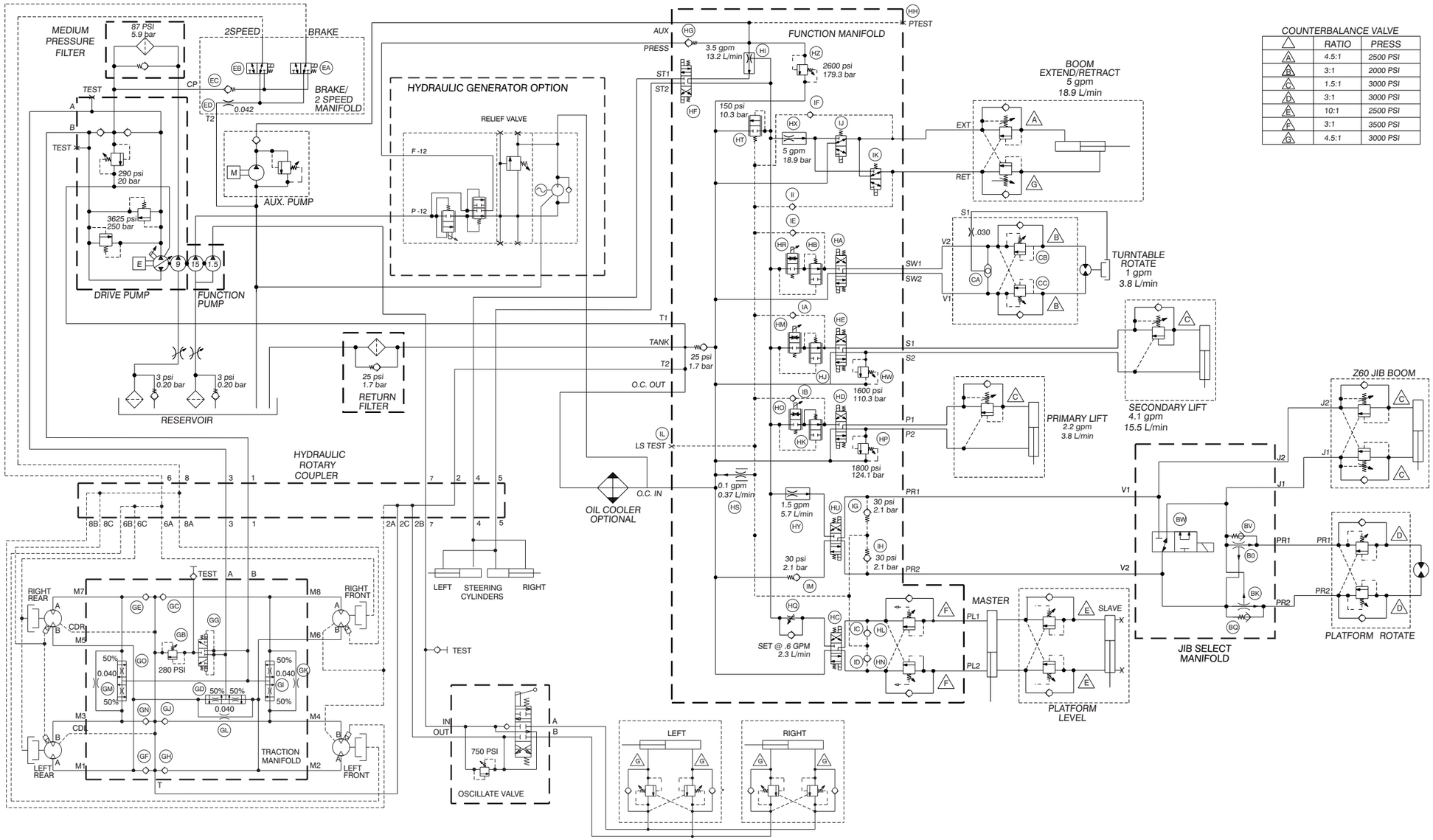
Hydraulic Schematic - 4WD Models
(from serial number 11004 to 11477)



Hydraulic Schematic - 4WD Models
(from serial number 11478)

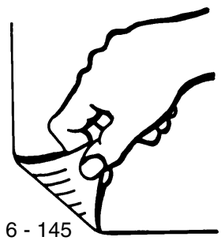
N M L K J I H G F E D C B A

1 2 3 4 5 6 7 8



COUNTERBALANCE VALVE		
	RATIO	PRESS
A	4.5:1	2500 PSI
B	3:1	2000 PSI
C	1.5:1	3000 PSI
D	3:1	3000 PSI
E	10:1	2500 PSI
F	3:1	3500 PSI
G	4.5:1	3000 PSI

Hydraulic Schematic - 4WD Models
(from serial number 11478)



California Proposition 65

Warning

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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