



A TEREX BRAND

Service Manual

Serial Number Range

S-40TM

from S40-7001 to
S4012-17231

S-45TM

Part No. 102521

Rev E

October 2013

Important

Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine before attempting any maintenance or repair procedure.

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

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

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:

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Serial Number Information


Genie offers the following Service Manuals for these models:

Title	Part No.
S-40 and S-45 Service Manual (before serial number 3804)	32222
S-40 and S-45 Service Manual (from serial number 3804 to 4728)	52271
S-40 and S-45 Service Manual (from serial number 4729 to 7000)	72136

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Revision History


Revision	Date	Section	Procedure / Schematic Page / Description
D	2/2012	2 - Spec.	2-1, 2-2, 2-13
		3 - Maint.	3-1, 3-3, 3-9 to 3-15, 3-17, 3-35 to 3-38, 3-54
		4 - Repair	4-4, 4-5, 4-6, 4-7, 4-48, 4-49, 4-50, 4-51, 4-60
		6 - Schem.	6-4, 6-5, 6-32 to 6-64, 6-92 to 6-125, 6-138, 6-139, 6-150, 6-151, 6-153
D1	10/1012	2 - Spec.	2-1, 2-2
		3 - Maint.	3-9, 3-33 to 3-34
		4 - Repair	4-59 to 4-60
D2	10/2013	4- Repair	4-3
		6 - Schem.	6-19, 6-29, 6-33, 6-93
REFERENCE EXAMPLES:			
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 #.			<p style="text-align: center;">Electronic Version</p> <p>Click on any procedure or page number highlighted in blue to view the update.</p>



REVISION HISTORY, CONTINUED

Revision	Date	Section	Procedure / Schematic Page / Description
REFERENCE EXAMPLES:			
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 #.			<p style="text-align: center;"><u>Electronic Version</u></p> <p>Click on any procedure or page number highlighted in blue to view the update.</p>


Serial Number Legend

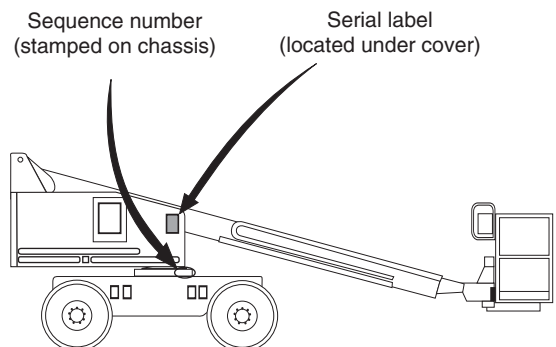
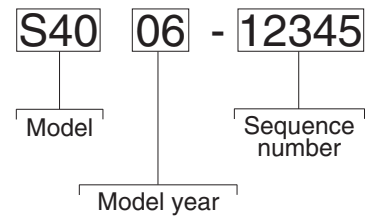

 A TEREX COMPANY

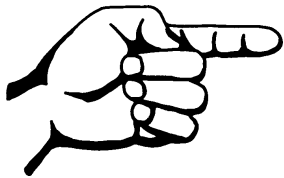
Model: S-40
Serial number: S4006-12345
Model year: 2006 **Manufacture date:** 01/05/06
Electrical schematic number: ES0274
Machine unladen weight:

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

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 PN - 77055





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Safety Rules



Danger

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

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

▲ DANGER

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 S-40 and S-45 Models

Tires and wheels

Tire size, 2WD front tires only	12.5L-16SL	
rear tires only	12-16.5 NHS	
Tire size, 2WDRT & 4WD front & rear	12-16.5 NHS	
Tire weight, new foam-filled (minimum) (Rough terrain)	300 lbs 136 kg	
Tire ply rating	12	8
Tire contact area	88 sq in 568 sq cm	57 sq in 368 sq cm
Overall tire diameter	33.7 in 85.6 cm	33.2 in 84.3 cm
Tire pressure (Rough terrain)	45 psi 3.1 bar	45 psi 3.1 bar
Tire pressure (Rough terrain)	60 psi 4.1 bar	60 psi 4.1 bar
Wheel diameter	16 in 40.6 cm	16 ¹ / ₂ in 41.9 cm
Wheel width	10 in 25.4 cm	9 ³ / ₄ in 24.8 cm
Wheel lugs	8@ ⁵ / ₈ -18	9@ ⁵ / ₈ -18

Lug nut torque - Drive and 9-bolt non-drive hubs

Lug nut, dry	230 ft-lbs 312 Nm
Lug nut, lubricated	170 ft-lbs 230 Nm

Lug nut torque - 8-bolt non-drive spindles

Lug nut, dry	170 ft-lbs 230 Nm
Lug nut, lubricated	130 ft-lbs 176 Nm

Track Components, TRAX option

Track material	Rubber
Weight, assembly (each)	480 lbs 218 kg

Fluid capacities

Fuel tank	20 gallons 75.7 liters
Fuel tank, Option	30 gallons 114 liters
LPG tank	33.5 pounds 15.2 kg
Hydraulic tank	45 gallons 170 liters
Hydraulic system (including tank)	55 gallons 208 liters
Drive hub (before serial number 7569)	17 fl oz 0.5 liters
Drive hub (from serial number 7569 to 15677)	24 fl oz 0.71 liters
Drive hub (from serial number 15678)	20 fl oz 0.6 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	

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

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



SPECIFICATIONS

Performance Specifications All Models

Drive speeds, 2WD and 4WD

Drive speed, stowed	40 ft / 5.2 - 5.9 sec 12.2 m / 5.2 - 5.9 sec
---------------------	---

Drive speed, raised or extended	40 ft / 40 - 45 sec 12.2 m / 40 - 45 sec
---------------------------------	---

Drive speed, TRAX option

Drive speed, stowed	40 ft / 11 sec 12.2 m / 11 sec
---------------------	-----------------------------------

Drive speed, raised or extended	40 ft / 40 sec 12.2 m / 40 sec
---------------------------------	-----------------------------------

Gradeability	See Operator's Manual
---------------------	-----------------------

Boom function speeds, maximum from platform controls

Boom up	50 to 60 seconds
---------	------------------

Boom down	45 to 60 seconds
-----------	------------------

Boom extend	30 to 60 seconds
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Boom retract	15 to 35 seconds
--------------	------------------

Turntable rotate, 360° boom fully stowed	70 to 100 seconds
---	-------------------

Turntable rotate, 360° boom fully extended	120 to 140 seconds
---	--------------------

Platform level (10° range of motion) ANSI	3 to 5 seconds
CE/Australia	20 to 22 seconds

Jib boom up, S-45 models	35 to 45 seconds
--------------------------	------------------

Jib boom down, S-45 models	20 to 30 seconds
----------------------------	------------------

Braking distance, maximum

High range on paved surface	3 to 4 ft 0.9 to 1.2 m
-----------------------------	---------------------------

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
---------------	---

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



SPECIFICATIONS

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 Industries Service Department before use.

Hydraulic Component Specifications

Drive pump

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

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

Type	gear, pressure balanced
Displacement	1.04 cu in 17 cc
Flow rate @ 2500 rpm	10.69 gpm 40.5 L/min

Oscillation pump

Type	gear, fixed displacement
Displacement	0.37 cu in 6 cc
Flow rate @ 2500 rpm	2.8 gallons per minute 10.6 liters per minute

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

SPECIFICATIONS

Auxiliary pump

Type: fixed displacement gear pump

Displacement - static 0.151 cu in
2.47 ccDisplacement 1.75 gallons per minute
6.62 liters per minute**Function manifold**Function relief valve pressure
S-40 2600 psi / 179 bar
S-45 2900 psi / 200 barBoom down relief valve pressure 2200 psi
152 barBoom extend 1950 psi
134 barOscillate axle 950 psi
66 barSteer regulator, 2 gallons per minute
All models 7.6 liters per minute**Traction manifold, 2WD and 4WD**
(before serial number 7569)Hot oil relief pressure 210 psi
14.5 bar**Traction manifold, 2WD and 4WD**
(after serial number 7568)Hot oil relief pressure 280 psi
19.3 bar**Steer-end drive motors, 4WD**
(before serial number 7569)

Displacement per revolution 1.52 cu in / 25 cc

Non-steer end drive motors, 2WD and 4WD
(before serial number 7569)

Displacement per revolution 2.13 cu in / 35 cc

Two-speed drive motors, 2WD and 4WD
(after serial number 7568)Displacement per revolution 0.99 cu in / 16.3 cc
low speedDisplacement per revolution 1.83 cu in / 30 cc
high speed**Hydraulic Filters**Medium pressure filter Beta ≥ 200 Medium pressure filter 51 psi
bypass pressure 3.5 barHydraulic tank circuit 10 micron with
return line filter 25 psi / 1.7 bar bypass

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

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

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 / 20°C that your air temperature increases or decreases from 68°F / 20°C.

Description	Specification
Solenoid valve, 2 position 3 way, 10V DC (schematic items AC and AE)	6.3 Ω
Solenoid valve, 3 position 4 way, 10V DC (schematic item AT and AZ)	6.3 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items AU, AV, AX, and AY)	6.3 Ω
Solenoid valve, 3 position 4 way, 10V DC (schematic items AZ and BF)	6.3 Ω
Proportional solenoid valve, 12V DC (schematic items AW and BB)	9 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic item CC)	6.8 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items DA)	3.3 Ω
Solenoid valve, 2 position 3 way, 12V DC (schematic items CE)	4.8 Ω

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



SPECIFICATIONS

Ford LRG-425 EFI Engine

Displacement	153 cu in 2.5 liters
---------------------	-------------------------

Number of cylinders	4
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Bore & stroke	3.78 x 3.4 in 96.01 x 86.36 mm
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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 rpm	1600 rpm
Frequency	396.8 Hz

High idle rpm	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
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Current draw, no load	70A
-----------------------	-----

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
----------------	------------------------

Ignition System

Spark plug type (before serial number 4546)	Motorcraft AWSF-52-C
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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

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
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Cold cranking ampere @ 0°F	1000A
----------------------------	-------

Reserve capacity @ 25A rate	200 minutes
-----------------------------	-------------

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SPECIFICATIONS

Deutz F3L-1011F Engine

Displacement	125 cu in 2.05 liters
Number of cylinders	3
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	36 @ 3000 rpm 26.8 kW @ 3000 rpm
Firing order	1 - 2 - 3
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle rpm	1500 rpm
Frequency	313 Hz
High idle rpm	2300 rpm
Frequency	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	
Temperature below 60°F / 15.5°C (synthetic)	5W-30
-10°F to 90°F / -23°C to 32°C	10W-40
Temperature above -4°F / -34°C	15W-40
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

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



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 rpm	1500 rpm
Frequency	313 Hz
High idle rpm	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
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Oil capacity (including filter) (Deutz F3L2011 Engine)	8.5 quarts 8 liters
---	------------------------

Oil capacity (including filter) (Deutz D2011L03i 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 $\frac{3}{8}$ to $\frac{1}{2}$ inch
9 to 12 mm

SPECIFICATIONS

Perkins 704-30 Engine

Displacement	183 cu in 2.9 liters
Number of cylinders	4
Bore and stroke	3.82 x 3.94 inches 97 x 100 mm
Horsepower	63 @ 2600 rpm 47 kW @ 2600 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	17.5:1
Compression pressure	300 to 500 psi 20.7 to 34.5 bar
Pressure (psi) of lowest cylinder must be within 50 psi (3.45 bar) of highest cylinder	
Low idle rpm	1600 rpm
Frequency	246.7 Hz
High idle rpm	2200 rpm
Frequency	339.2 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.014 in 0.35 mm
Exhaust	0.014 in 0.35 mm
Lubrication system	
Oil pressure (at 2600 rpm)	41 psi 2.8 bar
Oil capacity (including filter)	7.3 quarts 8.3 liters

Oil viscosity requirements

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

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

Injection system

Injection pump make	Zexel PFR-KX	
Injection pump pressure (stage one)	2755 psi	190 bar
(stage two)	3336 psi	230 bar
Injector opening pressure	3626 psi	250 bar

Fuel requirement

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

Engine coolant

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

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

Battery

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

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

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 rpm	1300 rpm
Frequency	200.5 Hz
Low idle rpm with generator option	1500 rpm
Frequency	231.3 Hz
High idle rpm	2500 rpm
Frequency	385.5 Hz
Compression ratio	22.4:1
Compression pressure	426 psi 29.4 bar
Pressure (psi) of lowest cylinder must be within 50 psi / 3.45 bar of highest cylinder	
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.008 in 0.2 mm
Exhaust	0.008 in 0.2 mm
Lubrication system	
Oil pressure, 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
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Coolant temperature sending unit

Torque	8-18 ft-lbs 11-24 Nm
--------	-------------------------

Temperature switch point	221° F 105° C
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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.

Battery

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

Starter motor

Current draw, normal load	140-200A
---------------------------	----------

Alternator output	65A @ 13.8V DC
--------------------------	----------------

Fan belt deflection	3/8 to 1/2 in 9 to 12 mm
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SPECIFICATIONS

Machine Torque Specifications**Platform rotator**

1-8 center bolt, Gr 5, dry	640 ft-lbs 868 Nm
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1-8 center bolt, Gr 5, lubricated	480 ft-lbs 651 Nm
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3/8 -16 bolts, Gr 8, lubricated *use blue thread-locking compound	35 ft-lbs* 47.5 Nm
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Turntable rotator

Drive hub mounting bolts, dry	210 ft-lbs 284 Nm
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Drive hub mounting bolts, lubricated* *use blue thread-locking compound	160 ft-lbs 217 Nm
--	----------------------

Drive motor and hubs

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

Drive hub mounting bolts, lubricated *use blue thread-locking compound	160 ft-lbs* 217 Nm
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Drive motor mounting bolts, dry	49 ft-lbs 66.4 Nm
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Drive motor mounting bolts, lubricated	37 ft-lbs 50 Nm
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Turntable bearing

Turntable bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
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TRAX Torque Specifications**Hub to drive sprocket fasteners**

Lug nut, dry	230 ft-lbs 312 Nm
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Lug nut, lubricated	170 ft-lbs 230 Nm
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Idler and bogey wheel fasteners

3/4 -10 bolts, GR 8, dry	375 ft-lbs 508 Nm
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3/4 -10 bolts, GR 8, lubricated	281 ft-lbs 381 N
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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.

SAE O-ring Boss Port

(tube fitting - installed into Aluminum)

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

SAE O-ring Boss Port

(tube fitting - installed into Steel)

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

Seal-Lok® fittings

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

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.





Seal-Lok® Fittings (ORFS)

(hose end)

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

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 (mm)	Class 4.6 				Class 8.8 				Class 10.9 				Class 12.9 			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	1.95	22.1	260	29.4
	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*. The frequency and extent of periodic examinations and tests may also depend on national regulations.

⚠ 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.

- ⦿ 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. Maintain completed forms for a minimum of 4 years or in compliance with 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 reinspect 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

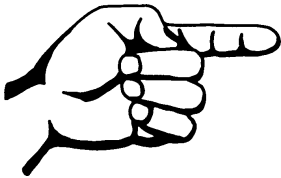
Inspector title

Inspector company



Terex South Dakota, Inc USA
500 Oak Wood Road
PO Box 1150
Watertown, SD 57201-6150
(605) 882-4000

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



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Maintenance Inspection Report

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

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

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

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in 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 Decals			
A-2	Pre-operation inspection			
A-3	Functions tests			
A-4	Engine maintenance - all models			
A-5	Inspect tracks - TRAX option			
Perform after 40 hours:				
A-6	30 Day Service			
Perform after first 50 hours:				
A-7	Engine maintenance - Deutz and Ford models			
A-8	Drive Hub Oil			
Perform every 50 hours:				
A-9	Engine maintenance- Perkins models			
Perform every 100 hours:				
A-10	Fuel filter/water separator - Deutz models			
A-11	Engine maintenance - Ford models			
A-12	Rotation bearing			
Perform after first 125 hours:				
A-13	Engine maintenance - Deutz 1011F models			
Perform every 200 hours:				
A-14	Engine maintenance - Ford models			

Comments

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 RPM			
B-12	Engine idle select			
B-13	Fuel select - Ford models			
B-14	Ground control			
B-15	Directional valve linkage			
B-16	Platform self-leveling			
B-17	Drive brakes			
B-18	Drive speed - stowed position			
B-19	Drive speed - raised position			
B-20	Hydraulic oil analysis			
B-21	Alarm package			
B-22	Fuel and hydraulic cap venting systems			
B-23	Check track tension - TRAX option			
Perform every 400 hours:				
B-24	Engine maintenance - Ford models			

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.

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

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

Perform every 800 hours:

C-6 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			

Comments

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 2400 hours:			
E-4 Engine maintenance - Ford models			
Perform every 3000 hours:			
E-5 Engine maintenance - Deutz and Perkins models			
Perform every 5000 hours:			
E-6 Engine maintenance - Deutz models			
Perform every 6000 hours:			
E-7 Engine maintenance - Deutz and Perkins models			
Perform every 12,000 hours:			
E-8 Engine maintenance - Deutz models			
Perform every 4 years:			
E-9 Engine maintenance - Ford models			

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 Industries 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.

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 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	139320

CHECKLIST A PROCEDURES

Perkins models

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

Perkins 404-22 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:

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-5

Inspect the Track Components, TRAX option



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

Maintaining tracks and track assembly components is essential to safe operation and good performance. A track assembly failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

- 1 Thoroughly clean the track assembly of any dirt, rocks, clay, etc.
- 2 Inspect the following areas for damaged, cracked, loose or missing parts and fasteners:
 - Track
 - Idler wheels
 - Drive sprocket and hub
 - Bogey wheels
 - Undercarriage
 - Kingpin and steering linkage bushings

CHECKLIST A PROCEDURES

A-6 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-10 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 Turntable Rotation Bearing Bolts
- D-6 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.

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 0312 3547).

Deutz 1011F Operation Manual

Genie part number 52883

Deutz 2011 Operation Manual

Genie part number 139320

CHECKLIST A PROCEDURES

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:

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.

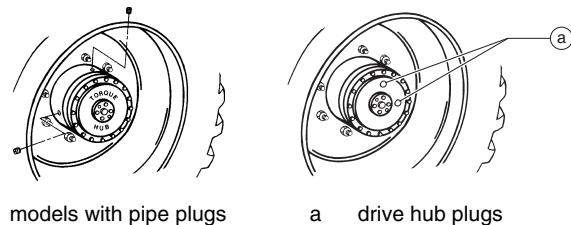
A-8
Replace the Drive Hub Oil



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 50 hours of use may cause the machine to perform poorly and continued use may cause component damage.

- 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 Section 2, *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 A PROCEDURES

A-9 Perform Engine Maintenance - Perkins Models



Engine specifications require that this procedure be performed every 50 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.

Perkins models

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

Perkins 404-22 Operation Manual

Genie part number 94890

To access the engine:

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-10 Inspect the Fuel Filter/Water Separator - Deutz Models



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

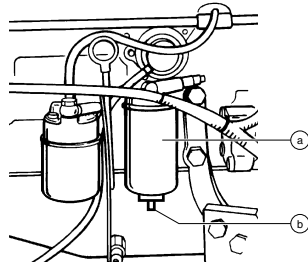
Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and/or hard starting, and continued use may result in component damage. Extremely dirty conditions may require this procedure be performed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

CHECKLIST A PROCEDURES



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-11 Perform Engine Maintenance - Ford Models



Engine specifications require that this procedure be performed every 100 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:

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-12 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 enough 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 specification

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

A-13 Perform Engine Maintenance - Deutz 1011F Models



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

Deutz 1011F Operation Manual

Genie part number	52883
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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-14

Perform Engine Maintenance - Ford Models



Engine specifications require that this procedure be performed every 200 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:

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 Electrocutation/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 Fully charge the batteries and allow the batteries to rest at least 6 hours.
 - 5 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.
 - 6 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.
- 7 Perform an equalizing charge, OR fully charge the batteries and allow the batteries to rest at least 6 hours.
 - 8 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.
 - 9 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:
 - Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
 - Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.
 - ⊙ Result: All battery cells display a specific gravity of 1.277 or greater. The battery is fully charged. Proceed to step 11.
 - ⊗ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is less than 1.217. Replace the battery.
 - 10 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.
 - 11 Install the vent caps and neutralize any electrolyte that may have spilled with 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 Electrocutation/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
 - Hydraulic manifold wiring

- 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.

CHECKLIST B PROCEDURES

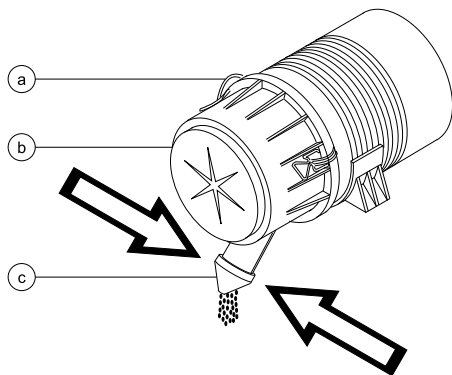
B-3**Inspect the Air Filter**

Note: 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
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Perkins models

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

Perkins 404-22 Operation Manual

Genie part number	94890
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To access the engine:

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-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.

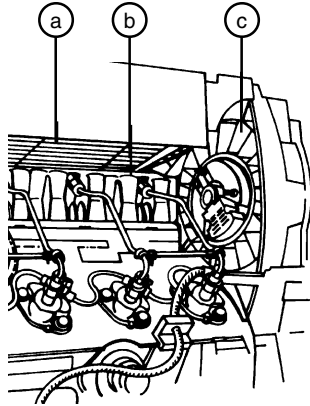
Oil cooler

- 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.

Note: 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 Section 2, *Specifications*.

Models with air-filled tires:

- 4 Check pressure in each air-filled tire. Add air as necessary. Refer to Section 2, *Specifications*.

CHECKLIST B PROCEDURES

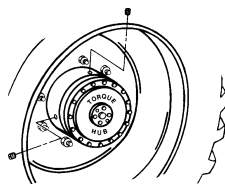
B-9 Check the Drive Hub Oil Level and Fastener Torque



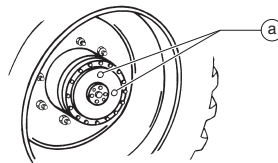
Genie specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

- 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 Section 2, *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 Section 2, *Specifications*.
- 6 Repeat this procedure for each drive hub.



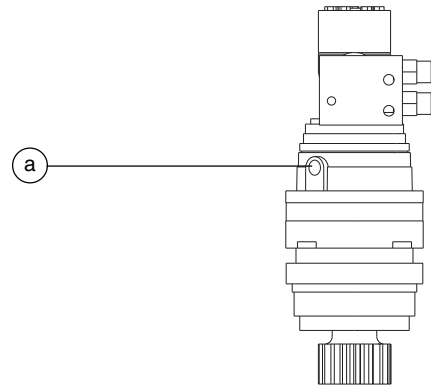
models with pipe plugs



a drive hub plugs

Turntable rotate drive hub

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

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 Section 2, *Specifications*.

CHECKLIST B PROCEDURES

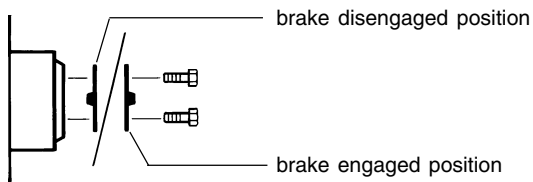
B-10 Confirm the Proper Brake Configuration



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

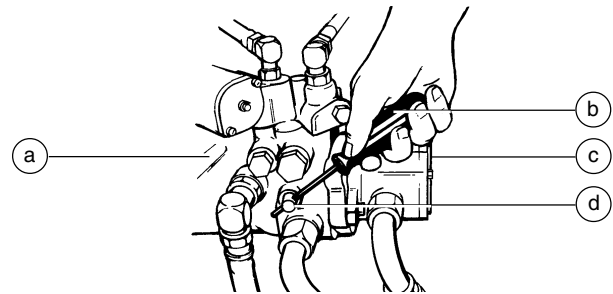
Proper brake configuration is essential to safe operation and good machine performance. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

- 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.

CHECKLIST B PROCEDURES

B-11 Check and Adjust the Engine RPM



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

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

Note: This procedure will require two people.

Ford Models

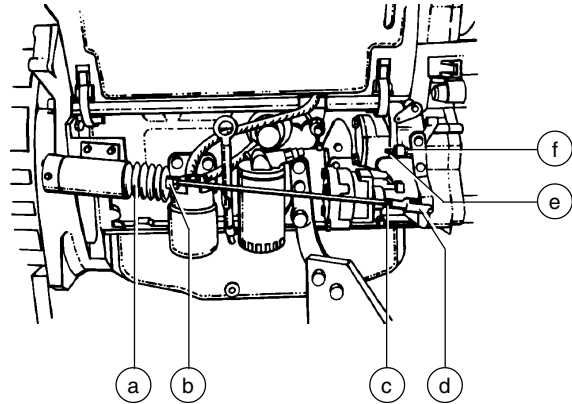
Note: The engine rpm is controlled by the ECM and can only be adjusted by re-programming the ECM. If rpm adjustment or service is required, please contact Genie Industries Service Department OR your local Ford dealer.

Deutz Models

- 1 Connect a tachometer to the engine. Start the engine from the ground controls. Refer to Section 2, *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 Section 2, *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.

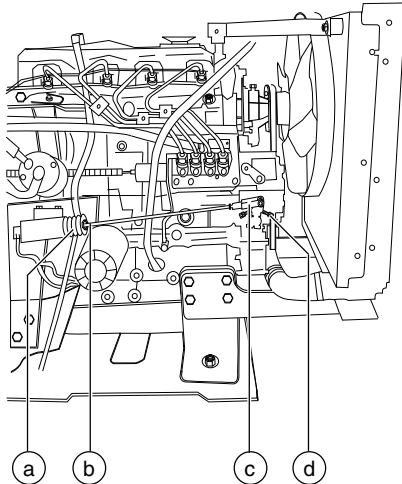
Perkins Models

- 1 Connect a tachometer to the engine. Start the engine from the ground controls. Refer to Section 2, *Specifications*.

CHECKLIST B PROCEDURES

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

- 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

- Move the function enable toggle switch to the high idle (rabbit symbol) position. Refer to Section 2, *Specifications*.

If high idle rpm is correct, disregard adjustment step 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.

B-12

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.

- Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 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.
- Release the function enable/rpm select toggle switch.
 - ⊙ Result: The engine should return to low idle.
- Turn the key switch to platform controls.
- 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.
- Press down the foot switch.
 - ⊙ Result: The engine should change to high idle.
- Move the engine idle control switch to foot switch activated low idle (turtle symbol).
 - ⊙ Result: The engine should change to low idle.

CHECKLIST B PROCEDURES

B-13 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.
- 3 Release the foot switch and shut the engine off by pushing the red Emergency Stop button in to the off position.
- 4 Move the fuel select switch to LPG.
- 5 Start the engine 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.

Note: The engine may hesitate momentarily and then continue to run on the selected fuel if switched while running.

CHECKLIST B PROCEDURES

B-14 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-15 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 and the axle covers from the non-steer end of the drive chassis.
- 2 Locate the directional valve inside of the non-steer axle and inspect the linkage for the following:
 - Lock nut is tight against yoke
 - Yoke clevis pins are installed
 - Cotter pins are installed through clevis pins
 - Linkage is properly attached to directional valve

CHECKLIST B PROCEDURES

B-16 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.

B-17 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. See B-10, *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 Section 2, *Specifications*.

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

CHECKLIST B PROCEDURES

B-18 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 Section 2, *Specifications*.

B-19 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.

CHECKLIST B PROCEDURES

- 6 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 7 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications*.
- 8 Lower the boom 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 Section 2, *Specifications*.

B-20

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

CHECKLIST B PROCEDURES

B-21 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.

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.

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

Note: The descent alarm is standard equipment beginning with serial number 12602.

- 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.

CHECKLIST B PROCEDURES

B-22**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 13740) and Diesel models (all):

Note: Perform this procedure with the engine off.

Note: Gasoline/LPG models use a pressurized cap beginning with serial number 13740.

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.

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.

CHECKLIST B PROCEDURES

B-23

Check the Track Tension and Fastener Torque, TRAX option

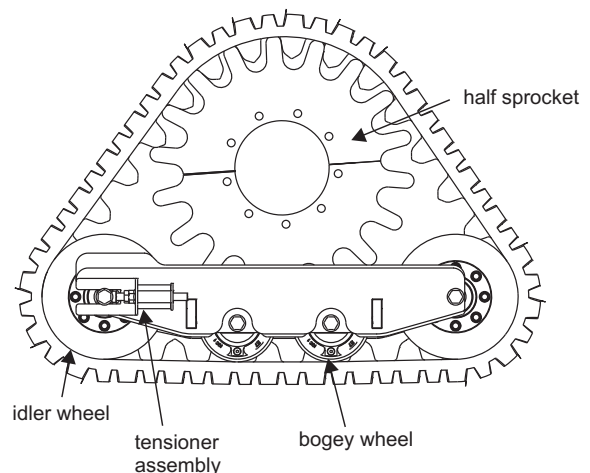


Note: Manufacturer specifications require that this procedure be performed every 250 hours or quarterly.

Maintaining proper track tension and properly torqued fasteners is essential to good machine performance and service life. The machine will not operate properly with a track that is incorrectly tensioned. Continued use of a machine with incorrectly tensioned tracks may cause component damage.

- 1 Thoroughly clean the track assembly of any dirt, rocks, clay, etc.
- 2 Chock the tracks at one end of the machine to prevent the machine from rolling.
- 3 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the tracks at the other end of the machine.
- 4 Lift the machine until the tracks are off the ground and then place jack stands under the drive chassis for support.

- 5 Visually inspect the section of track under the bogey wheels.
 - Result: There should be between 0.75 - 1 inch / 1.9 - 2.5 cm of gap between the bogey wheels and the inside surface of the track. Proceed to step 7.
 - ✗ Result: There is 1 inch / 2.5 cm or more of gap between the bogey wheels and the inside surface of the track. Proceed to step 6.



CHECKLIST B PROCEDURES

- 6 Loosen the tensioner jam nut and idler axle bolts on both sides of the tensioner wheel and tighten the tensioner nut until there is between 0.75 - 1 inch / 1.9 - 2.5 cm of gap between the bogey wheels and the inside surface of the track.

NOTICE

Component damage hazard.
Do not over tighten the track.
Overtightening the track will cause the machine to lose power during operation.

- 7 Tighten the jam nut.
8 Check the torque of the track assembly fasteners. Refer to Section 2, *Specifications*.
9 Raise the machine, remove the jack stands and lower the machine.
10 Repeat this procedure for each track assembly.

B-24

Perform Engine Maintenance - Ford Models



Engine specifications require that this procedure be performed every 400 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:

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 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	139320

Perkins models

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

Perkins 404-22 Operation Manual	
Genie part number	94890

To access the engine:

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 six months, whichever comes first.

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

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 inaccurate test.

- 4 Using a suitable lifting device, place a test weight equal to that of the available capacity at 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 2-4, *How to Calibrate the Platform Overload System (if equipped)*.

CHECKLIST C PROCEDURES

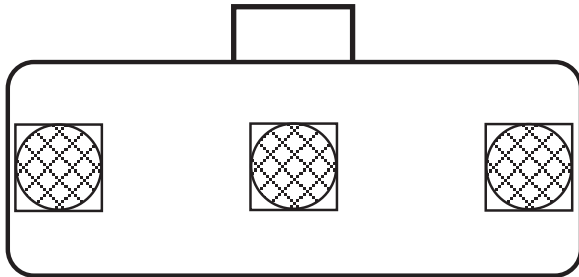


Illustration 1

- 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 2-4, *How to Calibrate the Platform Overload System (if equipped)*.
 - 6 Using a suitable lifting device, place an additional 50 lbs / 23 kg of weight onto the platform.
 - ⊙ Result: The alarm should sound and the engine should shut off. The platform overload indicator lights should be flashing at both the ground and platform controls.
 - ✗ Result: The alarm does not sound, the engine does not shut off and the platform overload indicator lights are not flashing. Calibrate the platform overload system. Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped)*.
- Note: There may be a 2 second delay before the overload indicator lights flash, the alarm sounds and the engine shuts off.
- 7 Using a suitable lifting device, remove the test weights, restart the engine and carefully move the test weights to each remaining location on the platform. Refer to Illustration 1.
 - ⊙ Result: The alarm should sound, the engine should shut off and 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 2-4, *How to Calibrate the Platform Overload System (if equipped)*.
- Note: There may be a 2 second delay before the overload indicator lights flash, the alarm sounds and the engine shuts off.
- 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.
 - 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.

CHECKLIST C PROCEDURES

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 2-4, *How to Calibrate the Platform Overload System (if equipped)*.

17 Push in the red Emergency stop button at the platform to shut off engine.

18 Using a suitable lifting device, remove all test weights from the platform.

19 Pull out the red Emergency stop button to the on position at the platform controls.

20 Remove the fasteners securing the lid to the platform controls. Using Illustration 2 as a guide, locate the timer relay inside the platform control box. Tag and disconnect the red wire from terminal 5 on the timer relay.

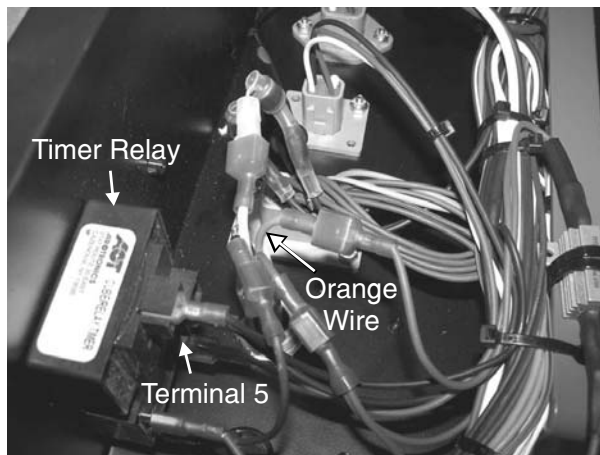


Illustration 2

21 Using Illustration 3 as a guide, locate D31 Valve Power LED on the ALC500 printed circuit board.

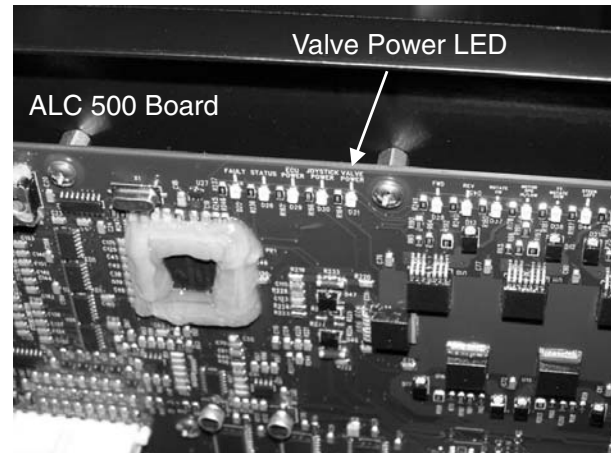


Illustration 3

22 Step on the footswitch at the platform.

- ⦿ Result: The Valve Power LED should not illuminate.

✗ Result: The Valve Power LED is illuminated. Remove the machine from service and contact the Genie Service Department.

23 Securely install the red wire, disconnected in step 20, onto terminal 5 of the relay timer.

24 Step on the footswitch at the platform.

- ⦿ Result: The Valve Power LED should illuminate.

✗ Result: The Valve Power LED is not illuminated. Remove the machine from service and contact the Genie Service Department.

25 Using a suitable lifting device, place a test weight equal to that of the available capacity at the center location shown in Illustration 1.

CHECKLIST C PROCEDURES

- 26 Using a suitable lifting device, place an additional 50 lbs / 23 kg of weight onto the platform.
- ⦿ Result: The alarm should sound and the Valve Power LED should not light. The platform overload indicator lights should be flashing at both the ground and platform controls.
- 27 Working from outside the platform and standing next to the platform rotator, locate the orange wire, which enters into the base of the platform control box from the load sense switch and locate the wire terminal at the end of the wire. Tag and disconnect the connectors. Refer to Illustration 2.
- 28 Using a multimeter set to read resistance (ohms), securely install a lead from the multimeter to the connector on the orange wire, and securely connect the other multimeter lead to a ground point in the control box.
- ⦿ Result: The readout on the multimeter should indicate zero resistance.
 - ✗ Result: The readout on the multimeter shows resistance. Remove the machine from service and contact the Genie Service Department.
- 29 Using a suitable lifting device, remove all weight from the platform. Note the result on the multimeter.
- ⦿ Result: The readout on the multimeter should indicate infinite resistance.
 - ✗ Result: The readout on the multimeter shows zero resistance. Remove the machine from service and contact the Genie Service Department.
- 31 Turn off the multimeter and remove the leads from the machine. Securely connect the wires disconnected in step 27.
- 32 Close the platform control box. Install and securely tighten the fasteners. Do not overtighten.

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.

CHECKLIST C PROCEDURES

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 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.

C-6 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:

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 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 Start the engine from the ground controls.
- 2 Raise the end of the primary boom to a comfortable working height (chest high), then extend the boom 1 foot / 30 cm.
- 3 Measure each wear pad. Replace the wear pad 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.

Note: 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.

Wear pad specifications	Minimum
all wear pads	9/16 inch 14.3 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.

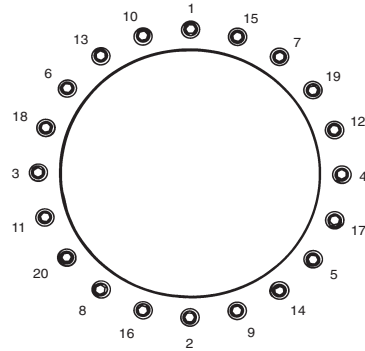
- 1 Raise the primary boom and place safety chocks on the lift cylinders rods. Carefully lower the boom onto the lift cylinders safety chocks.

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

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

- 2 Turn the engine off.
- 3 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.

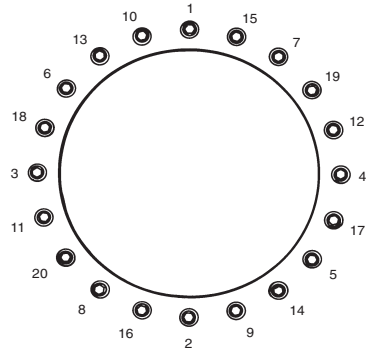


Bolt torque sequence

- 4 Be sure that each turntable mounting bolt is torqued in sequence to specifications. Refer to Section 2, *Specifications*.
- 5 Start the engine from the ground controls.
- 6 Raise the secondary boom and remove the safety chock.
- 7 Lower the boom to the stowed position.
- 8 Remove drive chassis covers from both the steer end and the non-steer end of the machine.

CHECKLIST D PROCEDURES

- 9 Check to ensure that each lower bearing mounting bolt under the drive chassis is torqued in sequence to specifications. Refer to Section 2, *Specifications*.



Bolt torque sequence

- 10 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.

D-3

Check the Free-wheel Configuration



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

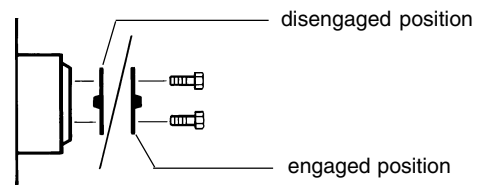
Proper use of the free-wheel configuration is essential to safe machine operation. The free-wheel configuration is used primarily for towing. A machine configured to free-wheel without operator knowledge may cause death or serious injury and property damage.

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.



CHECKLIST D PROCEDURES

- 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.

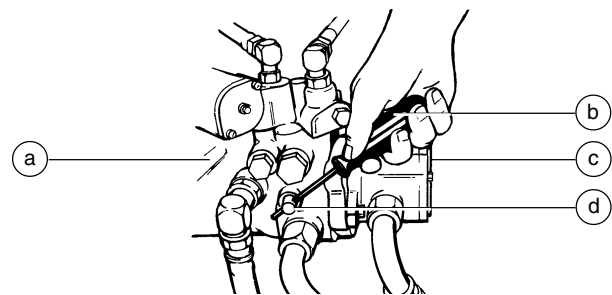
⚠ WARNING Collision hazard. Failure to re-engage the drive hubs may cause death or serious injury and property damage.

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

CHECKLIST D PROCEDURES

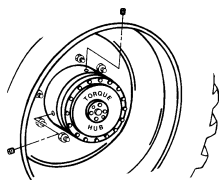
D-4 Replace the Drive Hub Oil



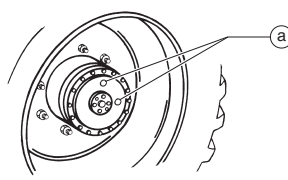
Genie specifications requires that this procedure be performed every 1000 hours or annually, whichever comes first.

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.

- 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 Section 2, *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



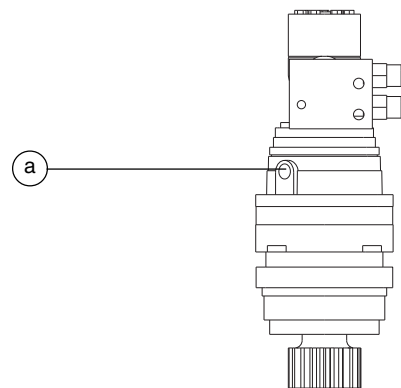
a drive hub plugs

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 Section 2, *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.

⚠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 Section 2, *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 0312 3547).

Deutz 1011F Operation Manual

Genie part number 52883

Deutz 2011 Operation Manual

Genie part number 139320

Perkins models

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

Perkins 404-22 Operation Manual

Genie part number 94890

To access the engine:

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 D PROCEDURES

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 cap from the filter housing.
- 3 Lift the handle on the filter element and rotate the element counterclockwise to release the element from the housing.
- 4 Remove the filter element from the filter housing.
- 5 Install the new filter element into the filter housing.
- 6 Push the filter element down to be sure the o-ring on the element is fully seated into the housing.
- 7 Rotate the filter element clockwise to lock it in place.
- 8 Install the filter housing cap.
- 9 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



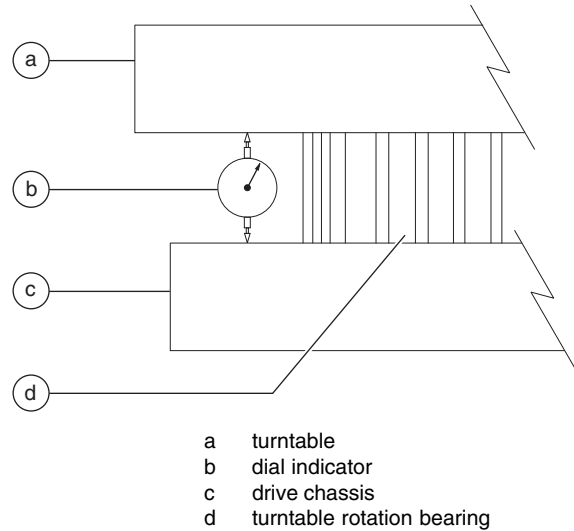
Genie specifications requires that this procedure be performed every 1000 hours or annually, whichever comes first.

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.

- 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.



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

CHECKLIST D PROCEDURES

- 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.

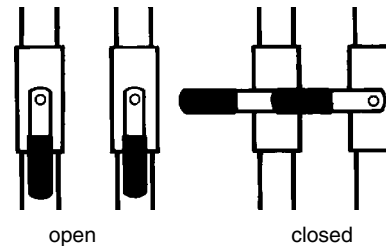
Note: Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

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 Section 2, *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.

CHECKLIST E PROCEDURES

- 8 Support the hydraulic tank with an appropriate lifting device.
- 9 Remove the hydraulic tank mounting fasteners.
- 10 Remove the hydraulic tank from the machine.

WARNING Crushing hazard. The hydraulic tank 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 6-2, *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.
- 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 and grease the wheel bearings.
 - ✗ Result: If there is side to side or up and down movement, continue to step 11 and replace the wheel bearings with new ones.

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.

Skip to step 10 if there is no movement.

CHECKLIST E PROCEDURES

- 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 slotted nut to 158 ft-lbs / 214 Nm to seat the bearings.
- 21 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.
- 22 Install a new cotter pin. Bend the cotter pin to lock it in.
- 23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications*.

E-3 Perform Engine Maintenance - Deutz 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 404-22 Operation Manual* (Perkins part number TPD 1443S).

Perkins 404-22 Operation Manual

Genie part number 94890

To access the engine:

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 - Ford Models



Engine specifications require that this procedure be performed every 2400 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).

Ford LRG 425 EFI Operation Manual	
Genie part number	84792

Ford DSG 423 EFI Operator Handbook	
Genie part number	119488

To access the engine:

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-5 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 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	139320

To access the engine:

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

Perkins models

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

Perkins 404-22 Operation Manual	
Genie part number	94890

To access the engine:

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 and Perkins 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 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	139320

To access the engine:

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 - 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 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	139320

To access the engine:

- 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 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 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0312 3547).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	139320

To access the engine:

- 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-9 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:

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



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Repair Procedures



Observe and Obey:

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

Before Repairs Start:

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

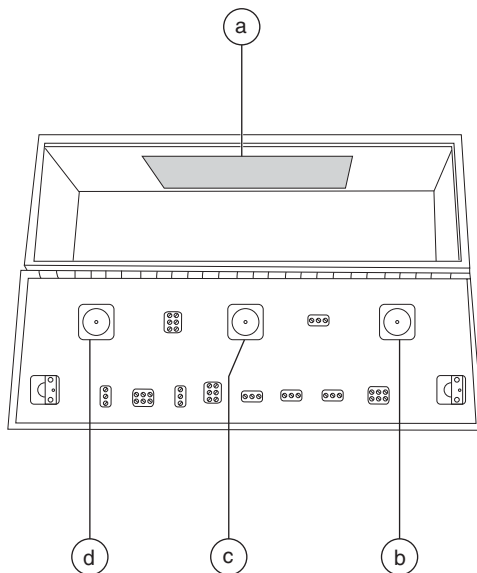
Used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

- ⦿ 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. See 1-2, *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. See 1-2, *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.

PLATFORM CONTROLS

- 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 function should operate while performing the joystick calibration procedure.

PLATFORM CONTROLS

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 platform controls red Emergency Stop button to the off position.
- 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 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.
- ✗ Result: The alarm does not sound. Repeat steps 3 through 7.
- 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 function times listed in Section 2, *Specifications*. 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 in the right direction to increase the function speed or momentarily move the drive enable toggle switch in the left direction to decrease the function speed.

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

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

PLATFORM CONTROLS

13 Return the joystick to the neutral position and wait for approximately 10 seconds to allow the settings to be saved.

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

⊗ Result: The alarm does not sound. The minimum or maximum adjustment has been obtained. No changes can be saved.

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

14 Cycle the red Emergency Stop button off, then back on.

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 platform controls red Emergency Stop button to the off position.

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.

⊗ Result: The alarm does not sound. Repeat steps 3 through 7.

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 Release the foot switch.

PLATFORM CONTROLS

12 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.

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

14 Return the joystick to the neutral position and wait for approximately 10 seconds to allow the settings to be saved.

⦿ 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.

15 Cycle the red Emergency Stop button off, then back on.

Ramp rate (factory settings)

Boom up/down

accelerate	3 second
decelerate	1 seconds

Turntable rotate

accelerate	2 seconds
decelerate	1 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 second
decelerate, shift from low to high speed	1 second
decelerate, shift from high to low speed	3 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.
 - ✗ Result: The alarm does not sound. Repeat steps 3 through 7.
- 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.

- 14 Cycle the red Emergency Stop button off, then back on.

Platform Components

2-1

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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.

Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Extend the primary boom until the slave cylinder barrel-end pivot pin is accessible.
- 2 Raise the primary boom slightly and place blocks under the platform for support.
- 3 Lower the primary boom until the platform is resting on the blocks just enough to support the platform.

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

- 4 Protect the slave cylinder rod from damage.

S-40 Models:

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

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

S-45 Models:

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

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

How to Bleed the Slave Cylinder

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

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

PLATFORM COMPONENTS

2-2**Platform Rotator**

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

How to Remove the Platform Rotator

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

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform and platform support.

S-40 Models:

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

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

S-45 Models:

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

All Models:

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

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

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

PLATFORM COMPONENTS

- 7 Support the platform leveling slave cylinder. Protect the cylinder rod from damage.
- 8 Remove the pin retaining fasteners from both the slave cylinder rod-end pivot pin, and the rotator pivot pin.
- 9 Use a soft metal drift to drive both pins out, then remove the platform rotator from the machine.

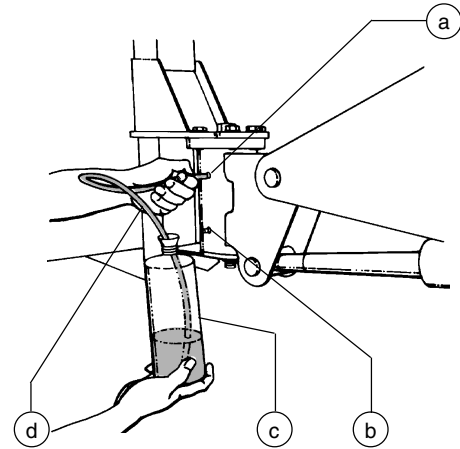
⚠ WARNING Crushing hazard. The platform rotator could become unbalanced and fall if it is not properly supported.

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

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



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

- 4 Move the function enable toggle switch to either side and hold the platform rotate 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 valve. Close the bleed valve.

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

- 5 Connect the clear hose to the bottom bleed valve and open the valve. Do not remove the bleed valve.
- 6 Move the function enable toggle switch to either side and hold the platform rotate 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 valve. Close the bleed valve.

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

- 7 Remove the hose from the bleed valve and clean up any hydraulic oil that may have spilled.
- 8 Rotate the platform fully in both directions and inspect the bleed valves for leaks.

PLATFORM COMPONENTS

2-3 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 and the engine will stop. 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: When 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.

PLATFORM COMPONENTS

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, the alarm is sounding, and the engine stops. 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, the alarm sounds, and the engine stops. Proceed to step 7.

⊗ Result: The overload indicator lights are flashing at the platform and ground controls, the alarm is sounding, and the engine stops. 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 light 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, the alarm is sounding, and the engine stops. 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, the alarm is sounding, and the engine stops. 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 overload indicator lights and alarm turn off.

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.

PLATFORM COMPONENTS

11 Test all machine functions from the ground controls.

- ⦿ Result: All ground control functions utilizing engine power should not operate. (Only limited ground control functions utilizing APU power should function).

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 Start the engine from the ground controls.

14 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 normally.

Jib Boom Components, S-45

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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.

Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform.
- 2 Remove the platform mounting weldment, and the platform rotator. See 2-2, *How to Remove the Platform Rotator*.
- 3 From the ground controls, raise the jib boom to a horizontal position.
- 4 Support the jib boom with a strap from an overhead crane.
- 5 Tag, disconnect and plug the hydraulic hoses from the jib boom lift cylinder. Cap the fittings on the cylinder.

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

- 6 Remove the hose cover, hoses and cables from the side of the jib boom and set them aside.

NOTICE Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

- 7 Place blocks under the platform leveling cylinder for support. Protect the cylinder rod from damage.
- 8 Remove the pin retaining fasteners from the jib boom lift cylinder barrel-end pivot pin. Do not remove the pin.
- 9 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.
- 10 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin.
- 11 Use a soft metal drift to remove the jib boom lift cylinder barrel-end pivot pin, then remove the jib boom cylinder.

▲WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

- 12 Remove the pin retaining fasteners from the jib boom pivot pin. Use a soft metal drift to remove the pin, then remove the jib boom from the bellcrank.

▲WARNING Crushing hazard. The jib boom could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

JIB BOOM COMPONENTS, S-45

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 on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 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 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

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

- 4 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Then lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.
- 5 Support the jib boom lift cylinder with a lifting device.
- 6 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the barrel-end pin and let the cylinder hang down.

WARNING Crushing hazard. The platform and jib boom could become unbalanced and fall when the jib boom barrel-end pivot pin is removed if not properly supported.

- 7 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.
- 8 Use a soft metal drift to remove the jib boom lift cylinder rod-end pin. Remove the cylinder from the machine.

WARNING Crushing hazard. The jib boom lift cylinder could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

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 on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Raise the primary boom to a horizontal position.
 - 2 Locate the cables from the 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.
 - 4 Remove the electrical outlet box bracket mounting fasteners. Remove the outlet box and lay it to the side.
 - 5 Remove the hose and cable clamp from the platform support.
 - 6 Tag, disconnect and plug the hydraulic hoses from the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.
- ⚠ WARNING** Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.
- 7 Tag, disconnect and plug the hydraulic hoses from the platform leveling cylinder at the union and connect the hoses from the cylinder together using a connector.
- ⚠ WARNING** Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.
- 8 Locate all electrical cables that enter the cable track.
 - 9 Tag and disconnect the electrical connectors for all cables that enter the cable track.
 - 10 Remove the retaining fasteners from the electrical connector receptacles for the cables that enter the cable track.
 - 11 Remove the fasteners from the drive speed limit switch mounted on the side of the cable track at the pivot end of the boom. Do not disconnect the wiring.

BOOM COMPONENTS

- 12 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.
- 13 Remove the cable cover on the side of the boom.
- 14 Place blocks in between the upper and lower cable tracks and secure the upper and lower tracks together.

AWARNING Crushing hazard. If the upper and lower cable tracks are not properly secured together, the cable track could become unbalanced and fall when it is removed from the machine.

- 15 Attach a lifting strap from an overhead crane to the cable track.
- 16 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.
- 17 Remove the cable track mounting fasteners that attach the lower cable track to the boom.
- 18 Remove the cable track from the machine and place it on a structure capable of supporting it.

AWARNING Crushing hazard. The cable track could become unbalanced and fall if it is not properly attached to the overhead crane.

NOTICE Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

How to Repair the Cable Track

NOTICE Component damage hazard. The boom cable track can be damaged if it is twisted.

Note: A cable track repair kit is available through the Genie Industries Service Parts Department, part no. 81007. The kit includes a 4 link section of cable track.

- 1 Visually inspect the cable track and determine which 4 link section needs to be replaced.
- 2 Remove the snap-on cable track spacers.
- 3 Carefully remove the external snap rings from the pivot pins at each end of the 4-link section to be removed.
- 4 Lift up the hoses and cables and carefully remove the damaged 4 link section of cable track.

NOTICE Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

- 5 Remove the snap-on spacers from the replacement section of the cable track.
- 6 Lift up the hoses and cables and carefully insert the new 4 link section of cable track.

NOTICE Component damage hazard. Hoses and cables can be damaged if they are kinked or pinched.

- 7 Connect the ends of the replacement cable track section to the existing cable track using the pivot pins and external snap rings.

Note: Be sure the pivot pins are installed from the inside out so the external snap rings are on the outside of the cable track.

- 8 Operate the boom extend/retract function through a full cycle to ensure smooth operation of the new section of cable track.

BOOM COMPONENTS

4-2 Boom

How to Remove the Boom

Consult the Genie Industries Service Department for instructions on how to safely remove the boom assembly from the machine. Failure to read and follow the warnings listed below could result in death or serious injury.

⚠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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.

Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform rotator and leveling slave cylinder. See 2-3, *How to Remove the Platform Rotator*.
- 3 **S-45 Models:** Remove the jib boom. See 3-1, *How to Remove the Jib Boom*.
- 4 Remove the mounting fasteners from the jib boom/platform rotate valve manifold on the end of the boom. Remove the manifold and set it aside.
- 5 Remove the fasteners from the limit switch mounted on the side of the cable track. Do not disconnect the wiring.
- 6 Support the cable track with an overhead crane.
- 7 Remove the hose/cable clamp from the pivot end of the boom.
- 8 Remove the hose/cable clamp at the platform end of the cable track.
- 9 Remove the fasteners from the large cable track guide at the platform end of the cable track. Remove the guide.
- 10 Remove the cotter pin from the clevis pin at the platform end of the cable track. Remove the clevis pin.

Note: Always replace the cotter pin with a new one when removing a clevis pin.

- 11 Remove the fasteners from the side panel on the cable track to access the cable track mounting fasteners.

- 12 Remove the cable track mounting fasteners, then remove the cable track from the boom and lay it off to the side.

NOTICE Component damage hazard. The boom cable track can be damaged if it is twisted.

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

- 13 Remove the turntable end cover.

- 14 Remove the retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Pull the cylinder back and secure it from moving.

NOTICE Component damage hazard. When pulling the master cylinder back, be sure not to damage the master cylinder hoses or fittings.

- 15 Remove the fasteners from the limit switch mounted to the turntable riser at the pivot end of the boom. Do not disconnect the wiring.

- 16 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.

- 17 Attach an overhead 5 ton / 4500 kg crane to the center point of the boom.

- 18 Attach a similar lifting device to the boom lift cylinder.

- 19 Use the overhead crane to lift the boom to a horizontal position.

- 20 Place support blocks under the boom lift cylinder, across the turntable.

- 21 Remove the pin retaining fastener from the boom lift cylinder rod-end pin. Use a soft metal drift to remove the pin.

WARNING Crushing hazard. The boom lift cylinder will fall if not properly supported.

- 22 Lower the rod end of the lift cylinder onto support blocks. Protect the cylinder rod from damage.

- 23 Remove the pin retaining fastener from the boom pivot pin.

- 24 Use a soft metal drift to remove the boom pivot pin, then carefully remove the boom from the machine.

WARNING Crushing hazard. The primary boom could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

How to Disassemble the Boom

Note: Complete disassembly of the boom is only necessary if the secondary boom tube must be replaced. The extension cylinder can be removed without completely disassembling the boom. See 4-4, *How to Remove the Extension Cylinder*.

- 1 Remove the boom. See 4-2, *How to Remove the Boom*.
- 2 Place blocks under the extension cylinder for support.
- 3 Remove the external snap rings from the extension cylinder barrel-end pivot pin at the pivot end of the primary boom tube. Use a soft metal drift to remove the pin.
- 4 Remove and label the wear pads from the top side of the primary boom tube at the platform end of the boom.

Note: Pay careful attention to the location and amount of shims used with each wear pad.

- 5 Attach a lifting strap from an overhead crane to the secondary boom tube at the platform end of the boom for support.
- 6 Support and slide the secondary boom tube out of the primary boom tube. Place the secondary boom tube on blocks for support.

▲WARNING Crushing hazard. The secondary boom 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 and label the wear pads from the top side of the secondary boom tube at the platform end of the boom.

- 8 Remove the trunnion pin retaining fasteners at the base end of the secondary boom tube. Use a slide hammer to remove the trunnion pins.
- 9 Carefully rotate the base end of the extension cylinder until the pin mounting bore is in a vertical position.
- 10 Remove the external snap rings from the extension cylinder rod-end pivot pin at the platform end of the secondary boom tube. Use a soft metal drift to remove the pin.
- 11 Support and slide the extension cylinder out of the base end of the secondary boom tube. Place the extension cylinder on blocks for support.

▲WARNING Crushing hazard. The extension cylinder may become unbalanced and fall when removed from the secondary boom tube if not properly supported.

Note: During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

- 12 Remove the label the wear pads from the extension cylinder.

Note: Pay careful attention to the location of each wear pad.

BOOM COMPONENTS

4-3 Boom Lift Cylinder

The boom lift cylinder raises and lowers the boom. The boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Boom Lift Cylinder

WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

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 Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Raise the boom to a horizontal position.
- 2 Place support blocks across the turntable under the boom lift cylinder.
- 3 Attach a 5 ton / 5000 kg overhead crane to the boom at the platform end for support. Do not lift the boom.
- 4 Support and secure both ends of the boom lift cylinder to a second overhead crane or similar lifting device.

- 5 Tag, disconnect and plug the boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 6 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Lower the lift cylinder onto the blocks. Protect the cylinder rod from damage.

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

- 7 Remove the four mounting fasteners from the lift cylinder barrel-end pivot pin mounting plate.
- 8 With the lift cylinder being supported by the overhead crane, pull the cylinder toward the platform to remove it from the machine.

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

NOTICE Component damage hazard. The cables and hydraulic hoses can be damaged if the lift cylinder is pulled across them.

- 9 Using auxiliary power, activate the boom down function so the cylinder will retract. Retract the cylinder just enough until the rod end of the cylinder will clear the mounting bracket on the boom. Turn the machine off.

BOOM COMPONENTS

4-4 Extension Cylinder

The extension cylinder extends and retracts the boom extension tube. The extension cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Extension Cylinder

WARNING This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could cause death or serious injury and significant component damage. Dealer service is strongly recommended.

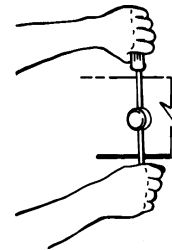
Note: When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Extend the boom until the extension cylinder rod-end pivot pins are accessible in the extension tube.
- 2 Remove the master cylinder. See 4-5, *How to Remove the Master Cylinder*.
- 3 Raise the boom to a horizontal position.

- 4 Remove the external snap rings from the extension cylinder rod-end pins (at the platform end). Use a soft metal drift to remove the pins.
- 5 Remove the turntable end cover.
- 6 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 7 Remove the barrel-end pivot pin retaining fasteners.
- 8 Place a rod through the barrel-end pivot pin and twist to remove the pin.



- 9 Support and slide the extension cylinder out of the pivot end of the boom.

WARNING Crushing hazard. The extension cylinder will fall when it is removed from the extension boom if it is not properly supported.

Note: Note the length of the cylinder after removal. The cylinder must be at the same length for installation.

BOOM COMPONENTS

4-5 Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed circuit hydraulic loop that keeps the platform level through the entire range of boom motion. The master cylinder is located at the base of the boom.

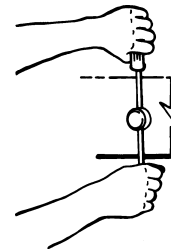
How to Remove the Platform Leveling Master Cylinder

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 Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the turntable end cover to access the master cylinder.
- 2 Raise the boom until the master cylinder rod-end pivot pin is accessible.
- 3 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 4 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder.
- 5 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin.
- 6 Place a rod through the barrel-end pivot pin and twist to remove the pin.



- 7 Remove the pin retaining fastener from the rod-end pivot pin.
- 8 Use a soft metal drift to remove the pin.
- 9 Remove the master cylinder from the machine.

WARNING Crushing hazard. The master cylinder could become unbalanced and fall if it is not properly attached to the overhead crane.

Engines

5-1 RPM Adjustment - Deutz Models

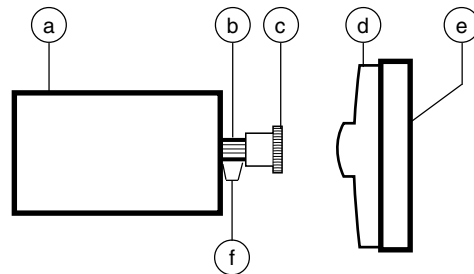
Refer to Maintenance Procedure B-11, *Check and Adjust the Engine RPM.*

5-2 RPM Adjustment - Perkins Models

Refer to Maintenance Procedure B-11, *Check and Adjust the Engine RPM.*

5-3 Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.



- a pump
- b pump shaft
- c pump coupler
- d flex plate with raised spline
- e engine flywheel
- f 0.18 inch / 4.6 mm gap - Deutz Models
0.070 inch / 1.8 mm gap - Perkins Models
0.0625 inch / 1.6 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 EFI 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.

ENGINES

- 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 13740: Torque the flex plate mounting bolts in sequence to 24 ft-lbs / 32 Nm.

After serial number 13739: 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.

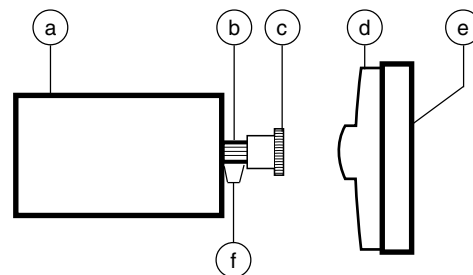
Perkins models:

Before serial number 7472: Torque the flex plate mounting bolts in sequence to 28 ft-lbs / 38 Nm.

From serial number 7472 to 13773: Torque the flex plate mounting bolts in sequence to 49 ft-lbs / 66 Nm.

After serial number 13773: Torque the flex plate mounting bolts in sequence to 14 ft-lbs / 19.1 Nm.

- 3 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between coupler and pump end plate for your engine.



- 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 / 1.6 mm gap - Ford LRG-425
0.080 inch / 2 mm gap - Ford DSG-423

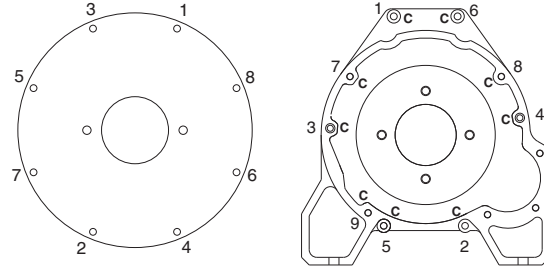
- 4 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 61 ft-lbs / 83 Nm.
- 5 Install the pump and bell housing assembly.

ENGINES

Ford LRG-425 models:

Before serial number 7597: Torque the bell housing mounting bolts in sequence to 23 ft-lbs / 31 Nm.

After serial number 7596: 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.

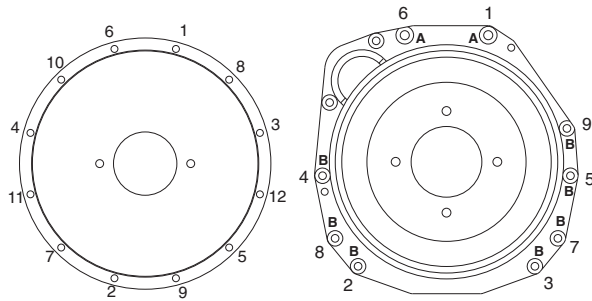


Ford LRG 425 models
(before serial number 7597)

Ford LRG 425 models
(after serial number 7596)

Ford DSG-423 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.



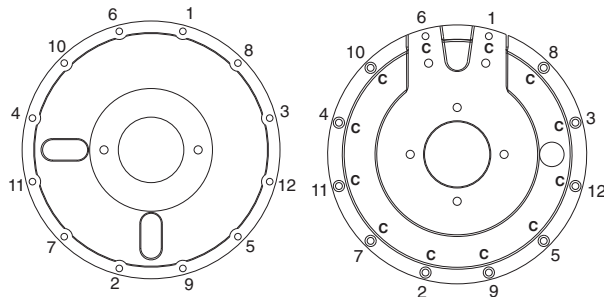
Perkins models
(before serial number 7472)

Perkins models
(after serial number 7471)

Deutz models:

Before serial number 7544: Torque the bell housing mounting bolts in sequence to 28 ft-lbs / 38 Nm.

After serial number 7543: Torque the bell housing mounting bolts in sequence to 47 ft-lbs / 63 Nm.



Deutz 1011 models
(before serial number 7544)

Deutz 2011 models
(after serial number 7543)

Perkins models:

Before serial number 7472: Torque the bell housing mounting bolts in sequence to 28 ft-lbs / 38 Nm.

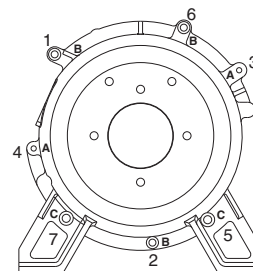
After serial number 7471: Torque the bell housing mounting bolts labeled "B" in sequence to 28 ft-lbs / 38 Nm and the mounting bolts labeled "A" to 49 ft-lbs / 66 Nm. Then torque the bell housing mounting bolts labeled "B" in sequence to 40 ft-lbs / 54 Nm and the mounting bolts labeled "A" to 70 ft-lbs / 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 DSG 423 models

ENGINES

5-4 Engine Fault Codes - Ford Models

How to Retrieve Engine Fault Codes

When an engine malfunction is detected by the Electronic Control Module (ECM), a fault code is recorded and the check engine light will turn on at the ground controls. Special equipment is required to retrieve fault codes stored within the ECM. Contact Genie Industries Service Department for assistance in retrieving fault codes.

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. (before serial no. 7597)
 - 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: If any fault codes are present, the ECM will use the check engine light to blink a three digit code.

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. There will be a longer pause between codes.

- 6 Refer to Section 5, *Fault Codes*, for definition of engine fault codes.

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. See *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 Electrocutation/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.

Hydraulic Pumps

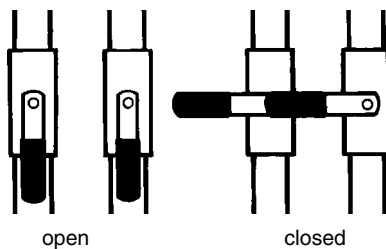
6-1 Function Pump

How to Remove the Function Pump

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 Section 2, *Hydraulic Hose and Fitting Torque 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.

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.

- 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.

- Remove the pump mounting bolts. Carefully remove 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.

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.

HYDRAULIC PUMPS

6-2 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 Eaton Hydraulics center. Call Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

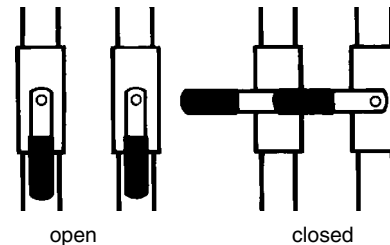
NOTICE Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

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

Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Disconnect the electrical connection at the electro-proportional controller located on the drive pump.

- 2 **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.

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.

- 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.

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.

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.

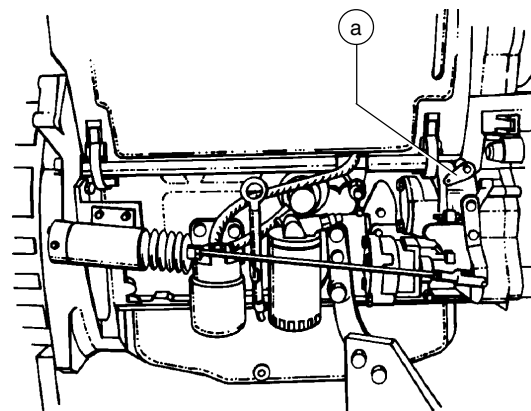
How to Prime the Pump

- 1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.
 - 2 Remove the safety pin (if equipped) from the engine pivot plate latch.
- Note: The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.
- 3 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

- 4 **Ford models:** Close the valve on the LPG tank then disconnect the hose from the tank. 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

7-1

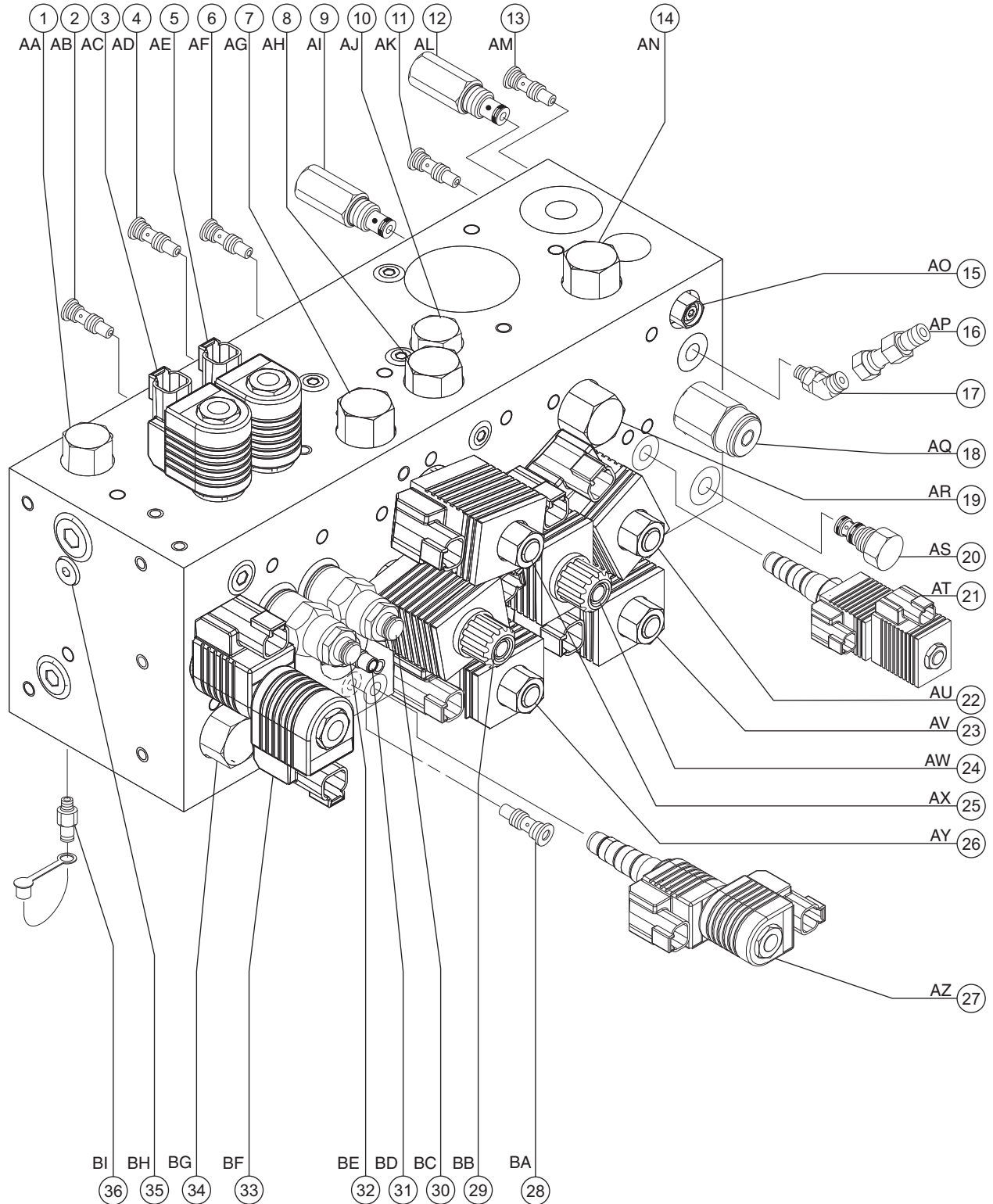
Function Manifold Components

The function manifold is located underneath the ground controls side turntable cover.

Index No.	Description	Schematic Item	Function	Torque
1	Flow regulator valve, 0.8 gpm / 3.03 L/min	AA	platform rotate and jib boom (S-45)	20-25 ft-lbs / 27-34 Nm
1	Flow regulator valve, 0.6 gpm / 2.27 L/min	AA	platform rotate (S-40)	20-25 ft-lbs / 27-34 Nm
2	Check valve	AB	Differential sensing circuit, platform rotate right and jib boom down (S-45)	10-12 ft-lbs / 14-16 Nm
3	Solenoid valve, 2 position 3 way	AC	Platform level up/down	20-25 ft-lbs / 27-34 Nm
4	Check valve	AD	Differential sensing circuit, platform level up	10-12 ft-lbs / 14-16 Nm
5	Solenoid valve, 2 position 3 way	AE	Platform level up/down	20-25 ft-lbs / 27-34 Nm
6	Check valve	AF	Differential sensing circuit, boom up/down	10-12 ft-lbs / 14-16 Nm
7	Differential sensing valve, 150 psi / 10.3 bar	AG	Turntable rotate circuit	30-35 ft-lbs / 41-47 Nm
8	Differential sensing valve, 150 psi / 10.3 bar	AH	Boom up/down circuit	30-35 ft-lbs / 41-47 Nm
9	Relief valve, 2200 psi / 152 bar	AI	Boom down relief	20-25 ft-lbs / 27-34 Nm
10	Flow regulator valve, 0.1 gpm / 0.38 L/min	AJ	Bleeds off differential sensing valves to tank	20-25 ft-lbs / 27-34 Nm
11	Check valve	AK	Differential sensing circuit, boom up/down	10-12 ft-lbs / 14-16 Nm
12	Relief valve, 1950 psi / 134 bar	AL	Extend cylinder relief	20-25 ft-lbs / 27-34 Nm
13	Check valve	AM	Differential sensing circuit, boom extend/retract	10-12 ft-lbs / 14-16 Nm
14	Flow regulator valve, 2.0 gpm / 7.6 L/min	AN	Steer left/right circuit	30-35 ft-lbs / 41-47 Nm
15	Check valve	AO	Platform level up	14 ft-lbs / 19 Nm
16	Diagnostic nipple	AP	Testing	

This list continues. Please turn the page

MANIFOLDS

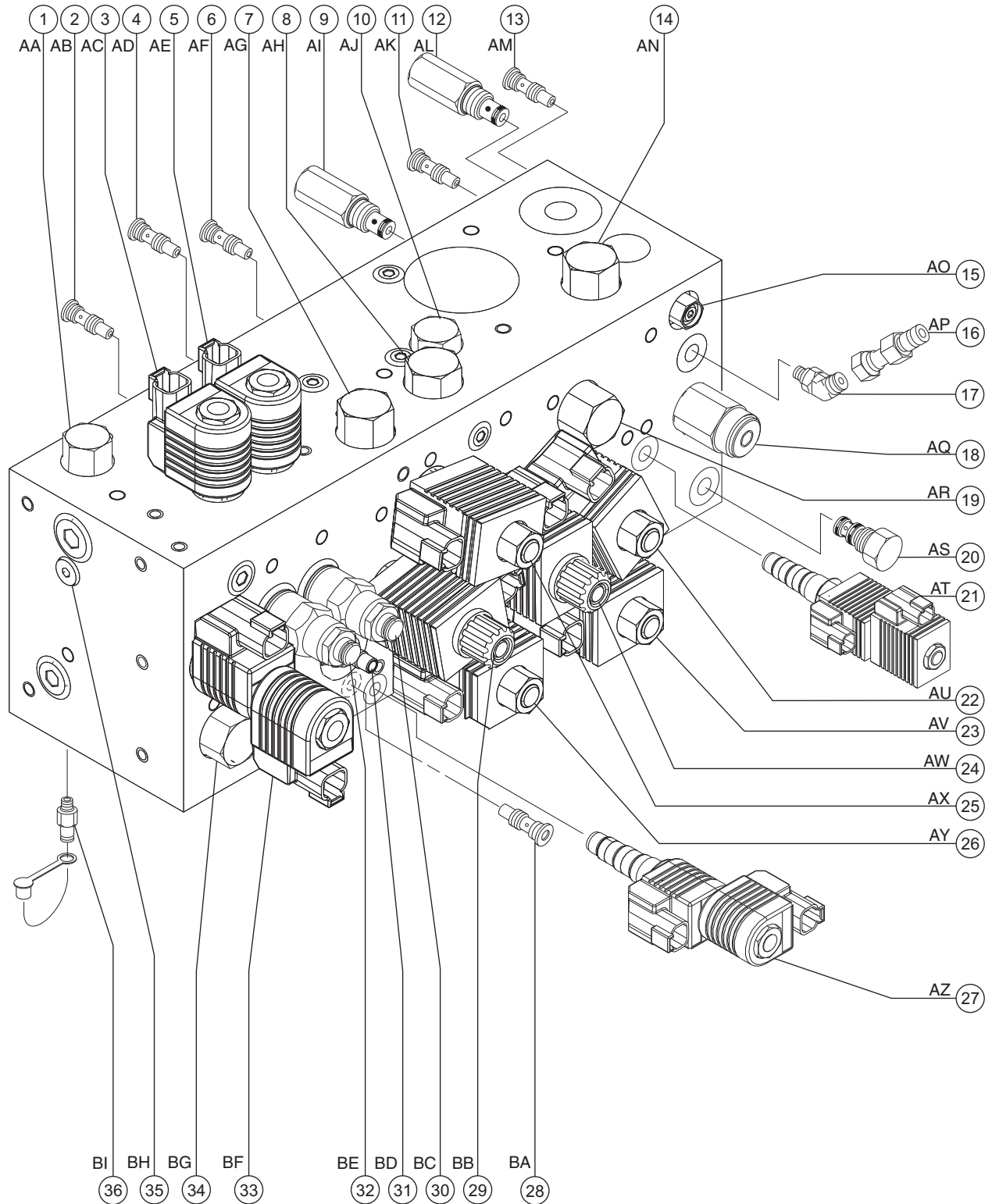


MANIFOLDS

Function Manifold Components, continued

Index No.	Description	Schematic Item	Function	Torque
18	Relief valve, 2900 psi / 200 bar	AQ	System relief (S-45)	30-35 ft-lbs / 41-47 Nm
18	Relief valve, 2600 psi / 179 bar	AQ	System relief (S-40)	30-35 ft-lbs / 41-47 Nm
19	Flow regulator valve, 4.5 gpm / 17.03 L/min	AR	Boom extend/retract circuit	30-35 ft-lbs / 41-47 Nm
20	Check valve	AS	Blocks flow from auxiliary pump to function pump	30-35 ft-lbs / 41-47 Nm
21	Solenoid valve, 3 position 4 way	AT	Steer left/right	30-35 ft-lbs / 41-47 Nm
22	Solenoid valve, 2 position 3 way	AU	Boom extend	30-35 ft-lbs / 41-47 Nm
23	Solenoid valve, 2 position 3 way	AV	Boom retract	30-35 ft-lbs / 41-47 Nm
24	Proportional solenoid valve	AW	Boom up/down circuit	20-25 ft-lbs / 27-34 Nm
25	Solenoid valve, 2 position 3 way	AX	Boom up	30-35 ft-lbs / 41-47 Nm
26	Solenoid valve, 2 position 3 way	AY	Boom down	30-35 ft-lbs / 41-47 Nm
27	Solenoid valve, 3 position 4 way	AZ	Turntable rotate	20-25 ft-lbs / 27-34 Nm
28	Check valve	BA	Platform level down	10-12 ft-lbs / 14-16 Nm
29	Proportional solenoid valve	BB	Turntable rotate left/right	20-25 ft-lbs / 27-34 Nm
30	Counterbalance valve	BC	Platform level up	30-35 ft-lbs / 41-47 Nm
31	Needle Valve	BD	Platform level circuit	20-25 ft-lbs / 27-34 Nm
32	Counterbalance valve	BE	Platform level down	30-35 ft-lbs / 41-47 Nm
33	Solenoid valve, 3 position 4 way	BF	Platform rotate and jib boom up/down (S-45)	20-25 ft-lbs / 27-34 Nm
34	Differential sensing valve, 150 psi / 10.3 bar	BG	Differential sensing circuit, meters flow to functions	30-35 ft-lbs / 41-47 Nm
35	Check valve	BH	Differential sensing circuit, platform rotate left and jib boom up (S-45)	10-12 ft-lbs / 14-16 Nm
36	Diagnostic nipple	BI	Testing	

MANIFOLDS



MANIFOLDS

7-2**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 P_{TEST} port on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Hold the function enable/rpm select toggle switch to the high idle position. Activate and hold the boom retract toggle switch with the boom fully retracted.
- 4 Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.
- 5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item AQ).
- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

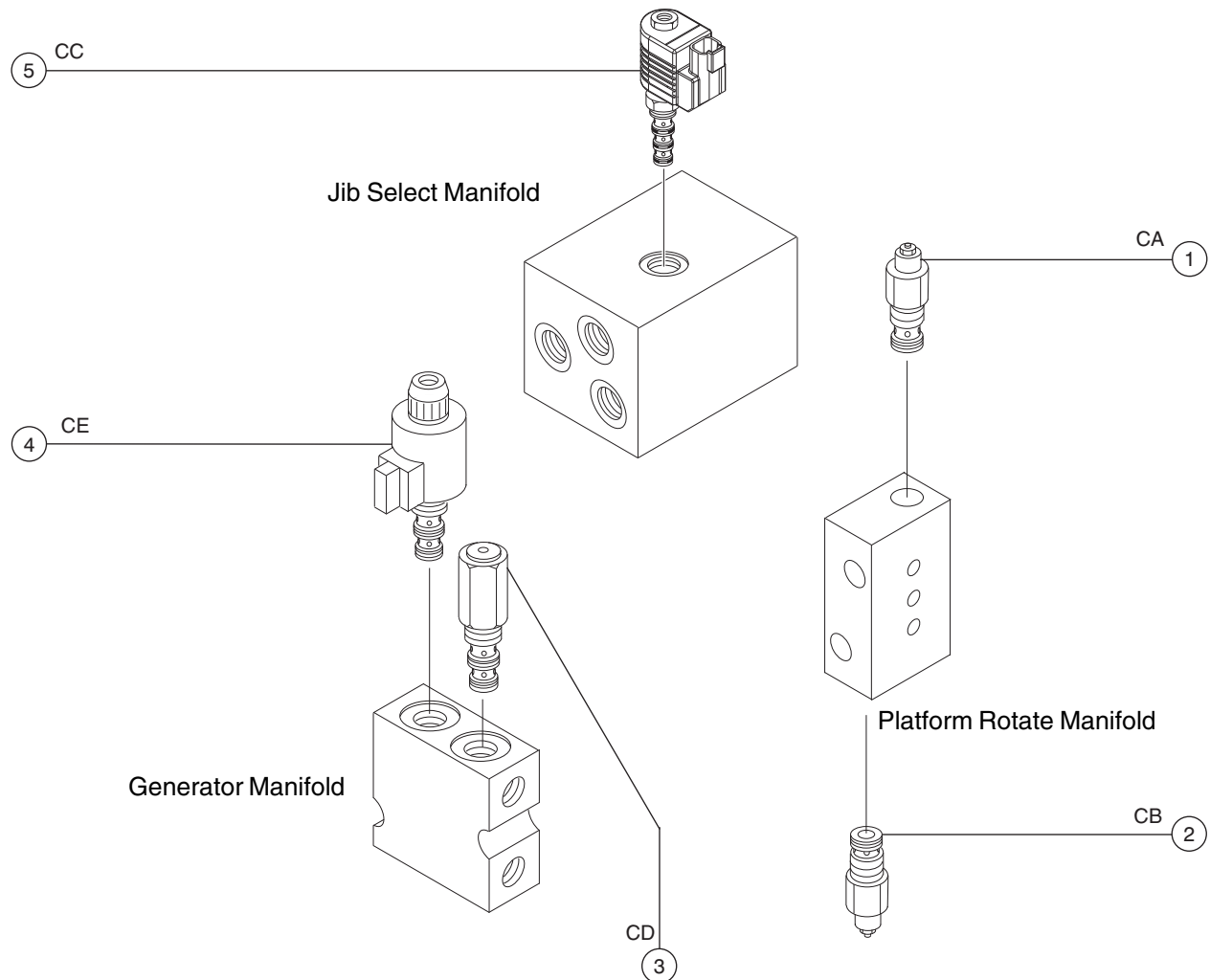
⚠WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

- 7 Repeat steps 2 through 5 and recheck relief valve pressure.
- 8 Remove the pressure gauge.

MANIFOLDS

7-3 Jib Select, Platform Rotate and Generator Manifold Components

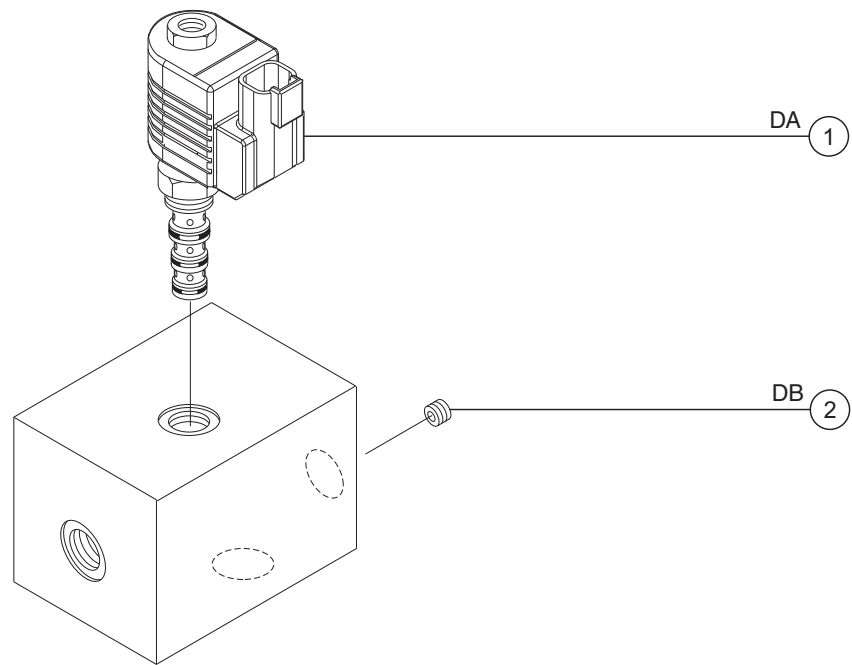
Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve	CA	Platform rotate right	30-35 ft-lbs / 41-47 Nm
2	Counterbalance valve	CB	Platform rotate left	30-35 ft-lbs / 41-47 Nm
3	Relief valve	CD	Generator overload relief	30-35 ft-lbs / 41-47 Nm
4	Solenoid valve	CE	Controls generator on / off	50-55 ft-lbs / 68-75 Nm
5	Solenoid valve, 2 position 3 way	CC	Platform rotate/jib boom select	18-20 ft-lbs / 25-27 Nm



MANIFOLDS

7-4 Brake Manifold Components (before serial number 7569)

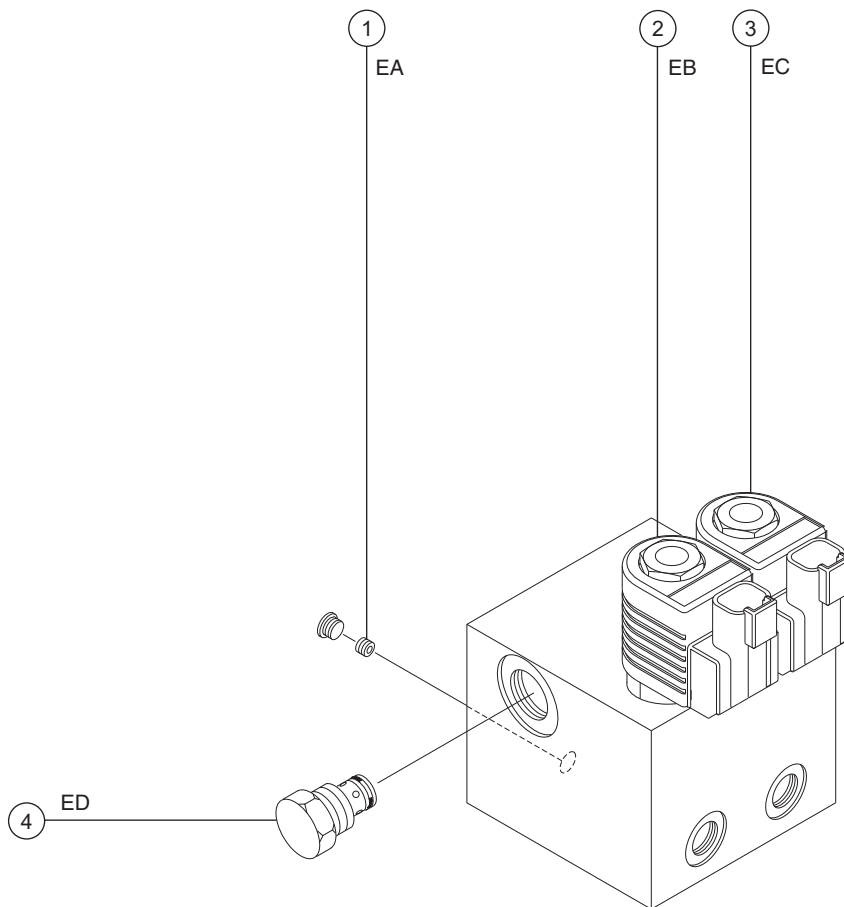
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way ... DA	DA	Brake release	20-25 ft-lbs / 27-34 Nm
2	Orifice, 0.025 inch / 0.635 mm DB	DB	Turntable rotation brake release	



MANIFOLDS

7-5 Brake/Two-Speed Manifold Components (after serial number 7568)

Index No.	Description	Schematic Item	Function	Torque
1	Orifice, 0.025 inch / 0.63 mm	EA	Turntable rotation brake release	
2	Solenoid valve, 2 position 3 way	EB	Brake release	20-25 ft-lbs / 27-34 Nm
3	Solenoid valve, 2 position 3 way	EC	Two-speed motor shift	20-25 ft-lbs / 27-34 Nm
4	Check valve	ED	Brake release circuit	20-25 ft-lbs / 27-34 Nm



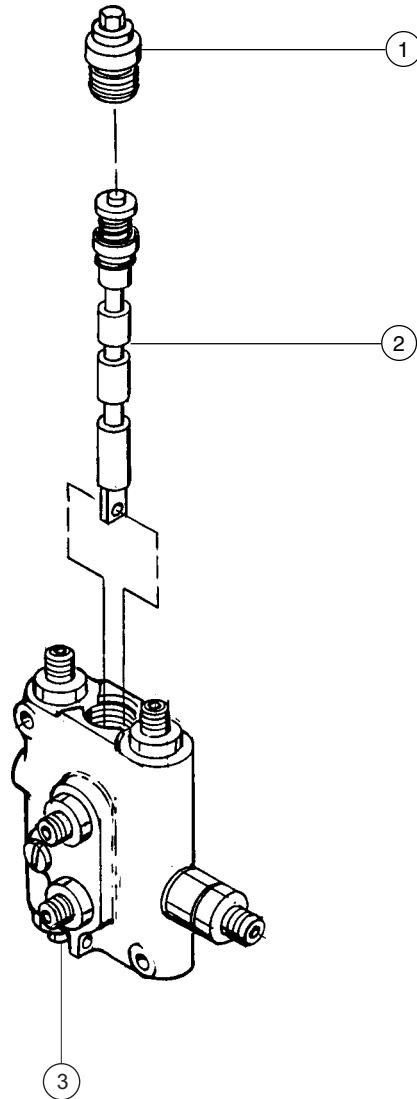
MANIFOLDS

7-6 Oscillate Directional Valve Components

The oscillate directional valve 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	
2	Relief valve	Pressure adjustment	



MANIFOLDS

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 and the non-steer axle covers.
- 5 Place a "bubble type" level across the drive chassis non-steer end. Check to be sure the drive chassis is completely level.
- 6 To level the drive chassis, start the engine and loosen the lock nuts on both sides of the urethane cushions.

- 7 Push up or pull down on the threaded rod until the machine is completely level.
- 8 Verify that the ground and drive chassis are completely level.
- 9 Tighten the nuts on both sides of the urethane cushions until they are snug. Tighten the locknuts.
- 10 Verify that the ground and drive chassis are completely level.
- 11 Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

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.

MANIFOLDS

7-7 Valve Adjustments - Oscillate Relief Valve

How to Adjust the Oscillate Relief Valve Pressure

- 1 Remove the drive chassis cover from the non-steer end of the machine.
- 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 platform controls.
- 5 With the engine running, manually activate the valve and observe the pressure reading on the pressure gauge.

Oscillate relief valve specification

Pressure	950 psi 65.5 bar
----------	---------------------

- 6 Turn the engine off.
- 7 Locate the relief valve on the directional valve and remove the cap.

- 8 Adjust the internal screw. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

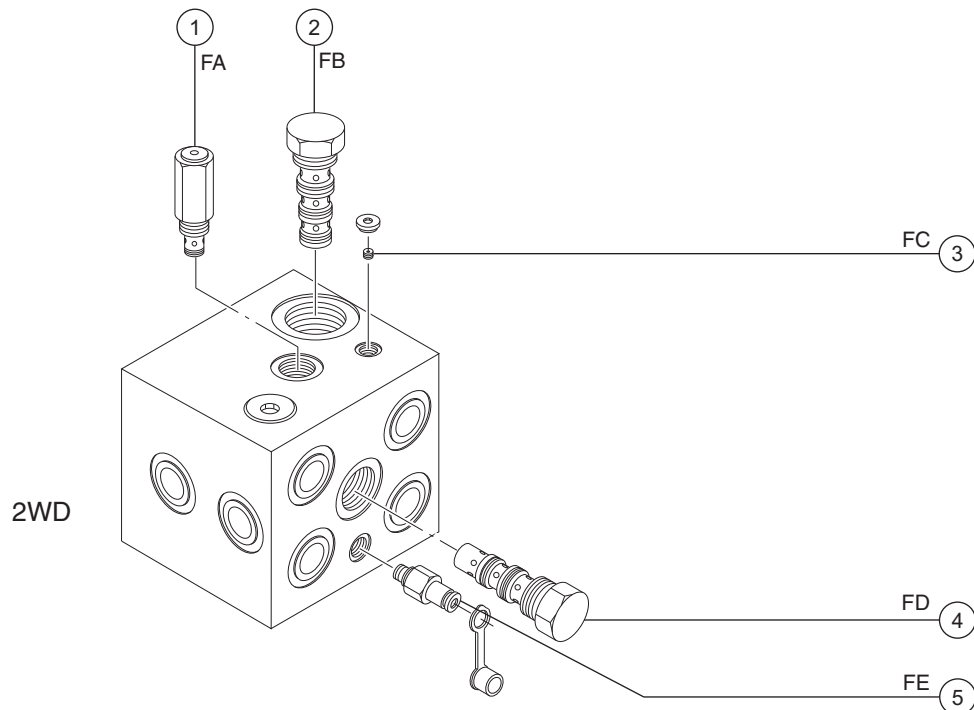
- 9 Repeat steps 4 through 7 and manually activate the valve to confirm the valve pressure.
- 10 Turn the engine off, remove the pressure gauge and assemble the directional valve linkage.
- 11 Install the cover on the non-steer end of the drive chassis.

MANIFOLDS

7-8 Traction Manifold Components, 2WD (before serial number 7569)

The traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 210 psi / 14.5 bar	FA	Charge pressure circuit	30-35 ft-lbs / 41-47 Nm
2	Flow divider/combiner valve	FB	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 122-136 Nm
3	Orifice, 0.070 inch / 1.78 mm	FC	Equalizes flow across flow divider/combiner valve (item FB)	
4	Shuttle valve, 3 position 3 way	FD	Charge pressure, hot oil shuttle	50-55 ft-lbs / 68-75 Nm
5	Diagnostic nipple	FE	Testing	

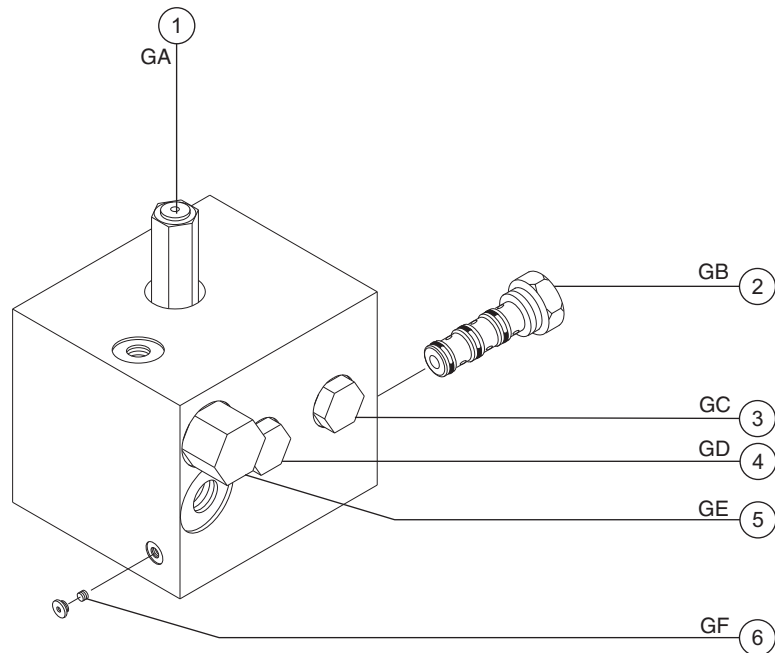


MANIFOLDS

7-9 Traction Manifold Components, 2WD (after serial number 7568)

The 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	GA	Charge pressure circuit	30-35 ft-lbs / 41-47 Nm
2	Flow divider/combiner valve	GB	Controls flow to drive motors in forward and reverse	90-100 ft-lbs / 122-136 Nm
3	Check valve	GC	Drive circuit	30-35 ft-lbs / 41-47 Nm
4	Check valve	GD	Drive circuit	30-35 ft-lbs / 41-47 Nm
5	Flow divider/combiner valve	GE	Controls flow to drive motors in forward and reverse	50-55 ft-lbs / 68-75 Nm
6	Orifice, 0.070 inch / 1.78 mm	GF	Equalizes flow across flow divider/combiner valve (item GB)	



MANIFOLDS

7-10 Valve Adjustments, 2WD Drive Manifold

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 41 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 41 bar pressure gauge to the diagnostic nipple located on the drive manifold.
- 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 (item FA). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap. (before serial no. 7569)
- 5 Turn the engine off, and remove the hot oil shuttle relief valve cap (item GA). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap. (after serial no. 7568)
- 6 Repeat steps 4 and 5 until the pressure reading on the gauge is 40 psi / 2.8 bar less than the pressure reading at the pump.

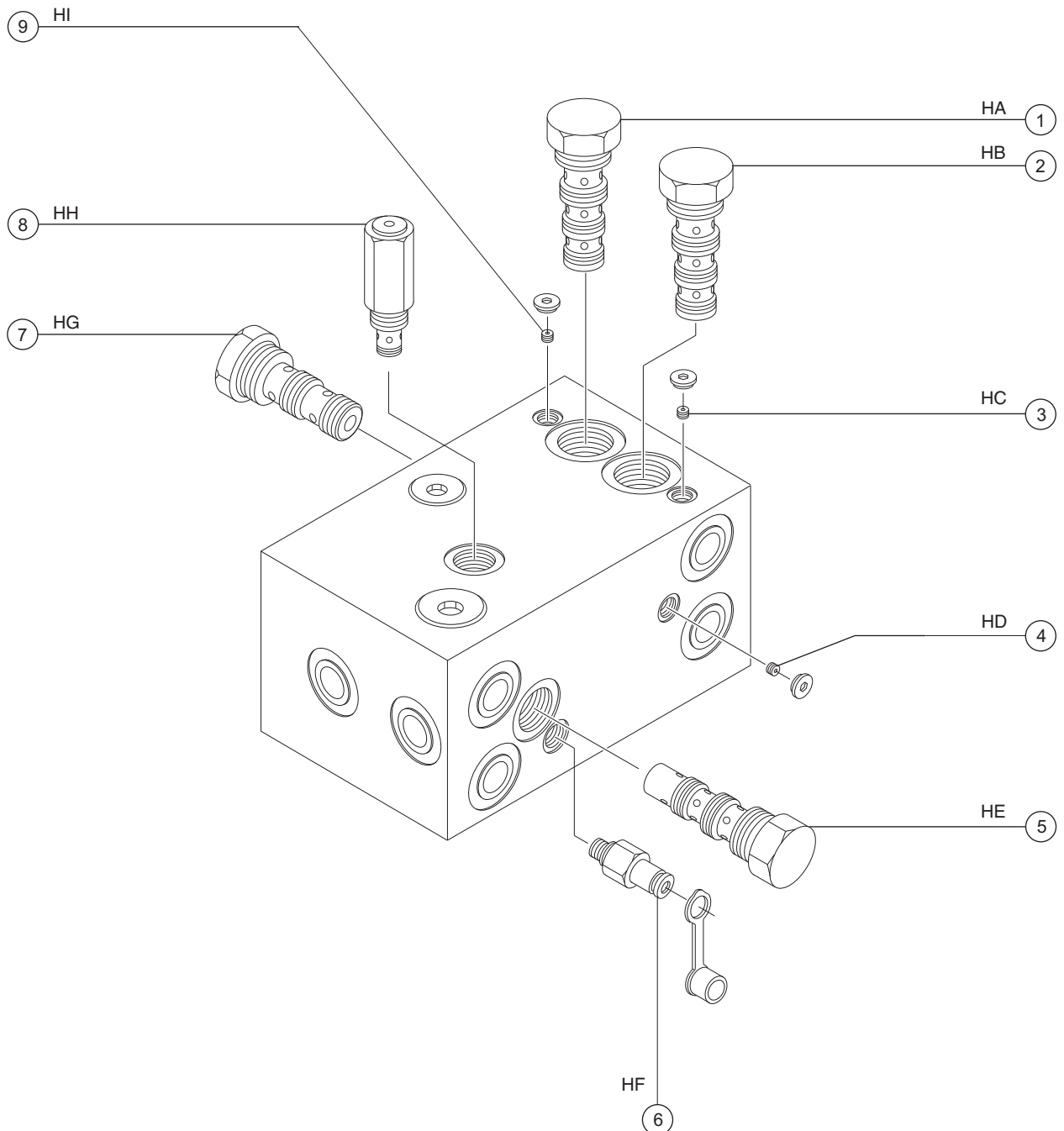
MANIFOLDS

7-11**Traction Manifold Components, 4WD (before serial number 7569)**

The traction manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Flow divider/combiner valve	HA	Controls flow to steer end drive motors in forward/reverse	90-100 ft-lbs / 122-136 Nm
2	Flow divider/combiner valve	HB	Controls flow to non-steer end drive motors in forward/reverse	90-100 ft-lbs / 122-136 Nm
3	Orifice, 0.070 inch / 1.778 mm	HC	Rear drive motor circuit	
4	Orifice, 0.070 inch / 1.778 mm	HD	Equalizes pressure on both sides of flow divider/combiner valve 7	
5	Shuttle valve, 3 position 3 way	HE	Charge pressure, hot oil shuttle	50-55 ft-lbs / 68-75 Nm
6	Diagnostic nipple	HF	Testing	
7	Flow divider/combiner valve	HG	Controls flow to flow divider/combiner valves 1 and 2	90-100 ft-lbs / 122-136 Nm
8	Relief valve, 210 psi / 14.5 bar	HH	Charge pressure circuit	30-35 ft-lbs / 41-47 Nm
9	Orifice, 0.052 inch / 1.32 mm	HI	Front drive motor circuit	

MANIFOLDS



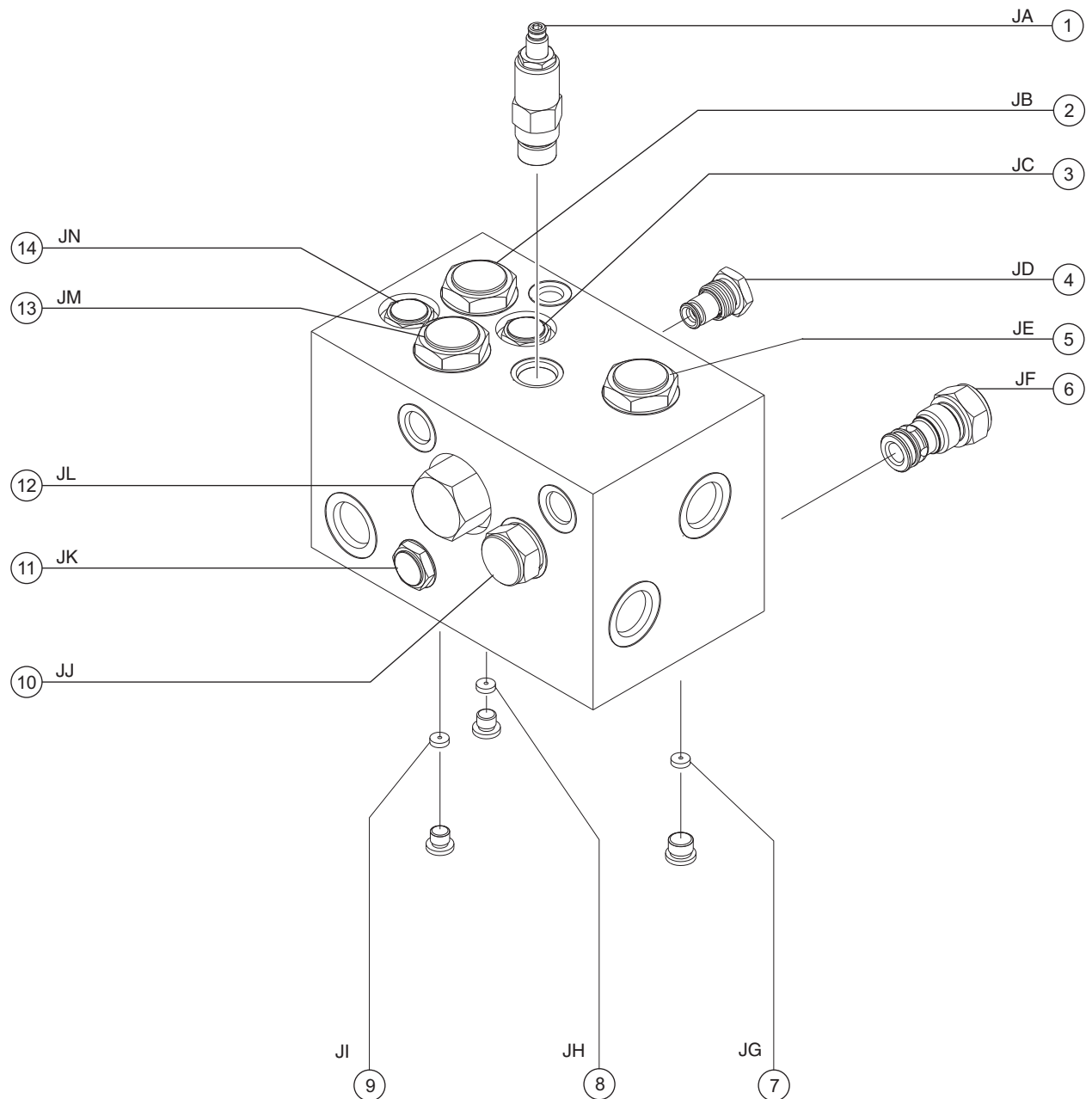
MANIFOLDS

7-12**Traction Manifold Components, 4WD (from serial number 7568 to 15822)**

The 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	JA	Charge pressure circuit	35-40 ft-lbs / 48-54 Nm
2	Flow divider/combiner valve	JB	Controls flow to non-steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
3	Check valve	JC	Steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
4	Check valve	JD	Non-steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
5	Flow divider/combiner valve	JE	Controls flow to flow divider/combiner valves 2 and 13	80-90 ft-lbs / 108-122 Nm
6	Check valve	JF	Non-steer end drive motor circuit	60-70 ft-lbs / 81-95 Nm
7	Orifice, 0.040 inch / 1 mm	JG	Equalizes pressure on both sides of flow divider/combiner valve 5	
8	Orifice, 0.040 inch / 1 mm	JH	Equalizes pressure on both sides of flow divider/combiner valve 2	
9	Orifice, 0.040 inch / 1 mm	JI	Equalizes pressure on both sides of flow divider/combiner valve 13	
10	Check valve	JJ	Steer end drive motor circuit	60-70 ft-lbs / 81-95 Nm
11	Check valve	JK	Steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm
12	Shuttle valve, 3 position 3 way	JL	Charge pressure circuit that directs hot oil out of low pressure side of drive pump	80-90 ft-lbs / 108-122 Nm
13	Flow divider/combiner valve	JM	Controls flow to steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
14	Check valve	JN	Non-steer end drive motor circuit	35-40 ft-lbs / 48-54 Nm

MANIFOLDS



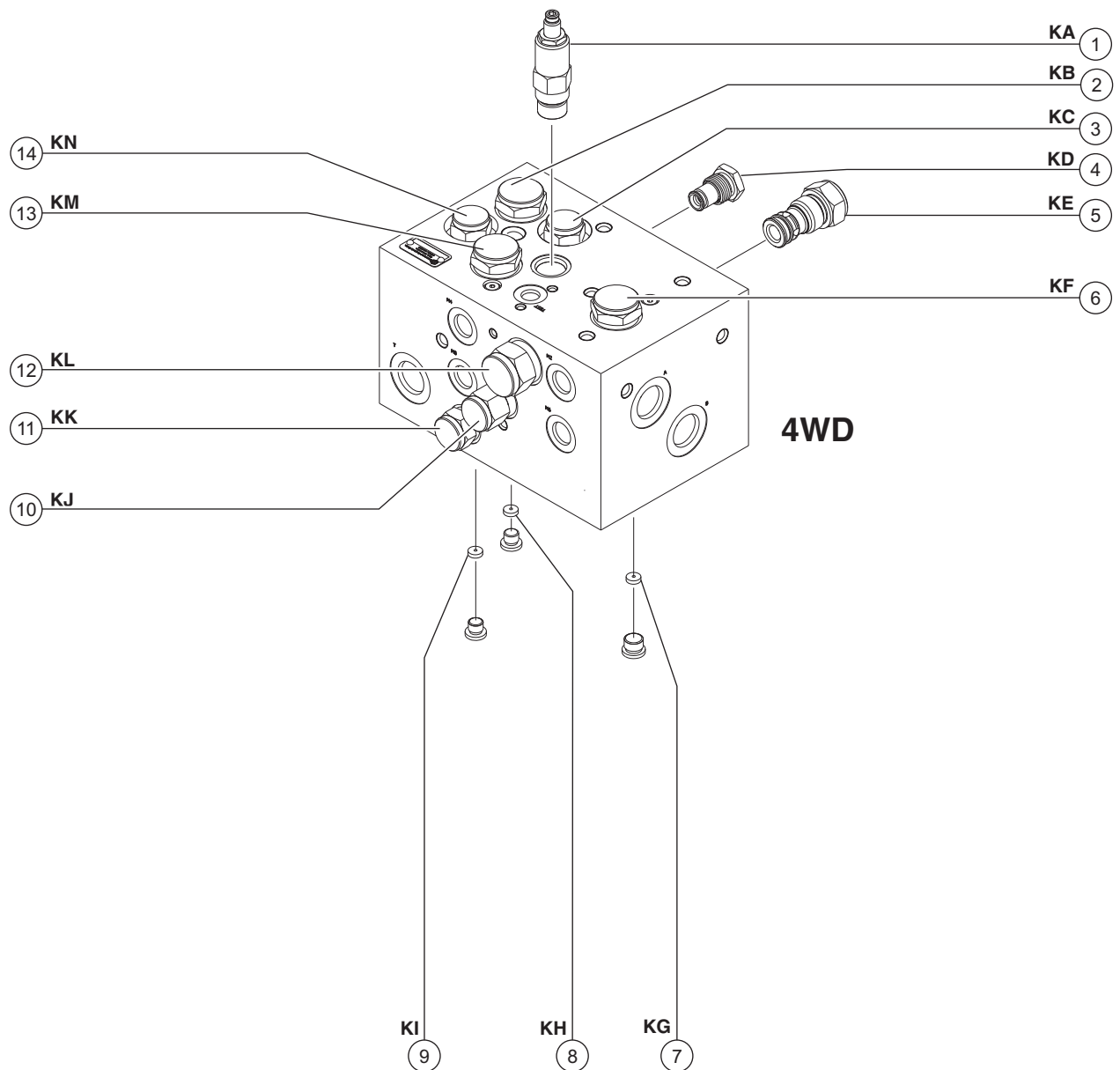
MANIFOLDS

7-13**Traction Manifold Components, 4WD (from serial number 15823)**

The 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	KA	Charge pressure circuit	55-60 ft-lbs / 74-81 Nm
2	Flow divider/combiner valve	KB	Controls flow to non-steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
3	Check valve	KC	Steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm
4	Check valve	KD	Non-steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm
5	Check valve	KE	Non-steer end drive motor circuit	70-75 ft-lbs / 95-100 Nm
6	Flow divider/combiner valve	KF	Controls flow to flow divider/combiner valves 2 and 13	80-90 ft-lbs / 108-122 Nm
7	Orifice, 0.040 inch / 1 mm	KG	Equalizes pressure on both sides of flow divider/combiner valve 5	
8	Orifice, 0.040 inch / 1 mm	KH	Equalizes pressure on both sides of flow divider/combiner valve 2	
9	Orifice, 0.040 inch / 1 mm	KI	Equalizes pressure on both sides of flow divider/combiner valve 13	
11	Shuttle valve, 3 position 3 way	KJ	Charge pressure circuit that directs hot oil out of low pressure side of drive pump	35-40 ft-lbs / 48-54 Nm
10	Check valve	KK	Steer end drive motor circuit	55-60 ft-lbs / 95-100 Nm
12	Check valve	KL	Steer end drive motor circuit	70-75 ft-lbs / 95-100 Nm
13	Flow divider/combiner valve	KM	Controls flow to steer end drive motors in forward and reverse	80-90 ft-lbs / 108-122 Nm
14	Check valve	KN	Non-steer end drive motor circuit	55-60 ft-lbs / 74-81 Nm

MANIFOLDS



MANIFOLDS

7-14 Valve Adjustments, 4WD Drive Manifold

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 41 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 41 bar pressure gauge to the diagnostic nipple located on the drive manifold.
- 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 (item HH). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
(before serial no. 7569)
- 5 Turn the engine off, and remove the hot oil shuttle relief valve cap (item JA). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
(from serial no. 7569 to 15822)
- 5 Turn the engine off, and remove the hot oil shuttle relief valve cap (item KA). Adjust the internal hex socket clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.
(from serial no. 15823)
- 6 Repeat steps 4 and 5 until the pressure reading on the gauge is 40 psi / 2.8 bar less than the pressure reading at the pump.

MANIFOLDS

7-15 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 Electrocuting/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 Specification

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
Solenoid valve, 2 position 3 way, 10V DC (schematic items AC and AE)	6.3 Ω
Solenoid valve, 3 position 4 way, 10V DC (schematic item AT and AZ)	6.3 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items AU, AV, AX, and AY)	6.3 Ω
Solenoid valve, 3 position 4 way, 10V DC (schematic items AZ and BF)	6.3 Ω
Proportional solenoid valve, 12V DC (schematic items AW and BB)	9 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic item CC)	6.8 Ω
Solenoid valve, 2 position 3 way, 10V DC (schematic items DA)	3.3 Ω
Solenoid valve, 2 position 3 way, 12V DC (schematic items CE)	4.8 Ω

MANIFOLDS

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its directional valve coils except proportional valves and those coils with a metal case. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

⚠ WARNING Electrocuting/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.

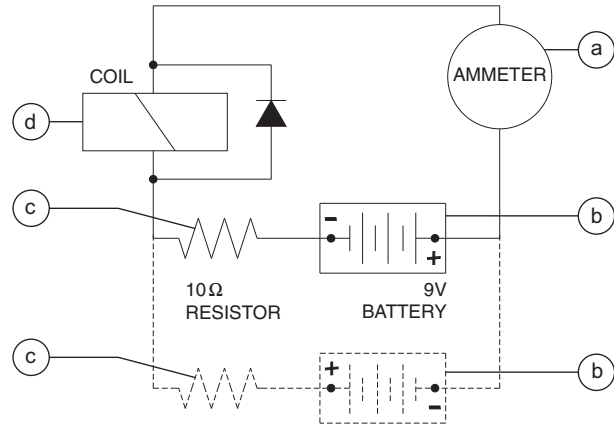
Resistor, 10Ω

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
b 9V DC battery
c 10Ω resistor
d 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.

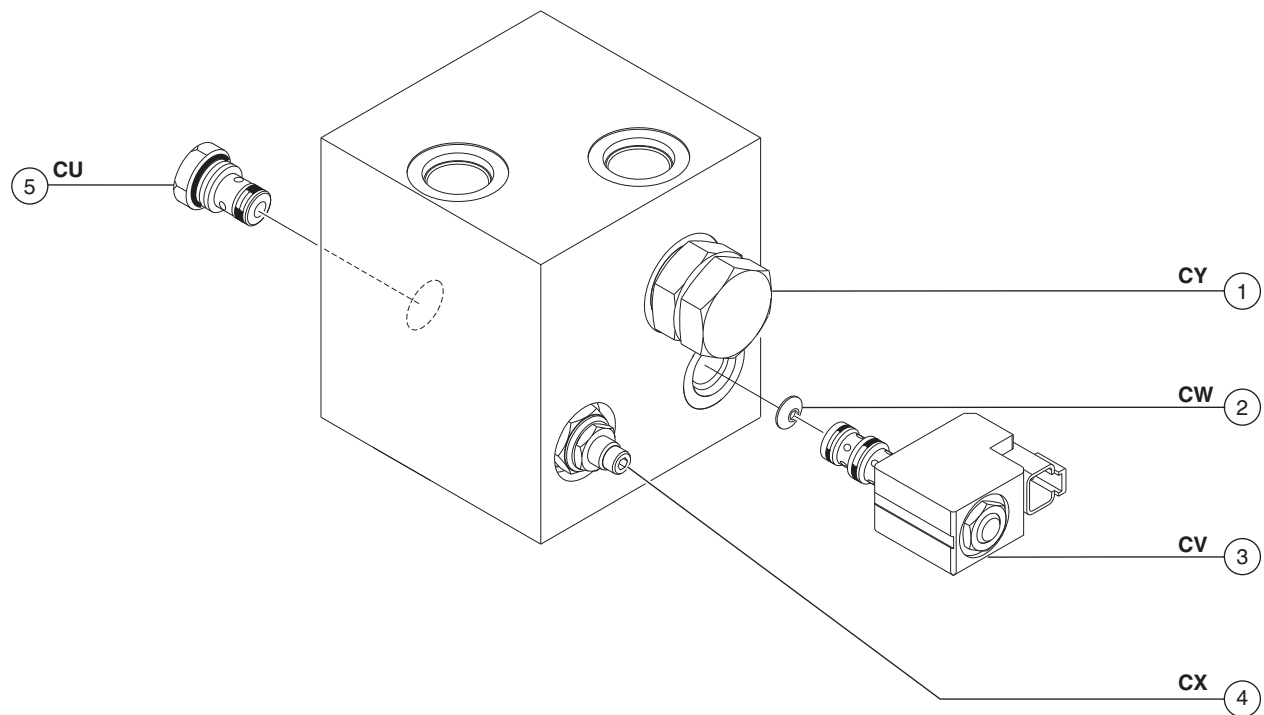
- 5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V DC battery. Note and record the current reading.
 - 6 At the battery or coil terminals, reverse the connections. Note and record the current reading.
- ⊙ Result: Both current readings are greater than 0 mA 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.

MANIFOLDS

7-16 Drive 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	Directional Valve	CY	Diverter valve	80-90 ft-lbs / 108-122 Nm
2	Orifice disc	CW	Delays shift to drive	35-40 ft-lbs / 47-54 Nm
3	Solenoid valve	CV	Pilot valve to diverter	35-40 ft-lbs / 47-54 Nm
4	Relief valve	CX	Charge pressure circuit	35-40 ft-lbs / 47-54 Nm
5	Check valve	CU	Prevents oil to generator	35-40 ft-lbs / 47-54 Nm



Turntable Rotation Components

8-1 Turntable Rotation Assembly

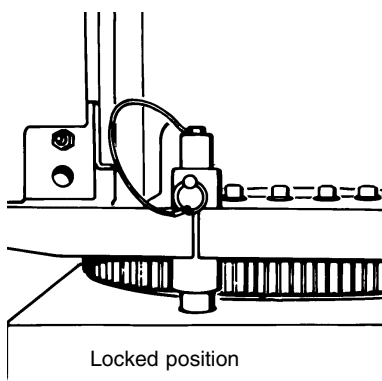
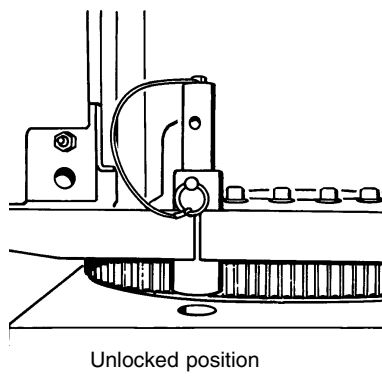
How to Remove the Turntable Rotation Assembly

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 Section 2, *Hydraulic Hose and Fitting Torque Specifications*.

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

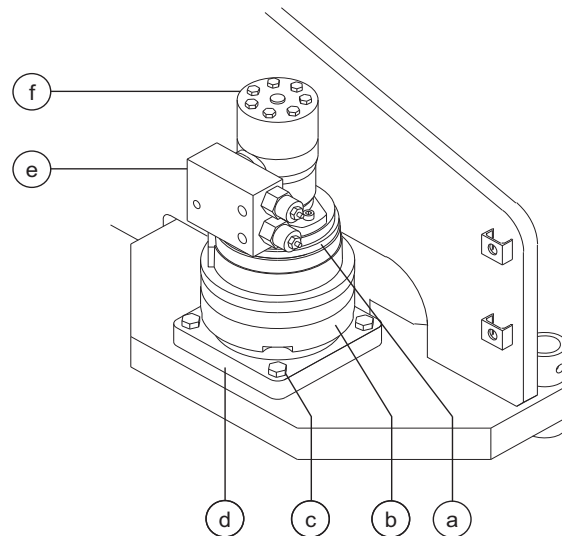
- 1 Secure the turntable from rotating with the turntable rotation lock pin.



- 2 Tag, disconnect and plug the hydraulic hoses from the motor, brake and manifold. Cap the fittings on the motor, brake and manifold.

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

- 3 Attach a suitable lifting device to the turntable rotator assembly.



- a brake assembly
- b drive hub
- c backlash plate mounting bolts
- d backlash plate
- e manifold
- f motor

TURNTABLE ROTATION COMPONENTS

- 4 Remove the turntable rotation assembly mounting fasteners.
- 5 Carefully remove the turntable rotation assembly from the machine.

⚠WARNING Crushing hazard. The turntable could rotate unexpectedly when the rotation drive hub assembly is removed if the turntable is not secured with the turntable rotation lock pin.

⚠WARNING Crushing hazard. The turntable rotation drive hub assembly could become unbalanced and fall when removed from the machine if not properly supported.

When installing the drive hub assembly:

- 6 Install the drive hub. Apply Loctite® removable thread sealant and torque the backlash plate mounting fasteners to 160 ft-lbs / 217 Nm.

Axle Components

9-1 Oscillate Cylinders

The oscillating axle cylinders extend and retract between the drive chassis and the axle to maintain a level chassis while driving over uneven terrain. The cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic hose failure.

How to Remove an Oscillating Axle Cylinder

▲WARNING Bodily injury hazard. This procedure requires specific repair skills and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

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 on the fitting and/or hose end must be replaced and then torqued to specification during installation.

Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Rotate the turntable until the boom is between the steer tires.
- 2 Remove the fasteners from drive chassis cover at the steer end. Remove the cover.
- 3 Tag, disconnect and plug the oscillating axle cylinder hydraulic hoses. Cap the fittings on the oscillate cylinder.

▲WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.
- 4 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.
- 5 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.
- 6 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pin.
- 7 Remove the cylinder from the machine.

▲WARNING Crushing hazard. The oscillate cylinder could become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

Track Components

10-1 Track Assembly - TRAX option

How to Remove a Track Assembly

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

- 1 Chock the tracks at the opposite end of the machine to prevent the machine from rolling.
- 2 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the tracks.
- 3 Lift the machine until the tracks are off the ground and then place jack stands under the drive chassis for support.
- 4 Remove the lug nut bolts holding each half sprocket on the drive hub. Rotate the sprockets until only one sprocket is contacting the track. Remove the lower half sprocket from the track assembly.
- 5 Rotate the remaining half sprocket 180° so that it is free of the track.
- 6 Attach a lifting strap from an overhead crane to the center-point of the track assembly, above the sprocket.
- 7 Remove the fasteners holding the TRAX mounting pin located underneath the axle. Remove the pin supporting the TRAX assembly.
- 8 Carefully remove the track assembly from the drive hub and set aside.

CAUTION Crushing hazard. The track assembly could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

How to Replace the Track

Note: The sprocket is comprised of two halves.

- 1 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the tracks.
- 2 Refer to illustration 1 and place the drive hub disconnect cap in the brake disengaged position.
- 3 Lift the machine until the tracks are off the ground and then place jack stands under the drive chassis for support.
- 4 Loosen the idler axle bolt, tensioner jam nut and tension nut on both sides of the assembly to allow maximum play in the tensioner wheel.
- 5 Remove the lug nut bolts holding each half sprocket on the drive hub. Rotate the sprockets until only one sprocket is contacting the track. Remove the lower half sprocket from the track assembly.
- 6 Rotate the remaining half sprocket 180° so that it is free of the track.
- 7 Carefully remove the track from the undercarriage.

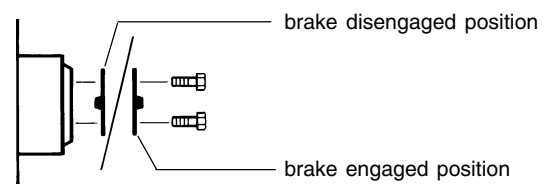


Illustration 1

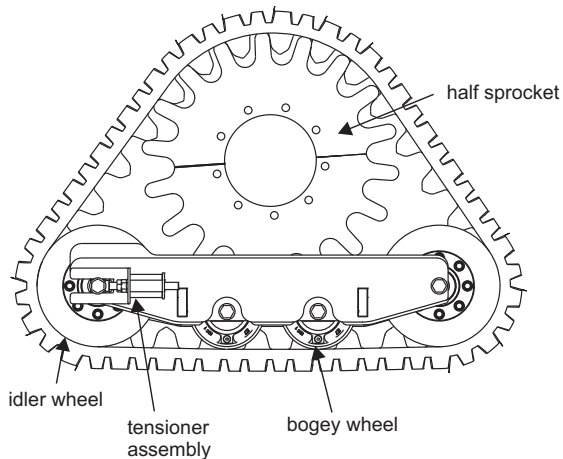


Illustration 2

- 8 Install the new track onto the undercarriage.

Note: Be sure the idler and bogey wheels are aligned with the inside surface of the track.

- 9 Using a suitable lifting device, lift up on the rubber track and rotate the half sprocket until one of the sprocket teeth is engaging the track.
- 10 Continue rotating the half sprocket until it is fully engaging the track.

- 11 Install the other sprocket half, removed in step 4.

- 12 Install the lug nuts onto the wheel hub and torque to specification. Refer to Section 2, *Specifications*.

- 13 Adjust the track tension. Tighten the tensioner nut on both sides of the idler wheel until there is about 0.75 - 1.0 inch / 19 - 25 mm of droop between the inside of the rubber track and the bottom surface of the bogey wheels.

Note: Make sure that both sides of the track have the same amount of clearance between the rollers and the track.

- 14 Tighten the jam nuts and idler axle bolts on both tensioner assemblies.

Generators

11-1 Hydraulic Generator

How to Adjust the Generator Voltage

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

Note: Be sure that the hydraulic oil level is within the top 2 inches / 5 cm of the sight gauge.

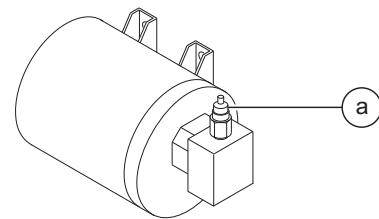
Note: Perform this procedure with the machine on a firm, level surface.

- 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.

- ⊙ 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 hold the generator flow regulator valve (item AM) and remove the cap.

a flow regulator



- 8 Adjust the internal hex socket. Turn it clockwise to increase the AC voltage or counterclockwise to decrease the AC voltage. Install the flow regulator valve cap.

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.

GENERATORS

How to Purge the Hydraulic Line on the MTE Generator

⚠ WARNING Electrocutation 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 hydraulic 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 $\pm 10\%$ of rated output. The generator is ready for use.
- ⊗ Result: The generator output voltage is outside the $\pm 10\%$ 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 S-40 and S-45 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate 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 Electrocutation/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 Electrocutation/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 indicates 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	Value at 5V	Function is inoperative until joystick is calibrated. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
		15	Value too low		
		16	Value at 0V		
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
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	Value too high	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
			15		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve thresholds
24	Boom 1 angle sensor	11	Value at 5V	Reduced speed.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
		15	Value too low		
		16	Value at 0V		
		31	Invalid setup	Initiate 1 second beep of alarm.	Calibrate angle sensor.
31	Boom 2 Joystick (secondary boom up/down or primary boom extend/retract)	11	Value at 5V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
		15	Value too low		
		16	Value at 0V		
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
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	Value too high	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		15	Value too low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve thresholds
41	Turntable rotate joystick	11	Value at 5V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
		15	Value too low		
		16	Value at 0V		
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
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	Value too high	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		15	Value too low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve thresholds.
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	Value at 5V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
15	Value too low				
16	Value at 0V				
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate joystick
53	Drive flow valve (EDC)	12	Value too high	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		15	Value too low		
		17	Not calibrated	Normal function except threshold for one or both directions is zero.	Calibrate valve thresholds
54	Drive brake valve	21	Fault	Valve is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
55	High speed drive motor Valve	21	Fault	Motor speed frozen in the low state. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
61	Steer joystick	11	Value at 5V	Joystick is operating outside of operational limits. Alarm sounds indicating fault.	Cycle power off, then on and problem should be corrected.
		12	Value too high		
15	Value too low				
16	Value at 0V				
		17	Not calibrated	Function is inoperative until joystick is calibrated.	Calibrate Joystick
62	Steer 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.

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. See *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 Electrocutation/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.

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.



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.	

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.

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.

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		

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. See *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 Electrocutation/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.

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

Code	Description
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

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

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

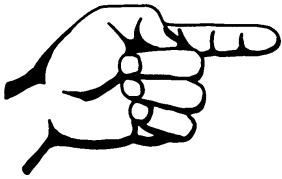
For further engine fault code troubleshooting and diagnostic information, refer to the *Ford DSG-423 EFI Service Manual* (EDI part number 1060040).
Genie part number 119494.

Ford DSG 423 EFI Operator Handbook

Genie part number

119488





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Schematics



Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie S-40 & Genie S-45 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

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

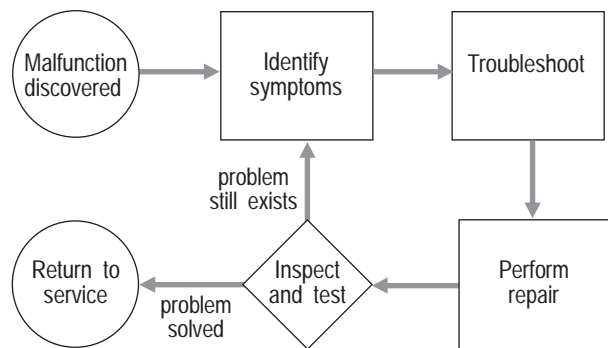
Electrical Schematics

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



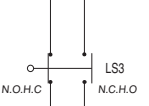
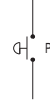
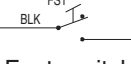
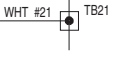
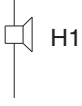
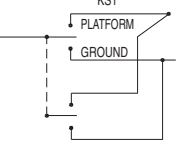

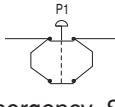


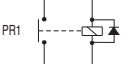




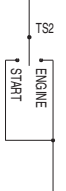

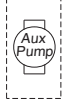


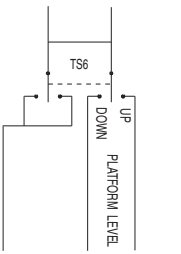




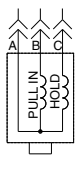
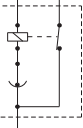
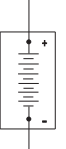


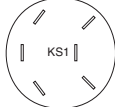



Hydraulic Schematics

⚠ 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.

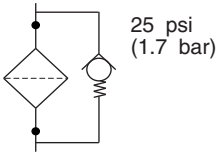

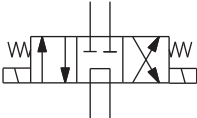
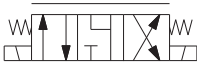


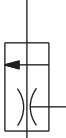
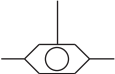

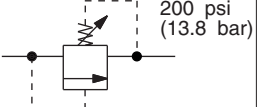
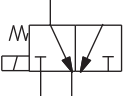


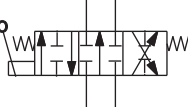
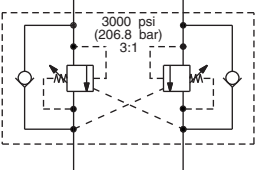
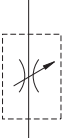

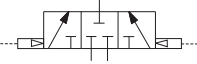
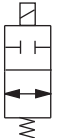

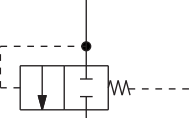
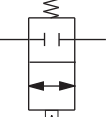

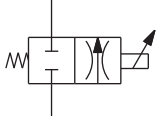
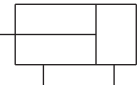
General Repair Process



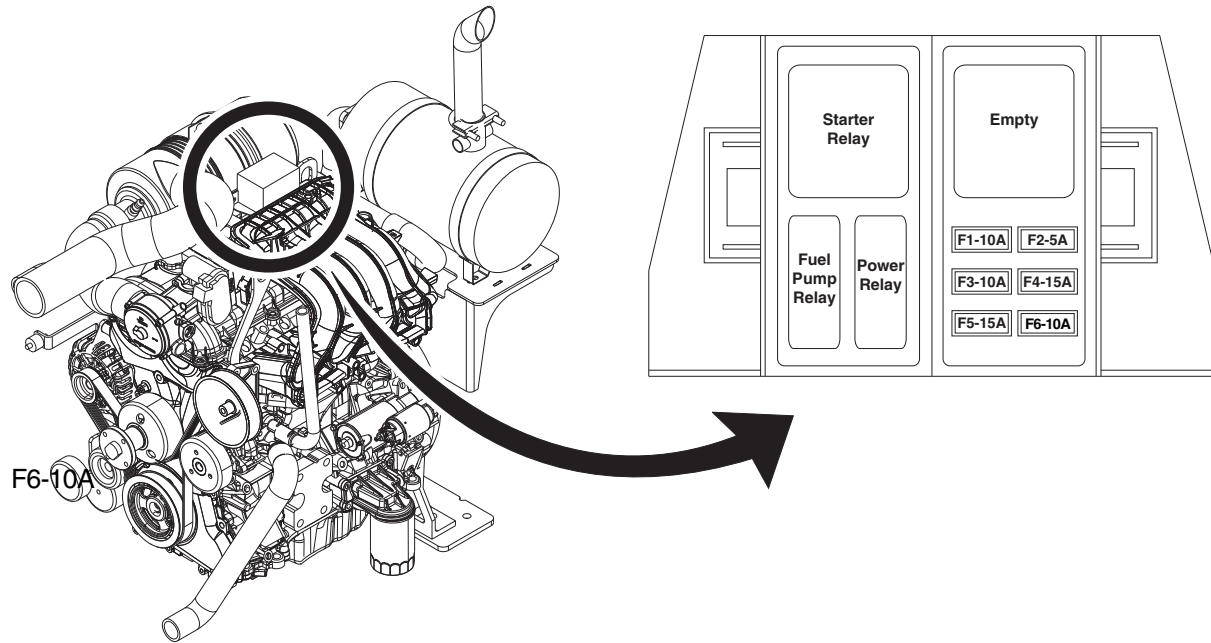
Electrical Symbols Legend

				
Quick disconnect terminal	Coil solenoid or relay	Limit switch	Horn button normally open	Foot switch
				
T-circuits connect at terminal	Horn or alarm	Key switch (before serial number 22051)	Oil temperature switch normally open	Emergency Stop button normally closed
				
T-circuits connect	Flashing beacon	Power relay	Coolant temperature switch normally open	Hydraulic oil cooling fan
				
Connection no terminal	Gauge	Toggle switch SPDT	Oil pressure switch normally closed	Auxiliary pump
				
Circuits crossing no connection	Hour meter	Toggle switch DPDT	Gauge sending unit	Resistor with ohm value
				
Diode	LED	Fuel or RPM solenoid	Tilt sensor	
				
Battery	Fuse with amperage	Control relay contact normally open	Key switch (after serial number 22050)	
				
Circuit breaker with amperage	Starting aid: glow plug or flame ignitor	Coil		

Hydraulic Symbols Legend

 <p>25 psi (1.7 bar)</p> <p>Filter with bypass valve relief setting</p>	 <p>.035" (0.89 mm)</p> <p>Orifice with size</p>	 <p>Solenoid operated 3 position, 4 way, directional valve</p>	 <p>Solenoid operated 3 position, 4 way, proportional directional valve</p>
 <p>Pump fixed displacement</p>	 <p>Check valve</p>	 <p>Priority flow regulator valve</p>	 <p>2 position, 3 way, shuttle valve</p>
 <p>Pump bi-directional, variable displacement</p>	 <p>200 psi (13.8 bar)</p> <p>Relief valve with pressure setting</p>	 <p>Solenoid operated 2 position, 3 way, directional valve</p>	 <p>Brake</p>
 <p>Motor bi-directional</p>	 <p>Directional valve (mechanically activated)</p>	 <p>3000 psi (206.8 bar) 3:1</p> <p>Counterbalance valve with pressure and pilot ratio</p>	 <p>Needle valve</p>
 <p>50% 50%</p> <p>Flow divider/combiner valve with pressure balancing orifice and flow percentages</p>	 <p>Pilot operated 3 position, 3 way, shuttle valve</p>	 <p>2 position, 2 way solenoid valve</p>	
 <p>Motor 2-speed, bi-directional</p>	 <p>Differential sensing valve</p>	 <p>Directional valve pilot operated 2 position, 2 way</p>	
 <p>Pump prime mover (engine or motor)</p>	 <p>Solenoid operated proportional valve</p>		
 <p>Double acting cylinder</p>			

Ford DSG-423 Engine Relay Layout

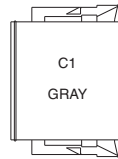


Connector Pin Legend

N M L K J I H G F E D C B A 1

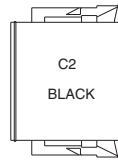
C1P DT06-12SA		
COLOR	CKT #	PIN #
RD	C27AUX	1
RD/BK	C28TTA	2
RD/WH	C29MS	3
WH	C30EDC+	4
WH/BK	C31EDC-	5
WH/RD	C32BRK	6
BK	C33STR	7
BK/WH	C34SA	8
BK/RD	C35RPM	9
BL	C36STC	10
BL/BK	C37STCC	11
BL/WH	C132PLI	12

C1



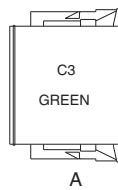
C2P DT06-12SB		
COLOR	CKT #	PIN #
BL/RD	C39LP	1
OR	C40LS1	2
OR/BK	C41RPM	3
OR/RD	C134PWR	4
GR	C43HRN	5
GR/BK	JDALARM	6
GR/WH	C45GEN	7
	PLUG	8
	PLUG	9
	PLUG	10
	PLUG	11
	PLUG	12

C2



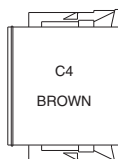
C3P DT06-12SC		
COLOR	CKT #	PIN #
RD	C1PBU	1
RD/BK	C2PBD	2
RD/WH	C3PBF	3
WH	C4TRL	4
WH/BK	C5TRR	5
WH/RD	C6TRF	6
BK	C7PBE	7
BK/WH	C8PBR	8
GR/BK	JALARM	9
BL	C10SBU	10
BL/BK	C11SBD	11
BL/WH	C12SBF	12

C3



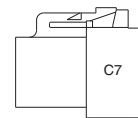
C4P DT06-12SD		
COLOR	CKT #	PIN #
BL/RD	C13DRE	1
OR	C14PLU	2
OR/BK	C15PLD	3
GR/BK	C133PLA	4
GR	C17JU	5
GR/BK	C18JD	6
GR/WH	C19JSV	7
	PLUG	8
	PLUG	9
	PLUG	10
	PLUG	11
	PLUG	12

C4

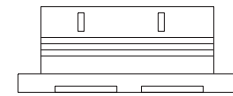


C7: DTP06-4S		
COLOR	CKT #	PIN #
BK	P22BAT	1
WH	P23BAT	2
BRN	BATGND	3
N/A	PLUG	4

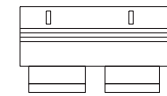
C7



* NOTE: WIRE ONLY IN C7B CONNECTOR.



C6 C6-GBOX

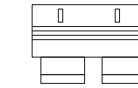
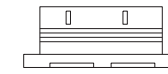


C6-FUNCTION HARNESS

	CIRCUIT #	COLOR	CIRCUIT #	COLOR
1	C1PBU	RD	C1PBU	RD
2	C2PBD	RD/BK	C2PBD	RD/BK
3	C3PBF	RD/WH	C3PBF	RD/WH
4	C4TRL	WH	C4TRL	WH
5	C5TRR	WH/BK	C5TRR	WH/BK
6	C6TRF	WH/RD	C6TRF	WH/RD
7	C7PBE	BK	C7PBE	BK
8	C8PBR	BK/WH	C8PBR	BK/WH
9				
10				
11				
12				
13	C13DRE	BL/RD	C13DRE	BL/RD
14	C14PLU	OR	C14PLU	OR
15	C15PLD	OR/BK	C15PLD	OR/BK
16	R43HRN	BK	R43HRN	BK
17	C17JU	GR	C17JU	GR
18	C18JD	GR/BK	C18JD	GR/BK
19	C2DA	RD/BK	C2DA	RD/BK
20				
21				
22				
23	C134PWR	RD	C23BAT	RD
24				
25	C116HYD	BK		
26	GND	BR		
27	C27AUX	RD	C27AUX	RD
28	C28TTA	RD/BK	C28TTA	RD/BK
29				
30	P46PWR	BL/WH	P46PWR	BL/WH
31				
32	C32TA	WH/RD	C32TA	WH/RD
33	R116HYD	OR		
34	R21IGN	WH		
35				
36	C36STC	BL	C36STC	BL
37	C37STCC	BL/BK	C37STCC	BL/BK
38				
39	C45GEN	GR/WH	C45GEN	GR/WH
40	C40LS1	OR	C40LS1	OR

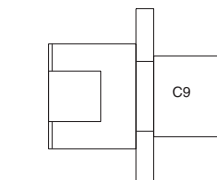
C5-GBOX

PIN#	CKT#	COLOR
1		
2	C41RPM	OR/BK
3	C107AF	WH
4		
5		
6		
7		
8		
9		
10	C39LP	BL/RD
11	TB23	WH
12		
13	C38ESL	BL/WH
14		
15		
16		
17	C21IGN	WH
18		
19		
20	C31EDC	WH/BK
21	C30EDC	WH
22	C34SA	BK/WH
23	C32BRK	WH/RD
24	C29MS	RD/WH



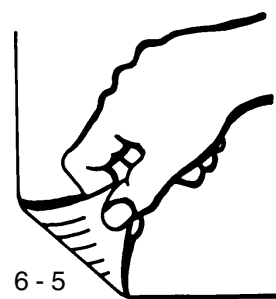
C5-ENGINE HARNESS

PIN#	COLOR	CKT#
1		
2	OR/BK	C41RPM
3	WH	C107AF
4		
5	BK	R33STR
6	RD	R27AUX
7		
8	WH	R21IGN
9	BK/RD	C35RPM
10	BL/RD	C39LP
11	WH(12)	VSW
12	GR	C127TST
13	BL/WH	C38ESL
14	WH/RD	C26TSR
15		
16	WH/BK	C25PSR
17	WH	C21IGN
18		
19		
20	WH/BK	C31EDC
21	WH	C30EDC
22		
23	WH/RD	C32BRK
24	RD/WH	C29MS



C9 FS DT04-4P		
COLOR	CKT #	PIN #
BK	P22ESTOP	1
WH	P24FS	2
RD	P25BAT	3
	N/C	4

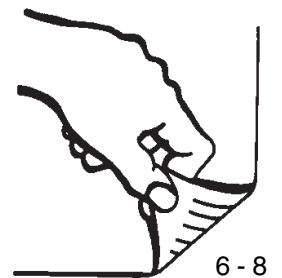
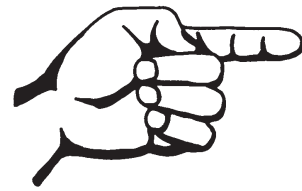
Connector Pin Legend



6-5

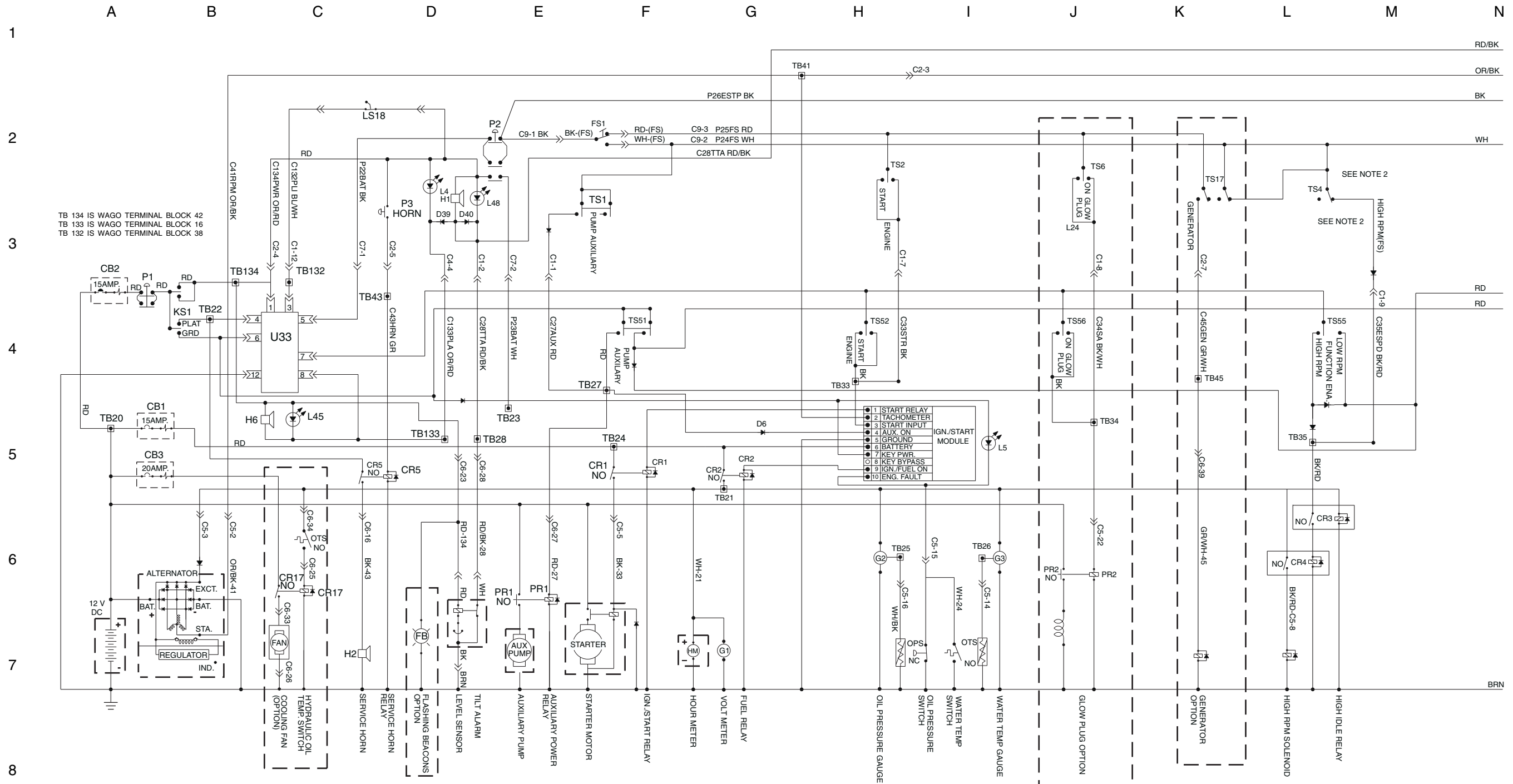
6-6

Electrical Schematic
Deutz F3L 1011F Models (before serial number 7544)



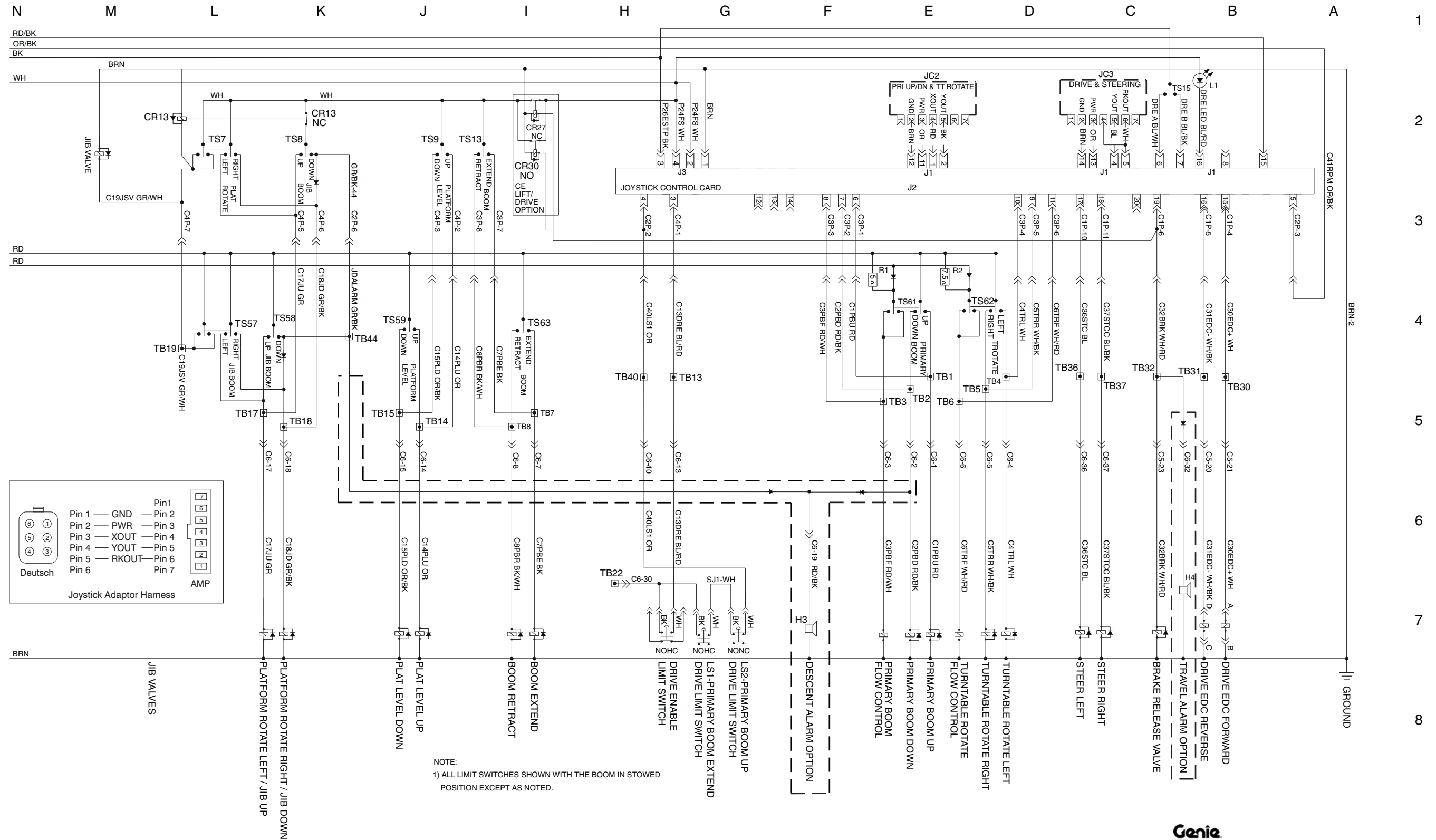
Electrical Schematic

Deutz F3L 1011F Models (before serial number 7544)



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.

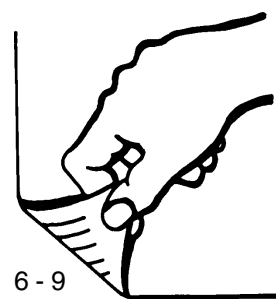
Electrical Schematic Deutz F3L 1011F Models (before serial number 7544)



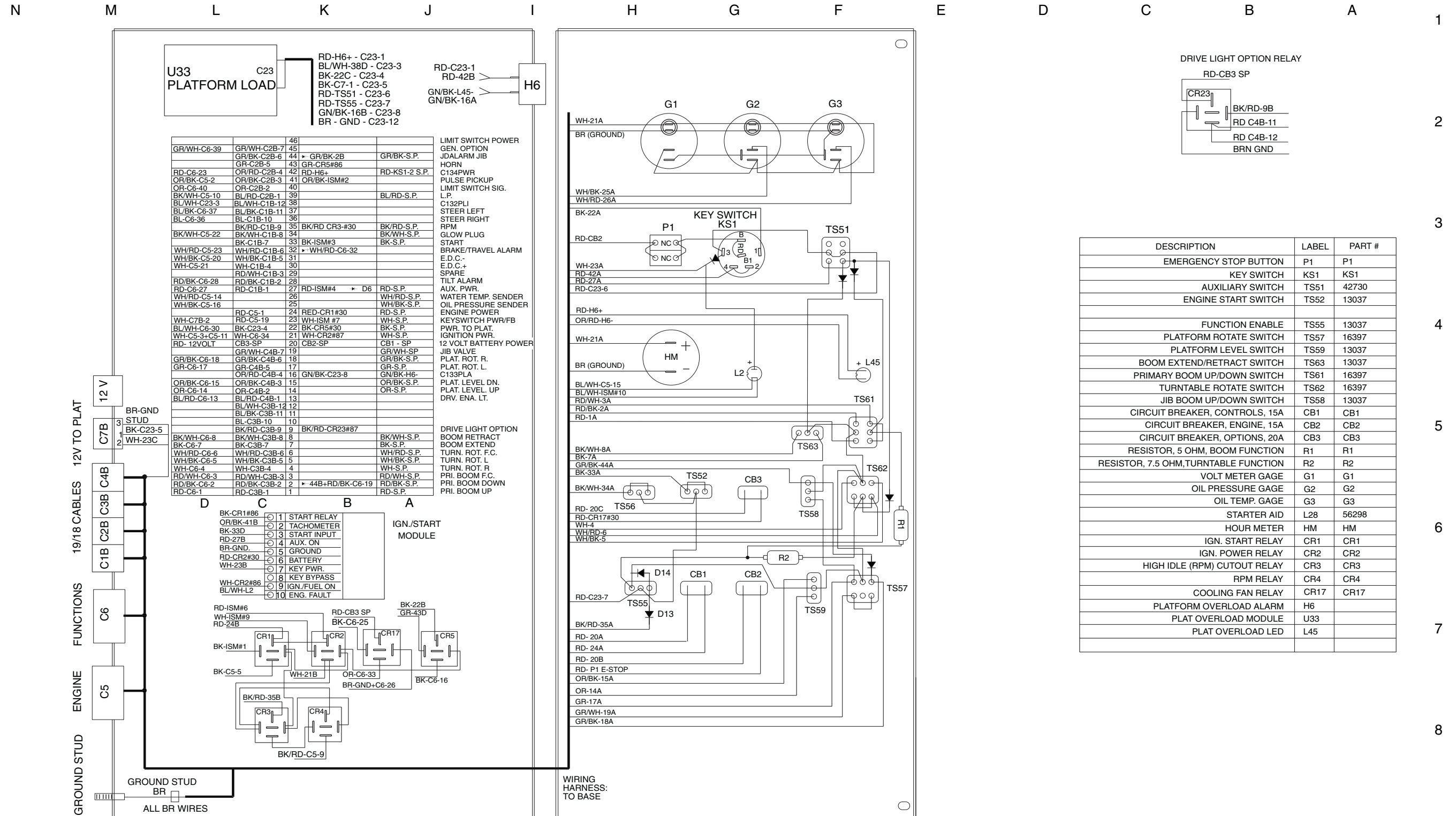
NOTE:
1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

Electrical Schematic

Deutz F3L 1011F Models (before serial number 7544)



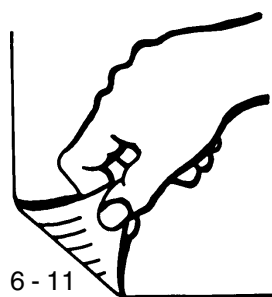
Ground Control Box Wiring Diagram Deutz F3L 1011F Models



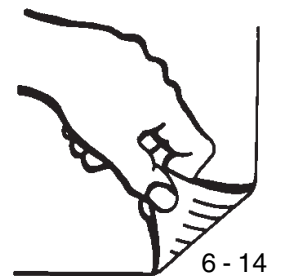
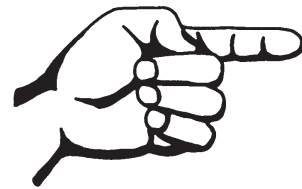
DESCRIPTION	LABEL	PART #
EMERGENCY STOP BUTTON	P1	P1
KEY SWITCH	KS1	KS1
AUXILIARY SWITCH	TS51	42730
ENGINE START SWITCH	TS52	13037
FUNCTION ENABLE	TS55	13037
PLATFORM ROTATE SWITCH	TS57	16397
PLATFORM LEVEL SWITCH	TS59	13037
BOOM EXTEND/RETRACT SWITCH	TS63	13037
PRIMARY BOOM UP/DOWN SWITCH	TS61	16397
TURNTABLE ROTATE SWITCH	TS62	16397
JIB BOOM UP/DOWN SWITCH	TS58	13037
CIRCUIT BREAKER, CONTROLS, 15A	CB1	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCTION	R2	R2
VOLT METER GAGE	G1	G1
OIL PRESSURE GAGE	G2	G2
OIL TEMP. GAGE	G3	G3
STARTER AID	L28	56298
HOUR METER	HM	HM
IGN. START RELAY	CR1	CR1
IGN. POWER RELAY	CR2	CR2
HIGH IDLE (RPM) CUTOFF RELAY	CR3	CR3
RPM RELAY	CR4	CR4
COOLING FAN RELAY	CR17	CR17
PLATFORM OVERLOAD ALARM	H6	
PLAT OVERLOAD MODULE	U33	
PLAT OVERLOAD LED	L45	

Ground Control Box Wiring Diagram

Deutz F3L 1011F Models

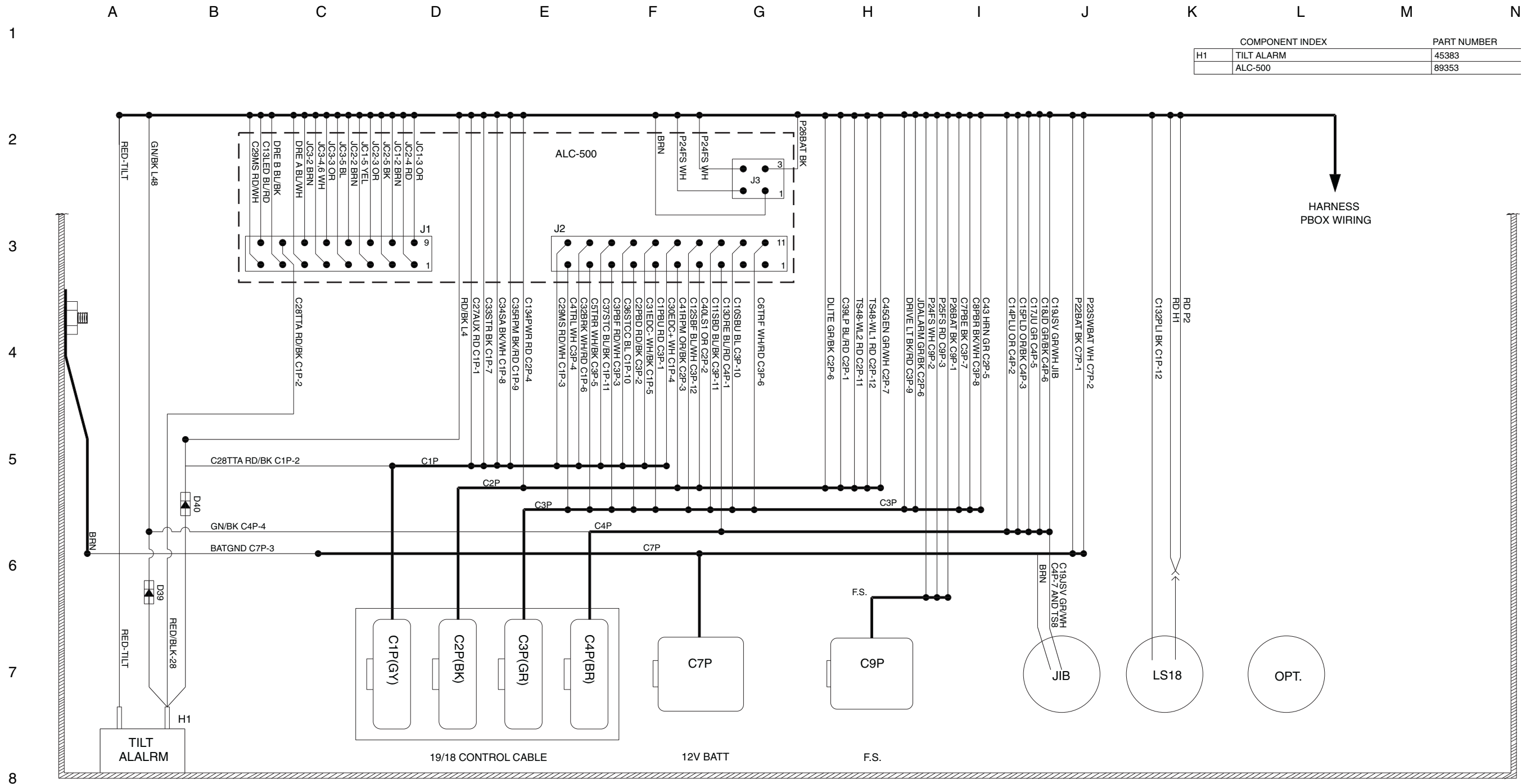


Platform Control Box Wiring Diagram- ALC-500
Deutz F3L 1011F Models



Platform Control Box Wiring Diagram

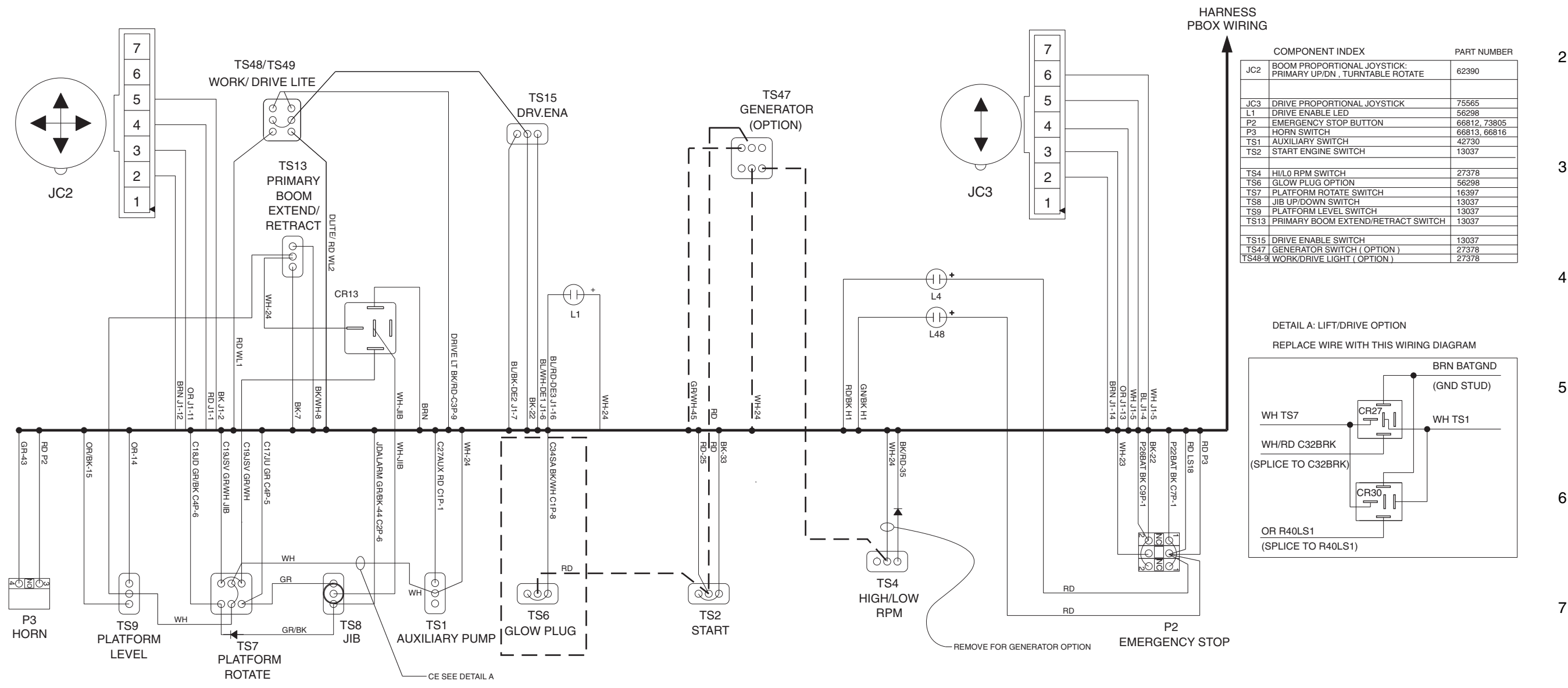
Deutz F3L 1011F Models



Platform Control Box Switch Panel Wiring Diagram

Deutz F3L 1011F Models

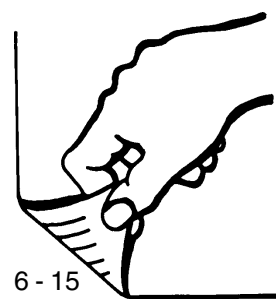
N M L K J I H G F E D C B A 1



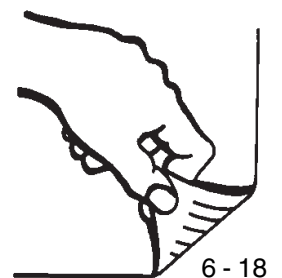
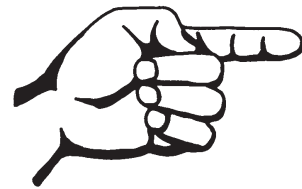
COMPONENT INDEX	PART NUMBER
JC2 BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNTABLE ROTATE	62390
JC3 DRIVE PROPORTIONAL JOYSTICK	75565
L1 DRIVE ENABLE LED	56298
P2 EMERGENCY STOP BUTTON	66812, 73805
P3 HORN SWITCH	66813, 66816
TS1 AUXILIARY SWITCH	42730
TS2 START ENGINE SWITCH	13037
TS4 HI/LO RPM SWITCH	27378
TS6 GLOW PLUG OPTION	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
TS47 GENERATOR SWITCH (OPTION)	27378
TS48-9 WORK/DRIVE LIGHT (OPTION)	27378

NOTE:
1) DASHED LINES INDICATE OPTION WIRES.

Platform Control Box Switch Panel Wiring Diagram
Deutz F3L 1011F Models

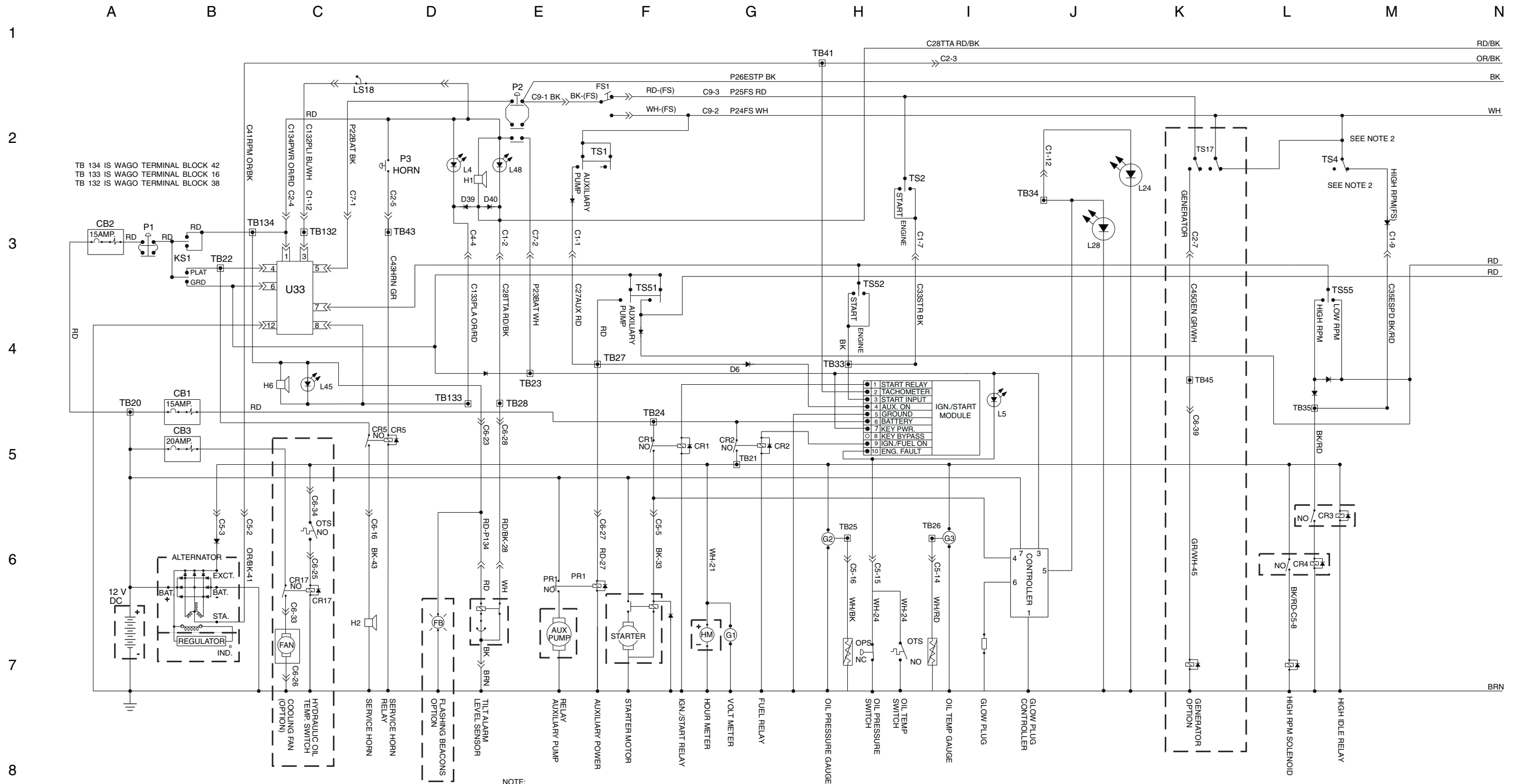


Electrical Schematic
Perkins 704-30 Models (before serial number 7472)



Electrical Schematic

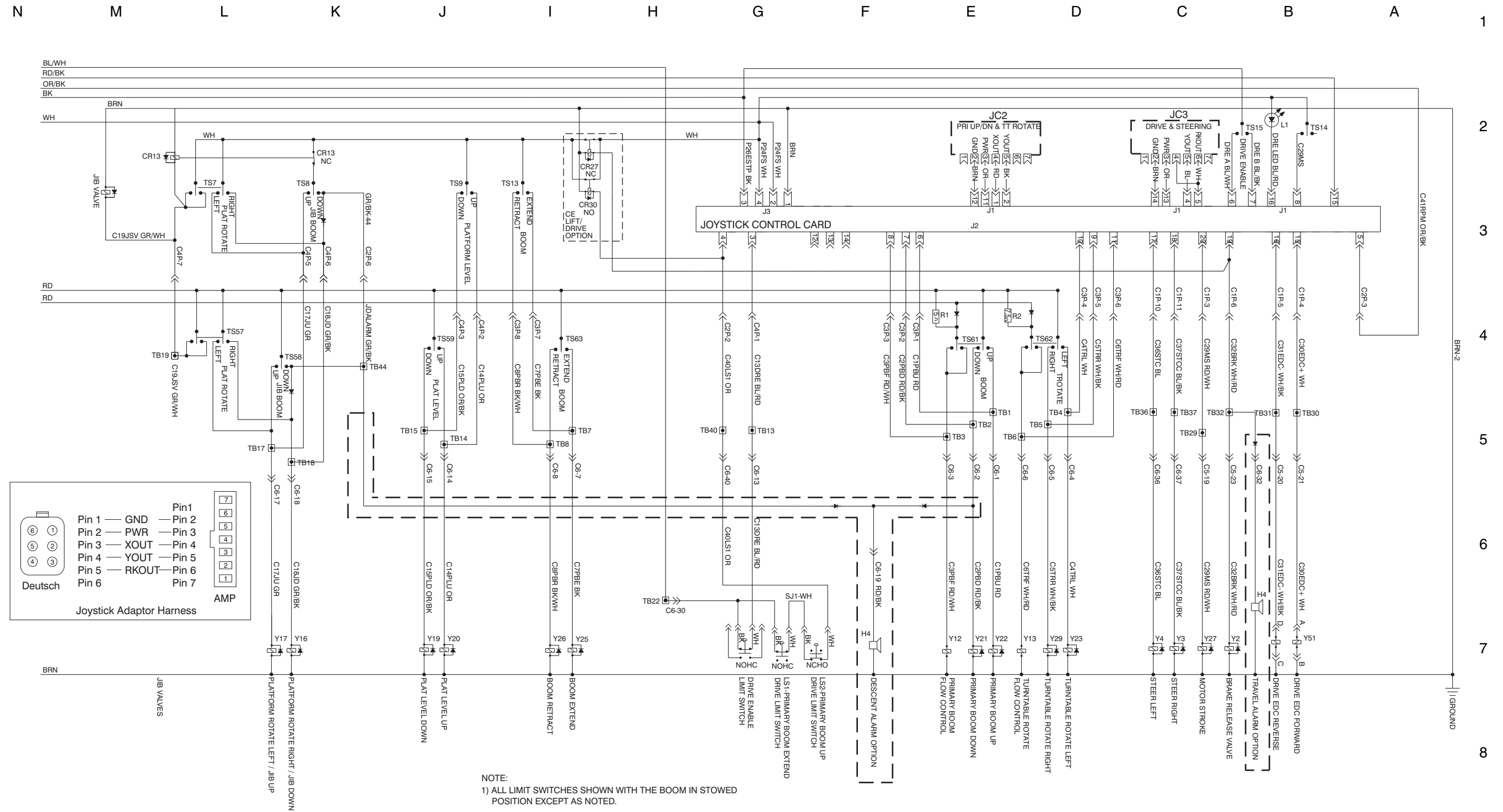
Perkins 704-30 Models (before serial number 7472)



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.

Electrical Schematic

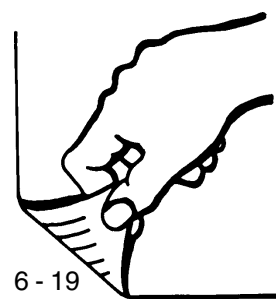
Perkins 704-30 Models (before serial number 7472)



NOTE:
1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

Electrical Schematic

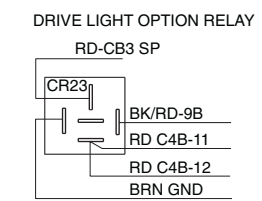
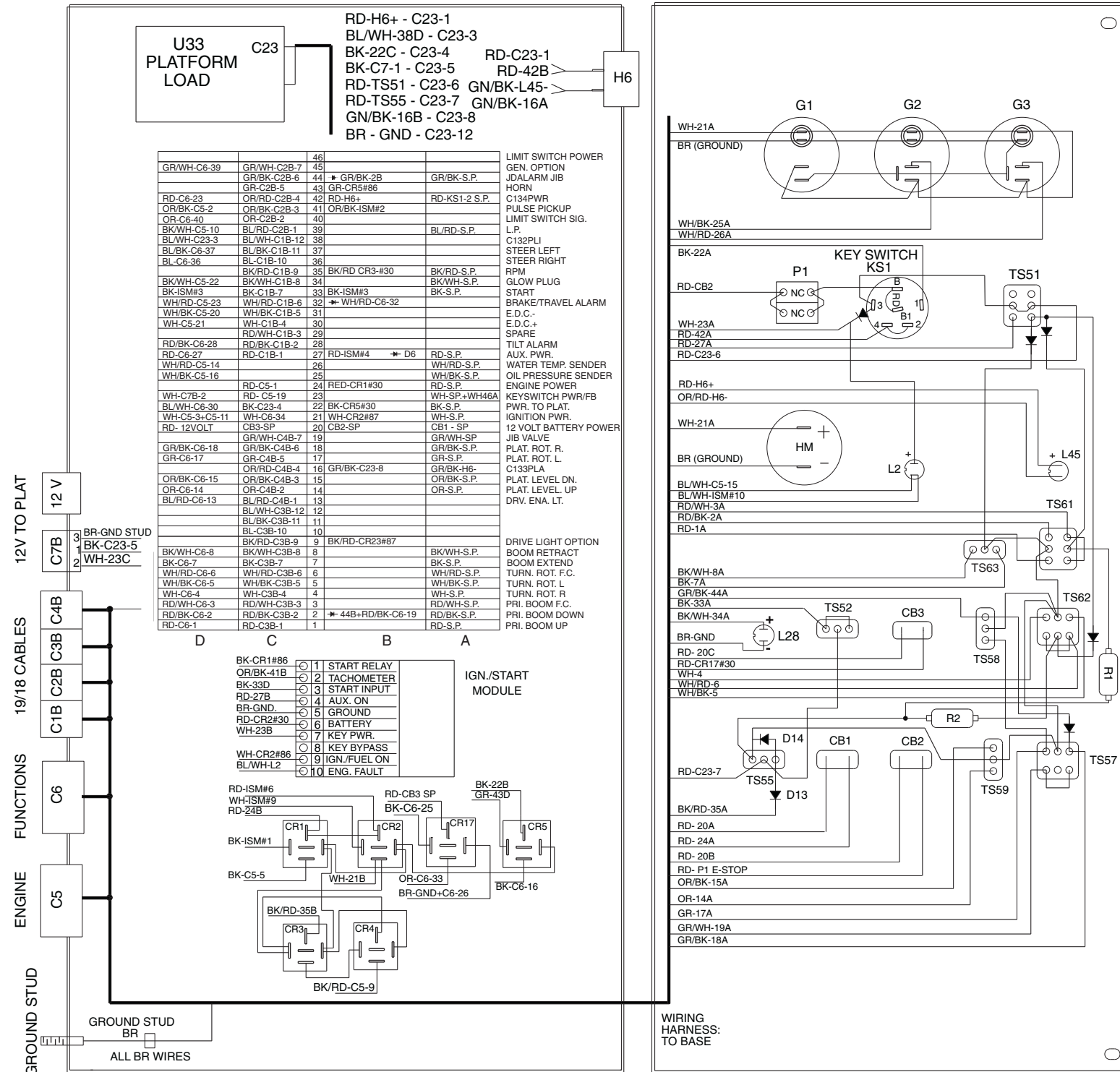
Perkins 704-30 Models (before serial number 7472)



Ground Control Box Wiring Diagram

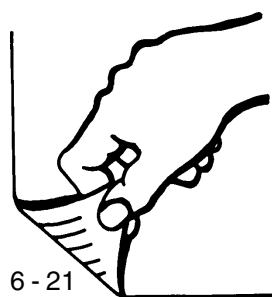
Perkins 704-30 Models

N M L K J I H G F E D C B A 1

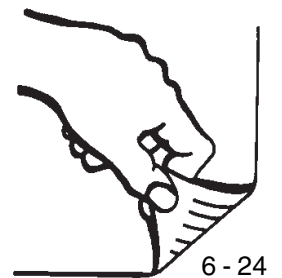
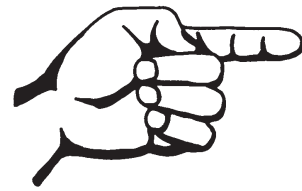


DESCRIPTION	LABEL	PART #
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JIB BOOM UP/DOWN SWITCH	TS58	13037
CIRCUIT BREAKER, CONTROLS, 15A	CB1	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCTION	R2	R2
VOLT METER GAGE	G1	G1
OIL PRESSURE GAGE	G2	G2
OIL TEMP. GAGE	G3	G3
STARTER AID	L28	56298
HOUR METER	HM	HM
IGN. START RELAY	CR1	CR1
IGN. POWER RELAY	CR2	CR2
HIGH IDLE (RPM) CUTOUT RELAY	CR3	CR3
RPM RELAY	CR4	CR4
COOLING FAN RELAY	CR17	CR17
PLATFORM OVERLOAD ALARM	H6	
PLAT OVERLOAD MODULE	U33	
PLAT OVERLOAD LED	L45	

Ground Control Box Wiring Diagram
Perkins 704-30 Models

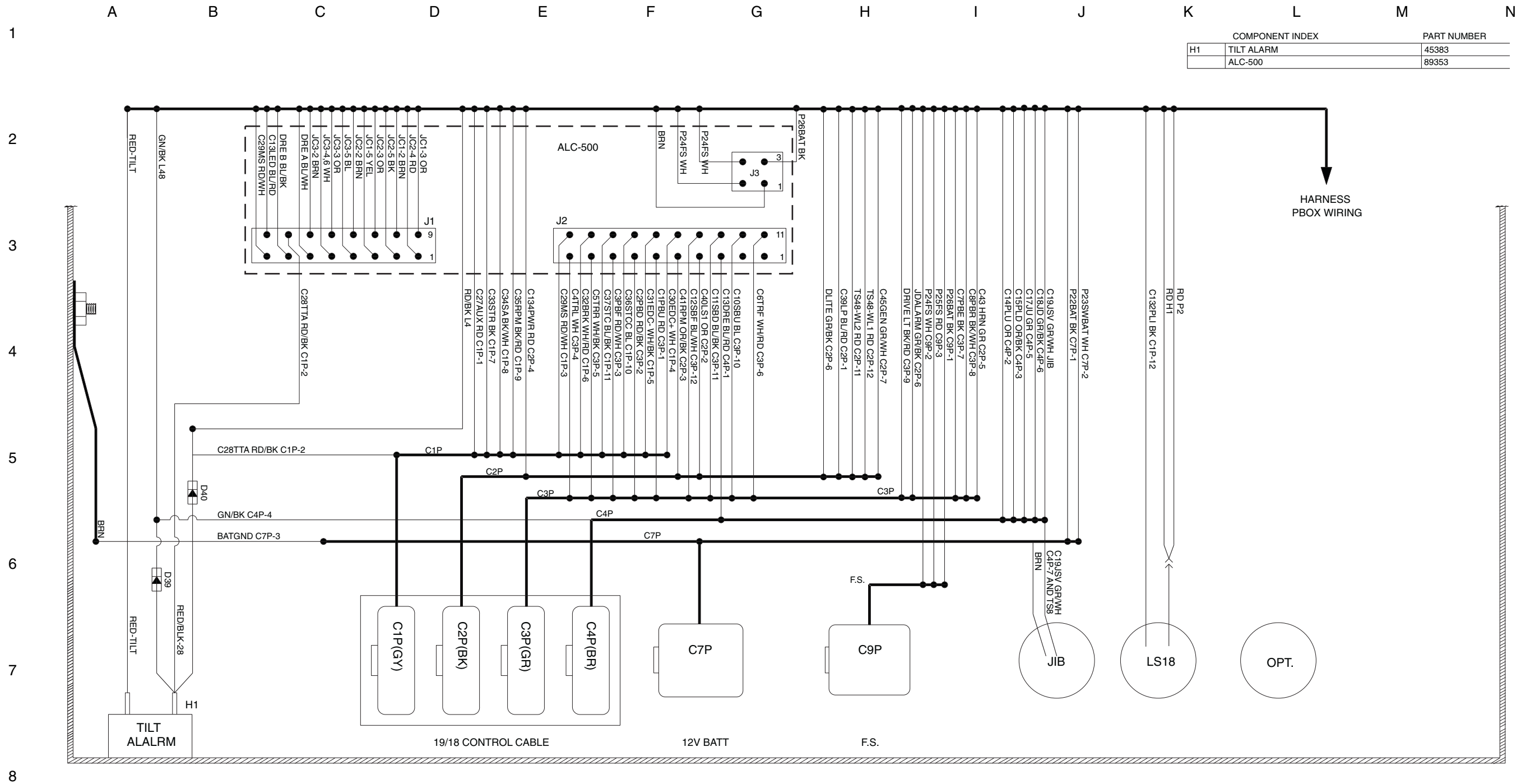


Platform Control Box Wiring Diagram
Perkins 704-30 Models



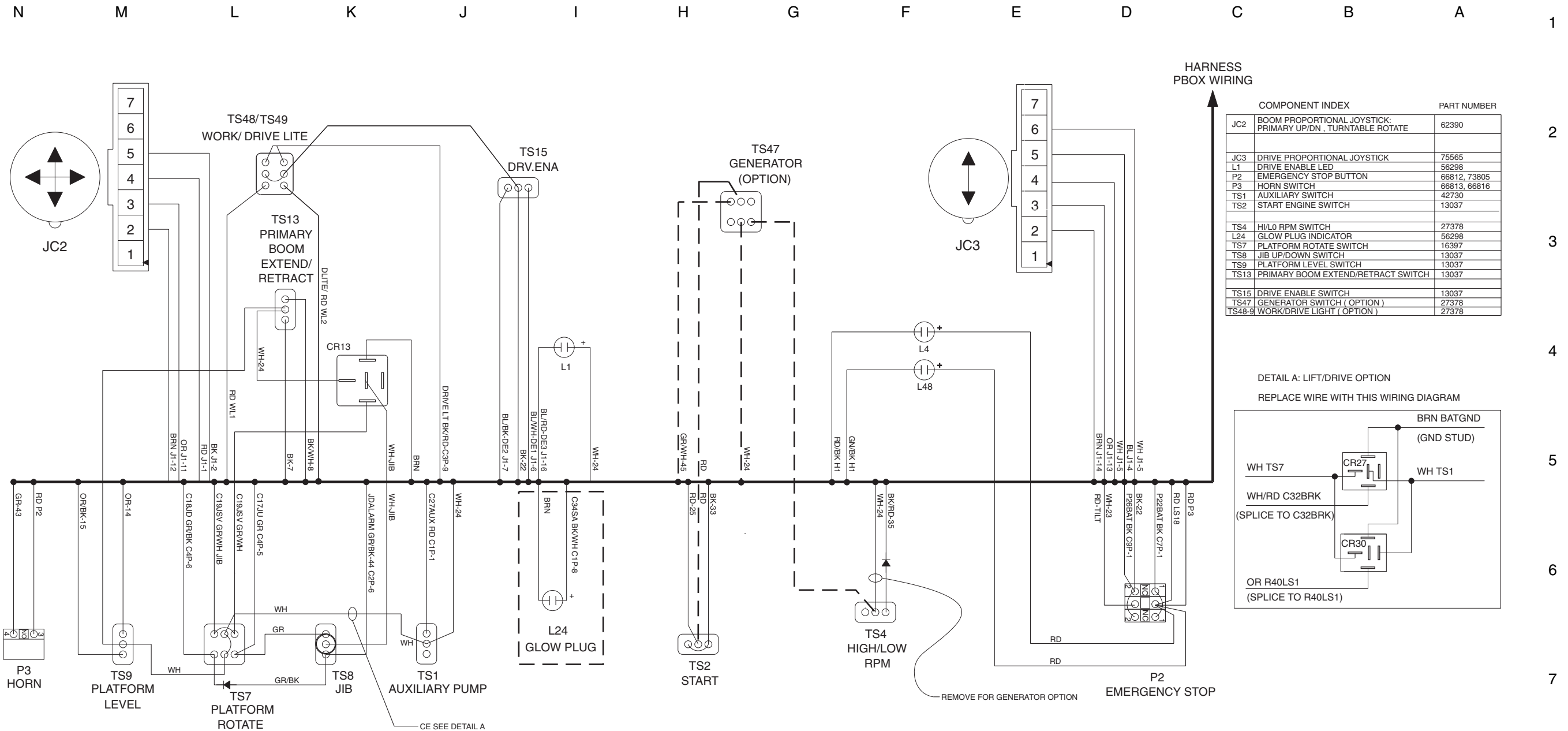
Platform Control Box Wiring Diagram

Perkins 704-30 Models

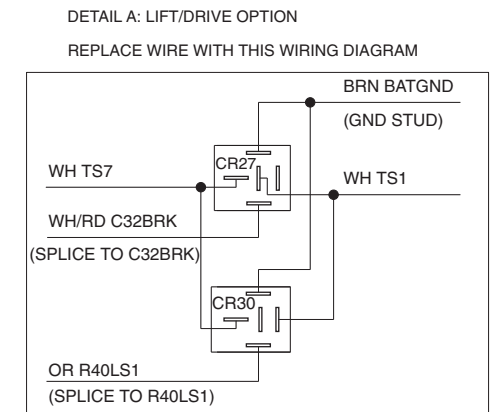


Platform Control Box Switch Panel Wiring Diagram

Perkins 704-30 Models

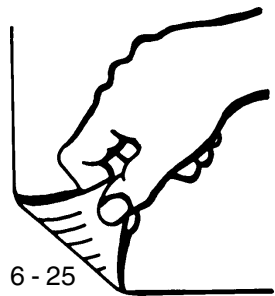


COMPONENT INDEX		PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN , TURNTABLE ROTATE	62390
JC3	DRIVE PROPORTIONAL JOYSTICK	75565
L1	DRIVE ENABLE LED	56298
P2	EMERGENCY STOP BUTTON	66812, 73805
P3	HORN SWITCH	66813, 66816
TS1	AUXILIARY SWITCH	42730
TS2	START ENGINE SWITCH	13037
TS4	HI/LO RPM SWITCH	27378
L24	GLOW PLUG INDICATOR	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
TS47	GENERATOR SWITCH (OPTION)	27378
TS48-9	WORK/DRIVE LIGHT (OPTION)	27378



NOTE:
1) DASHED LINES INDICATE OPTION WIRES.

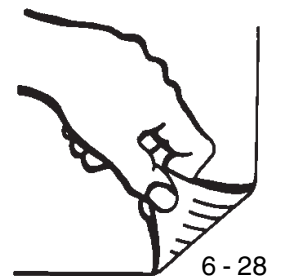
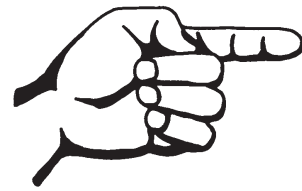
Platform Control Box Switch Panel Wiring Diagram
Perkins 704-30 Models



Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)

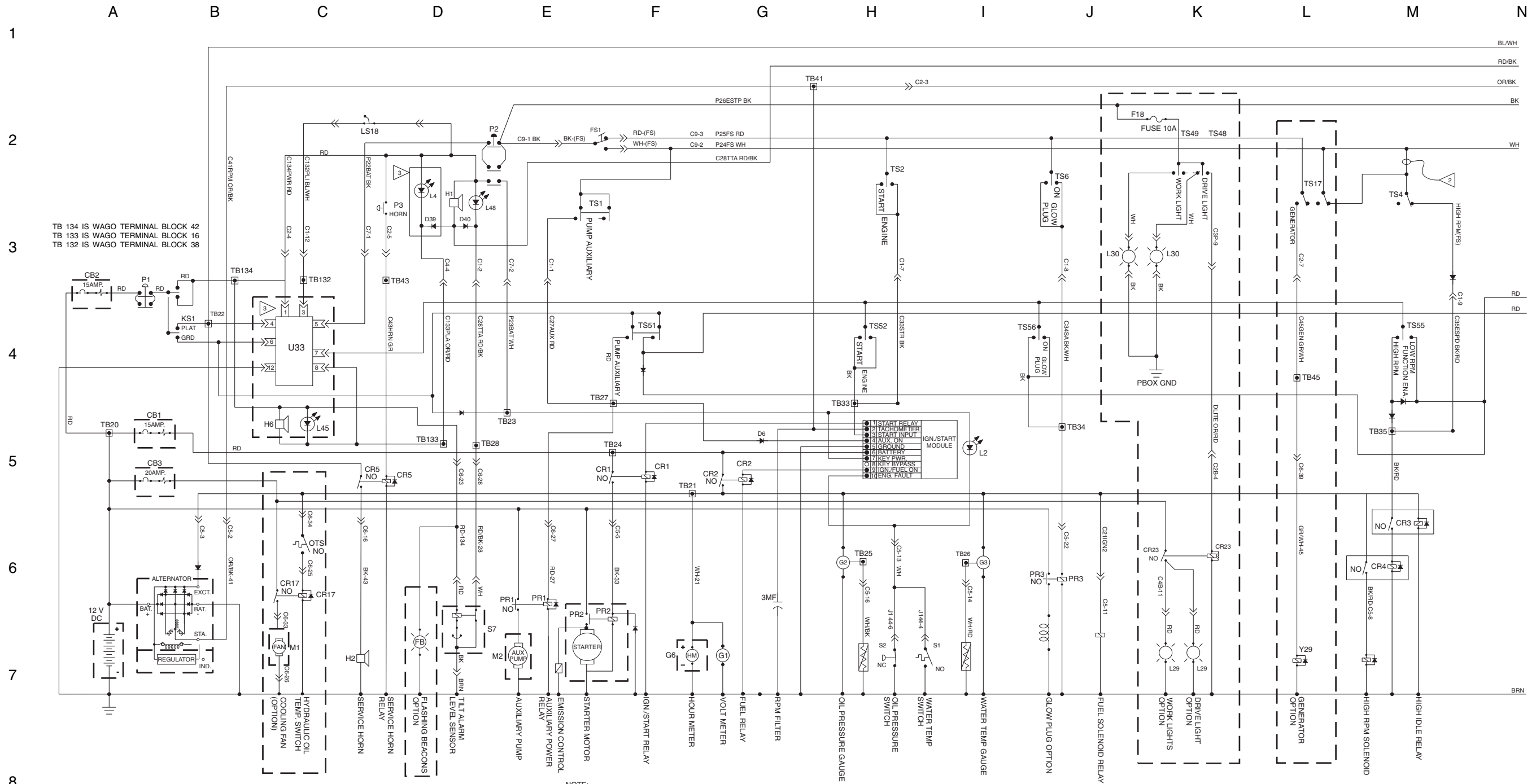
Perkins 404-22 Models (from serial number 7472 to 12509)



Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)

Perkins 404-22 Models (from serial number 7472 to 12509)



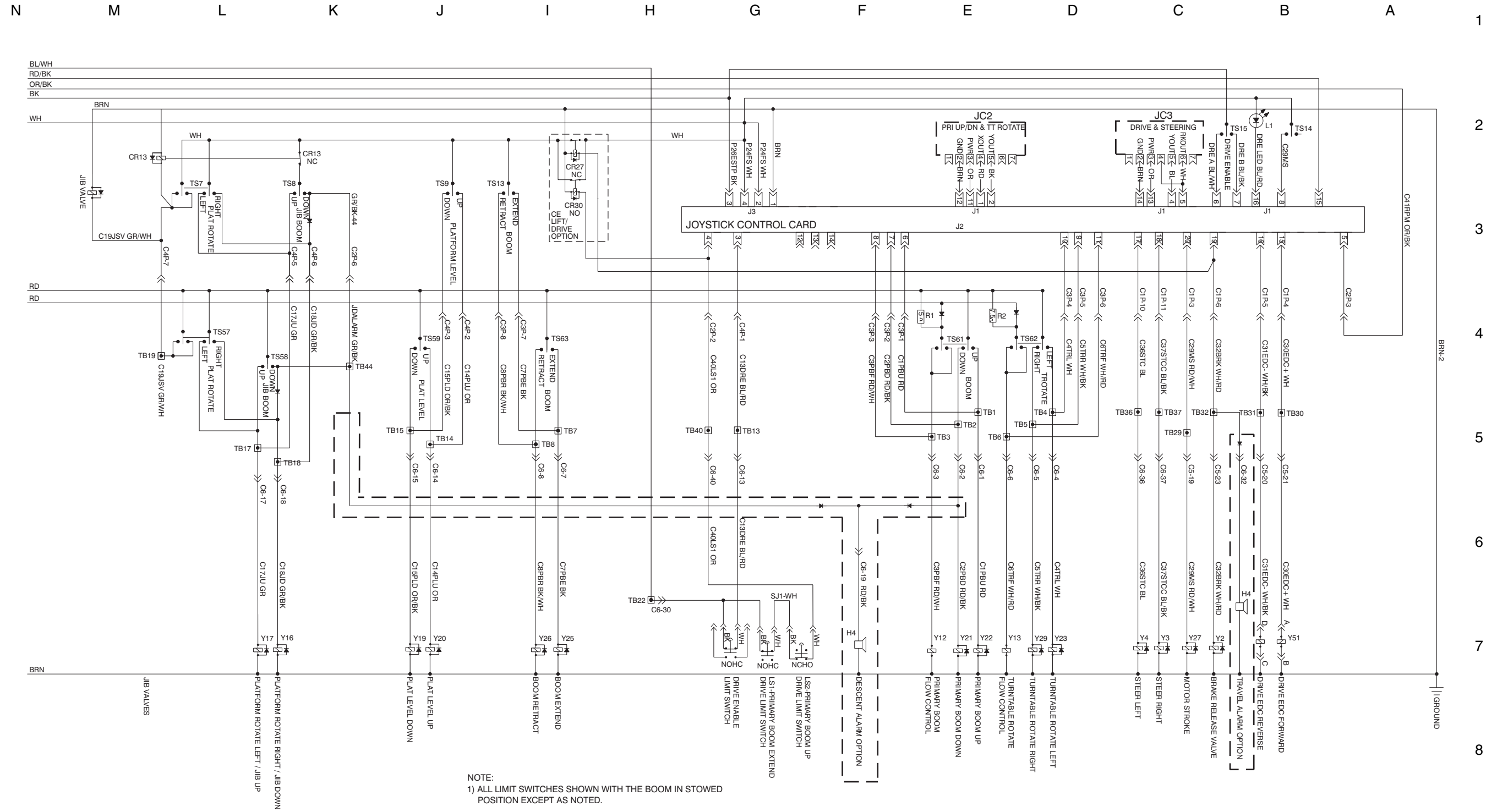
NOTE:
 1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

2 THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION.

3 C.E. OPTION ONLY

Electrical Schematic

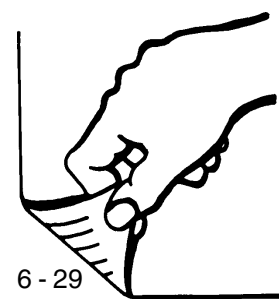
Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)
Perkins 404-22 Models (from serial number 7472 to 12509)



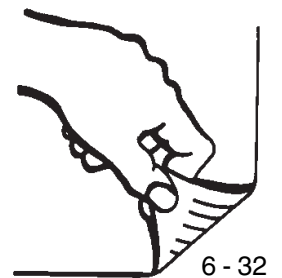
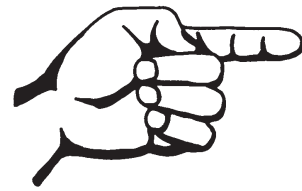
Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)

Perkins 404-22 Models (from serial number 7472 to 12509)

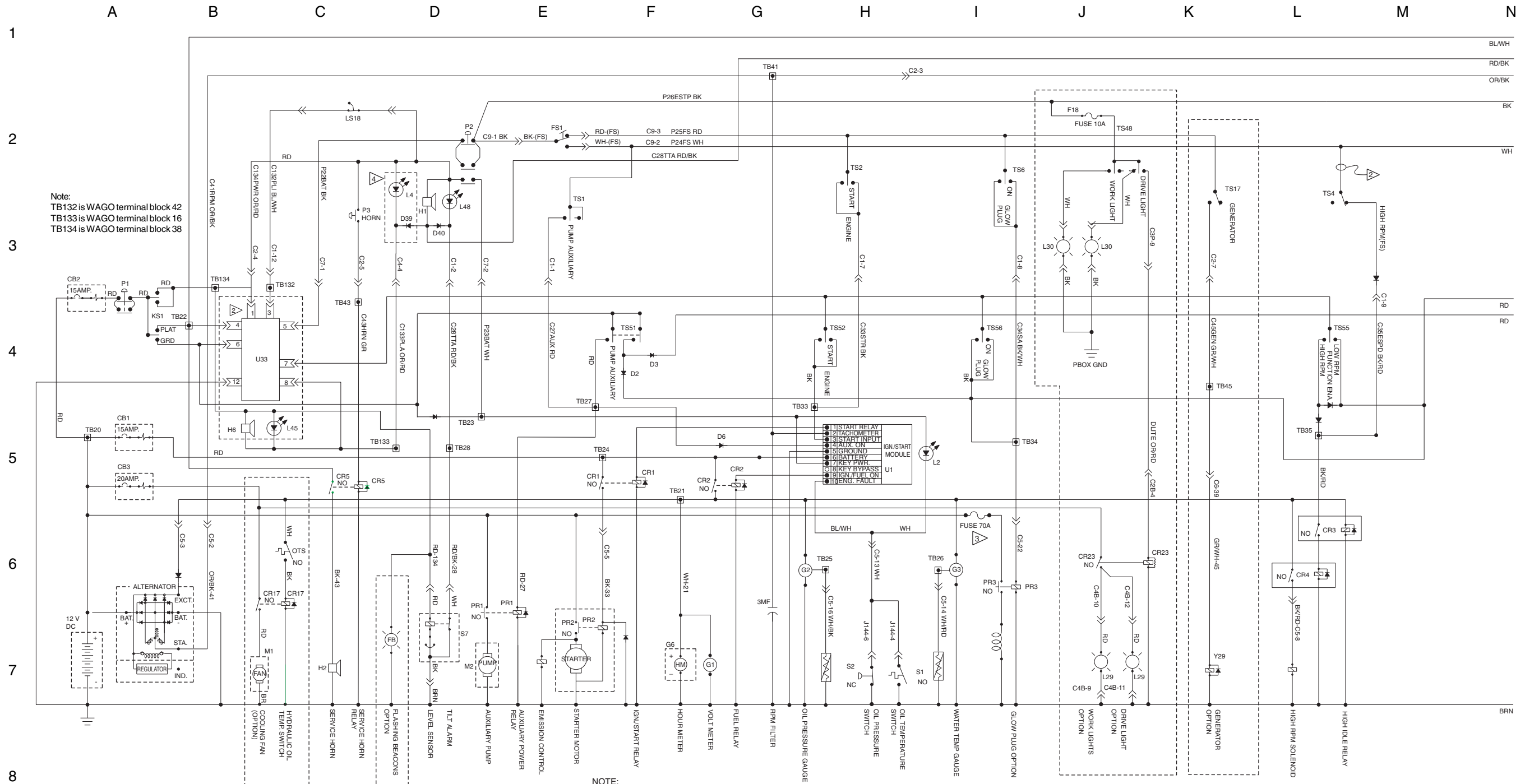


Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 12510 to 14831)



Electrical Schematic

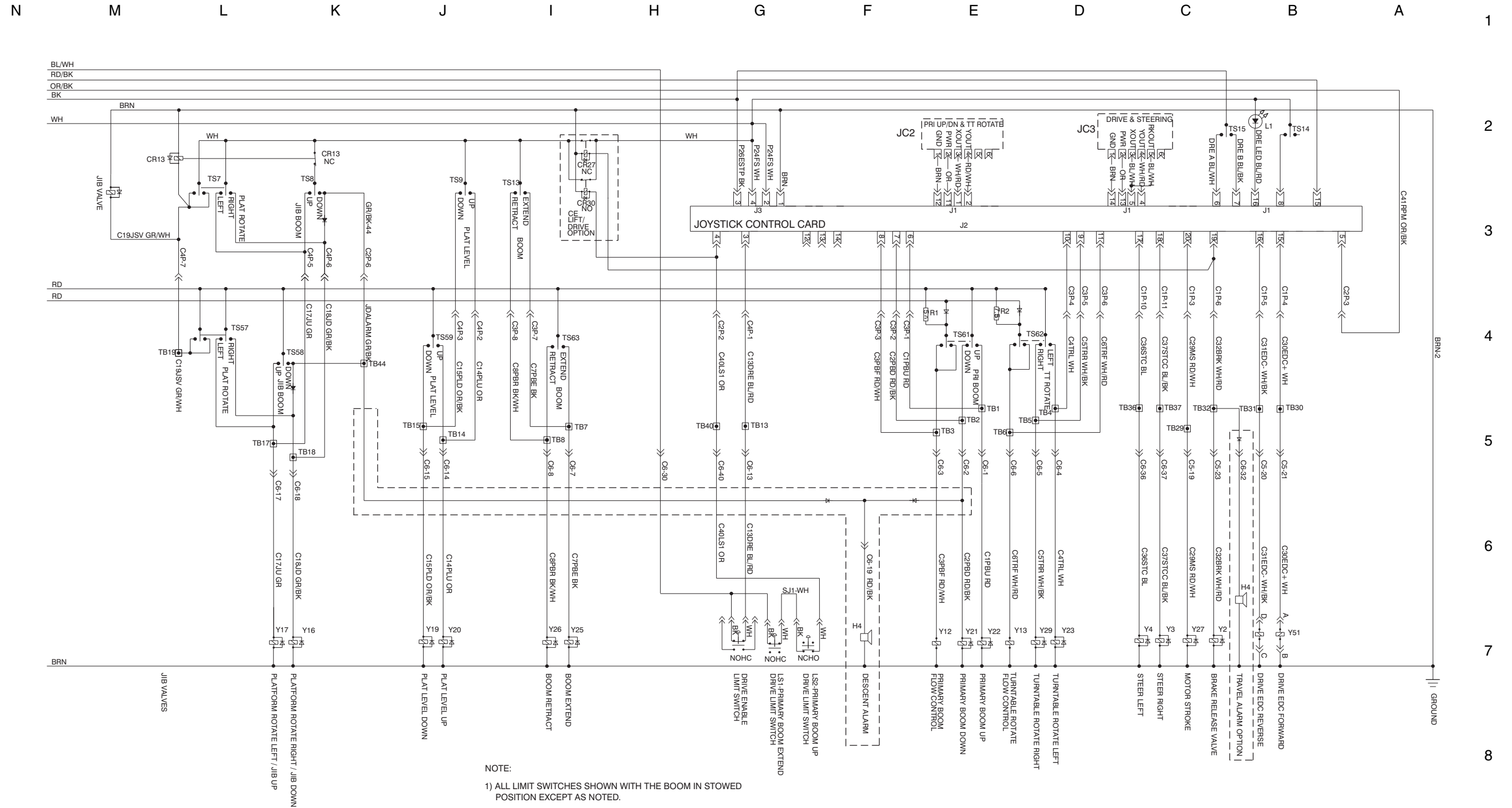
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 12510 to 14831)



NOTE:

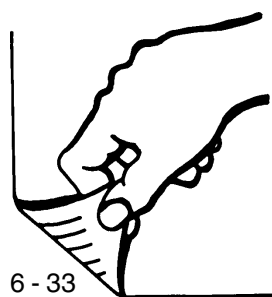
- 1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
- THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION
- 70A FUSE ADDED AT SERIAL NUMBER 12978
- C.E. OPTION ONLY
WHEN C.E. OPTION IS NOT INSTALLED A JUMPER HARNESS CONNECTS PIN 4 TO PIN 5 AND PIN 6 TO PIN 7
- LS18 - PLATFORM OVERLOAD SWITCH

Electrical Schematic Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models (from serial number 12510 to 14831)

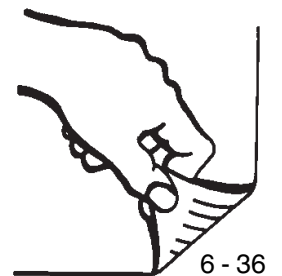
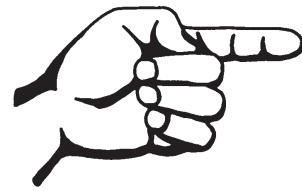


Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 12510 to 14831)

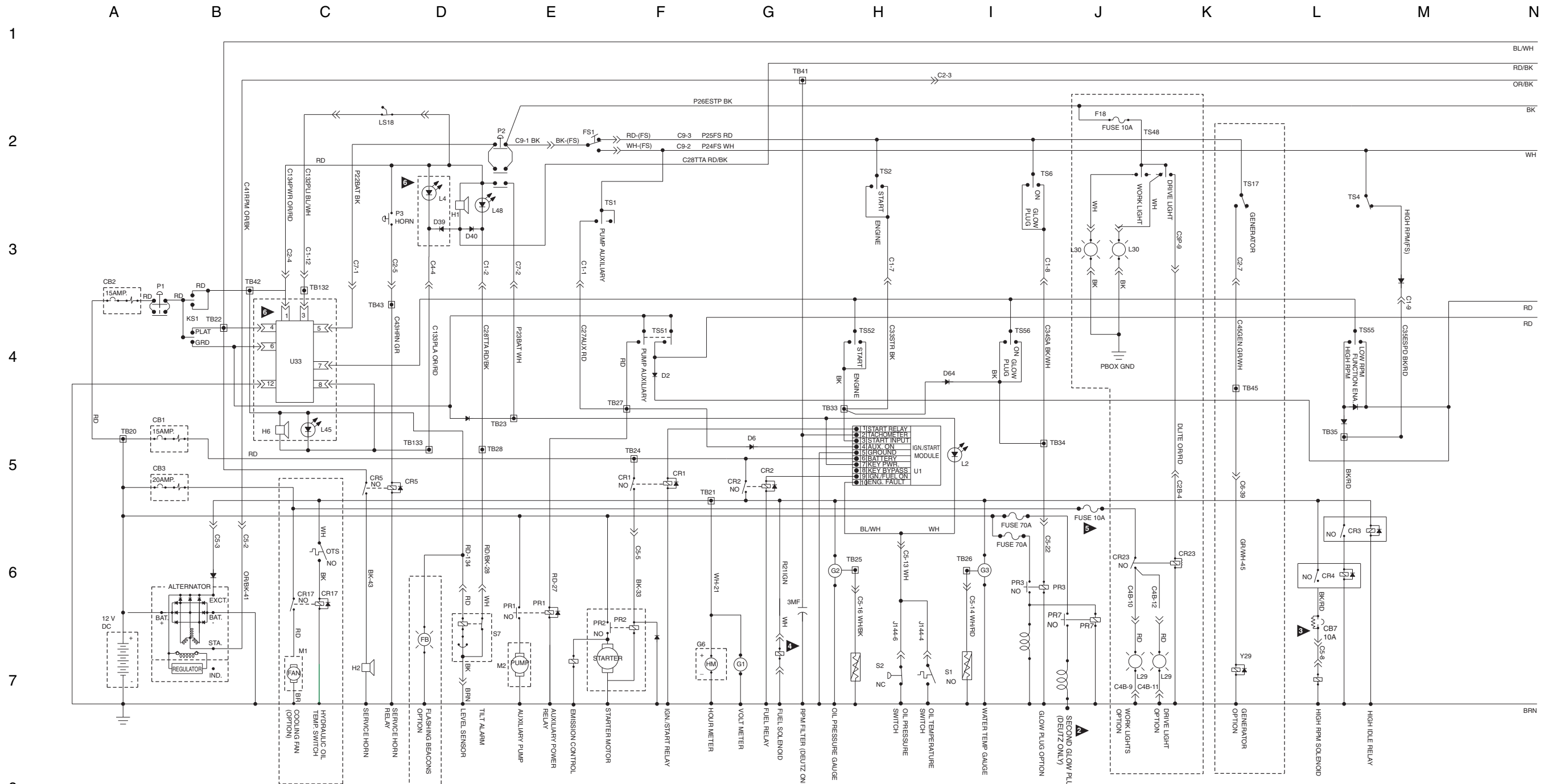


Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 14832 to 15662)



Electrical Schematic

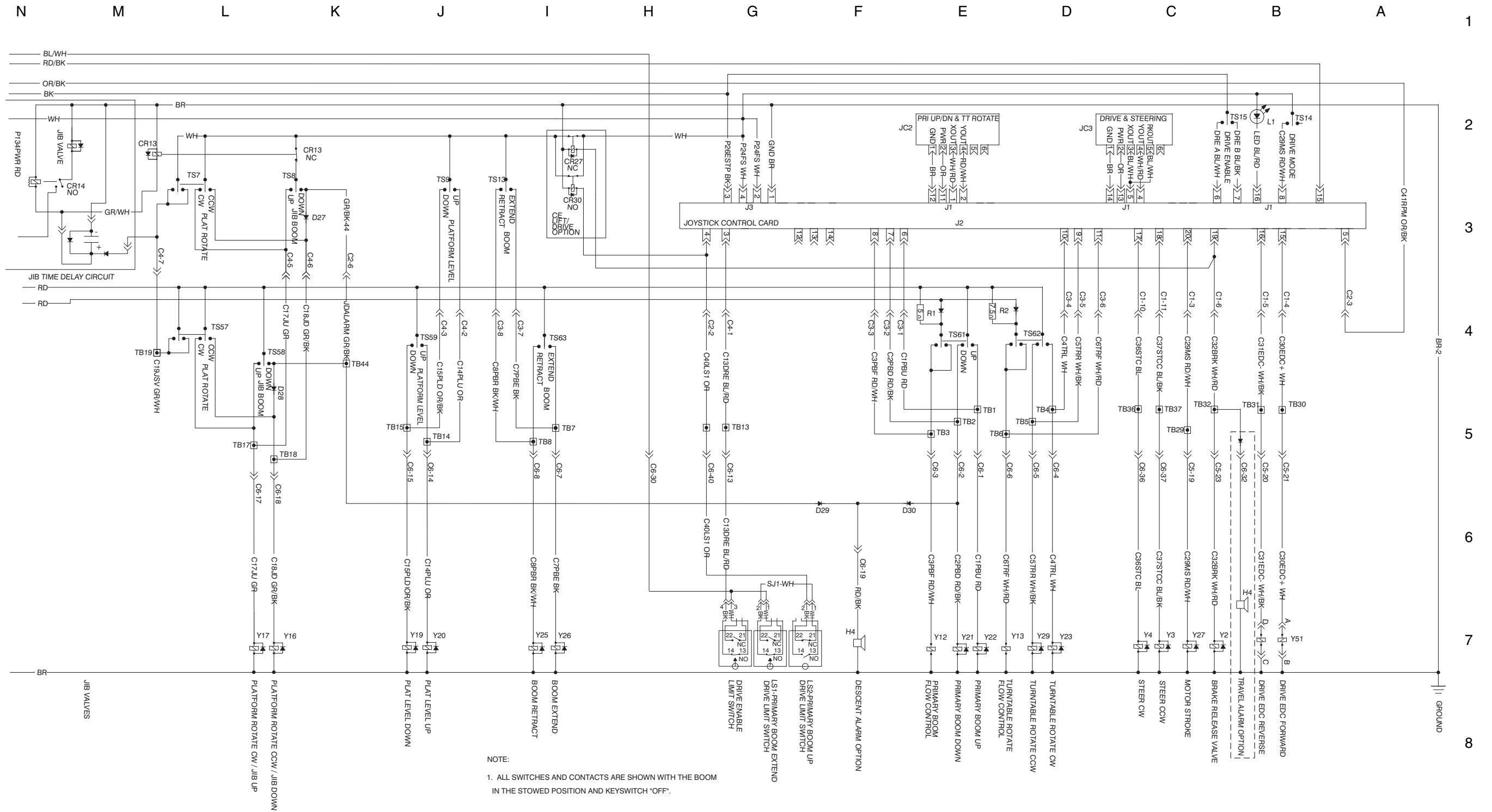
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 14832 to serial 15662)



- NOTE:
- 1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 - ▲ SECOND GLOW PLUG OPTION ADDED AT SERIAL NUMBER 15151
 - ▲ CB7 10A FUSE ADDED AT SERIAL NUMBER 15573
 - ▲ FUEL SOLENOID ADDED AT SERIAL NUMBER 15574
 - ▲ 10A FUSE ADDED AT SERIAL NUMBER 15574
 - ▲ C.E. OPTION ONLY WHEN C.E. OPTION IS NOT INSTALLED A JUMPER HARNESS CONNECTS PIN 4 TO PIN 5 AND PIN 6 TO PIN 7
 - LS18 - PLATFORM OVERLOAD SWITCH

Electrical Schematic

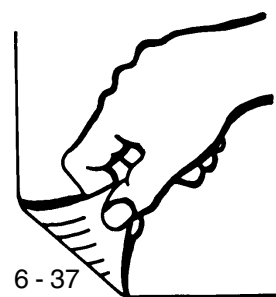
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models (from serial number 14832 to 15662)



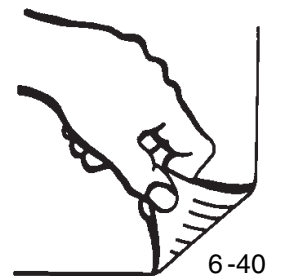
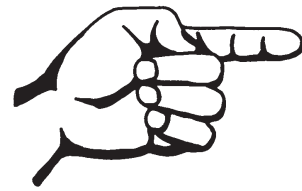
NOTE:
1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM
IN THE STOWED POSITION AND KEYSWITCH 'OFF'.

Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(from serial number 14832 to 15662)



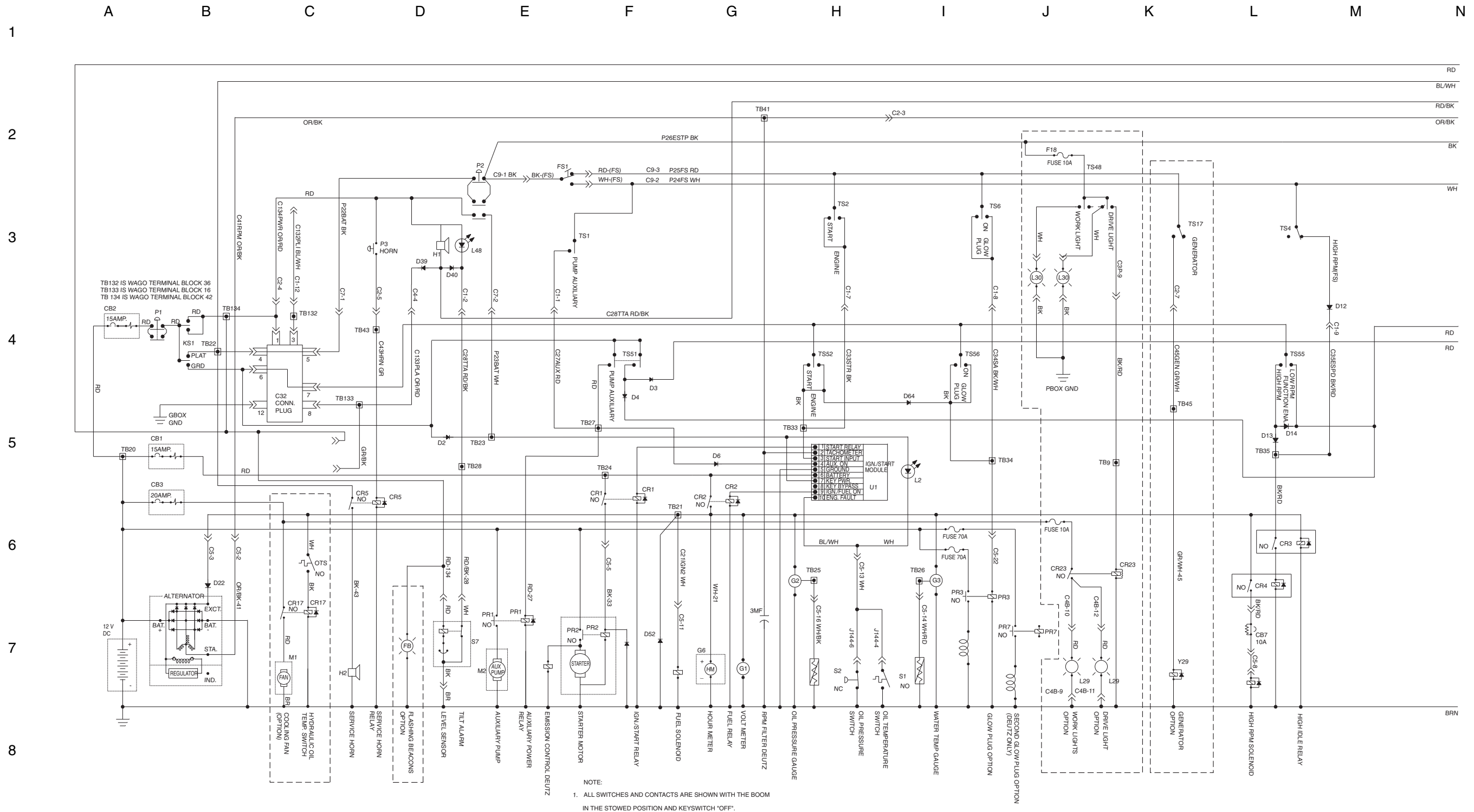
Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **ANSI/CSA/AS**
(from serial number 15663 to 16419)



Electrical Schematic

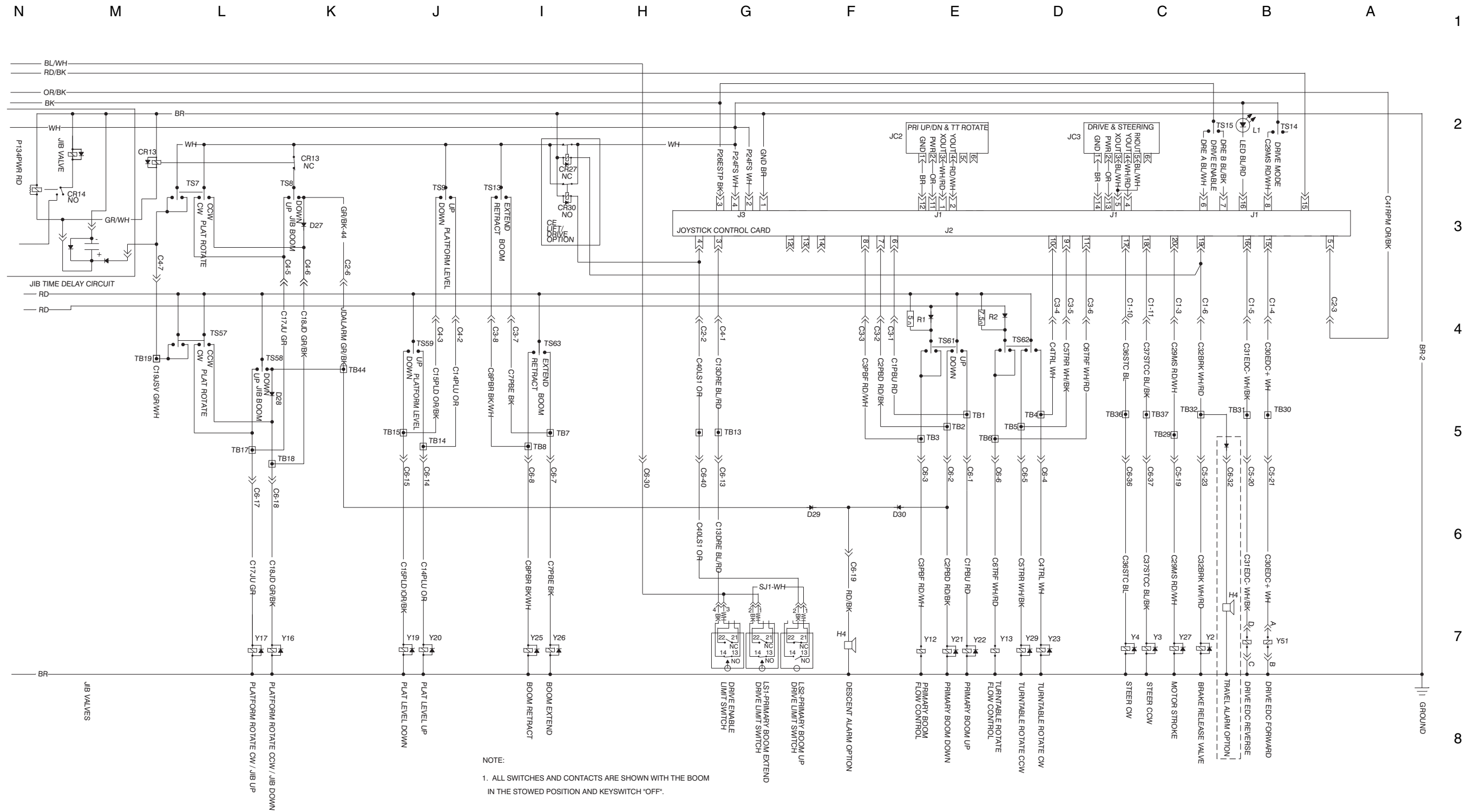
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - ANSI/CSA/AS

(from serial number 15663 to 16419)



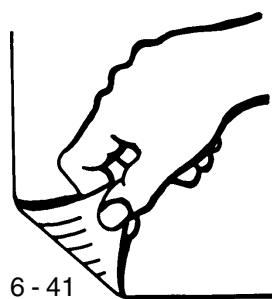
Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - ANSI/CSA/AS (from serial number 15663 to 16419)

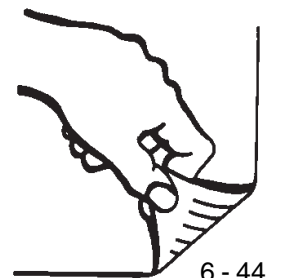
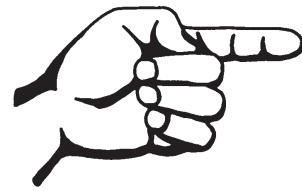


Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **ANSI / CSA / AS**
(from serial number 15663 to 16419)



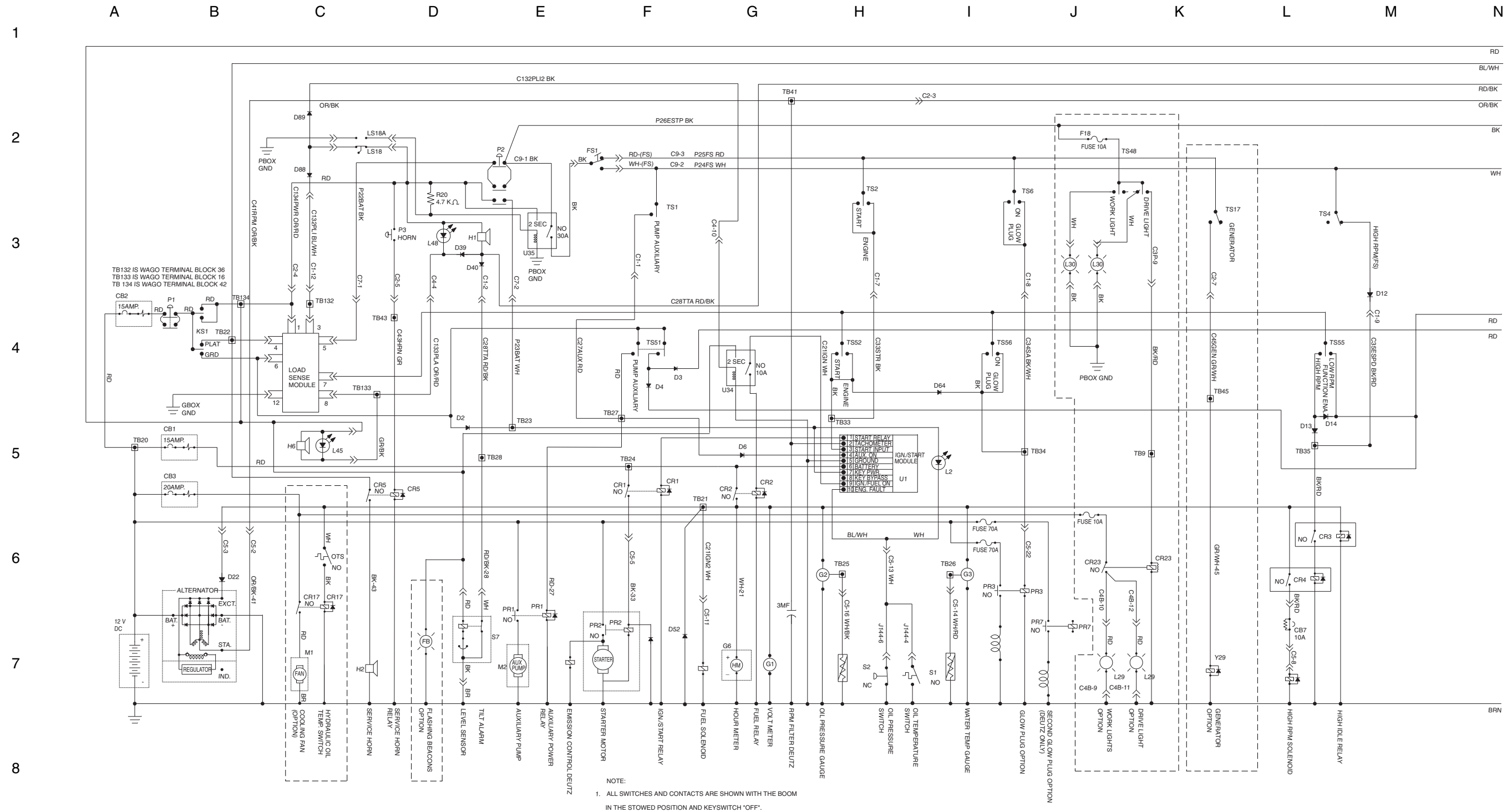
Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **CE**
(from serial number 15663 to 16419)



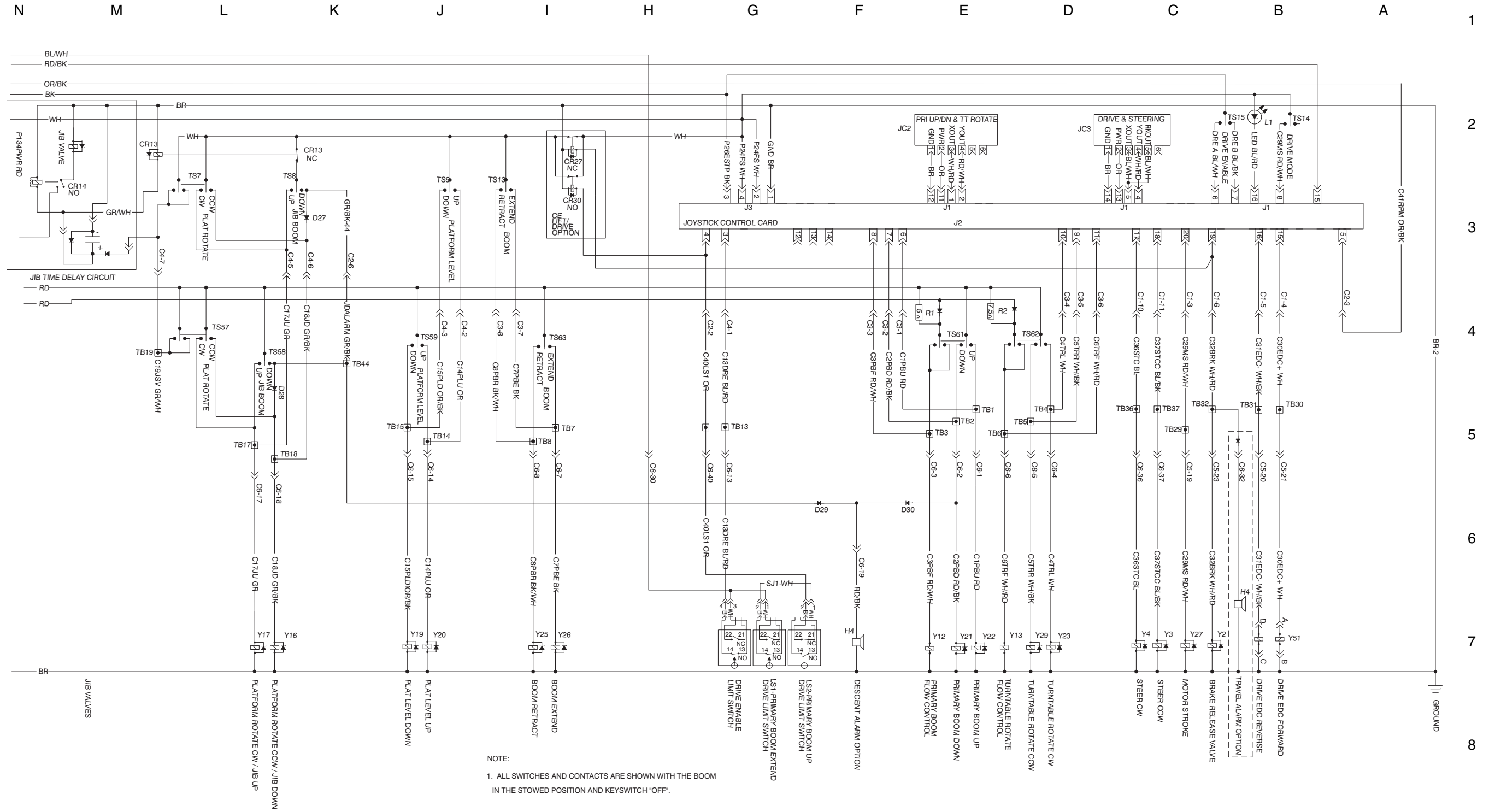
Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - CE

(from serial number 15663 to 16419)

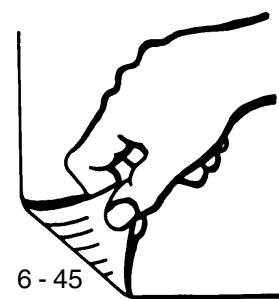


Electrical Schematic Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - CE (from serial number 15663 to 16419)

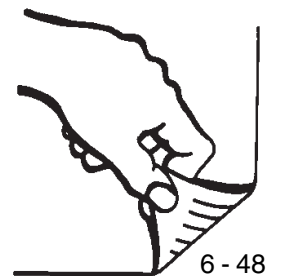
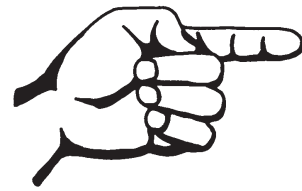


Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **CE**
(from serial number 15663 to 16419)



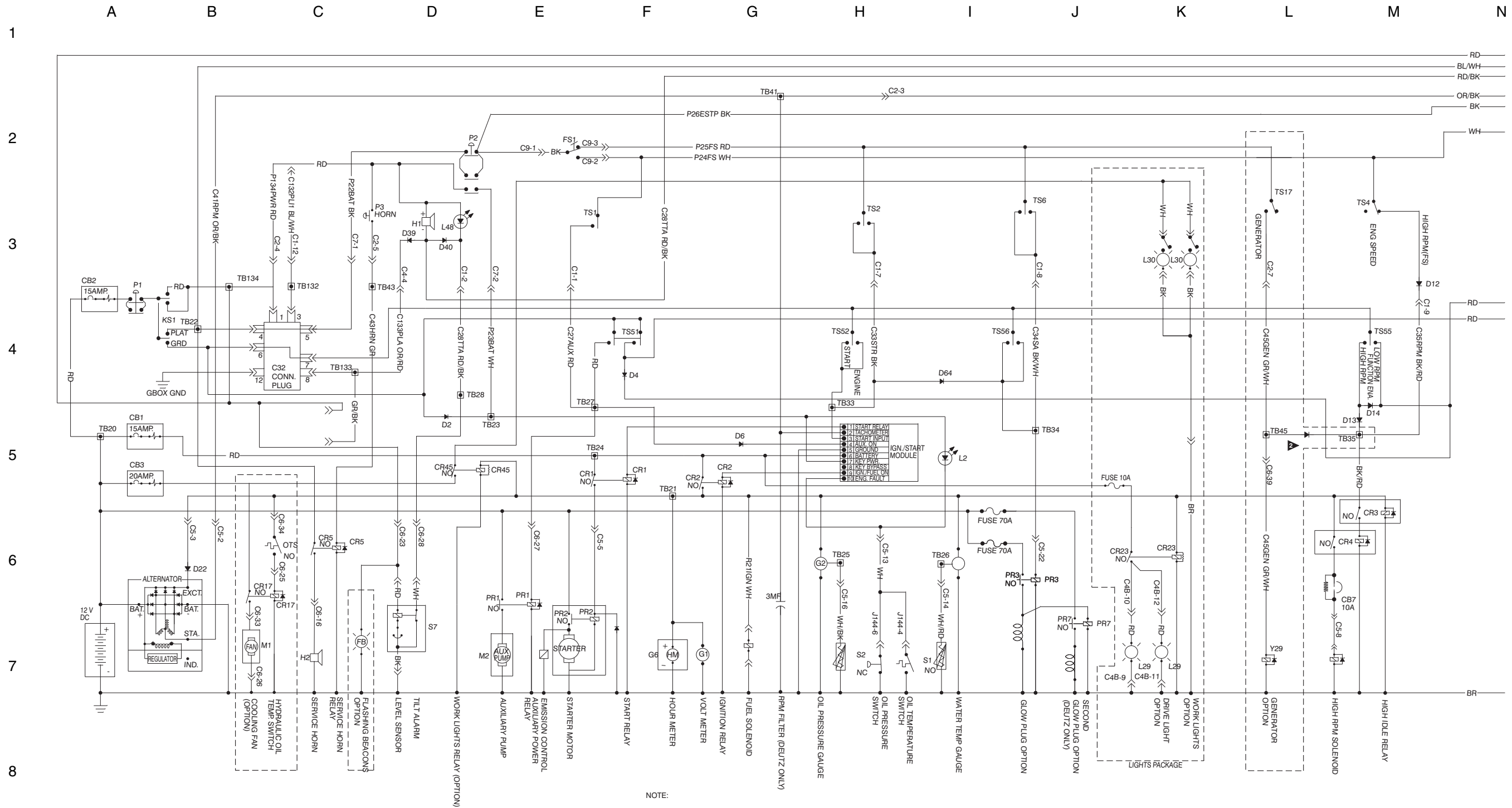
Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **ANSI/CSA/AS**
(from serial number 16420)



Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - ANSI/CSA/AS

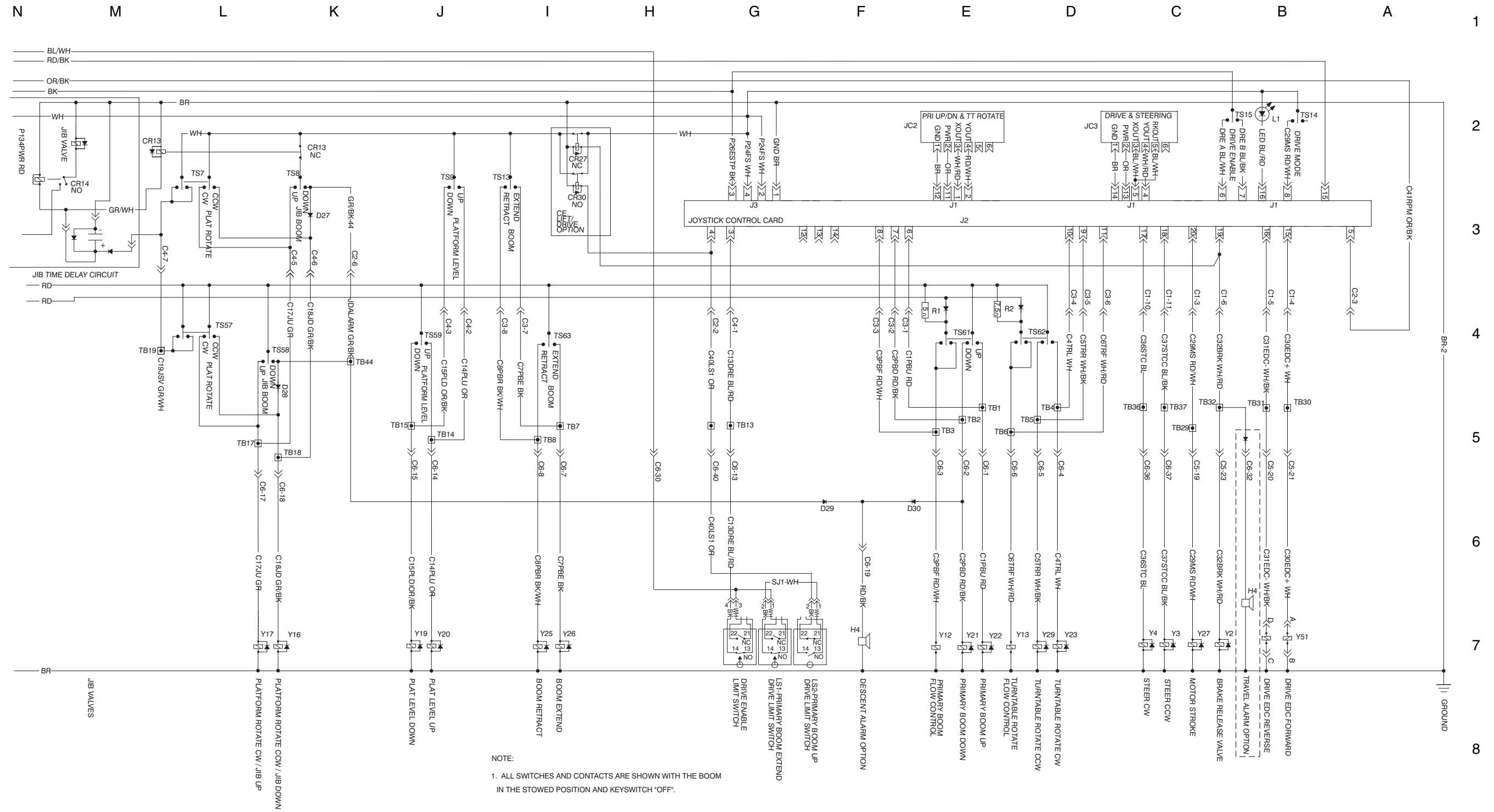
(from serial number 16420)



NOTE:
 1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 ▲ DIODE BETWEEN TB35 AND TB45 ADDED AT SERIAL NUMBER 16453

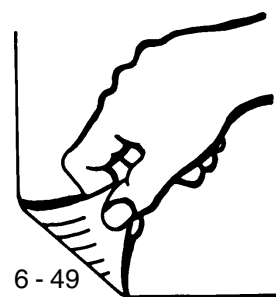
Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - ANSI/CSA/AS (from serial number 16420)

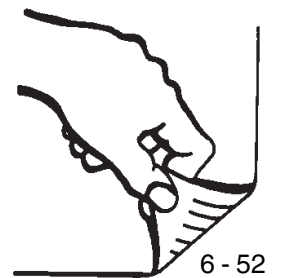
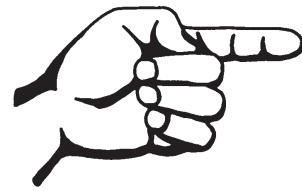


Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **ANSI/CSA/AS**
(from serial number 16420)



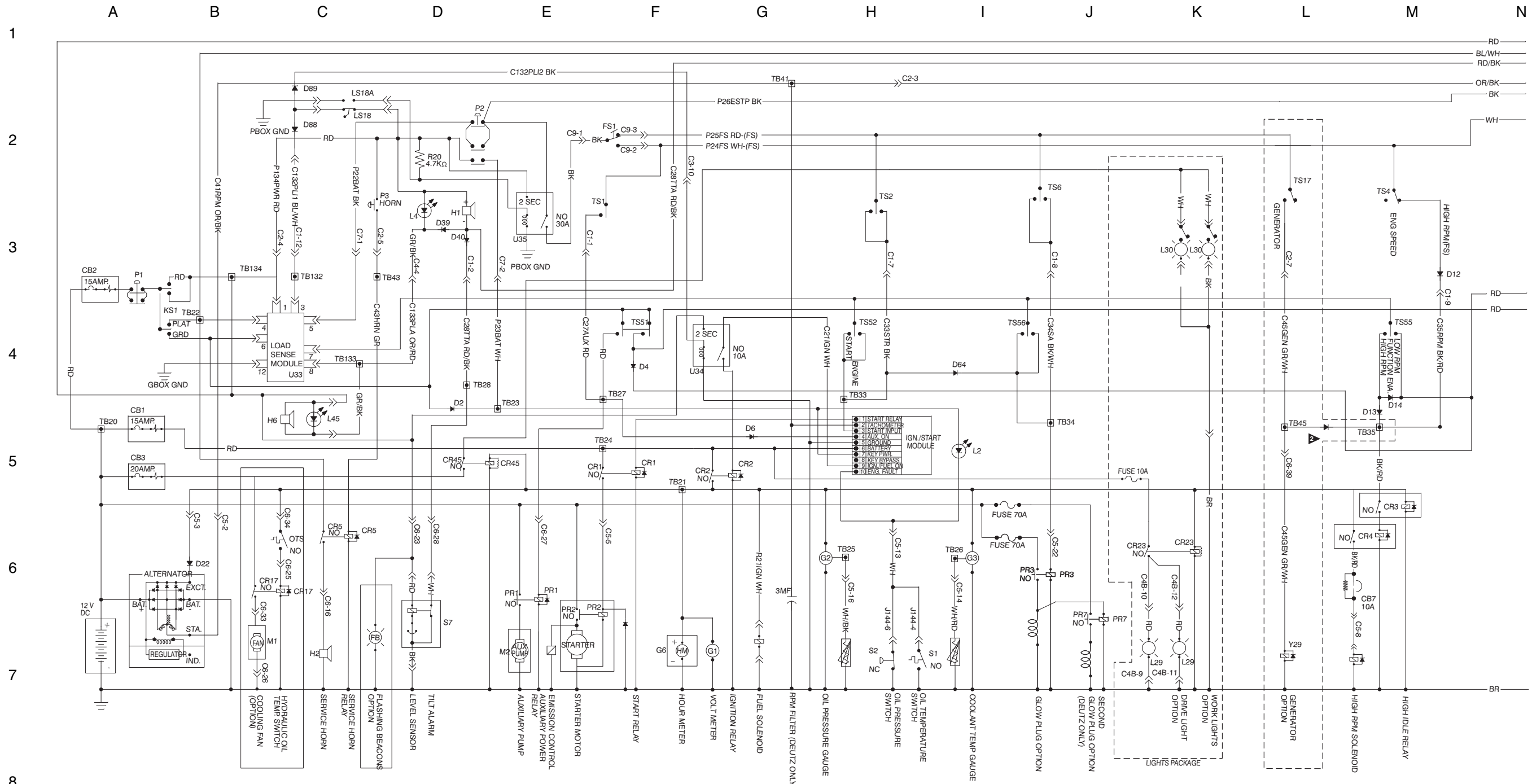
Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **CE**
(from serial number 16420)



Electrical Schematic

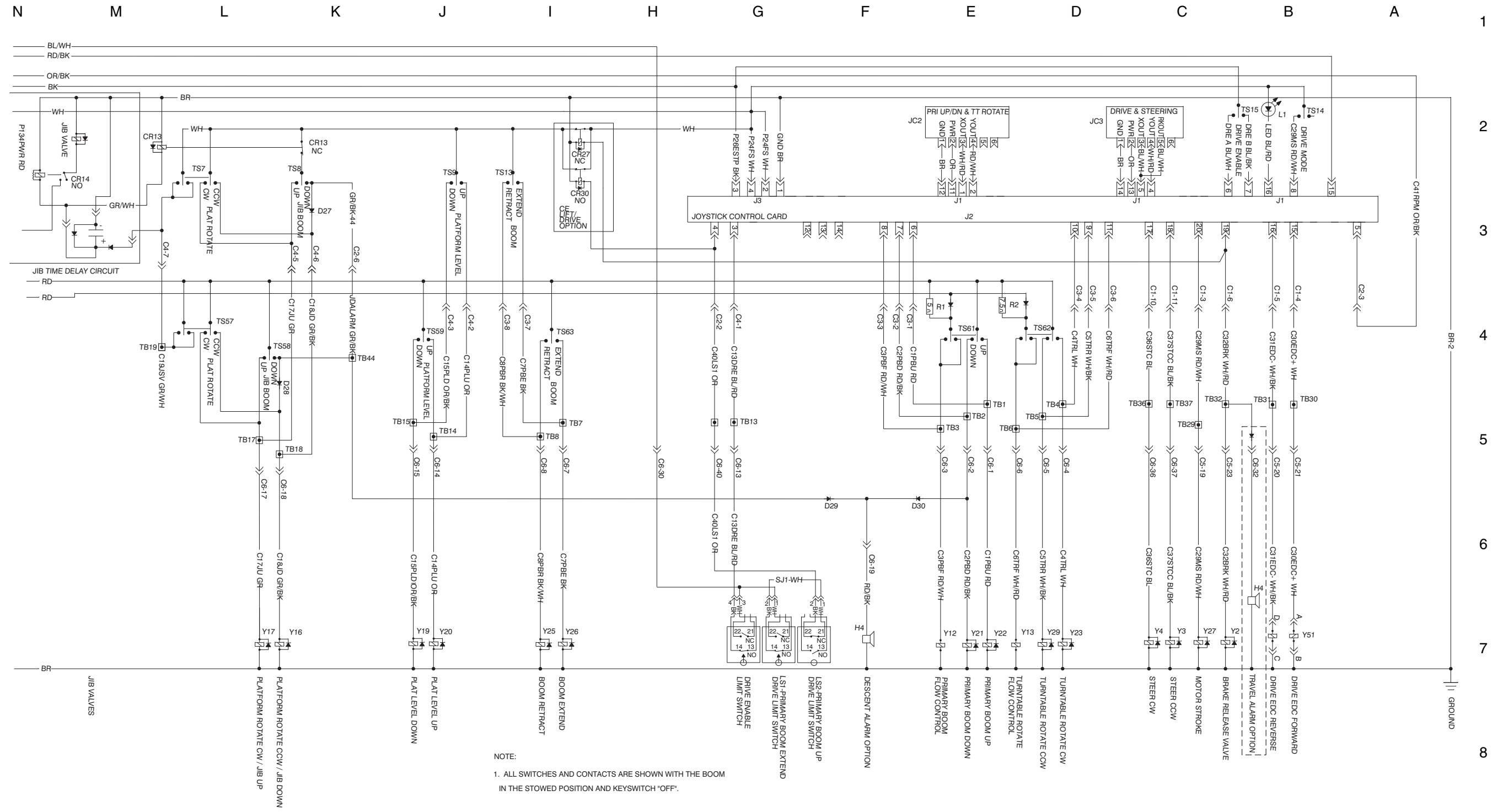
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - CE

(from serial number 16420)



NOTE:
 1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 ▲ DIODE BETWEEN TB35 AND TB45 ADDED AT SERIAL NUMBER 16453

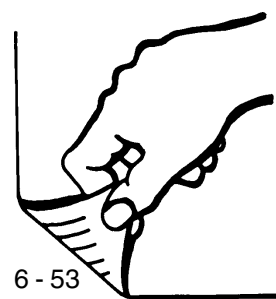
Electrical Schematic
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - CE
(from serial number 16420)



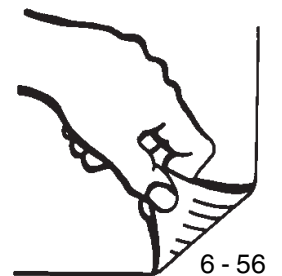
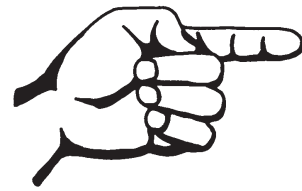
NOTE:
1. ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM
IN THE STOWED POSITION AND KEYSWITCH "OFF".

Electrical Schematic

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models - **CE**
(from serial number 16420)

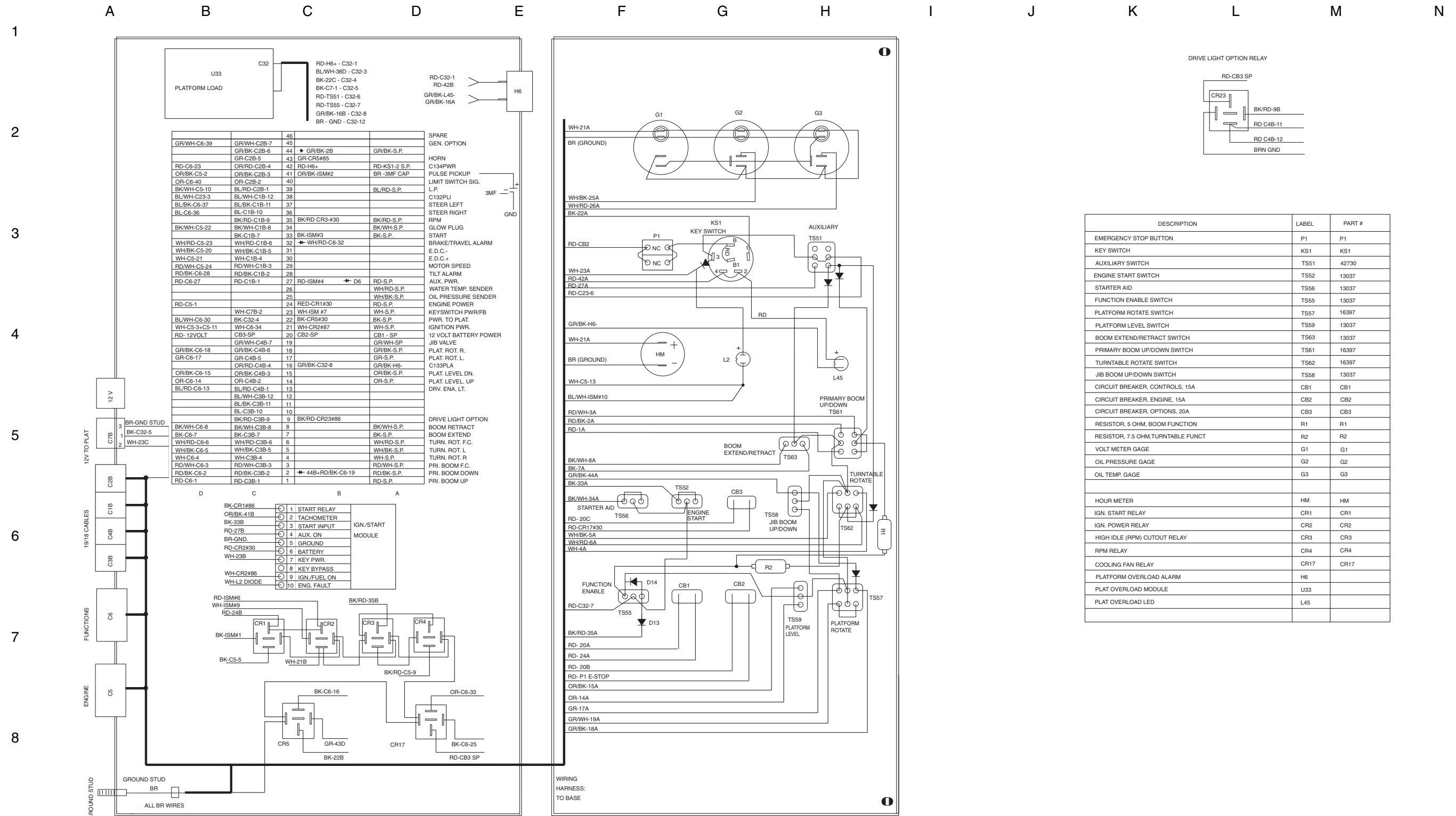


Ground Control Box Wiring Diagram
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(before serial number 14832)



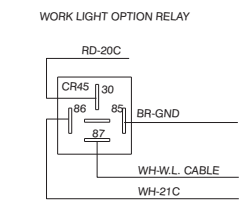
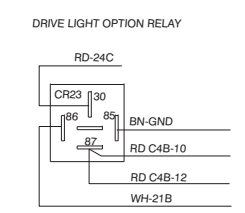
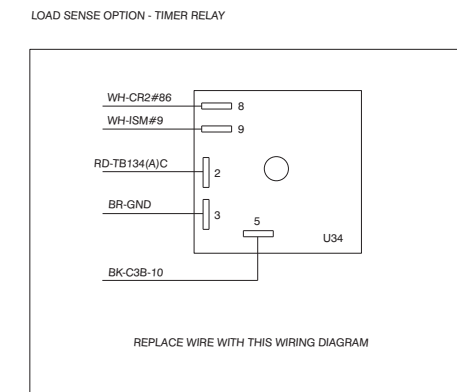
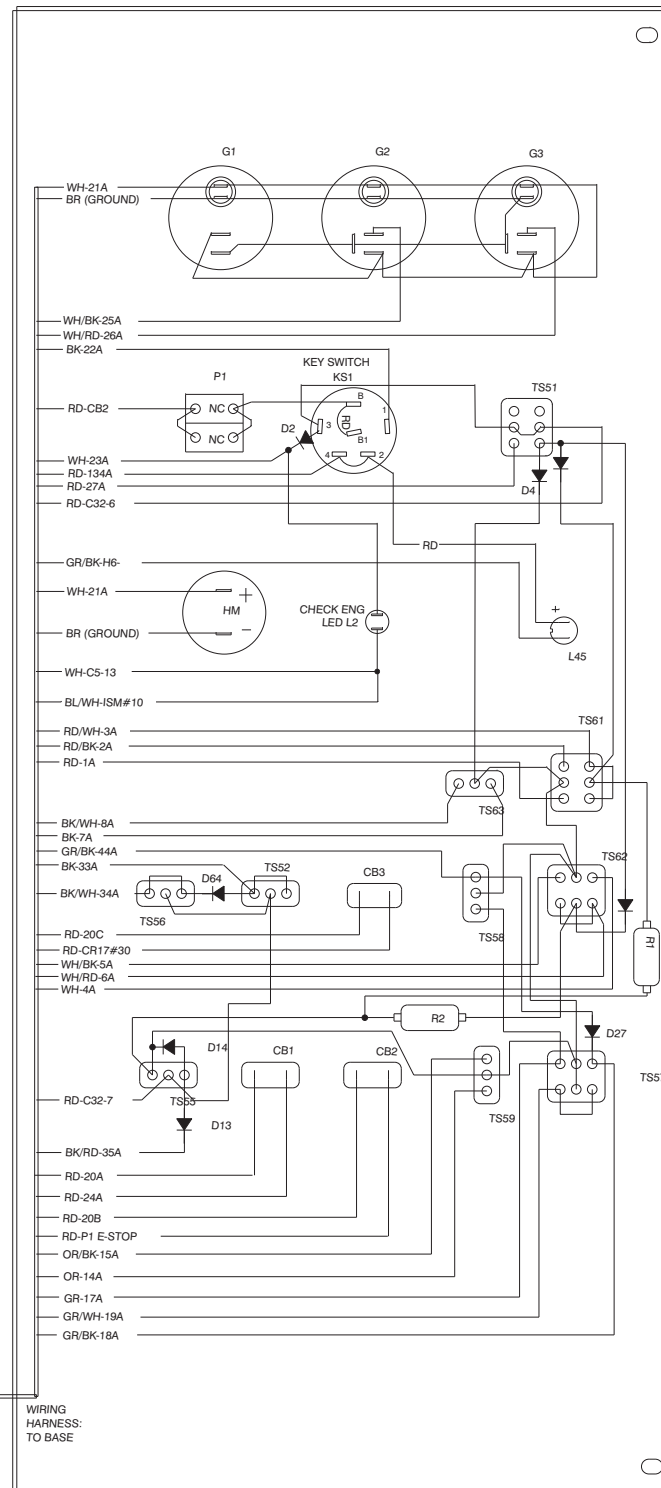
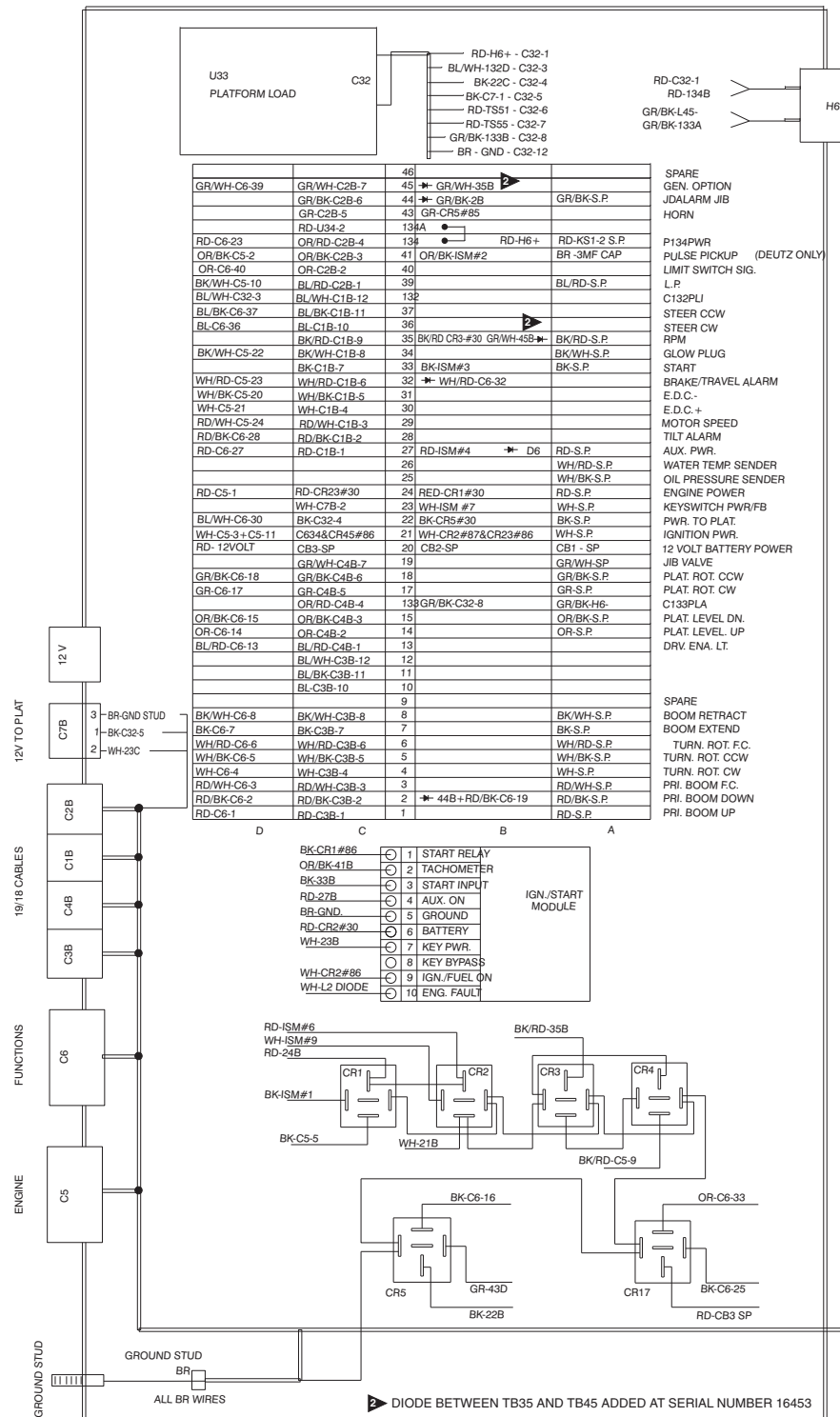
Ground Control Box Wiring Diagram

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(before serial number 14832)



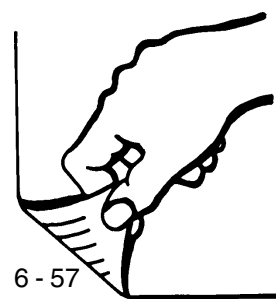
Ground Control Box Wiring Diagram Deutz D2011L03i and Perkins 404-22 Models (from serial number 14832)

N M L K J I H G F E D C B A 1

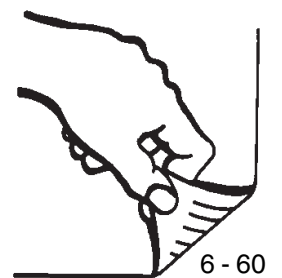
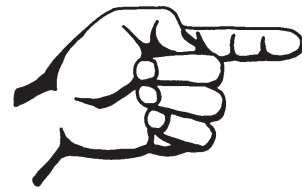


DESCRIPTION	LABEL
EMERGENCY STOP BUTTON	P1
KEY SWITCH	KS1
AUXILIARY SWITCH	TS51
ENGINE START SWITCH	TS52
STARTER AID	TS56
FUNCTION ENABLE	TS55
PLATFORM ROTATE SWITCH	TS57
PLATFORM LEVEL SWITCH	TS59
BOOM EXTEND/RETRACT SWITCH	TS63
PRIMARY BOOM UP/DOWN SWITCH	TS61
TURNTABLE ROTATE SWITCH	TS62
JIB BOOM UP/DOWN SWITCH	TS58
CIRCUIT BREAKER, CONTROLS, 15A	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCT	R2
VOLT METER GAGE	G1
OIL PRESSURE GAGE	G2
OIL TEMP. GAGE	G3
CHECK ENG LED	L2
HOUR METER	HM
IGN. START RELAY	CR1
IGN. POWER RELAY	CR2
HIGH IDLE (RPM) CUTOUT RELAY	CR3
RPM RELAY	CR4
HORN RELAY	CR5
COOLING FAN RELAY	CR17
PLATFORM OVERLOAD ALARM	H6
PLAT OVERLOAD MODULE	U33
LOAD SENSE TIME DELAY RELAY (10A)	U34
PLAT OVERLOAD LED	L45

Ground Control Box Wiring Diagram
Deutz D2011L03i and Perkins 404-22 Models
(from serial number 14832)

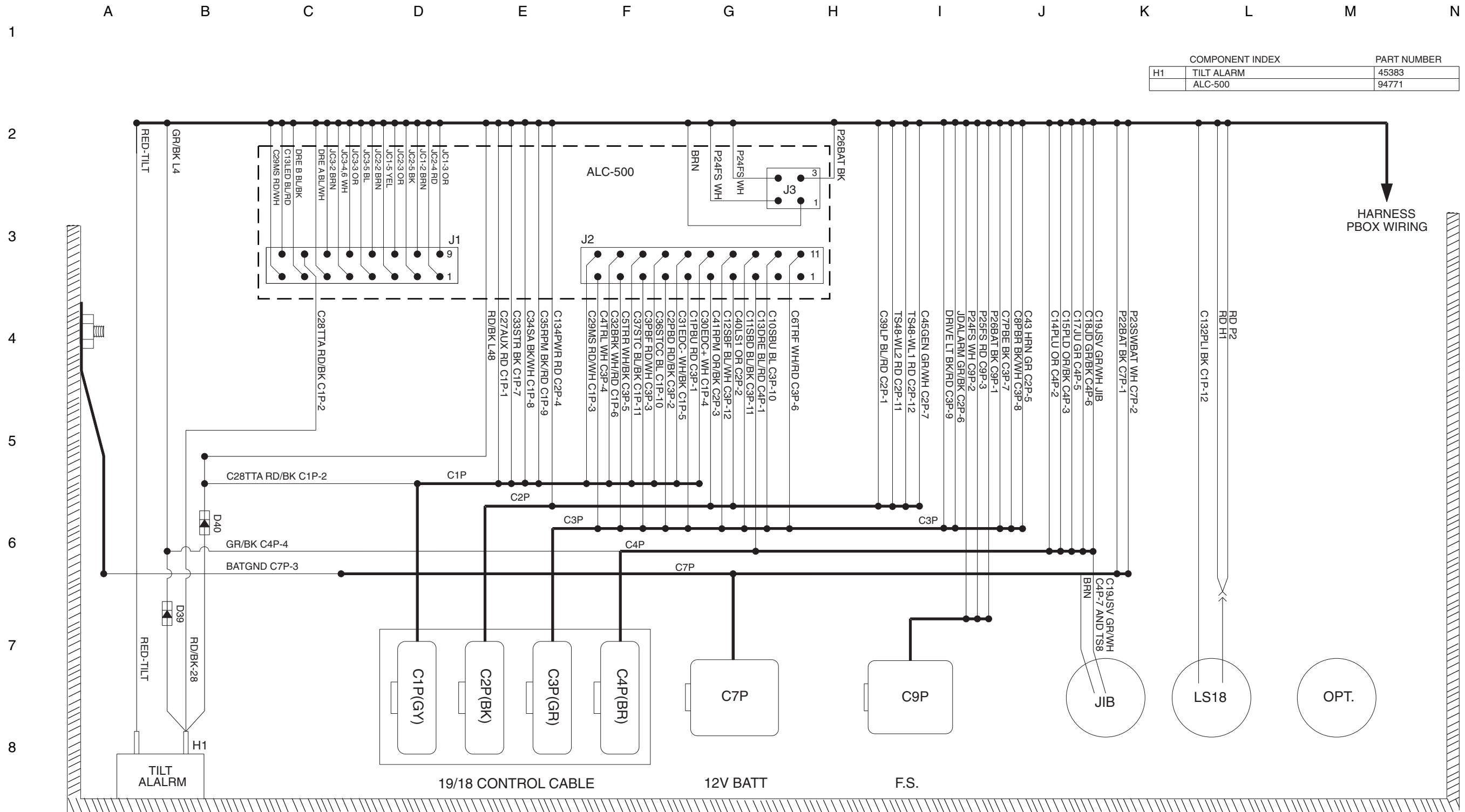


Platform Control Box Wiring Diagram
Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(before serial number 14832)



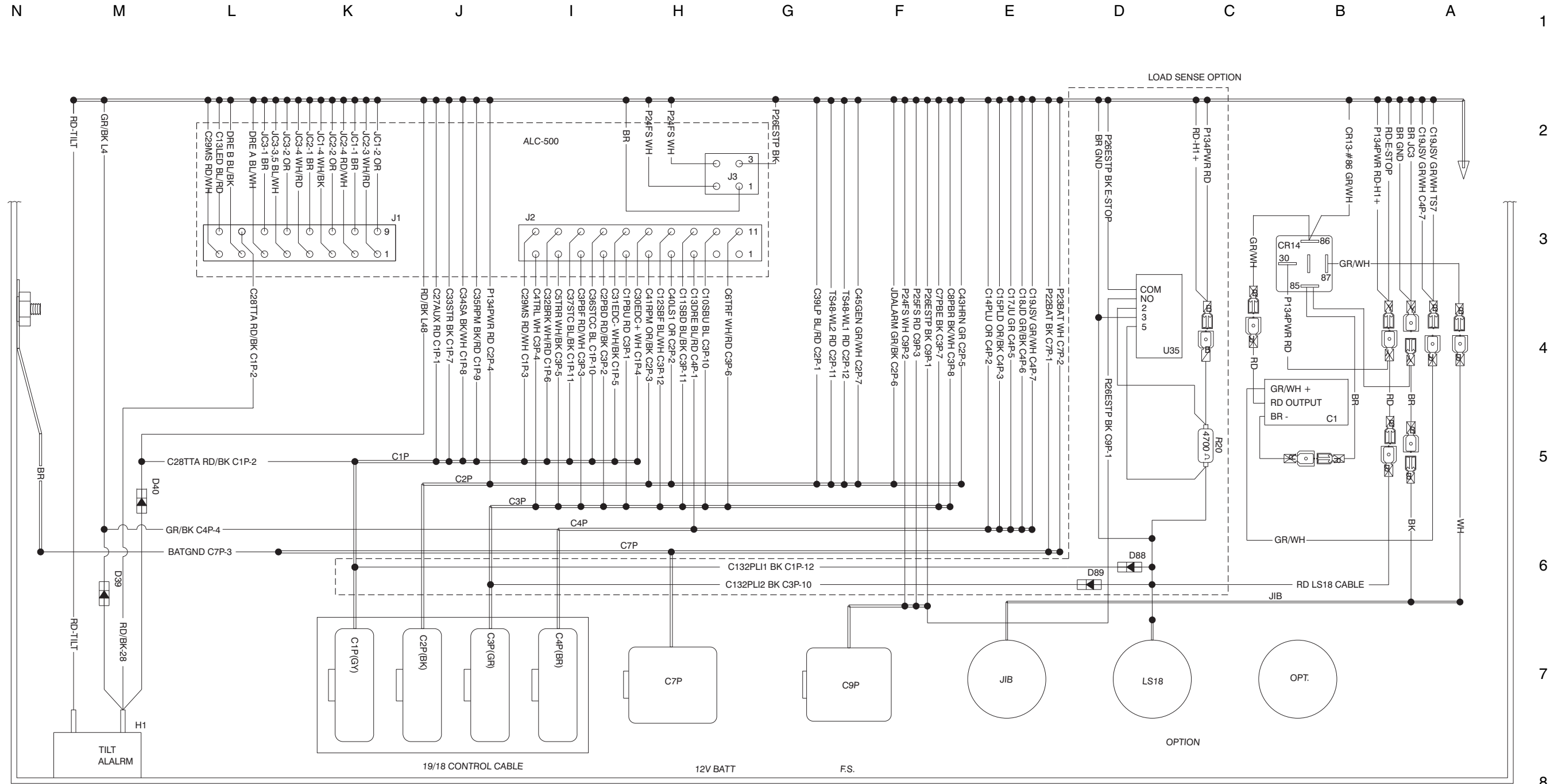
Platform Control Box Wiring Diagram- ALC-500

Deutz F3L-2011/Deutz D2011L03i and Perkins 404-22 Models
(before serial number 14832)



Platform Control Box Wiring Diagram- ALC-500

Deutz D2011L03i and Perkins 404-22 Models
(from serial number 14832)



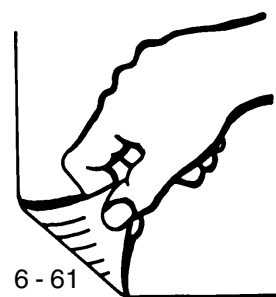
COMPONENT INDEX

H1	TILT ALARM
C1	JIB TIME DELAY
CR14	JIB DELAY RELAY
U35	LOAD SENSE TIME DELAY RELAY (30A)

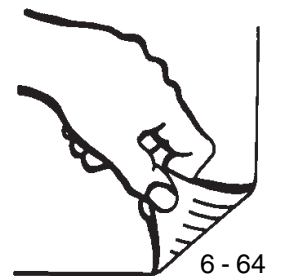
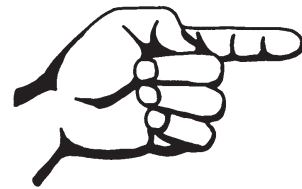
Platform Control Box Wiring Diagram- ALC-500

Deutz D2011L03i and Perkins 404-22 Models

(from serial number 14832)

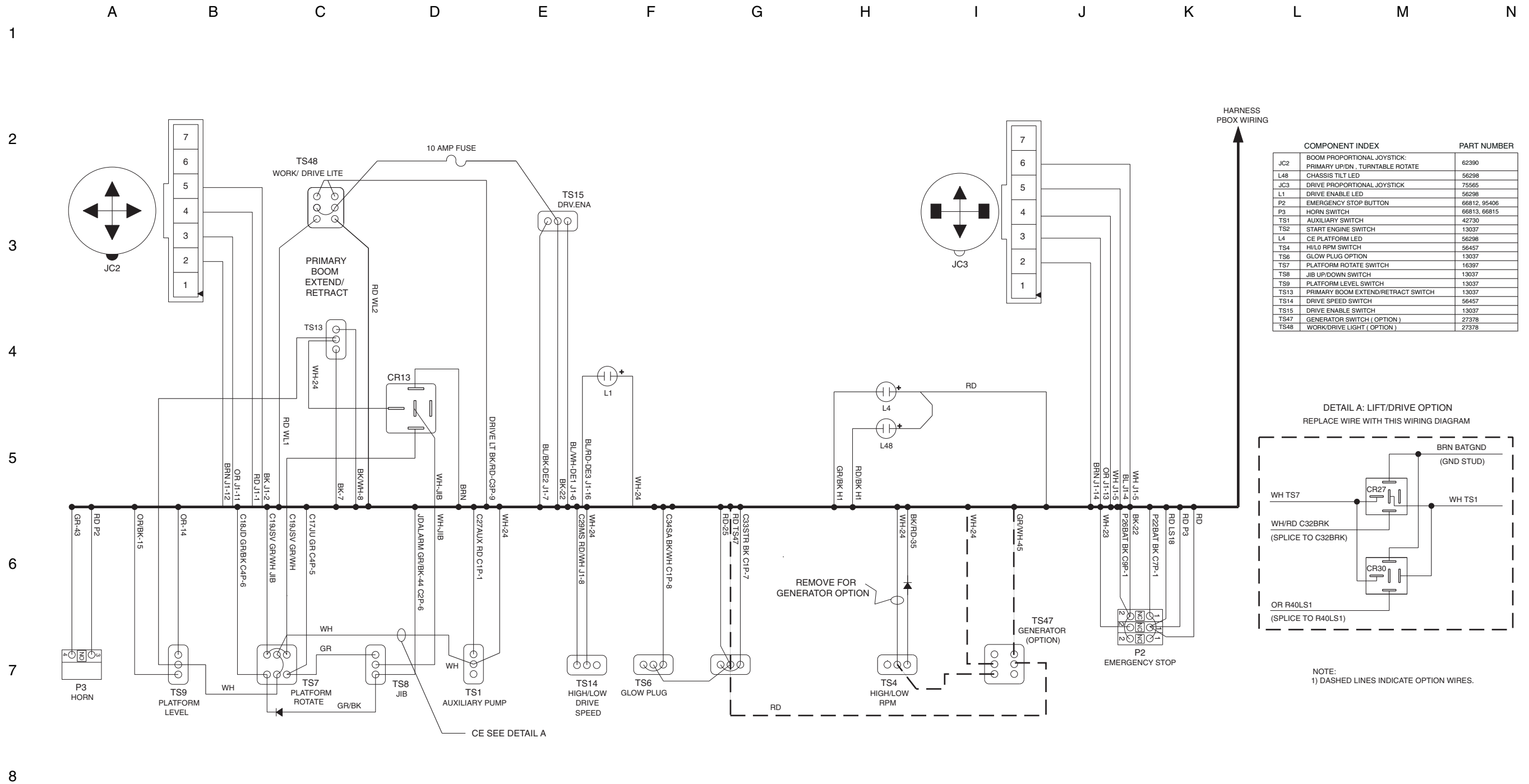


Platform Control Box Switch Panel Wiring Diagram
Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)
Perkins 404-22 Models (from serial number 7472 to 12509)

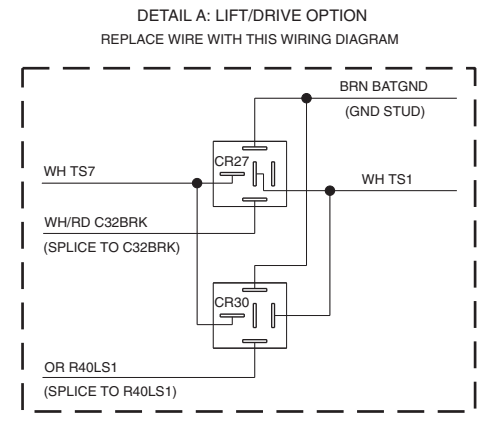


Platform Control Box Switch Panel Wiring Diagram

Deutz F3L-2011/Deutz D2011L03i (from serial number 7544 to 12509)
Perkins 404-22 Models (from serial number 7472 to 12509)



COMPONENT INDEX	PART NUMBER	
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNABLE ROTATE	62390
L48	CHASSIS TILT LED	56298
JC3	DRIVE PROPORTIONAL JOYSTICK	75565
L1	DRIVE ENABLE LED	56298
P2	EMERGENCY STOP BUTTON	66812, 95406
P3	HORN SWITCH	66813, 66815
TS1	AUXILIARY SWITCH	42730
TS2	START ENGINE SWITCH	13037
L4	CE PLATFORM LED	56298
TS4	H/L0 RPM SWITCH	56457
TS6	GLOW PLUG OPTION	13037
TS7	PLATFORM ROTATE SWITCH	16397
TS8	JIB UP/DOWN SWITCH	13037
TS9	PLATFORM LEVEL SWITCH	13037
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH	13037
TS14	DRIVE SPEED SWITCH	56457
TS15	DRIVE ENABLE SWITCH	13037
TS47	GENERATOR SWITCH (OPTION)	27378
TS48	WORK/DRIVE LIGHT (OPTION)	27378

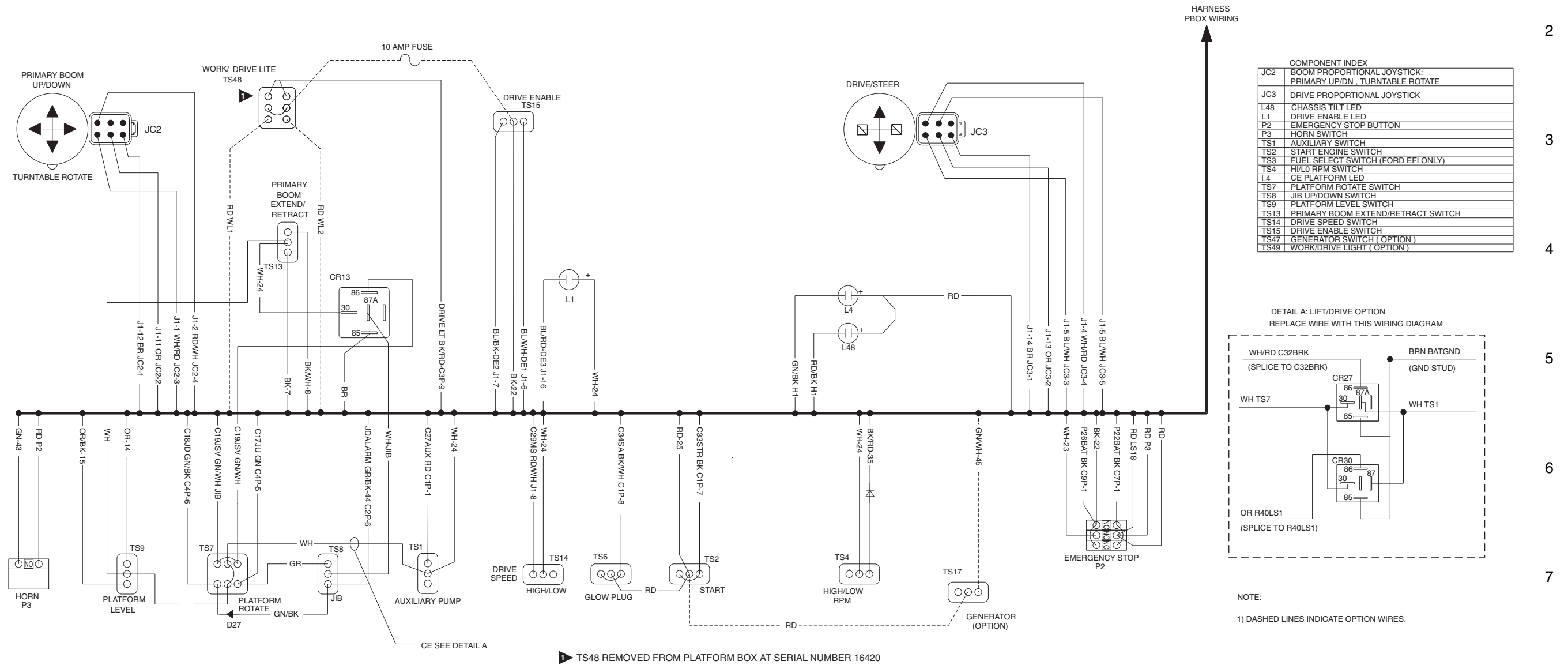


NOTE:
1) DASHED LINES INDICATE OPTION WIRES.

Platform Control Box Switch Panel Wiring Diagram

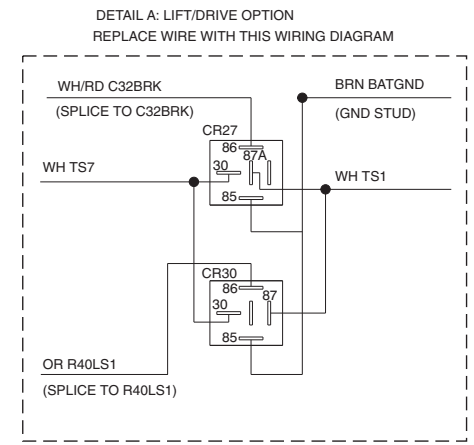
Deutz D2011L03i and Perkins 404-22 Models
(from serial number 12510)

N M L K J I H G F E D C B A 1



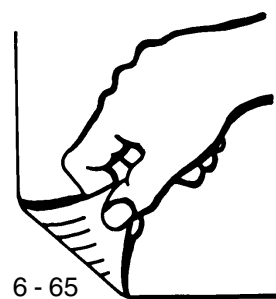
COMPONENT INDEX

JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNTABLE ROTATE
JC3	DRIVE PROPORTIONAL JOYSTICK
L48	CHASSIS TILT LED
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	CE PLATFORM LED
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
TS47	GENERATOR SWITCH (OPTION)
TS49	WORK/DRIVE LIGHT (OPTION)

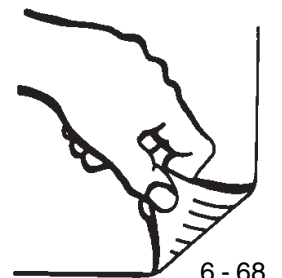
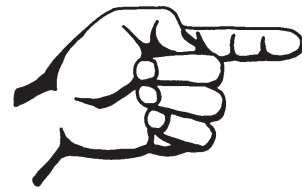


Platform Control Box Switch Panel Wiring Diagram

Deutz D2011L03i and Perkins 404-22 Models
(from serial number 12510)

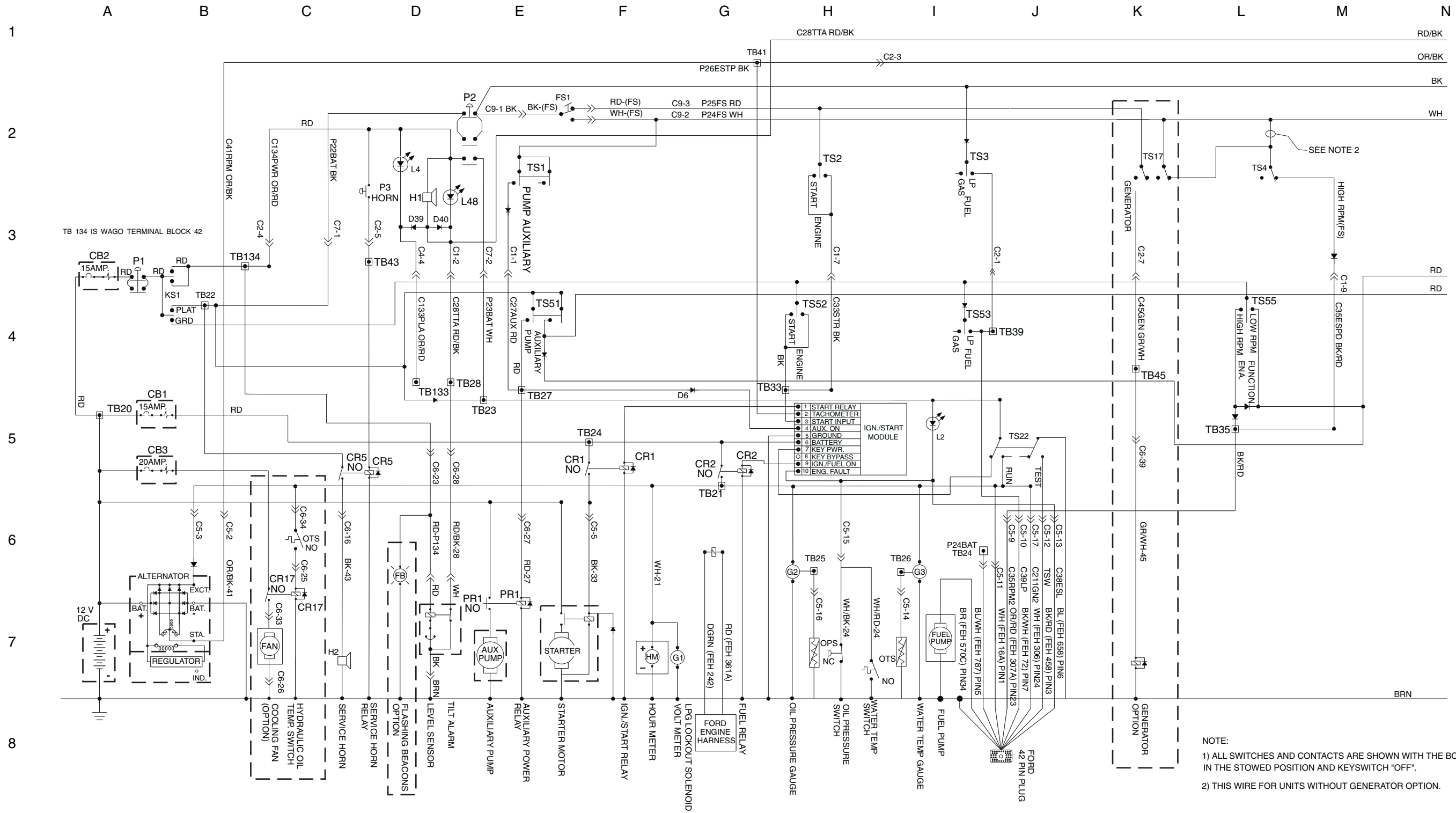


Electrical Schematic
Ford LRG-425 EFI Models
(before serial number 7597)



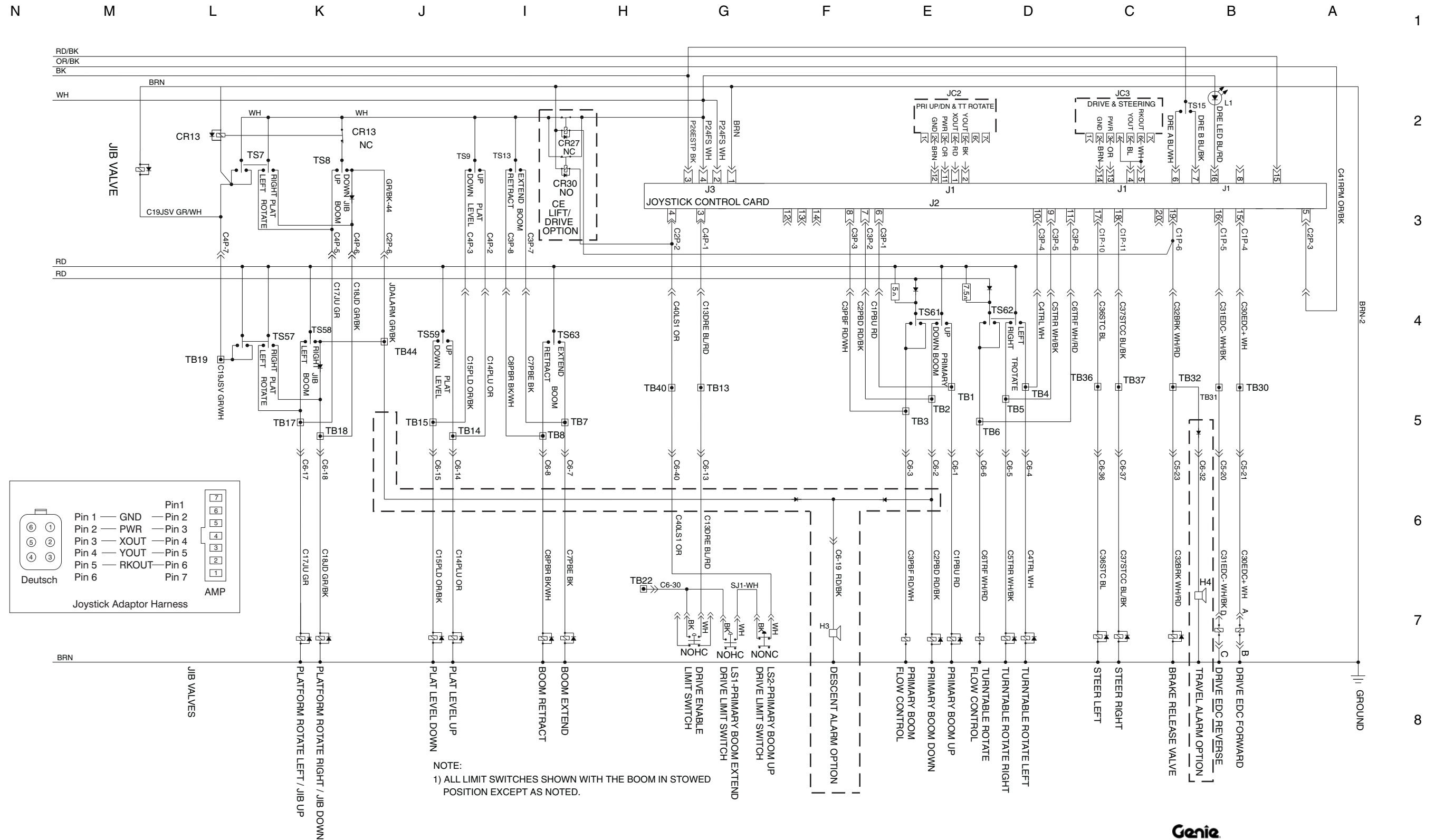
Electrical Schematic

Ford LRG-425 EFI Models
(before serial number 7597)

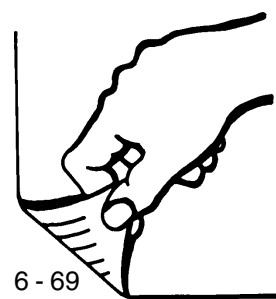


NOTE:
 1) ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 2) THIS WIRE FOR UNITS WITHOUT GENERATOR OPTION.

Electrical Schematic Ford LRG-425 EFI Models (before serial number 7597)



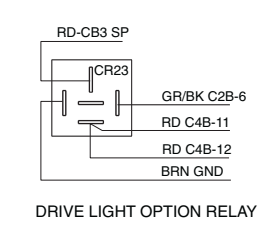
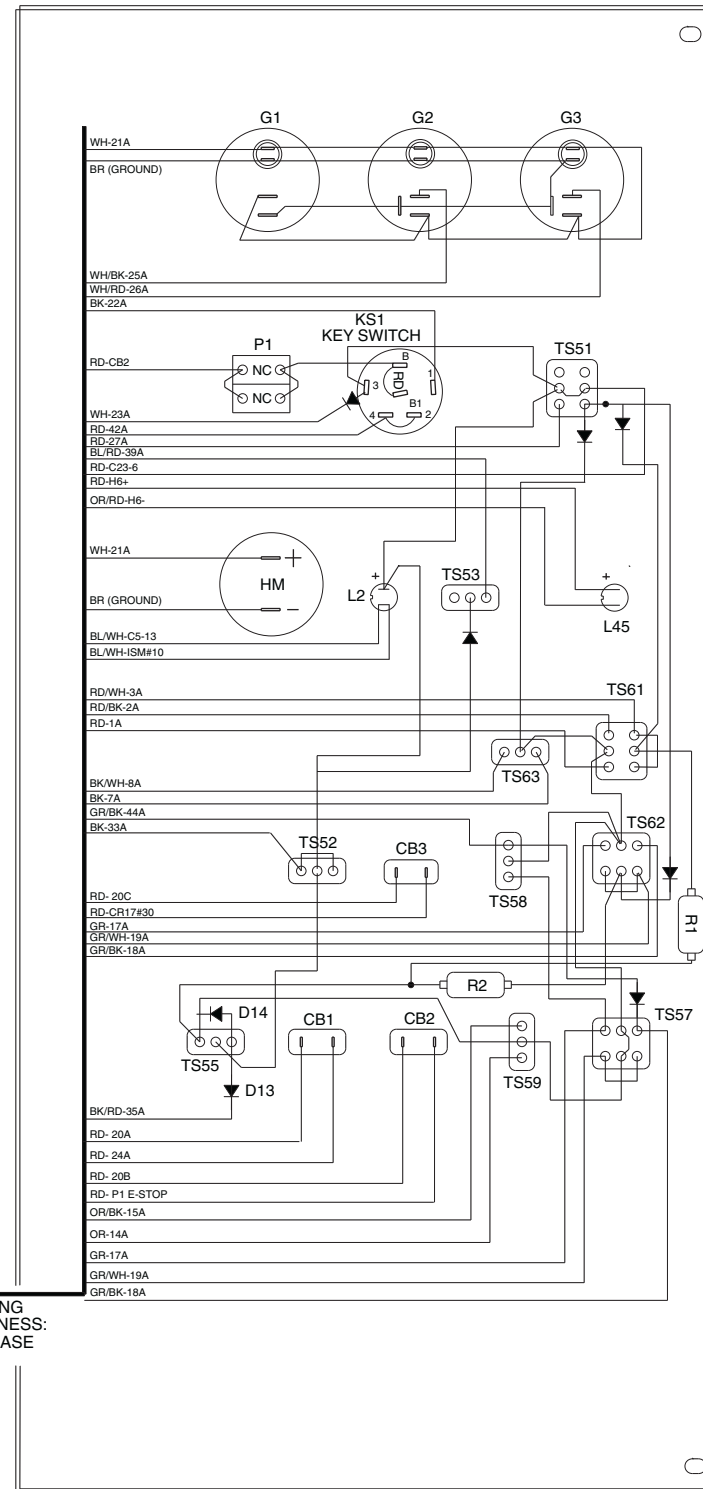
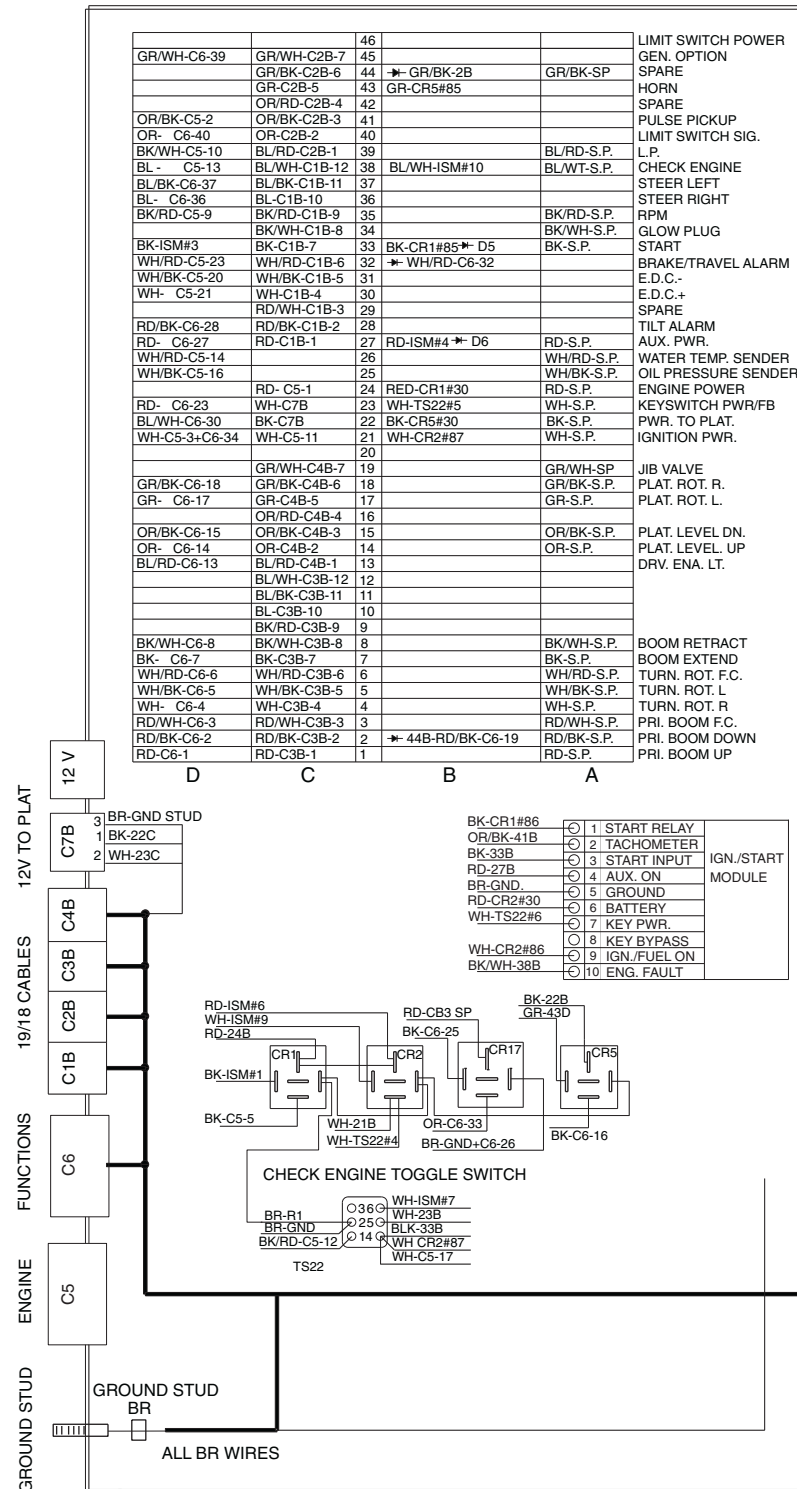
Electrical Schematic
Ford LRG-425 EFI Models
(before serial number 7597)



Ground Control Box Wiring Diagram

Ford LRG-425 EFI Models (before serial number 7597)

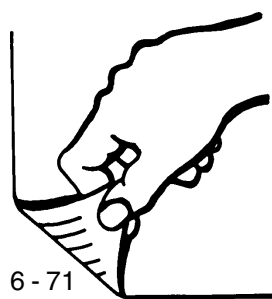
N M L K J I H G F E D C B A 1



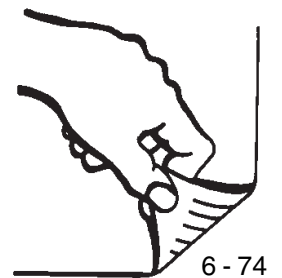
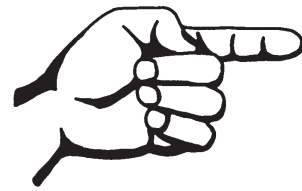
DESCRIPTION	LABEL	PART #
EMERGENCY STOP BUTTON	P1	P1
KEY SWITCH	KS1	KS1
AUXILIARY SWITCH	TS51	42730
ENGINE START SWITCH	TS52	13037
LP/GAS SWITCH	TS53	56457
FUNCTION ENABLE	TS55	13037
PLATFORM ROTATE SWITCH	TS57	16397
PLATFORM LEVEL SWITCH	TS59	13037
BOOM EXTEND/RETRACT SWITCH	TS63	13037
PRIMARY BOOM UP/DOWN SWITCH	TS61	16397
TURNTABLE ROTATE SWITCH	TS62	16397
JIB BOOM UP/DOWN SWITCH	TS58	13037
CHECK ENGINE SWITCH	TS22	42730
CIRCUIT BREAKER, CONTROLS, 15A	CB1	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCT	R2	R2
VOLT METER GAGE	G1	G1
OIL PRESSURE GAGE	G2	G2
WATER TEMP. GAGE	G3	G3
CHECK ENGINE	L2	56298
HOUR METER	HM	HM

Ground Control Box Wiring Diagram

Ford LRG-425 EFI Models
(before serial number 7597)

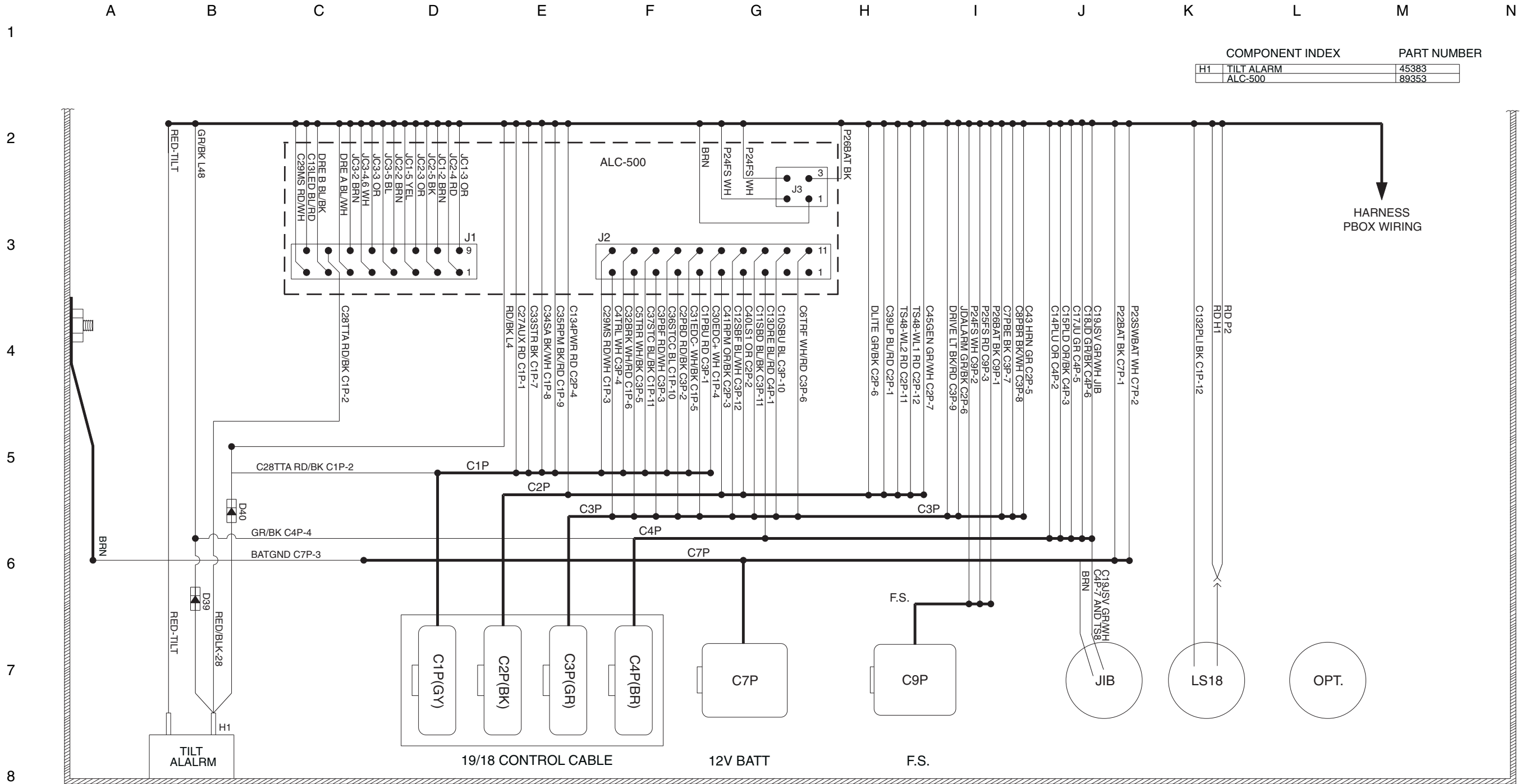


Platform Control Box Wiring Diagram
Ford LRG-425 EFI Models
(before serial number 7597)

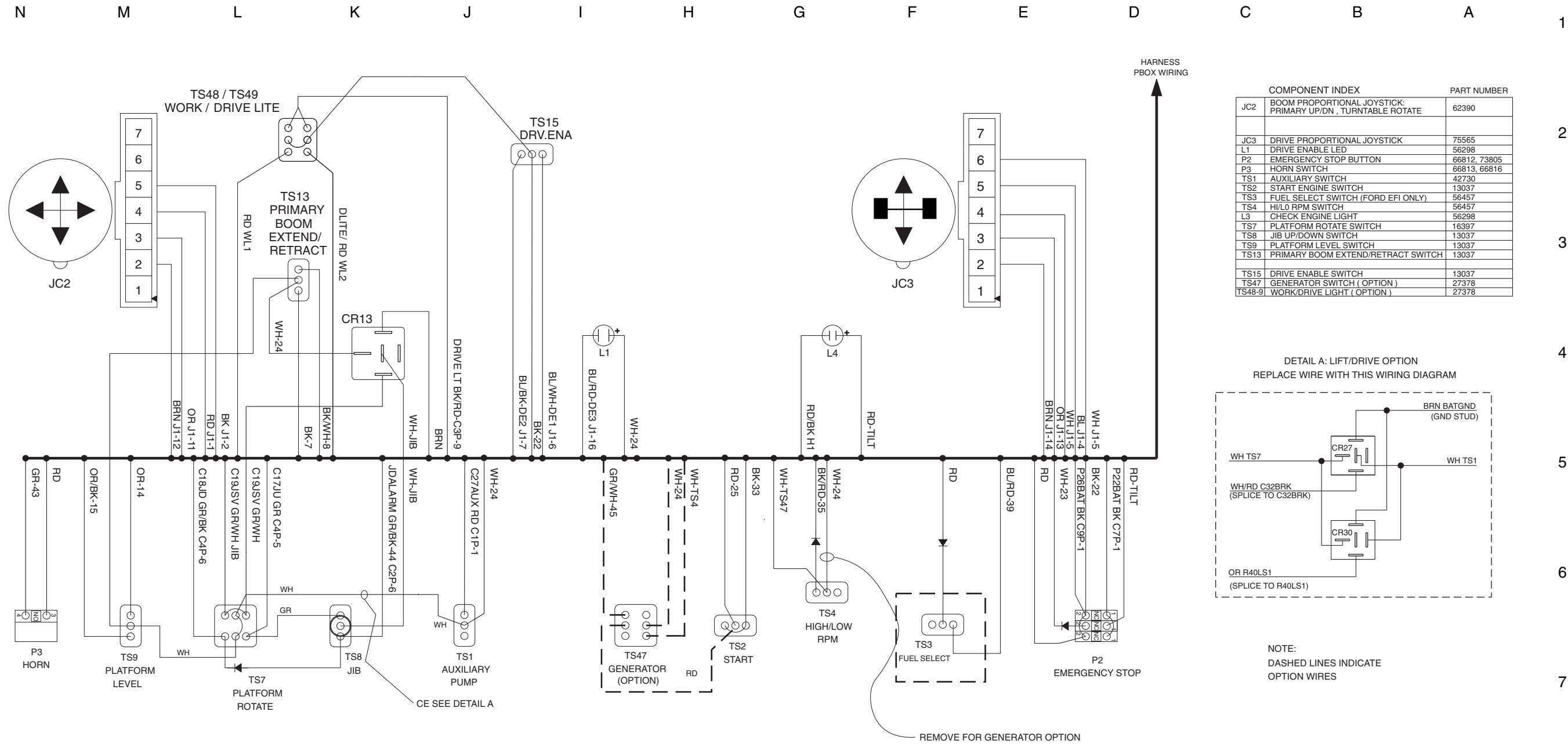


Platform Control Box Wiring Diagram

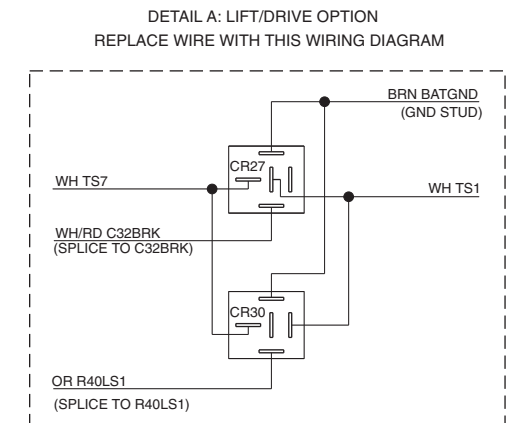
Ford LRG-425 EFI Models
(before serial number 7597)



Platform Control Box Switch Panel Wiring Diagram Ford LRG-425 EFI Models (before serial number 7597)



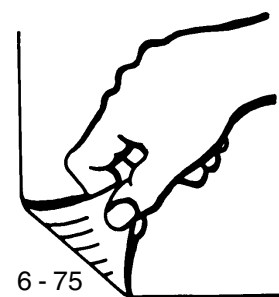
COMPONENT INDEX	PART NUMBER
JC2 BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNABLE ROTATE	62390
JC3 DRIVE PROPORTIONAL JOYSTICK	75565
L1 DRIVE ENABLE LED	56298
P2 EMERGENCY STOP BUTTON	66812, 73805
P3 HORN SWITCH	66813, 66816
TS1 AUXILIARY SWITCH	42730
TS2 START ENGINE SWITCH	13037
TS3 FUEL SELECT SWITCH (FORD EFI ONLY)	56457
TS4 HI/LO RPM SWITCH	56457
L3 CHECK ENGINE LIGHT	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
TS47 GENERATOR SWITCH (OPTION)	27378
TS48-9 WORK/DRIVE LIGHT (OPTION)	27378



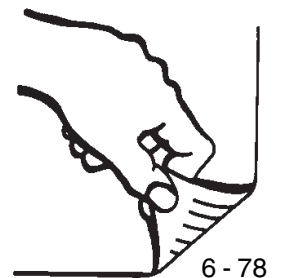
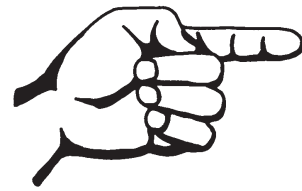
NOTE:
DASHED LINES INDICATE
OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram

Ford LRG-425 EFI Models
(before serial number 7597)

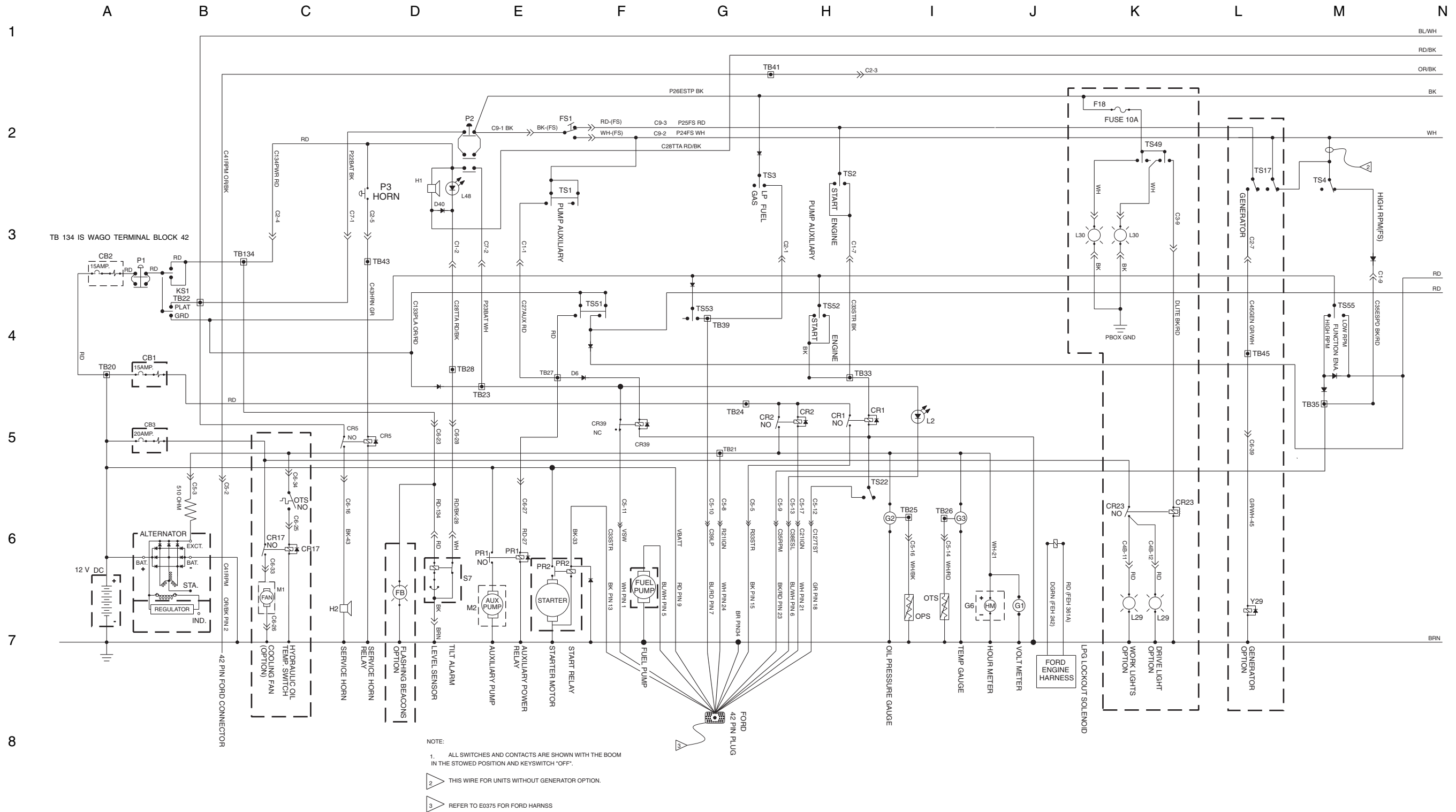


Electrical Schematic
Ford LRG-425 EFI Models
(from serial number 7597 to 11066)

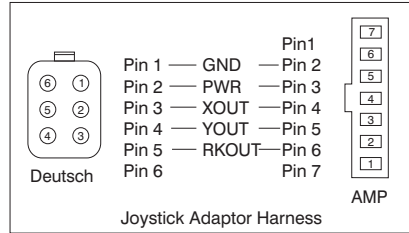
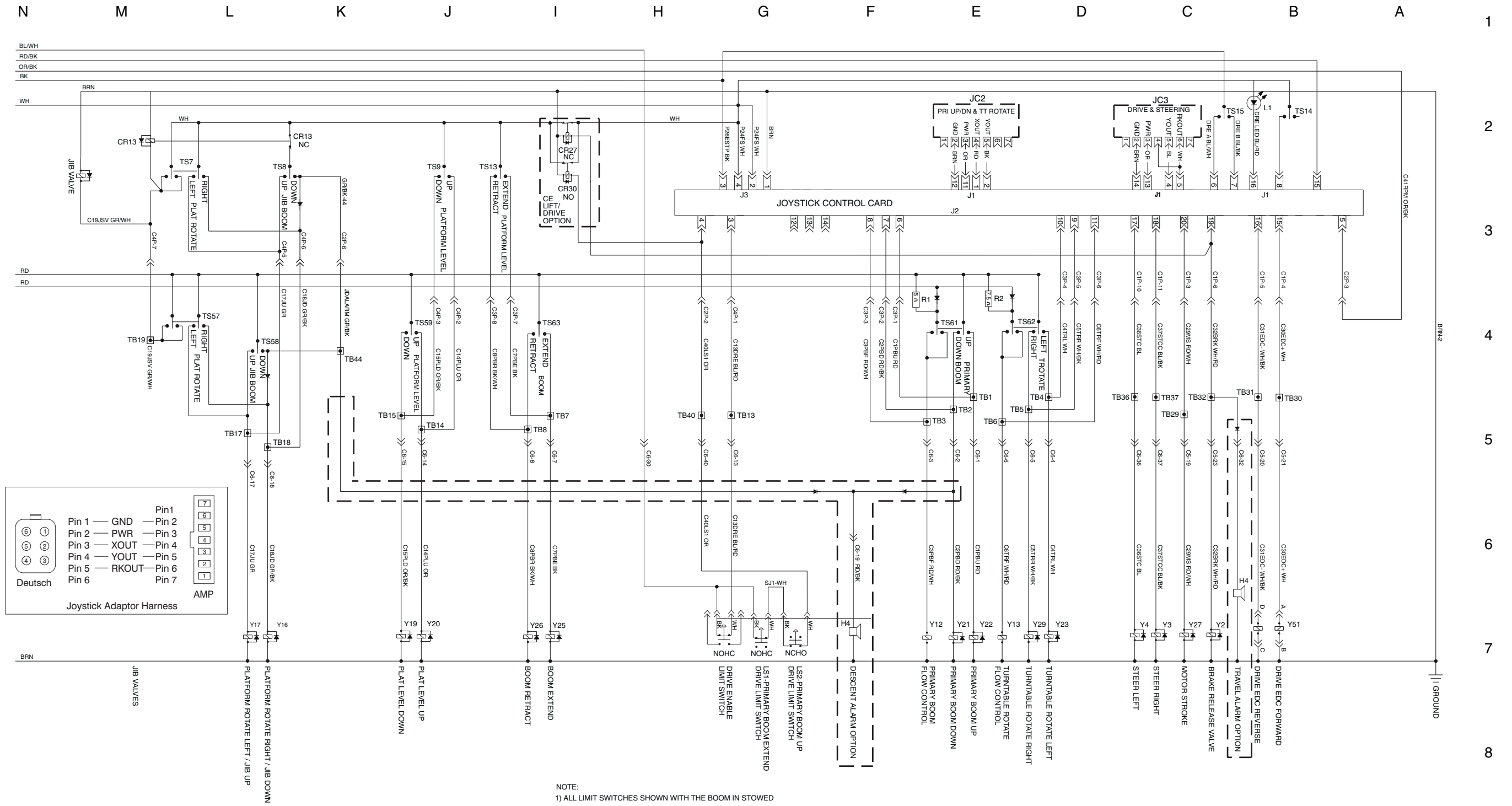


Electrical Schematic

Ford LRG-425 EFI Models
(from serial number 7597 to 11066)



Electrical Schematic
Ford LRG-425 EFI Models
 (from serial number 7597 to 11066)

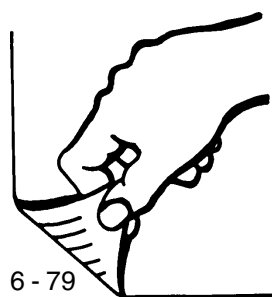


NOTE:
 1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

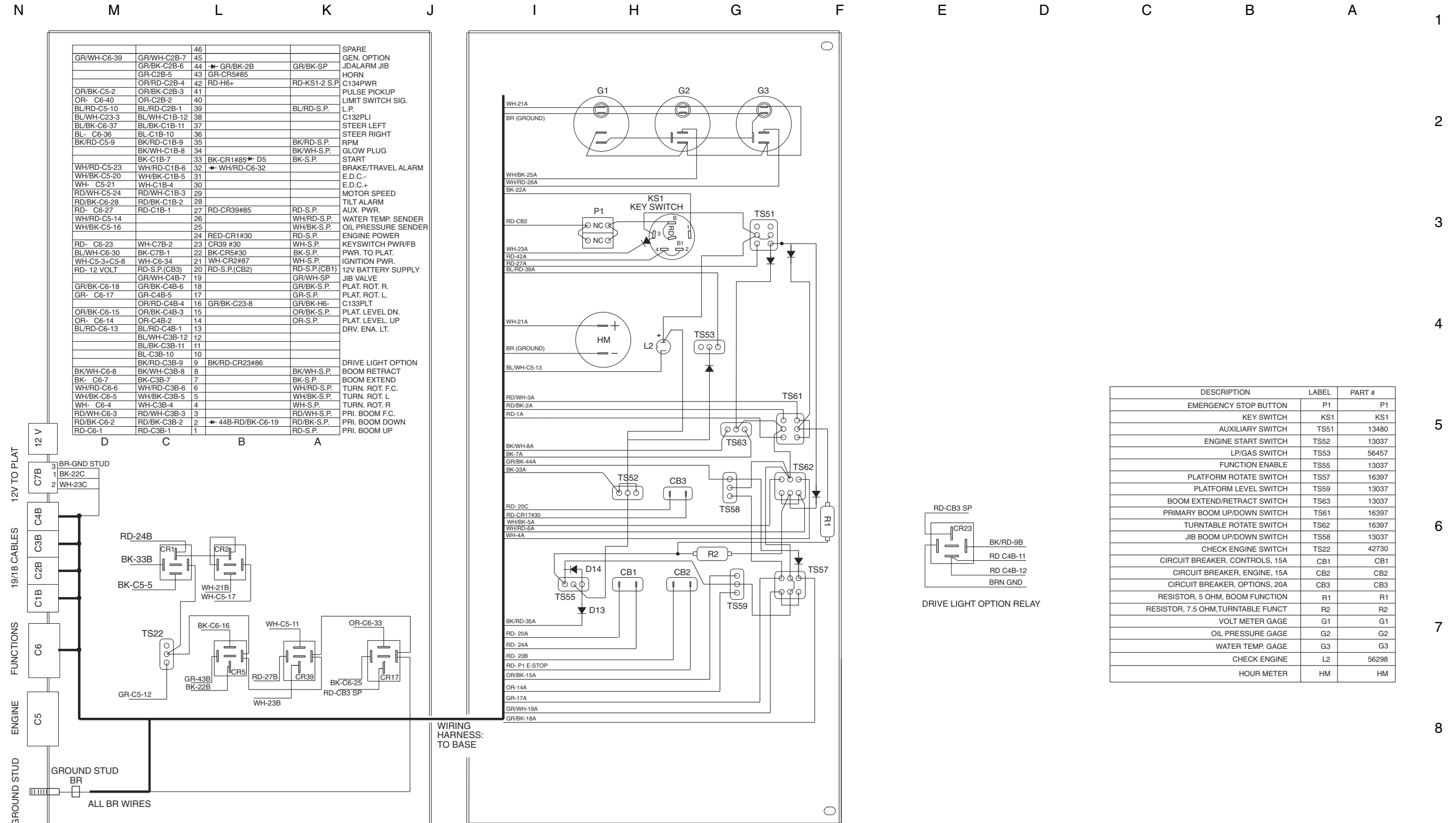
Electrical Schematic

Ford LRG-425 EFI Models

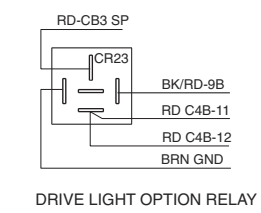
(from serial number 7597 to 11066)



Ground Control Box Wiring Diagram Ford LRG-425 EFI Models (from serial number 7597 to 11066)



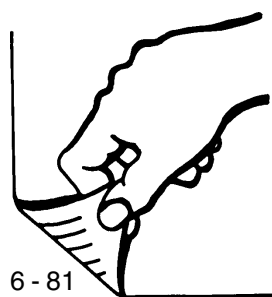
DESCRIPTION	LABEL	PART #
EMERGENCY STOP BUTTON	P1	P1
KEY SWITCH	KS1	KS1
AUXILIARY SWITCH	TS51	13480
ENGINE START SWITCH	TS52	13037
LP/GAS SWITCH	TS53	56457
FUNCTION ENABLE	TS55	13037
PLATFORM ROTATE SWITCH	TS57	16397
PLATFORM LEVEL SWITCH	TS59	13037
BOOM EXTEND/RETRACT SWITCH	TS63	13037
PRIMARY BOOM UP/DOWN SWITCH	TS61	16397
TURNTABLE ROTATE SWITCH	TS62	16397
JIB BOOM UP/DOWN SWITCH	TS58	13037
CHECK ENGINE SWITCH	TS22	42730
CIRCUIT BREAKER, CONTROLS, 15A	CB1	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCT	R2	R2
VOLT METER GAGE	G1	G1
OIL PRESSURE GAGE	G2	G2
WATER TEMP. GAGE	G3	G3
CHECK ENGINE	L2	56298
HOUR METER	HM	HM



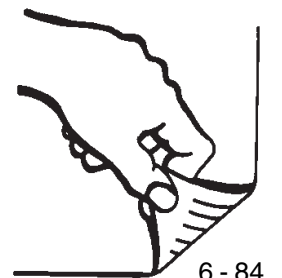
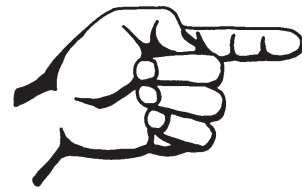
Ground Control Box Wiring Diagram

Ford LRG-425 EFI Models

(from serial number 7597 to 11066)



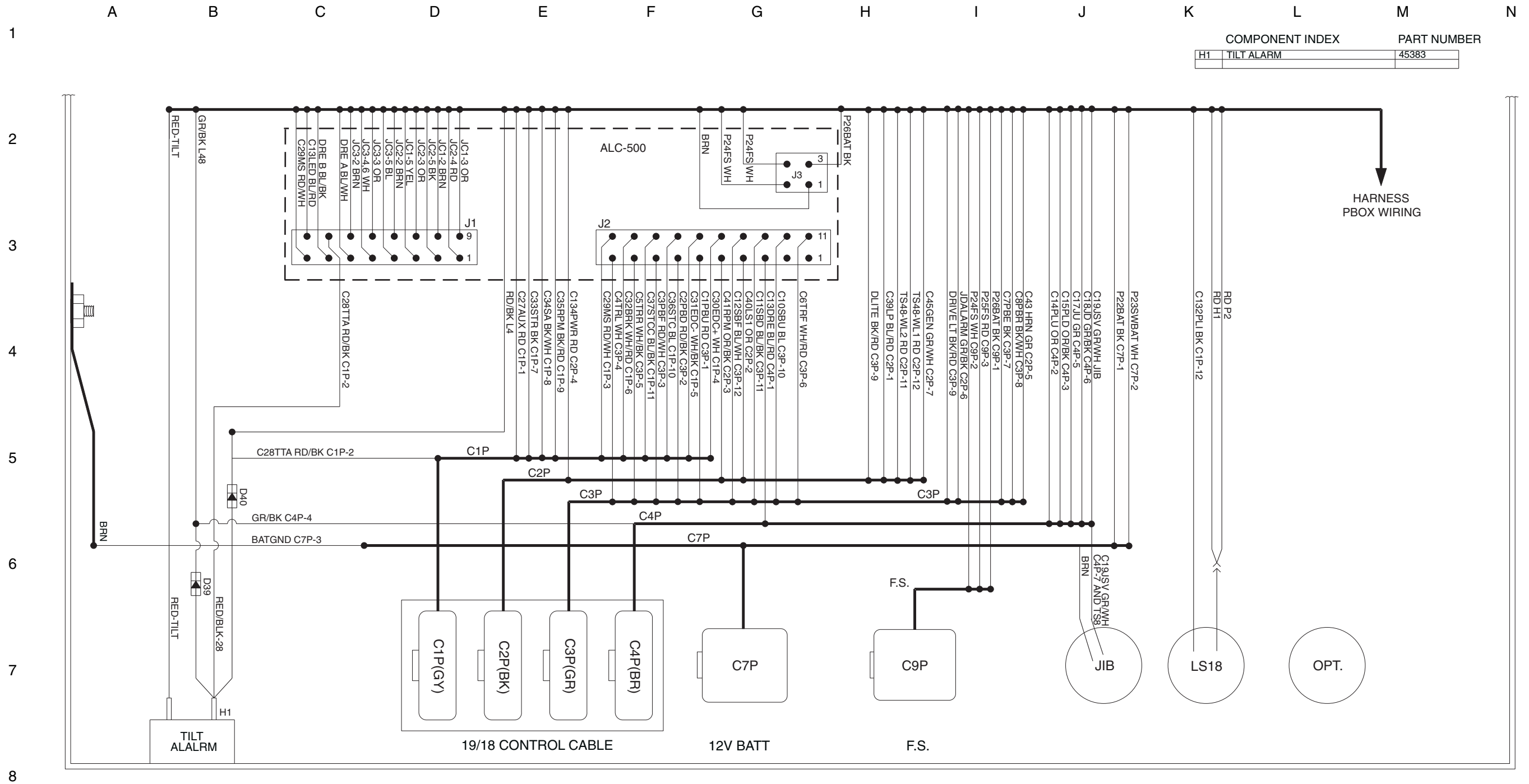
Platform Control Box Wiring Diagram
Ford LRG-425 EFI Models
(from serial number 7597 to 11066)



Platform Control Box Wiring Diagram

Ford LRG-425 EFI Models

(from serial number 7597 to 11066)

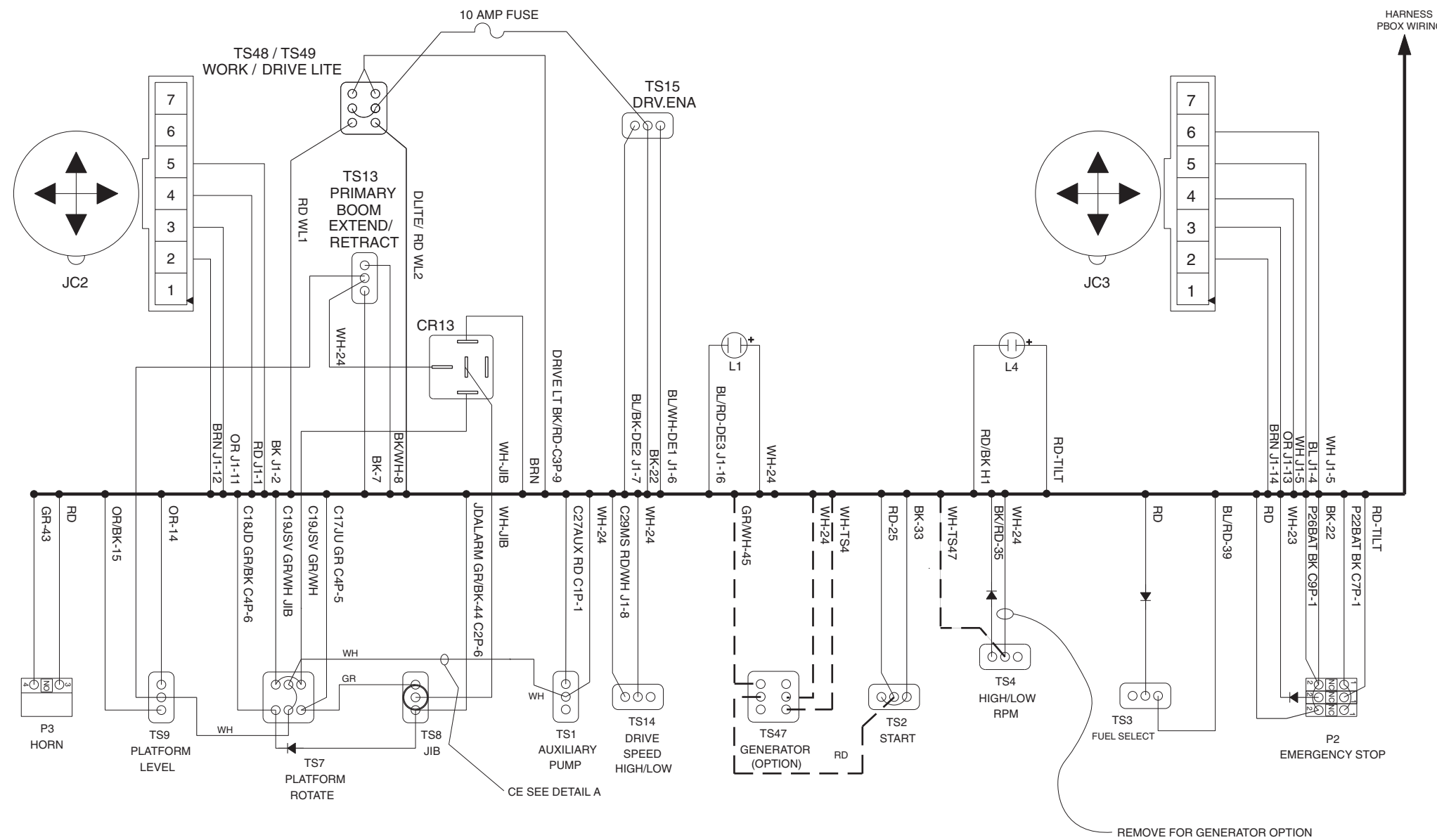


Platform Control Box Switch Panel Wiring Diagram

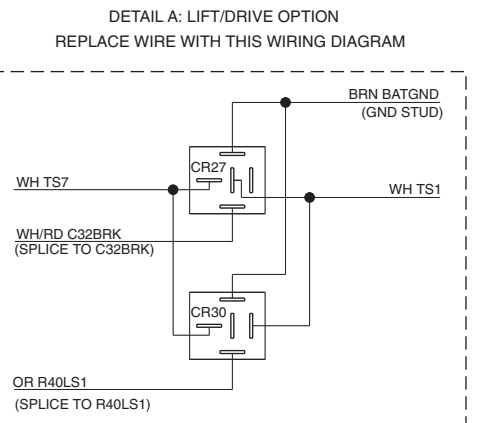
Ford LRG-425 EFI Models

(from serial number 7597 to 11066)

N M L K J I H G F E D C B A 1



COMPONENT INDEX	PART NUMBER
JC2 BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNTABLE ROTATE	62390
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/LO RPM SWITCH	56457
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
TS14 DRIVE SPEED SWITCH	56457
TS15 DRIVE ENABLE SWITCH	13037
TS47 GENERATOR SWITCH (OPTION)	27378
TS48-9 WORK/DRIVE LIGHT (OPTION)	27378

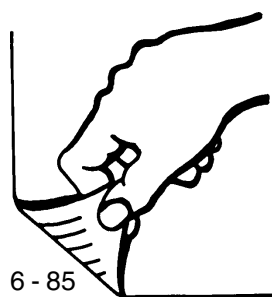


NOTE:
DASHED LINES INDICATE
OPTION WIRES

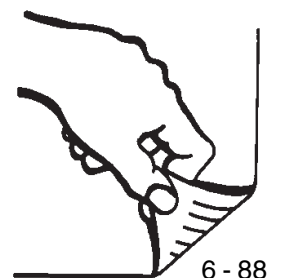
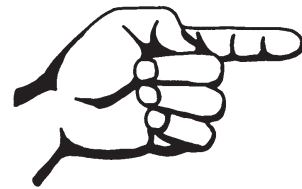
Platform Control Box Switch Panel Wiring Diagram

Ford LRG-425 EFI Models

(from serial number 7597 to 11066)



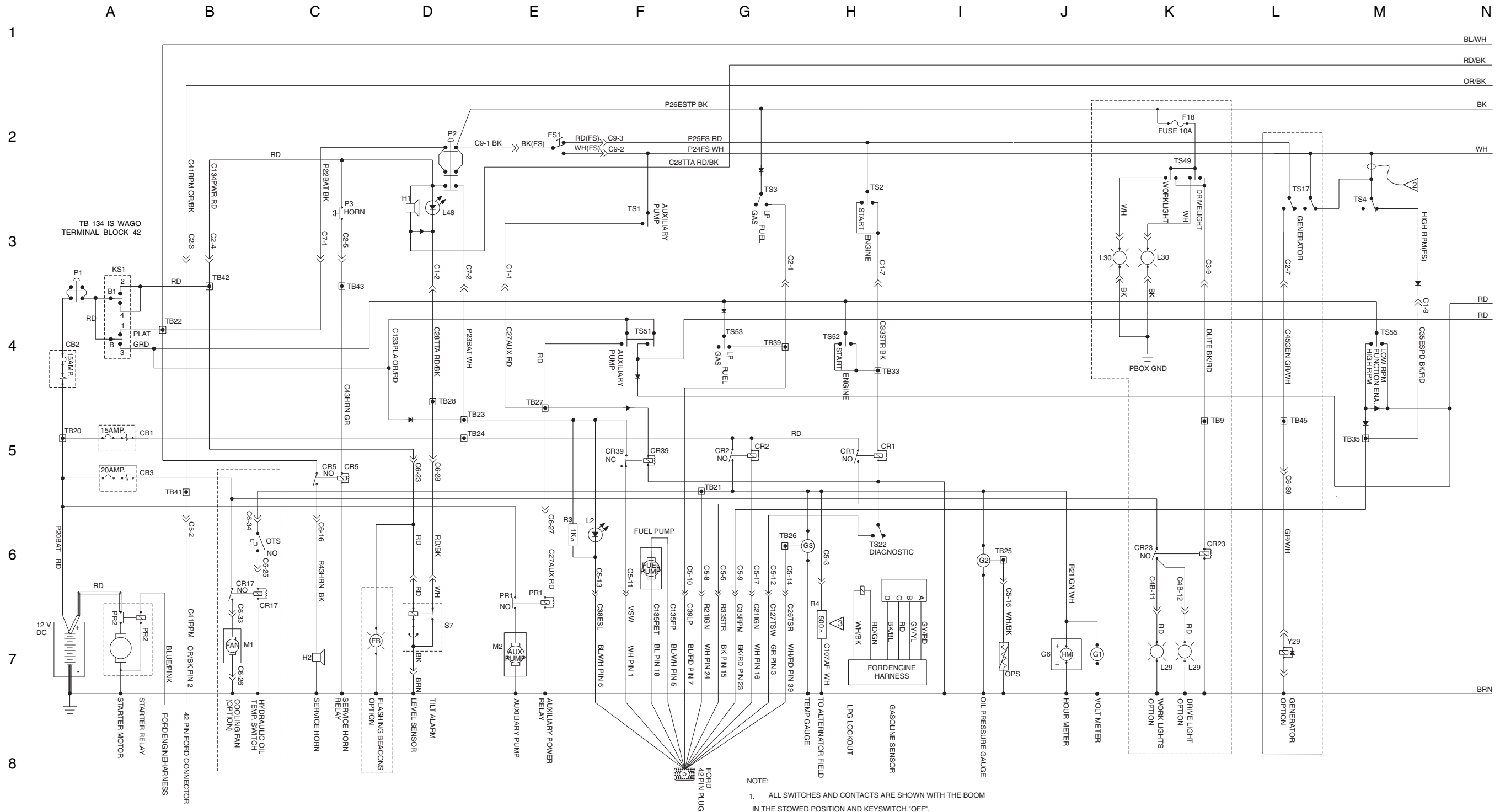
Electrical Schematic
Ford DSG-423 EFI Models
(from serial number 11067 to 12509)



Electrical Schematic

Ford DSG-423 EFI Models

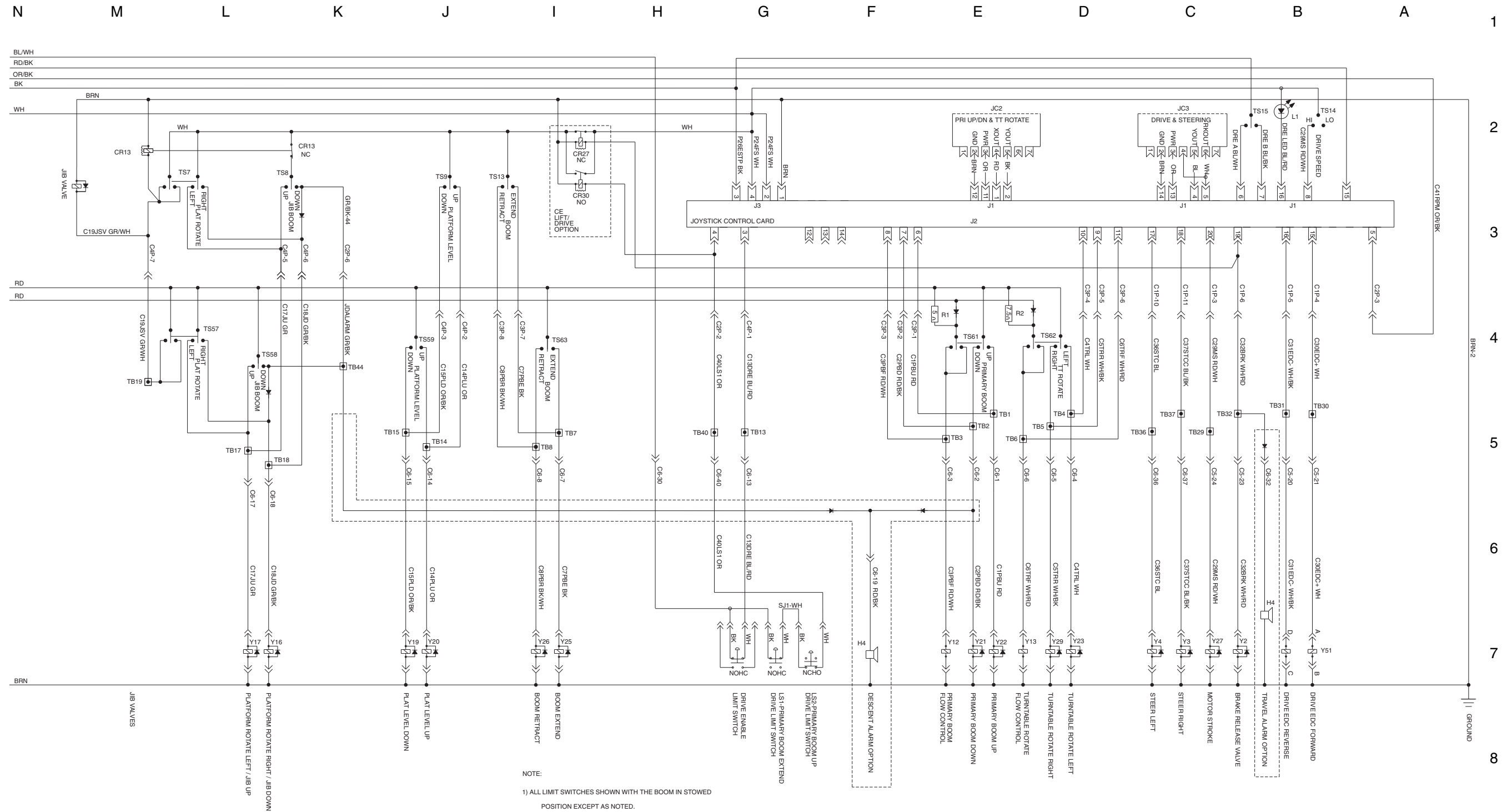
(from serial number 11067 to 12509)



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.
 3. RESISTOR R4 REMOVED AT SERIAL NUMBER 11785.

ESO433B

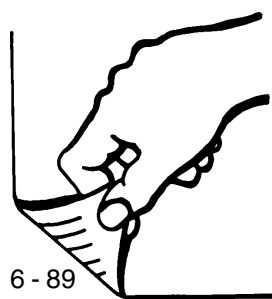
Electrical Schematic Ford DSG-423 EFI Models (from serial number 11067 to 12509)



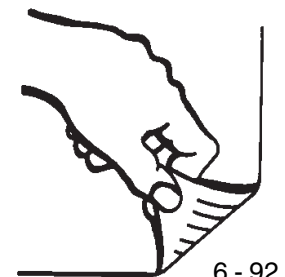
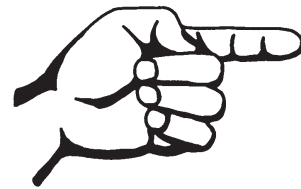
Electrical Schematic

Ford DSG-423 EFI Models

(from serial number 11067 to 12509)



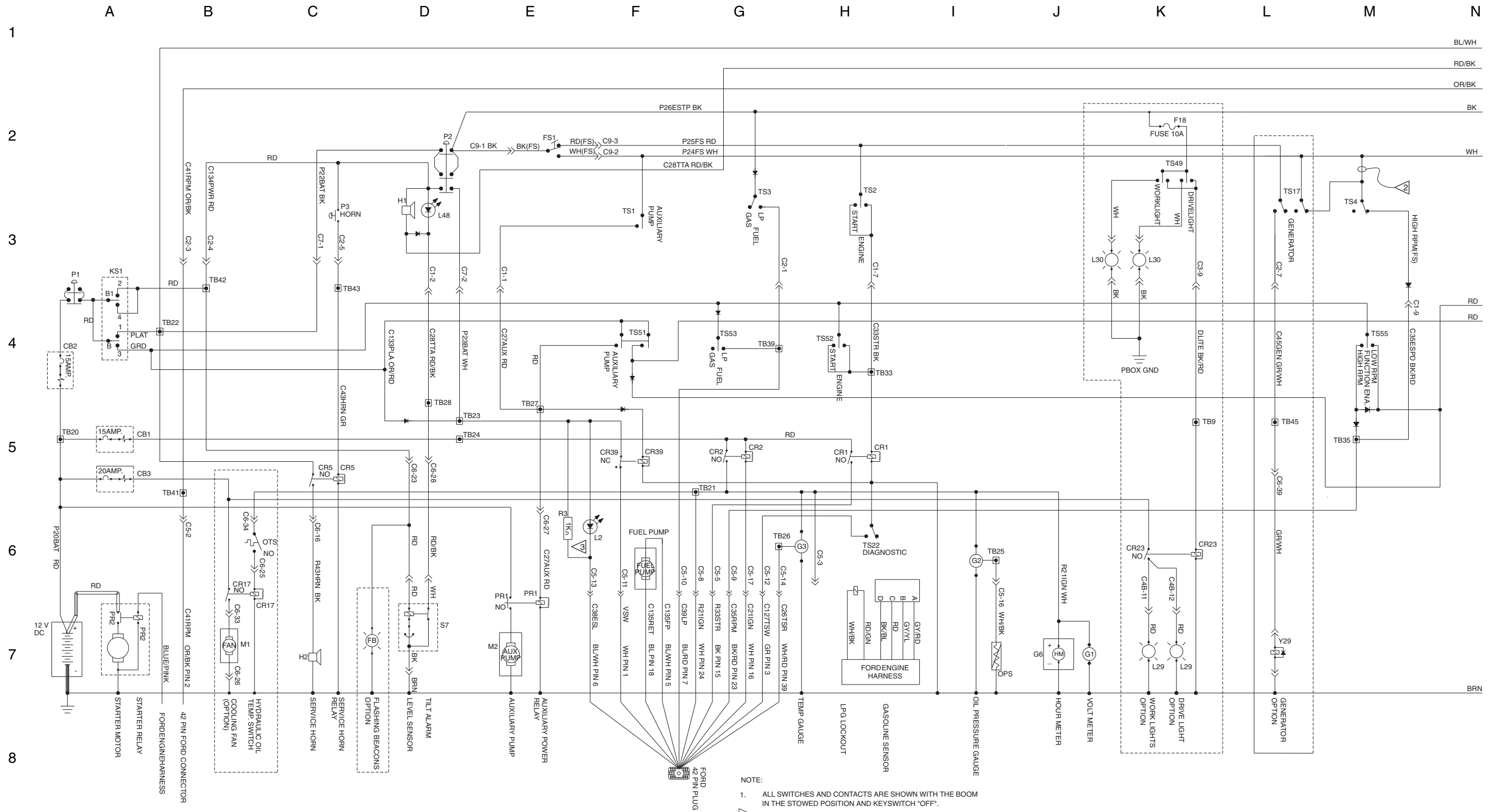
Electrical Schematic
Ford DSG-423 EFI Models
(from serial number 12510 to 14831)



Electrical Schematic

Ford DSG-423 EFI Models

(from serial number 12510 to 14831)

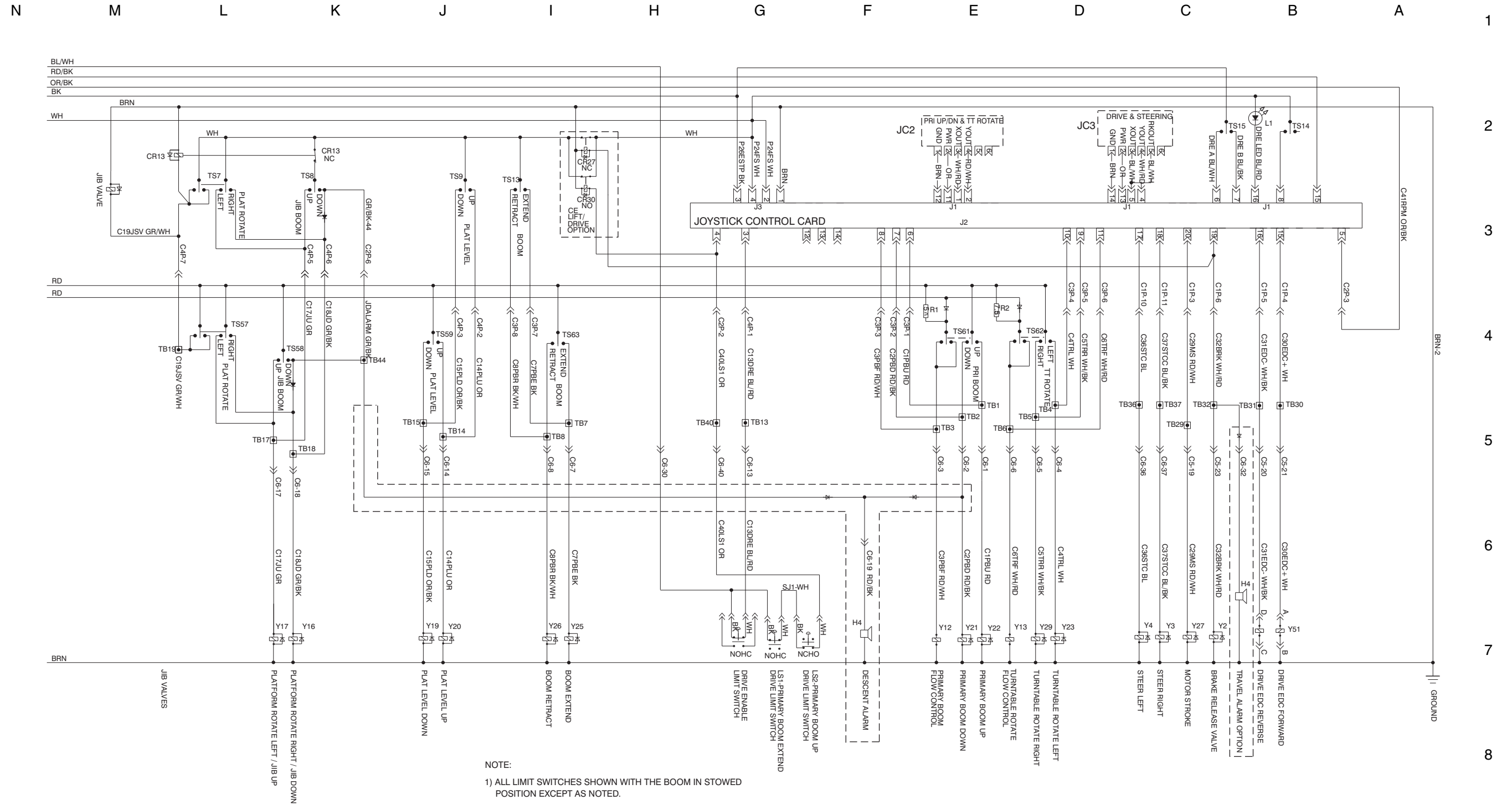


NOTE:

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.
3. RESISTOR R3 REMOVED AT SERIAL NUMBER 13740. CHECK ENGINE LAMP L2 CHANGED TO INCANDESCENT.

ESO433C

Electrical Schematic Ford DSG-423 EFI Models (from serial number 12510 to 14831)

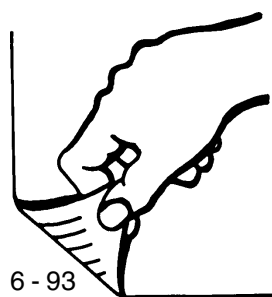


NOTE:
1) ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN STOWED POSITION EXCEPT AS NOTED.

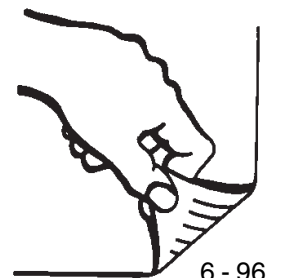
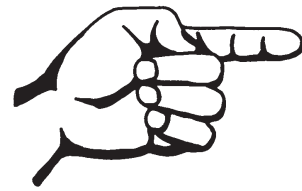
Electrical Schematic

Ford DSG-423 EFI Models

(from serial number 12510 to 14831)

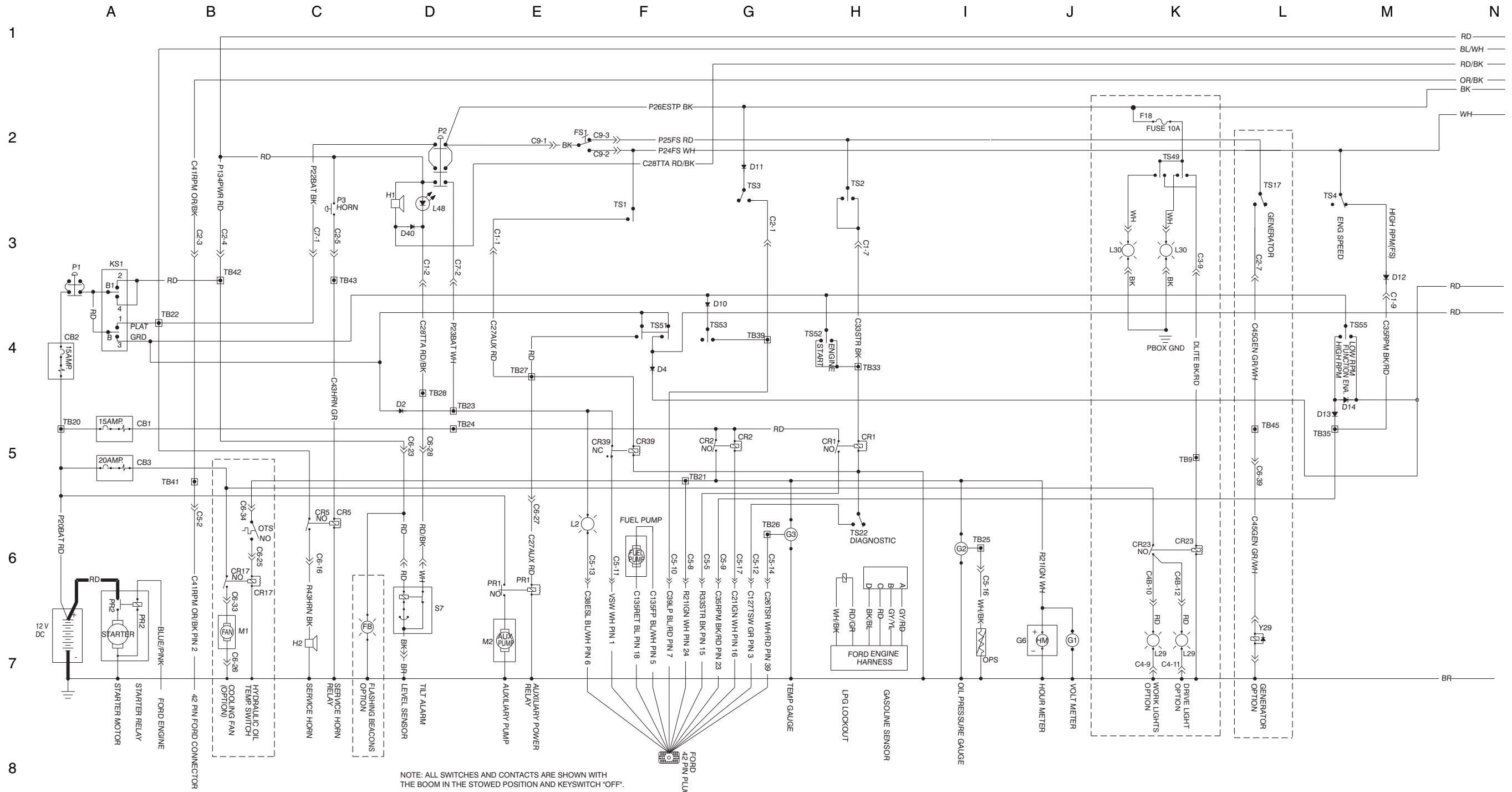


Electrical Schematic
Ford DSG-423 EFI Models
(from serial number 14832 to 15662)

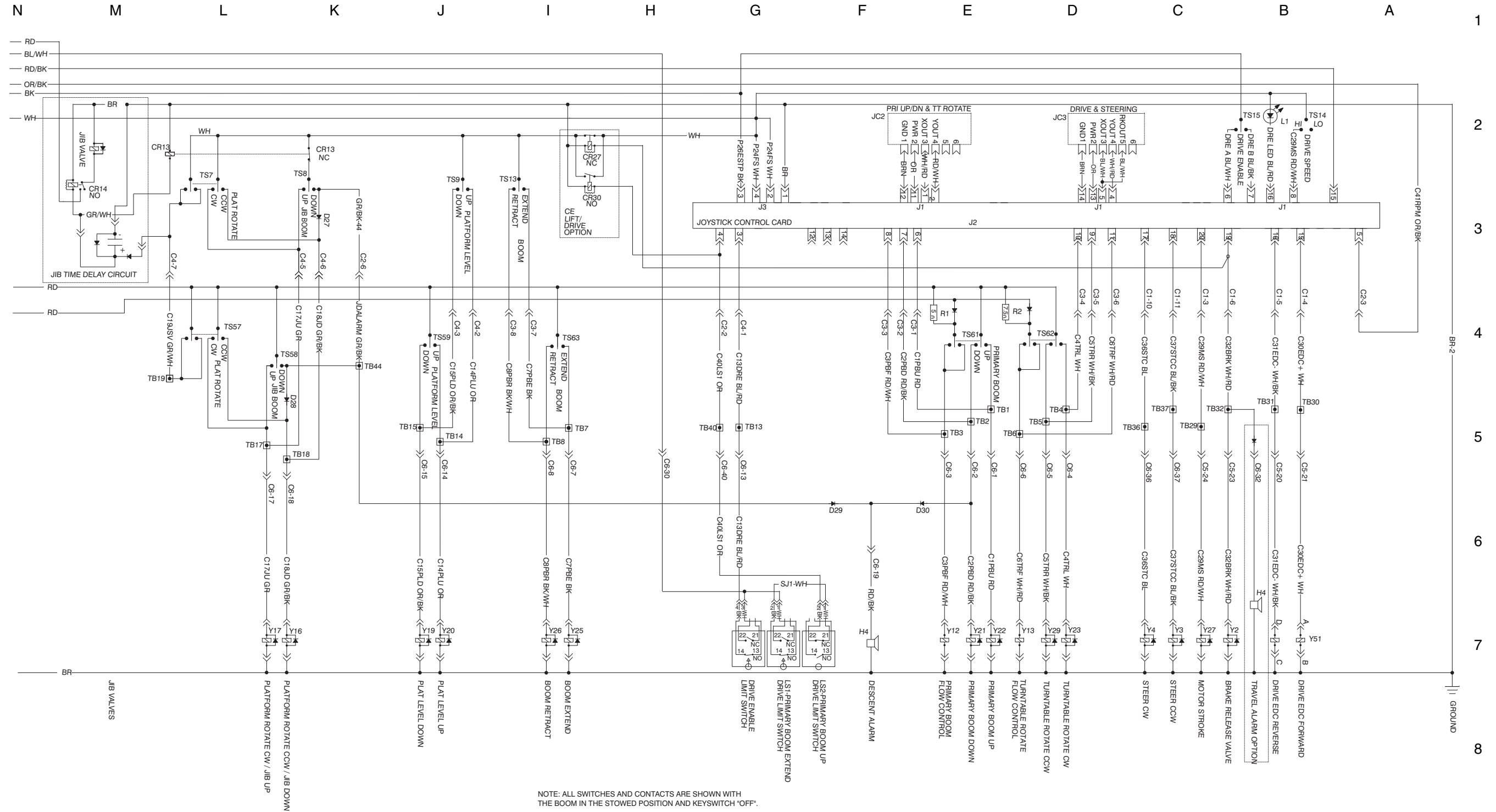


Electrical Schematic

Ford DSG-423 EFI Models
(from serial number 14832 to 15662)



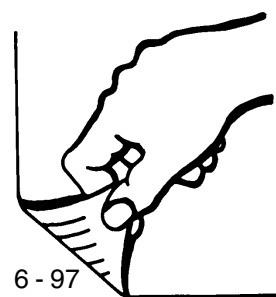
Electrical Schematic Ford DSG-423 EFI Models (from serial number 14832 to 15662)



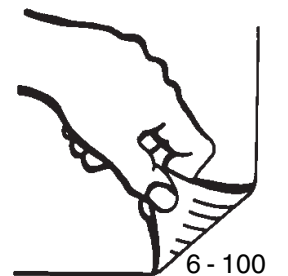
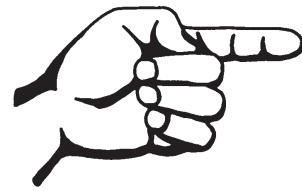
Electrical Schematic

Ford DSG-423 EFI Models

(from serial number 14832 to 15662)



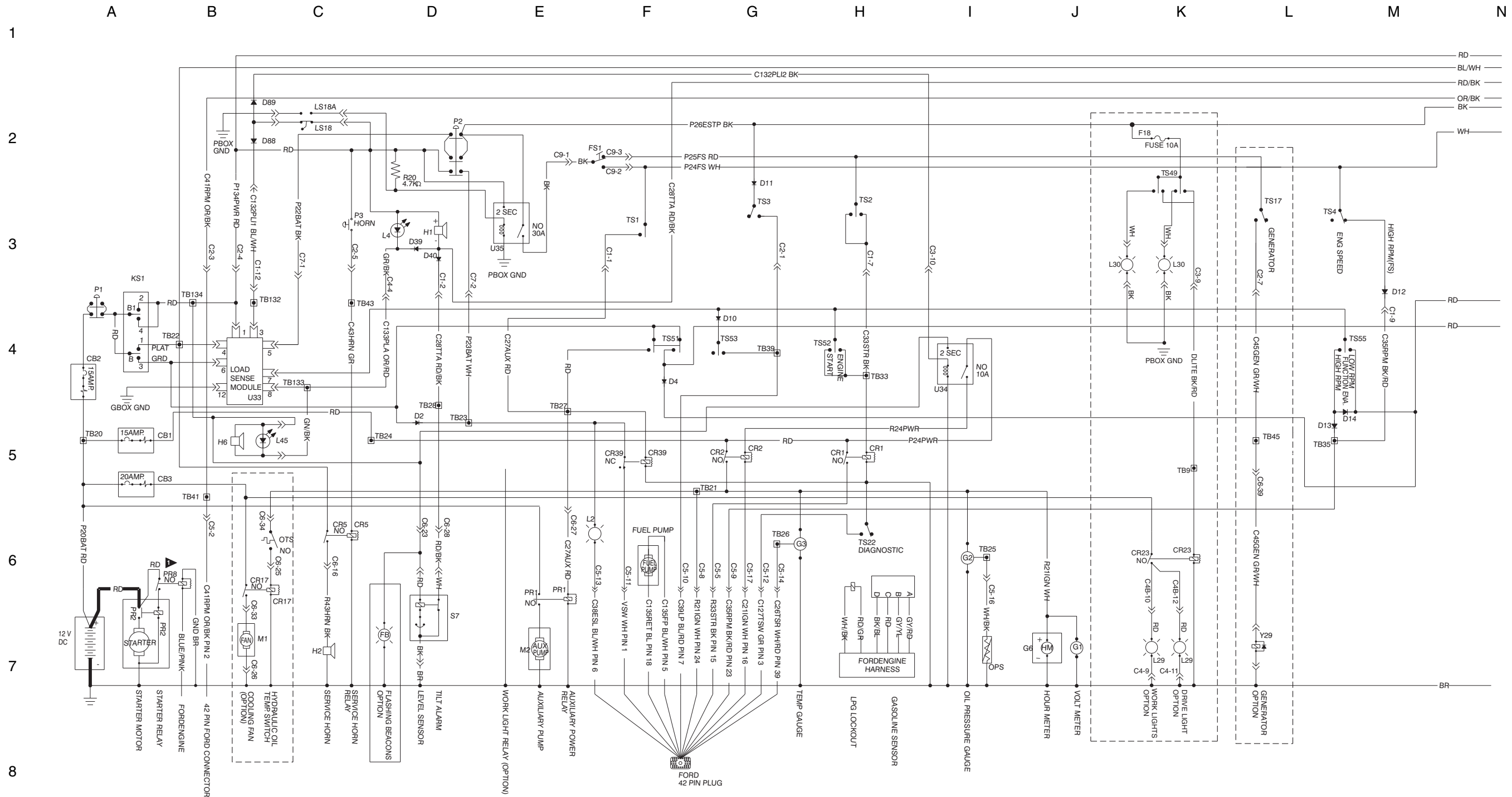
Electrical Schematic
Ford DSG-423 EFI Models- ANSI / CSA / AS
(from serial number 15663 to 16419)



Electrical Schematic

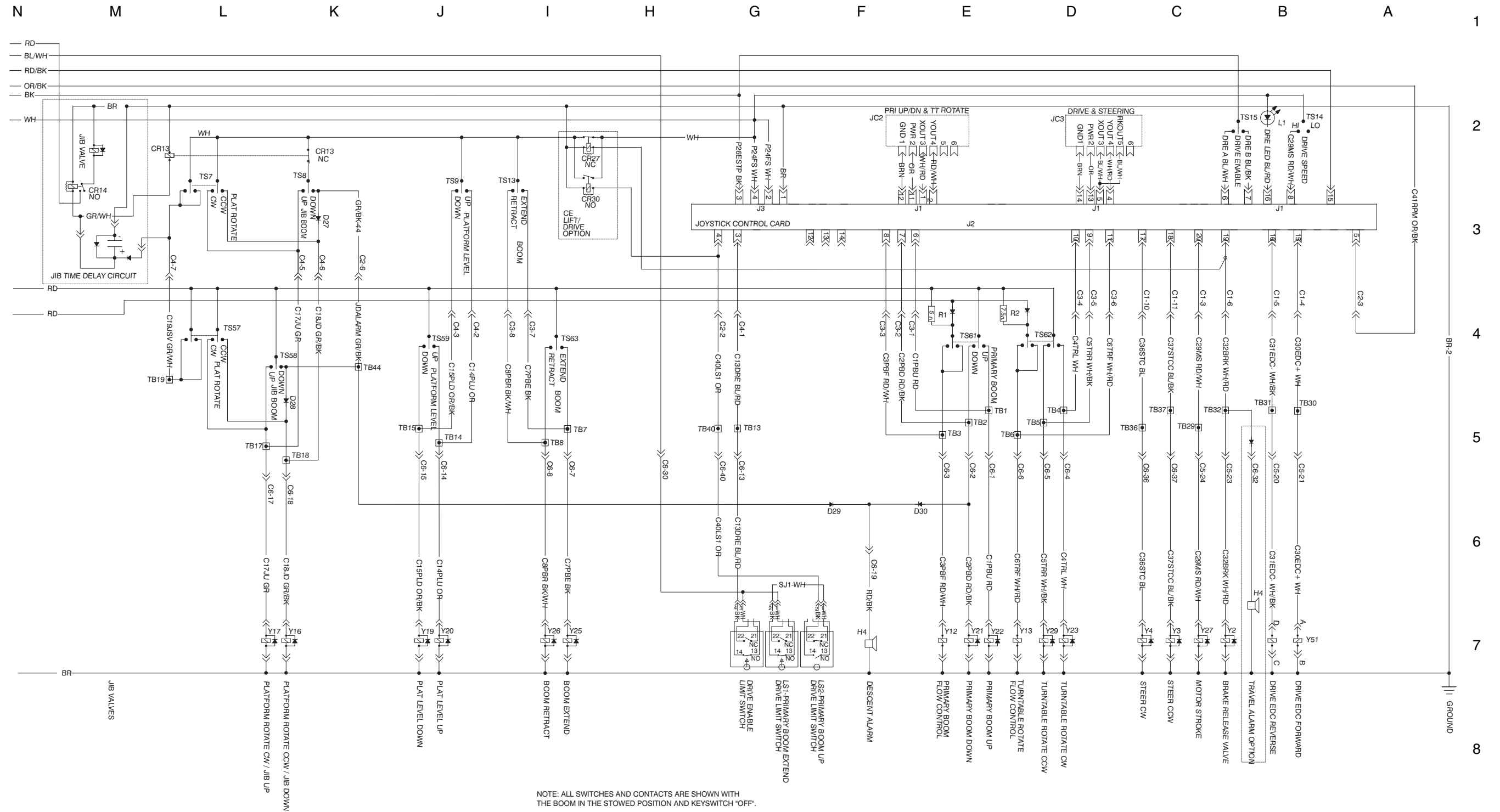
Ford DSG-423 EFI Models- ANSI / CSA / AS

(from serial number 15663 to 16419)



NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 ▲ STARTER RELAY PR8 ADDED AT SERIAL NUMBER 15703

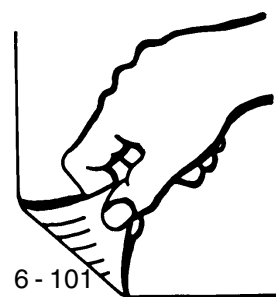
Electrical Schematic Ford DSG-423 EFI Models- ANSI / CSA / AS (from serial number 15663 to 16419)



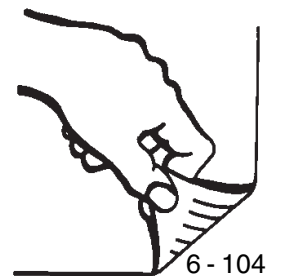
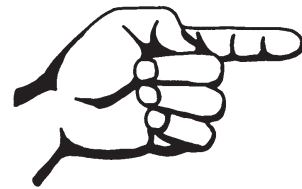
NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Electrical Schematic

Ford DSG-423 EFI Models- ANSI / CSA / AS
(from serial number 15663 to 16419)

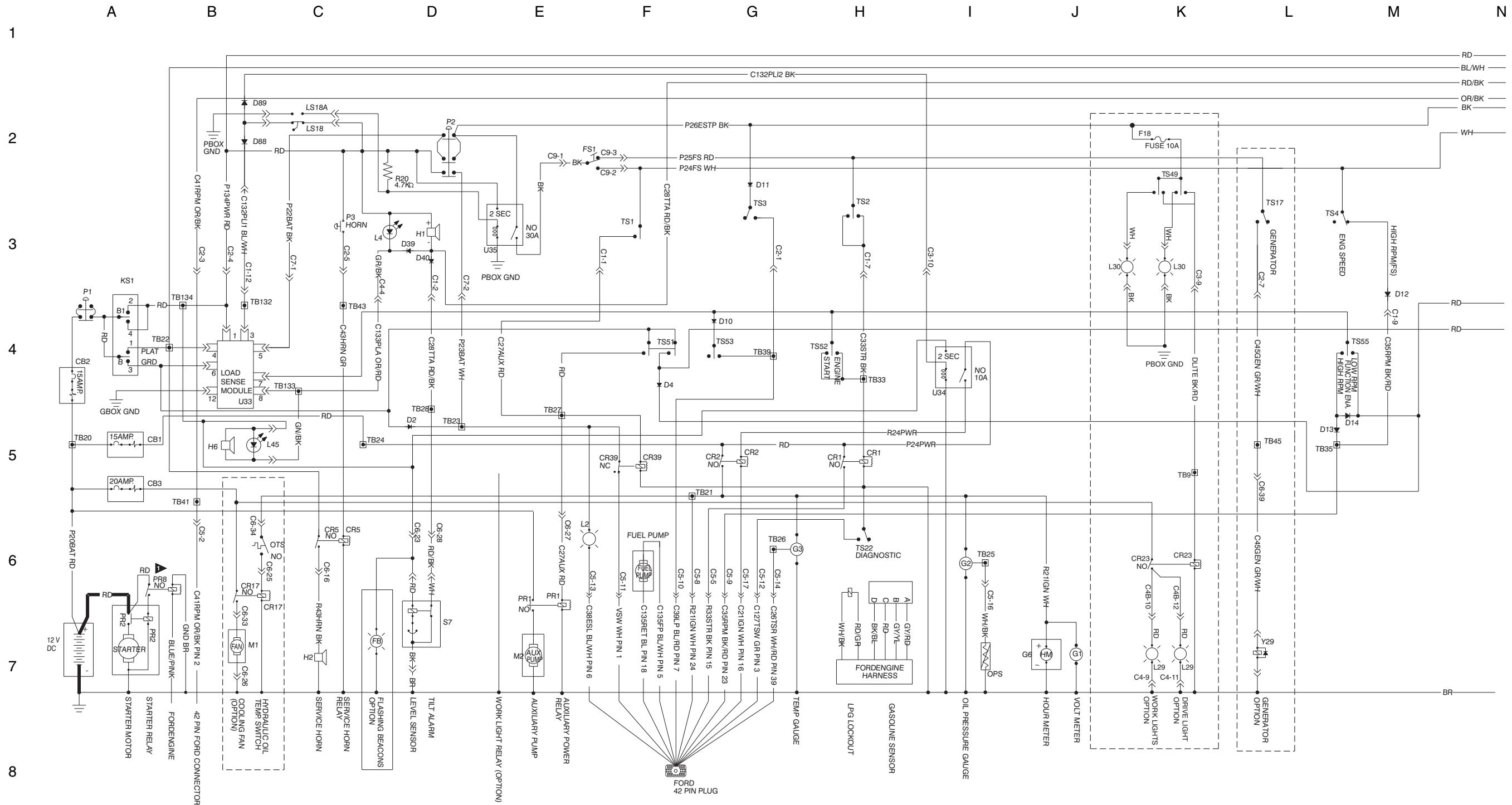


Electrical Schematic
Ford DSG-423 EFI Models- CE
(from serial number 15663 to 16419)



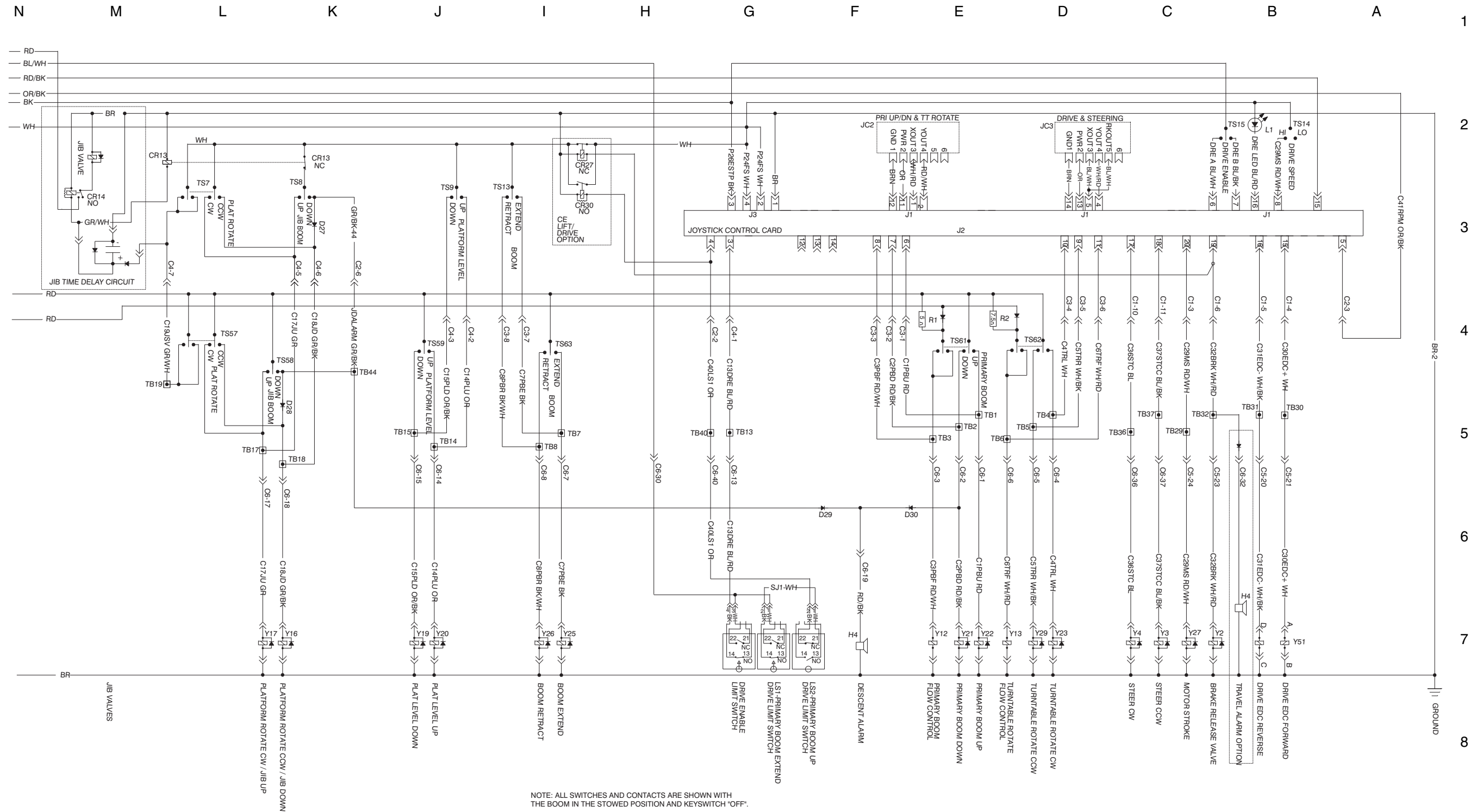
Electrical Schematic

Ford DSG-423 EFI Models- CE
(from serial number 15663 to 16419)



NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH 'OFF'.
 ▲ STARTER RELAY PR8 ADDED AT SERIAL NUMBER 15703

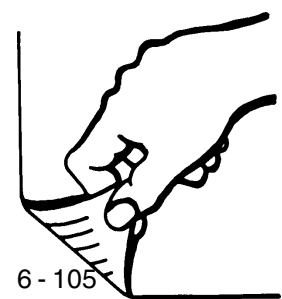
Electrical Schematic
Ford DSG-423 EFI Models- CE
 (from serial number 15663 to 16419)



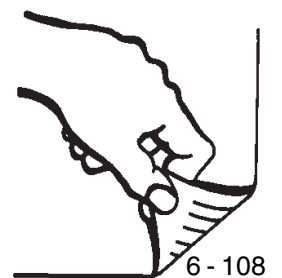
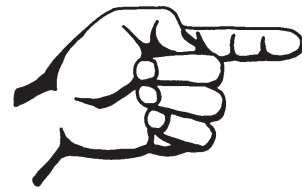
NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Electrical Schematic

Ford DSG-423 EFI Models- CE
(from serial number 15663 to 16419)

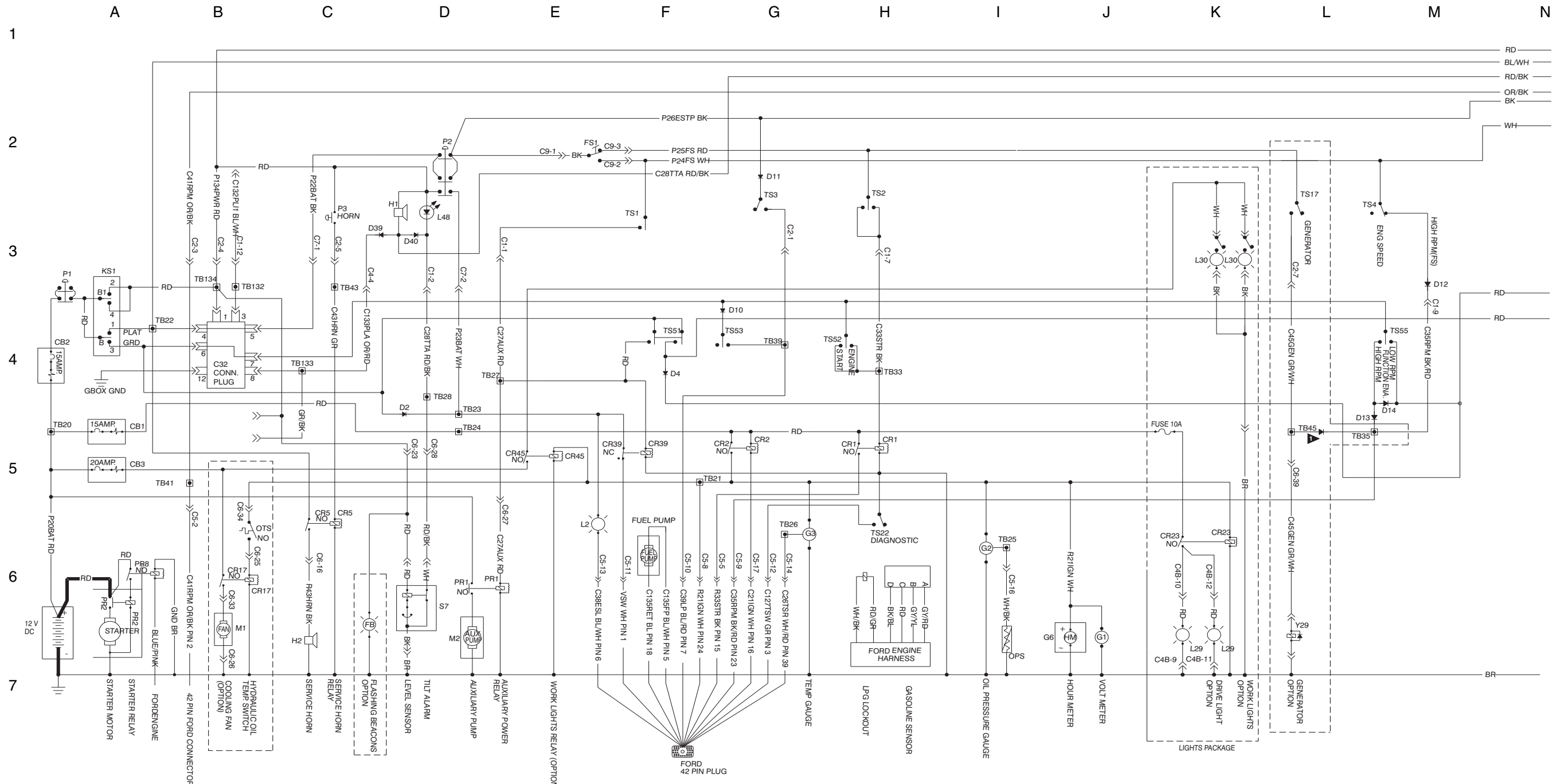


Electrical Schematic
Ford DSG-423 EFI Models- ANSI / CSA / AS
(from serial number 16420)



Electrical Schematic

Ford DSG-423 EFI Models- ANSI / CSA / AS (from serial number 16420)

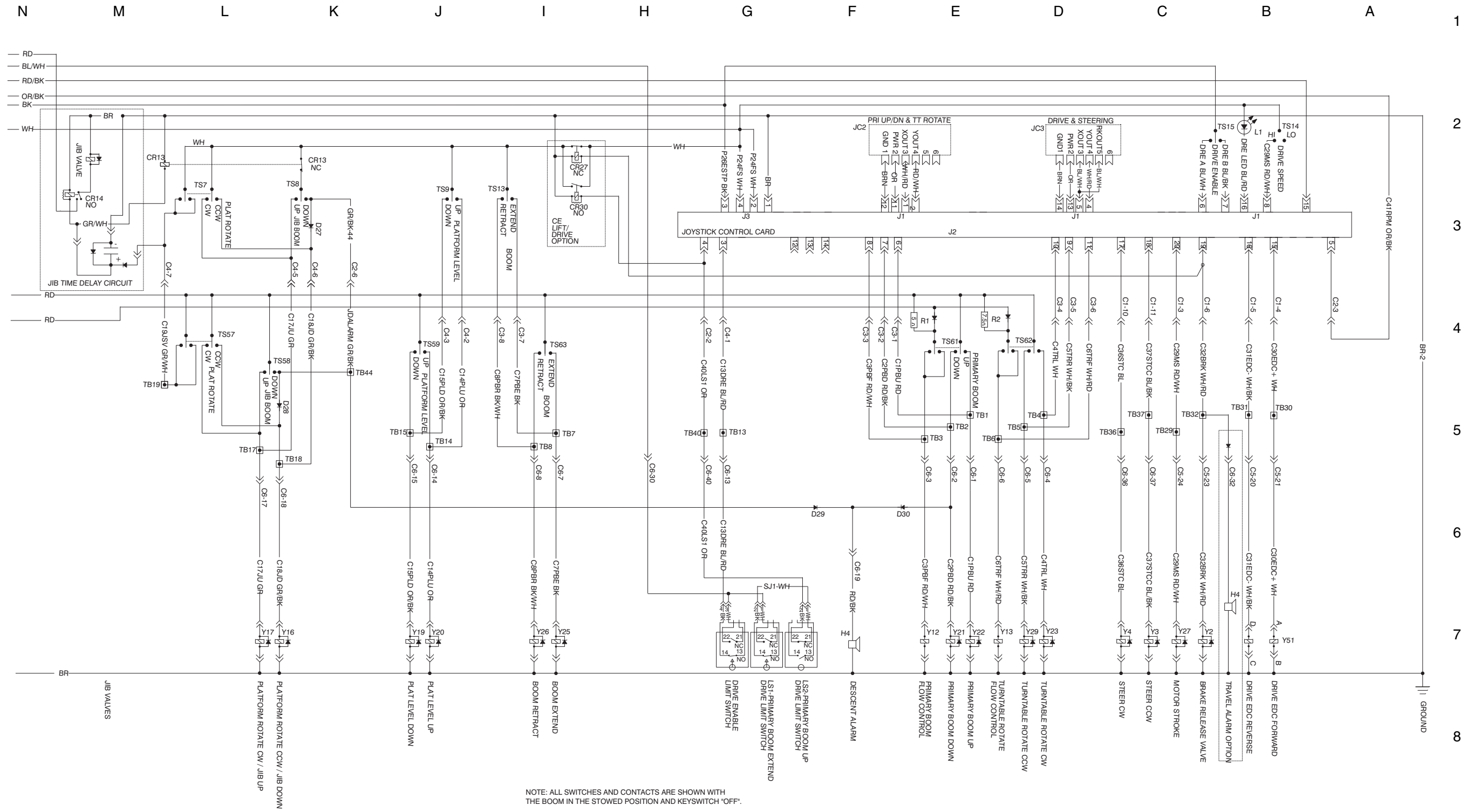


NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".
 ▲ DIODE BETWEEN TB35 AND TB45 ADDED AT SERIAL NUMBER 16453

ES0433K

Electrical Schematic

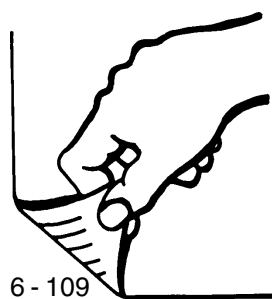
Ford DSG-423 EFI Models- ANSI / CSA / AS
(from serial number 16420)



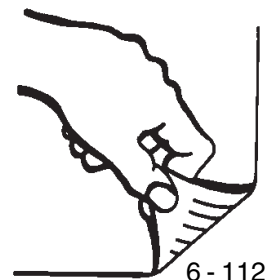
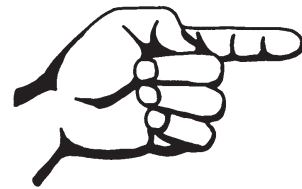
NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH 'OFF'.

Electrical Schematic

Ford DSG-423 EFI Models- ANSI / CSA / AS
(from serial number 16420)

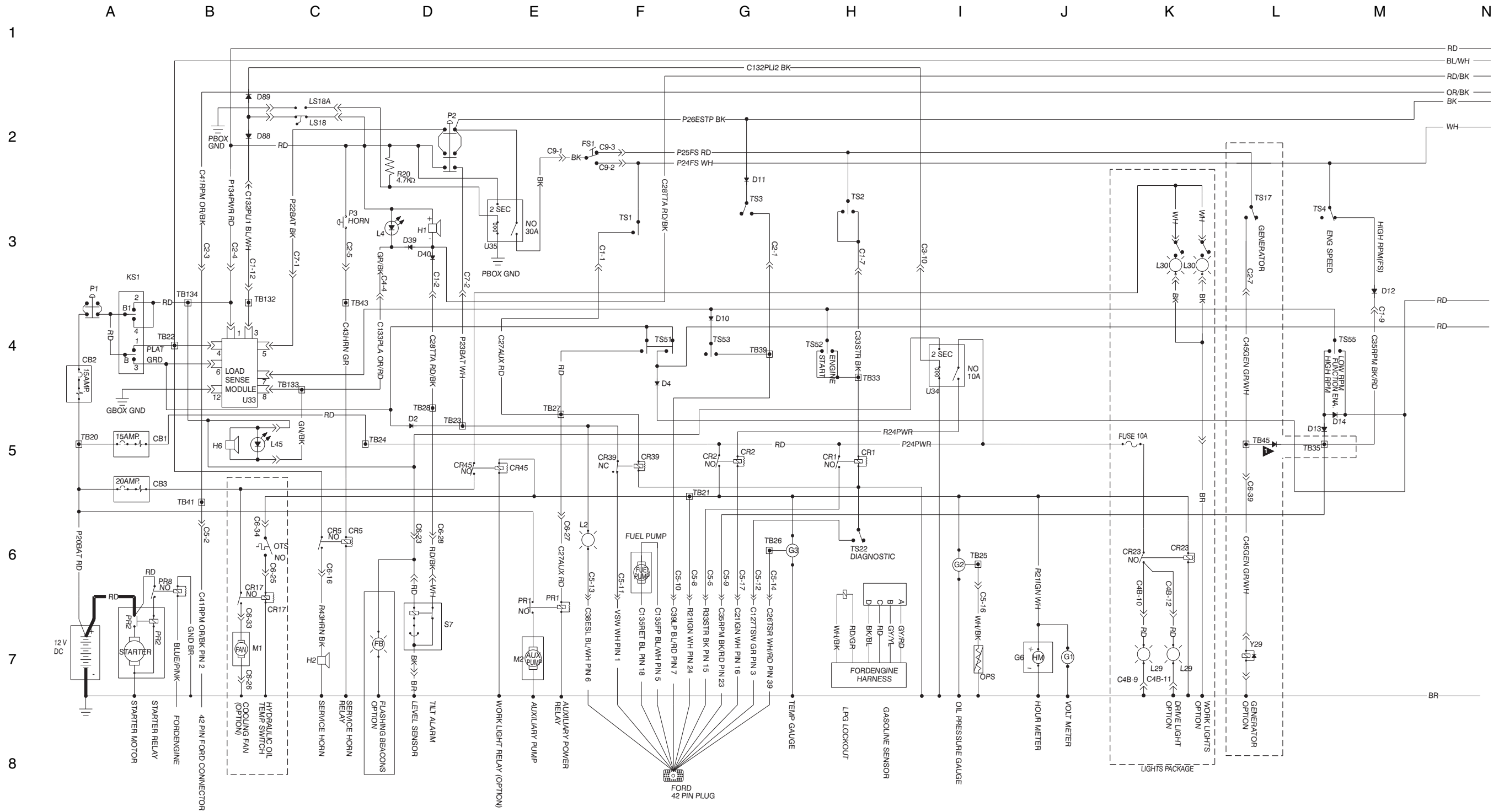


Electrical Schematic
Ford DSG-423 EFI Models- CE
(from serial number 16420)



Electrical Schematic

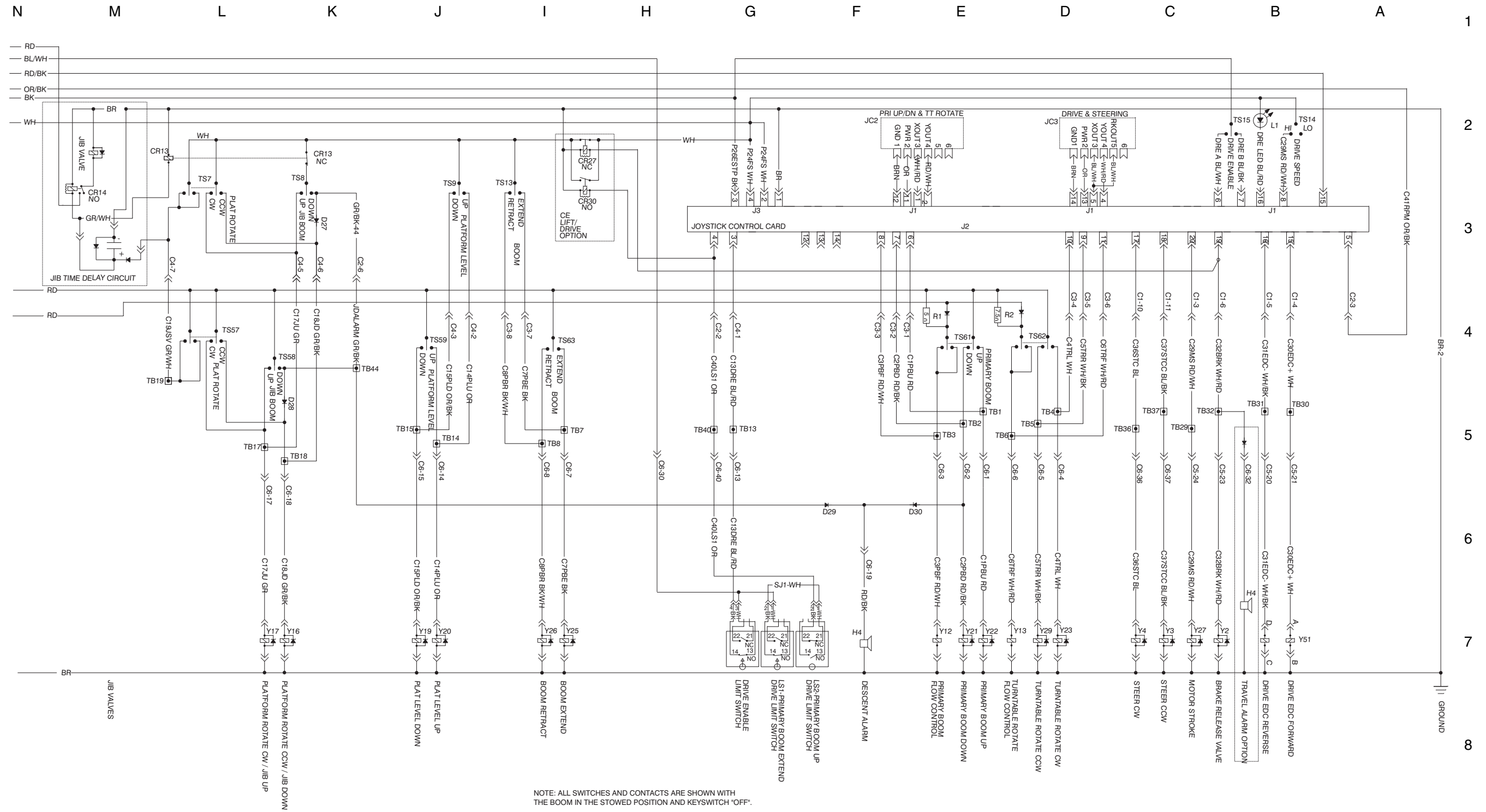
Ford DSG-423 EFI Models- CE
(from serial number 16420)



NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

▶ DIODE BETWEEN TB35 AND TB45 ADDED AT SERIAL NUMBER 16453

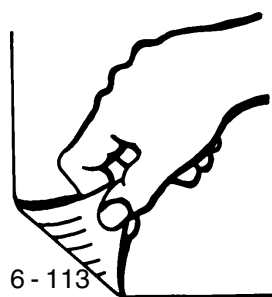
Electrical Schematic Ford DSG-423 EFI Models- CE (from serial number 16420)



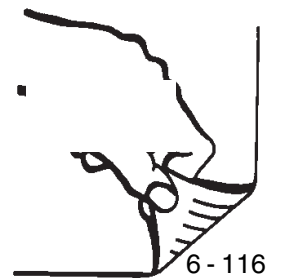
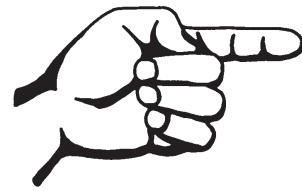
NOTE: ALL SWITCHES AND CONTACTS ARE SHOWN WITH THE BOOM IN THE STOWED POSITION AND KEYSWITCH "OFF".

Electrical Schematic

Ford DSG-423 EFI Models- CE
(from serial number 16420)



Ground Control Box Wiring Diagram
Ford DSG-423 EFI Models
(before serial number 14832)



Ground Control Box Wiring Diagram

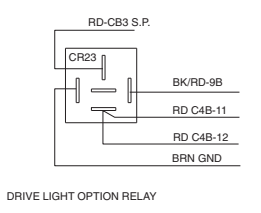
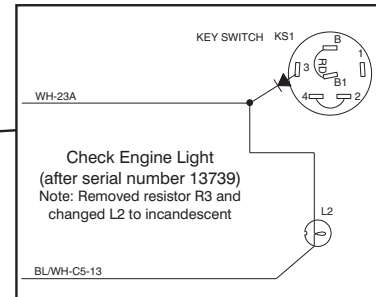
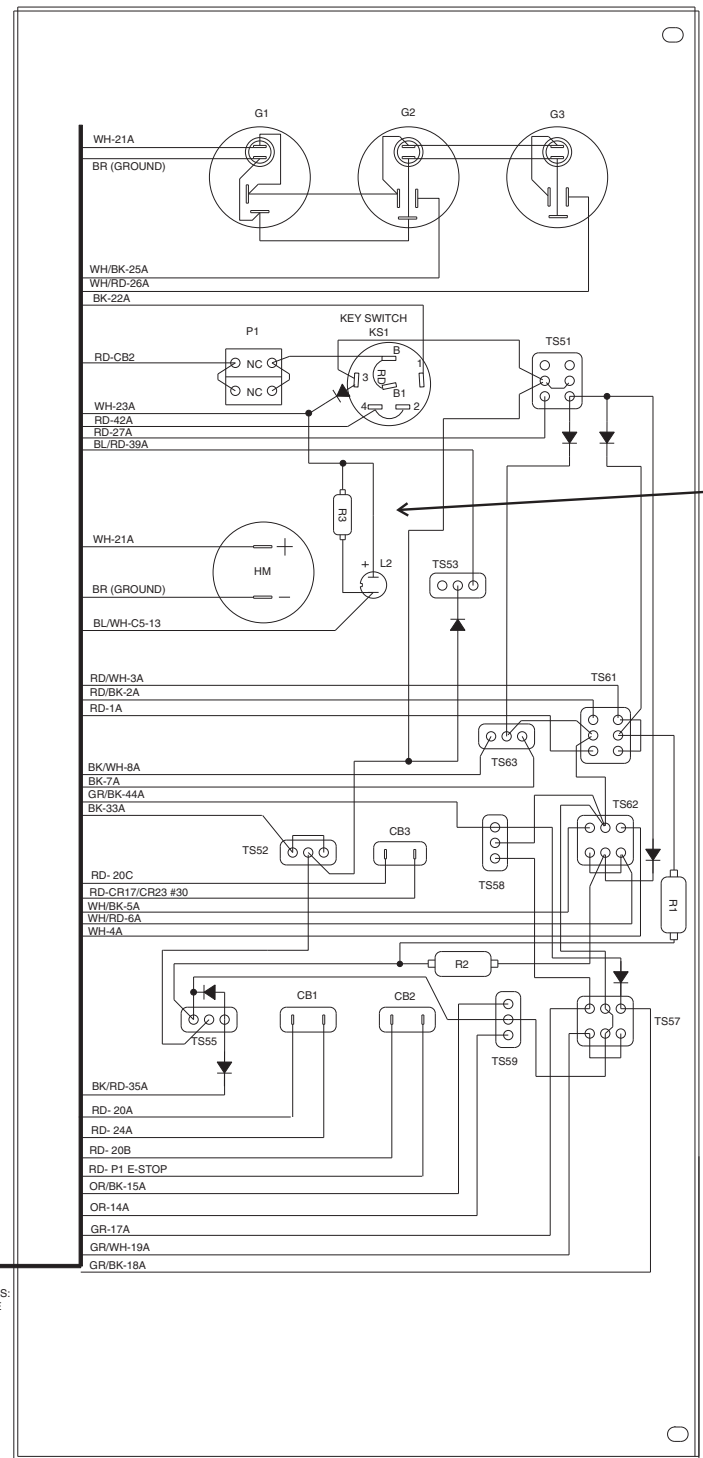
Ford DSG-423 EFI Models

(before serial number 14832)

1
2
3
4
5
6
7
8

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

GR/WH-C6-39	GR/WH-C2B-7	46		SPARE
GR/BK-C2B-6	GR/BK-C2B-6	44	GR-BK-2B	GEN. OPTION
GR-C2B-5	GR-C2B-5	43	GR-CR5#85	JDALARM JIB
	RD-C2B-4	42		HORN
OR/BK-C5-2	OR/BK-C2B-3	41		C134PWR
OR- C6-40	OR- C2B-2	40		PULSE PICKUP
BL/RD-C5-10	BL/RD-C2B-1	39		LIMIT SWITCH SIG.
	BL/WH-C1B-12	38		L.P.
BL/BK-C6-37	BL/BK-C1B-11	37		C132PLJ
BL- C6-36	BL-C1B-10	36		STEER LEFT
BK/RD-C5-9	BK/RD-C1B-9	35		STEER RIGHT
	BK/WH-C1B-8	34		RPM
	BK-C1B-7	33	BK-CR1#85 * D5	GLOW PLUG
WH/RD-C5-23	WH/RD-C1B-6	32	WH/RD-C6-32	START
WH/BK-C5-20	WH/BK-C1B-5	31		BRAKE/TRAVEL ALARM
WH- C5-21	WH-C1B-4	30		E.D.C.-
RD/WH-C5-24	RD/WH-C1B-3	29		E.D.C.+
RD/BK-C6-28	RD/BK-C1B-2	28		MOTOR SPEED
RD- C6-27	RD-C1B-1	27	RD-CR39#85	TILT ALARM
WH/BK-C5-16		25		AUX. PWR.
		24	RED-CR1#30	WATER TEMP. SENDER
RD- C6-23	WH-C7B-2	23	CR39 #30	OIL PRESSURE SENDER
BL/WH-C6-30	BK-C7B-1	22	BK-CR5#30	ENGINE POWER
WH-C5-3-C5-8	WH-C6-34	21	WH-CR2#87	KEYSWITCH PWR/FB
RD- 12 VOLT	RD-S.P.(CB3)	20	RD-S.P.(CB2)	PWR. TO PLAT.
	GR/WH-C4B-7	19		IGNITION PWR.
GR/BK-C6-18	GR/BK-C4B-6	18		12V BATTERY SUPPLY
GR- C6-17	GR-C4B-5	17		JIB VALVE
	OR/RD-C4B-4	16		PLAT. ROT. R.
OR/BK-C6-15	OR/BK-C4B-3	15		PLAT. ROT. L.
OR- C6-14	OR-C4B-2	14		C133PLT
BL/RD-C6-13	BL/RD-C4B-1	13		PLAT. LEVEL DN.
	BL/BK-C3B-11	11		PLAT. LEVEL UP
	BL-C3B-10	10		DRV. ENA. LT.
	BK/RD-C3B-9	9	BK/RD-CR23#86	
BK/WH-C6-8	BK/WH-C3B-8	8		DRIVE LIGHT OPTION
BK- C6-7	BK-C3B-7	7		BOOM RETRACT
WH/RD-C6-6	WH/RD-C3B-6	6		BOOM EXTEND
WH/BK-C6-5	WH/BK-C3B-5	5		TURN. ROT. F.C.
WH- C6-4	WH-C3B-4	4		TURN. ROT. R.
RD/WH-C6-3	RD/WH-C3B-3	3		TURN. ROT. L.
RD/BK-C6-2	RD/BK-C3B-2	2	44B-RD/BK-C6-19	PRI. BOOM F.C.
RD- C6-1	RD-C3B-1	1		PRI. BOOM DOWN
				PRI. BOOM UP



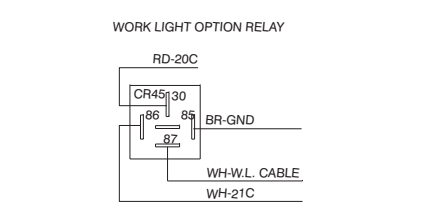
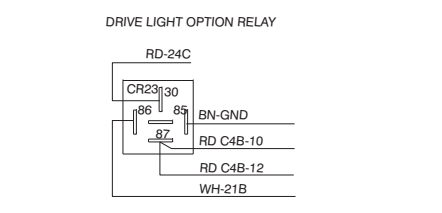
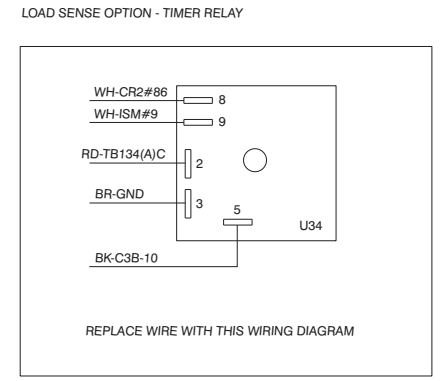
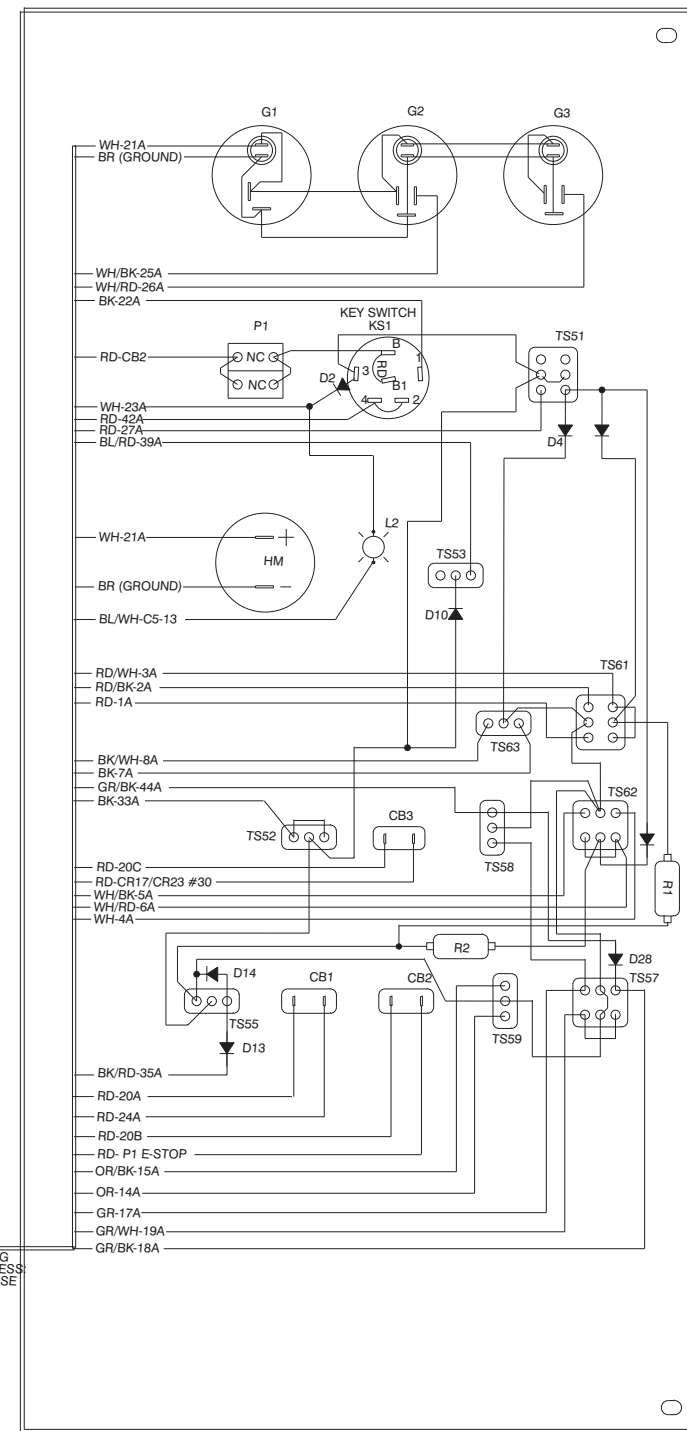
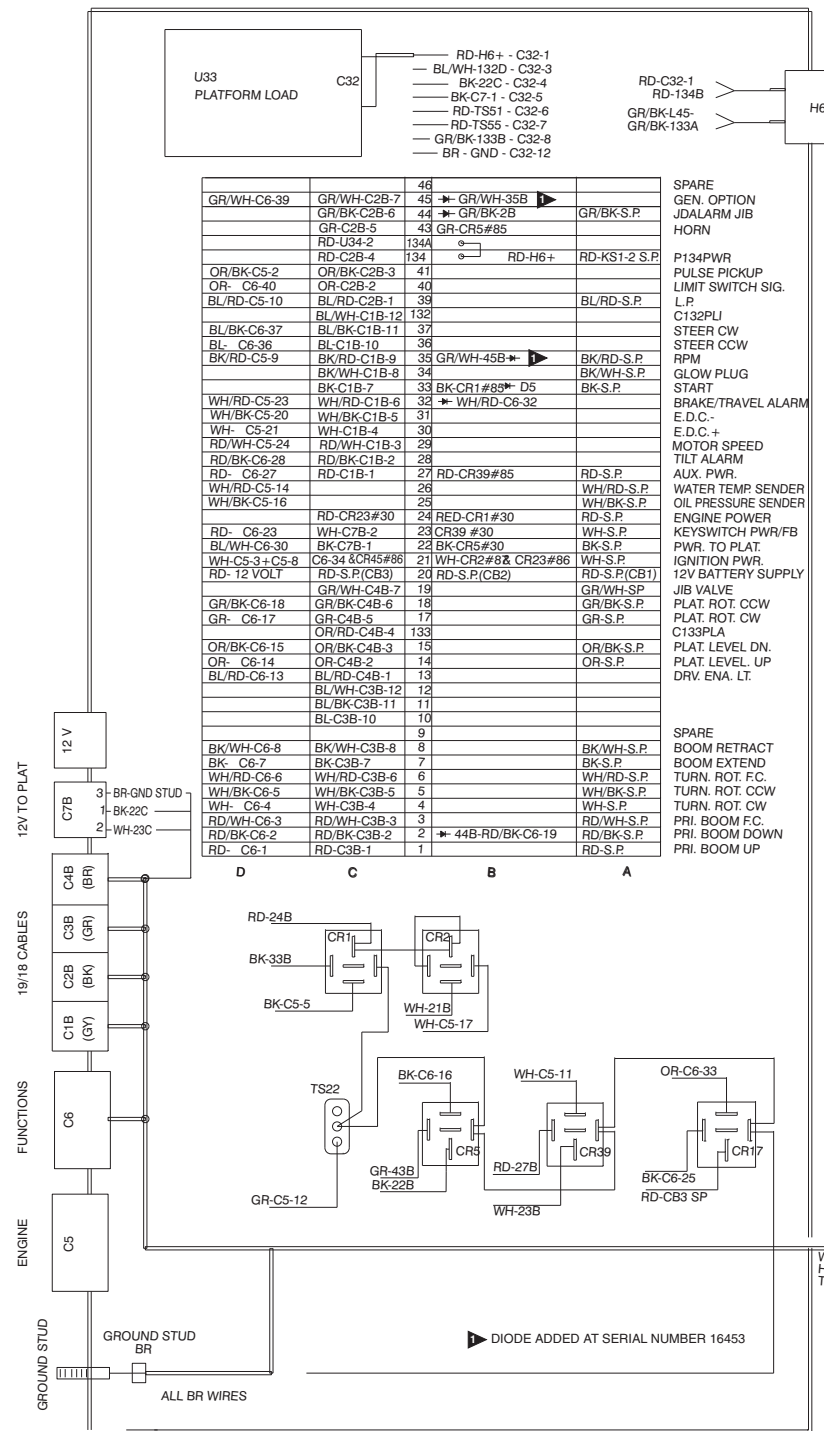
DESCRIPTION	LABEL	PART#
EMERGENCY STOP BUTTON	P1	P1
KEY SWITCH	KS1	KS1
AUXILIARY SWITCH	TS51	13480
ENGINE START SWITCH	TS52	13037
LPGAS SWITCH	TS53	56457
FUNCTION ENABLE	TS55	13037
PLATFORM ROTATE SWITCH	TS57	16397
PLATFORM LEVEL SWITCH	TS59	13037
BOOM EXTEND/RETRACT SWITCH	TS63	13037
PRIMARY BOOM UP/DOWN SWITCH	TS61	16397
TURNTABLE ROTATE SWITCH	TS62	16397
JIB BOOM UP/DOWN SWITCH	TS58	13037
CHECK ENGINE SWITCH	TS22	42730
CIRCUIT BREAKER, CONTROLS, 15A	CB1	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCT	R2	R2
VOLT METER GAGE	G1	G1
OIL PRESSURE GAGE	G2	G2
WATER TEMP. GAGE	G3	G3
CHECK ENGINE (before serial number 13740)	L2	110395
CHECK ENGINE (after serial number 13739)	L2	119870
HOUR METER	HM	HM
RESISTOR, 1K OHM/2W, CHECK ENGINE	R3	104333

ESO433

Ground Control Box Wiring Diagram

Ford DSG-423 EFI Models (from serial number 14832)

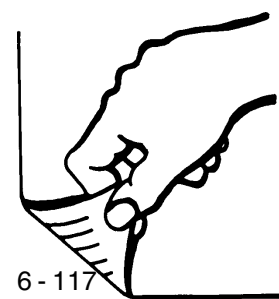
N M L K J I H G F E D C B A 1



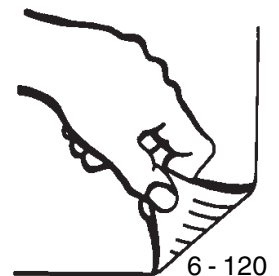
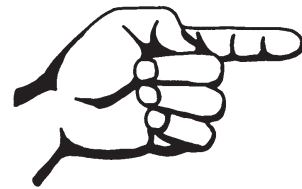
DESCRIPTION	LABEL
EMERGENCY STOP BUTTON	P1
KEY SWITCH	KS1
AUXILIARY SWITCH	TS51
ENGINE START SWITCH	TS52
LP/GAS SWITCH	TS53
FUNCTION ENABLE	TS55
PLATFORM ROTATE SWITCH	TS57
PLATFORM LEVEL SWITCH	TS59
BOOM EXTEND/RETRACT SWITCH	TS63
PRIMARY BOOM UP/DOWN SWITCH	TS61
TURNTABLE ROTATE SWITCH	TS62
JIB BOOM UP/DOWN SWITCH	TS58
CHECK ENGINE SWITCH	TS22
CIRCUIT BREAKER, CONTROLS, 15A	CB1
CIRCUIT BREAKER, ENGINE, 15A	CB2
CIRCUIT BREAKER, OPTIONS, 20A	CB3
RESISTOR, 5 OHM, BOOM FUNCTION	R1
RESISTOR, 7.5 OHM, TURNTABLE FUNCT	R2
VOLT METER GAGE	G1
OIL PRESSURE GAGE	G2
WATER TEMP GAGE	G3
CHECK ENGINE	L2
HOUR METER	HM
LOAD SENSE TIME DELAY RELAY (10A)	U34

Ground Control Box Wiring Diagram

Ford DSG-423 EFI Models
(from serial number 14832)

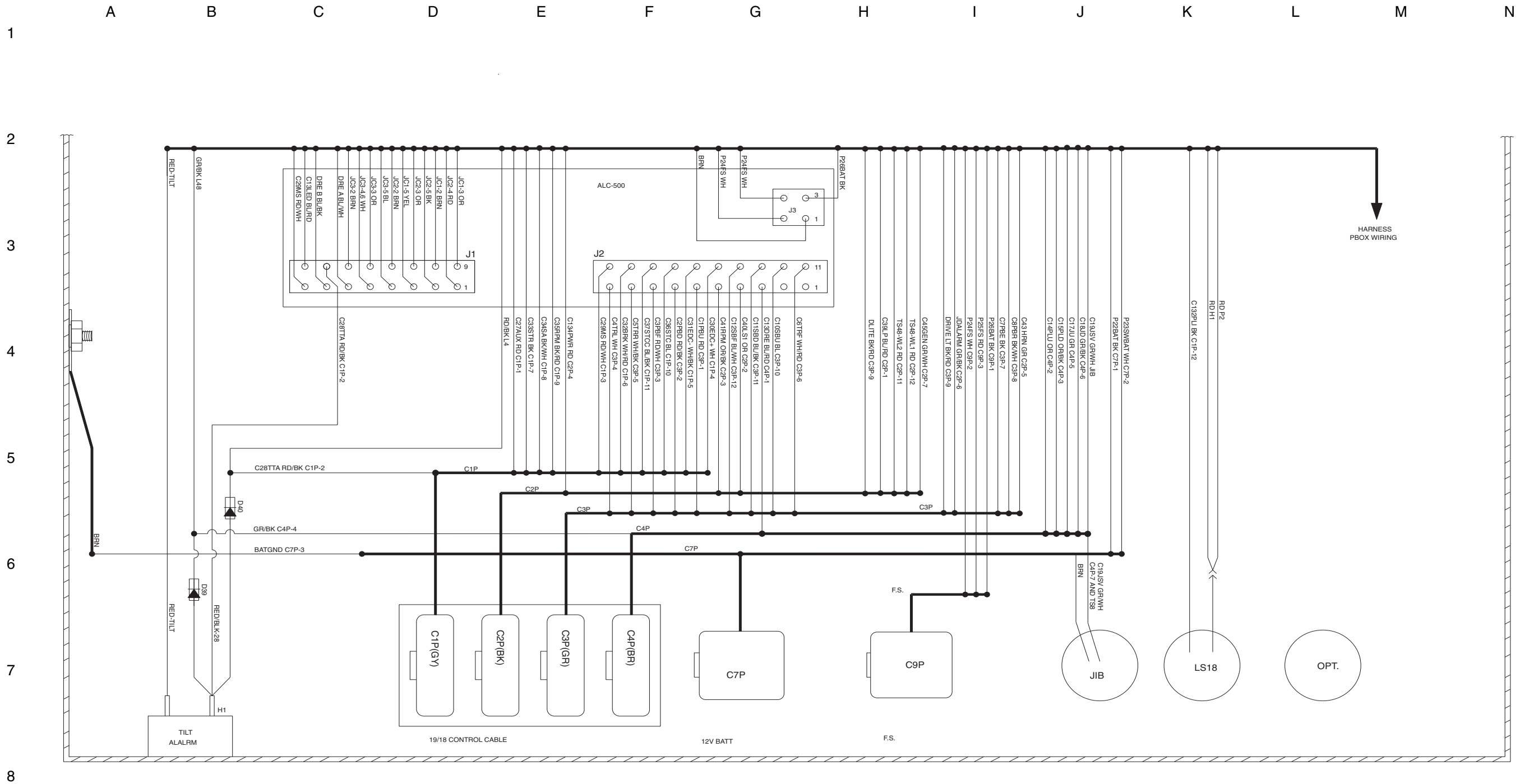


Platform Control Box Wiring Diagram
Ford DSG-423 EFI Models
(before serial number 14832)



Platform Control Box Wiring Diagram

Ford DSG-423 EFI Models
(before serial number 14832)



ESO433

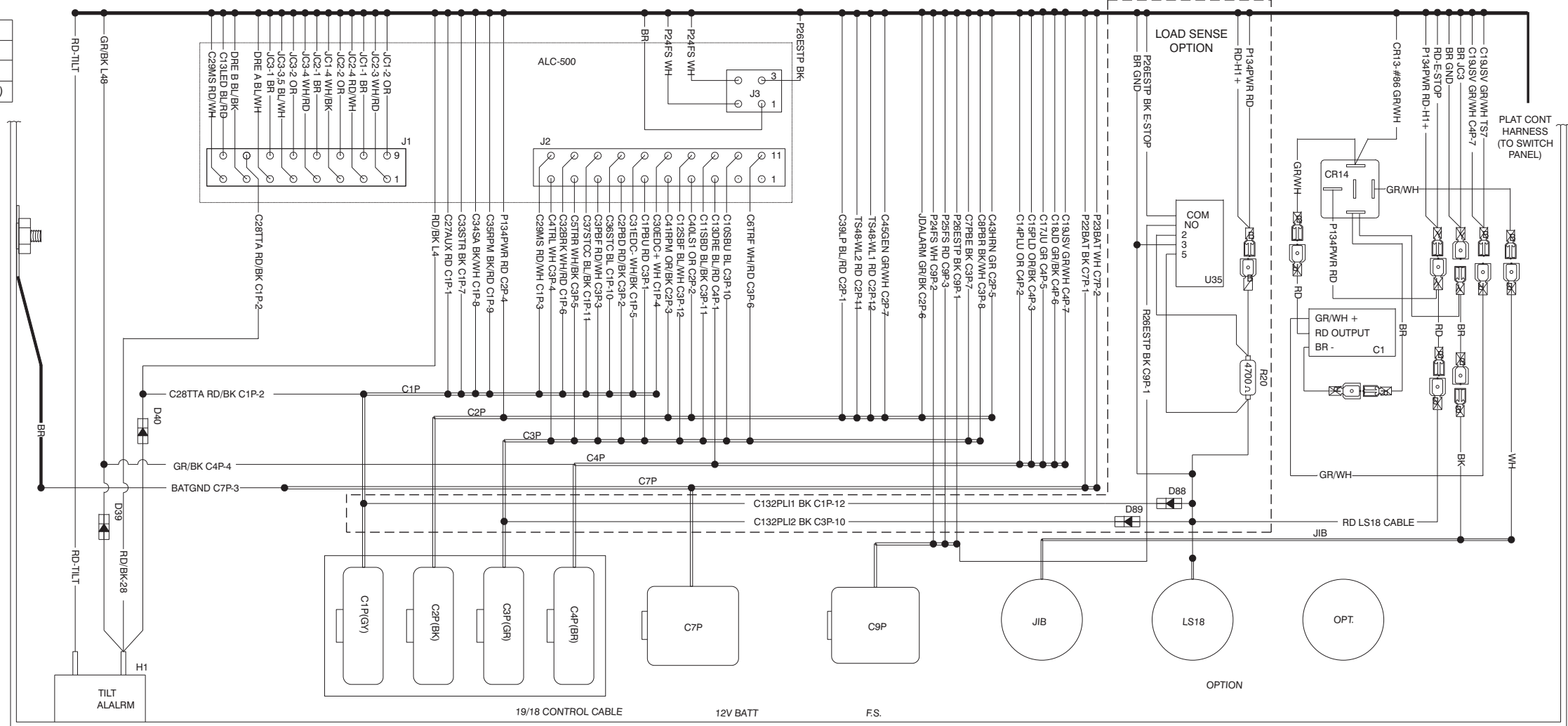
Platform Control Box Wiring Diagram

Ford DSG-423 EFI Models (from serial number 14832)

N M L K J I H G F E D C B A 1

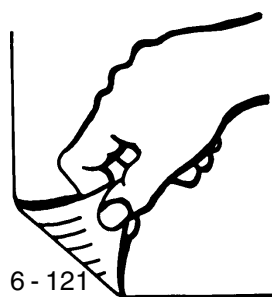
COMPONENT INDEX

H1	TILT ALARM
CR14	JIB DELAY RELAY
C1	JIB TIME DELAY
U35	LOAD SENSE TIME DELAY RELAY (30A)



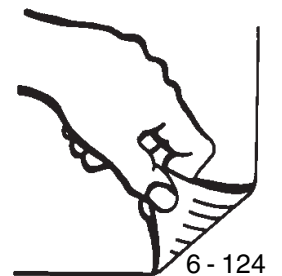
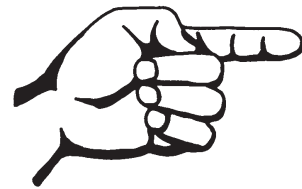
Platform Control Box Wiring Diagram

Ford DSG-423 EFI Models
(from serial number 14832)



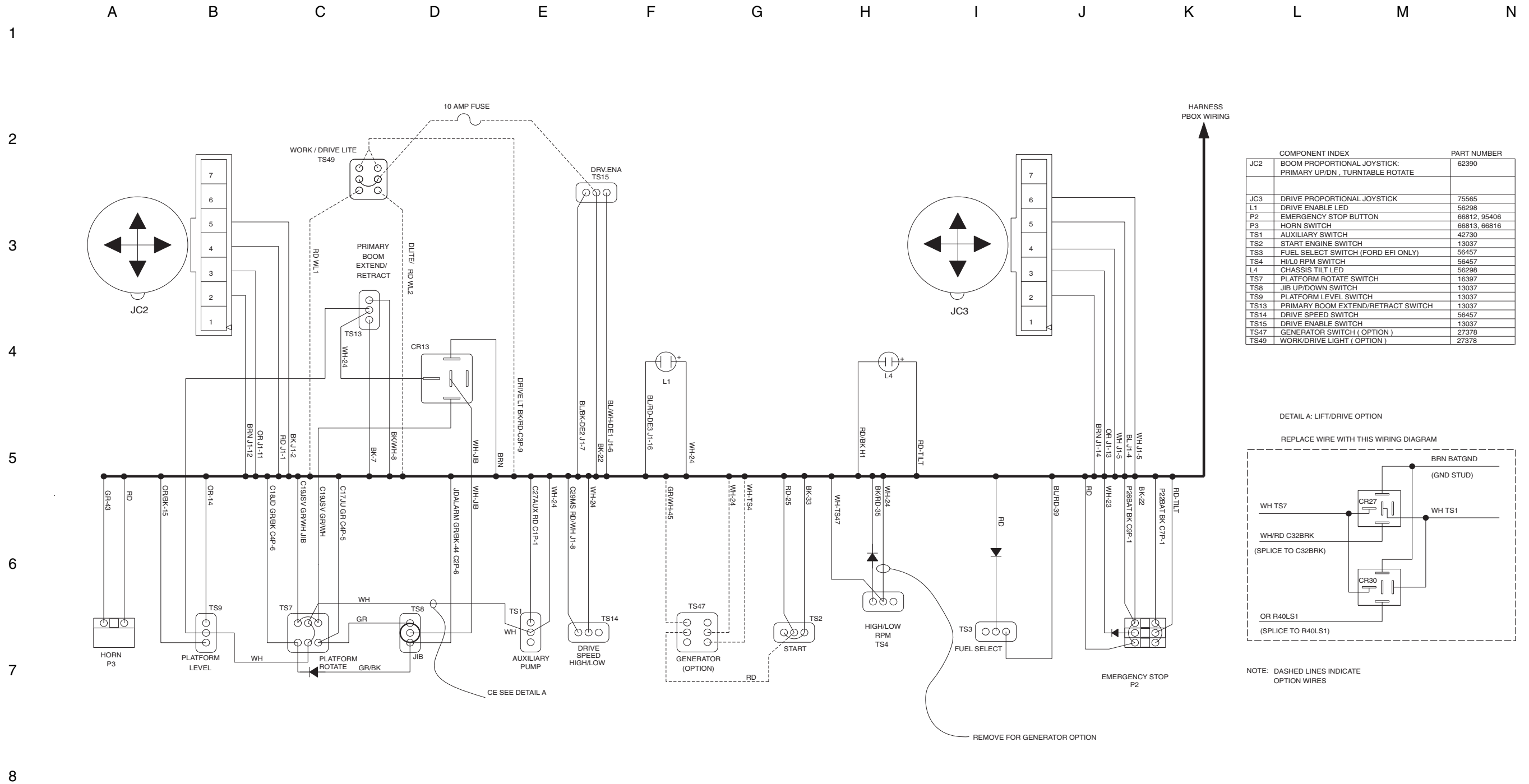
Platform Control Box Switch Panel Wiring Diagram

Ford DSG-423 EFI Models
(from serial number 11067 to 12509)

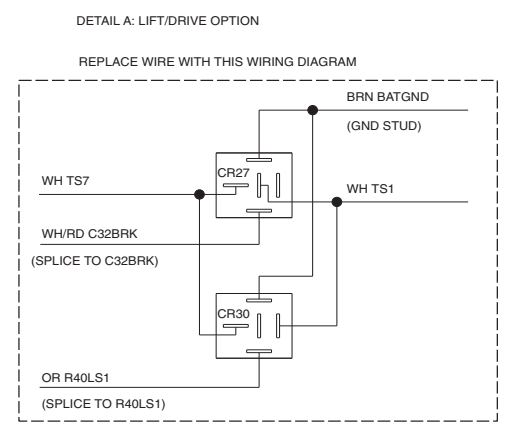


Platform Control Box Switch Panel Wiring Diagram

Ford DSG-423 EFI Models
(from serial number 11067 to 12509)



COMPONENT INDEX		PART NUMBER
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNTABLE ROTATE	62390
JC3	DRIVE PROPORTIONAL JOYSTICK	75565
L1	DRIVE ENABLE LED	56298
P2	EMERGENCY STOP BUTTON	66812, 95406
P3	HORN SWITCH	66813, 66816
TS1	AUXILIARY SWITCH	42730
TS2	START ENGINE SWITCH	13037
TS3	FUEL SELECT SWITCH (FORD EFI ONLY)	56457
TS4	HI/LO RPM SWITCH	56457
L4	CHASSIS TILT LED	56298
TS7	PLATFORM ROTATE SWITCH	16387
TS8	JIB UP/DOWN SWITCH	13037
TS9	PLATFORM LEVEL SWITCH	13037
TS13	PRIMARY BOOM EXTEND/RETRACT SWITCH	13037
TS14	DRIVE SPEED SWITCH	56457
TS15	DRIVE ENABLE SWITCH	13037
TS47	GENERATOR SWITCH (OPTION)	27378
TS49	WORK/DRIVE LIGHT (OPTION)	27378



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram

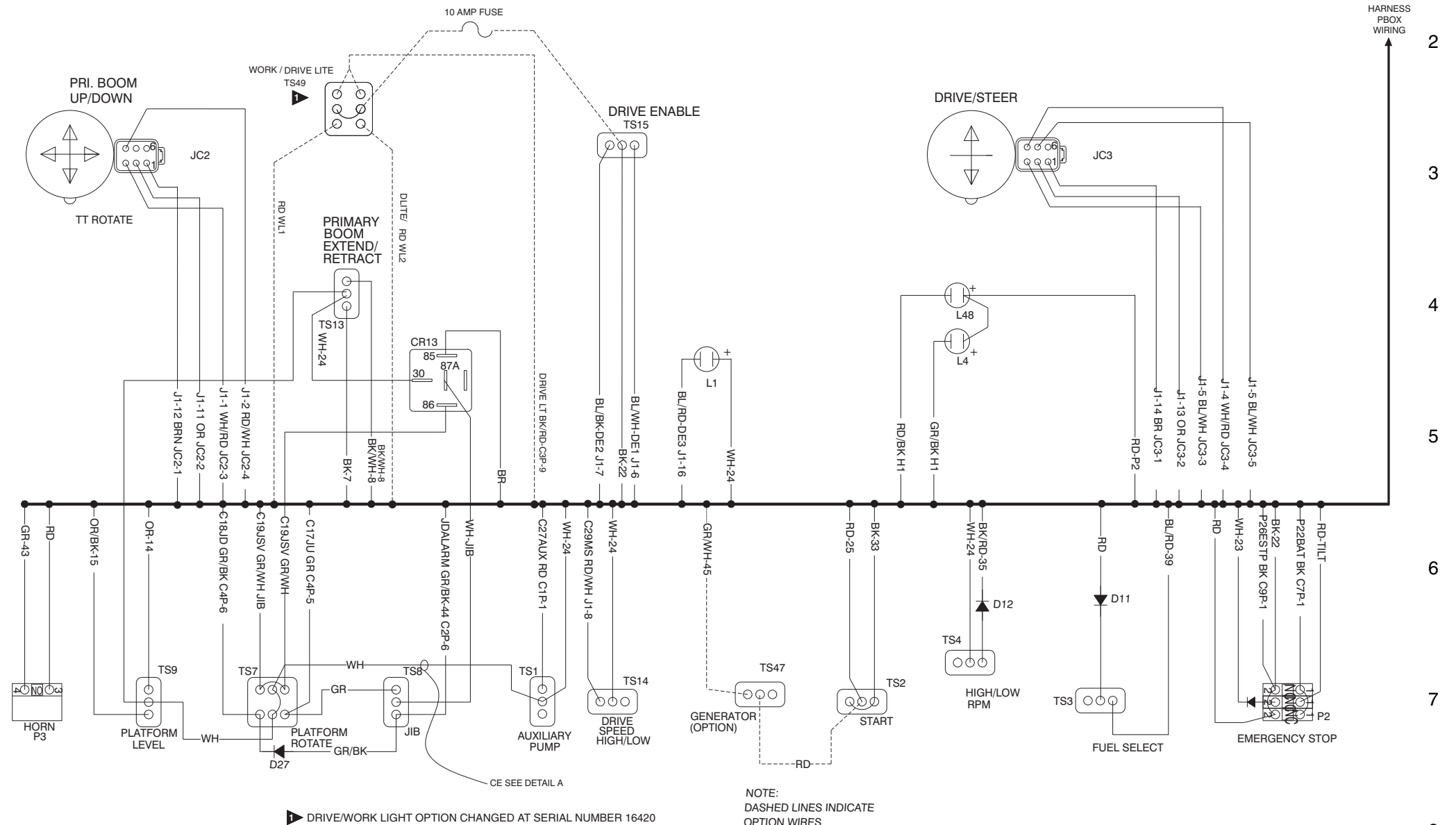
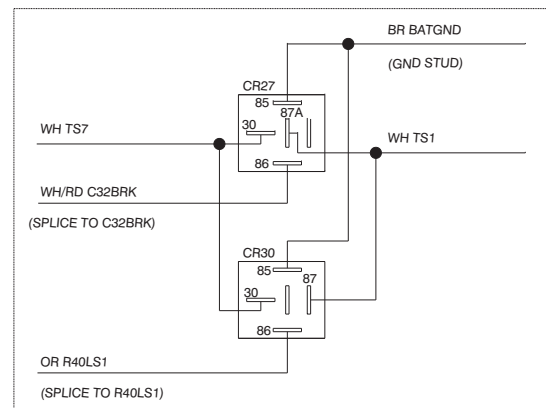
Ford DSG-423 EFI Models (from serial number 12510)

N M L K J I H G F E D C B A 1

COMPONENT INDEX	
JC2	BOOM PROPORTIONAL JOYSTICK: PRIMARY UP/DN, TURNABLE ROTATE
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
TS14	DRIVE SPEED SWITCH
TS15	DRIVE ENABLE SWITCH
TS47	GENERATOR SWITCH (OPTION)
TS49	WORK/DRIVE LIGHT (OPTION)

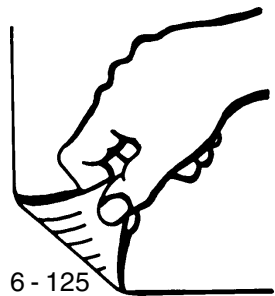
DETAIL A: LIFT/DRIVE OPTION

REPLACE WIRE WITH THIS WIRING DIAGRAM

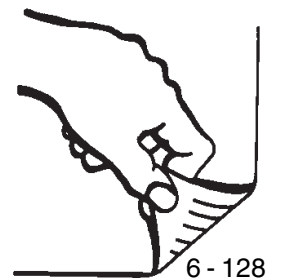
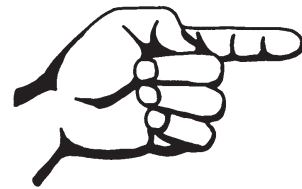


Platform Control Box Switch Panel Wiring Diagram

Ford DSG-423 EFI Models
(from serial number 12510)

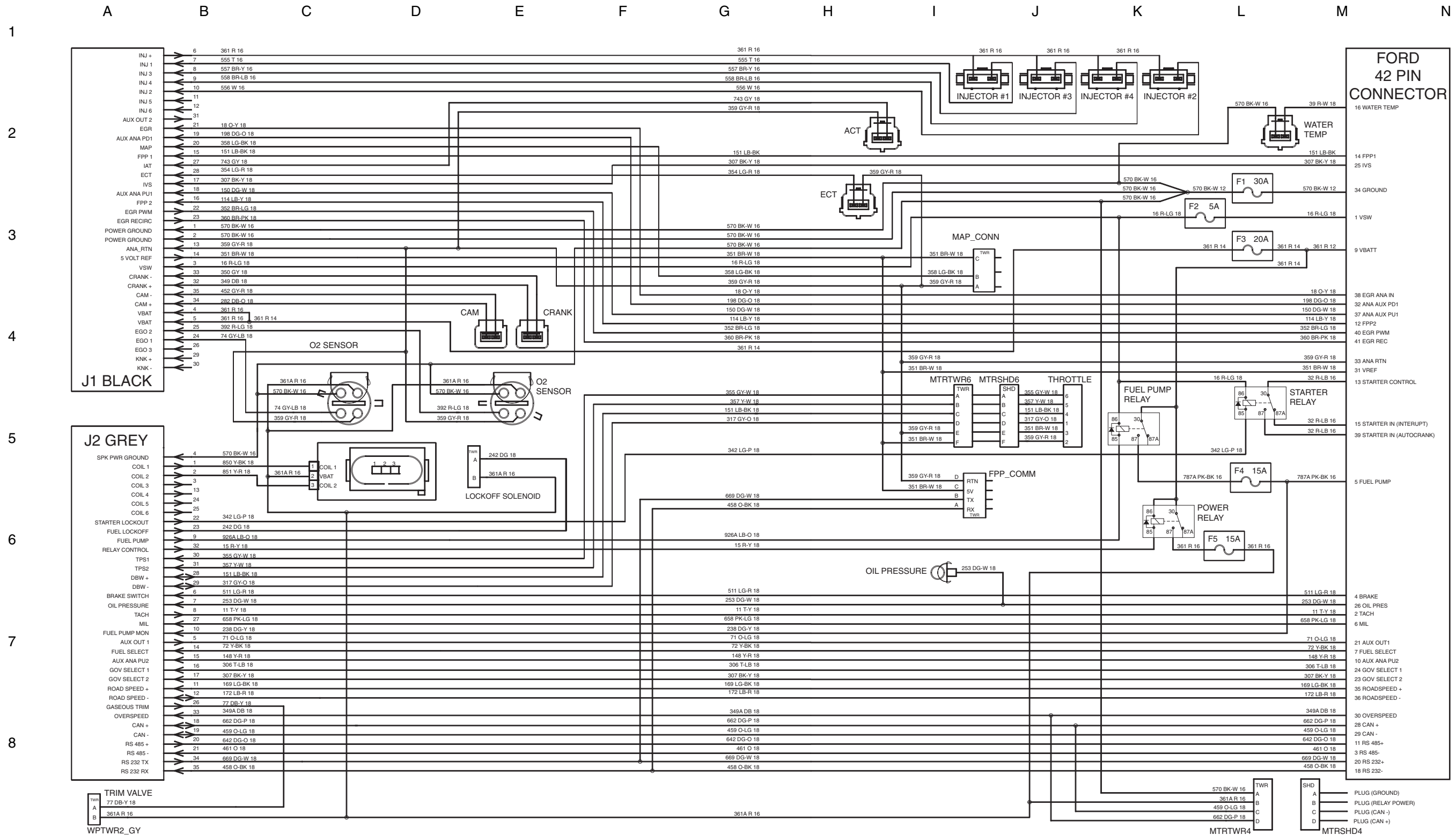


Engine Wire Harness
Ford LRG-425 EFI Models
(before serial number 11067)



Engine Wire Harness

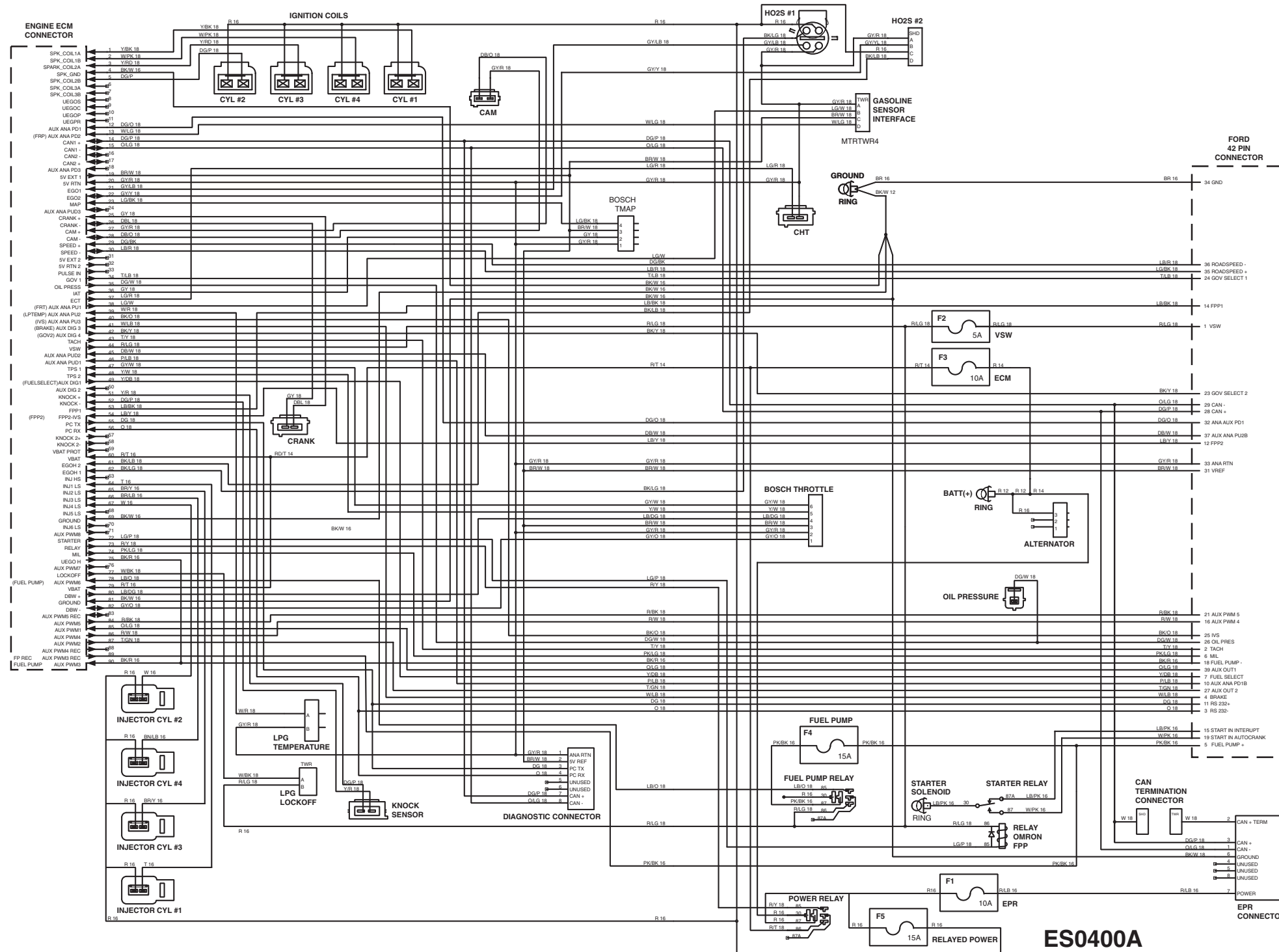
Ford LRG-425 EFI Models
(before serial number 11067)



Engine Wire Harness

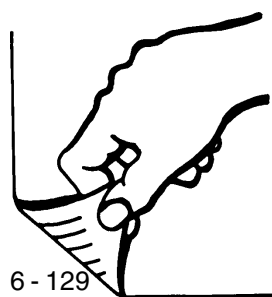
Ford DSG-423 EFI Models (from serial number 11067 to 11784)

N M L K J I H G F E D C B A 1

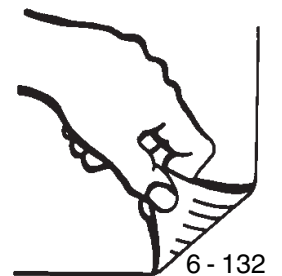
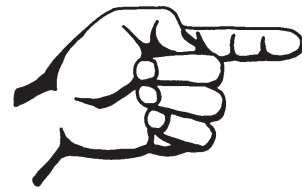


Engine Wire Harness

Ford DSG-423 EFI Models (from serial number 11101 to 11784)

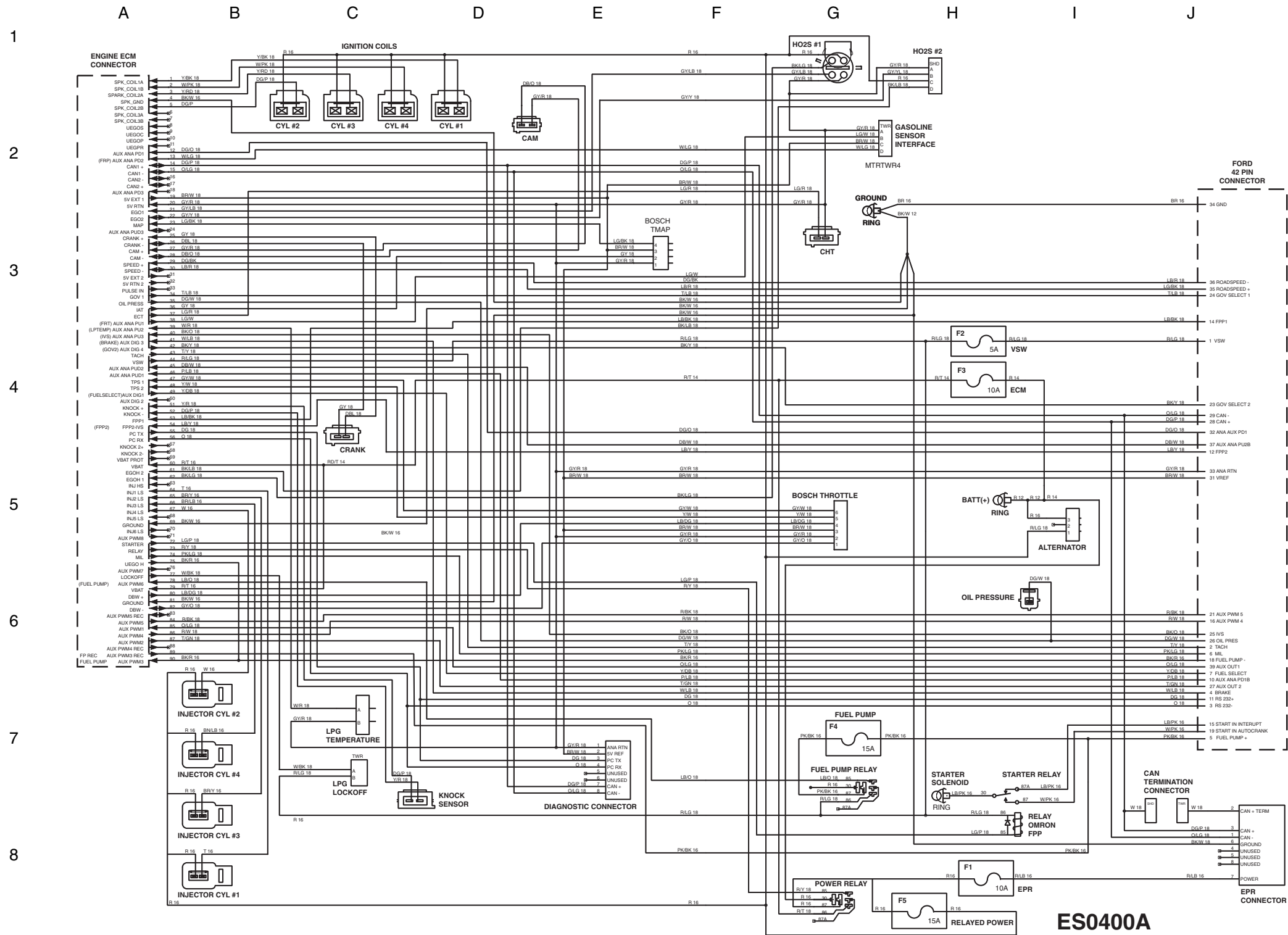


Engine Wire Harness
Ford DSG-423 EFI Models (from serial number 11785)



Engine Wire Harness

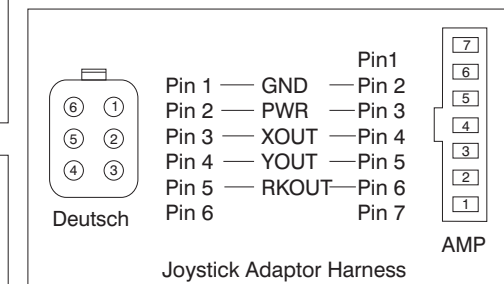
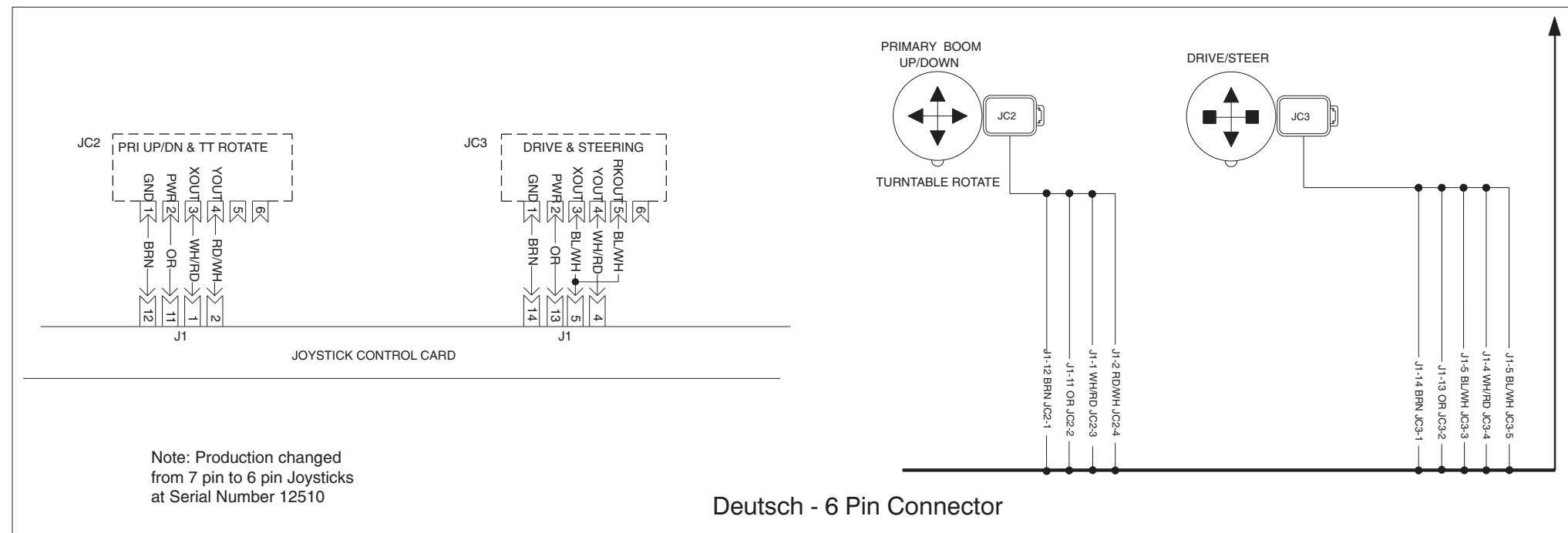
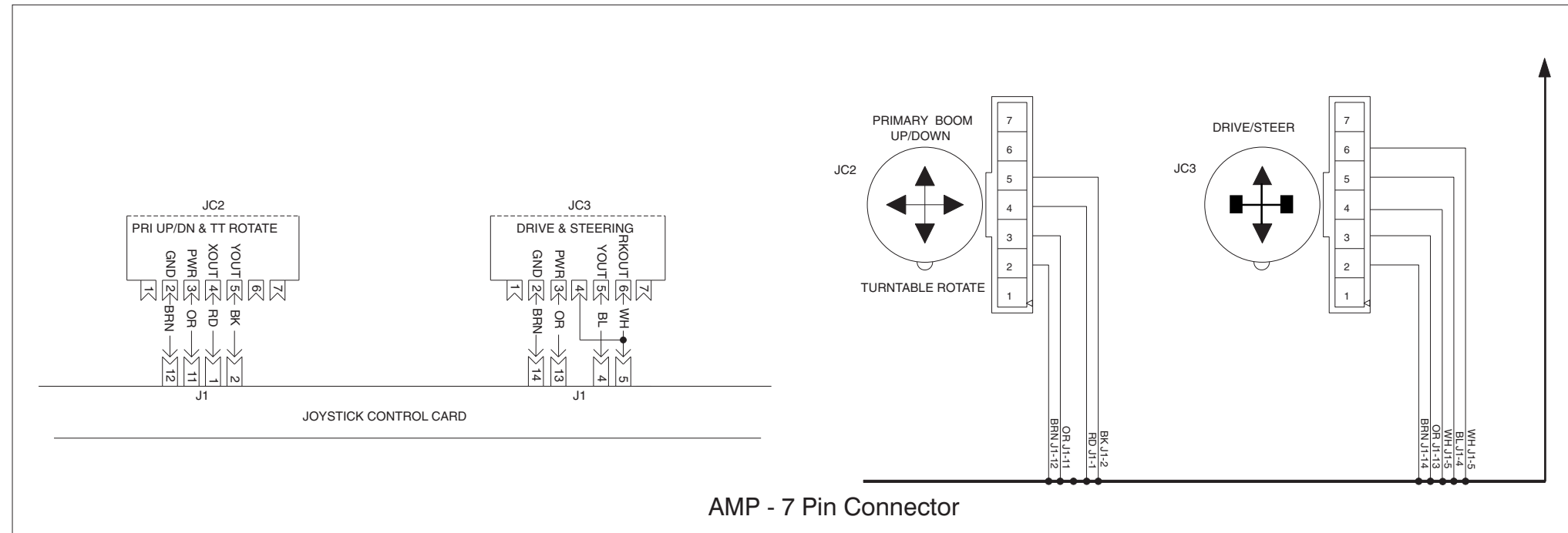
Ford DSG-423 EFI Models (from serial number 11785)



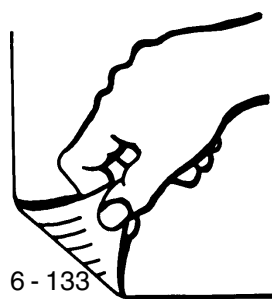
ES0400A

Joystick Connector Diagram

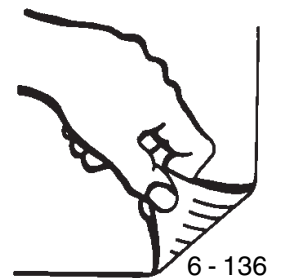
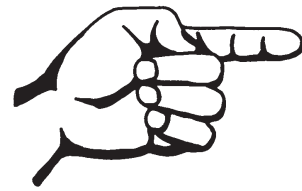
N M L K J I H G F E D C B A 1



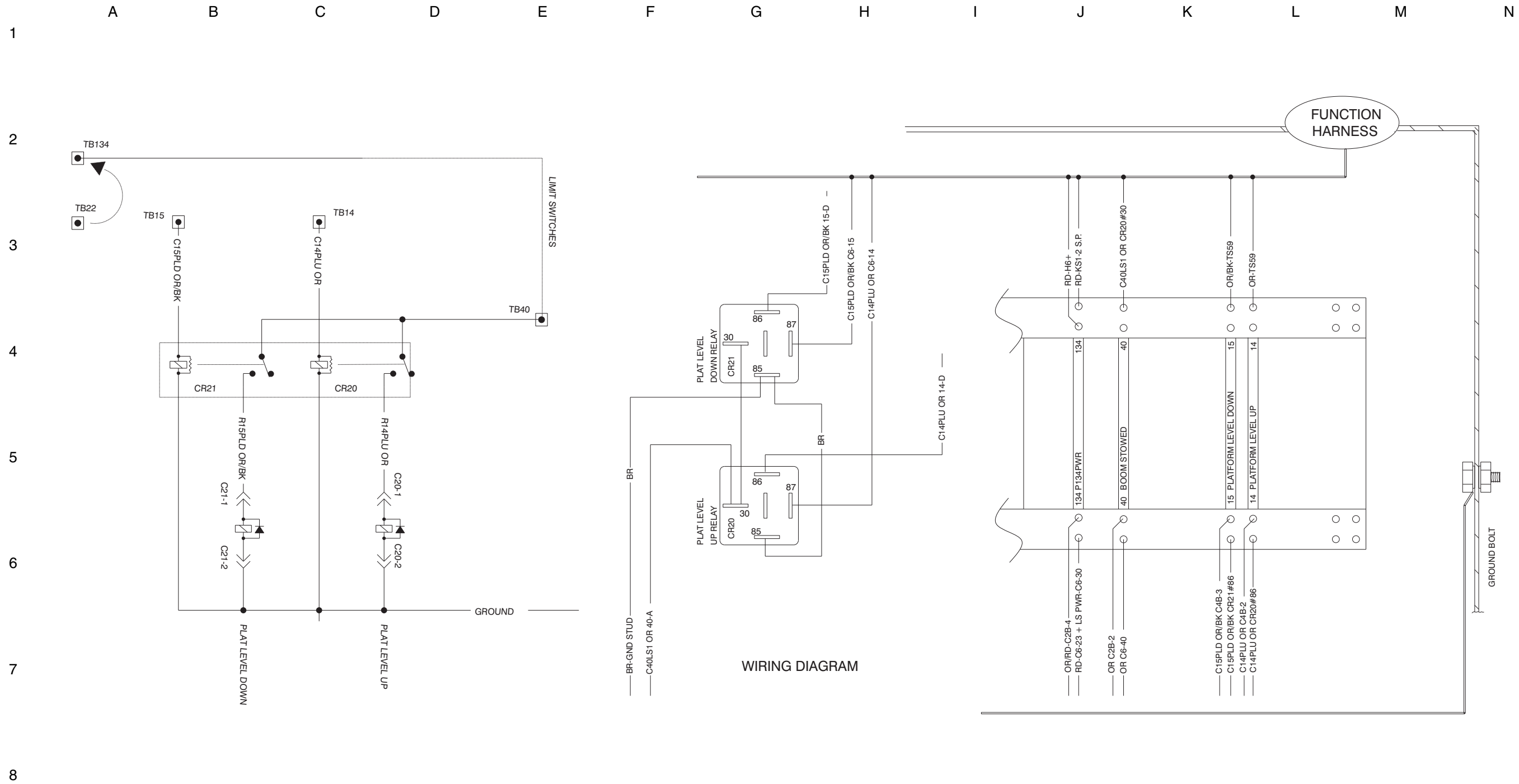
Joystick Connector Diagram



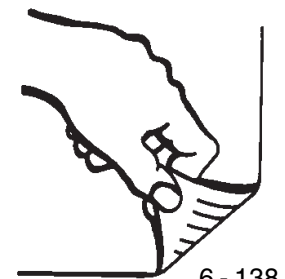
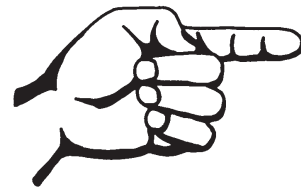
CTE Option Wiring Diagram



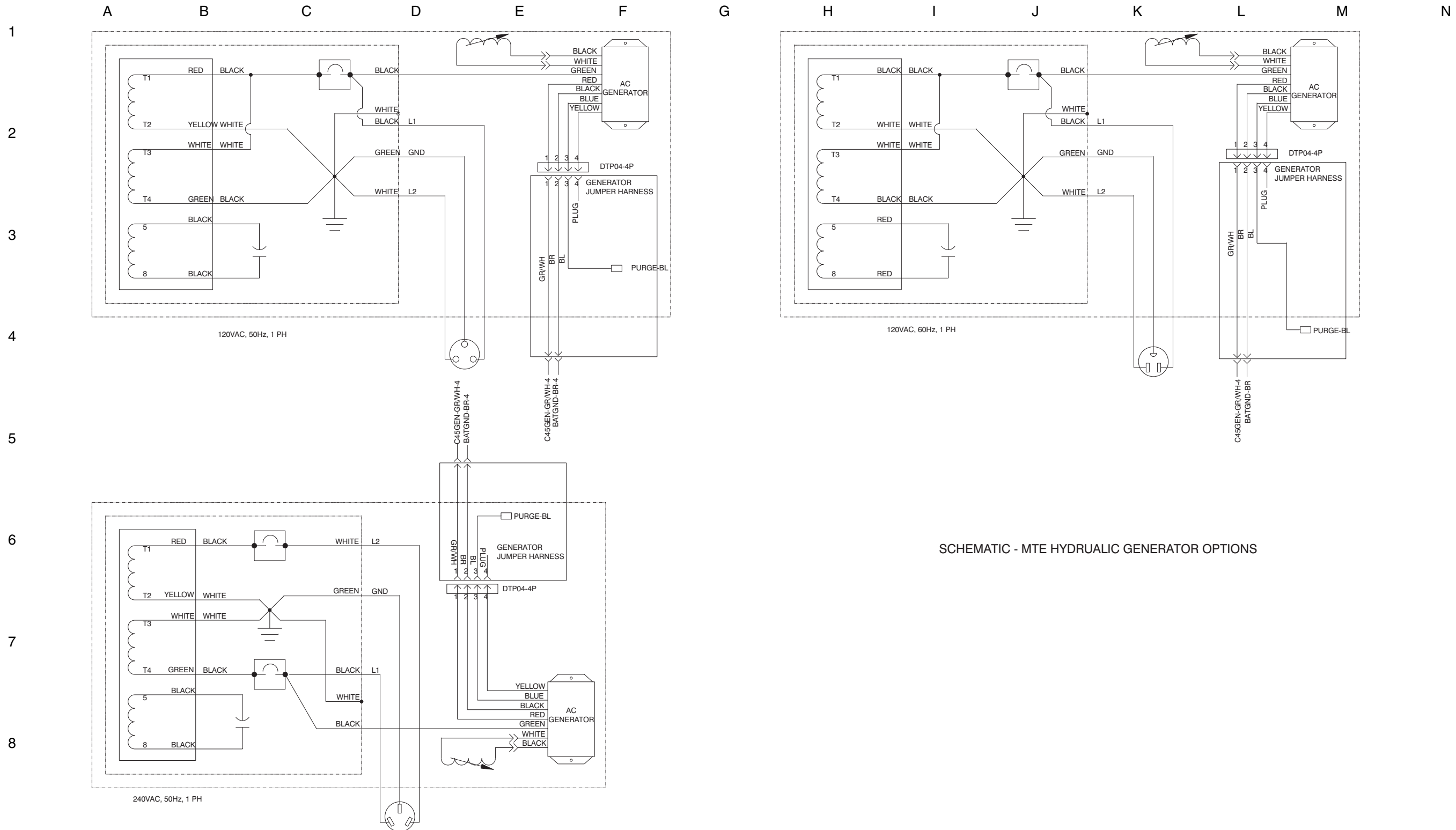
CTE Option Wiring Diagram



MTE Hydraulic Generator Option Wiring Diagram

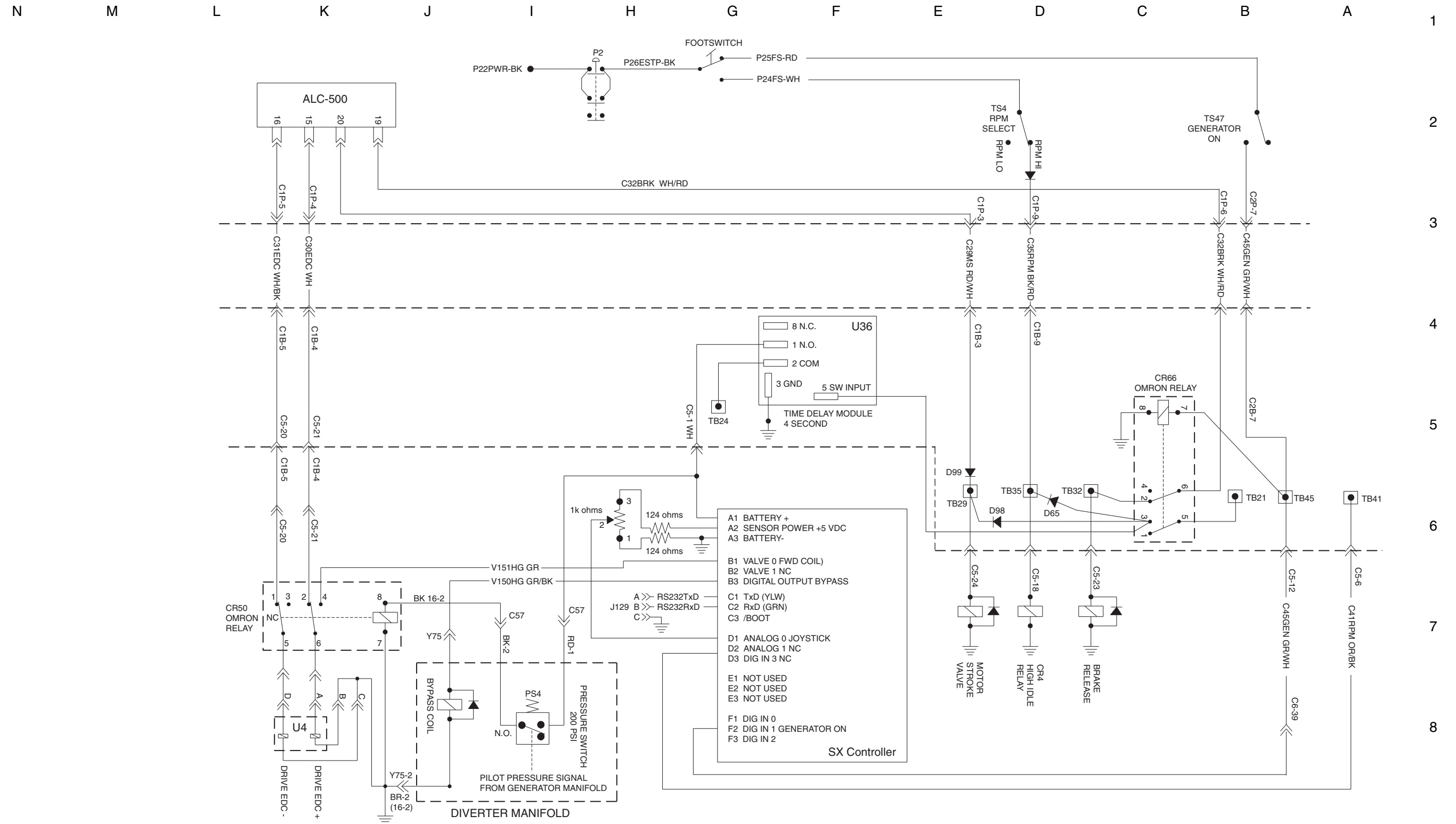


MTE Hydraulic Generator Option Wiring Diagram

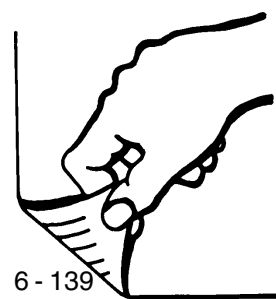


SCHEMATIC - MTE HYDRUALIC GENERATOR OPTIONS

Hydraulic Generator Wiring Diagram- Welder Option



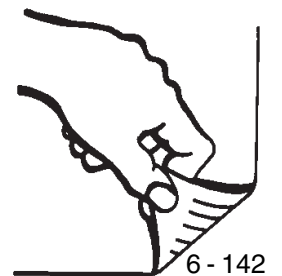
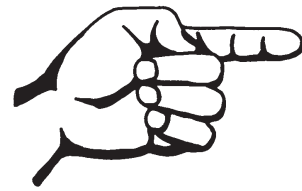
Hydraulic Generator Wiring Diagram- Welder Option



6 - 139

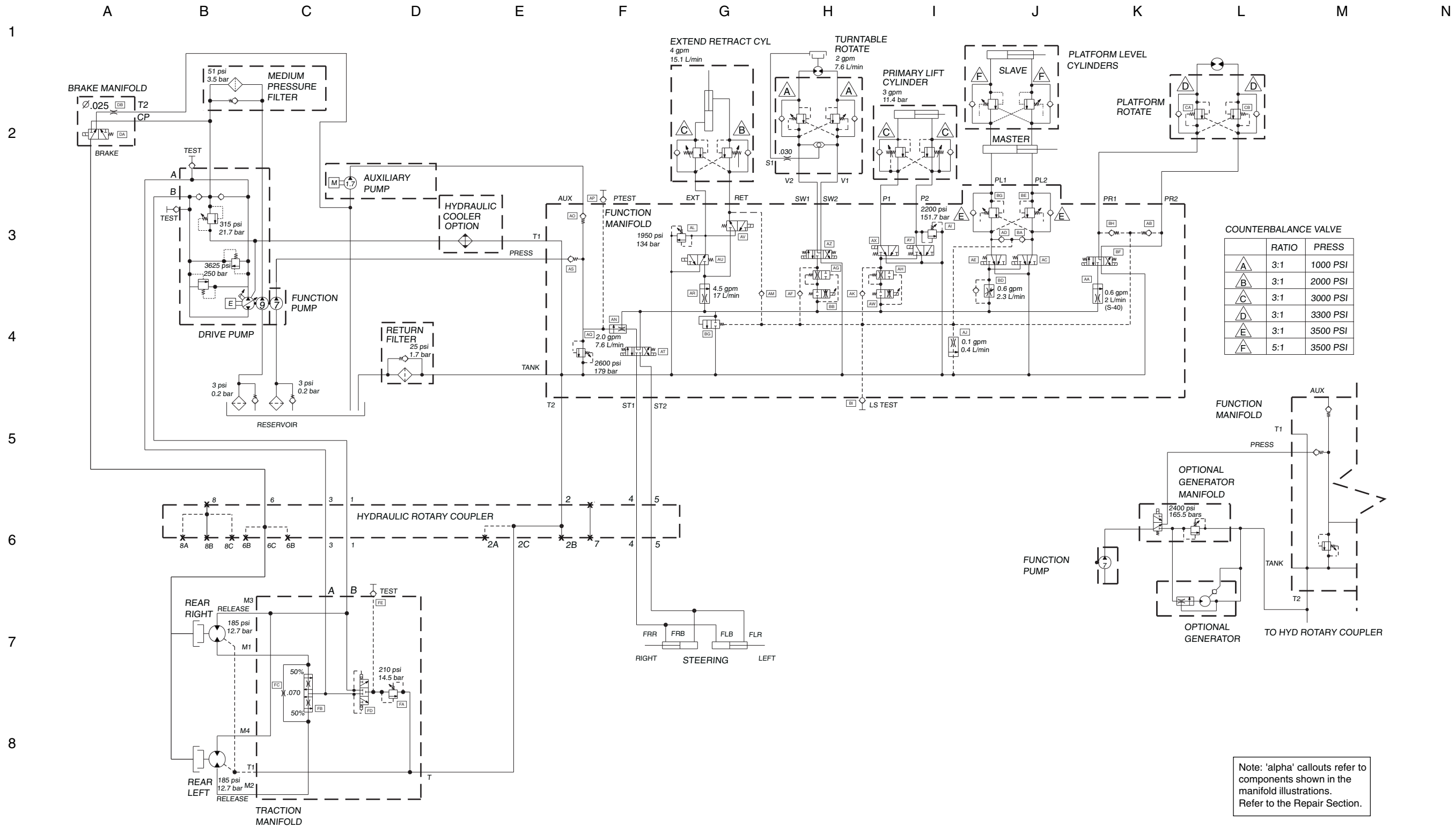
6 - 140

2WD Non-Oscillating Hydraulic Schematic
S-40 Models (before serial number 7569)



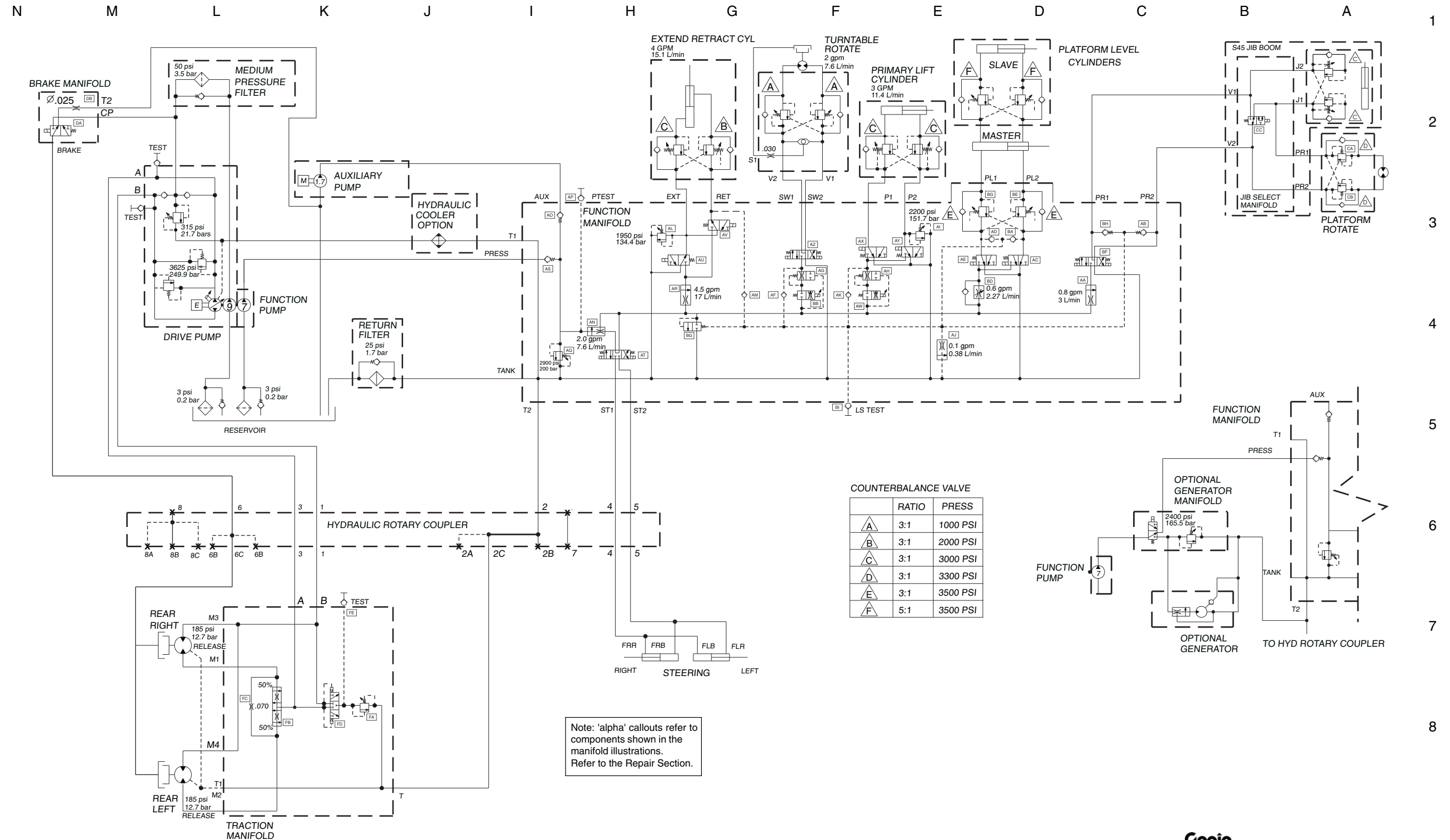
2WD Non-Oscillating Hydraulic Schematic

S-40 Models (before serial number 7569)

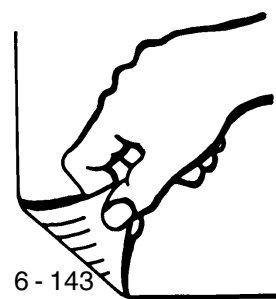


Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

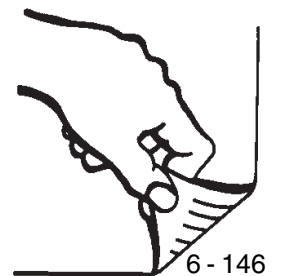
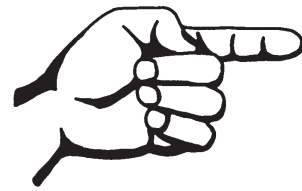
2WD Non-Oscillating Hydraulic Schematic S-45 Models (before serial number 7569)



2WD Non-Oscillating Hydraulic Schematic
S-45 Models (before serial number 7569)

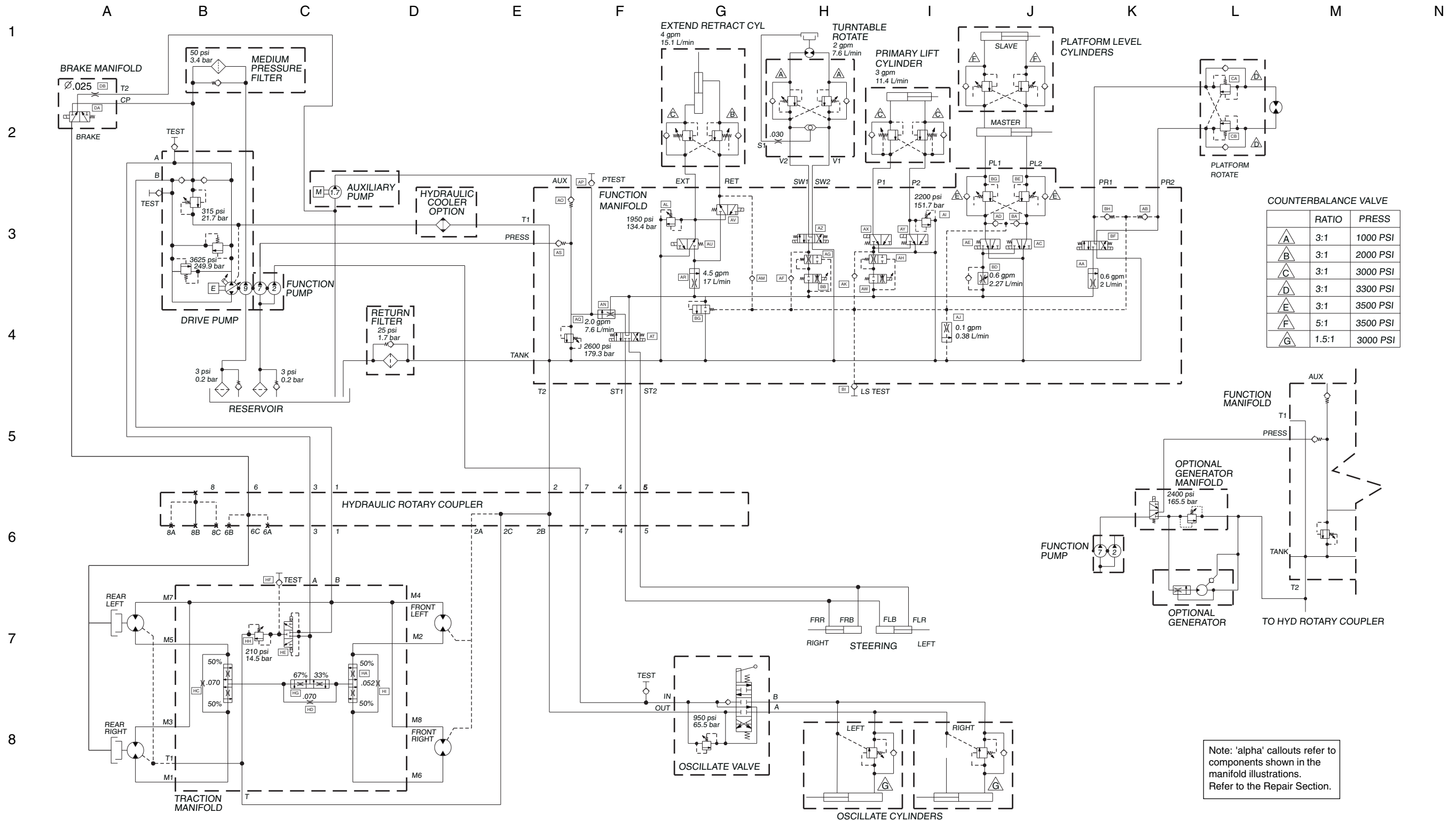


4WD Oscillating Hydraulic Schematic
S-40 Models (before serial number 7569)

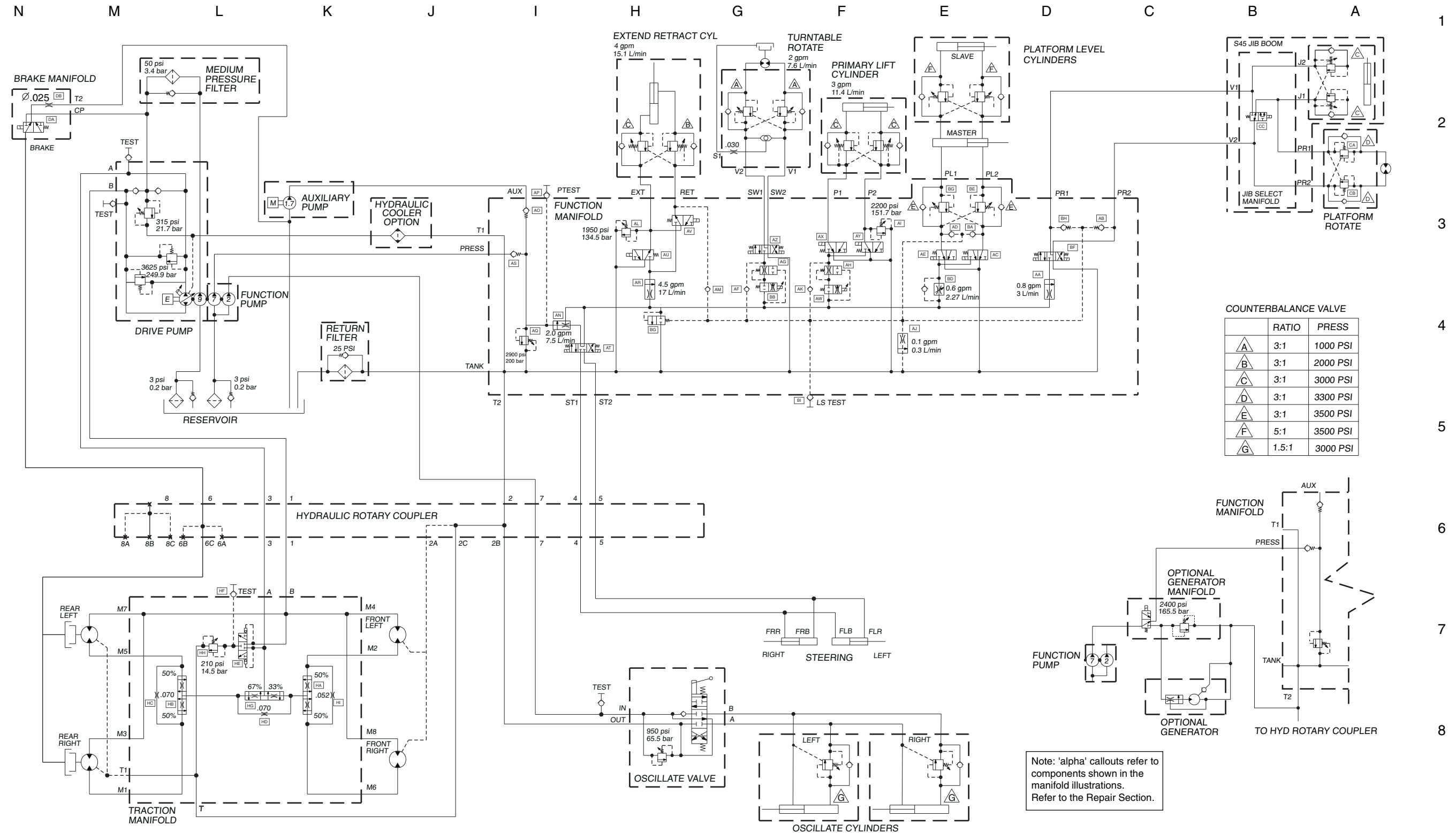


4WD Oscillating Hydraulic Schematic

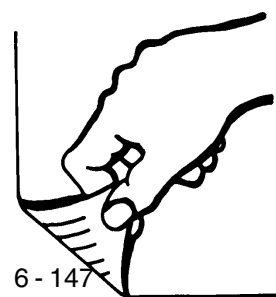
S-40 Models (before serial number 7569)



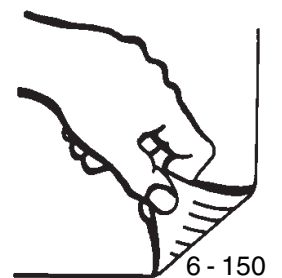
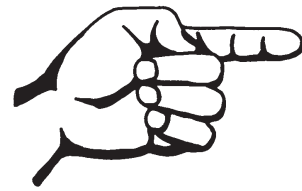
4WD Oscillating Hydraulic Schematic S-45 Models (before serial number 7569)



4WD Oscillating Hydraulic Schematic
S-45 Models (before serial number 7569)

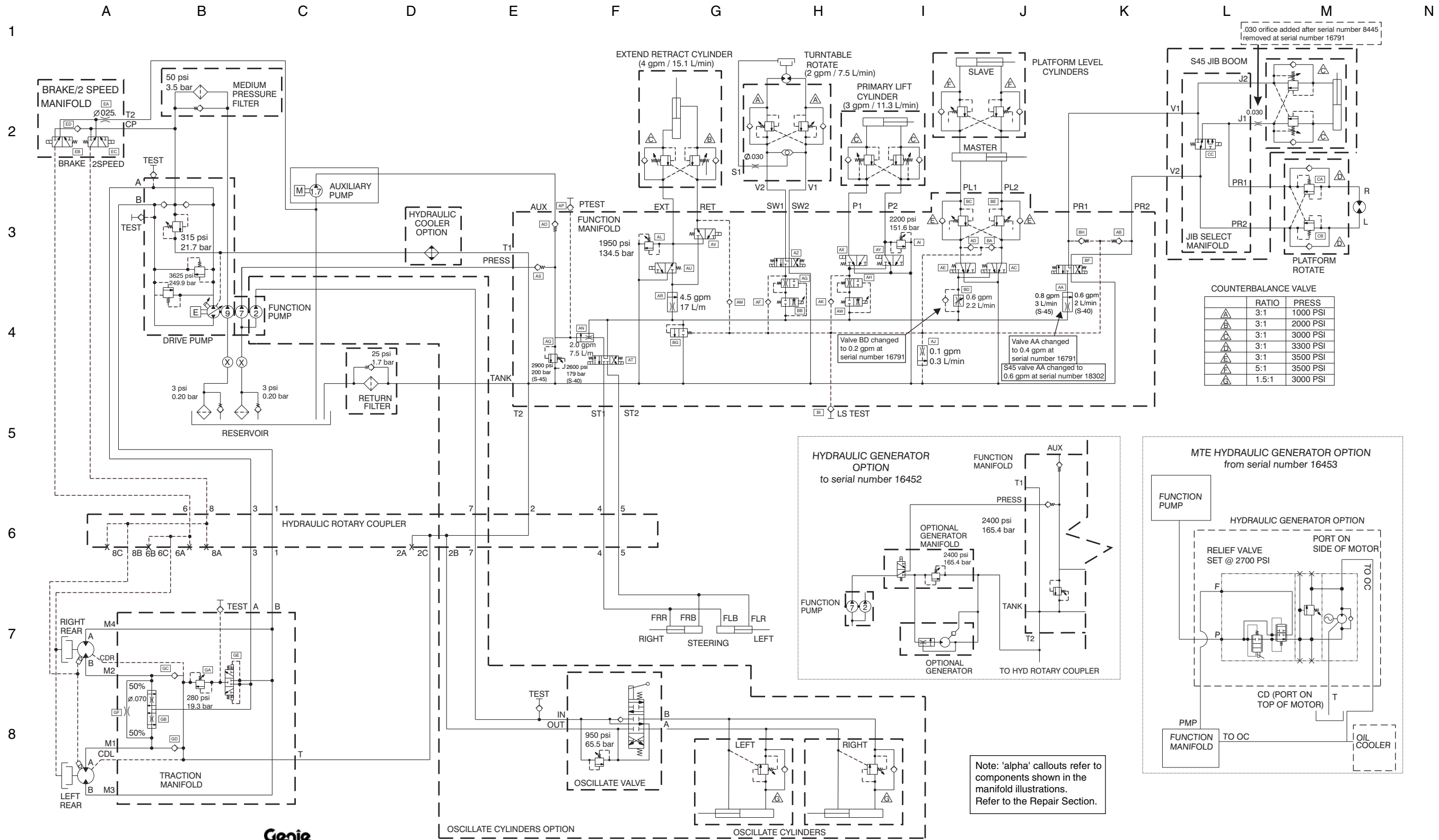


2WD Hydraulic Schematic
(from serial number 7569)



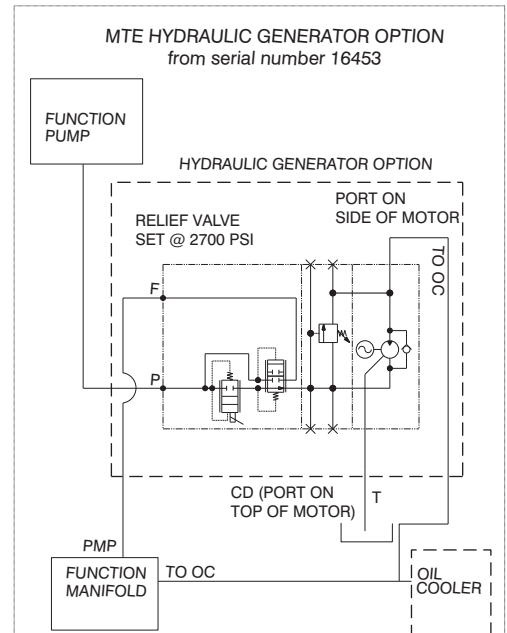
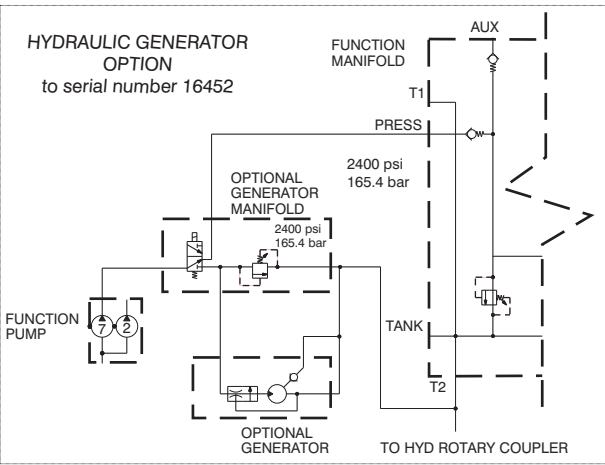
2WD Hydraulic Schematic

(from serial number 7569)



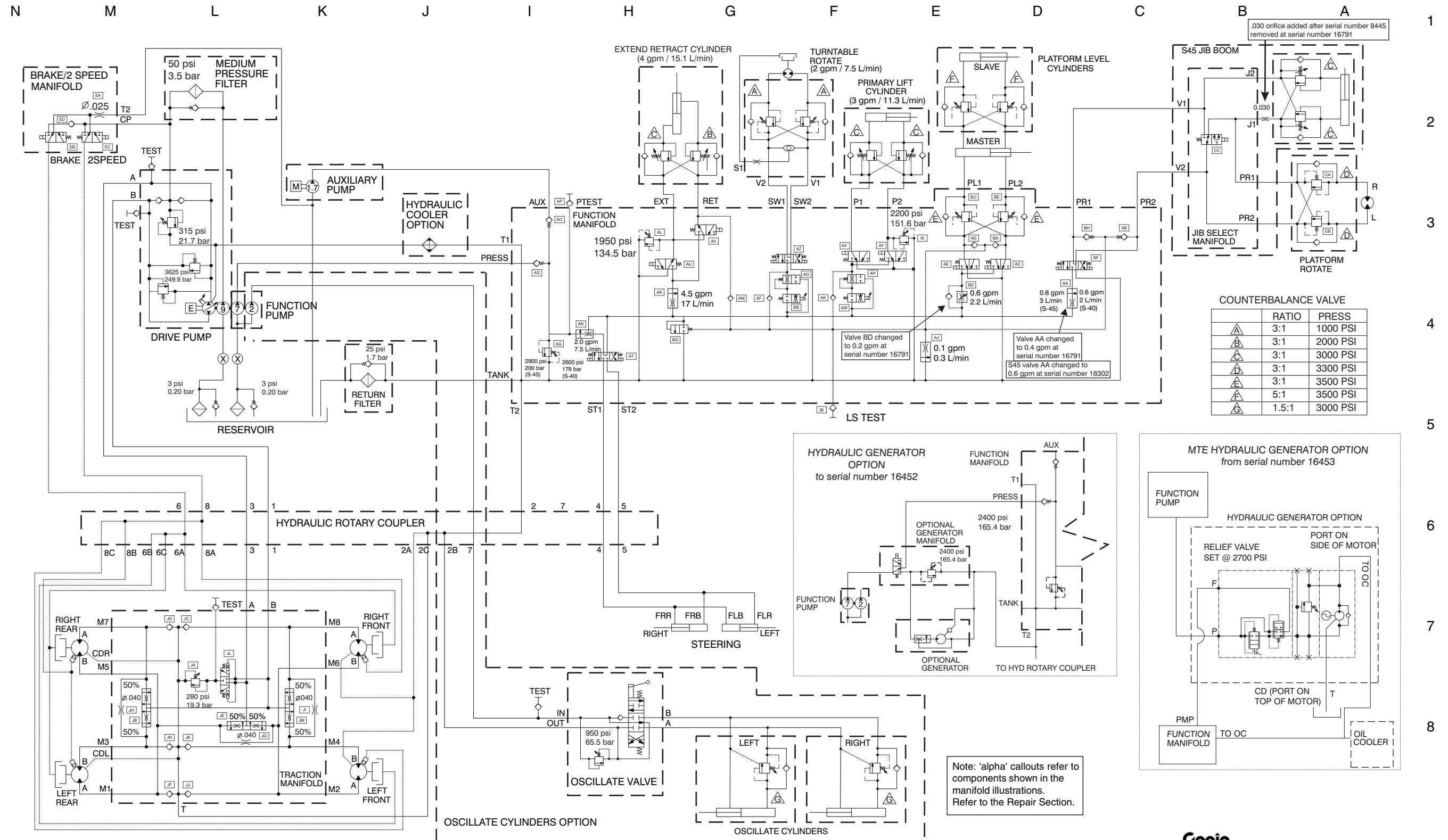
COUNTERBALANCE VALVE

	RATIO	PRESS
	3:1	1000 PSI
	3:1	2000 PSI
	3:1	3000 PSI
	3:1	3300 PSI
	3:1	3500 PSI
	5:1	3500 PSI
	1.5:1	3000 PSI

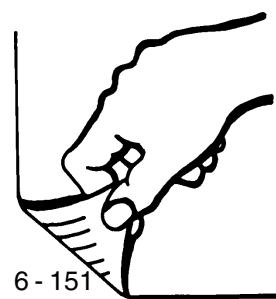


Note: 'alpha' callouts refer to components shown in the manifold illustrations. Refer to the Repair Section.

4WD Hydraulic Schematic (from serial number 7569)

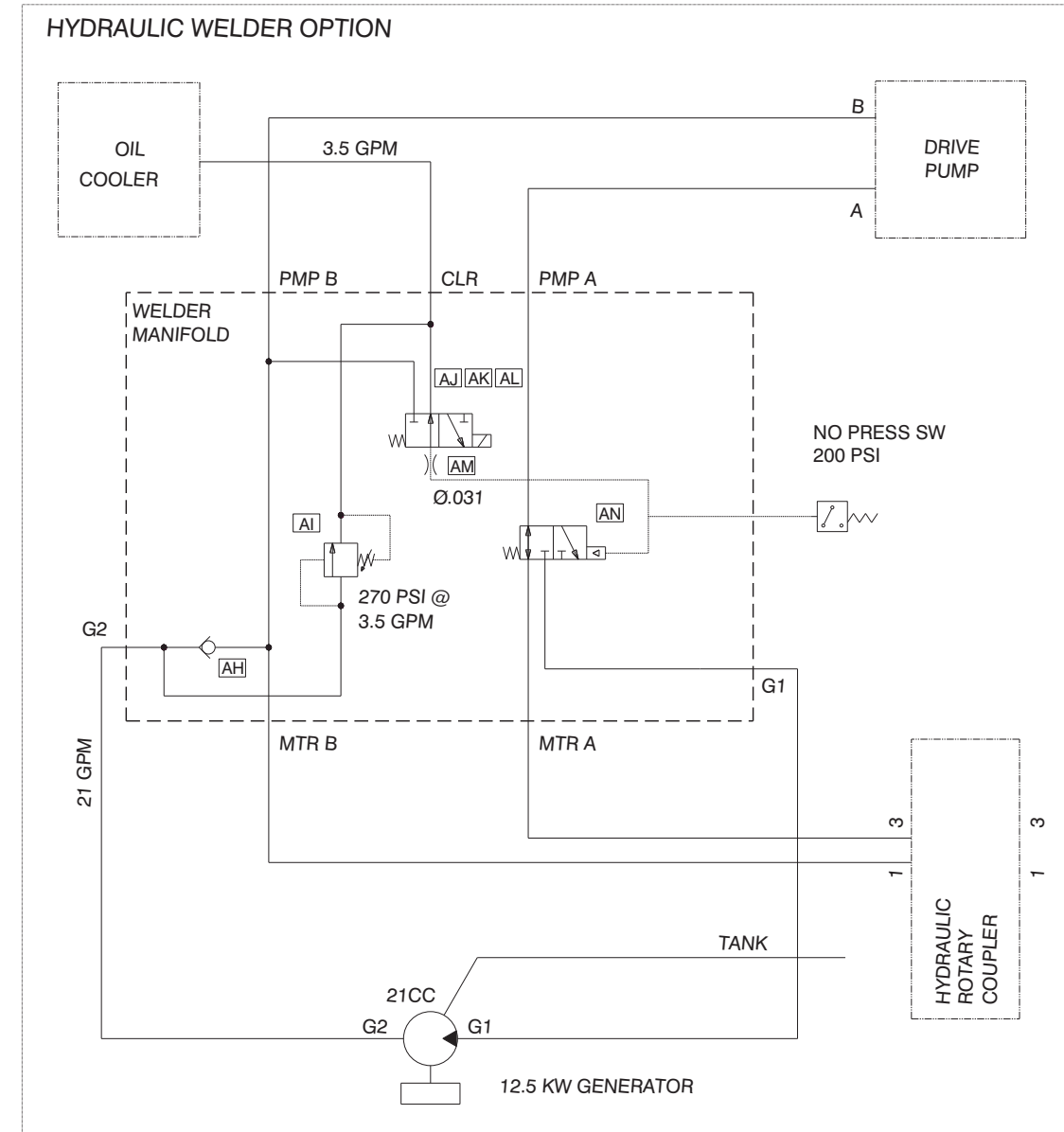


4WD Hydraulic Schematic
(from serial number 7569)



Generator Hydraulic Schematic- Welder Option

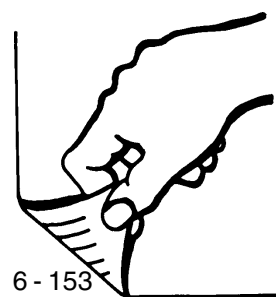
N M L K J I H G F E D C B A 1



2
3
4
5
6
7
8

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

Generator Hydraulic Schematic- Welder Option



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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