Genie®
A TEREX BRAND

Service Manual

Serial Number Range

Z-45/25
Z-45/25J
IC Power

Deutz models: from 21180 to 23040
Ford models: from 21180 to 23189
Perkins models: from 21180 to 23008

Part No. 77809
Rev C2
August 2005

Important

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

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

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

Technical Publications

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

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

Contact Us:

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

Serial Number Information

Genie Industries offers the following Service Manuals for these models:

Title	Part No.
Z-45/25 and Z-45/25J Service Manual From serial number 9998 to 21179	52709
Z-45/25 and Z-45/25J Service Manual Deutz models: from 21180 to 23040 Ford models: from 21180 to 23189 Perkins models: from 21180 to 23008	77809
Z-45/25 and Z-45/25J Service Manual Deutz models: from 23041 to 34010 Ford models: from 23190 to 34010 Perkins models: from 23009 to 34010 All models: from A34011 to A47000 All models: from B101	107846
Z-45/25 and Z-45/25J Service Manual From serial number 13A-47001	219418

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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie Z-45/25 and Genie Z-45/25J Operator's Manual* will result in death or serious injury.

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

⚠DANGER 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 result in minor or moderate injury.

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

NOTICE Used to indicate operation or maintenance information.



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



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

Workplace Safety



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



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



Be sure 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

REV B

Machine Specifications

Tires and wheels	Rough terrain	Industrial
Wheel lugs, 4WD	9 @ 5/8 -18	
Wheel lugs, 2WD Front Rear	 9 @ 5/8 -18 9 @ 5/8 -18	 9 @ 5/8 -18 9 @ 5/8 -18
Lug nut torque, dry	125 ft-lbs 169.5 Nm	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm	94 ft-lbs 127.4 Nm
Tire ply rating	14	Tread 8 Sidewall 6
Tire contact area	59 sq in 149.9 sq cm	43.5 sq in 280 sq cm
Overall tire diameter	35.8 in 90.9 cm	28 in 71 cm
Tire pressure (air filled tires)	45 psi 3.1 bar	100 psi 6.9 bar
Fluid capacities		
LPG tank		33.5 pounds 15.2 kg
Hydraulic tank		24 gallons 91 liters
Hydraulic system (including tank)		30 gallons 113.6 liters
Drive hubs		17 fl oz 0.5 liters

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

Performance Specifications

Drive speed, maximum	
Stowed position	4.8 mph 7.7 km/h 40 ft/5.7 sec 12.2 m/5.7 sec
Raised or extended position	0.3 mph 0.5 km/h 40 ft/45 sec 12.2 m/45 sec
Braking distance, maximum	
High range on paved surface	3 to 6 ft 0.9 to 1.8 m

Boom function speeds, maximum from platform controls	
Jib boom up, Z-45/25J	28 to 32 seconds
Jib boom down, Z-45/25J	16 to 20 seconds
Primary boom up	24 to 28 seconds
Primary boom down	24 to 28 seconds
Secondary boom up	24 to 28 seconds
Secondary boom down	38 to 42 seconds
Primary boom extend	14 to 18 seconds
Primary boom retract	16 to 20 seconds
Turntable rotate, 359° primary boom retracted	62 to 68 seconds
Platform rotate, 180° Z-45/25	5 to 7 seconds
Platform rotate, 160° Z-45/25J	5 to 7 seconds

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

SPECIFICATIONS REV B

Hydraulic Specifications

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

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Premium ECO 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

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

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

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

Drive pump	
Type:	bi-directional, variable displacement piston pump
Flow rate @ 2500 rpm (before serial number 22050)	30.3 gpm 114.7 L/min
Flow rate @ 2500 rpm (after serial number 22049)	32 gpm 121 L/min
Drive pressure, maximum (before serial number 22050)	3500 psi 241.3 bar
Drive pressure, maximum (after serial number 22049)	3750 psi 259 bar

Charge pump	
Type:	gerotor
Displacement (before serial number 22050)	0.85 cu in 13.9 cc
Displacement (after serial number 22049)	0.84 cu in 13.76 cc
Flow rate @ 2500 rpm (before serial number 22050)	9.2 gpm 34.8 L/min
Flow rate @ 2500 rpm (after serial number 22049)	9.1 gpm 34.4 L/min
Charge pressure @ 2500 rpm (before serial number 22050)	250 psi 17.2 bar
Charge pressure @ 2500 rpm (after serial number 22049)	315 psi 21.7 bar

Function pump	
Type:	gear, pressure balanced
Displacement	0.67 cu in 11 cc
Flow rate @ 2500 rpm	7.25 gpm 27.4 L/min

REV B SPECIFICATIONS

Auxiliary pump	
Type:	gear, fixed displacement
Displacement	1.75 gpm 2.8 L/min
Auxiliary pump relief pressure	3200 psi 220.6 bar
Function manifold	
System relief valve pressure	3200 psi 220.6 bar
Secondary boom down relief valve pressure	1800 psi 124 bar
Platform level relief valve pressure (after serial number 22049)	3500 psi 241.3 bar
Steer flow regulator	1.5 gpm 5.7 L/min
Boom extend flow regulator	2 gpm 7.6 L/minSteer
Jib boom / platform rotate flow regulator (before serial number 22050)	0.6 gpm 2.27 L/min
Jib boom / platform rotate flow regulator (after serial number 22049)	0.4 gpm 1.5 L/min
Drive manifold	
Hot oil relief pressure	250 psi 17.2 bar
Steer end drive motors (4WD models)	
Displacement per revolution	1.53 cu in 25 cc
Non-steer end drive motors	
Displacement per revolution, variable 4WD (2 speed motor)	0.16 to 2.8 cu in 2.62 to 45.9 cc
Displacement per revolution, variable 2WD	1.1 to 2.8 cu in 18.4 to 45.9 cc

Hydraulic filters	
High pressure filter	Beta $_3 \geq 200$
High pressure filter bypass pressure	100 psi 6.89 bar
Medium pressure filter	Beta $_3 \geq 200$
Medium pressure filter bypass pressure	50 psi 3.4 bar
Hydraulic return filter	10 micron with 25 psi / 1.7 bar bypass

SPECIFICATIONS REV A

Manifold Component Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Valve coil resistance specifications (before serial number 22050)	
Proportional solenoid valve, 12V DC (schematic items A, B and KK)	4 to 5Ω
3 position 4 way directional valve, 10V DC (schematic items R, AA, CC, EE, FF and HH)	5 to 7Ω
2 position 3 way solenoid valve, 10V DC (schematic items J, K, AI, AK, AU, AV, OO and XX)	5 to 7Ω

Valve coil resistance specifications (after serial number 22049)	
Proportional directional solenoid valve, 10V DC (schematic items A, C, D)	6 to 8Ω
3 position 4 way directional valve, 10V DC (schematic items B, F, H)	6 to 8Ω
2 position 3 way solenoid valve, 10V DC (schematic items E, G, AD, OO, XX, AI and AK)	6 to 8Ω

REV A SPECIFICATIONS

Ford LRG-425 EFI Engine

Displacement	153 cu in 2.5 liters
Number of cylinders	4
Bore & stroke	3.78 x 3.4 in 96.01 x 86.36 mm
Horsepower	
Gross intermittent @ 3600 rpm	97
Continuous @ 3600 rpm	82
Horsepower @ 2500 rpm	70
Firing order	1 - 3 - 4 - 2
Low idle	1600 rpm
High idle	2500 rpm
Compression ratio	9.4:1
Compression pressure (approx.) Pressure (psi) of lowest cylinder must be at least 75% of highest cylinder	
Valve clearances - collapsed tappet	0.035 to 0.055 in 0.889 to 1.397 mm
Lubrication system	
Oil pressure (operating temp. @ 2000 rpm)	40 to 60 psi 2.75 to 4.1 bar
Oil capacity (including filter)	5 quarts 4.7 liters

Oil viscosity requirements	
Below 60°F / 15.5°C	5W-30
-10°F to 90°F / -23°C to 32°C	10W-30
Above -10°F / -23°C	10W-40 to 10W-50
Above 20°F / -6.6°C	20W-40 or 20W-50

Use oils meeting API classification SG (labeled SG/CC or SG/CD) as they offer improved wear protection. Units ship with 10W-40 SG/CC.

Oil pressure switch specifications	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	3-5 psi 0.21-0.34 bar
Starter motor	
Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Current draw, minimum	60-80A
Maximum circuit voltage drop while starting (normal temperature)	0.5V DC
Brush length, new	0.66 in 16.8 mm
Brush length wear limit	0.25 in 6.35 mm
Brush spring tension	64 ounces 18 Newtons
Bolt torque through brush	45 to 84 in-lbs 5.08 to 9.5 Nm
Brush mounting bolt torque	15 to 20 ft-lbs 20 to 27 Nm
Maximum commutator run-out	0.005 in 0.127 mm

SPECIFICATIONS REV A

Battery	
Type	12V DC, Group 34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	200 minutes
Electronic fuel pump	
Fuel pressure, static	64 psi 4.4 bar
Fuel flow rate	0.58 gpm 2.18 L/min
Ignition System	
Spark plug type	Motorcraft AWSF-52C
Spark plug gap	0.042 to 0.046 in 1.07 to 1.18 mm
Spark plug torque	5 to 10 ft-lbs 7 to 14 Nm
Engine coolant	
Capacity	11 1/2 quarts 10.9 liters
Coolant temperature switch	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	230° F 112° C
Alternator	
Output	95A, 14.5V DC

REV A SPECIFICATIONS

Deutz F3L 1011F Engine

Displacement	125 cu in 2.05 liters
Number of cylinders	3
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	
Gross intermittent @ 3000 rpm	44
Continuous @ 3000 rpm	40
Horsepower @ 2500 rpm	36
Firing order	1 - 2 - 3
Low idle	1400 rpm
High idle	2500 rpm
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure	26 to 87 psi 1.8 to 6 bar
Oil capacity (including filter)	6.5 quarts 6 liters
Oil viscosity requirements	
Below 60°F / 15.5°C	5W-30 (synthetic)
-10°F to 90°F / -23°C to 32°C	10W-40
Above -4°F / -34°C	15W-40

Engine oil should have minimum properties of API classification CC/SG or CD/SG grades.
Units ship with 10W-40 CH-4

Oil temperature switch specifications	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	220° F 104° C
Oil pressure switch specifications	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	15 psi 1 bar
Fuel injection system	
Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D
Alternator output	60A, 14V DC
Starter motor	
Current draw, no load	90A
Brush length, new	0.72 in 18.5 mm
Brush length, minimum	0.27 in 7 mm
Battery	
Type	12V DC, Group 34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm

SPECIFICATIONS REV A

Perkins 104-22 Engine (KR model)

Displacement	135 cu in 2.2 liters
Number of cylinders	4
Bore and stroke	3.31 x 3.94 inches 84 x 100 mm
Horsepower	
Gross intermittent @ 2800 rpm	50
Net intermittent @ 2800 rpm	46.9
Net continuous @ 2800 rpm	41
Intermittent @ 2500 rpm	44
Firing order	1 - 3 - 4 - 2
Low idle	1600 rpm
High idle	2500 rpm
Compression ratio	22:1
Compression pressure	300 to 500 psi 20.7 to 34.5 bar
Pressure (psi) of lowest cylinder must be 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 @ 2500 rpm	41 psi 2.8 bar
Oil capacity (including filter)	8.6 quarts 8.2 liters
Oil viscosity requirements	
Below 68°F / 20°C (synthetic)	5W-20
5°F to 104°F / -15°C to 40°C	10W-30
Above 14°F / -10°C	15W-40
Engine oil should have minimum 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. Units ship with CH-4	
Oil pressure sending unit	
Torque	8-18 ft-lbs 11-24 Nm
Oil pressure switch point	4.2 psi 0.3 bar
Fuel injection system	
Injection pump make	Zexel
Injection pressure	2133 psi 147 bar
Fuel requirement	#2 Diesel
Alternator output	55A @ 13.8V DC
Starter motor	
Current draw, no load	90A
Brush length, new	0.7480 in 19 mm
Brush length, minimum	0.5 in 12.7 mm

REV A SPECIFICATIONS

Perkins Engine 104-22 (KR model), continued

Battery	
Type	12V DC, Group 34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	200 minutes
Fan belt deflection	3/8 in 10 mm
Engine coolant	
Capacity	7.7 quarts 7.3 liters
Coolant temperature sending unit	
Torque	8-18 ft-lbs 11-24 Nm
Temperature switch point	221° F 105° C

SPECIFICATIONS REV A

Machine Torque Specifications

Platform rotator	
1-8 center bolt	480 ft-lbs 651 Nm
3/8 -16 bolts	47 ft-lbs 63.7 Nm
Drive motor and hubs	
Drive hub mounting bolts, dry	200 ft-lbs 271 Nm
Drive hub mounting bolts, lubricated	150 ft-lbs 203 Nm
Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm

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	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

Seal-Lok® fittings

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

NOTICE The O-rings used in the Parker Seal Lok® fittings and hose ends are 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.

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

SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

Seal-Lok® Fittings
(hose end)

SAE Dash size	Torque
-4	18 ft-lbs / 25 Nm
-6	30 ft-lbs / 40 Nm
-8	40 ft-lbs / 55 Nm
-10	60 ft-lbs / 80 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 Nm

SPECIFICATIONS REV A

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	100	11.3	80	9	140	15.8	110	12.4	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.*

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

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

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

NOTICE Used to indicate operation or maintenance information.

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

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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



Indicates that tools will be required to perform this procedure.



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



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



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



Indicates that dealer service is required to perform this procedure.

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

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

Maintenance Inspection Report

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

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

Pre-Delivery Preparation

Fundamentals

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

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

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

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

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

Instructions

Use the operator's manual on your machine.

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

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

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

Legend

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

Comments

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

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

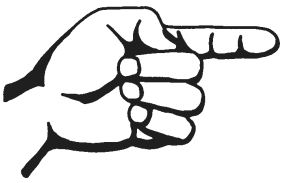
Inspector company

Genie®
A TEREX COMPANY

Genie Industries USA
18340 NE 76th Street
PO Box 97030
Redmond, WA 98073-9730
(425) 881-1800

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

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Rev A



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

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

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

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist A - Rev E	Y	N	R
A-1 Pre-operation inspection			
A-2 Functions tests			
A-3 Engine maintenance - Deutz models			
A-4 Engine maintenance - Ford models			
A-5 Engine maintenance - Perkins models			
A-6 Filter condition indicator			
A-7 Oscillate axle			
Perform after 40 hours:			
A-8 30 day service			
Perform every 100 hours:			
A-9 Engine maintenance - Ford and Perkins models			
A-10 Fuel filters - Ford models			
A-11 Fuel filter/separator - Diesel models			
A-12 Check engine RPM- Perkins models			
A-13 Rotation bearing			
Perform every 200 hours:			
A-14 Engine maintenance - Ford models			
A-15 Engine maintenance - Perkins models			

Checklist B - Rev D	Y	N	R
B-1 Battery			
B-2 Electrical wiring			
B-3 Key switch			
B-4 Engine maintenance - Ford models			
B-5 Exhaust system			
B-6 Oil cooler and fins- Deutz models			
B-7 Lug nut torque			
B-8 Brake configuration			
B-9 Drive hub oil level			
B-10 Engine RPM - Ford and Deutz models			
B-11 Ground control override			
B-12 Directional valve			
B-13 Platform leveling			
B-14 Engine idle select			
B-15 Fuel select - Ford models			
B-16 Drive brakes			
B-17 Drive speed - stowed position			
B-18 Drive speed - raised position			
B-19 Alarm package			
B-20 Hydraulic oil analysis			
B-21 Fuel filter/separator - Perkins models			
B-22 Replace fuel filter - Perkins models			
Perform every 400 hours:			
B-23 Engine maintenance - Deutz models			
B-24 Engine maintenance - Ford models			
B-25 Engine maintenance - Perkins 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.

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

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

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist C - Rev C		**Y**	**N**	**R**
C-1	Engine maintenance - Deutz models			
C-2	Grease platform overload (if equipped)			
C-3	Test platform overload (if equipped)			
Perform every 600 hours:				
C-4	Engine maintenance - Perkins models			
Perform every 800 hours:				
C-5	Engine maintenance - Ford models			

Checklist D - Rev 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	Air/LPG mixture - Ford models			
D-6	Engine maintenance - Deutz models			
D-7	Turntable bearing wear			
D-8	Calibrate platform overload system (if equipped)			
D-9	Hydraulic filters			

Checklist E - Rev B		**Y**	**N**	**R**
E-1	Hydraulic oil			
E-2	Fuel hoses - Ford models			
E-3	Engine maintenance - Deutz models			
E-4	Grease steer axle wheel bearings, 2WD models			

Checklist A Procedures

REV E

A-1
Perform Pre-operation Inspection

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 *Genie Z-45/25 and Genie Z-45/25J Operator's Manual* on your machine.

A-2
Perform Function Tests

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 *Genie Z-45/25 and Genie Z-45/25J Operator's Manual* on your machine.

CHECKLIST A PROCEDURES REV E

A-3
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this procedure be performed daily or every 10 hours, 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.

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

Deutz FL 1011F Operation Manual	
Genie part number	52883

To access the engine:

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

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

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

A-4
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed daily or every 8 hours, 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.

Required maintenance procedures and additional engine information are available in the *Ford LRG-425 EFI Operator Handbook* (Ford part number FPP 194-302).

Ford LRG-425 EFI Operator Handbook	
Genie part number	84792

To access the engine:

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

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

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

A-5
Perform Engine Maintenance - Perkins Models

NOTICE Engine specifications require that this procedure be performed daily or every 8 hours, 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.

Required maintenance procedures and additional engine information are available in the *Perkins 100 Series Workshop Manual* (Perkins part number TPD 1377E).

Perkins 100 Series Workshop Manual	
Genie part number	72352

To access the engine:

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

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

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

A-6
Check the High Pressure Hydraulic Filter Condition Indicator

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

1 Open the engine side turntable cover.

2 Start the engine from the ground controls.

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

4 Visually inspect the filter condition indicator.

⊙ Result: The filter condition indicator should be operating with the plunger in the green area.

⊠ Result: If the indicator displays the plunger in the red area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See D-9, *Replace the Hydraulic Filters.*

CHECKLIST A PROCEDURES REV E

A-7
Test the Oscillate Axle (if equipped)

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

1 Start the engine from the platform controls.

2 Drive the right steer tire up onto a 6 inch / 15.2 cm block or curb.

⊙ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.

3 Drive the left steer tire up onto a 6 inch / 15.2 cm block or curb.

⊙ Result: The three remaining tires should stay in firm contact with the ground and the chassis should remain level at all times.

4 Drive both steer tires up onto a 6 inch / 15.2 cm block or curb.

⊙ Result: The non-steer tires should stay in firm contact with the ground.

NOTICE If the chassis does not remain level during test, refer to Repair Procedure 8-8, *How to Set Up the Directional Valve Linkage.*

A-8
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 checklist for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- A-9 Perform Engine Maintenance - Ford and Perkins Models
- A-13 Grease the Turntable Rotation Bearing and Rotate Gear
- B-7 Check the Lug Nut Torque (including tires and wheels)
- B-9 Check the Oil Level in the Drive Hubs
- C-1 Perform Engine Maintenance - Deutz Models
- D-2 Check the Turnable Rotation Bearing Bolts
- D-9 Replace the Hydraulic Filters

REV E CHECKLIST A PROCEDURES

A-9
Perform Engine Maintenance - Ford and Perkins Models

NOTICE Engine specifications require that this procedure be performed every 100 hours. Perform this procedure more often if dusty conditions exist or the machine is subjected to extended low idle operation.

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 *Perkins 100 Series Workshop Manual* (Perkins part number TPD 1377E).

Ford LRG-425 EFI Operator Handbook	
Genie part number	84792
Perkins 100 Series Workshop Manual	
Genie part number	72352

To access the engine:

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

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

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

A-10
Replace the Fuel Filters - Ford Models

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

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

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

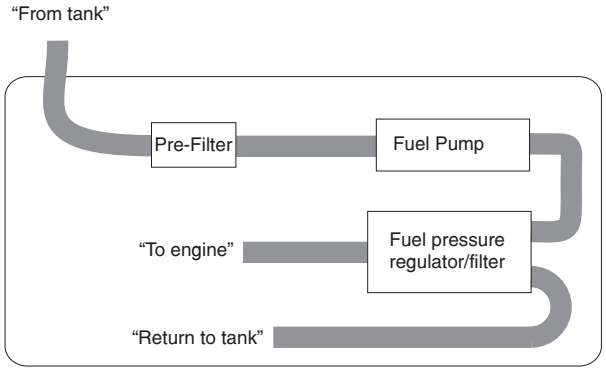
NOTICE Perform this procedure with the engine off.

1 Put on protective clothing and eye wear.

2 Open the tank side turntable cover and locate the fuel system components mounted to the plate under the fuel tank.

CHECKLIST A PROCEDURES REV E

3 Remove the fuel system plate retaining fasteners. Carefully lower the fuel system plate.



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

5 Disconnect the fuel hose from the fuel pre-filter to the fuel pump. Remove the pre-filter.

6 Install the new fuel pre-filter and connect the fuel hose between the fuel pump and the pre-filter.

NOTICE Be sure the arrow on the pre-filter is pointing towards the fuel pump.

7 Tag and disconnect the fuel hoses from the pressure regulator/filter.

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

8 Remove the regulator/filter mounting fasteners and remove the regulator/filter from the fuel system mounting plate.

9 Install the new regulator/filter onto the fuel system mounting plate. Connect the fuel hoses to the regulator/filter.

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

NOTICE Be sure each fuel hose is connected to the correct port of the pressure/regulator.

10 Install the fuel hose from the fuel tank to the fuel pre-filter.

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

12 Start the machine from the ground controls. Inspect the fuel filters and hoses for leaks.

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

A-11
Inspect the Fuel Filter/ Water Separator - Diesel Models

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

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

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

NOTICE Perform this procedure with the engine off.

Perkins models:

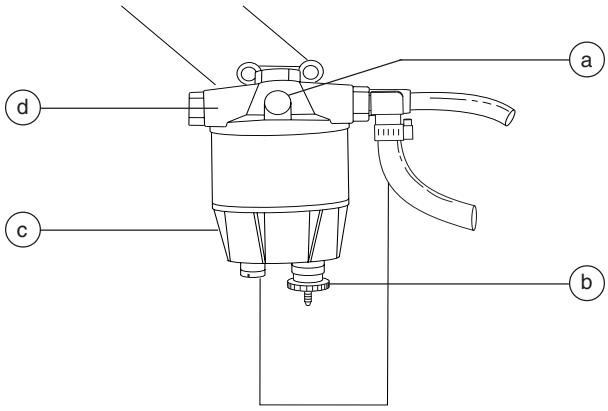
1 Put on protective clothing and eye wear.

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

3 Visually inspect the filter bowl for water buildup.

⊙ Result: If water is present in the filter bowl, continue with steps 3 through 7.

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



a vent plug
b drain plug
c filter bowl
d separator head

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

6 Tighten the vent plug.

NOTICE If the fuel filter/water separator is completely drained, you must prime the fuel filter/water separator before starting the engine. See B-22, *Replace The Fuel Filter Element - Perkins Models,* for instructions on how to prime the fuel filter/water separator.

7 Clean up any fuel that may have spilled.

CHECKLIST A PROCEDURES REV E

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

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

Deutz models:

1 Put on protective clothing and eye wear.

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

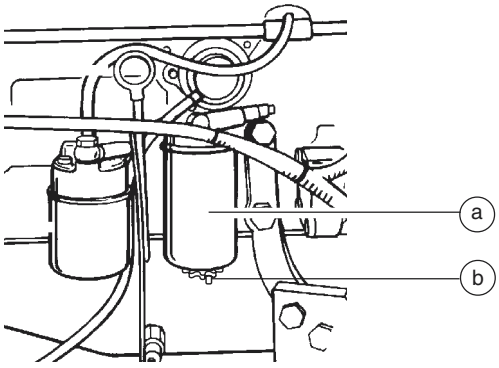
NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

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

4 Locate the fuel filter/water separator next to the oil filter.

5 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.

NOTICE Do not completely drain the filter.



a fuel filter/water separator
b drain valve

6 Clean up any fuel that may have spilled.

7 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.

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

9 Install the engine pivot plate safety pin.

A-12
Check and Adjust the Engine RPM - Perkins Models

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

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

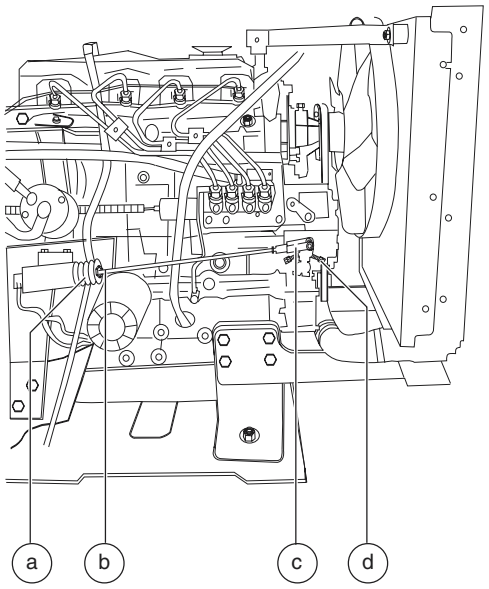
NOTICE This procedure will require two people.

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

⊙ Result: Low idle should be 1600 rpm.

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

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



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

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

⊙ Result: High idle should be 2500 rpm.

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

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

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

CHECKLIST A PROCEDURES REV E

A-13
Grease the Turntable Rotation Bearing and Rotate Gear

NOTICE 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 Locate the grease fitting on the front turntable cover.

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

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

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

A-14
Perform Engine Maintenance - Ford Models

NOTICE Ford 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).

Ford LRG-425 EFI Operator Handbook	
Genie part number	84792

To access the engine:

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

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

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

REV E CHECKLIST A PROCEDURES

A-15
Perform Engine Maintenance - Perkins Models

NOTICE Perkins 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 *Perkins 100 Series Workshop Manual* (Perkins part number TPD 1377E).

Perkins 100 Series Workshop Manual	
Genie part number	72352

To access the engine:

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

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

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

Checklist B Procedures

REV D

B-1
Inspect the Battery



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

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

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

1 Put on protective clothing and eye wear.

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

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

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

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

B-2
Inspect the Electrical Wiring



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

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

1 Open the engine side turntable cover.

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

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

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

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

- Engine wiring harness
- Hydraulic manifold wiring

5 Open the ground controls side turntable cover.

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

- Inside of the ground control box
- Hydraulic manifold wiring

7 Start the engine from the ground controls and raise the boom above the turntable covers.

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

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

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

- Cable track on the primary boom
- Cables on the primary, and jib booms
- Jib boom/Platform rotate manifold
- Inside of the platform control box

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

12 Install the engine pivot plate safety pin.

B-3
Test the Key Switch

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

1 Pull out the 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.

CHECKLIST B PROCEDURES REV D

B-4
Perform Engine Maintenance - Ford Models

NOTICE Ford engine specifications require that this procedure be performed every 250 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).

Ford LRG-425 EFI Operator Handbook	
Genie part number	84792

To access the engine:

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

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

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

B-5
Check the Exhaust System

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

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

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

Ford models:

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

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

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

All models:

3 Be sure that all nuts and bolts are tight.

4 Inspect all welds for cracks.

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

Ford models:

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

7 Install the engine pivot plate safety pin.

REV D CHECKLIST B PROCEDURES

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

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

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

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

Oil cooler

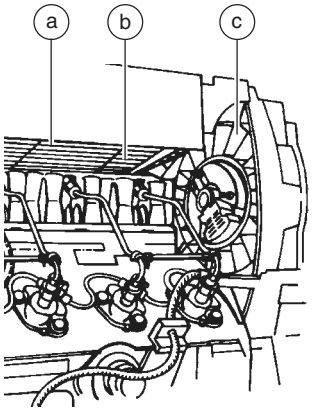
1 Remove the safety pin from the engine pivot plate latch.

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

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

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

4 Inspect the oil cooler for leaks and physical damage.



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

5 Clean the oil cooler of debris and foreign material.

Cooling and fan blower fins

6 Inspect the fan blower fins for physical damage.

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

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

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

10 Install the engine side cover.

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

12 Install the engine pivot plate safety pin.

CHECKLIST B PROCEDURES REV D

B-7
Check the Lug Nut Torque (including the tires and wheels)

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

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

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

NOTICE 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 cracked welds.

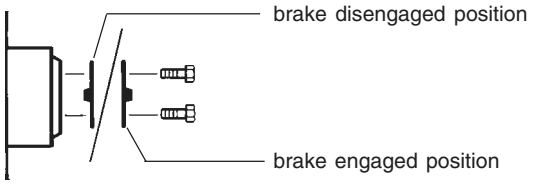
3 Check each lug nut for proper torque. Refer to Section 2, *Specifications*.

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

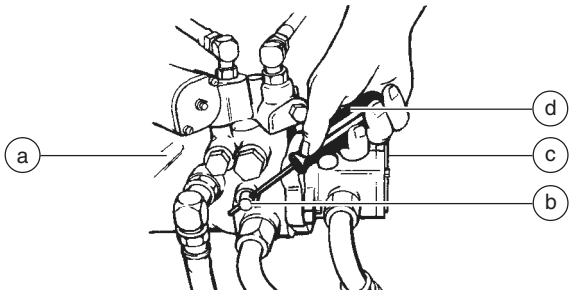
B-8
Confirm the Proper Brake Configuration

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

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



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



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

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

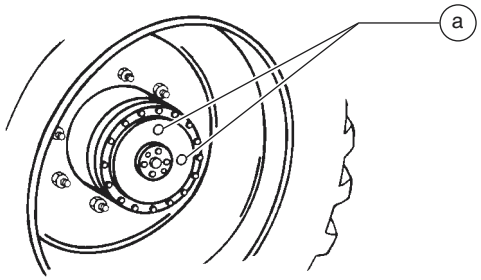
NOTICE The free-wheel valve should always remain closed.

REV D CHECKLIST B PROCEDURES

B-9
Check the Oil Level in the Drive Hubs

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

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



a drive hub plugs

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.

4 Apply pipe thread sealant to the plug(s), and install the plug(s) in the drive hub.

5 Repeat this procedure for each drive hub.

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

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

Ford models:

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

Deutz models:

NOTICE This procedure will require two people.

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

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

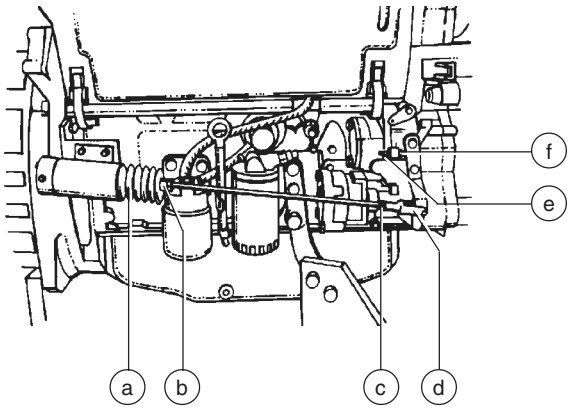
2 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

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

⊙ Result: Low idle should be 1400 rpm.

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

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



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

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

⊙ Result: High idle should be 2500 rpm.

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

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

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

B-11
Test the Ground Control Override

A properly functioning ground control override is essential to safe machine operation. The ground control override function is intended to allow ground personnel to operate the machine from the ground controls whether or not the 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.

REV D CHECKLIST B PROCEDURES

B-12
Check the Directional Valve Linkage

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

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

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

2 Locate the directional valve inside of the non-steer axle and inspect the linkage for the following:

- Lock nut is tight against yoke
- Yoke clevis pins are installed
- Cotter pins are installed through clevis pins
- Linkage is properly attached to directional valve

B-13
Test the Platform Self-leveling

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

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

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

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

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

CHECKLIST B PROCEDURES REV D

B-14
Test the Engine Idle Select

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. Drive functions will operate at low idle, but at reduced performance.

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

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

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

⊙ Result: The engine should change to high idle.

3 Release the function enable toggle switch.

⊙ Result: The engine should return to low idle.

4 Turn the key switch to platform controls.

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

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

6 Press down the foot switch.

⊙ Result: The engine should change to high idle.

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

⊙ Result: The engine should change to low idle.

B-15
Test the Fuel Select Operation - Ford Models

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

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

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

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

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

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

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

5 Move the fuel select switch to LPG.

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

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

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

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

B-16
Test the Drive Brakes



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

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-8, *Confirm the Proper Brake Configuration*.

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

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

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

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

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

6 Measure the distance between the test line and your machine reference point. Refer to Section 2, *Specifications.*

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

CHECKLIST B PROCEDURES REV D

B-17
Test the Drive Speed - Stowed Position

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

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

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

2 Start the engine from the platform controls.

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

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

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

6 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications.*

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

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

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

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

2 Start the engine from the platform controls.

3 Move the engine idle select switch to foot switch activated high idle (rabbit and foot switch). Press down the foot switch and raise the boom above horizontal.

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.

7 Press down the foot switch and lower the boom to the stowed position.

8 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-19
Test the Alarm Package (if equipped)

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

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

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

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

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

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

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

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

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

4 **Z-45/25J:** Move the function enable 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 switch is held down.

5 Turn the key switch to platform control.

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

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

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

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

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

8 **Z-45/25J:** Press down the foot switch. 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 switch is held down.

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

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

B-20
Perform Hydraulic Oil Analysis



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

NOTICE

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.*

B-21
Replace the Fuel Filter/ Water Separator Element - Perkins Models

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

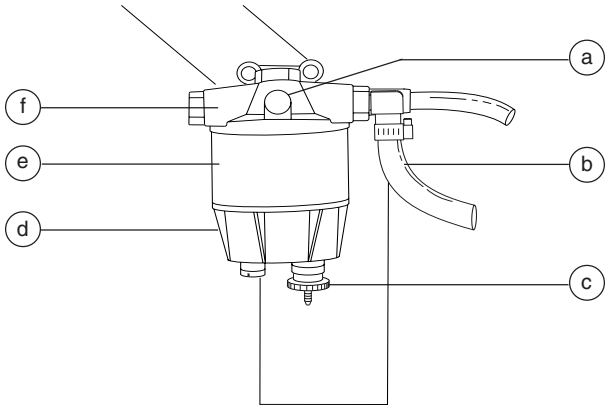
⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

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

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

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



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

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

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

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

7 Install the bowl onto the new filter element.

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

CAUTION Component damage hazard. The drain plug and vent plug can be damaged if they are overtightened.

CHECKLIST B PROCEDURES REV D

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

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

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

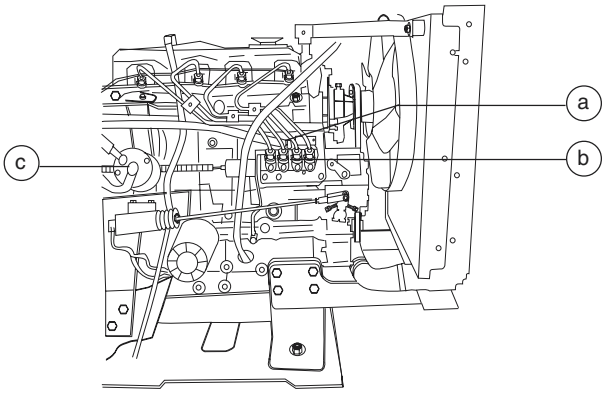
Bleed the system:

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

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

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

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



a vent plug
b fuel injection pump
c fuel lift pump

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

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

17 Operate the starter motor for intervals of 15 seconds until the engine starts.

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

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

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

18 Install the engine pivot plate safety pin.

REV D CHECKLIST B PROCEDURES

B-22
Replace the Fuel Filter Element - Perkins Models

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

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

NOTICE Perform this procedure with the engine off.

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

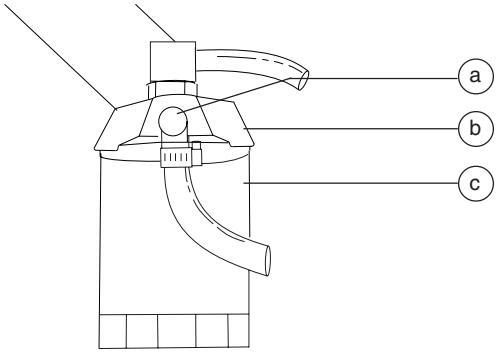
NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

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

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

4 Place a suitable container under the fuel filter element.

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



a fuel line
b filter head
c fuel filter element

6 Remove the fuel filter element with a filter wrench.

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

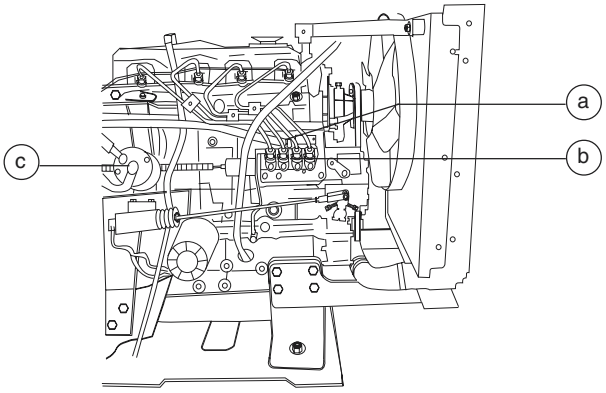
8 Install the new fuel filter element and tighten it securely by hand. Clean up any fuel that may have spilled during the installation procedure.

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

CHECKLIST B PROCEDURES REV D

Bleed the fuel system:

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



a vent plug
b fuel injection pump
c fuel lift pump

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

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

12 Operate the starter motor for intervals of 15 seconds until the engine starts.

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

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

B-23
Perform Engine Maintenance - Deutz Models

NOTICE Deutz 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 *Deutz FL 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz FL 1011F Operation Manual	
Genie part number	52883

To access the engine:

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

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

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

REV D CHECKLIST B PROCEDURES

B-24
Perform Engine Maintenance - Ford Models

NOTICE Ford 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).

Ford LRG-425 EFI Operator Handbook	
Genie part number	84792

To access the engine:

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

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

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

B-25
Perform Engine Maintenance - Perkins Models

NOTICE Perkins 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 *Perkins 100 Series Workshop Manual* (Perkins part number TPD 1377E).

Perkins 100 Series Workshop Manual	
Genie part number	72352

To access the engine:

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

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

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

Checklist C Procedures

REV C

C-1
Perform Engine Maintenance - Deutz Models



NOTICE Deutz 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.

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

Deutz FL 1011F Operation Manual	
Genie part number	52883

To access the engine:

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

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

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

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



NOTICE 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 mulit-purpose grease.

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

NOTICE Genie specifications require that this procedure be performed every 500 hours or six months.

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

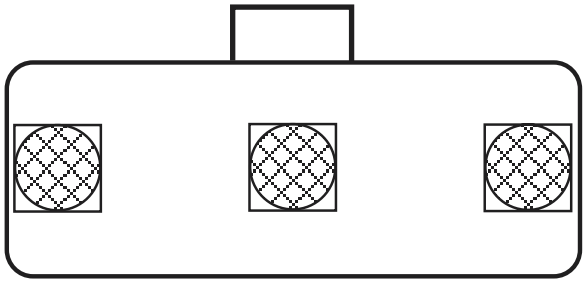
NOTICE Perform this procedure with the machine on a firm, level surface.

1 Turn the key switch to platform control. Start the engine from the platform controls.

2 Level the platform.

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

4 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity in one of the locations shown.



⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

5 Carefully move the test weight to each remaining location.

⊙ Result: The platform overload indicator light should be off at both the ground and platform controls.

6 Add an additional 66 lbs / 30 kg of weight to overload the platform.

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

⊠ Result: If the alarm does not sound and the platform overload indicator light does not come on with the test weights in any of the platform locations, the platform overload system needs to be calibrated. See D-8, *Calibrate the Platform Overload System*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

CHECKLIST C PROCEDURES REV C

7 Carefully move the test weights to each remaining location in the platform.

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

⊠ Result: If the alarm does not sound and the platform overload indicator light does not come on with the test weights in any of the platform locations, the platform overload system needs to be calibrated. See D-8, *Calibrate the Platform Overload System*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

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.

NOTICE Machine functions should still operate with auxiliary power at the ground controls.

11 Lift the test weights off the platform floor using a suitable lifting device.

⊙ Result: The platform overload indicator light and alarm should turn off at both the ground and platform controls.

NOTICE There may be an approximate 2 second delay before the overload indicator light and alarm turn off.

12 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

13 Turn the key switch to platform control.

14 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate.

NOTICE If the platform overload system is not operating properly, see D-8, *Calibrate the Platform Overload System.*

REV C CHECKLIST C PROCEDURES

C-4
Perform Engine Maintenance - Perkins Models

NOTICE Perkins engine specifications require that this procedure be performed every 600 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 *Perkins 100 Series Workshop Manual* (Perkins part number TPD 1377E).

Perkins 100 Series Workshop Manual
Genie part number 72352

To access the engine:

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

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

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

C-5
Perform Engine Maintenance - Ford Models

NOTICE Ford 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).

Ford LRG-425 EFI Operator Handbook
Genie part number 84792

To access the engine:

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

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

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

Checklist D Procedures

REV D

D-1
Check the Boom Wear Pads



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

1 Start the engine from the ground controls.

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

3 Measure each wear pad. Replace the wear pad if it is less than $^{9}/_{16}$ inch / 14.3 mm. If the wear pad is not less than $^{9}/_{16}$ inch / 14.3 mm, shim as necessary to obtain zero clearance and zero drag.

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

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

Wear pad specifications

All wear pads	$^{9}/_{16}$ inch 14.3 mm

D-2
Check the Turntable Rotation Bearing Bolts



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

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

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

NOTICE The lift cylinder safety chock is available through Genie Service Parts.

2 Turn the engine off.

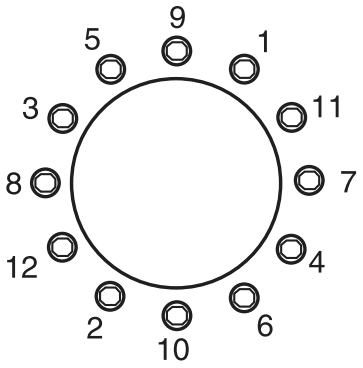
3 Remove the safety pin from the engine pivot plate latch.

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

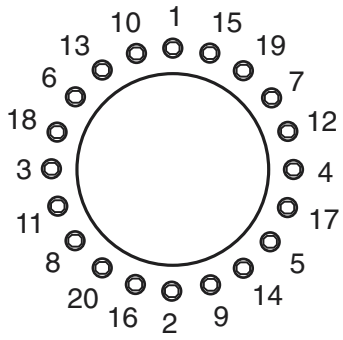
4 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine.

REV D CHECKLIST D PROCEDURES

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



Bolt torque sequence
(before serial number 23332)



Bolt torque sequence
(after serial number 23331)

6 Start the engine from the ground controls.

7 Raise the secondary boom and remove the safety chocks.

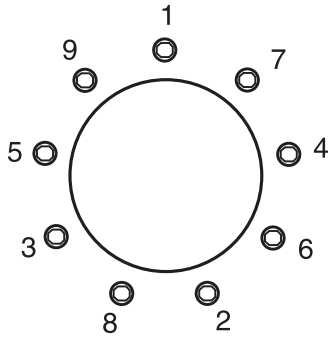
8 Lower the boom to the stowed position.

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

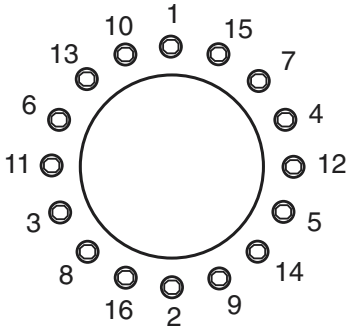
10 Remove the lower chassis cover mounting fasteners from inside of the drive chassis (if equipped).

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

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



Bolt torque sequence
(before serial number 23332)



Bolt torque sequence
(after serial number 23331)

CHECKLIST D PROCEDURES REV D

D-3
Check the Free-wheel Configuration

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

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

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

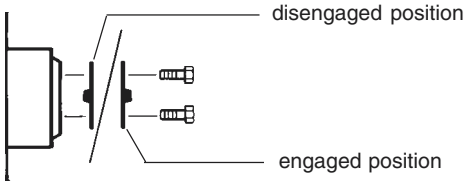
Non-steer wheels: All models

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

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

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

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



5 Manually rotate each non-steer wheel.

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

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

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

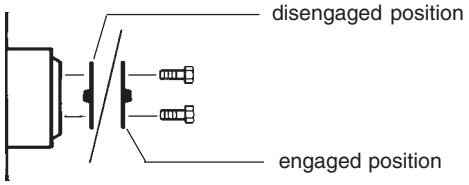
Steer wheels: 4WD models

7 Chock the non-steer wheels to prevent the machine from rolling.

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

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

10 Disengage the drive hubs by turning over the drive hub disconnect caps on each steer wheel hub.



11 Manually rotate each steer wheel.

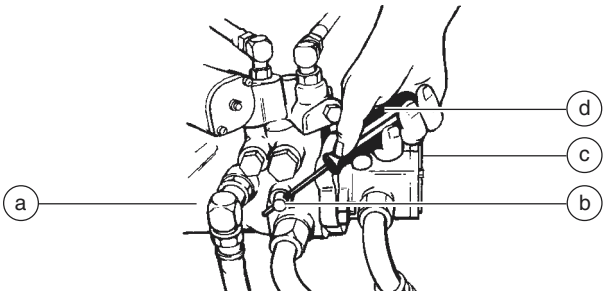
⊙ Result: Each steer wheel should rotate with minimum effort.

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

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

All Models:

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



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

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

NOTICE The free-wheel valve should always remain closed.

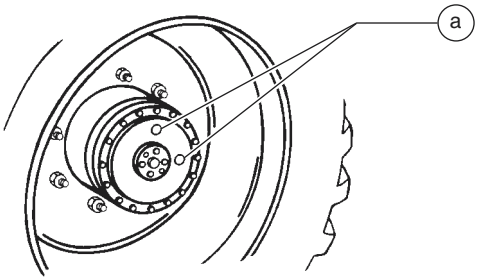
D-4
Replace the Drive Hub Oil

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

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

2 Remove both plugs and drain the oil.

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



a drive hub plugs

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Apply pipe thread sealant to the plugs, and then install the plugs.

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

CHECKLIST D PROCEDURES REV D

D-5
Check and Adjust the Air/LPG Mixture - Ford Models



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

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

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

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

2 Locate the high idle mixture adjustment screw on the LPG venturi that attaches to the air cleaner air cleaner hose.

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

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

5 Adjust the high idle adjustment screw to obtain an air-to-fuel mixture ratio of 13:1 to 13.2:1, using an exhaust gas analyzer.

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

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

6 Hold the adjustment screw and tighten the lock nut.

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

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

9 Adjust the low idle mixture adjustment screw to obtain an air-to-fuel mixture ratio of 13:1 to 13.2:1.

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

REV D CHECKLIST D PROCEDURES

D-6
Perform Engine Maintenance - Deutz Models




NOTICE Deutz engine specifications require that this procedure be performed every 1000 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 FL 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz FL 1011F Operation Manual	
Genie part number	52883

To access the engine:

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

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

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

D-7
Inspect for Turntable Bearing Wear




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.

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

1 Grease the turntable bearing. See A-13, *Grease the Turntable Bearing and Rotate Gear.*

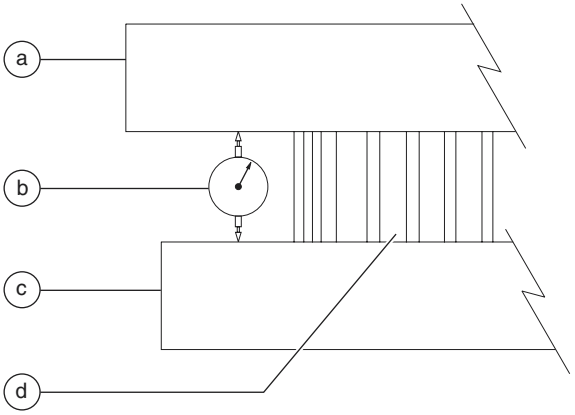
2 Torque the turntable bearing bolts to specification. See D-2, *Check the Turntable Rotation Bearing Bolts.*

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

CHECKLIST D PROCEDURES REV D

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.

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



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

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

6 Lower the secondary boom to the stowed position and lower the primary boom to a horizontal position. Fully extend the primary boom.

7 Note the reading on the dial indicator.

⊙ Result: The measurement is less than 0.055 inch / 1.4 mm. The bearing is good.

⊠ Result: The measurement is more than 0.055 inch / 1.4 mm. The bearing is worn and needs to be replaced.

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

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

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

11 Lower the primary and secondary booms to the stowed position and turn the machine off.

12 Remove the dial indicator from the machine.

D-8
Calibrate the Platform Overload System (if equipped)



NOTICE Genie specifications require that this procedure be performed every 1000 hours of operation or yearly.

Yearly 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.

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

1 Level the platform.

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

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

Determine the limit switch trigger point:

4 Gently move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm. Allow the platform to settle.

⊙ Result: **The overload indicator light and the alarm is on.** Slowly tighten the load spring adjustment nut by turning it clockwise just until the overload indicator light and alarm turns off.

NOTICE The platform will need to be moved up and down and allowed to settle in between adjustments.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

⊙ Result: **The overload indicator light and alarm is off.** Slowly loosen the load spring adjustment nut by turning it counterclockwise just until the overload indicator light and alarm turn on.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

NOTICE The platform will need to be moved up and down and allowed to settle in between adjustments.

CHECKLIST D PROCEDURES REV D

Confirm the setting:

5 Turn the key switch to platform control. Start the engine from the platform controls.

6 Lift the test weight off the platform floor using a suitable lifting device.

7 Place the test weight back onto the center of the platform floor using a suitable lifting device.

⊙ Result: The alarm should be off. The platform overload indicator light should be off at both the ground and platform controls.

NOTICE There may be an approximate 2 second delay before the overload indicator light and alarm turn off.

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

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

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground control.

11 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

NOTICE If the platform overload system is not operating properly, repeat steps 1 through 4.

D-9
Replace the Hydraulic Filters



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

Replacement of the hydraulic 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.

NOTICE 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 filters

NOTICE The medium pressure filter is for the charge pump and the high pressure filter is for all machine functions except the drive circuit and oscillating axle circuit.

10 Open the engine side turntable cover and locate the medium and high pressure filters.

NOTICE The medium pressure filter is mounted near the pump. The high pressure filter, with filter condition indicator, is mounted to the bulkhead.

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.

NOTICE The medium and high pressure filters use the same elements.

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 E Procedures

REV B

E-1
Test or Replace the Hydraulic Oil

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

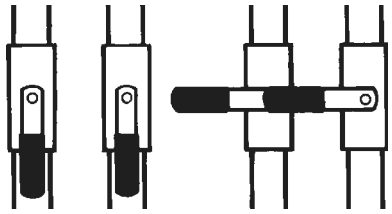
NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

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

1 **Ford models:** Turn the valve on the LPG tank clockwise to the off position (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.



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

3 Place a suitable container underneath the hydraulic tank.

4 Remove the drain plug from the hydraulic tank.

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

6 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.

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

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

REV B CHECKLIST E PROCEDURES

8 Remove the ground controls side turntable cover.

9 Support the hydraulic tank with an appropriate lifting device.

10 Remove the hydraulic tank mounting fasteners.

11 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.

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

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

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

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

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

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

18 Install the hydraulic tank onto the machine.

19 Install the two suction hoses to the suction strainers.

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

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

22 Fill the tank with the proper hydraulic oil for your machine until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill. Refer to Section 2, *Specifications.*

23 Clean up any oil that may have spilled.

24 Prime the pump. Refer to Repair Procedure 7-2, *How to Prime the Pump.*

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

CHECKLIST E PROCEDURES REV B

E-2
Change the Fuel Hoses - Ford Models

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

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

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

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

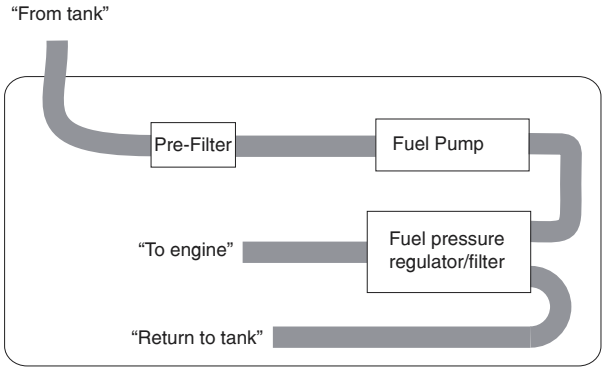
1 Put on protective clothing and eye wear.

2 Open the tank side turntable cover and locate the fuel system components mounted to the plate under the fuel tank.

3 Remove the fuel system plate retaining fasteners. Carefully lower the fuel system plate.

4 At the pre-filter, disconnect and drain the fuel tank into a suitable container. See capacity specifications.

5 Remove and replace all of the fuel line hoses and clamps according to the following illustration.



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

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

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

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

E-3
Perform Engine Maintenance - Deutz Models

NOTICE Deutz 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 FL 1011F Workshop Manual* (Deutz part number: 0297 7195).

Deutz FL 1011F Workshop Manual	
Genie part number	52229

To access the engine:

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

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

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

E-4
Grease the Steer Axle Wheel Bearings, 2WD Models

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

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

2 Block the non-steer wheels, then center a lifting jack under the steer axle.

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

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

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

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

Skip to step 10 if there is no movement.

CHECKLIST E PROCEDURES REV B

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

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

8 Loosen the castle nut and re-tighten to 8 ft-lbs / 11 Nm.

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

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

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

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

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

11 Remove the castle nut.

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

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

14 Pack both bearings with clean, fresh grease.

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

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

17 Slide the hub onto the yoke spindle.

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

18 Place the outer bearing into the hub.

19 Install the washer and castle nut.

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

21 Loosen the castle nut and re-tighten to 8 ft-lbs / 11 Nm.

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

NOTICE Always use a new cotter pin when installing a castle nut.

23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications.*

Repair Procedures

Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie Z-45/25 and Genie Z-45/25J Operator's Manual* on your machine.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Boom in 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

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.

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

NOTICE Used to indicate operation or maintenance information.

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

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

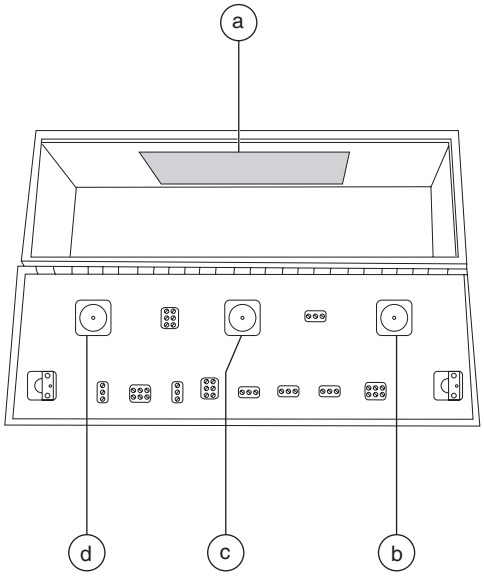
Platform Controls

REV C

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 (non-contact) 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.

For further information or assistance, consult the Genie Industries Service Department.



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.

NOTICE 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.

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

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

CAUTION 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.

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

NOTICE Perform this procedure with the engine off.

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 Select a joystick to calibrate.

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

5 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 and return the joystick to the neutral position.

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

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

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

How to Adjust the Joystick Max-out Setting

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

NOTICE 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.

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 specifications and determine whether the function time needs to increase or decrease.

NOTICE Refer to Section 2, *Specifications* for function speeds.

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.

NOTICE 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.

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.

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

How to Adjust the Joystick Ramp Rate Setting

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

NOTICE 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.

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

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

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

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

NOTICE Each time the drive enable toggle switch is momentarily moved, the time will change in 10% increments.

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

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

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

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

Ramp rate (factory settings)	
Primary boom up/down	
accelerate	4 seconds
decelerate	0.5 second
Secondary boom up/down	
accelerate	2 seconds
decelerate	0.5 second
Turntable rotate	
accelerate	2 seconds
decelerate	0.5 second
Drive	
accelerate	3.3 seconds
accelerate (narrow models)	3.8 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	2 seconds

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.

NOTICE 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 8 times.

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

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

9 Select a boom function joystick to set the threshold.

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

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

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

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

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

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

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

Platform Components

REV A

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

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 **Z-45/25J:** Extend the primary boom until the slave cylinder barrel-end pivot pin is accessible.

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

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

NOTICE Do not rest the entire weight of the boom on the blocks.

4 **Z-45/25J:** Tag, disconnect and plug the hydraulic hoses from the slave cylinder at the union located near the jib/rotate manifold and connect them together using a connector. Connect the hoses from the cylinder together using a connector.

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

Z-45/25: Tag, disconnect and plug the hydraulic hoses from the slave cylinder and connect the hoses together using a connector. Cap the fittings on the cylinder. Then pull the slave cylinder hoses out through the primary extension boom.

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

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

6 **Z-45/25J:** Remove the external snap rings from the barrel-end pivot pin.

Z-45/25: Remove the pin retaining fastener from the slave cylinder barrel-end pivot pin. Do not remove the pin.

7 Support the slave cylinder with a lifting device.

8 **Z-45/25J:** Support the jib boom bell crank with a suitable lifting device.

9 Use a soft metal drift to drive the rod-end pivot pin out.

⚠WARNING Crushing hazard. The jib boom bell crank could fall when the slave cylinder rod-end pivot pin is removed if not properly supported.

CAUTION Component damage hazard. The slave cylinder rod may become damaged if it is allowed to fall if not properly supported by the lifting device.

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

11 Carefully pull the cylinder out of the primary boom.

How to Bleed the Slave Cylinder

NOTICE Do not start the engine. Use auxiliary power for 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.

2-2 Platform Rotator

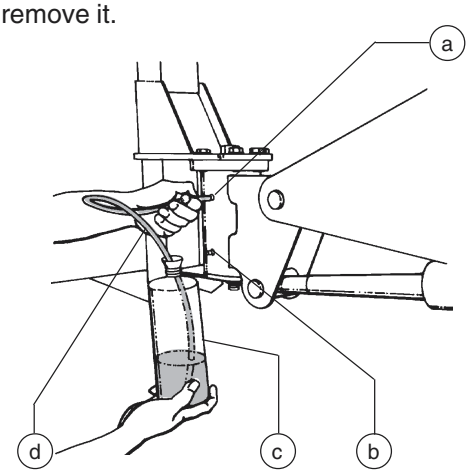
How to Bleed the Platform Rotator

NOTICE 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.

Jib Boom Components, Z-45/25J

REV A

3-1
Jib Boom

How to Remove the Jib Boom

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform.

2 Remove the platform mounting weldment and the platform rotator.

3 Remove the hose and cable cover from the side of the jib boom.

4 Attach a lifting strap from an overhead crane to the jib boom.

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

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

6 Support the barrel end of the cylinder with a suitable lifting device.

7 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin.

8 Use a soft metal drift to remove the pin and let the cylinder hang down.

9 Remove the pin retaining fastener from the jib boom pivot pin. Use a soft metal drift to remove the pin, then remove the jib boom from the primary boom bellcrank.

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

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

11 Slide both of the jib boom leveling arms off of the jib boom cylinder rod-end pivot pin.

12 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

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

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

3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

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

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

NOTICE Do not rest the entire weight of the boom on the blocks.

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

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

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

4 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out. Then lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.

5 Support the jib boom lift cylinder with a lifting device.

6 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the barrel-end pin and let the cylinder hang down.

7 Attach a lifting strap from an overhead crane to the lug on the rod end of the jib boom lift cylinder.

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

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

Primary Boom Components

REV A

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, Z-45/25

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Locate the cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

2 Disconnect the cables from the platform control box.

3 Pull all of the electrical cables out of the plastic cable track. Do not pull out the hydraulic hoses.

4 Raise the primary boom to a horizontal position.

5 Tag, disconnect and plug the platform rotator hydraulic hoses at the union located above the primary boom lift cylinder. Cap the fittings on the unions.

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

6 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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

7 Tag, disconnect and plug the hydraulic hoses from the platform leveling master cylinder. Cap the fittings on the cylinder.

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

8 Tag and disconnect the hydraulic hoses from the platform leveling slave cylinder and connect them together using a connector. Cap the fittings on the cylinder.

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

9 Pull the four hydraulic hoses toward the platform to clear the rod end of the primary boom lift cylinder.

10 Place blocks in between the upper and lower cable tracks and secure the upper and lower tracks together.

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

11 Remove all hose and cable clamps from the underside of the primary boom.

12 Attach a strap from an overhead crane to the cable track.

13 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.

14 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

15 Remove the cable track from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The cable track could become unbalanced and fall if not properly attached to the overhead crane.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

How to Remove the Cable Track, Z-45/25J

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Locate the cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

2 Disconnect the cables from the platform control box.

3 Pull all of the electrical cables out of the plastic cable track. Do not pull out the hydraulic hoses.

PRIMARY BOOM COMPONENTS REV A

4 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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

5 Tag and disconnect the hydraulic hoses from the platform leveling slave cylinder at the union and connect them together using a connector. Connect the hoses from the cylinder together using a connector.

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

6 Tag, disconnect and plug the hydraulic hoses from the jib boom/platform rotate manifold. Cap the fittings on the manifold.

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

7 Tag, disconnect and plug the platform rotator hydraulic hoses at the union located above the primary boom lift cylinder. Cap the fittings on the unions.

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

8 Tag, disconnect and plug the hydraulic hoses from the platform leveling master cylinder. Cap the fittings on the cylinder.

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

9 Raise the boom to a horizontal position.

10 Remove the hose and cable cover from the side of the jib boom.

11 Remove the hose clamp on the primary boom bellcrank.

12 Place blocks between the upper and lower cable tracks and secure the upper and lower tracks together.

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

13 Attach a lifting strap from an overhead 5 ton / 5,000 kg capacity crane to the platform end of the primary boom for support. Do not lift it.

14 Remove all hose and cable clamps from the underside of the primary boom.

15 Support the rod end of the primary boom lift cylinder with a lifting device.

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

17 Raise the primary boom slightly with the overhead crane to relieve the pressure on the primary boom lift cylinder rod-end pivot pin.

18 Use a soft metal drift to remove the primary boom lift cylinder rod-end pivot pin.

⚠WARNING Crushing hazard. The primary boom lift cylinder could become unbalanced and fall if not properly supported by the lifting device.

19 Lower the rod end of the primary boom lift cylinder approximately 12 inches / 30 cm.

20 Pull all of the hoses and cables out and away from the mounting ears for the rod end of the primary boom lift cylinder.

21 Raise the rod end of the primary boom lift cylinder back into position and install the rod-end pivot pin. Install the pin retaining fastener.

22 Attach a strap from an overhead crane to the cable track.

23 Remove the mounting fasteners from the upper cable track at the platform end of the extension boom.

24 Remove the cable track mounting fasteners that attach the lower cable track to the primary boom.

25 Remove the cable track from the machine and place it on a structure capable of supporting it.

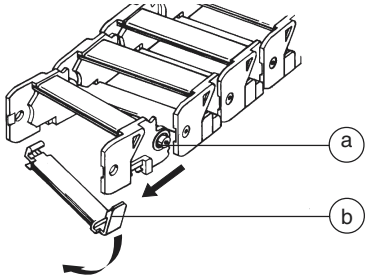
⚠WARNING Crushing hazard. The cable track could become unbalanced and fall if it is not properly attached to the overhead crane.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

How to Repair the Primary Boom Cable Track

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

NOTICE A 7 link repair section of cable track is available through the Genie Industries Service Parts Department.



a link separation point
b lower clip

1 Use a slotted screwdriver to pry down on the lower clip.

2 To remove a single link, open the lower clip and then use a screw driver to pry the link to the side.

3 Repeat steps 1 and 2 for each link.

4-2
Primary Boom

How to Remove the Primary Boom

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

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform.

2 Remove the platform rotator and platform mounting weldment.

3 **Z-45/25:** Remove the platform leveling slave cylinder. See 2-1, *How to Remove the Platform Leveling Slave Cylinder.*

Z-45/25J: Remove the jib boom.
See 3-1, *How to Remove the Jib Boom.*

4 Remove the cable track. See 4-1, *How to Remove the Cable Track.*

5 Raise the primary boom to a horizontal position.

6 Remove the hose and cable cover from the upper pivot.

7 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin. Then lower the cylinder and let it hang down.

CAUTION Component damage hazard. When lowering the master cylinder down, be sure not to damage the master cylinder hoses or fittings.

8 Locate the primary boom drive speed limit switch inside of the upper pivot.

9 Remove the primary boom drive speed limit switch mounting fasteners. Do not disconnect the wiring.

10 Locate the primary boom extension drive speed limit switch inside of the extension boom.

11 Remove the primary boom extension drive speed limit switch mounting fasteners. Do not disconnect the wiring.

12 Pull the limit switch and the wiring out of the extension tube and move it out of the way.

13 Tag, disconnect and plug the primary boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

14 Remove the hose clamp at the pivot end of the boom.

15 Attach a 5 ton / 5,000 kg overhead crane to the center point of the primary boom.

16 Attach a similar lifting device to the primary boom lift cylinder.

17 Place support blocks under the primary boom lift cylinder.

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

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

19 Lower the rod end of the primary boom lift cylinder onto support blocks. Protect the cylinder rod from damage.

20 Remove the pin retaining fastener from the primary boom pivot pin.

21 Remove the primary boom pivot pin with a soft metal drift, then carefully remove the primary boom from the machine and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. 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 Primary Boom

NOTICE Complete disassembly of the boom is only necessary if the outer or inner boom tube must be replaced. The extension cylinder can be removed without completely disassembling the boom. See 4-4, *How to Remove the Primary Boom Extension Cylinder*.

1 Remove the primary boom. See *How to Remove the Primary Boom*.

2 Place blocks under the barrel end of the primary boom extension cylinder for support.

3 Remove the pin retaining fastener from the extension cylinder barrel-end pivot pin at the pivot end of the primary boom. Use a soft metal drift to remove the pin.

4 Remove and label the location of the wear pads from the platform end of the primary boom.

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

5 Support and slide the extension tube and extension cylinder assembly out of the boom tube.

⚠WARNING Crushing hazard. The primary boom extension tube could become unbalanced and fall when removed from the primary boom tube if not properly supported.

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

6 Remove the external snap rings from the extension cylinder rod-end pivot pin at the platform end of the extension tube. Use a soft metal drift to remove the pin.

7 Support and slide the extension cylinder out of the base end of the extension tube. Place the extension cylinder on blocks for support.

⚠WARNING Crushing hazard. The extension cylinder could become unbalanced and fall when removed from primary boom extension tube if not properly supported.

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

4-3 Primary Boom Lift Cylinder

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

How to Remove the Primary Boom Lift Cylinder

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the primary boom until the primary boom is horizontal.

2 Raise the secondary boom until the primary boom lift cylinder barrel-end pivot pin is above the turntable covers.

3 Attach a 5 ton / 5000 kg overhead crane to the primary boom for support. Do not lift the boom.

4 Support the rod end and the barrel end of the primary boom lift cylinder with a second overhead crane or similar lifting device.

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

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

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

⚠WARNING The primary boom will fall if not properly supported when the primary boom rod-end pivot pin is removed.

7 Place a support block across both turntable covers under the primary boom lift cylinder.

8 Lower the lift cylinder onto the block. Protect the cylinder rod from damage.

⚠WARNING Crushing hazard. The primary boom lift cylinder could fall if not properly supported.

9 Remove the primary boom lift cylinder barrel-end pivot pin retaining fasteners. Do not remove the pin.

10 Use a slide hammer to remove the barrel-end pivot pin. Carefully remove the primary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if not properly supported and secured to the lifting device.

4-4 Primary Boom Extension Cylinder

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

How to Remove the Primary Boom Extension Cylinder

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the primary boom to a horizontal position.

2 Extend the primary boom until the primary boom extension cylinder rod-end pivot pin is accessible in the primary boom extension tube.

3 Remove the hose and cable guard from the upper pivot.

4 Tag, disconnect and plug the primary boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

5 At the platform end, remove the external snap rings from the extension cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

6 Remove the barrel-end pivot pin retaining fasteners.

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

8 Support and slide the extension cylinder out of the upper pivot.

⚠WARNING Crushing hazard. The extension cylinder could fall when removed from the extension boom if not properly supported.

CAUTION Component damage hazard. Be careful not to damage the counterbalance valves on the primary boom extension cylinder when removing the cylinder from the primary boom.

CAUTION Component damage hazard. Hoses and cables can be damaged if the primary boom extension cylinder is dragged across them.

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

4-5 Platform Leveling Master Cylinder

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

How to Remove the Platform Leveling Master Cylinder

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the secondary boom until both the rod-end and barrel-end pivot pins on the master cylinder are accessible.

2 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

3 Attach overhead crane or similar lifting device to the master cylinder.

4 Remove the pin retaining fasteners from the master cylinder barrel-end pivot pin. Do not remove the pin.

5 Place a rod through the barrel-end pivot pin and twist to remove the pin.

6 Remove the pin retaining fastener from the rod-end pivot pin.

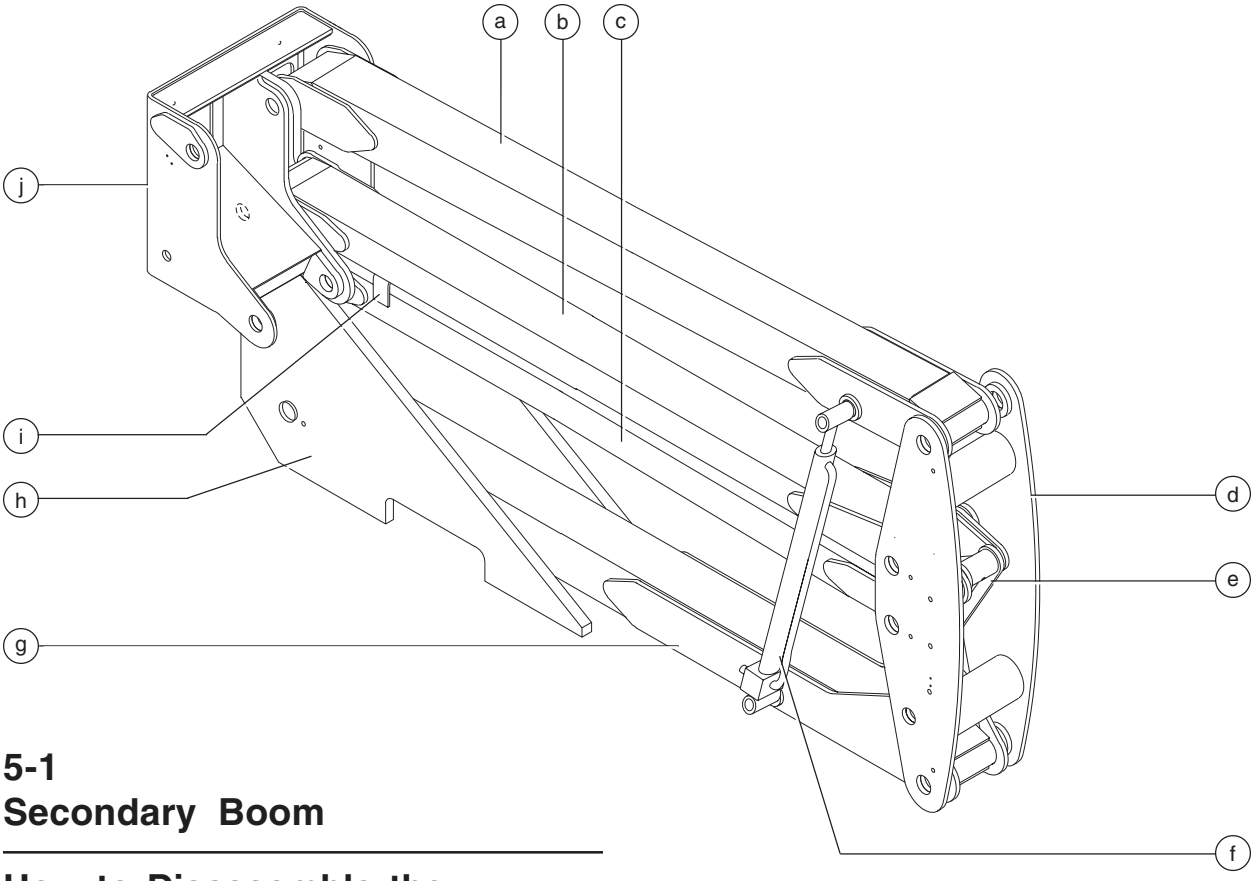
7 Place a rod through the rod-end pivot pin and twist to remove the pin.

8 Remove the master cylinder from the machine.

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

Secondary Boom Components

REV A



5-1
Secondary Boom

How to Disassemble the Secondary Boom

⚠WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

Follow the disassembly steps to the point required to complete the repair. Then re-assemble the secondary boom by following the disassembly steps in reverse order.

Secondary Boom components

- a upper secondary boom (number 1 arm)
- b upper tension link (number 2 arm)
- c lower tension link (number 3 arm)
- d mid-pivot
- e compression link
- f secondary boom lift cylinder (2)
- g lower secondary boom (number 4 arm)
- h turntable pivot
- i boom rest
- j upper pivot

REV A SECONDARY BOOM COMPONENTS

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the platform.

2 **Z-45/25J:** Remove the jib boom.
See 3-1, *How to Remove the Jib Boom.*

3 Remove the primary boom. See 3-2, *How to Remove the Primary Boom*.

4 Remove the master cylinder. See 4-5, *How to Remove the Master Cylinder*.

5 Attach a lifting strap from an overhead crane to to the lug on the rod end of the primary boom lift cylinder. Then raise the primary boom lift cylinder with the crane, to a vertical position.

6 Tag, disconnect and plug the hydraulic hoses at the primary boom lift cylinder. 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 pin retaining fastener from the primary boom lift cylinder barrel-end pivot pin.

8 Use a slide hammer to remove the pin. Remove the primary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The primary boom lift cylinder could become unbalanced and fall if not properly supported by the overhead crane.

9 Tag, disconnect and plug the hydraulic hoses on both of the secondary boom lift cylinders. Cap the fittings on the cylinders.

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

10 Remove the pin retaining fasteners from both sides of the secondary boom lift cylinder rod-end pivot pin and barrel-end pivot pin. Do not remove the pins.

11 Attach a strap from an overhead crane to the lug on the rod end of one of the secondary boom lift cylinders for support. Do not apply any lifting pressure.

12 Use a soft metal drift to drive the barrel-end pivot pin half way out. Lower the barrel end of the secondary boom lift cylinder and let it hang down.

13 Use a soft metal drift to drive the rod-end pivot pin half way out.

14 Remove the secondary boom lift cylinder from the machine.

SECONDARY BOOM COMPONENTS REV A

15 Repeat steps 11 through 14 for the other secondary boom lift cylinder.

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

CAUTION Component damage hazard. When removing a secondary boom lift cylinder from the machine, be careful not to damage the counterbalance valve at the barrel end of the cylinder.

16 Attach a lifting strap from an overhead crane to the upper pivot for support. Do not lift it.

17 Attach a lifting strap from a second overhead crane to the number 1 arm at the mid-point between the upper pivot and mid-pivot.

18 Remove the pin retaining fasteners from the number 1 arm pivot pins at the mid-pivot and the upper pivot. Do not remove the pins.

19 Use a soft metal drift to drive both pins out.

20 Remove the number 1 arm from the machine.

⚠WARNING Crushing hazard. The number 1 arm could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

⚠CAUTION Crushing hazard. The upper pivot could fall when the number 1 arm is removed from the machine if not properly supported by the overhead crane.

21 Using the overhead crane attached to upper pivot, raise the secondary boom assembly approximately 30 inches / 76 cm.

22 Insert a 4 x 4 x 11 inch / 10 x 10 x 28 cm block between the number 2 arm and the boom rest. Then lower the secondary boom assembly onto the block.

⚠WARNING Crushing hazard. The secondary boom assembly could fall if not properly supported by the 4 x 4 x 11 inch / 10 x 10 x 28 cm block.

23 Pull all of the cables and hoses out through the upper pivot.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

24 Remove the hose and cable covers from the top of the number 2 arm.

25 Pull all of the hoses and cables out of the upper pivot and out through the mid-pivot. Lay the hoses and cables on the ground.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

26 Remove the pin retaining fastener from the number 2 arm pivot pin at the upper pivot. Use a soft metal drift to remove the pin.

27 Remove the upper pivot from the machine.

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

28 Attach the lifting strap from an overhead crane to the number 2 arm at the upper pivot end.

29 Raise the number 2 arm slightly and remove the 4 x 4 x 11 inch / 10 x 10 x 28 cm block.

30 Lower the number 2 arm onto the boom rest pad.

31 Insert a 4 x 4 x 8 1/2 inch / 10 x 10 x 22 cm block between the number 3 arm and the number 4 arm at the mid-pivot end.

32 Attach a lifting strap from the overhead crane to the mid-pivot for support. Do not lift it.

33 Remove the pin retaining fasteners from the number 2, 3 and 4 arm pivot pins at the mid-pivot. Do not remove the pins.

34 Use a soft metal drift to drive each pin out. Then remove the mid-pivot from the secondary boom assembly.

⚠WARNING Crushing hazard. The mid-pivot could become unbalanced and fall when removed from the secondary boom assembly if not properly supported by the overhead crane.

35 Attach the lifting strap from an overhead crane to the center point of the number 2 arm for support. Do not lift it.

36 Remove the pin retaining fasteners from both compression link pivot pins. Do not remove the pins.

37 Use a soft metal drift to remove the lower compression link pivot pin at the number 3 arm.

38 Support the compression link with an appropriate lifting device.

39 Use a soft metal drift to remove the upper compression link pivot pin from the number 2 arm. Remove the compression link from the machine.

⚠WARNING Crushing hazard. The number 2 arm could fall when the compression link is disconnected from the number 2 arm if not properly supported by the overhead crane.

⚠CAUTION Crushing hazard. The compression link may fall if not properly supported when removed from the secondary boom assembly.

40 Remove the number 2 arm from the machine.

⚠WARNING Crushing hazard. The number 2 arm could become unbalanced and fall when removed from the secondary boom assembly if not properly supported by the overhead crane.

41 Remove the upper and lower hose and cable covers from the number 3 arm.

SECONDARY BOOM COMPONENTS REV A

42 Pull all of the cables and hoses from the number 3 arm and lay them over the turntable counterweight.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

43 Open the ground controls side turntable cover.

44 Remove the fuel tank.

⚠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.

45 Remove the retaining fastener from the ground control box and function manifold pivot plate.

46 Lower the ground control box and function manifold pivot plate to access the number 3 arm pivot pin.

47 Attach the lifting strap from the overhead crane to the centerpoint of the number 3 arm for support. Do not lift it.

48 Remove the mounting fasteners from the cover located in the boom storage area to access the number 3 and number 4 arm pivot pin retaining fasteners at the turntable pivot.

49 Remove the pin retaining fasteners from the number 3 arm at the turntable pivot. Do not remove the pin.

50 Use a slide hammer to remove the number 3 arm pivot pin from the turntable pivot through the access hole behind the ground control box.

51 Remove the number 3 arm from the machine.

⚠WARNING Crushing hazard. The number 3 arm could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

52 Remove the secondary boom drive speed limit switch mounting fasteners from the number 4 arm at the mid-pivot end. Do not disconnect the wiring.

53 Remove the pin retaining fasteners from the number 4 arm at the turntable pivot. Do not remove the pin.

54 Attach a lifting strap from the overhead crane to the center point of the number 4 arm. Do not lift it.

55 Use a slide hammer to remove the number 4 arm from the turntable pivot through the ground controls side bulkhead.

56 Remove the number 4 arm from the machine.

⚠WARNING Crushing hazard. The number 4 arm could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

5-2 Secondary Boom Lift Cylinders

There are two secondary boom lift cylinders incorporated in the structure of the secondary boom assembly. These cylinders operate in parallel and require hydraulic pressure to extend and retract. Each secondary boom lift cylinder is equipped with a counterbalance valve to prevent movement in the event of a hydraulic line failure.

How to Remove a Secondary Boom Lift Cylinder

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Lower the secondary boom to the stowed position.

2 Raise the primary boom so that it is above the secondary boom lift cylinder rod-end pivot pin.

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

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

4 Remove the pin retaining fasteners from the secondary boom lift cylinder rod-end pivot pin and barrel-end pivot pin. Do not remove the pins.

5 Attach a strap from an overhead crane to the lug on the rod end of the secondary boom lift cylinder for support. Do not apply any lifting pressure.

6 Use a soft metal drift to drive the barrel-end pivot pin half way out. Lower the barrel end of the secondary boom lift cylinder and let it hang down.

7 Use a soft metal drift to drive the rod-end pivot pin half way out.

8 Remove the secondary boom lift cylinder from the machine.

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

CAUTION Component damage hazard. When removing a secondary boom lift cylinder from the machine, be careful not to damage the counterbalance valve at the barrel end of the cylinder.

Engines

REV A

6-1 RPM Adjustment - Ford and Deutz Models

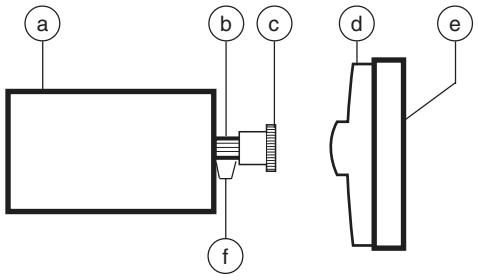
Refer to Maintenance Procedure B-9, *Check and Adjust the Engine RPM- Ford and Deutz Models.*

6-2 RPM Adjustment - Perkins Models

Refer to Maintenance Procedure A-13, *Check and Adjust the Engine RPM- Perkins Models.*

6-3 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 7/16 inch / 11 mm gap - Deutz Models
1/16 inch / 1.5 mm gap - Perkins Models
1/16 inch / 1.5 mm gap - Ford Models

How to Remove the Flex Plate

1 Disconnect the wiring plug at the electronic displacement controller (EDC), located on the drive pump.

2 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.

3 Carefully pull the pump away from the engine and secure it from moving.

4 Remove the flex plate mounting fasteners, then remove the flex plate from the engine flywheel.

How to Install the Flex Plate

1 Install the flex plate onto the engine flywheel with the raised spline towards the pump. Torque the flex plate mounting bolts to 34 ft-lbs / 46 Nm.

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

Pump coupler gap specification	
Deutz models	7/16 inch 11 mm
Ford and Perkins models	1/16 inch 1.5 mm

3 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 45 ft-lbs / 61 Nm.

4 Install the pump and torque the pump mounting plate fasteners to 34 ft-lbs / 46 Nm.

CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

6-4
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. Use the following procedure to retrieve the engine fault code to determine the engine malfunction.

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

1 Open the ground controls side turntable cover.

2 Locate the run/test toggle switch located on the left side of the ground control box.

3 Pull out the red Emergency Stop button to the on position at the ground controls.

4 Hold the run/test toggle switch to the test position and turn the key switch to the ground controls position.

⊙ Result: The check engine light should turn on. The check engine light should begin to blink.

NOTICE The check engine light will blink a "123" code three times before blinking a fault code if one is present.

5 Continue to hold the run/test toggle switch in the test position and count the blinks.

NOTICE If any fault codes are present, the ECM will 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.

NOTICE 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.

6 Refer to the Fault Code Section for definition of engine fault codes.

NOTICE Once a fault code has been retrieved and the repair has been completed, the ECM memory must be reset to clear the fault code from the ECM. See *How to Clear Engine Fault Codes.*

How to Clear Engine Fault Codes from the ECM

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

1 Open the engine side turntable cover and locate the battery.

2 Disconnect the negative battery cable from the battery for a minimum of 5 minutes.

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

3 Connect the negative battery cable to the battery.

Hydraulic Pumps

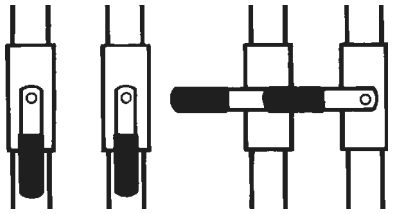
REV A

7-1 Lift/Steer Pump

How to Remove the Lift/Steer Pump

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 **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.



open closed

CAUTION 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.

2 Tag, disconnect and plug the lift/steer pump hydraulic hoses. Cap the fittings on the pump.

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

3 Remove the pump mounting bolts. Carefully remove the pump.

Models with hydraulic tank shut-off valves:

CAUTION 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:

CAUTION Component damage hazard. Be sure to fill the hydraulic tank to specification and prime the pump after installing the pump.

7-2 Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Sundstrand-Sauer service center. Call Genie Industries Service Department to locate your local authorized service center.

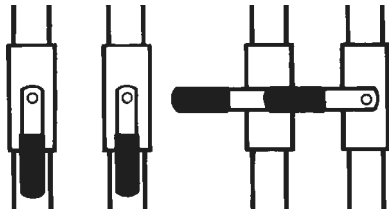
How to Remove the Drive Pump

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Disconnect the electrical connection at the electronic displacement controller (EDC) 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.



CAUTION 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 lift/steer pumps. Cap the fittings on the pumps.

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

4 Support the pump with a lifting device and remove the two drive pump mounting fasteners.

5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

6 Remove the drive pump from the machine.

CAUTION Component damage hazard. The hydraulic pump may become unbalanced and fall if it is not properly supported.

Models with hydraulic tank shut-off valves:

CAUTION 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:

CAUTION 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 41 bar pressure gauge to the test port on the drive pump.

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

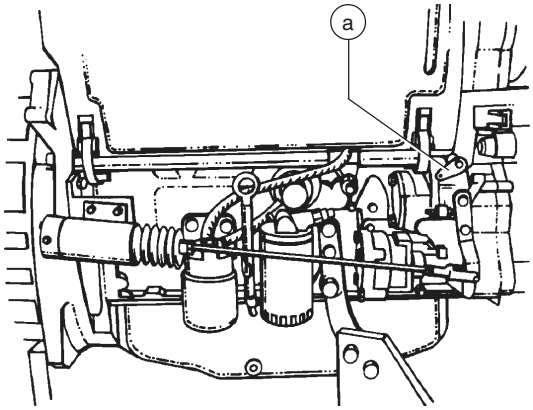
NOTICE The engine pivot plate latch is located under the engine turntable pivot plate at the counterweight end of the machine.

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

4 **Ford models:** Close the valve on the LPG tank then disconnect the hose from the tank. Then move the fuel select switch to the LPG position.

Perkins 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.

Perkins models: Connect the engine wiring harness to the fuel solenoid.

7 Start the engine from the ground controls and check for hydraulic leaks.

Manifolds

REV B

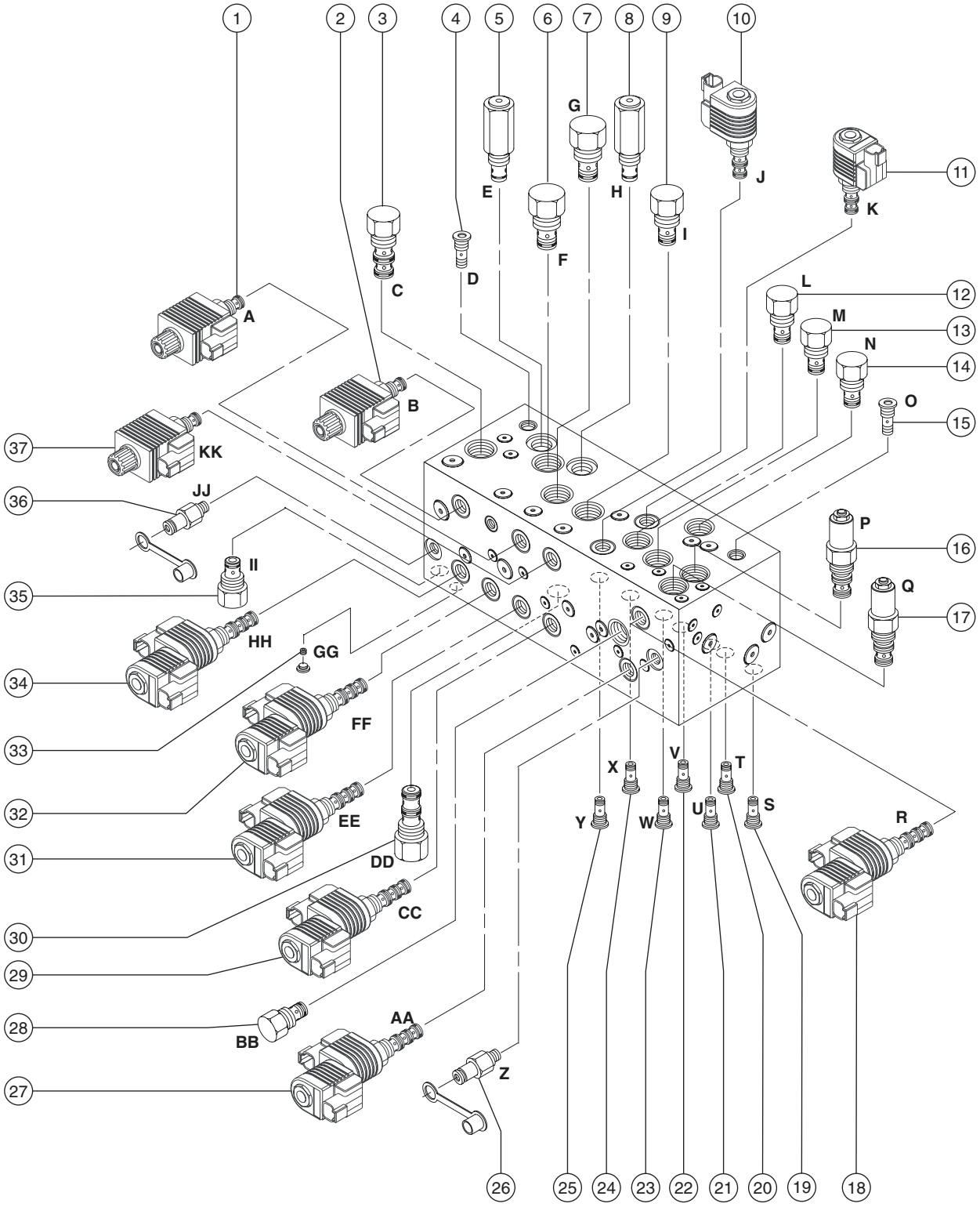
8-1
Function Manifold Components (before serial number 22050)

The function manifold is located next to the hydraulic tank underneath the ground controls side cover.

Index No.	Description	Schematic Item	Function	Torque
1	Proportional solenoid valve	A	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm
2	Proportional solenoid valve	B	Secondary boom up/down	10-12 ft-lbs / 14-16 Nm
3	Flow regulator valve	C	Secondary boom up/down (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
4	Check valve	D	Differential sensing circuit, secondary boom up/down	11-13 ft-lbs / 15-18 Nm
5	Relief valve, 1800 psi / 124 bar	E	Secondary boom down	25-30 ft-lbs / 34-41 Nm
6	Priority flow regulator valve, 1.5 gpm / 5.7 L/min	F	Steer left/right circuit	10-12 ft-lbs / 14-16 Nm
7	Flow regulator valve	G	Turntable rotate left/right (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
8	Relief valve, 3200 psi / 220.6 bar	H	System relief	35-40 ft-lbs / 47-54 Nm
9	Flow regulator valve	I	Primary boom up/down (prevents overflowing the proportional valve)	10-12 ft-lbs / 14-16 Nm
10	Solenoid valve, 2 position 3 way	J	Primary boom retract	25-30 ft-lbs / 34-41 Nm
11	Solenoid valve, 2 position 3 way	K	Primary boom extend	25-30 ft-lbs / 34-41 Nm
12	Flow regulator valve, 2 gpm / 7.6 L/min	L	Primary boom extend/ retract circuit	10-12 ft-lbs / 14-16 Nm
13	Flow regulator valve, adjustable	M	Platform level circuit	10-12 ft-lbs / 14-16 Nm
14	Flow regulator valve, 0.1 gpm / 0.38 L/min	N	Bleeds off check valves in differential sensing circuits to tank	10-12 ft-lbs / 14-16 Nm
15	Check valve	O	Differential sensing circuit, platform level down	11-13 ft-lbs / 15-18 Nm
16	Counterbalance valve	P	Platform level down	35-40 ft-lbs / 47-54 Nm
17	Counterbalance valve	Q	Platform level up	35-40 ft-lbs / 47-54 Nm

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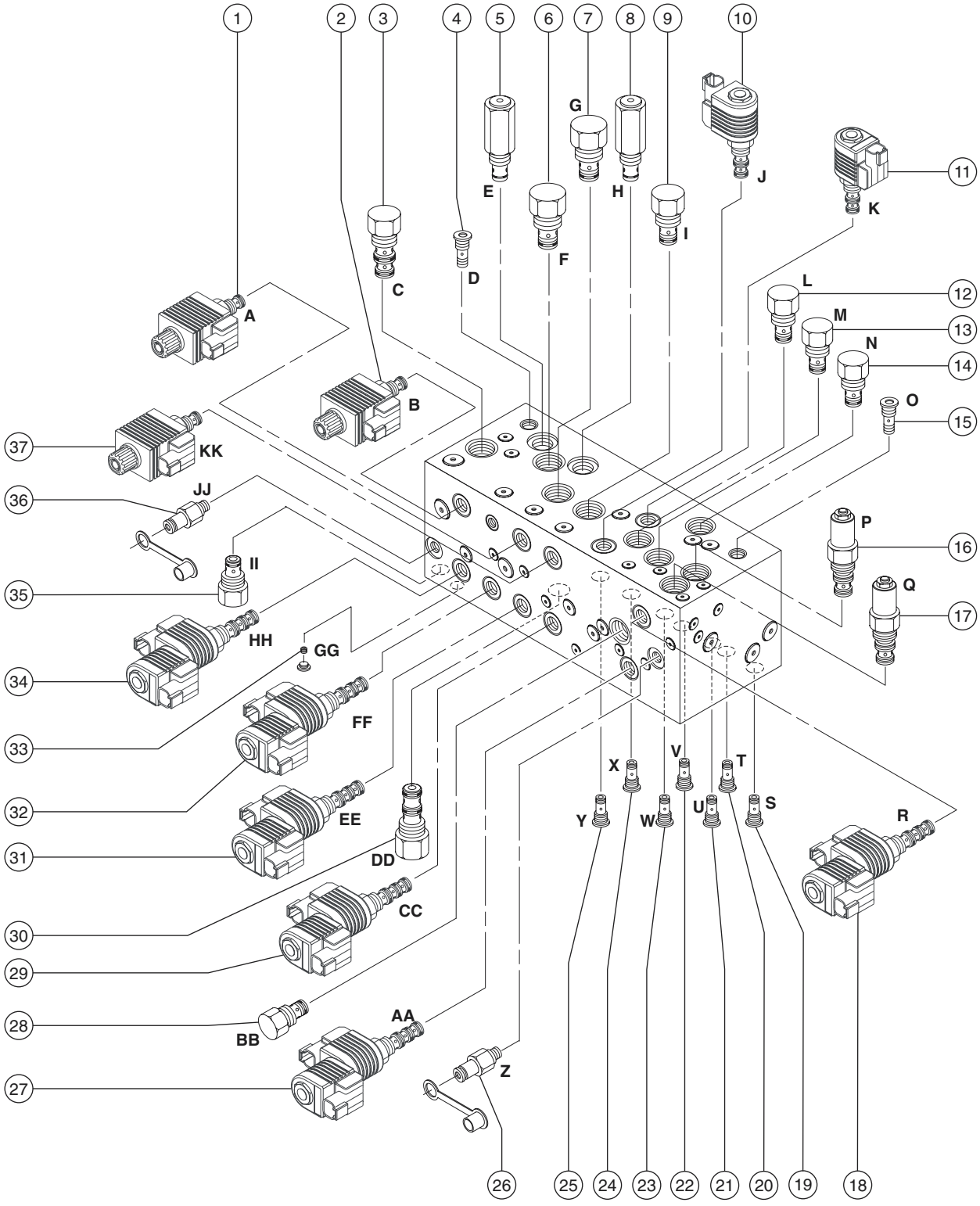
REV B MANIFOLDS



Function Manifold Components (before serial number 22050), continued

Index No.	Description	Schematic Item	Function	Torque
18	Solenoid valve, 3 position 4 way	R	Platform level up/down	25-30 ft-lbs / 34-41 Nm
19	Check valve	S	Differential sensing circuit, platform level up	11-13 ft-lbs / 15-18 Nm
20	Check valve	T	Differential sensing circuit, jib boom up/platform rotate left	11-13 ft-lbs / 15-18 Nm
21	Check valve	U	Differential sensing circuit, jib boom down/ platform rotate right	11-13 ft-lbs / 15-18 Nm
22	Check valve	V	Differential sensing circuit, primary boom extend	11-13 ft-lbs / 15-18 Nm
23	Check valve	W	Differential sensing circuit, primary boom retract	11-13 ft-lbs / 15-18 Nm
24	Check valve	X	Differential sensing circuit, primary boom up/down	11-13 ft-lbs / 15-18 Nm
25	Check valve	Y	Differential sensing circuit, turntable rotate left/right	11-13 ft-lbs / 15-18 Nm
26	Diagnostic nipple	Z	Testing	
27	Solenoid valve, 3 position 4 way	AA	Jib boom up/down and platform rotate left/right	25-30 ft-lbs / 34-41 Nm
28	Flow regulator valve, 0.6 gpm / 2.3 L/min	BB	Jib boom up/down and platform rotate left/right	25-30 ft-lbs / 34-41 Nm
29	Solenoid valve, 3 position 4 way	CC	Primary boom up/down	25-30 ft-lbs / 34-41 Nm
30	Differential sensing valve	DD	Meters flow to functions	10-12 ft-lbs / 14-16 Nm
31	Solenoid valve, 3 position 4 way	EE	Turntable rotate left/right	25-30 ft-lbs / 34-41 Nm
32	Solenoid valve, 3 position 4 way	FF	Steer left/right	25-30 ft-lbs / 34-41 Nm
33	Orifice, 0.039 in / 0.99 mm	GG	Secondary boom circuit	
34	Solenoid valve, 3 position 4 way	HH	Secondary boom up/down	25-30 ft-lbs / 34-41 Nm
35	Check valve	II	Secondary boom circuit	10-12 ft-lbs / 14-16 Nm
36	Diagnostic nipple	JJ	Testing	
37	Proportional solenoid valve	KK	Primary boom up/down	10-12 ft-lbs / 14-16 Nm

REV B MANIFOLDS



8-2 Valve Adjustments - Function Manifold (before serial number 22050)

How to Adjust the System Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item JJ) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the primary boom retract 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 H).

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.

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item JJ) on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the secondary boom down switch with the secondary boom fully lowered.

4 Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications.*

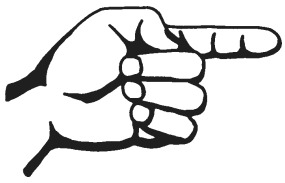
5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item E).

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.



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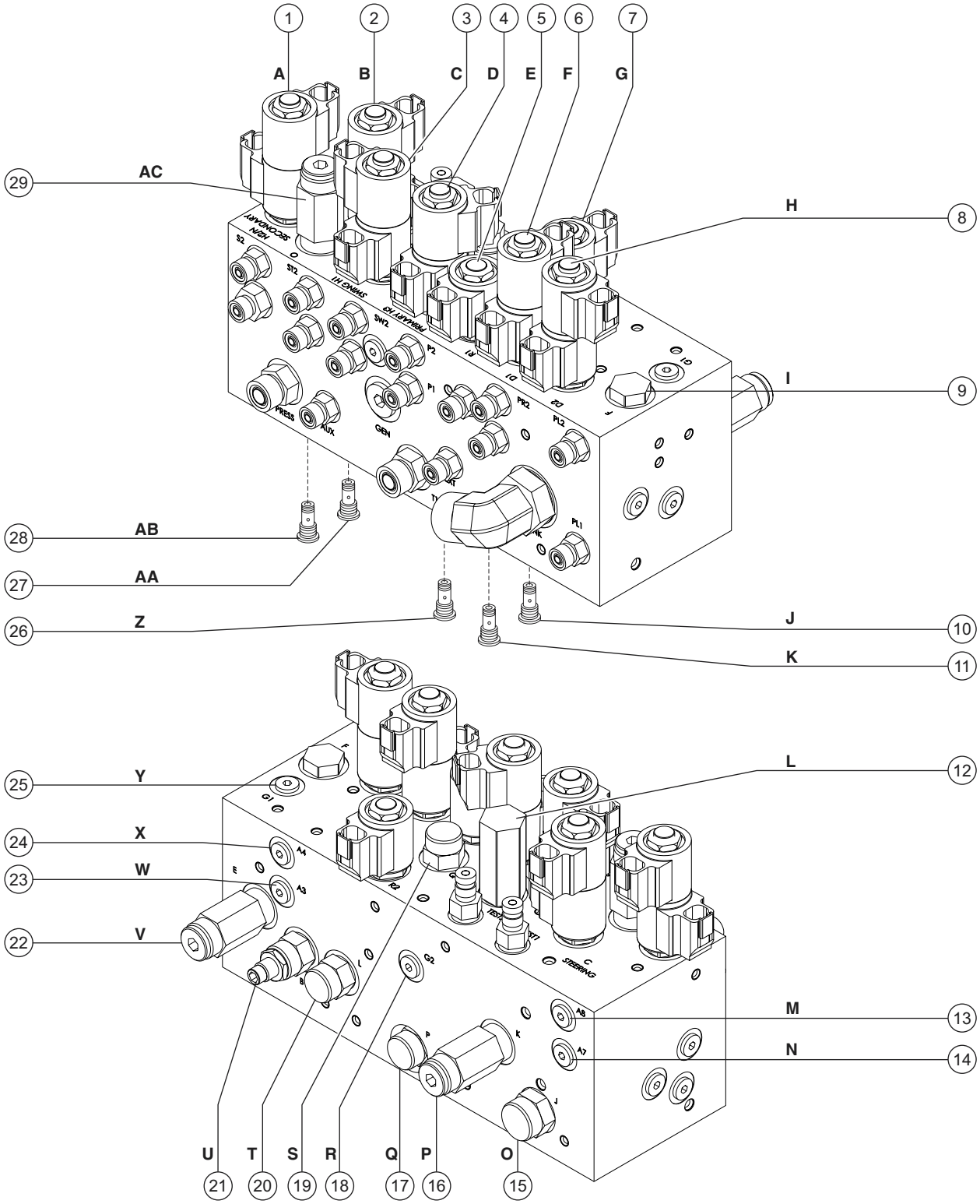
8-3
Function Manifold Components (after serial number 22049)

The function manifold is located next to the hydraulic tank underneath the ground controls side cover.

Index No.	Description	Schematic Item	Function	Torque
1	Proportional directional solenoid valve, 3 position 4 way	A	Secondary boom up/down	16-20 ft-lbs / 22-27 Nm
2	Solenoid valve, 3 position 4 way	B	Steer left/right	25 ft-lbs / 34 Nm
3	Proportional directional solenoid valve, 3 position 4 way	C	Turntable rotate left/right	16-20 ft-lbs / 22-27 Nm
4	Proportional directional solenoid valve, 3 position 4 way	D	Primary boom up/down	16-20 ft-lbs / 22-27 Nm
5	Solenoid valve, 2 position 3 way	E	Primary boom extend	20 ft-lbs / 27 Nm
6	Solenoid valve, 3 position 4 way	F	Platform rotate left/right and jib boom up/down (Z-45/25J)	25 ft-lbs / 34 Nm
7	Solenoid valve, 2 position 3 way	G	Primary boom retract	20 ft-lbs / 27 Nm
8	Solenoid valve, 3 position 4 way	H	Platform level up/down	25 ft-lbs / 34 Nm
9	Check valve, dual pilot operated	I	Platform level circuit	20 ft-lbs / 27 Nm
10	Check valve	J	Differential sensing circuit, platform rotate right and jib boom up (Z-45/25J)	12-14 ft-lbs / 16-19 Nm
11	Check valve	K	Differential sensing circuit, platform rotate left and jib boom down (Z-45/25J)	12-14 ft-lbs / 16-19 Nm
12	Differential sensing valve	L	Meters flow to functions	25 ft-lbs / 34 Nm
13	Check valve	M	Differential sensing circuit, secondary boom down	12-14 ft-lbs / 16-19 Nm
14	Check valve	N	Differential sensing circuit, secondary boom up	12-14 ft-lbs / 16-19 Nm
15	Priority flow regulator valve, 1.5 gpm / 5.7 L/min	O	Steer circuit	25 ft-lbs / 34 Nm
16	Relief valve, 3200 psi / 220.6 bar	P	System relief	20 ft-lbs / 27 Nm
17	Flow regulator valve, 0.1 gpm / 0.38 L/min	Q	Primary boom load sense circuit	20 ft-lbs / 27 Nm
18	Shuttle valve	R	Primary boom circuit	4-5 ft-lbs / 5-7 Nm
19	Flow regulator valve, 2 gpm / 7.6 L/min	S	Boom extend/retract circuit	20 ft-lbs / 27 Nm
20	Flow regulator valve, 0.4 gpm / 1.5 L/min	T	Jib boom and platform rotate circuit	20 ft-lbs / 27 Nm

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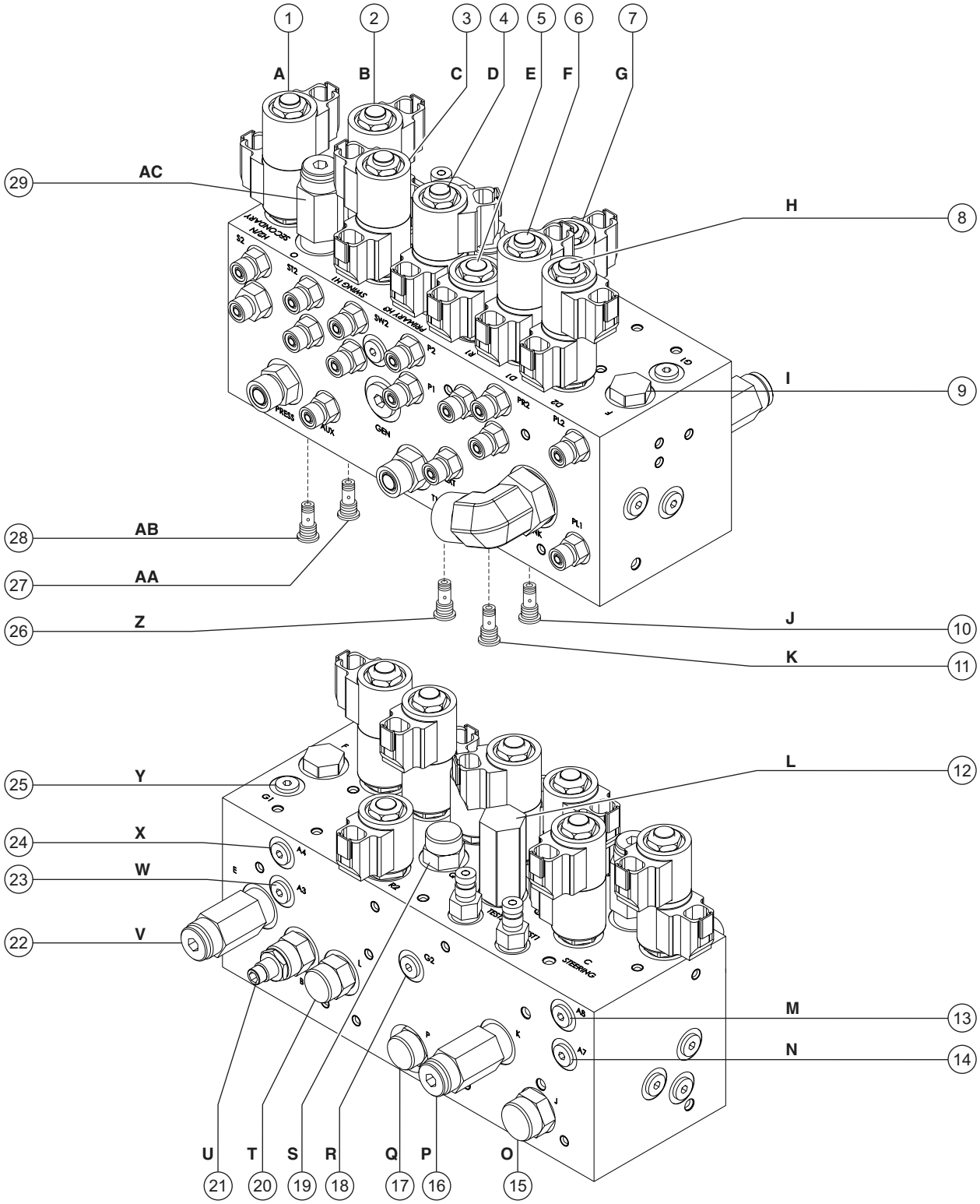
REV B MANIFOLDS



Function Manifold Components (after serial number 22049)

Index No.	Description	Schematic Item	Function	Torque
21	Needle valve	U	Platform level flow control	20 ft-lbs / 27 Nm
22	Relief valve, 2500 psi / 172 bar	V	Platform level circuit	25 ft-lbs / 34 Nm
23	Check valve	W	Differential sensing circuit, platform level up	12-14 ft-lbs / 16-19 Nm
24	Check valve	X	Differential sensing circuit, platform level down	12-14 ft-lbs / 16-19 Nm
25	Shuttle valve	Y	Platform level circuit	4-5 ft-lbs / 5-7 Nm
26	Check valve	Z	Differential sensing circuit, boom retract	12-14 ft-lbs / 16-19 Nm
27	Check valve	AA	Differential sensing circuit, turntable rotate right	12-14 ft-lbs / 16-19 Nm
28	Check valve	AB	Differential sensing circuit, turntable rotate left	12-14 ft-lbs / 16-19 Nm
29	Relief valve, 2100 psi / 145 bar	AC	Secondary boom down	25 ft-lbs / 34 Nm

REV B MANIFOLDS



8-4 Valve Adjustments - Function Manifold (after serial number 22049)

How to Adjust the System Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the TEST1 port on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the primary boom retract 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 P).

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.

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the TEST1 port on the function manifold.

2 Start the engine from the ground controls.

3 Hold the function enable switch to the high rpm position and activate and hold the secondary boom down switch with the secondary boom fully lowered.

4 Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications.*

5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item AC).

6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

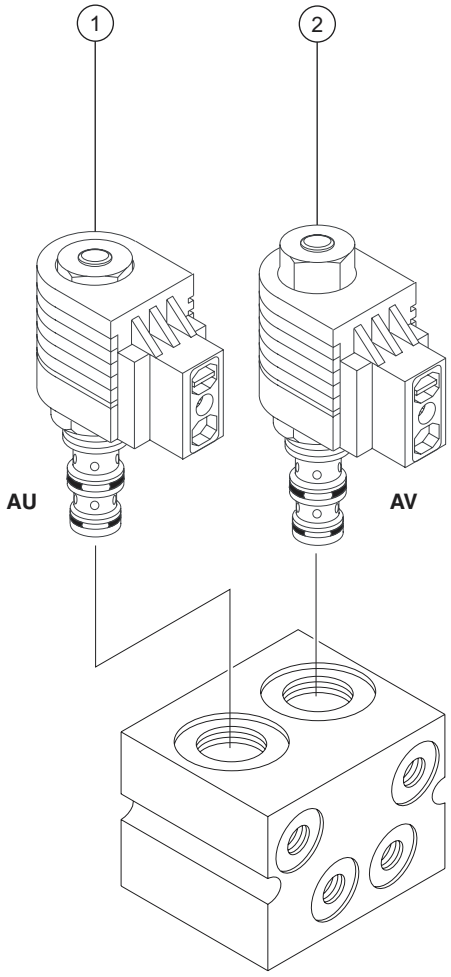
⚠WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

7 Repeat steps 2 through 5 and recheck relief valve pressure.

8 Remove the pressure gauge.

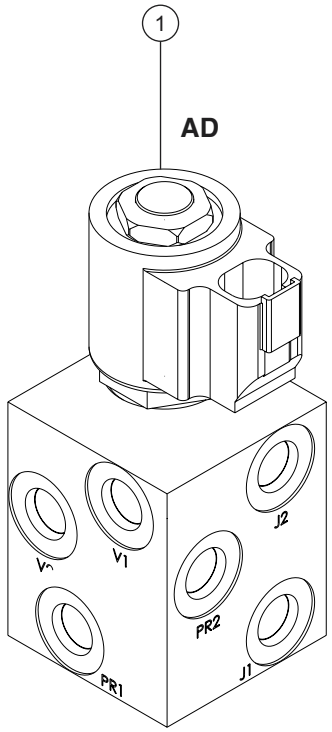
8-5
Jib Boom / Platform Rotate Manifold Components (before serial number 22050)

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	AU	Platform rotate/jib boom select	8-10 ft-lbs / 11-14 Nm
2	Solenoid valve, 2 position 3 way	AV	Platform rotate/jib boom select	8-10 ft-lbs / 11-14 Nm



8-6
Jib Boom / Platform Rotate Manifold Components (after serial number 22049)

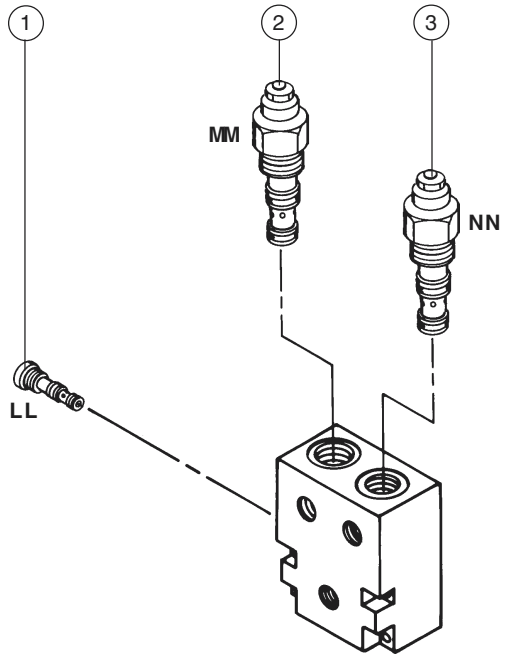
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	AD	Platform rotate/jib boom select	8-10 ft-lbs / 11-14 Nm



8-7
Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor located in the boom storage compartment.

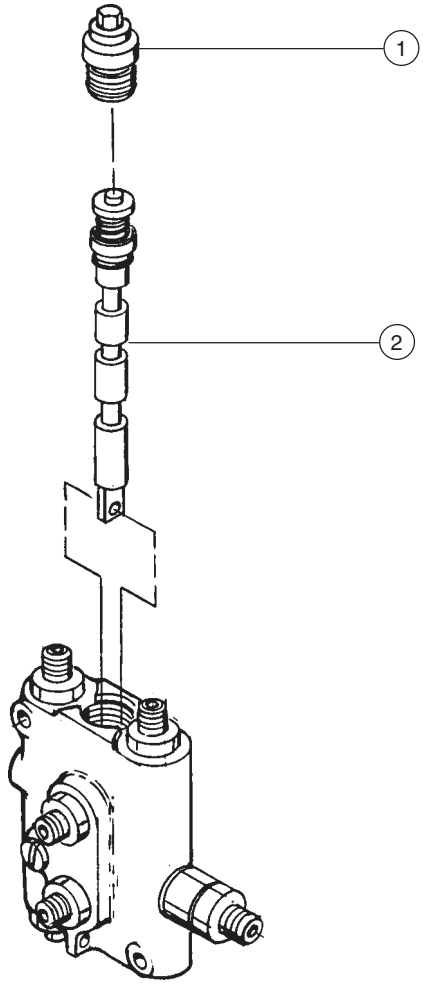
Index No.	Description	Schematic Item	Function	Torque
1	Shuttle valve, 2 position 3 way	LL	Turntable rotation brake release	10-13 ft-lbs / 14-18 Nm
2	Counterbalance valve	MM	Turntable rotate right	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	NN	Turntable rotate left	35-40 ft-lbs / 47-54 Nm



8-8
Directional Valve Manifold Components

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

Index No.	Description	Function	Torque
1	Cap	Breather	20-25 ft-lbs / 27-33 Nm
2	Spool valve	Directional control	



How to Set Up the Directional Valve Linkage

NOTICE Adjustment of the directional valve linkage is only necessary when the linkage or valve has been replaced.

1 Lower the boom to the stowed position.

2 Use a "bubble type" level to be sure the floor is completely level.

⚠WARNING Tip-over hazard. Failure to perform this procedure on a level floor 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.

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 Check to be sure the drive chassis is completely level.

11 Measure the distance between the drive chassis and the non-steer axle on both sides (from the inside of the drive chassis).

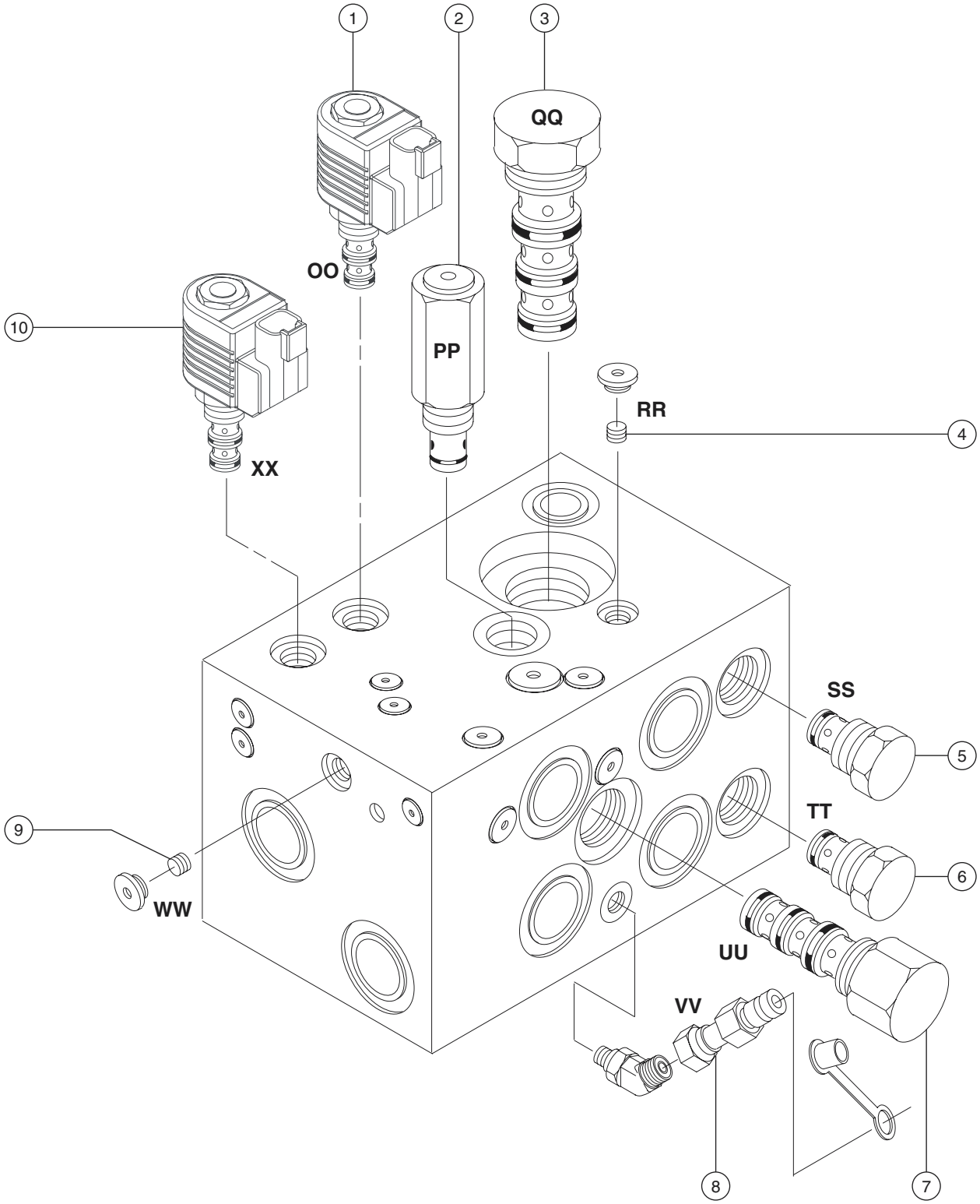
NOTICE If the distance is not equal and the adjustment to the linkage was completed with the ground and drive chassis level, repeat steps 6 through 10 OR consult Genie Industries Service Department.

8-9
Drive Manifold Components, 2WD

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

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	OO	Braking	10-12 ft-lbs / 14-16 Nm
2	Relief valve, 250 psi / 17.2 bar	PP	Charge pressure circuit	10-12 ft-lbs / 14-16 Nm
3	Flow divider/combiner valve	QQ	Controls flow to drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
4	Orifice, 0.070 in / 1.78 mm	RR	Drive circuit	
5	Check valve	SS	Drive circuit	25-30 ft-lbs / 34-41 Nm
6	Check valve	TT	Drive circuit	25-30 ft-lbs / 34-41 Nm
7	Shuttle valve, 3 position 3 way	UU	Charge pressure circuit that directs hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	15-18 ft-lbs / 20-24 Nm
8	Diagnostic fitting	VV	Testing	
9	Orifice, 0.030 in / 0.76 mm	WW	Brake circuit	
10	Solenoid valve, 2 position 3 way	XX	2-speed motor shift	10-12 ft-lbs / 14-16 Nm

REV B MANIFOLDS



8-10
Valve Adjustments, 2WD Drive Manifold

How to Adjust the Charge Pressure Relief Valve

1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.

2 Hold the charge pressure relief valve and remove the cap (item PP).

3 Turn the internal hex socket clockwise fully until it stops. Install the cap.

4 Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position. Note the reading on the pressure gauge.

5 Turn the engine off.

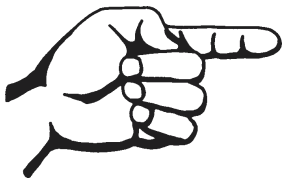
6 Remove the pressure gauge from the drive pump. Connect the gauge to the test port (item VV) located on the drive manifold.

7 Hold the charge pressure relief valve and remove the cap (item PP).

8 Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position.

9 Adjust the internal hex socket until the pressure reading on the gauge is 40 psi / 2.8 bar less than the pressure reading on the pump. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

10 Turn the engine off and remove the pressure gauge.



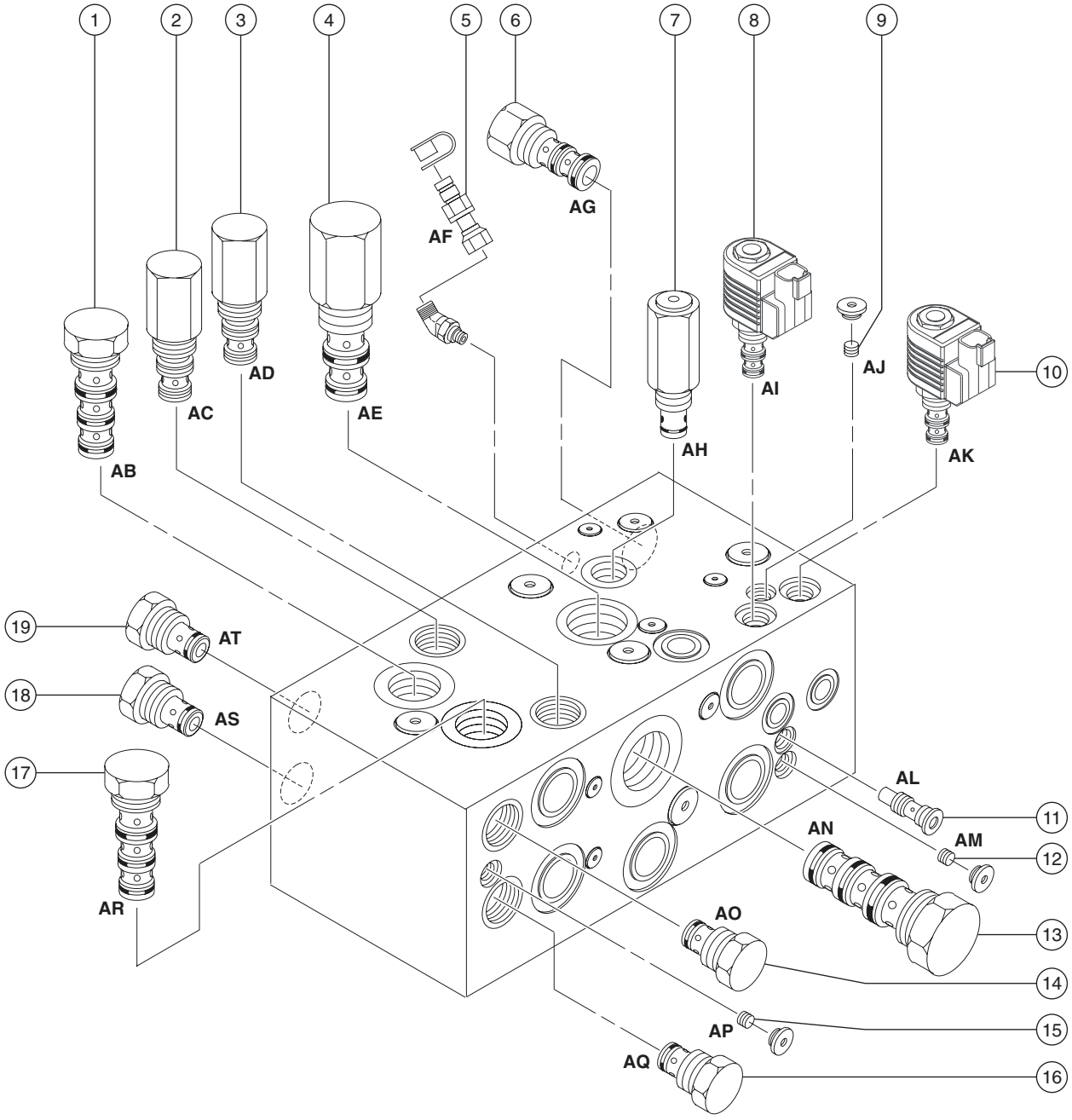
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8-11
Drive Manifold Components, 4WD

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

Index No.	Description	Schematic Item	Function	Torque
1	Flow divider/combiner valve	AB	Controls flow to non-steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
2	Bi-directional flow control valve, 2 gpm / 7.6 L/min	AC	Non-steer end drive motor circuit	25-30 ft-lbs / 34-41 Nm
3	Bi-directional flow control valve, 1 gpm / 3.8 L/min	AD	Steer end drive motor circuit	25-30 ft-lbs / 34-41 Nm
4	Directional control valve	AE	2 speed motor shift circuit/ High speed bypass	10-12 ft-lbs / 14-16 Nm
5	Diagnostic fitting	AF	Testing	
6	Shuttle valve, 3 position 3 way	AG	Charge pressure circuit that directs hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	15-18 ft-lbs / 20-24 Nm
7	Relief valve, 250 psi / 17.2 bar	AH	Charge pressure circuit	10-12 ft-lbs / 14-16 Nm
8	Solenoid valve, 2 position 3 way	AI	2-speed motor shift	10-12 ft-lbs / 14-16 Nm
9	Orifice, 0.030 inch / 0.76 mm	AJ	Brake circuit	
10	Solenoid valve, 2 position 3 way	AK	Braking	10-12 ft-lbs / 14-16 Nm
11	Check valve	AL	2 speed motor shift circuit	10-12 ft-lbs / 14-16 Nm
12	Orifice, 0.025 inch / 0.64 mm	AM	2 speed motor shift circuit	
13	Flow divider/combiner valve	AN	Controls flow to flow divider/combiner valves 1 and 17	25-30 ft-lbs / 34-41 Nm
14	Check valve	AO	Steer end drive motor circuit	10-12 ft-lbs / 14-16 Nm
15	Orifice, 0.052 in / 1.32 mm	AP	Drive circuit	
16	Check valve	AQ	Steer end drive motor circuit	10-12 ft-lbs / 14-16 Nm
17	Flow divider/combiner valve	AR	Controls flow to steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
18	Check valve	AS	Non-steer end drive motor circuit	10-12 ft-lbs / 14-16 Nm
19	Check valve	AT	Non-steer end drive motor circuit	10-12 ft-lbs / 14-16 Nm

REV B


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8-12
Valve Adjustments, 4WD Drive Manifold

How to Adjust the Charge Pressure Relief Valve

1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to the test port on the drive pump.

2 Hold the charge pressure relief valve and remove the cap (item AH).

3 Turn the internal hex socket clockwise fully until it stops. Install the cap.

4 Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position. Note the reading on the pressure gauge.

5 Turn the engine off.

6 Remove the pressure gauge from the drive pump. Connect the gauge to the test port (item AF) located on the drive manifold.

7 Hold the charge pressure relief valve and remove the cap (item AH).

8 Start the engine and move and hold the function enable/rpm select toggle switch to the high rpm (rabbit symbol) position.

9 Adjust the internal hex socket until the pressure reading on the gauge is 40 psi / 2.8 bar less than the pressure reading on the pump. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the valve cap.

10 Turn the engine off and remove the pressure gauge.

Turntable Rotation Components

REV A

9-1 Turntable Rotation Assembly

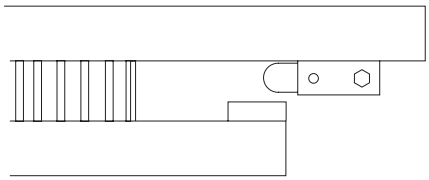
How to Remove the Turntable Rotation Assembly

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

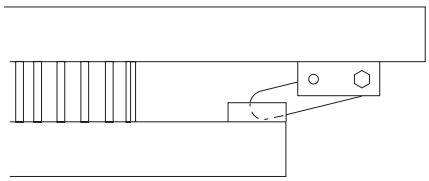
1 Raise the secondary boom until the upper pivot is above the turntable covers. Turn the machine off.

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

⚠WARNING Crushing hazard. The machine could tip over when the turntable rotation assembly is removed if the turntable rotation lock is not in the locked position.



Unlocked position



Locked position

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

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

4 Open the engine pivot plate latch and swing the engine pivot plate out and away from the machine to access the turntable rotation motor.

5 Tag, disconnect and plug the hydraulic hoses from the turntable rotation motor manifold. Cap the fittings on the manifold.

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

6 Attach a lifting strap from and overhead crane or other suitable lifting device to the turntable rotator assembly.

7 Remove the turntable rotation assembly mounting fasteners.

8 Carefully remove the turntable rotation assembly from the machine.

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

Axle Components

REV B

10-1
Hub and Bearings, 2WD Models

How to Remove the Hub and Bearings, 2WD Models

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

2 Block the non-steering wheels and place a lifting jack of ample capacity under the steer axle.

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

⚠CAUTION Crushing hazard. The machine may fall if not properly supported.

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

5 Remove the dust cap, cotter pin and castle nut.

NOTICE Always use a new cotter pin when installing a castle nut.

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

7 Place the hub on a flat surface and gently pry the bearing seal out of the hub.

8 Remove the rear bearing.

How to Install the Hub and Bearings, 2WD Models

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

1 Be sure that both bearings are packed with clean, fresh grease.

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

3 Press the bearing seal evenly into the hub until it is flush.

4 Slide the hub onto the yoke spindle.

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

5 Place the outer bearing into the hub.

6 Install the washer and castle nut.

7 Tighten the castle nut to 35 ft-lbs / 47 Nm to seat the bearing.

8 Fully loosen the castle nut, then re-tighten to 8 ft-lbs / 11 Nm.

9 Install a new cotter pin. Bend the cotter pin to secure the castle nut.

NOTICE Always use a new cotter pin when installing a castle nut.

10 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications.*

10-2 Oscillating Axle Lock-out Cylinders

The oscillating axle cylinders extend and retract between the drive chassis and the oscillating axle. The cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure. The valves are not adjustable.

How to Remove an Oscillating Axle Cylinder

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

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Tag, disconnect and plug the oscillating axle cylinder hydraulic hoses. Cap the fittings on the oscillate cylinder.

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

2 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to remove the pin.

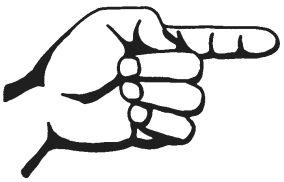
3 Attach a lifting strap from an overhead crane to the barrel end of the oscillating cylinder.

4 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pin.

⚠CAUTION Crushing hazard. The oscillate cylinder may become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

5 Remove the oscillate cylinder from the machine.

REV A



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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-steering 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

Before Troubleshooting:

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

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

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

FAULT CODES REV B

Fault Codes - Control System

How to Retrieve Control System Fault Codes

NOTICE At least one fault code is present when the alarm at the platform controls produces two short beeps every 30 seconds for 10 minutes.

NOTICE Perform this procedure with the engine off, the key switch turned to platform controls and the red Emergency Stop button pulled out to the on position at both the ground and platform controls.

1 Open the platform control box lid.

⚠WARNING Electrocution 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.

CAUTION 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.

NOTICE When the red LED is flashing the code, the yellow LED will be on solid.

4 **Determine the error type:** The yellow LED indidates the error type and will flash two separate codes. The first code will indicate the first digit of the two digit code, flashing once per second. It will then pause for 1.5 seconds and flash the second digit once per 0.5 second.

NOTICE 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.

Error Source		Error Type		Condition	Solution
ID	Name	ID	Name		
21	Boom 1 Joystick (primary boom up/down)	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate joystick.
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
22	Boom 1 directional valves	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
23	Boom 1 flow control valve	12 15	Value too high Value too low	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds.
		18	Just calibrated		Self-clearing. (transient)
31	Boom 2 Joystick (secondary boom up/down or primary boom extend/retract)	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate joystick.
		18	Just calibrated	Initiate 1 second beep of alarm.	Self-clearing. (transient)
32	Boom 2 directional valves	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.



Continued on next page

FAULT CODES REV B

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
33	Boom 2 flow control valve	12 15	Value too high Value too low	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds.
		18	Just calibrated		Self-clearing. (transient)
41	Turntable rotate joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate joystick.
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
42	Turntable rotate directional valves	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
43	Turntable rotate flow control valve	12 15	Value too high Value too low	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds.
		18	Just calibrated		Self-clearing. (transient)
44	Drive enable override switches	21	Fault	Enable override direction is frozen at neutral.	Power up controller with problem corrected.

Error Source		Error Type		Condition	Solution
ID	**Name**	**ID**	**Name**		
51	Drive joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
53	Drive flow valve (EDC)	12 15	Value too high Value too low	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Normal function **except** threshold for one or both directions is zero.	Calibrate valve thresholds
		18	Just calibrated		Self-clearing. (transient)
54	Drive brake valve	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
55	High speed drive motor Valve	21	Fault	Motor speed frozen in the low state. Alarm sounds indicating fault.	Power up controller with problem corrected.
61	Steer joystick	11 12 15 16	Value at 5V Value too high Value too low Value at 0V	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.
		17	Not calibrated	Joystick speed and direction frozen at zero and neutral.	Calibrate Joystick
		18	Just calibrated	Initiate 1-second beep of alarm.	Self-clearing. (transient)
62	Steer directional valves	21	Fault	Limited speed and direction frozen at zero and neutral. Alarm sounds indicating fault.	Power up controller with problem corrected.

FAULT CODES REV B

Fault codes - Ford Models

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

Refer to Repair Procedure 6-4, *How to Retrieve Engine Fault Codes.* Use the Fault Code Chart on the following pages to aid in identifying the fault.

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.	Repair wiring and/or connections OR replace 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 po	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.



Continued on next page

FAULT CODES REV B

Code	Problem	Cause	Solution
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	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.
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.

Code	Problem	Cause	Solution
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 as 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 as leaks OR IAT sensor is faulty.	Check air intake system for damage and proper routing of air intake components OR replace the IAT sensor.
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.



Continued on next page

FAULT CODES REV B

Code	Problem	Cause	Solution
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.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
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.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
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.	Repair wiring and/or connections to sensor OR replace MAP sensor.
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.	Replace MAP sensor OR replace the ECM.
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.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.

Code	Problem	Cause	Solution
244	Camshaft Sensor Loss	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.
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 shorted 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.
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.



Continued on next page

FAULT CODES REV B

Code	Problem	Cause	Solution
314	Injector Driver #2 Shorted	Wiring and/or connections to fuel injector #2 shorted 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.
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 shorted 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.
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 shorted 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.
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.	Repair wiring and/or connections to fuel pump OR replace fuel pump.
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.	Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.

Code	Problem	Cause	Solution
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 #1 OR replace ignition coil #1.
414	Coil Driver #2 Shorted	Wiring and/or connections to ignition coil #2 shorted OR ignition coil #2 is faulty.	Repair wiring and/or connections to ignition coil #2 OR replace ignition coil #2.
511	FPP1 High Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
512	FPP1 Low Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
513	FPP1 Higher than IVS Limit	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
514	FPP1 Lower than IVS Limit	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
521	FPP2 High Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
522	FPP2 Low Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.



Continued on next page

FAULT CODES REV B

Code	Problem	Cause	Solution
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	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.
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	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.
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.

Code	Problem	Cause	Solution
536	TPS1 Lower 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.
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.	Repair wiring and/or connections to governor actuator OR replace the governor actuator.
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.
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	Fuel Rev Limit	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.
553	Spark Rev Limit	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.



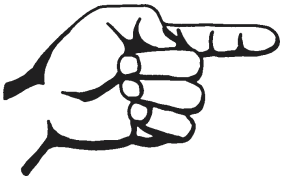
Continued on next page

FAULT CODES REV B

Code	Problem	Cause	Solution
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	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.
613	A/D 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.
614	RTI 1 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.
615	Flash Checksum Invalid	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.
616	RAM 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.
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.

Code	Problem	Cause	Solution
632	External 5V DC Ref Higher 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.
655	RTI 2 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	RTI 3 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.

REV B



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Schematics

Observe and Obey:

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

Before Troubleshooting:

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

About This Section

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

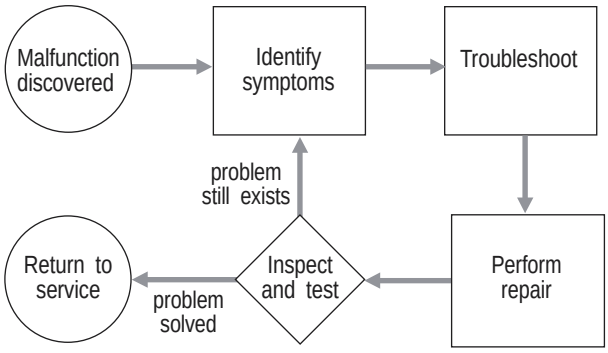
Electrical Schematics

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

Hydraulic Schematics

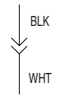
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process

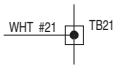


Electrical Symbols Legend

REV A



Quick disconnect terminal



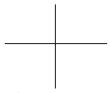
T-circuits connect at terminal



T-circuits connect

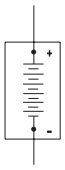


Connection no terminal



Circuits crossing no connection

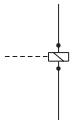
Diode



Battery



Circuit breaker with amperage



Coil solenoid or relay



Horn or alarm



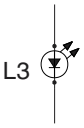
Flashing beacon



Gauge



Hour meter



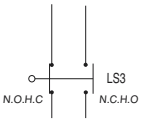
LED



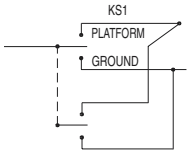
Fuse with amperage



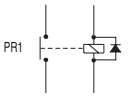
Starting aid: glow plug or flame ignitor



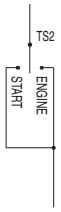
Limit switch



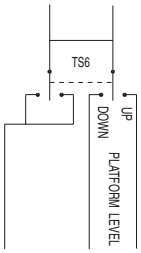
Key switch
(before serial number 22051)



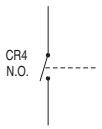
Power relay



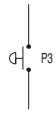
Toggle switch SPDT



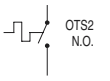
Toggle switch DPDT



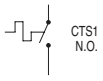
Control relay contact normally open



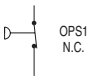
Horn button normally open



Oil temperature switch normally open



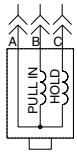
Coolant temperature switch normally open



Oil pressure switch normally closed



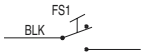
Gauge sending unit



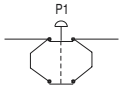
Fuel or RPM solenoid



Coil



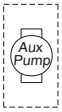
Foot switch



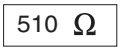
Emergency Stop button normally closed



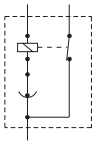
Hydraulic oil cooling fan



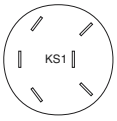
Auxiliary pump



Resistor with ohm value



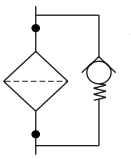
Tilt sensor



Key switch
(after serial number 22050)

Hydraulic Symbols Legend

REV A



Filter with bypass valve relief setting



Pump fixed displacement



Pump bi-directional, variable displacement



Motor bi-directional



Motor 2-speed, bi-directional



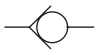
Pump prime mover (engine or motor)



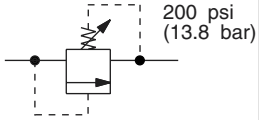
Double acting cylinder



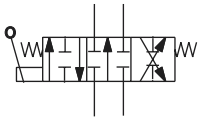
Orifice with size



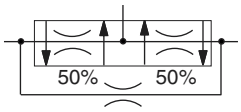
Check valve



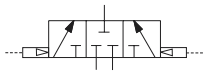
Relief valve with pressure setting



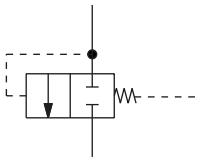
Directional valve (mechanically activated)



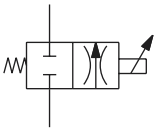
Flow divider/combiner valve with pressure balancing orifice and flow percentages



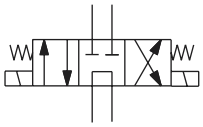
Pilot operated 3 position, 3 way, shuttle valve



Differential sensing valve



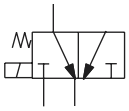
Solenoid operated proportional valve



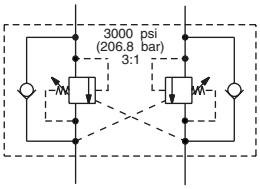
Solenoid operated 3 position, 4 way, directional valve



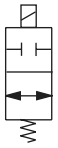
Priority flow regulator valve



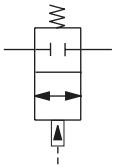
Solenoid operated 2 position, 3 way, directional valve



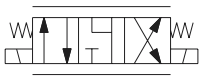
Counterbalance valve with pressure and pilot ratio



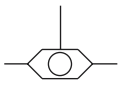
2 position, 2 way solenoid valve



Directional valve pilot operated 2 position, 2 way



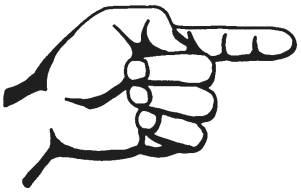
Solenoid operated 3 position, 4 way, proportional directional valve



2 position, 3 way, shuttle valve



Brake



REV A

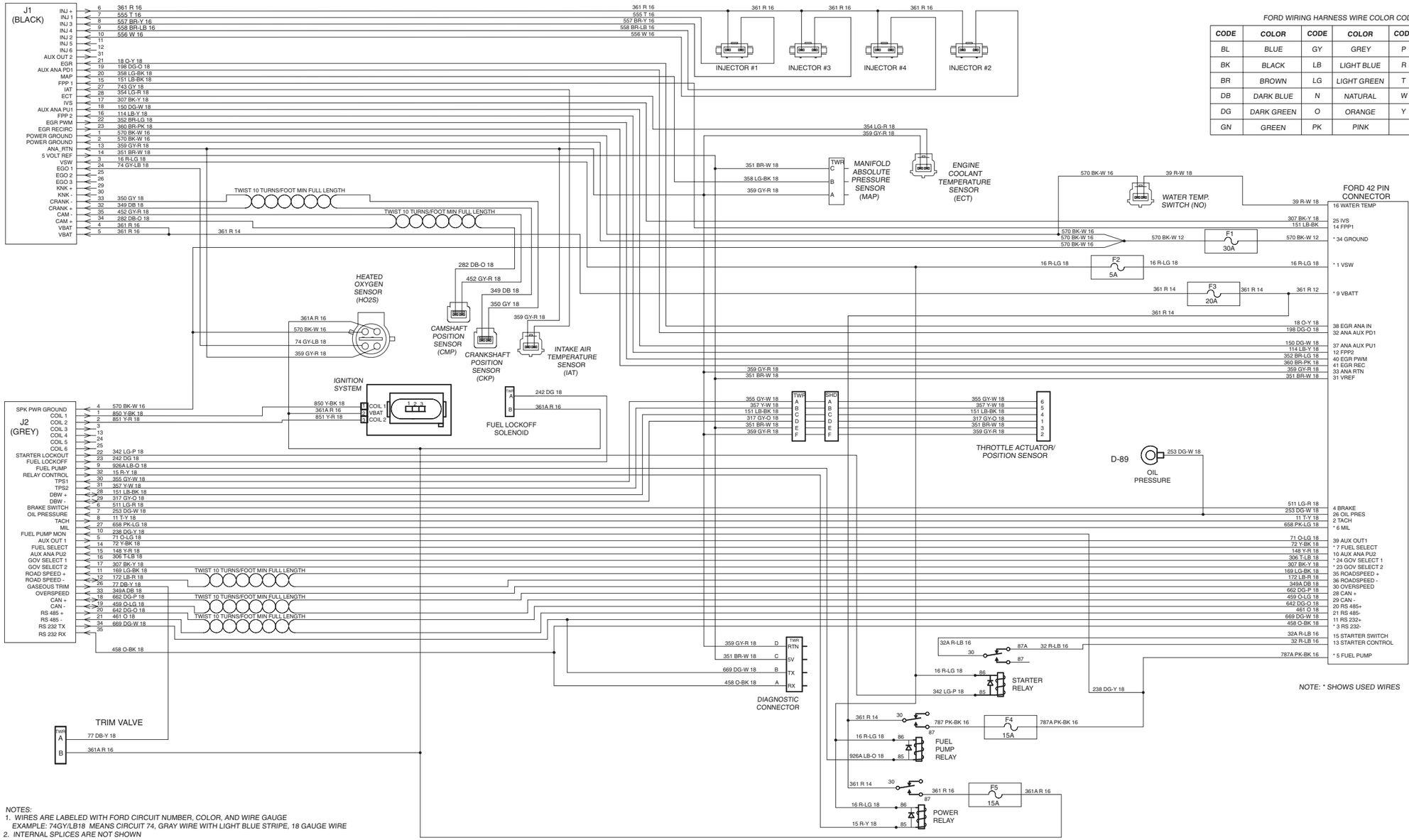
Ford LRG-425 EFI Engine Wire Harness
(before serial number 22050)

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

1 2 3 4 5 6 7 8

FORD WIRING HARNESS WIRE COLOR CODE

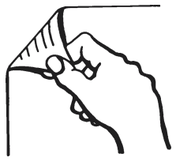
CODE	COLOR	CODE	COLOR	CODE	COLOR
BL	BLUE	GY	GREY	P	PURPLE
BK	BLACK	LB	LIGHT BLUE	R	RED
BR	BROWN	LG	LIGHT GREEN	T	TAN
DB	DARK BLUE	N	NATURAL	W	WHITE
DG	DARK GREEN	O	ORANGE	Y	YELLOW
GN	GREEN	PK	PINK		



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

NOTE: * SHOWS USED WIRES

Ford LRG-425 EFI Engine Wire Harness
(before serial number 22050)



REV A

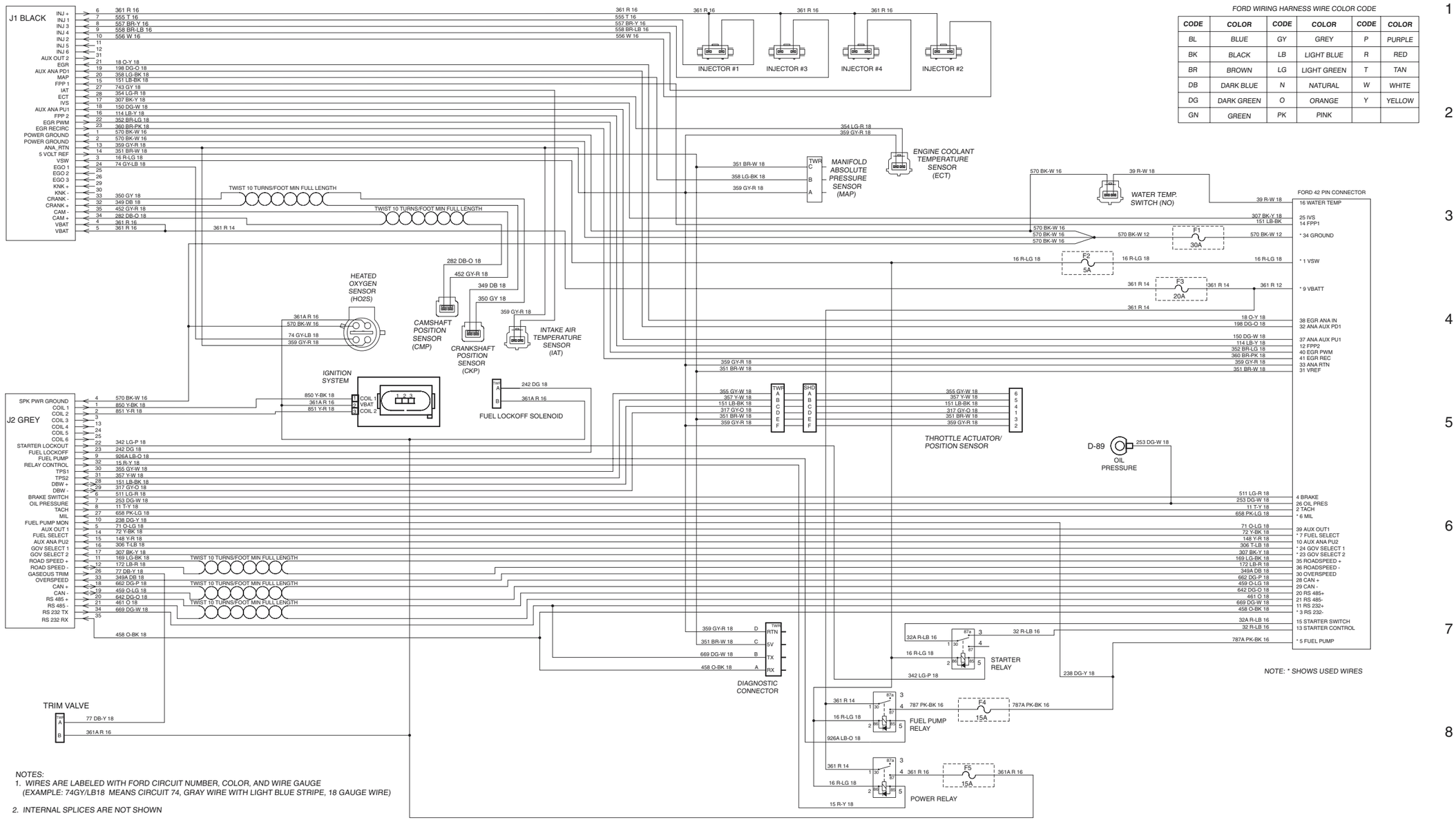
Ford LRG-425 EFI Engine Wire Harness
(after serial number 22049)

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

1 2 3 4 5 6 7 8

FORD WIRING HARNESS WIRE COLOR CODE

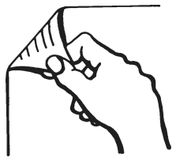
CODE	COLOR	CODE	COLOR	CODE	COLOR
BL	BLUE	GY	GREY	P	PURPLE
BK	BLACK	LB	LIGHT BLUE	R	RED
BR	BROWN	LG	LIGHT GREEN	T	TAN
DB	DARK BLUE	N	NATURAL	W	WHITE
DG	DARK GREEN	O	ORANGE	Y	YELLOW
GN	GREEN	PK	PINK		



NOTES:
1. *WIRES ARE LABELED WITH FORD CIRCUIT NUMBER, COLOR, AND WIRE GAUGE (EXAMPLE: 74GY/LB18 MEANS CIRCUIT 74, GRAY WIRE WITH LIGHT BLUE STRIPE, 18 GAUGE WIRE)*

2. *INTERNAL SPLICES ARE NOT SHOWN*

Ford LRG-425 EFI Engine Wire Harness
(after serial number 22049)



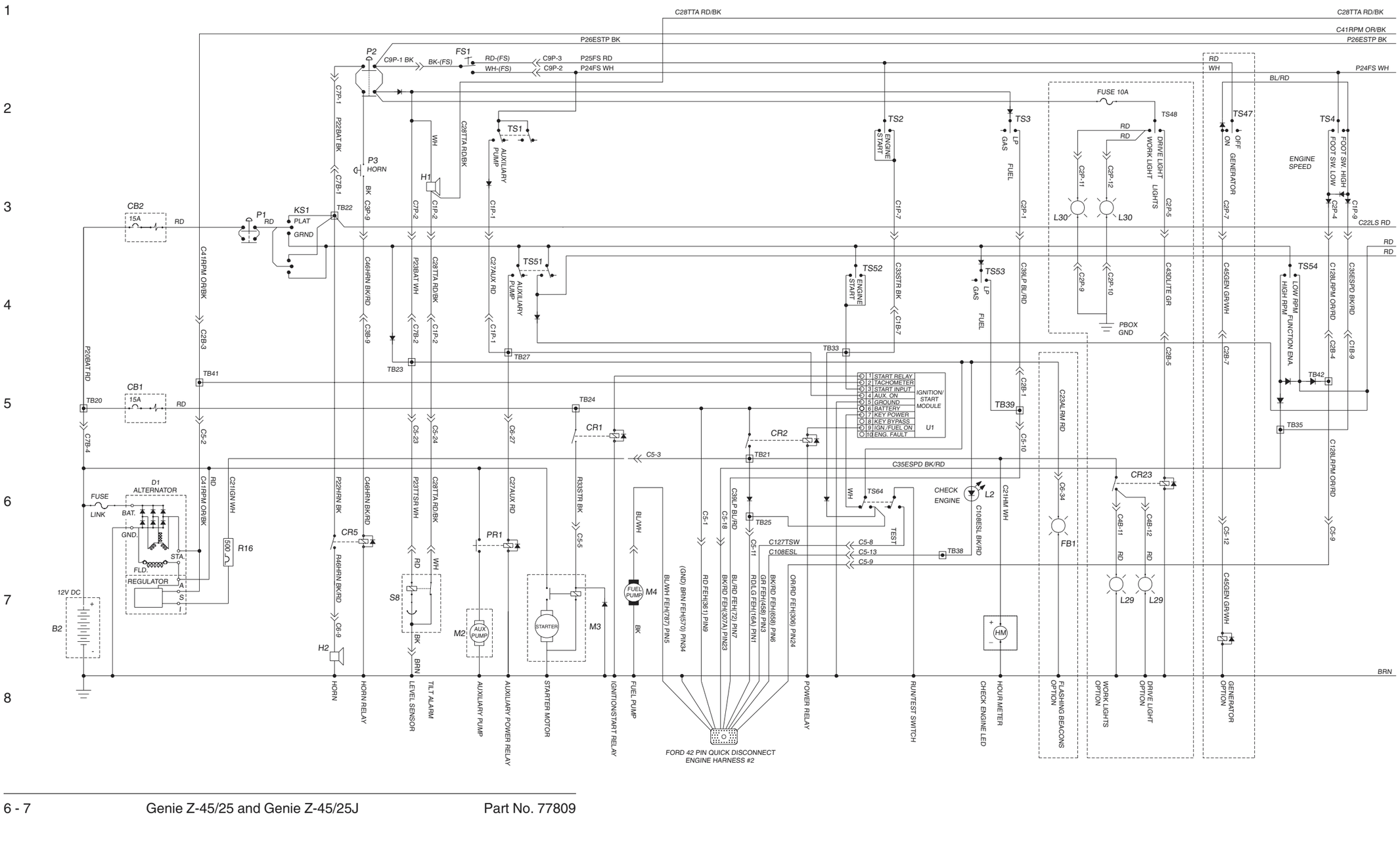




Electrical Schematic, Z-45/25

REV A

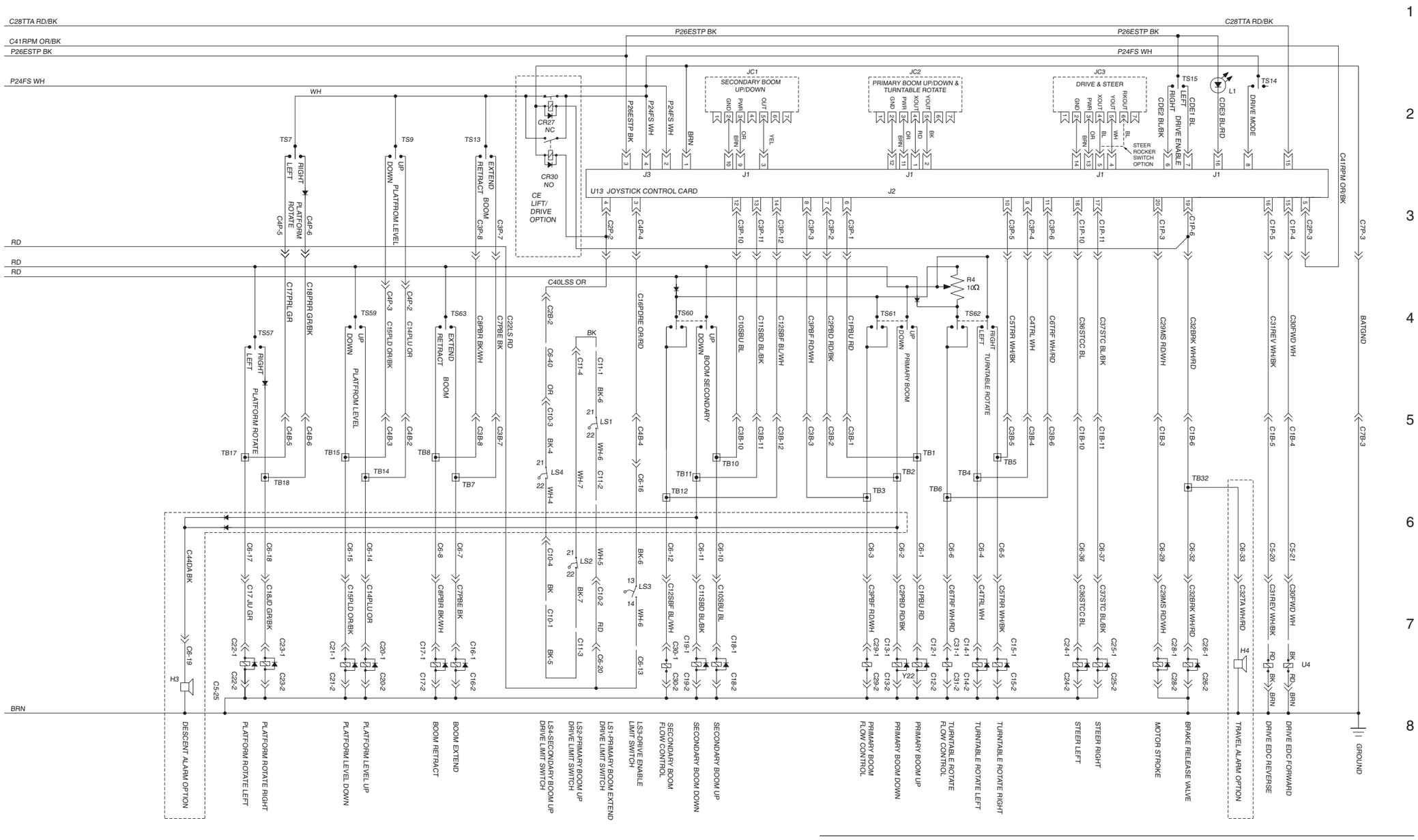
Ford LRG-425 EFI Models (before serial number 22050)



REV A

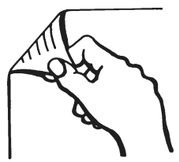
Electrical Schematic, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



Electrical Schematic, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



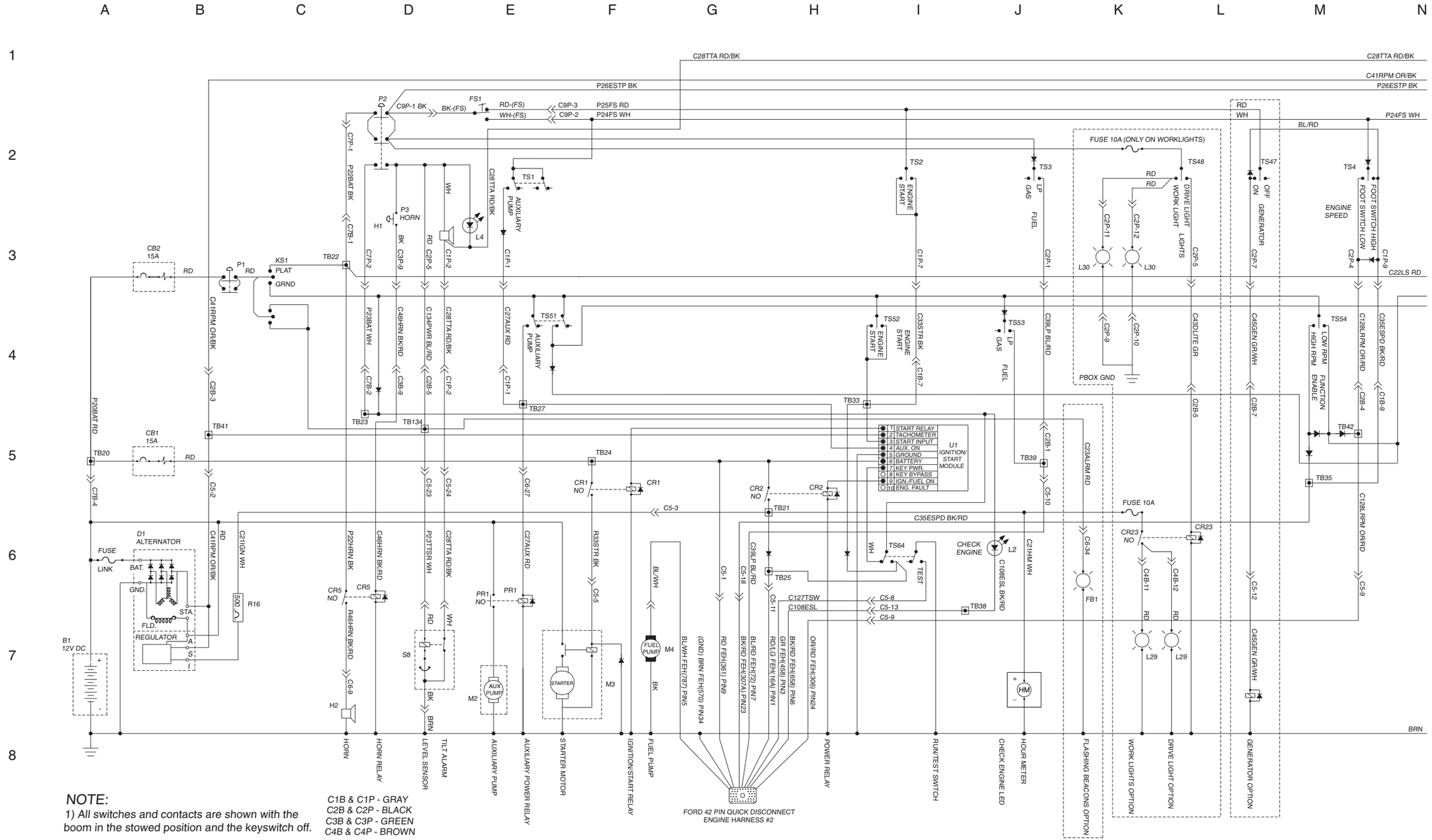




Electrical Schematic, Z-45/25

REV A

Ford LRG-425 EFI Models (after serial number 22049)



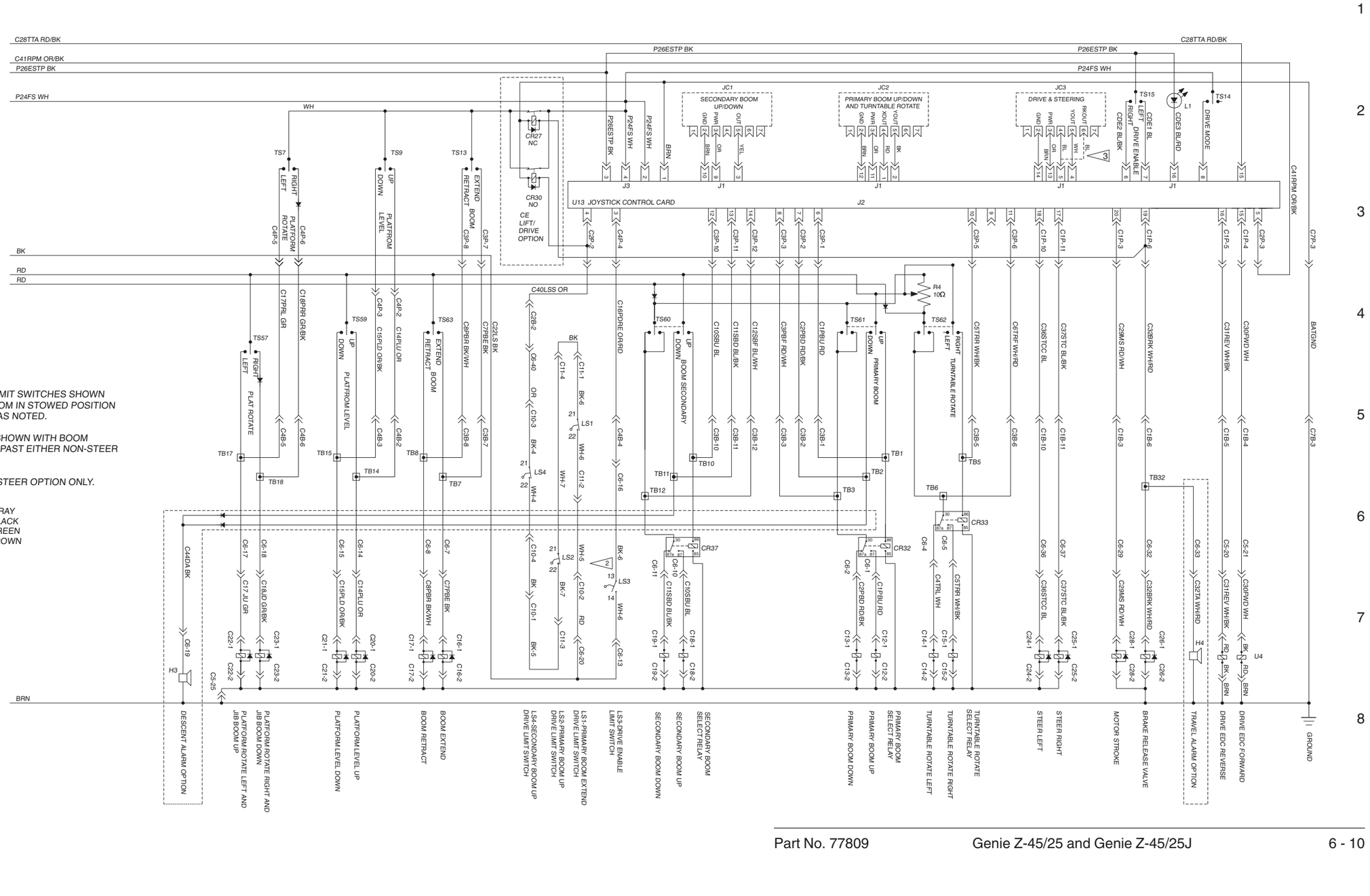
NOTE:
1) All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

REV A

Electrical Schematic, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)



NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.

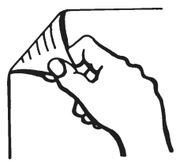
2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 ROCKER STEER OPTION ONLY.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

Electrical Schematic, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)



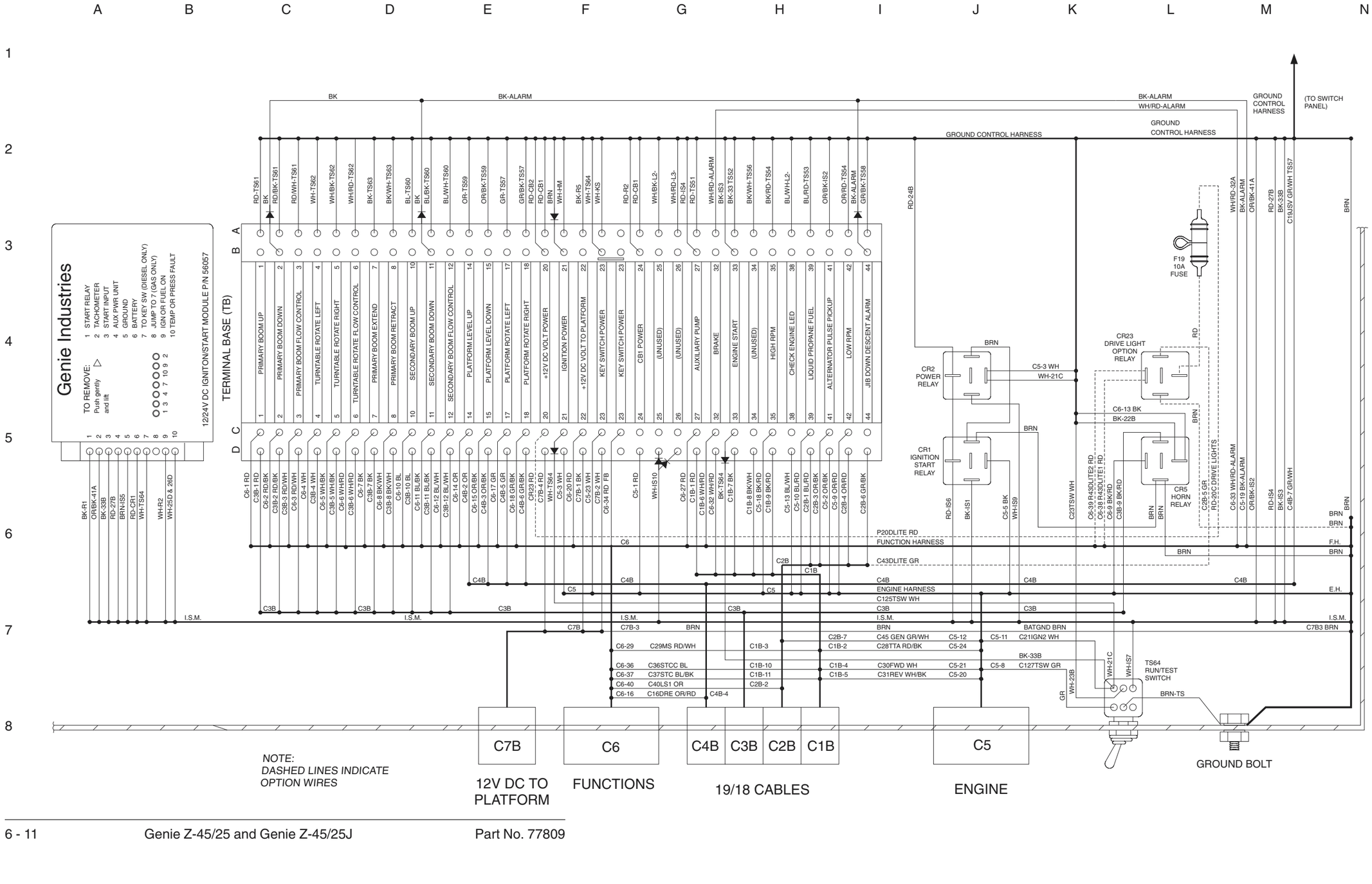
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

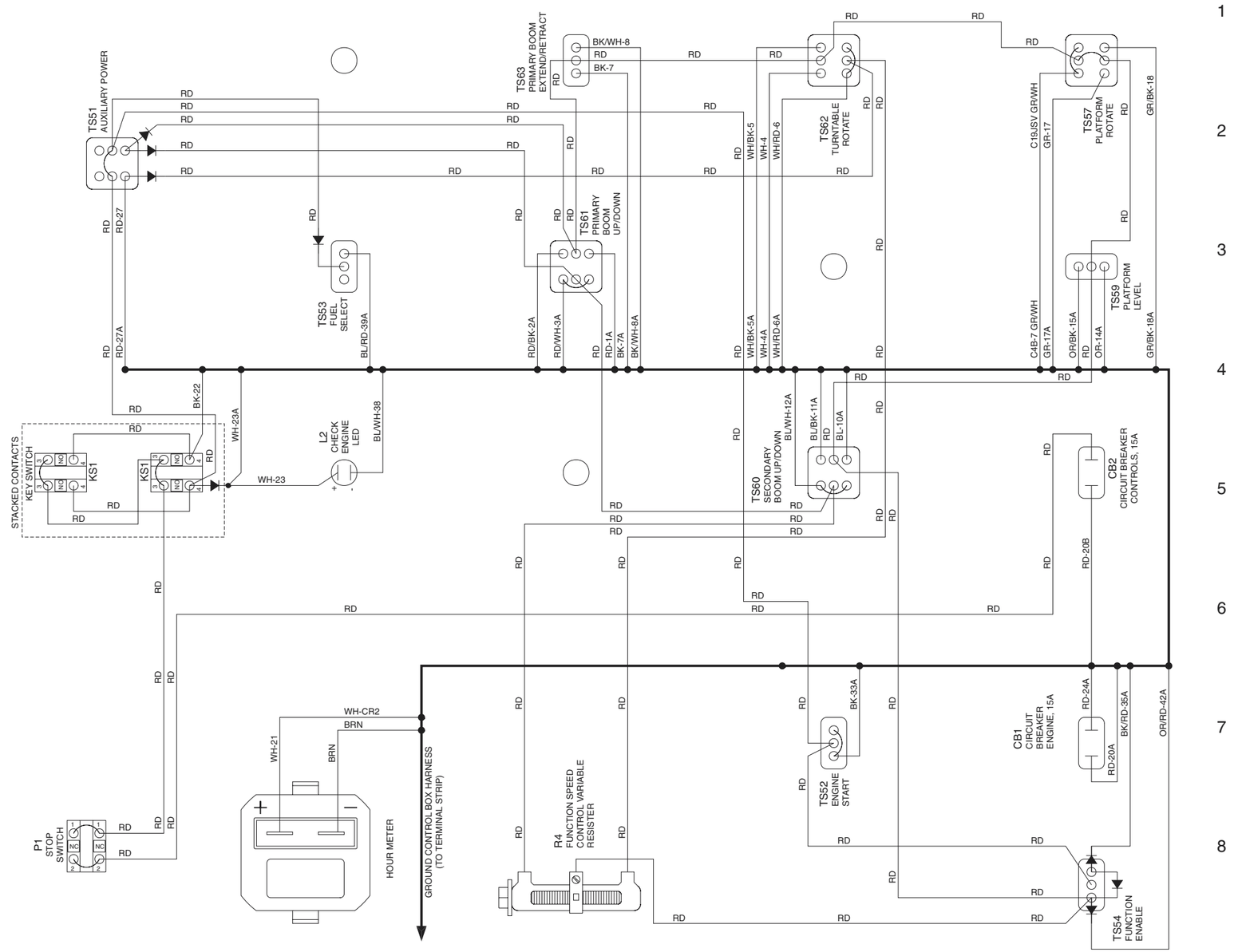
Ford LRG-425 EFI Models (before serial number 22050)



REV A

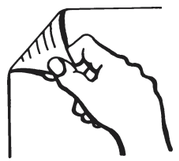
Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



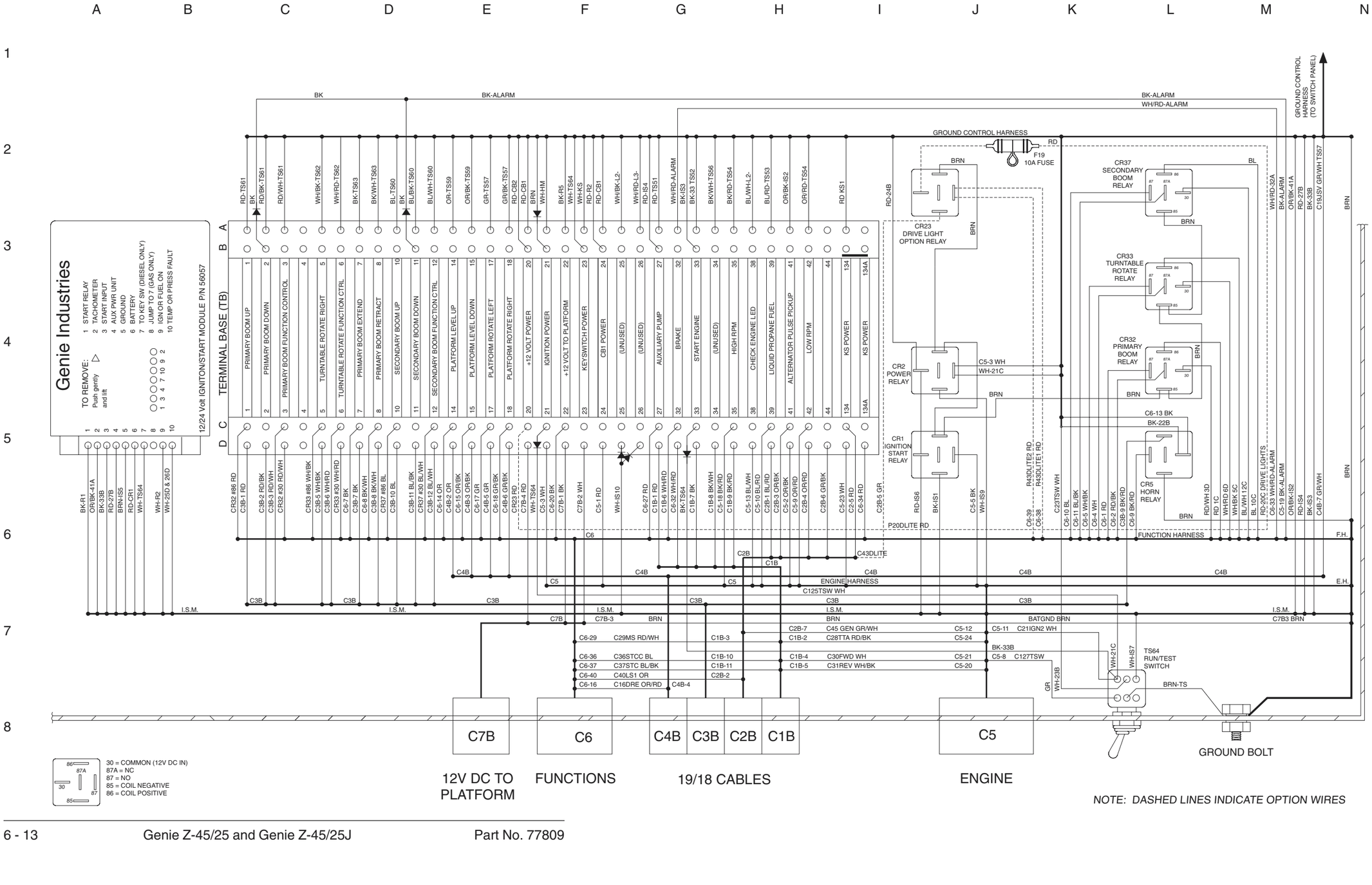
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

Ford LRG-425 EFI Models (after serial number 22049)



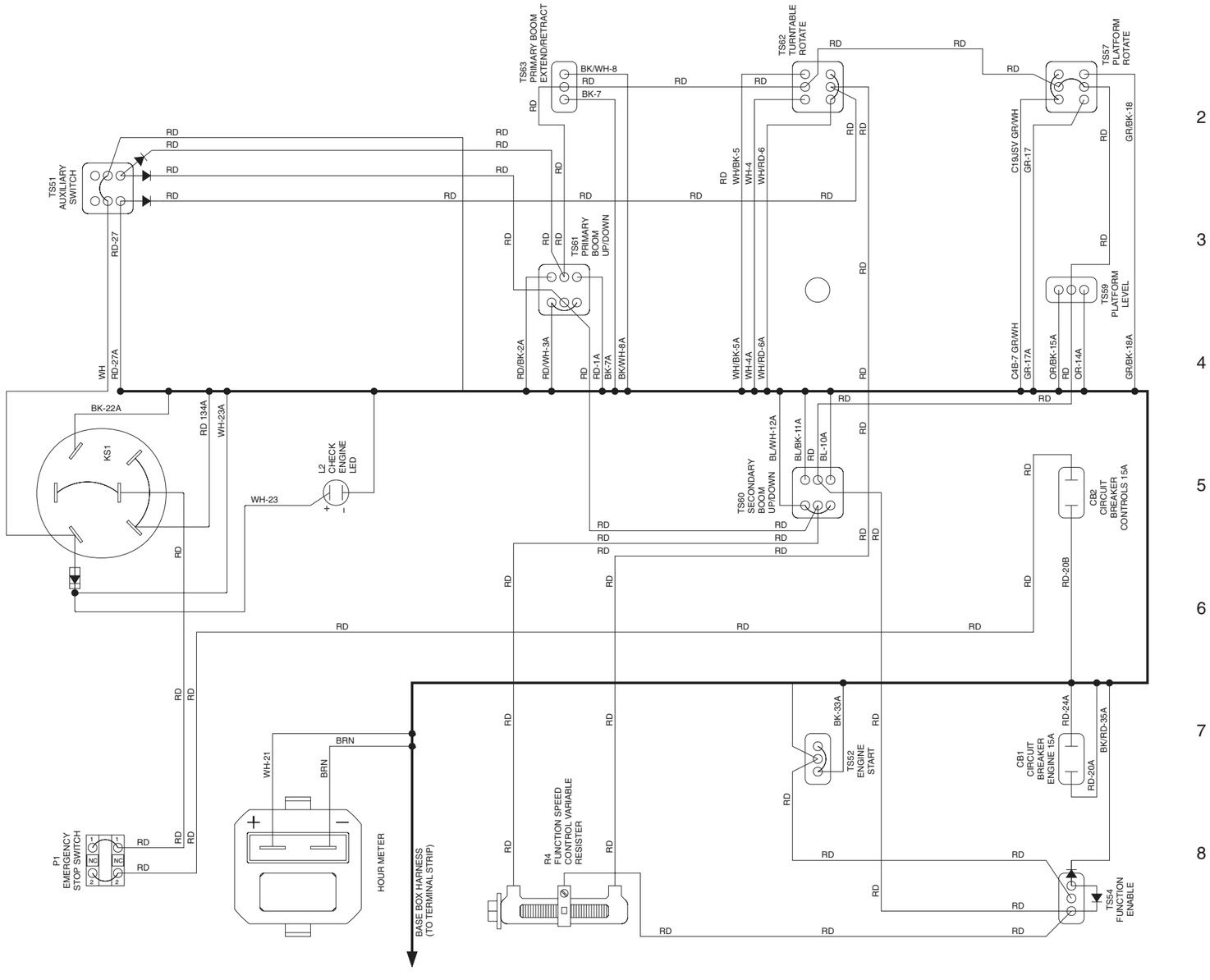
REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)

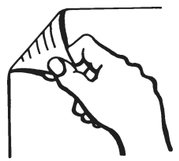
LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR5	HORN RELAY
HM	HOUR METER
KS1	KEY SWITCH
L2	CHECK ENGINE LED
P1	RED EMERGENCY STOP BUTTON
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
TS51	AUXILIARY POWER TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS53	FUEL SELECT TOGGLE SWITCH
TS54	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH
TS64	RUN/TEST TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTION WIRES



Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)



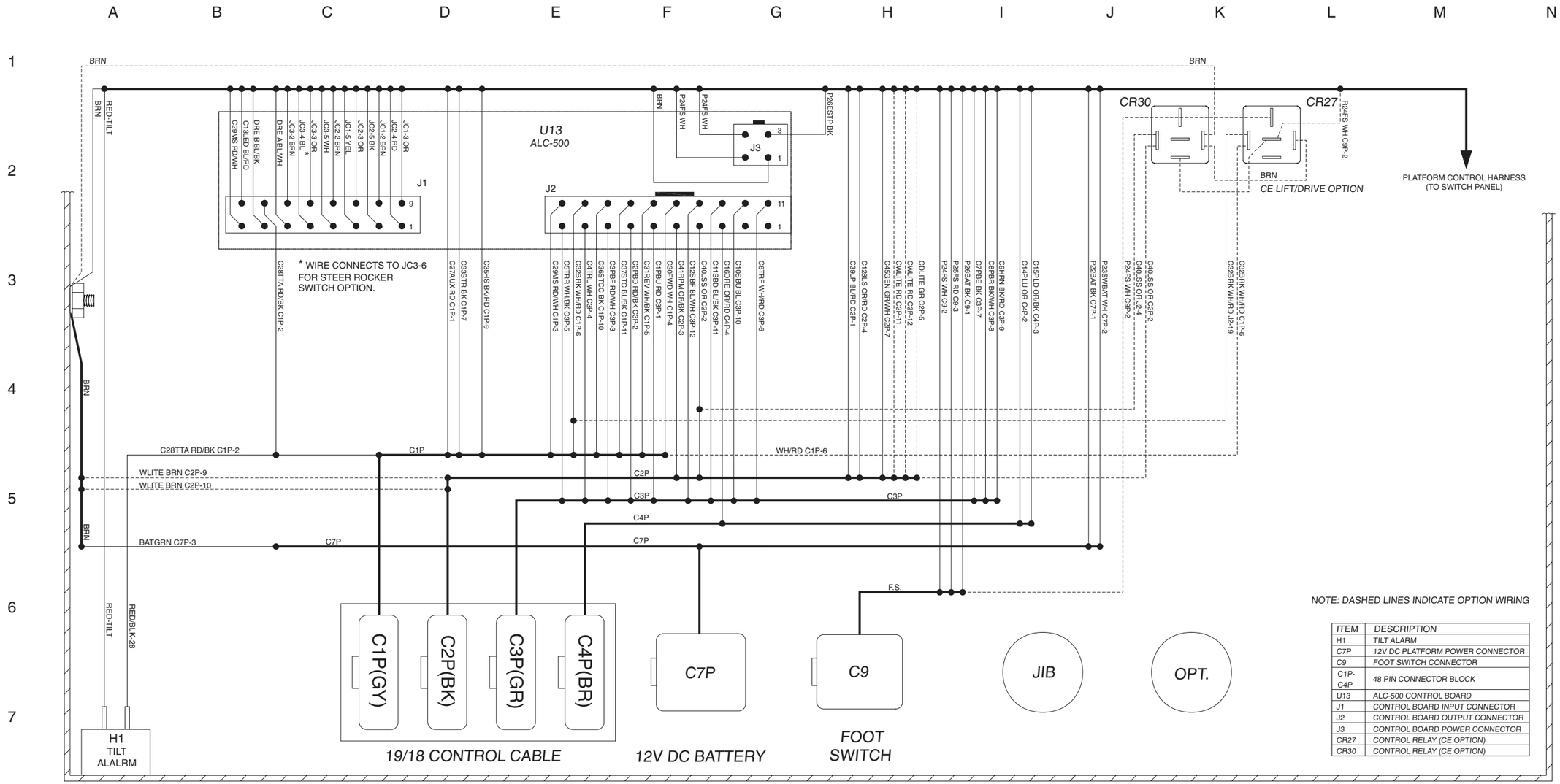
Platform Control Box Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)

Platform Box Wiring Diagram, Z-45/25

REV A

Ford LRG-425 EFI Models (before serial number 22050)



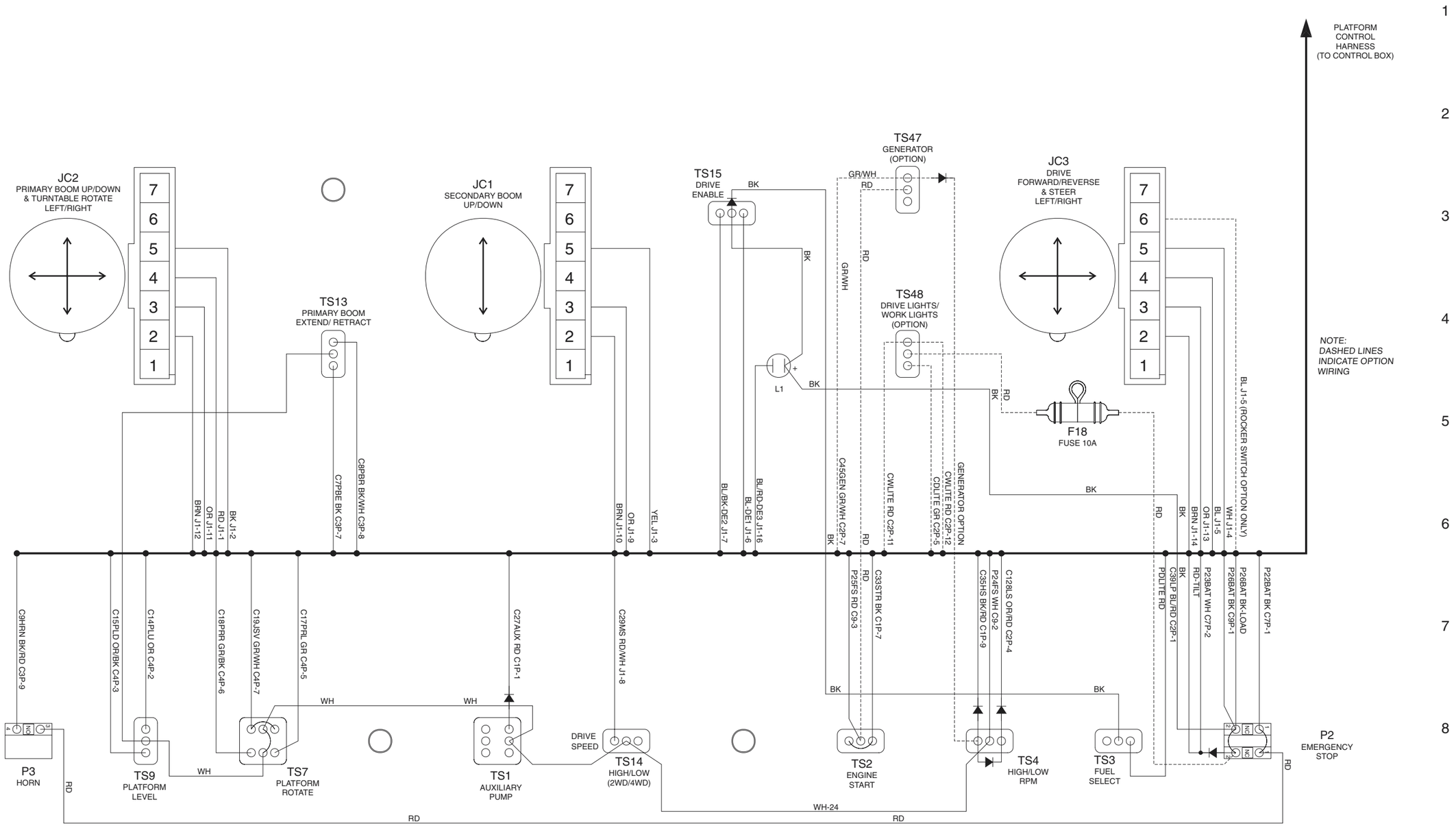
NOTE: DASHED LINES INDICATE OPTION WIRING

ITEM	DESCRIPTION
H1	TILT ALARM
C7P	12V DC PLATFORM POWER CONNECTOR
C9	FOOT SWITCH CONNECTOR
C1P-C4P	48 PIN CONNECTOR BLOCK
U13	ALC-500 CONTROL BOARD
J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
J3	CONTROL BOARD POWER CONNECTOR
CR27	CONTROL RELAY (CE OPTION)
CR30	CONTROL RELAY (CE OPTION)

REV A

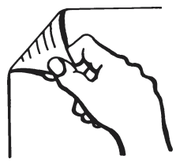
Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (before serial number 22050)



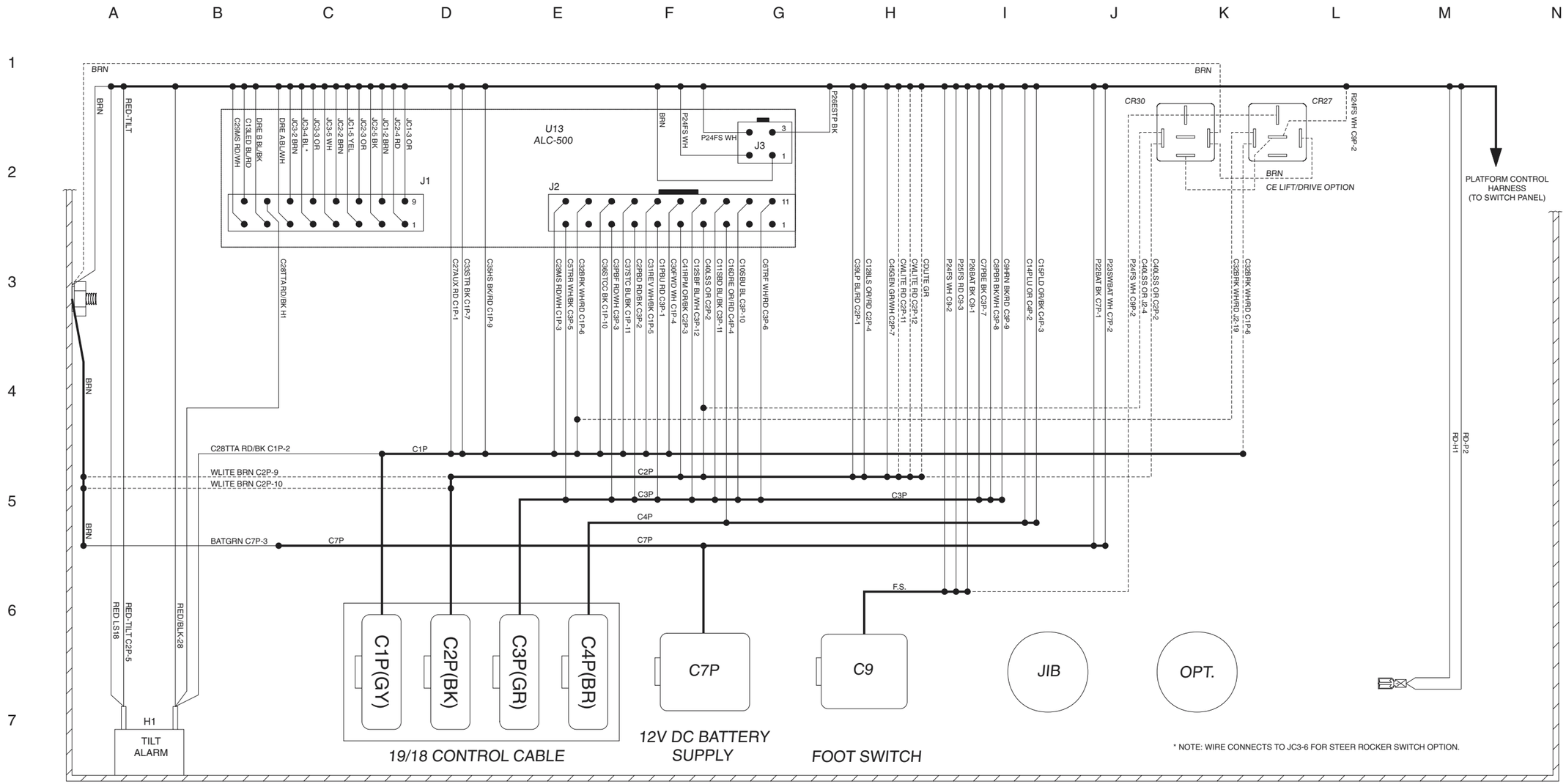
Platform Control Box Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)

Platform Box Wiring Diagram, Z-45/25

REV A

Ford LRG-425 EFI Models (after serial number 22049)

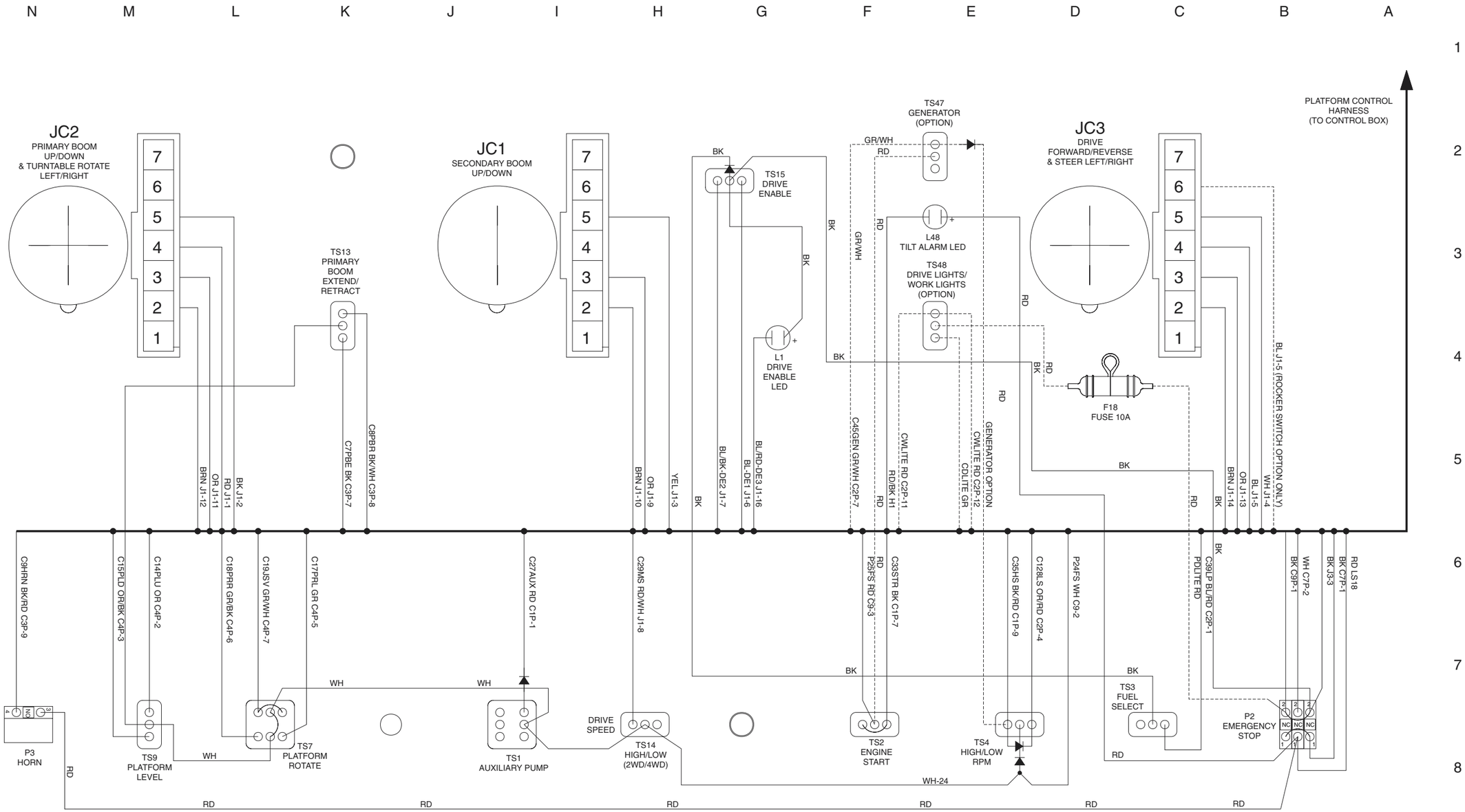


ITEM	DESCRIPTION
H1	TILT ALARM
C7P	12V DC PLATFORM POWER CONNECTOR
C9	FOOT SWITCH CONNECTOR
C1P - C4P	48 PIN CONNECTOR BLOCK
U13	ALC-500 CONTROL BOARD
J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
J3	CONTROL BOARD POWER CONNECTOR
CR27	CONTROL RELAY (CE OPTION)
CR30	CONTROL RELAY (CE OPTION)
LS18	LOAD SENSE LIMIT SWITCH

REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

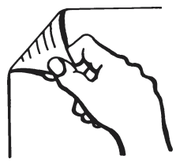
Ford LRG-425 EFI Models (after serial number 22049)



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Ford LRG-425 EFI Models (after serial number 22049)



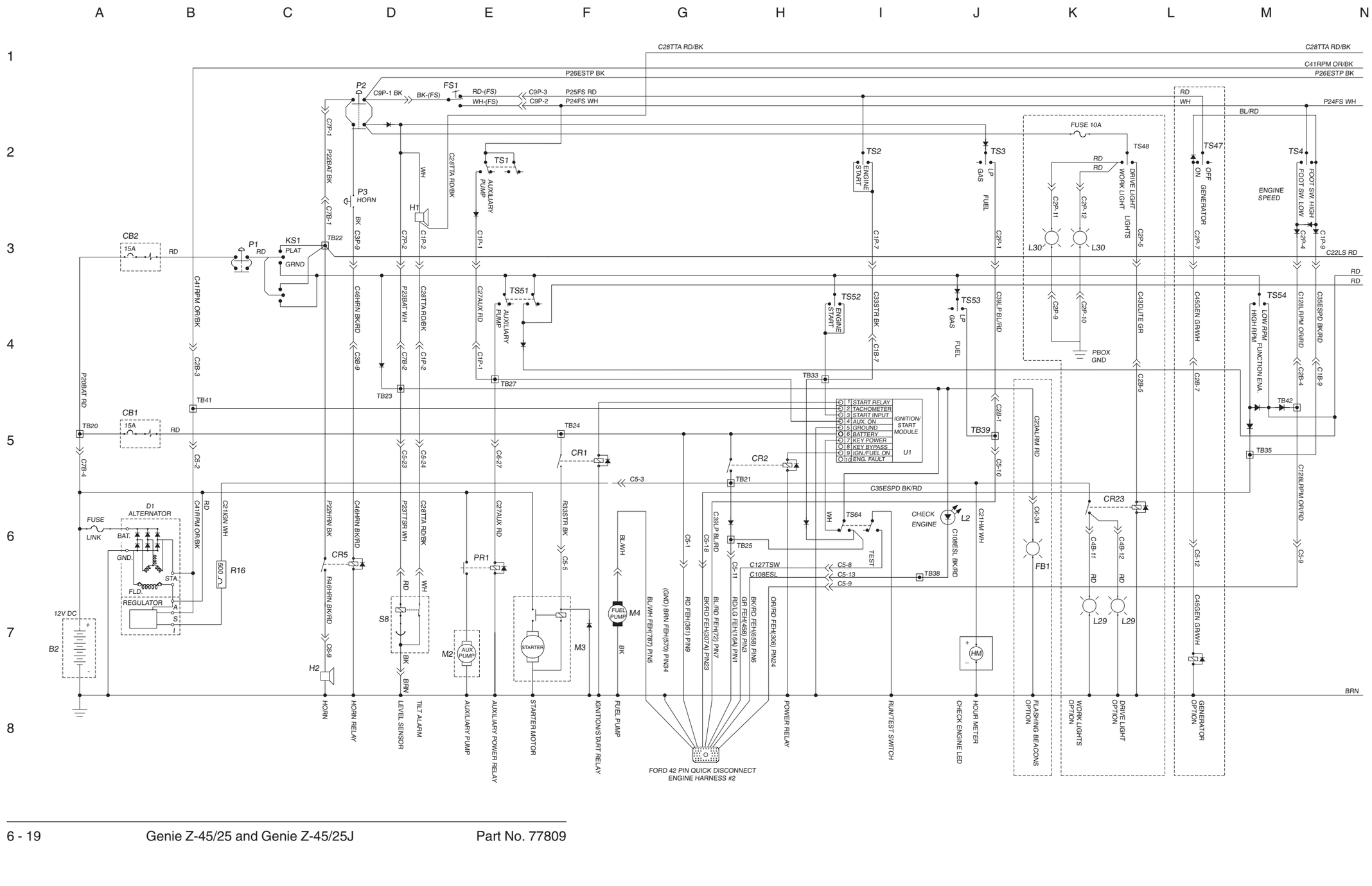




Electrical Schematic, Z-45/25J

REV A

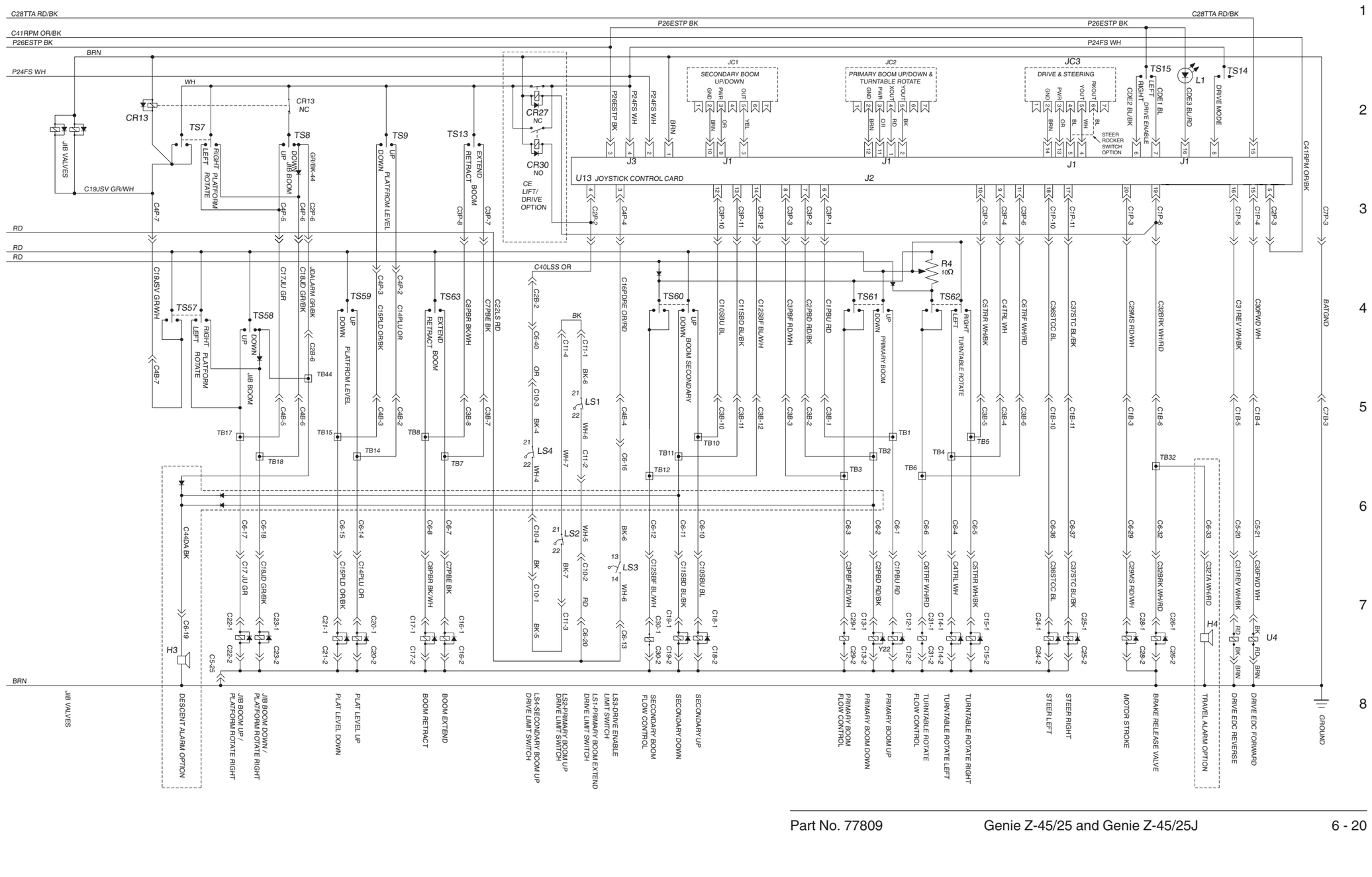
Ford LRG-425 EFI Models (before serial number 22050)



REV A

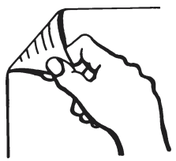
Electrical Schematic, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)



Electrical Schematic, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)



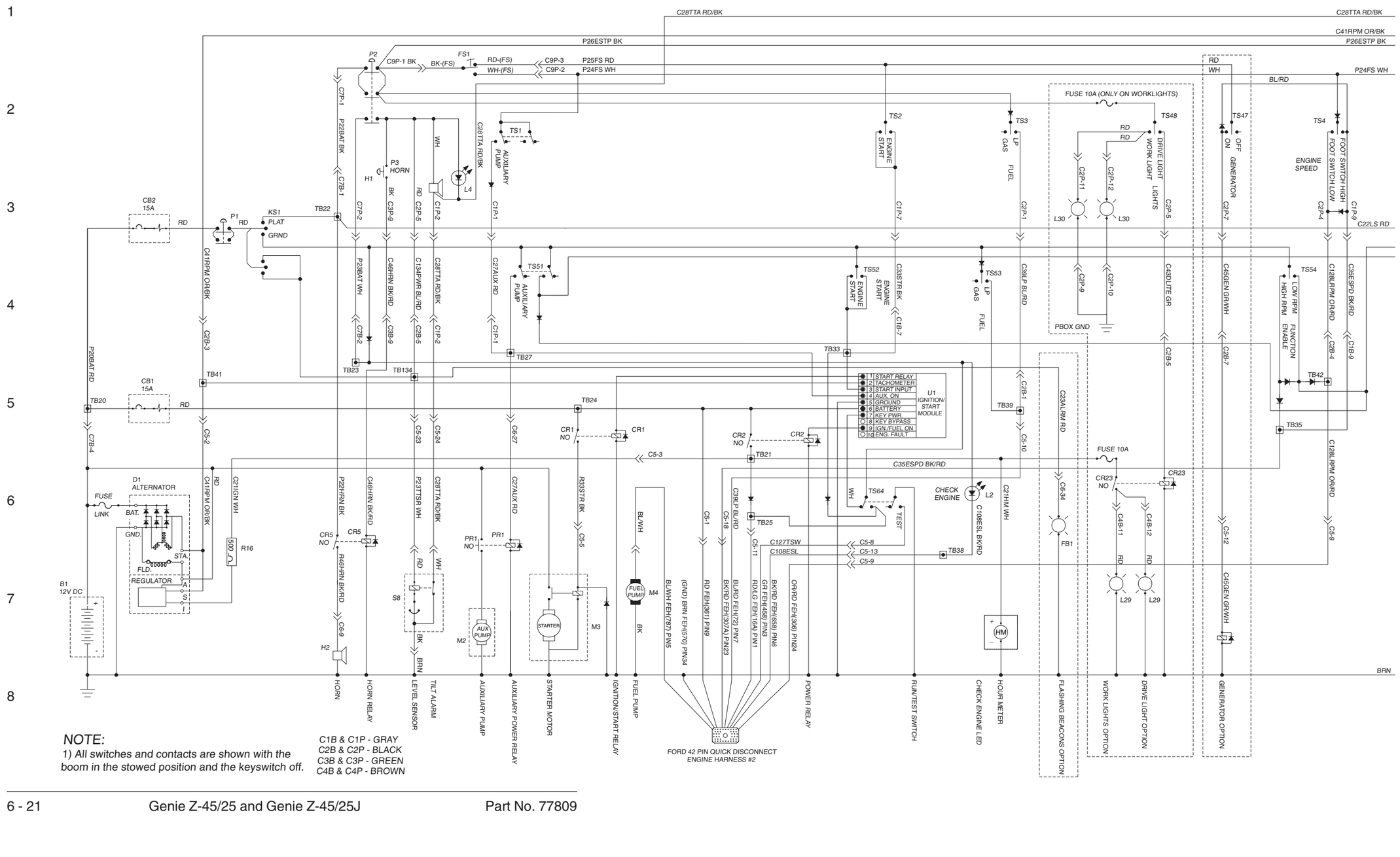




Electrical Schematic, Z-45/25J

REV A

Ford LRG-425 EFI Models (after serial number 22049)



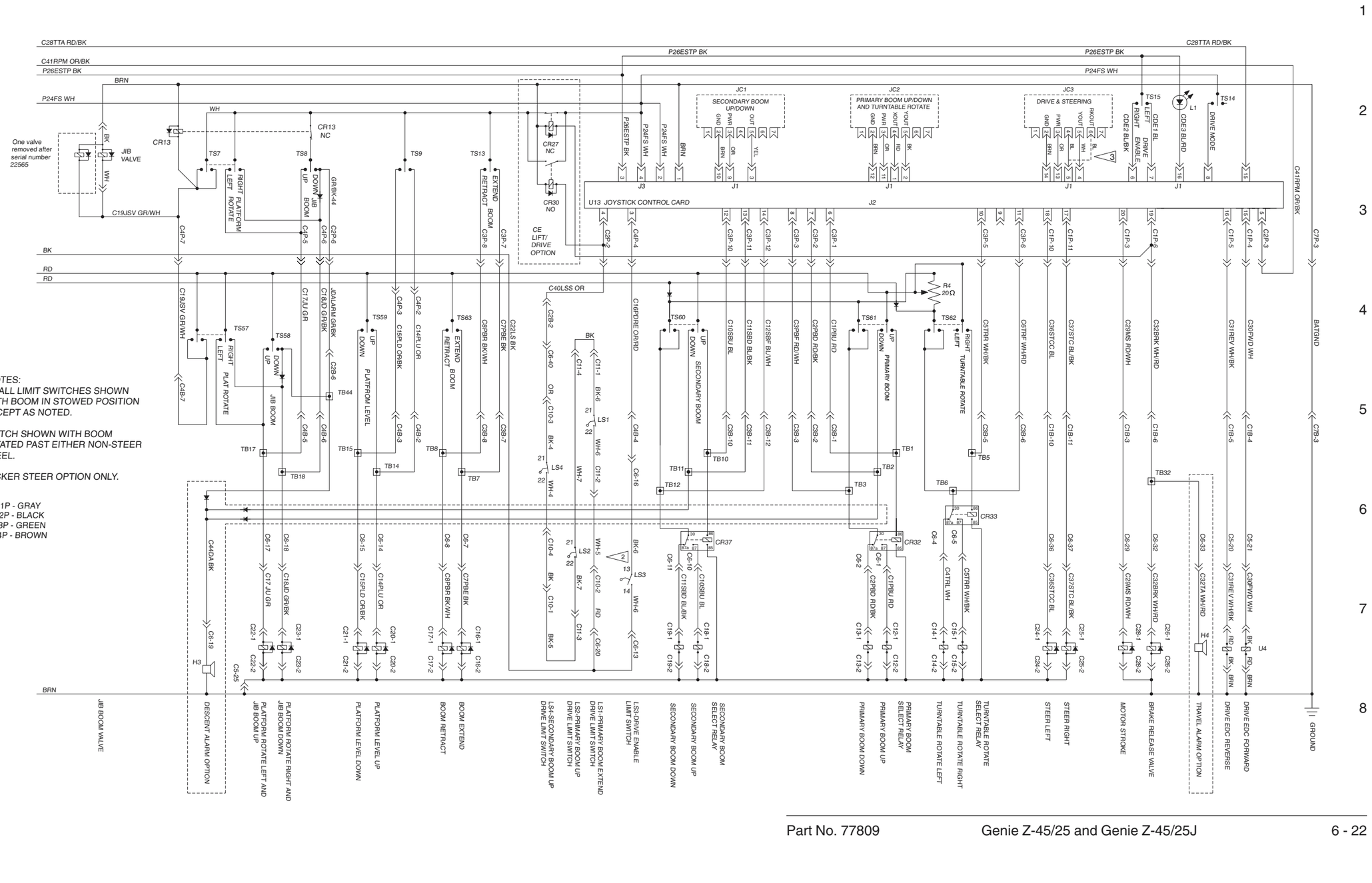
NOTE:
1) All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

REV A

Electrical Schematic, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)



NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.

2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 ROCKER STEER OPTION ONLY.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

Electrical Schematic, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)



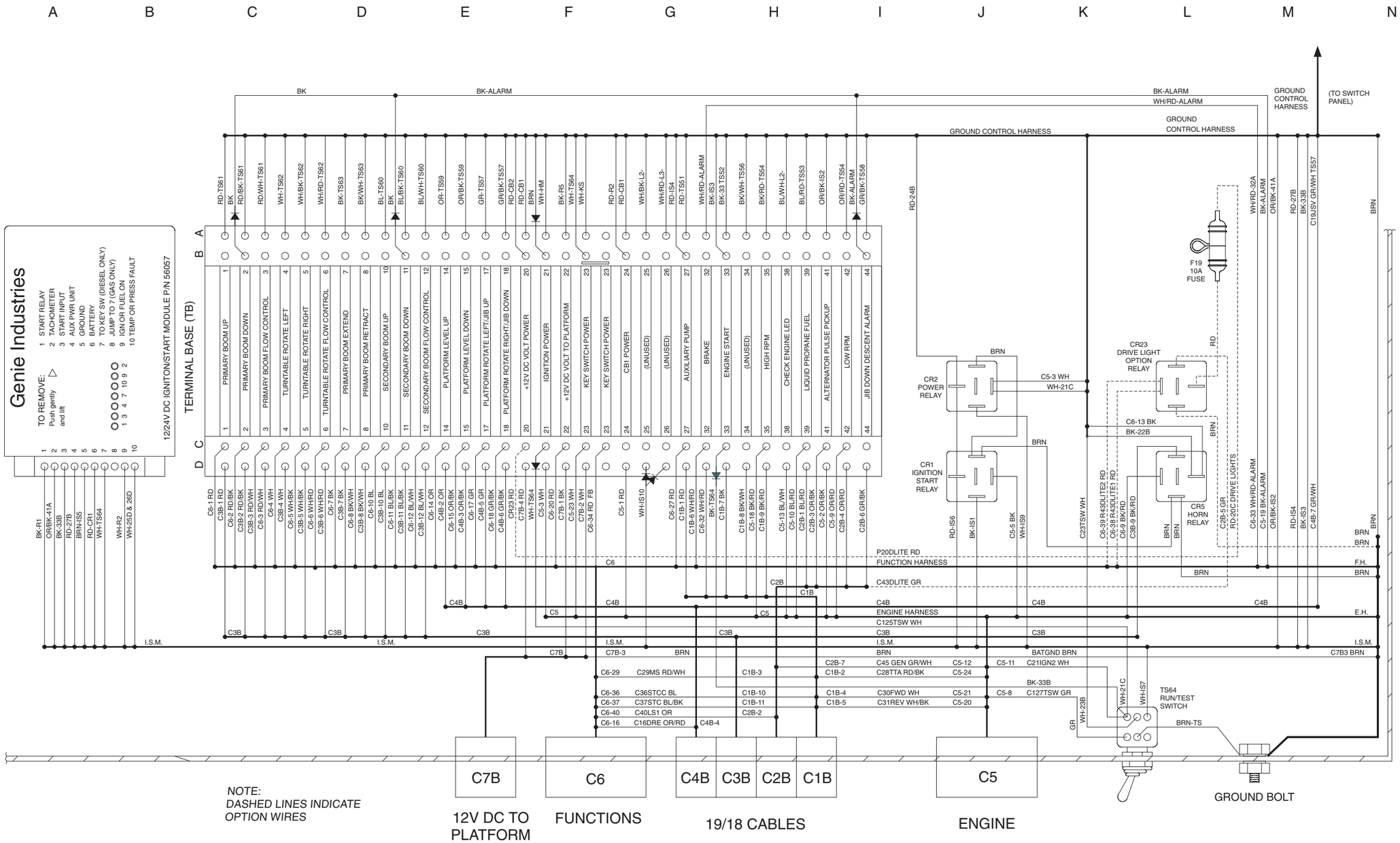
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

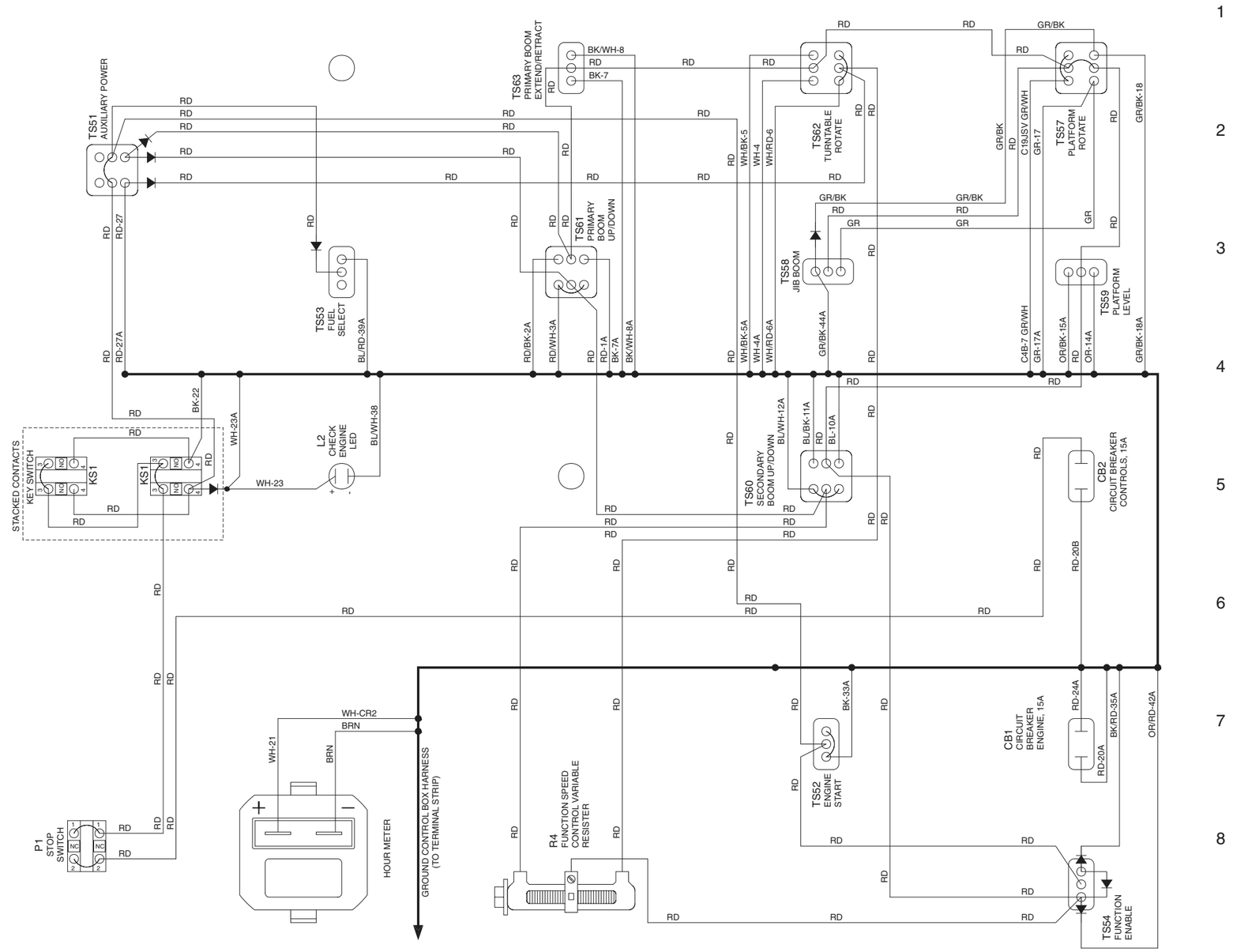
Ford LRG-425 EFI Models (before serial number 22050)



REV A

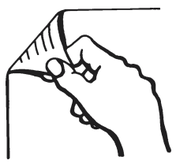
Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)



Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)



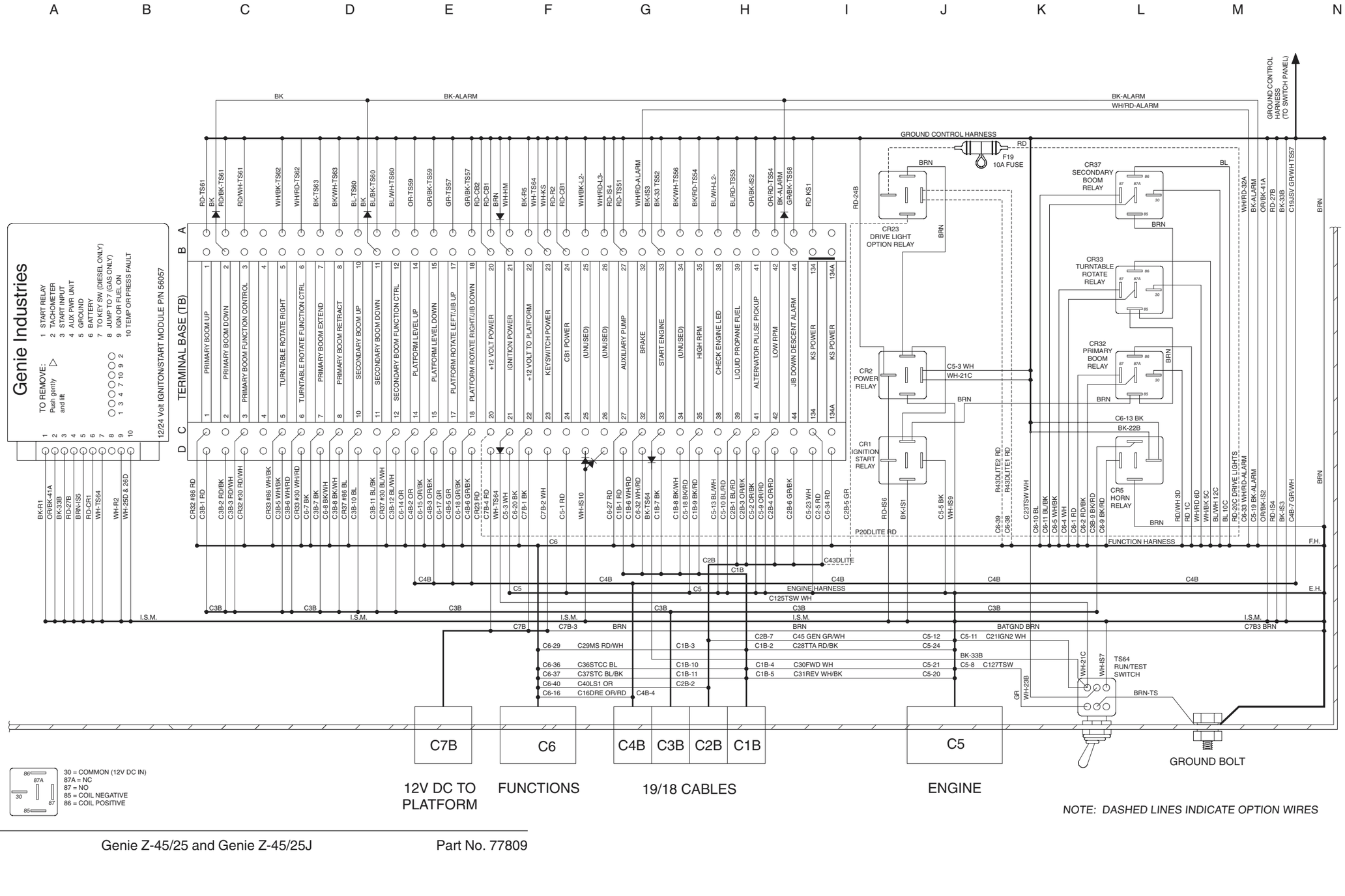
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

Ford LRG-425 EFI Models (after serial number 22049)



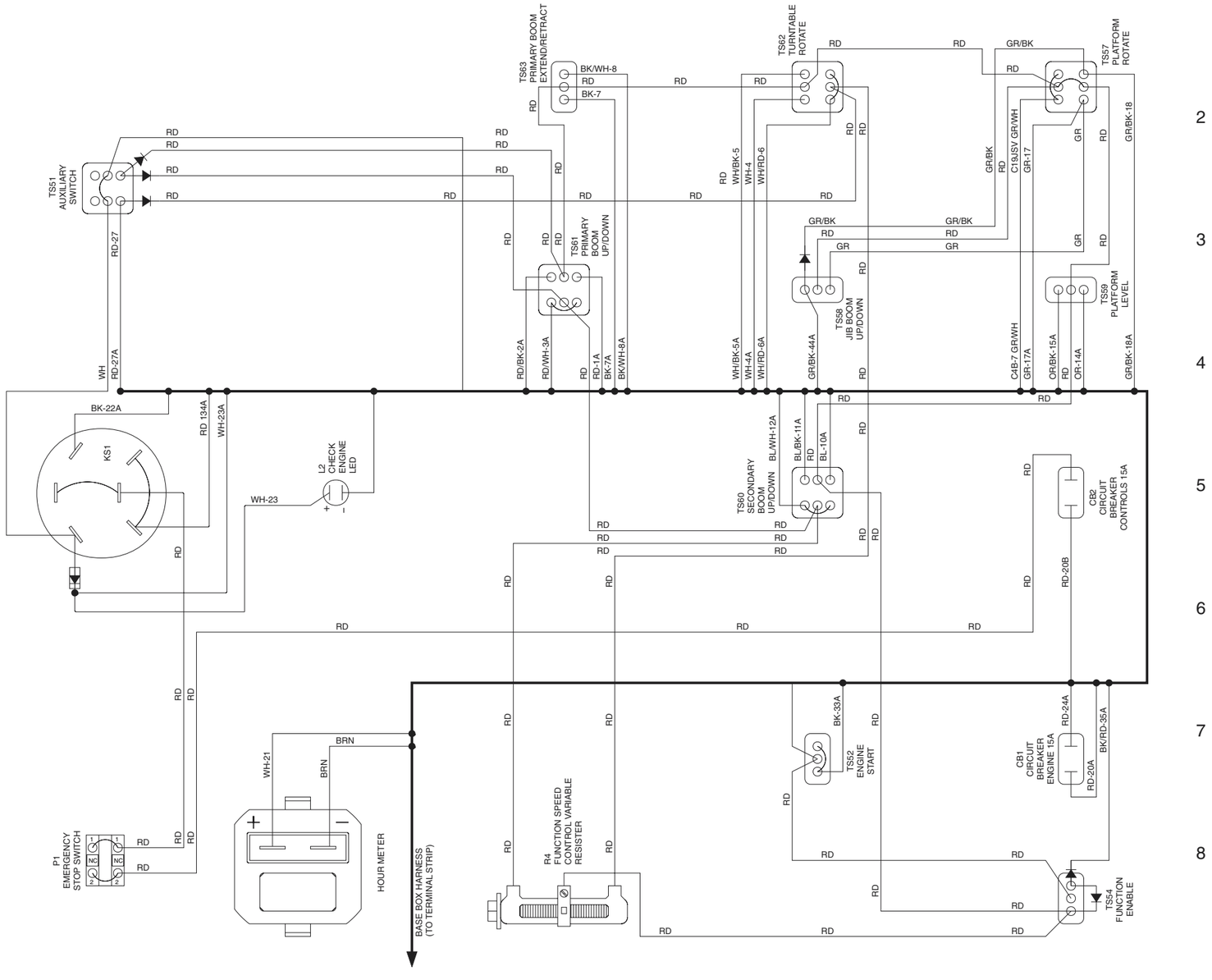
REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)

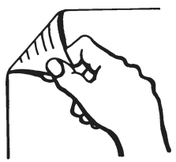
LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CR1	IGNITION / START RELAY
CR2	INGITION POWER RELAY
CR5	HORN RELAY
HM	HOUR METER
KS1	KEY SWITCH
L2	CHECK ENGINE LED
P1	RED EMERGENCY STOP BUTTON
R4	SPEED LIMITING VARIABLE RESISTOR 10 OHMS
TS51	AUXILIARY POWER TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS53	FUEL SELECT TOGGLE SWITCH
TS54	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB BOOM UP/DOWN TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH
TS64	RUN/TEST TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTION WIRES



Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)



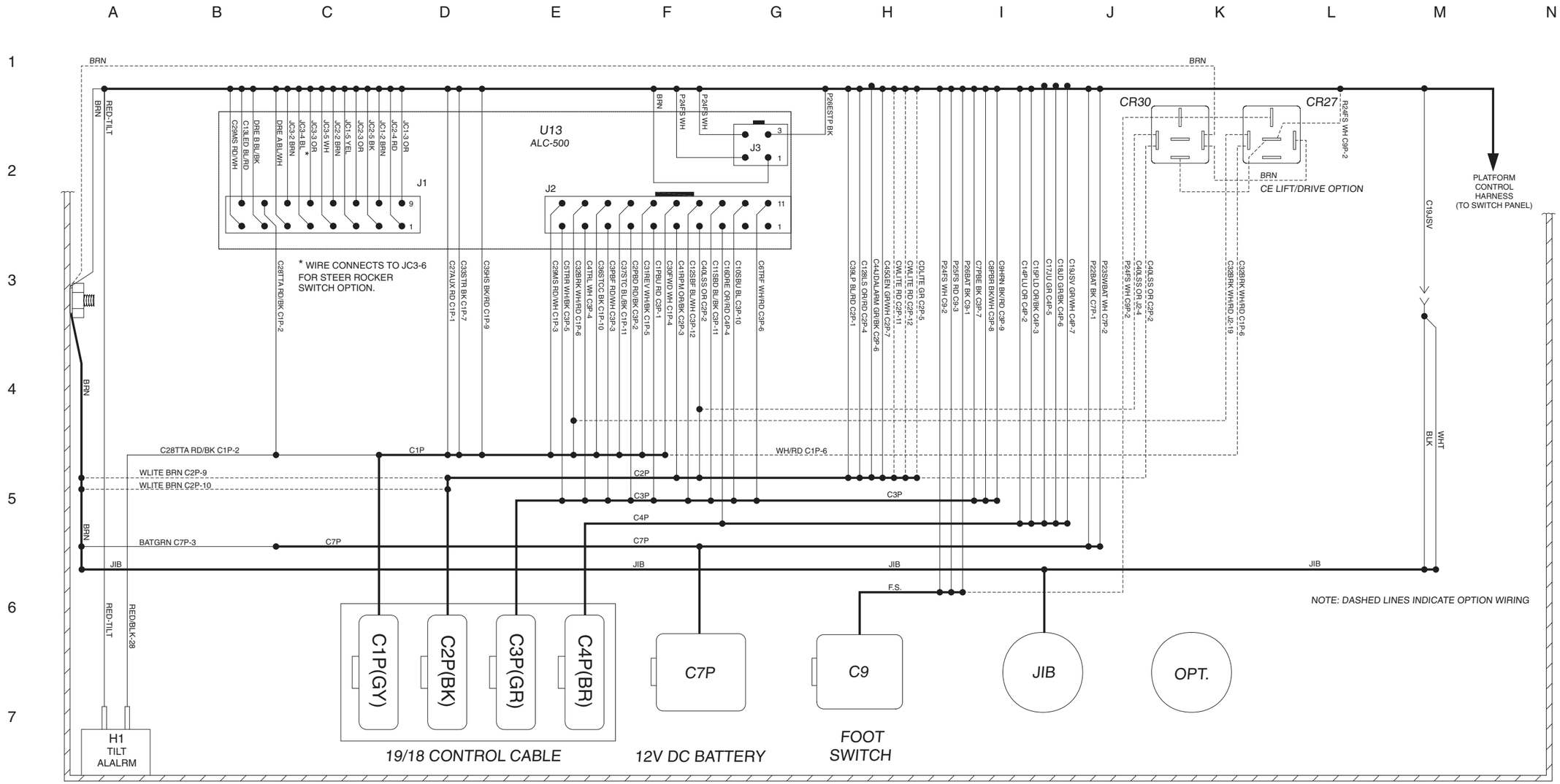
Platform Control Box Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)

Platform Control Box Wiring Diagram, Z-45/25J

REV A

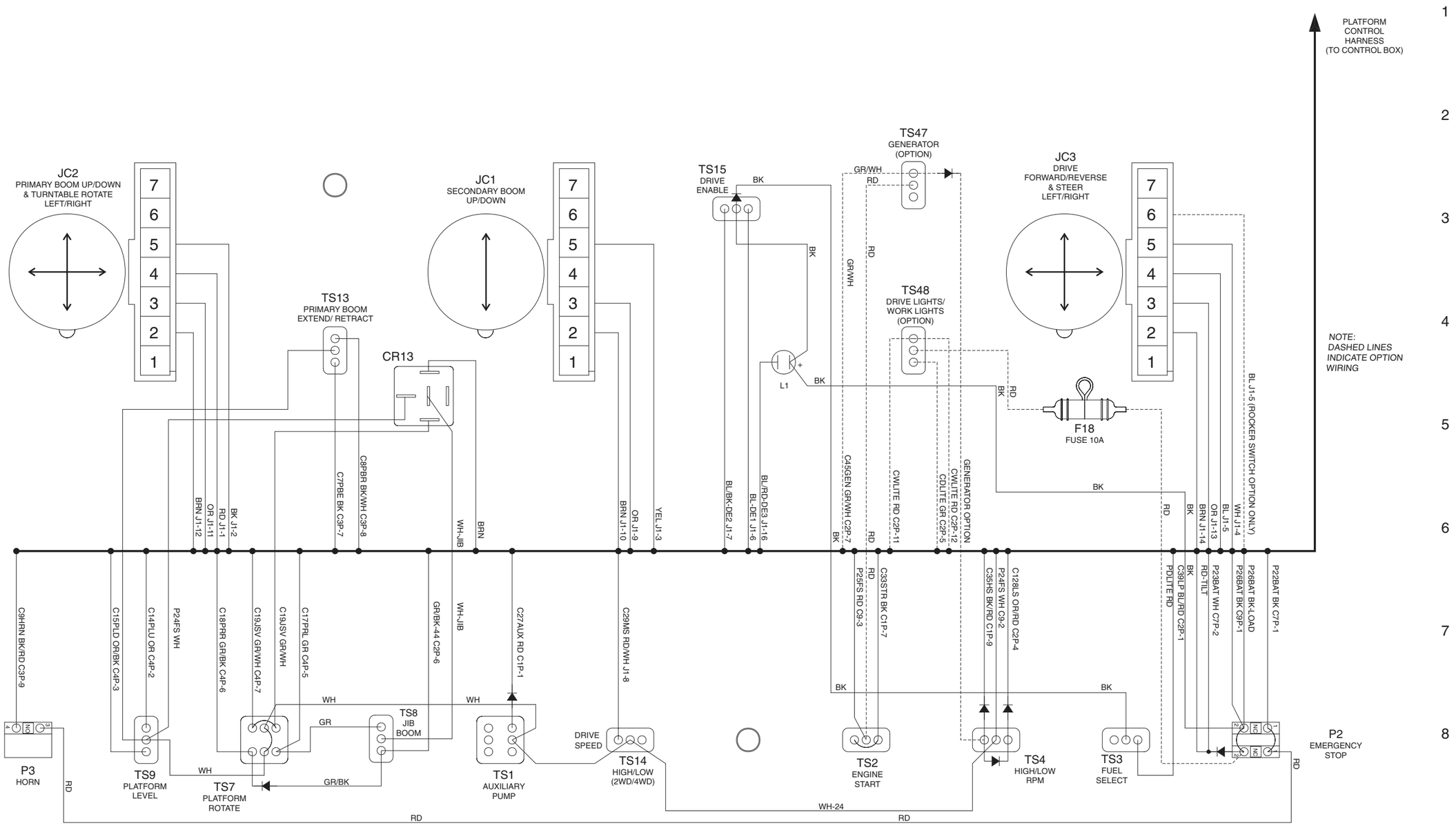
Ford LRG-425 EFI Models (before serial number 22050)



REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)



Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (before serial number 22050)

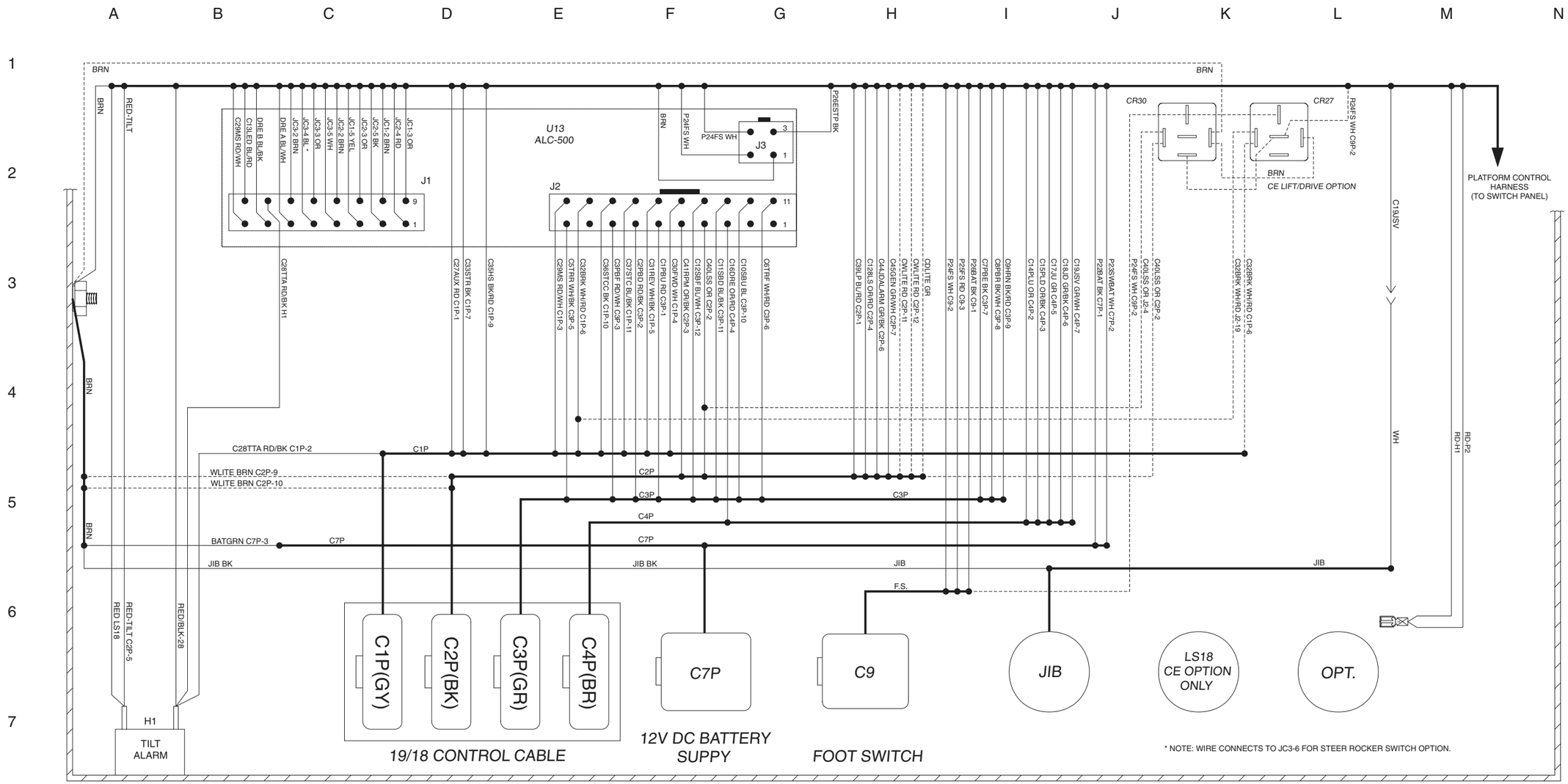


Platform Control Box Wiring Diagram, Z-45/25J
Ford LRG-425 EFI Models (after serial number 22049)

Platform Control Box Wiring Diagram, Z-45/25J

REV A

Ford LRG-425 EFI Models (after serial number 22049)

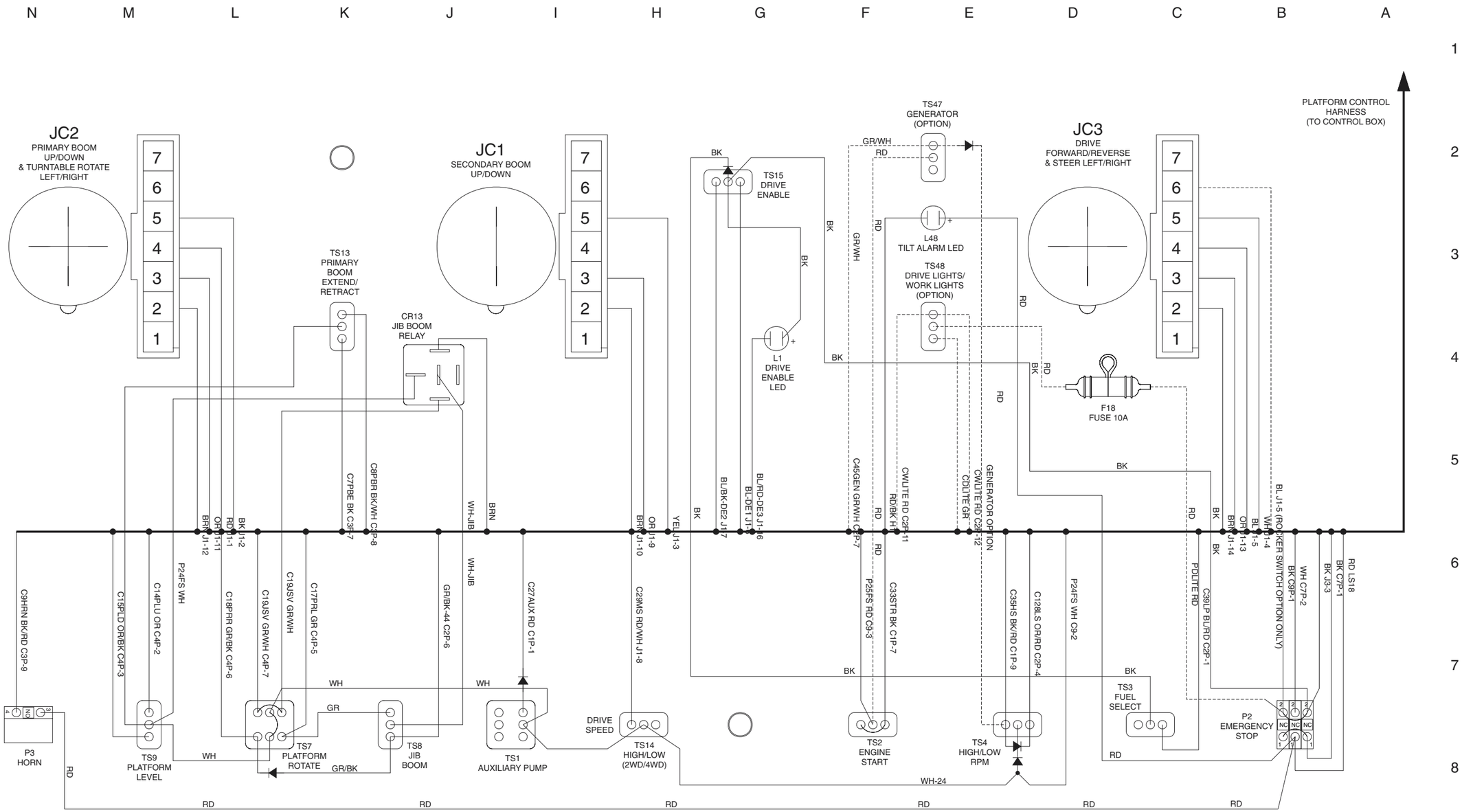


ITEM	DESCRIPTION
H1	TILT ALARM
C7P	12V DC PLATFORM POWER CONNECTOR
C9	FOOT SWITCH CONNECTOR
C1P - C4P	48 PIN CONNECTOR BLOCK
U13	ALC-500 CONTROL BOARD
J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
J3	CONTROL BOARD POWER CONNECTOR
CR27	CONTROL RELAY (CE OPTION)
CR30	CONTROL RELAY (CE OPTION)
LS18	LOAD SENSE LIMIT SWITCH

REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

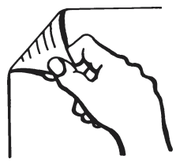
Ford LRG-425 EFI Models (after serial number 22049)



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

Ford LRG-425 EFI Models (after serial number 22049)



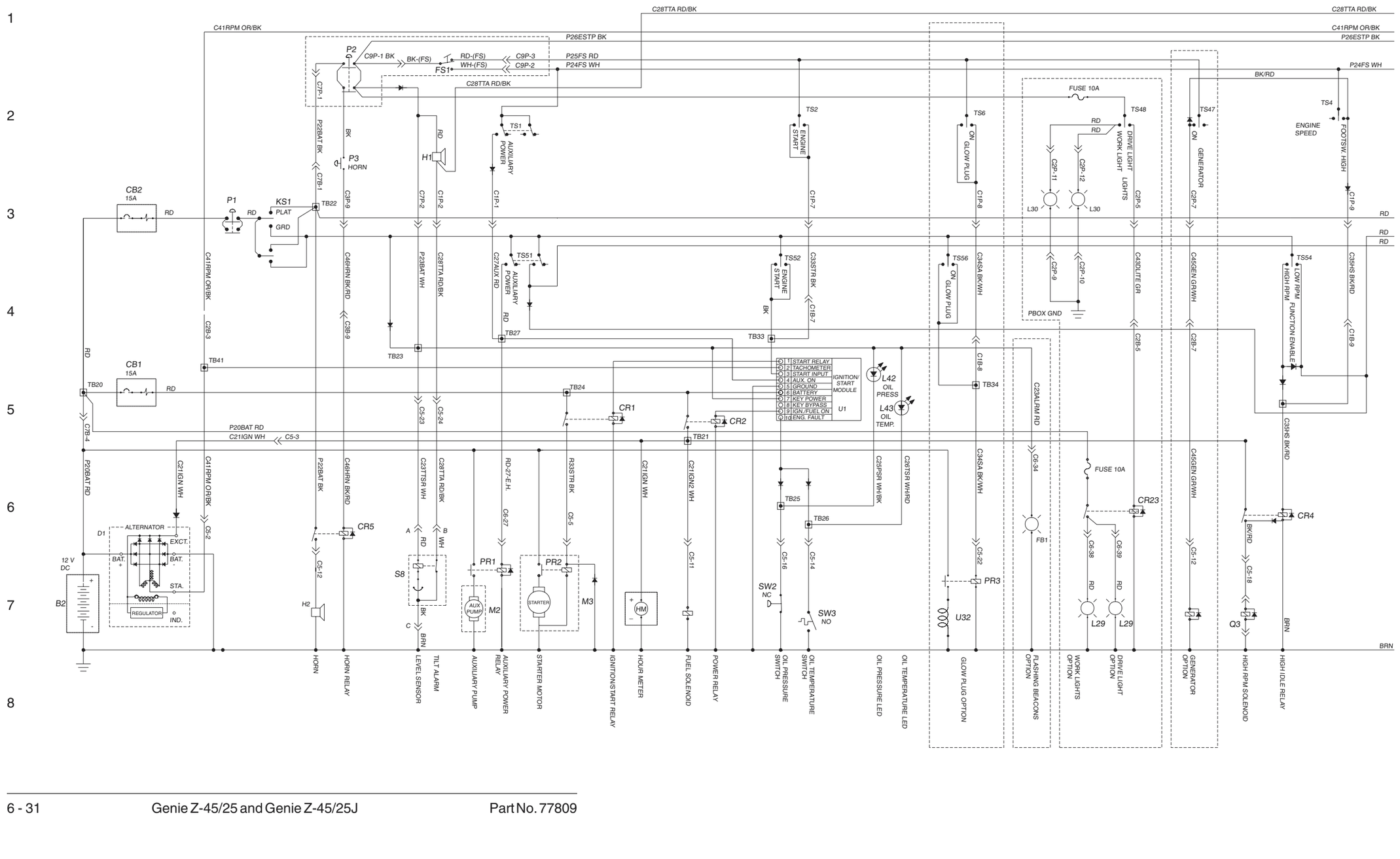




Electrical Schematic, Z-45/25

REV A

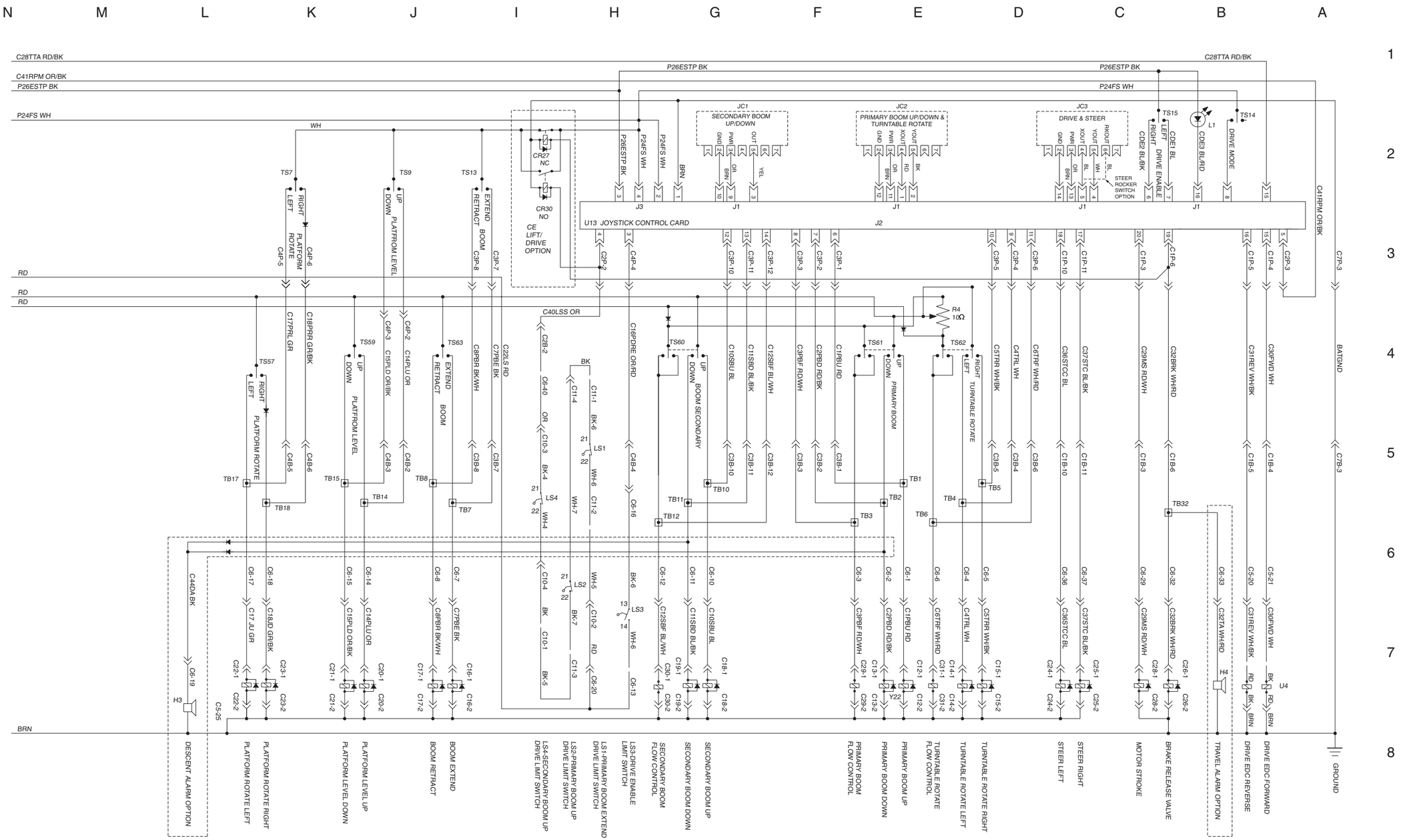
Deutz F3L-1011F Models (before serial number 22050)



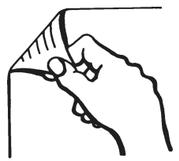
REV A

Electrical Schematic, Z-45/25

Deutz F3L-1011F Models (before serial number 22050)



Electrical Schematic, Z-45/25
Deutz F3L-1011F Models (before serial number 22050)



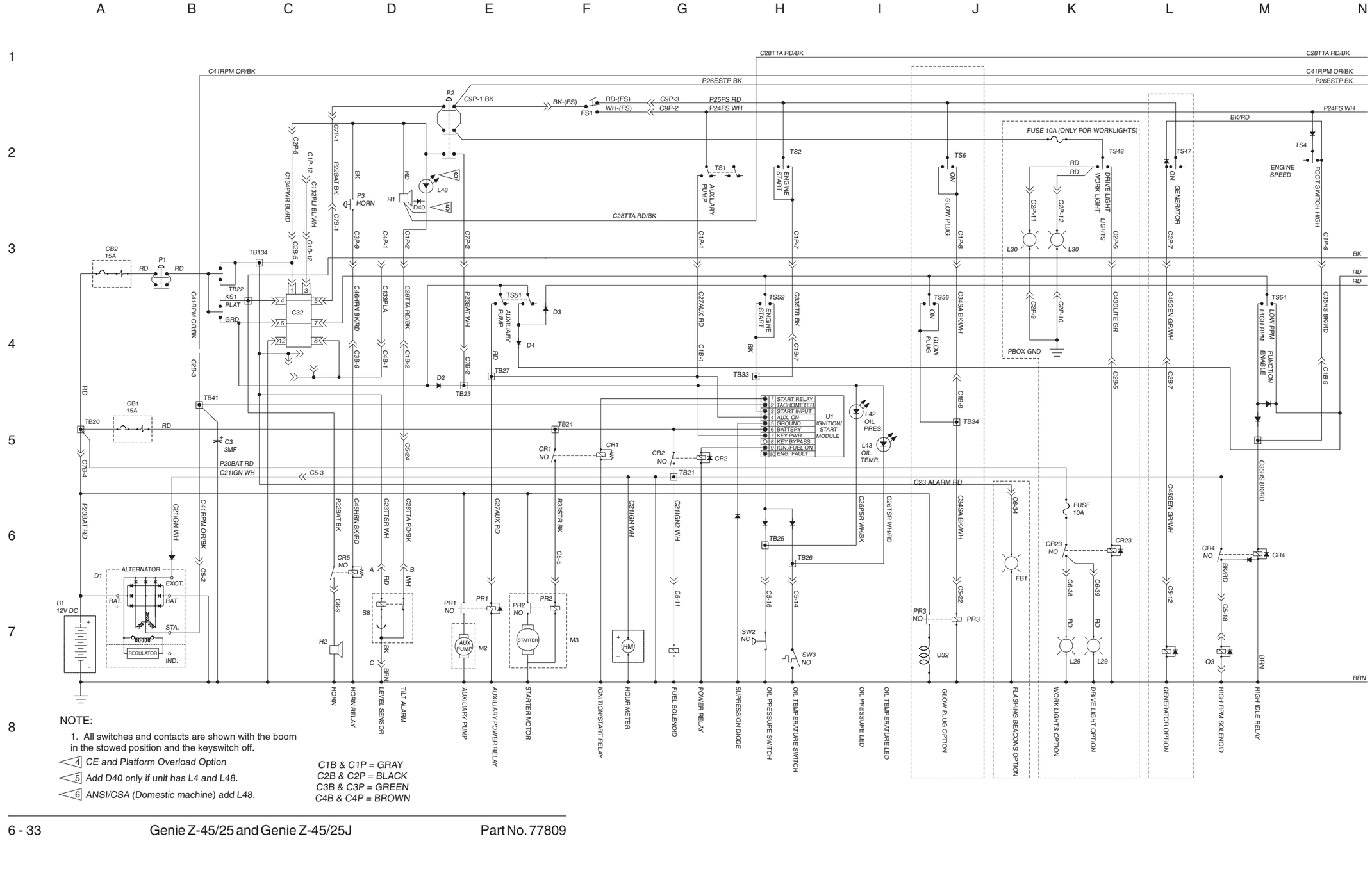




Electrical Schematic, Z-45/25

REV A

Deutz F3L-1011F Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 *CE and Platform Overload Option*

5 *Add D40 only if unit has L4 and L48.*

6 *ANSI/CSA (Domestic machine) add L48.*

C1B & C1P = GRAY
C2B & C2P = BLACK
C3B & C3P = GREEN
C4B & C4P = BROWN

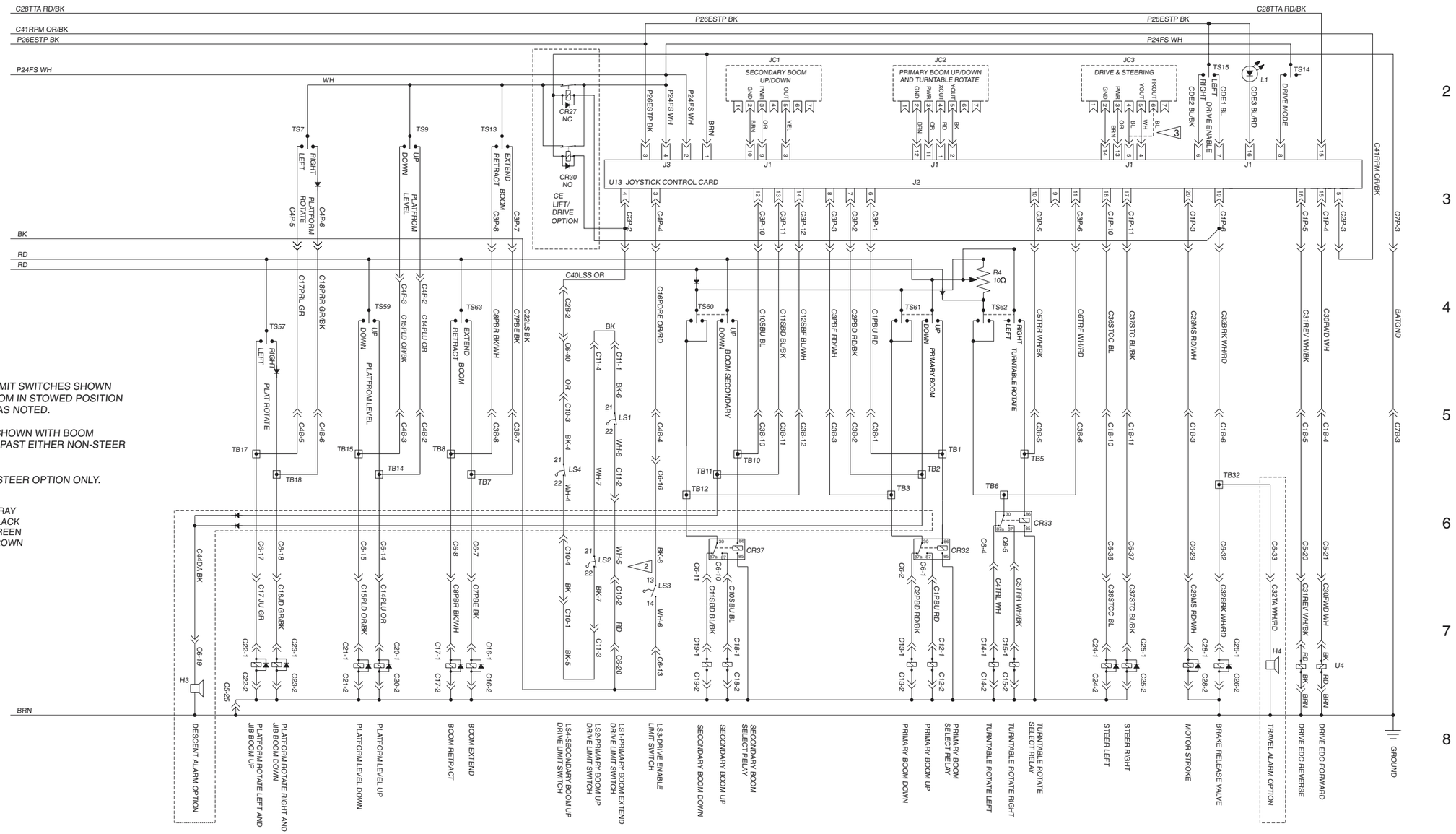
REV A

Electrical Schematic, Z-45/25

Deutz F3L-1011F Models (after serial number 22049)

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

1 2 3 4 5 6 7 8



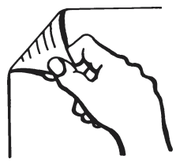
NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.

2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 ROCKER STEER OPTION ONLY.

C1B & C1P - GRAY
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C3B & C3P - GREEN
C4B & C4P - BROWN

Electrical Schematic, Z-45/25
Deutz F3L-1011F Models (after serial number 22049)



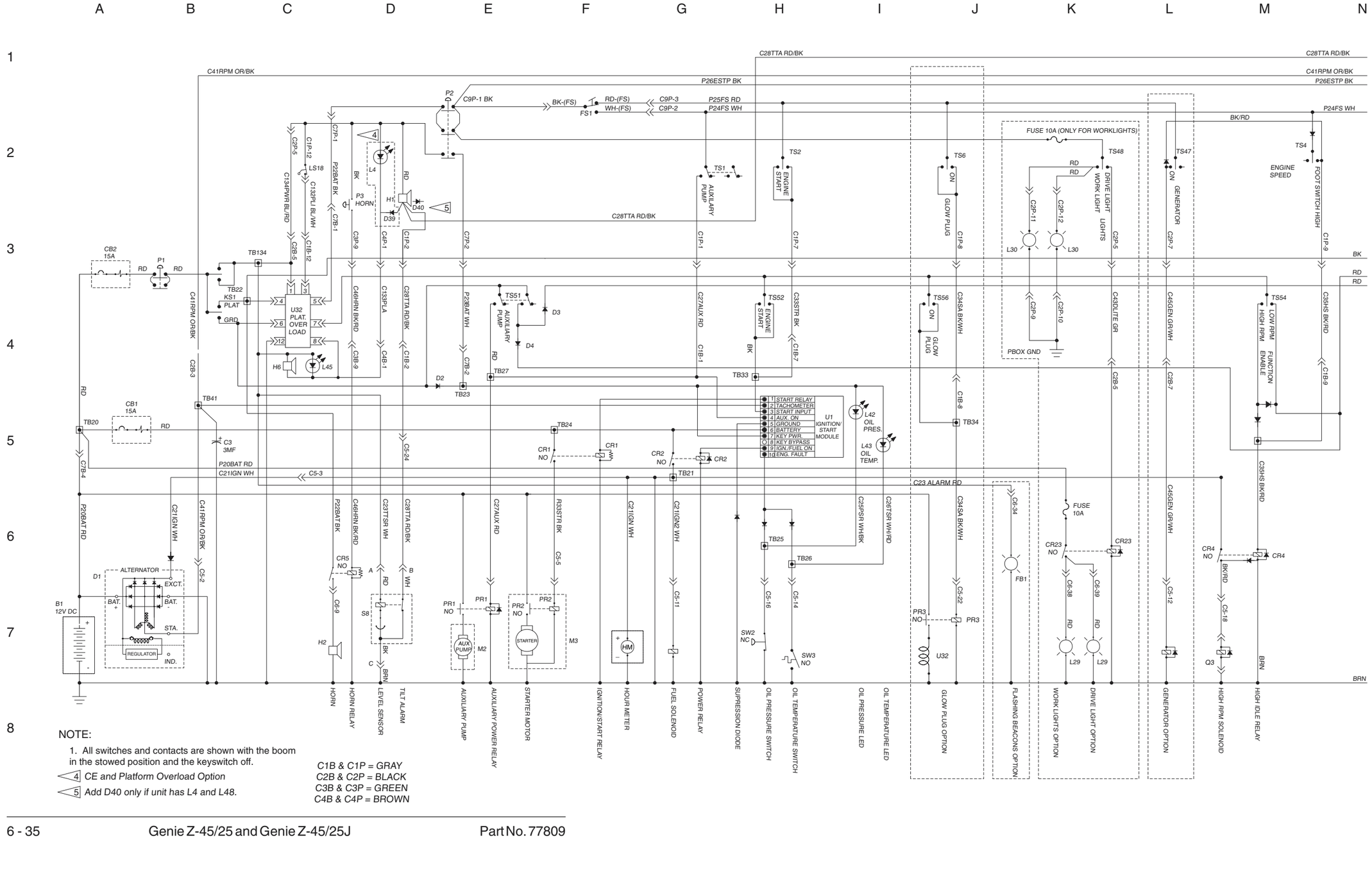




Electrical Schematic, Z-45/25, CE Models

REV A

Deutz F3L-1011F Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 CE and Platform Overload Option

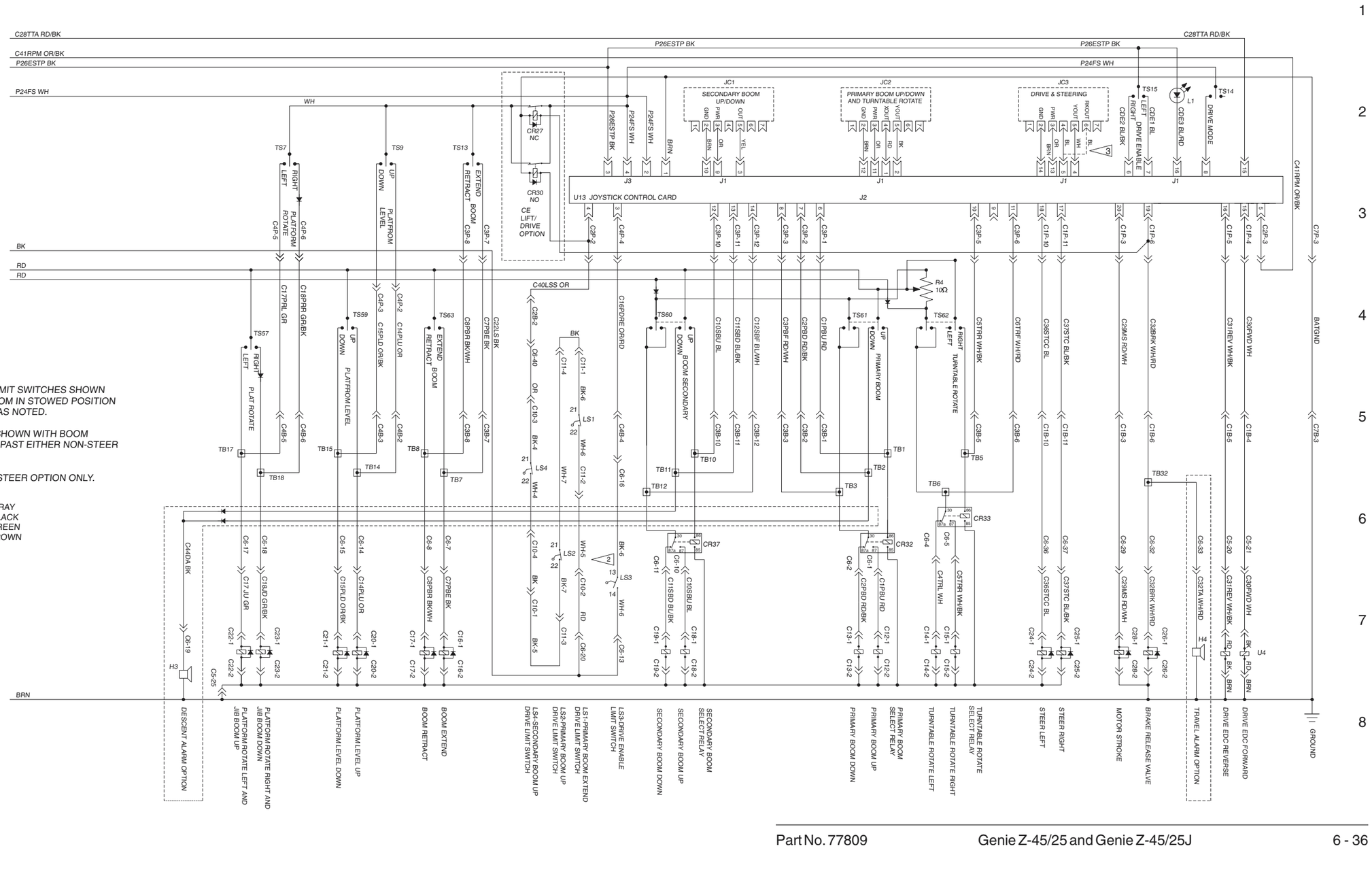
5 Add D40 only if unit has L4 and L48.

C1B & C1P = GRAY
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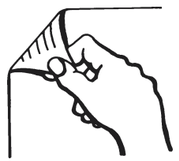
REV A

Electrical Schematic, Z-45/25, CE Models

Deutz F3L-1011F Models (after serial number 22049)



Electrical Schematic, Z-45/25, CE Models
Deutz F3L-1011F Models (after serial number 22049)



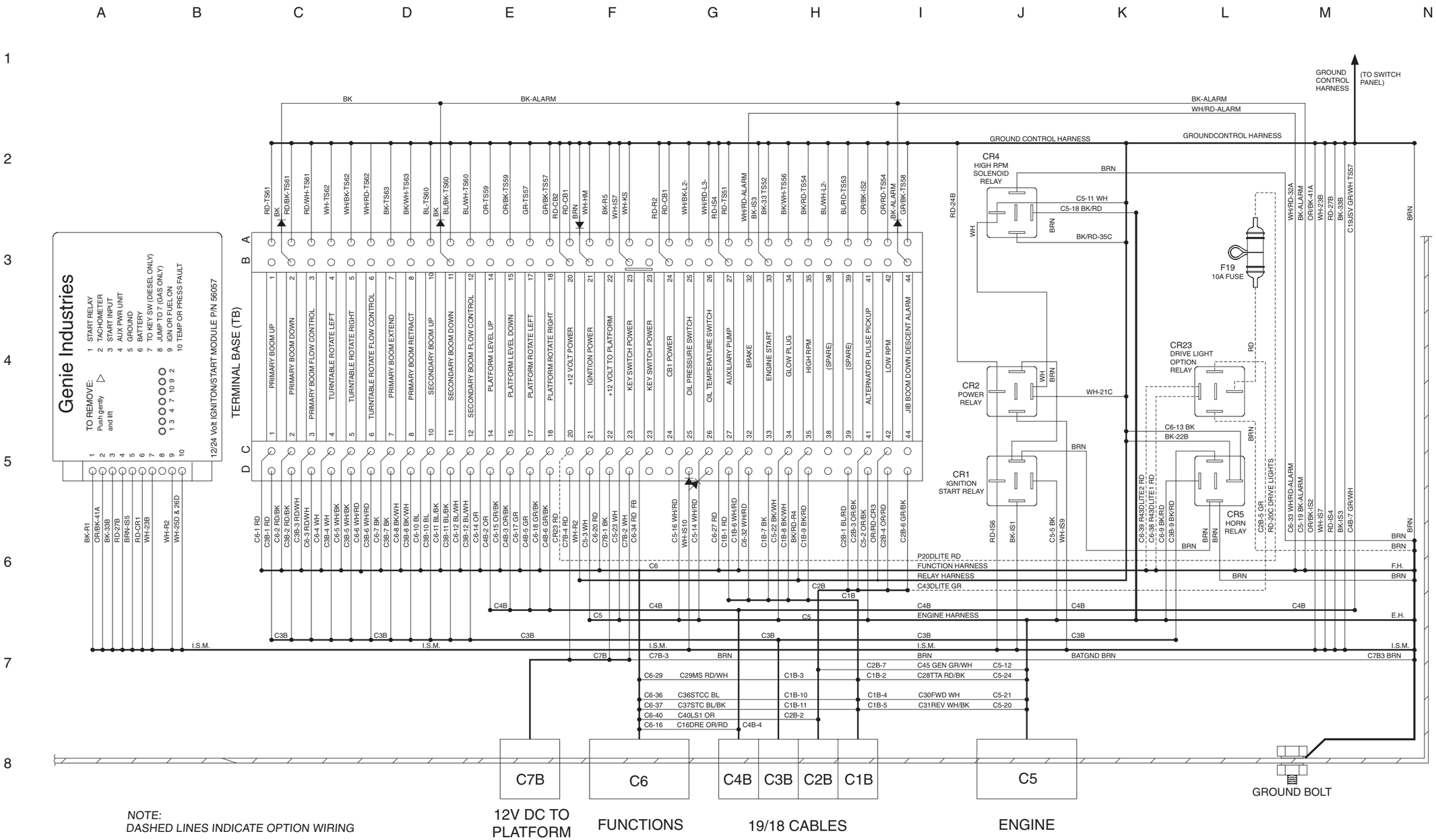
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

Deutz F3L-1011F Models (before serial number 22050)

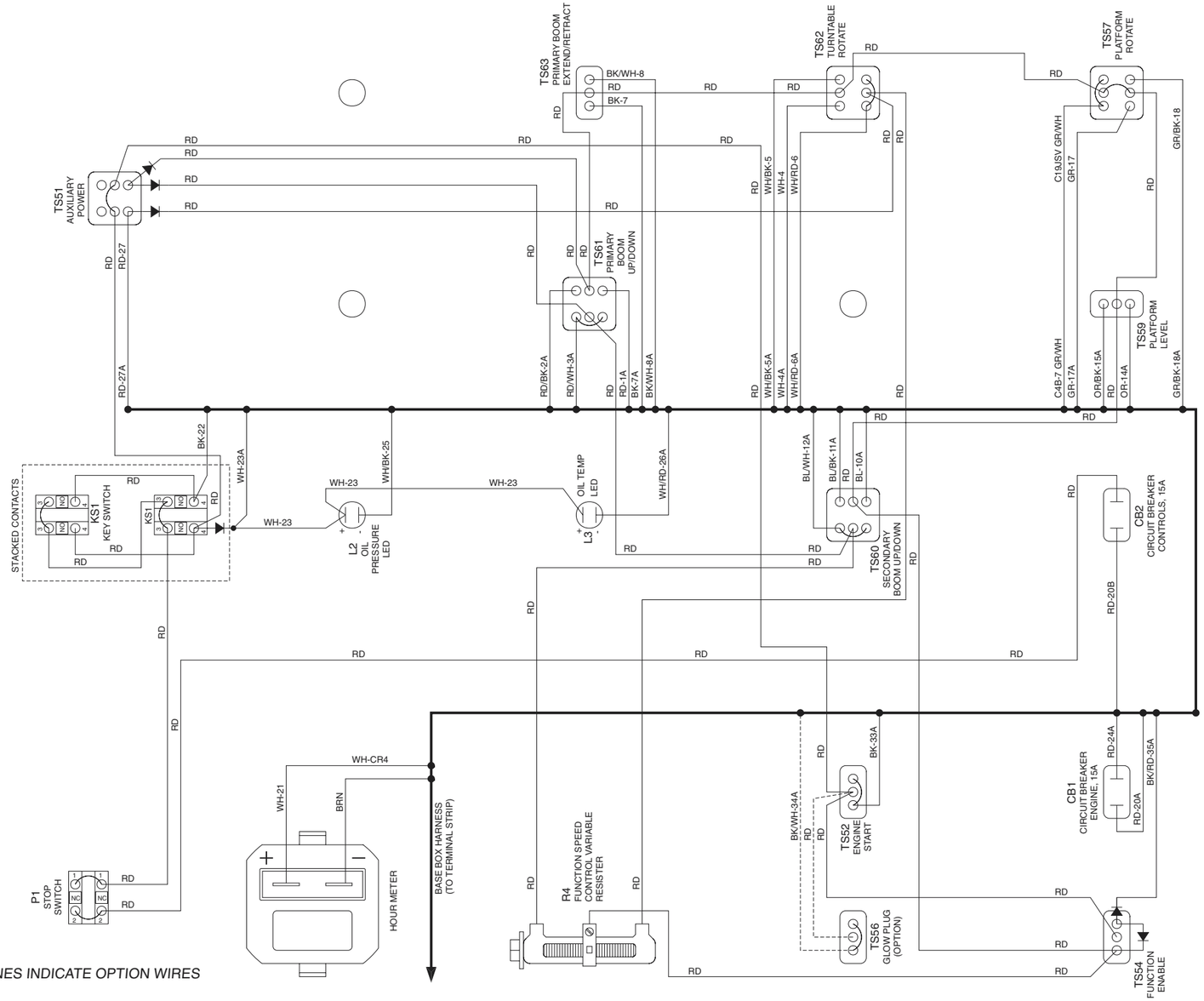


NOTE:
DASHED LINES INDICATE OPTION WIRING

REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

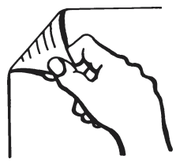
Deutz F3L-1011F Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (before serial number 22050)



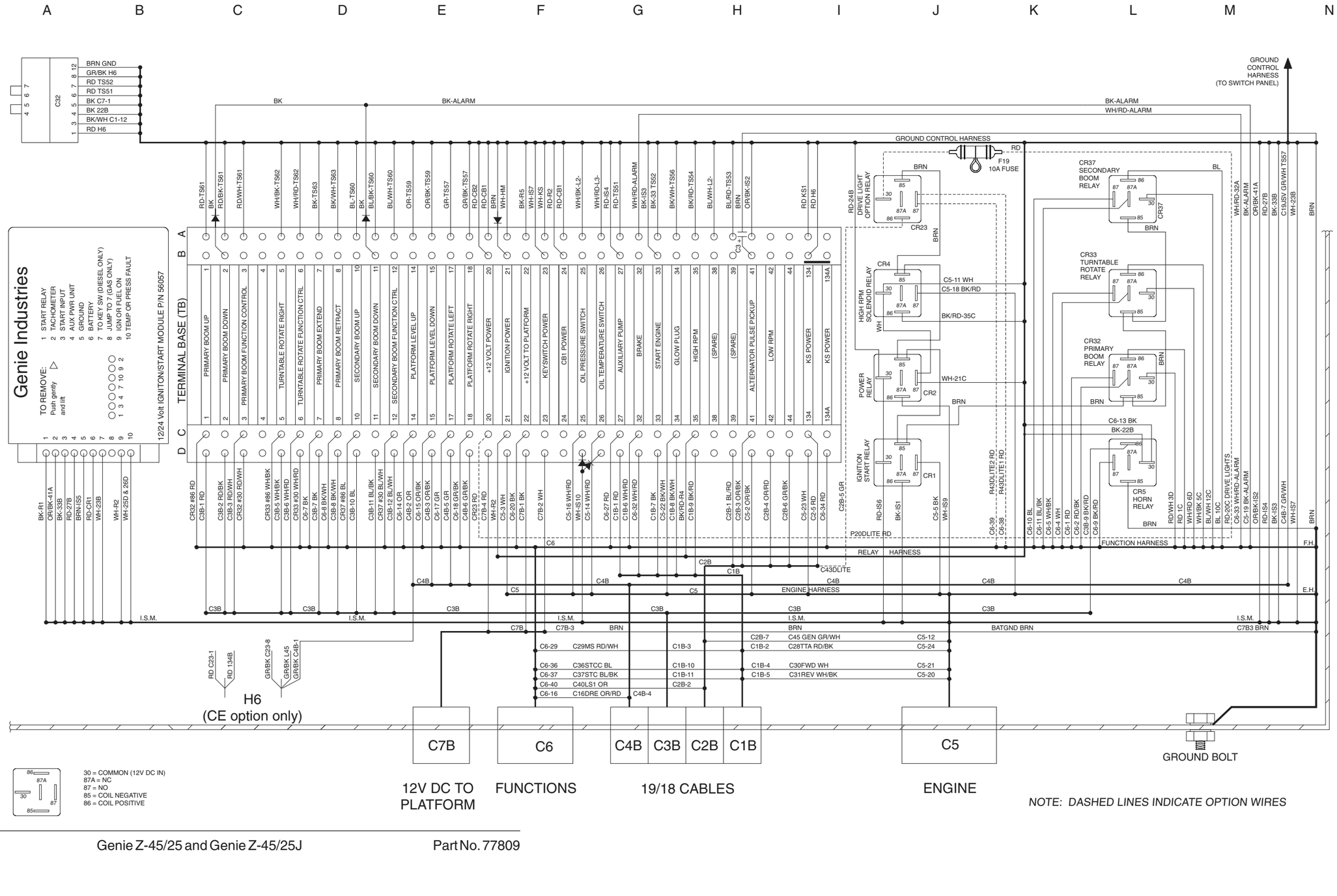
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

Deutz F3L-1011F Models (after serial number 22049)

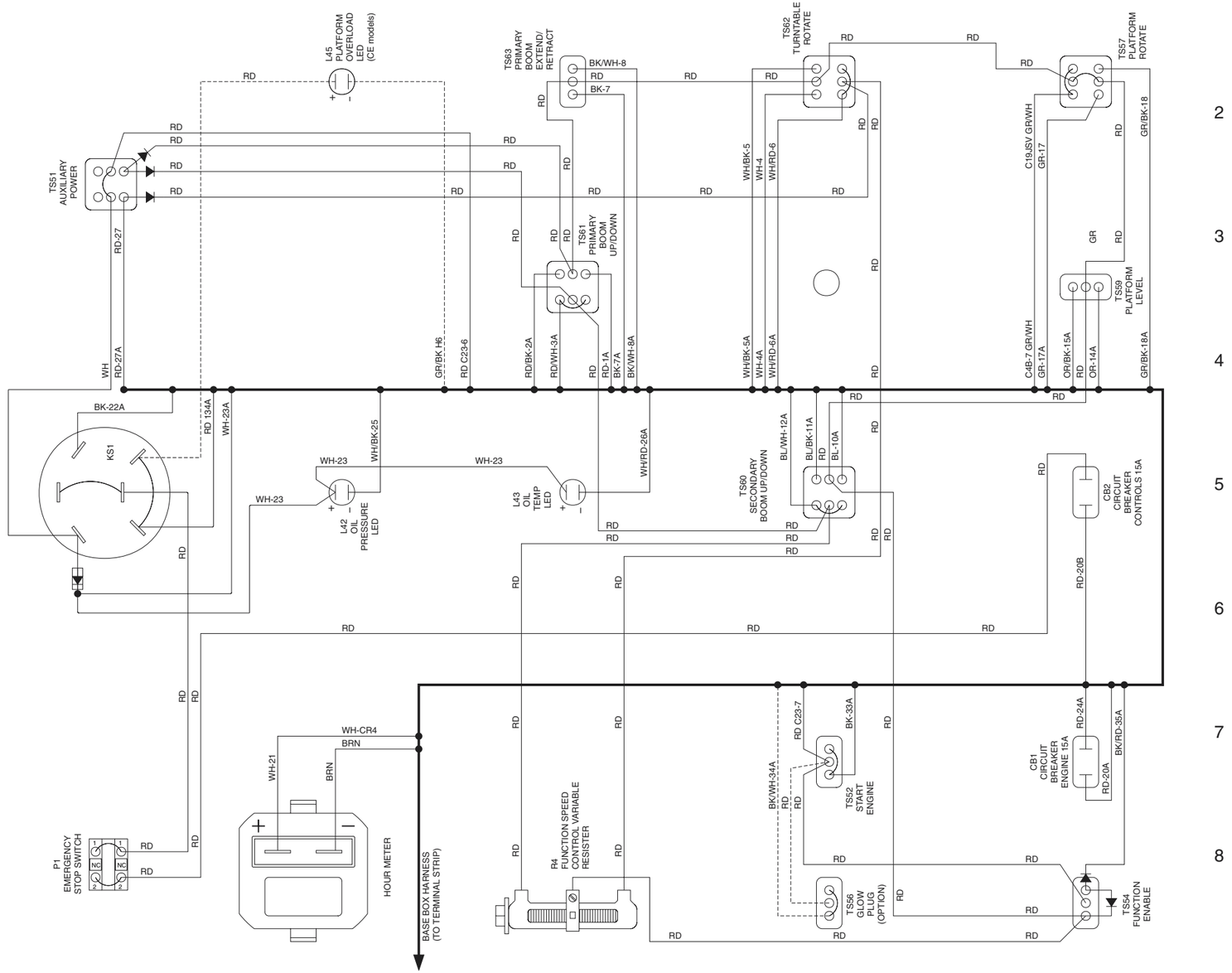


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

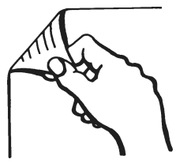
Deutz F3L-1011F Models (after serial number 22049)

LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CR1	IGNITION / START RELAY
CR2	IGNITION POWER RELAY
CR4	HIGH IDLE RELAY
CR5	HORN RELAY
HM	HOUR METER
KS1	KEY SWITCH
L42	OIL PRESSURE LED
L43	OIL TEMPERATURE LED
L45	PLATFORM OVERLOAD
P1	RED EMERGENCY STOP BUTTON
R4	SPEED LIMITING VARIABLE RESISTOR 20 OHMS
TS51	AUXILIARY POWER TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH (OPTION)
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH



Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (after serial number 22049)



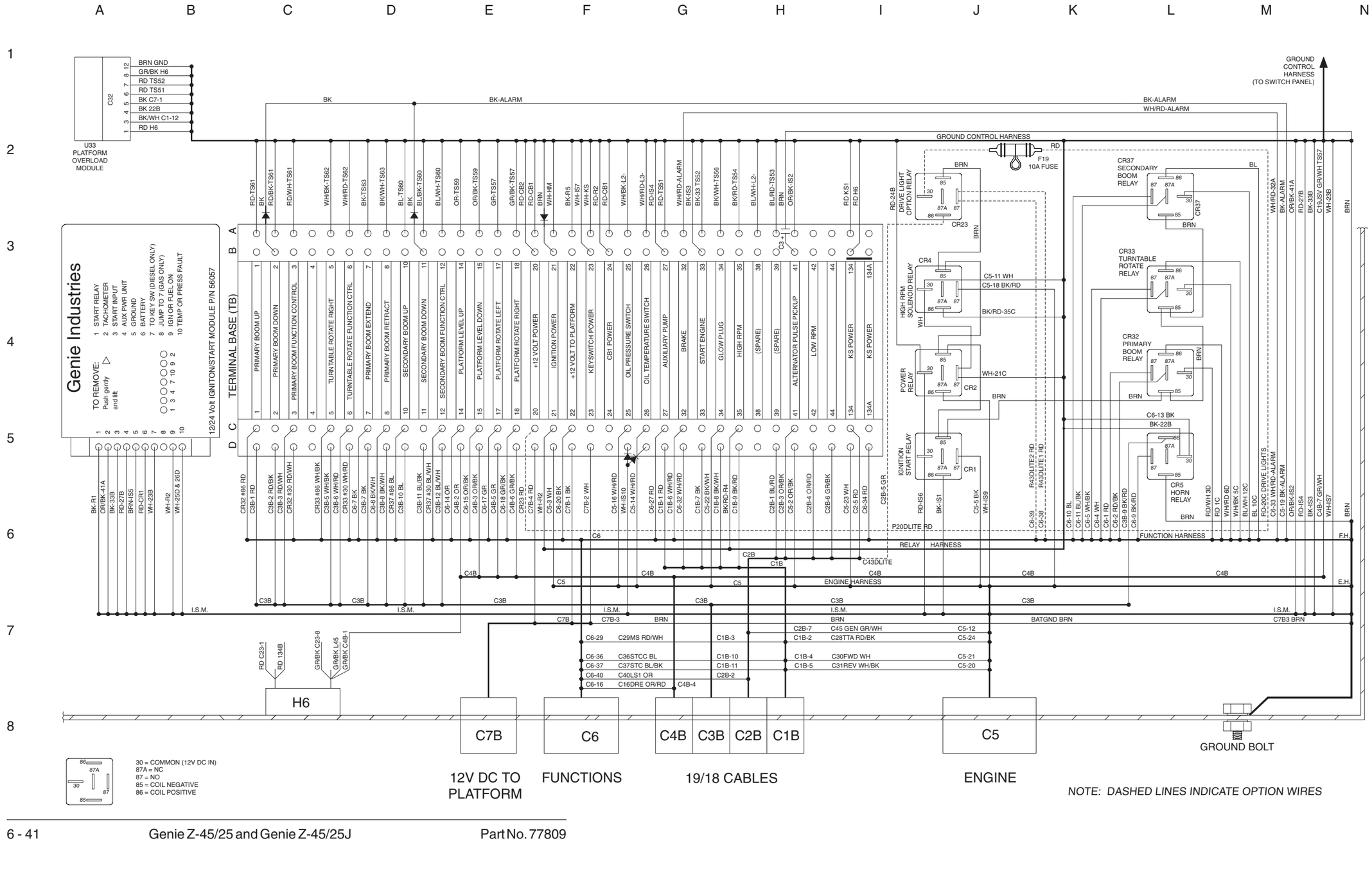
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25, CE Models

Deutz F3L-1011F Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25, CE Models

REV A

Deutz F3L-1011F Models (after serial number 22049)

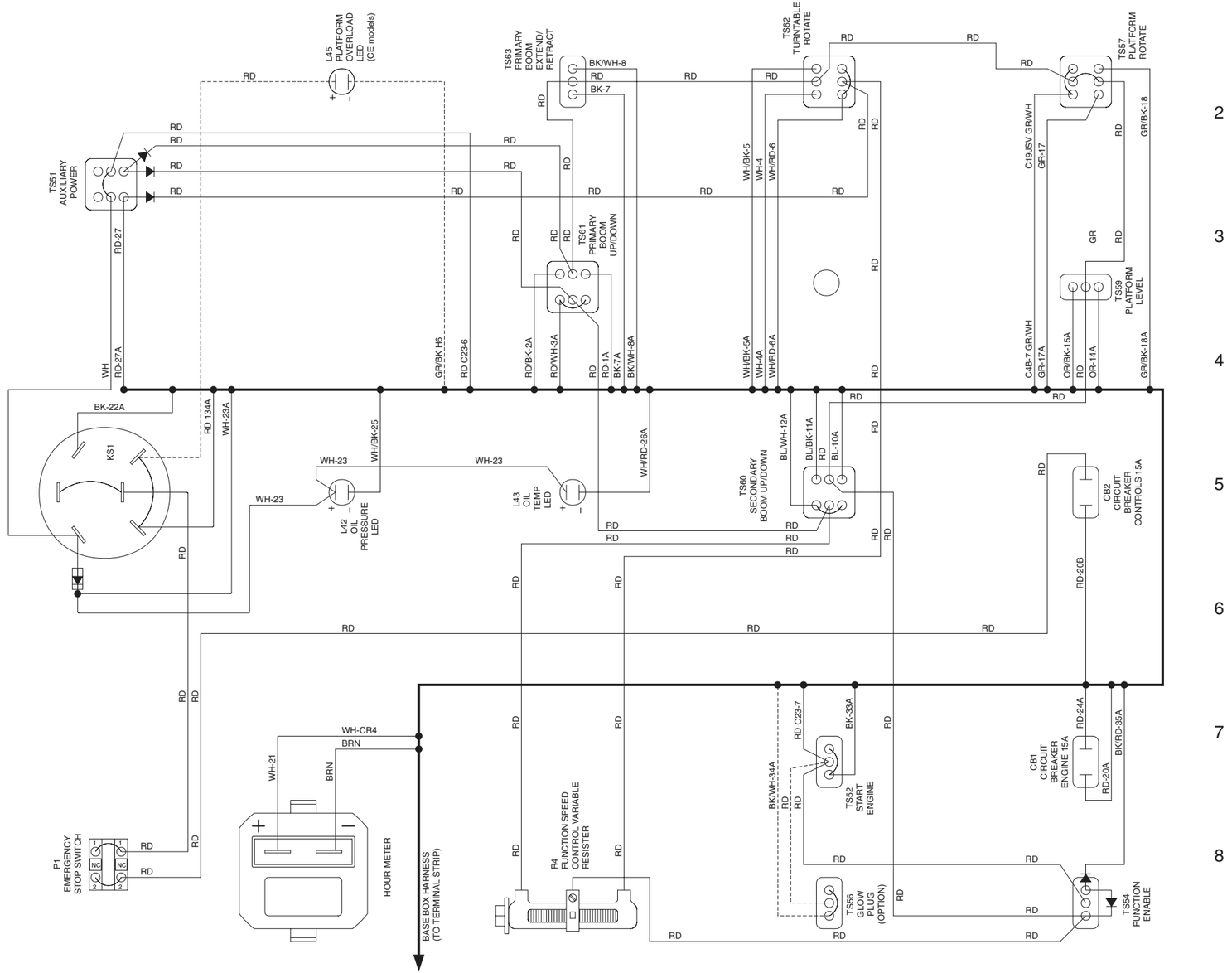


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25, CE Models

Deutz F3L-1011F Models (after serial number 22049)

LABEL	DESCRIPTION
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P1	RED EMERGENCY STOP BUTTON
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TS51	AUXILIARY POWER TOGGLE SWITCH
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TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH



Ground Control Box Switch Panel Wiring Diagram, Z-45/25, CE Models

Deutz F3L-1011F Models (after serial number 22049)



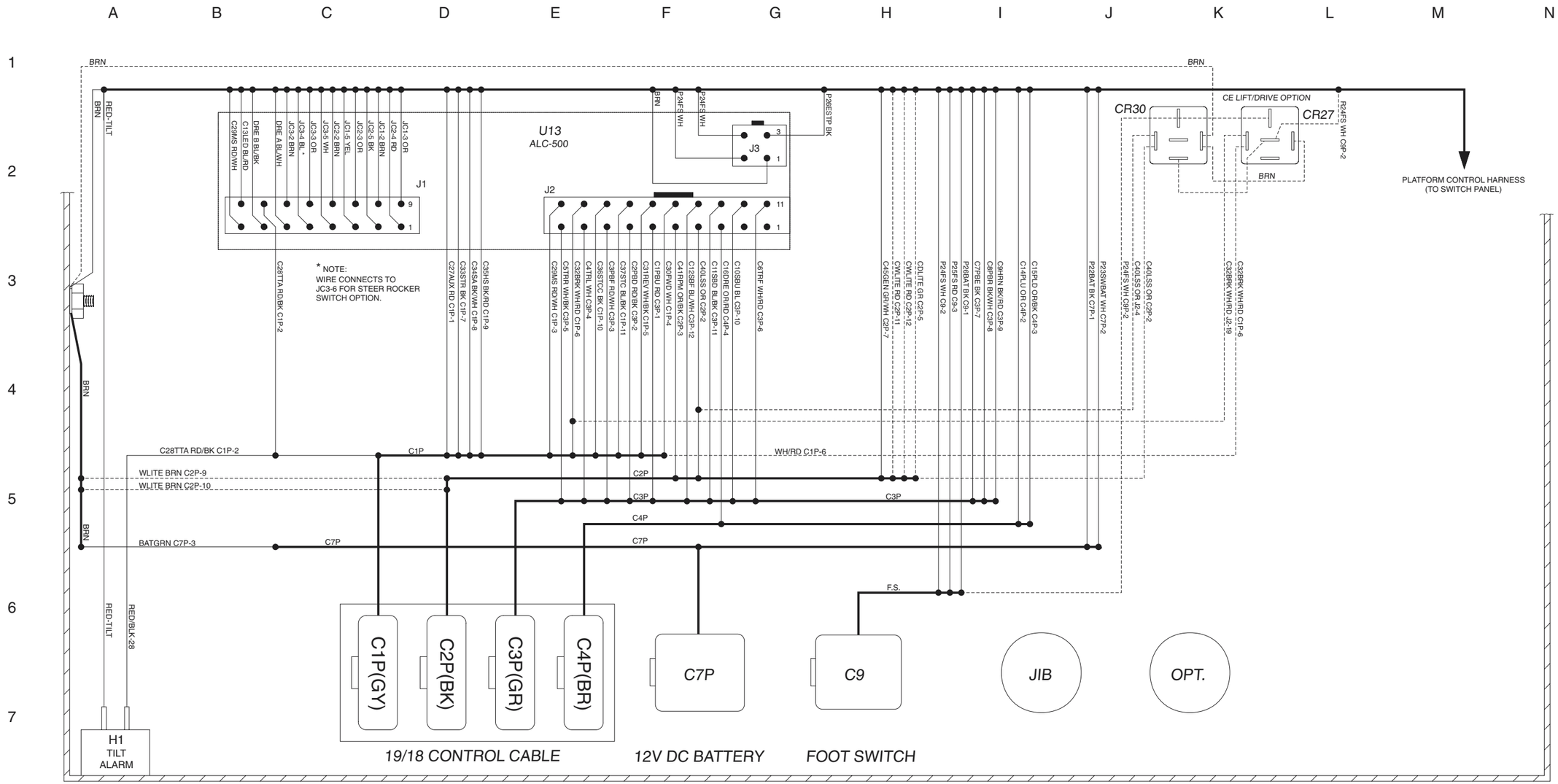
Platform Control Box Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (before serial number 22050)

Platform Control Box Wiring Diagram, Z-45/25

REV A

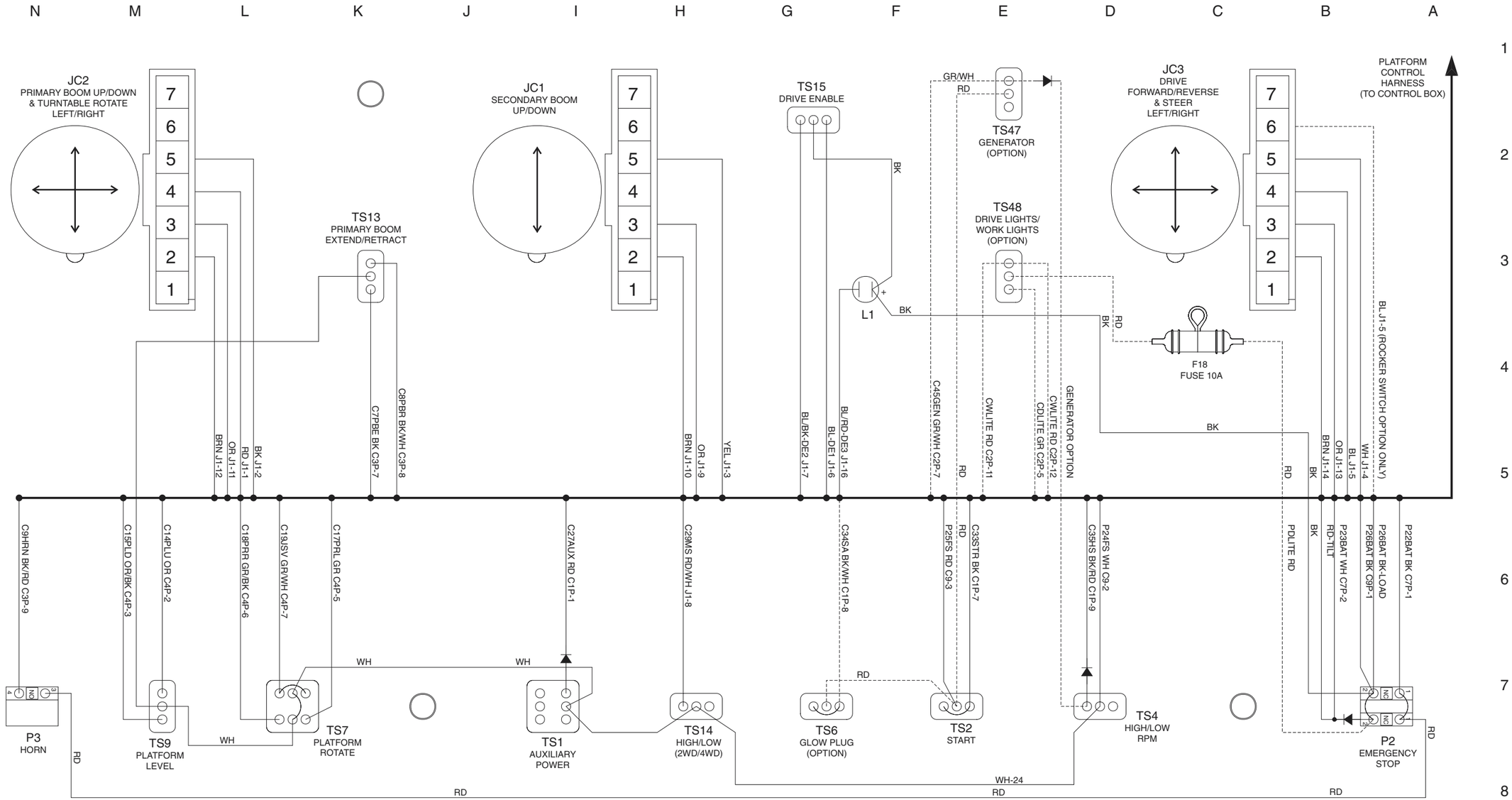
Deutz F3L-1011F Models (before serial number 22050)



REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

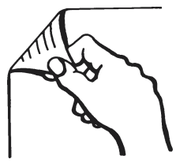
Deutz F3L-1011F Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (before serial number 22050)



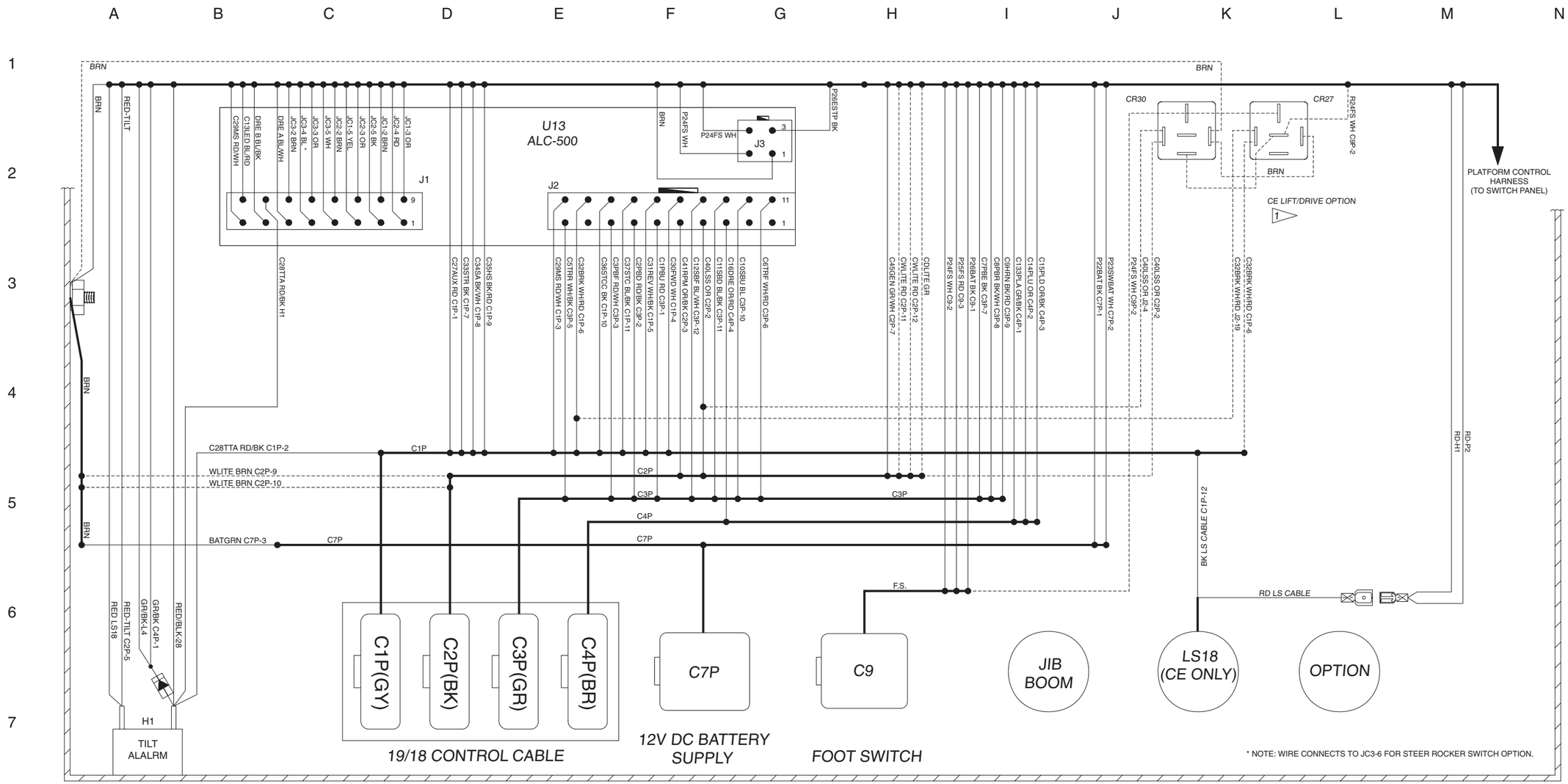
Platform Control Box Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (after serial number 22049)

Platform Control Box Wiring Diagram, Z-45/25

REV A

Deutz F3L-1011F Models (after serial number 22049)



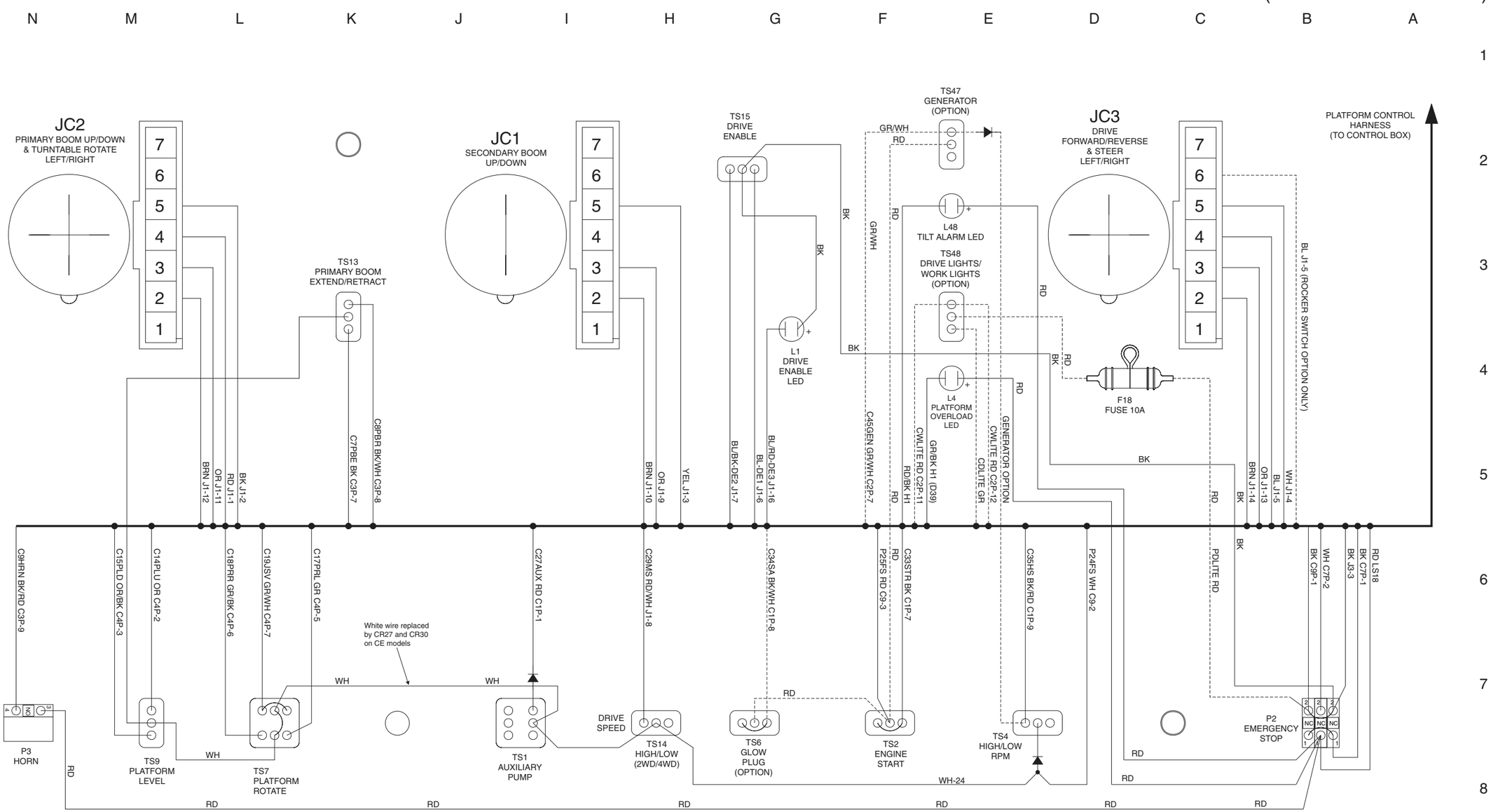
1 CE Models: CR27 and CR30 replaces white wire between TS1 and TS7

ITEM	DESCRIPTION
H1	TILT ALARM
C7P	12V DC PLATFORM POWER CONNECTOR
C9	FOOT SWITCH CONNECTOR
C1P - C4P	48 PIN CONNECTOR BLOCK
U13	ALC-500 CONTROL BOARD
J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
J3	CONTROL BOARD POWER CONNECTOR
CR27	CONTROL RELAY (CE OPTION)
CR30	CONTROL RELAY (CE OPTION)
LS18	LOAD SENSE LIMIT SWITCH

REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

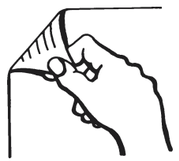
Deutz F3L-1011F Models (after serial number 22049)



NOTE:
DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Deutz F3L-1011F Models (after serial number 22049)



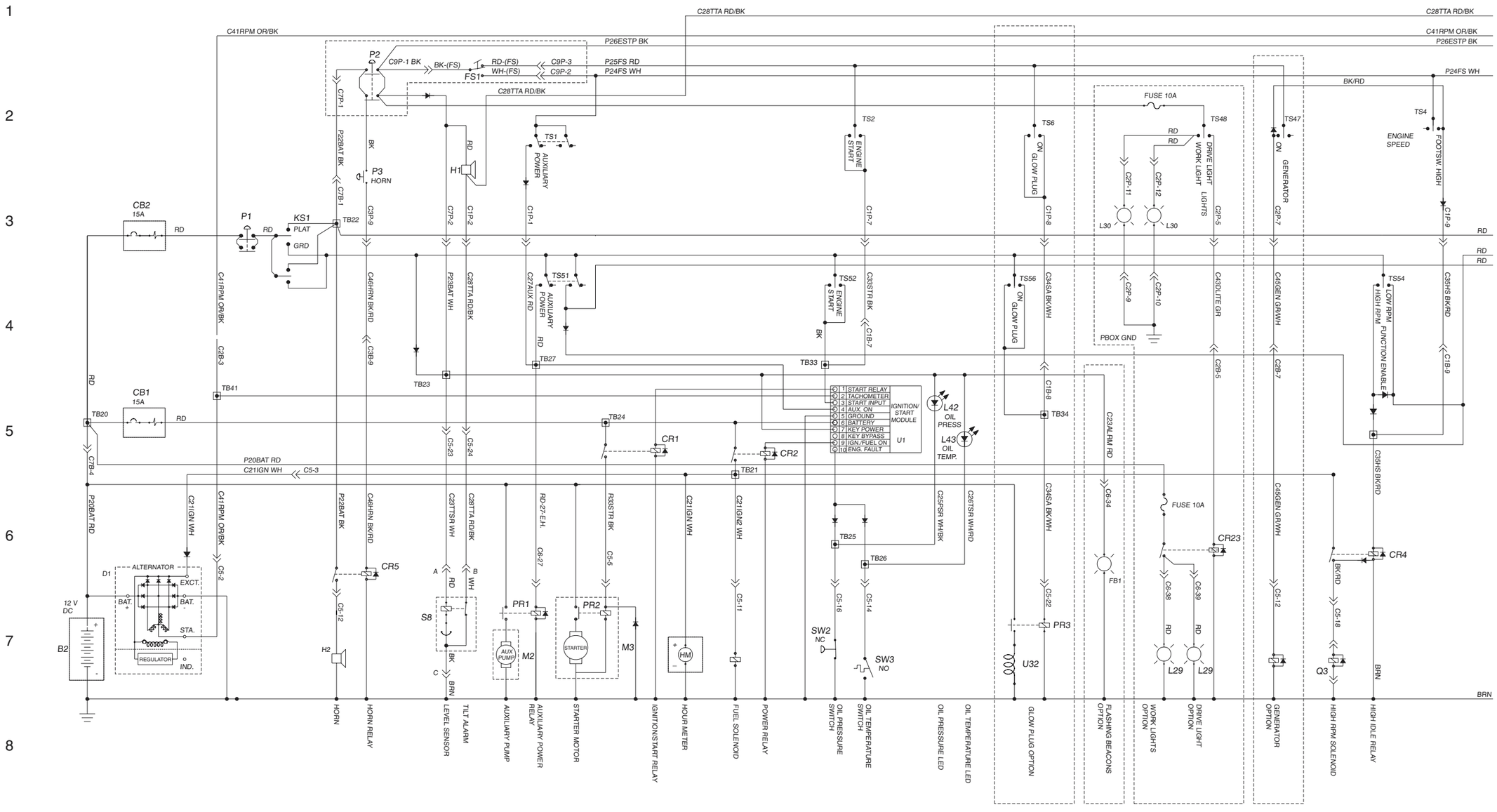




Electrical Schematic, Z-45/25J

REV A

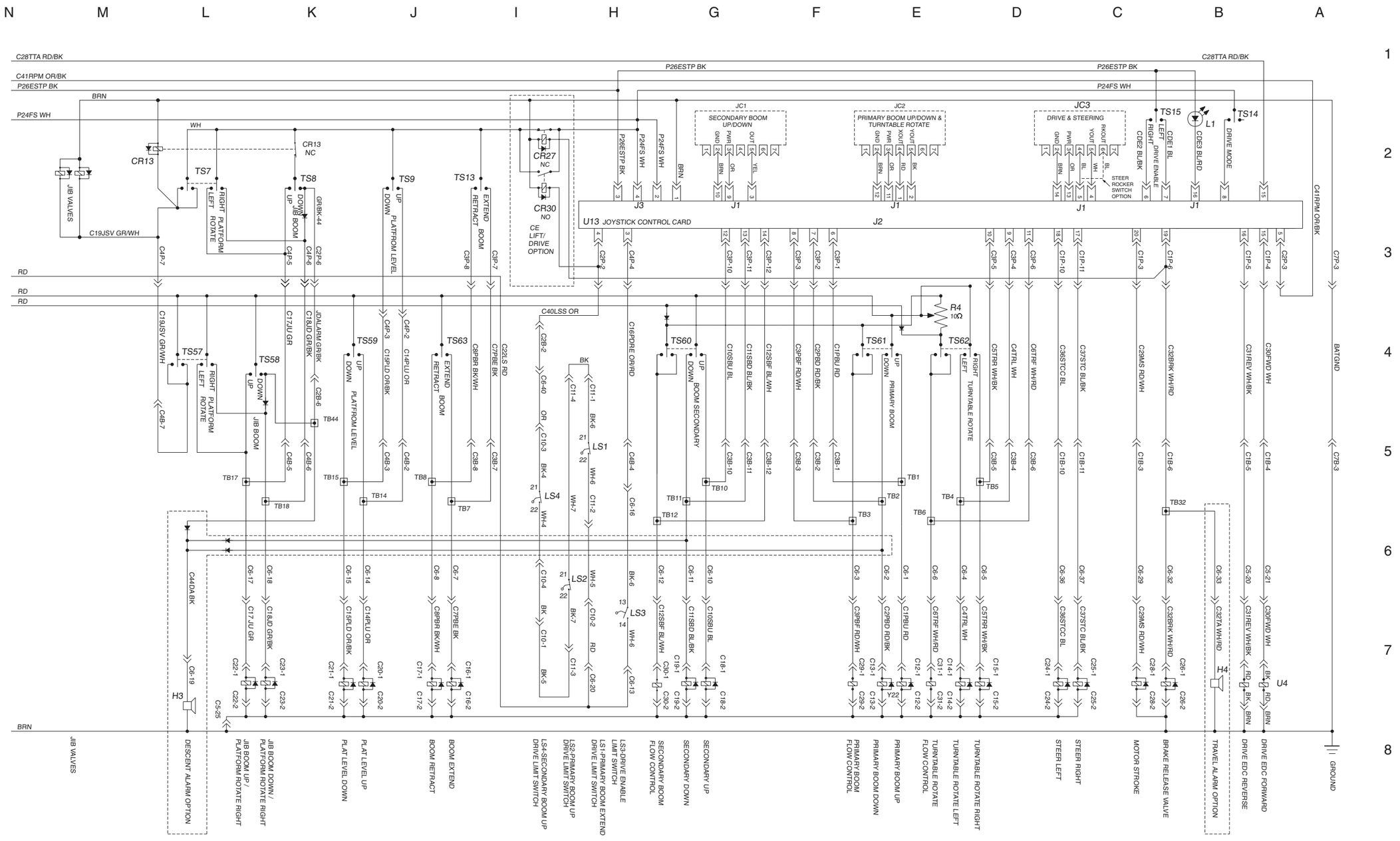
Deutz F3L-1011F Models (before serial number 22050)



REV A

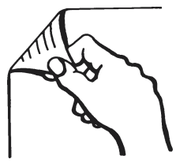
Electrical Schematic, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)



Electrical Schematic, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)







Electrical Schematic, Z-45/25J

REV A

Deutz F3L-1011F Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 CE and Platform Overload Option

5 Add D40 only if unit has L4 and L48.

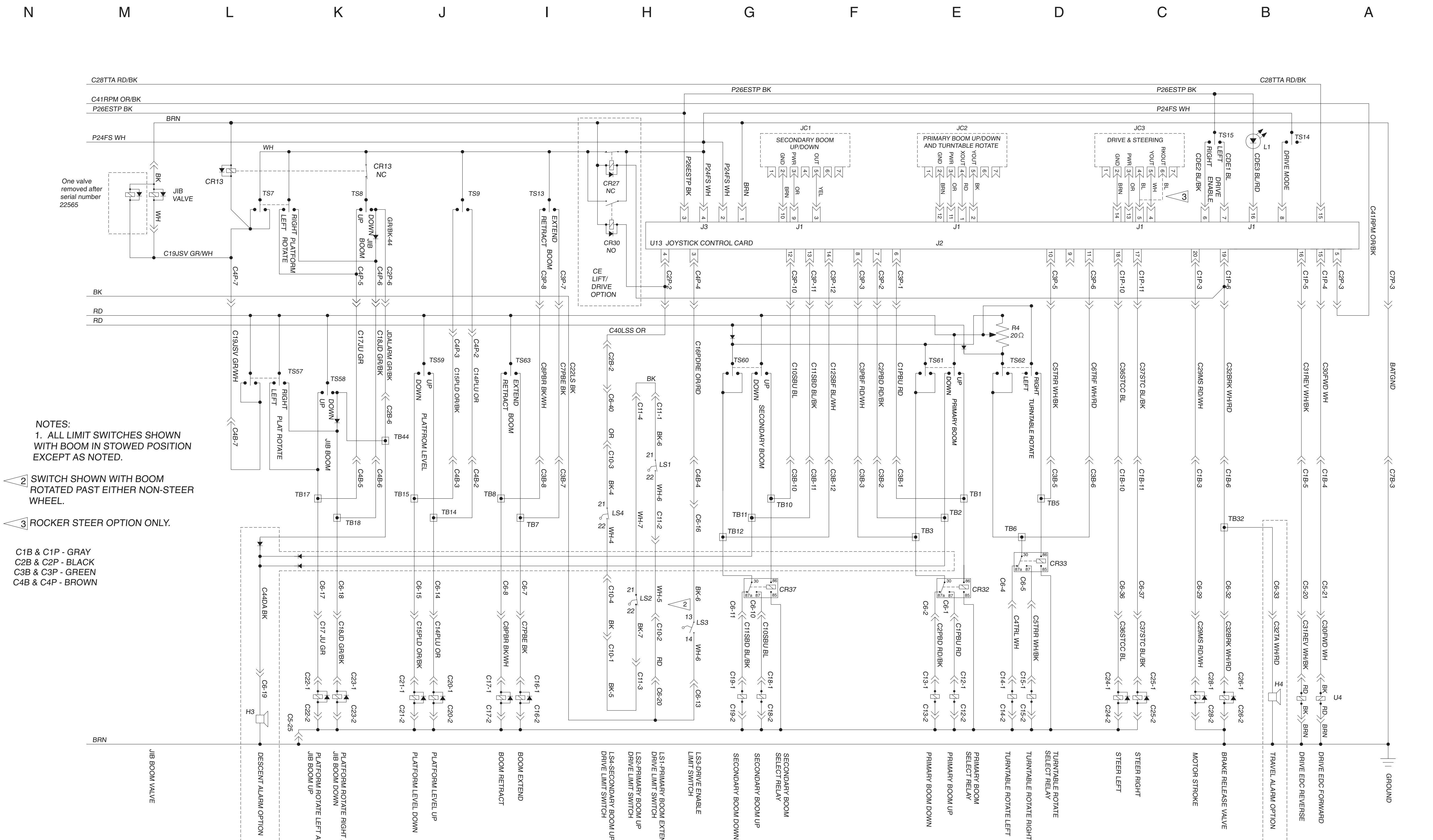
6 ANSI/CSA (Domestic machine) add L48.

C1B & C1P = GRAY
C2B & C2P = BLACK
C3B & C3P = GREEN
C4B & C4P = BROWN

REV A

Electrical Schematic, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)



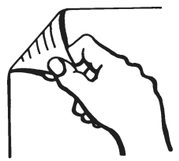
NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.

2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 ROCKER STEER OPTION ONLY.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

Electrical Schematic, Z-45/25J
Deutz F3L-1011F Models (after serial number 22049)



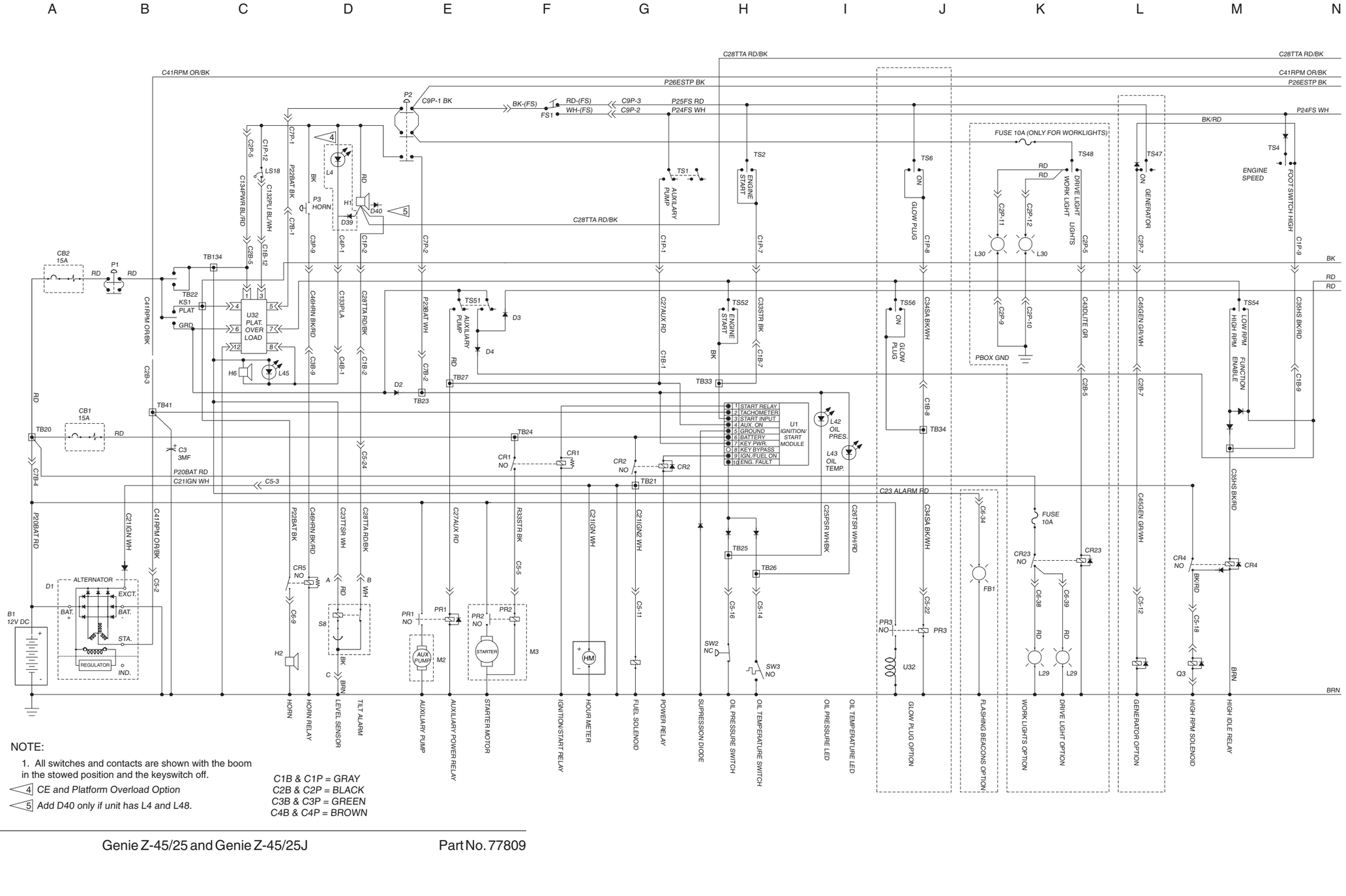




Electrical Schematic, Z-45/25J, CE Models

REV A

Deutz F3L-1011F Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 *CE and Platform Overload Option*

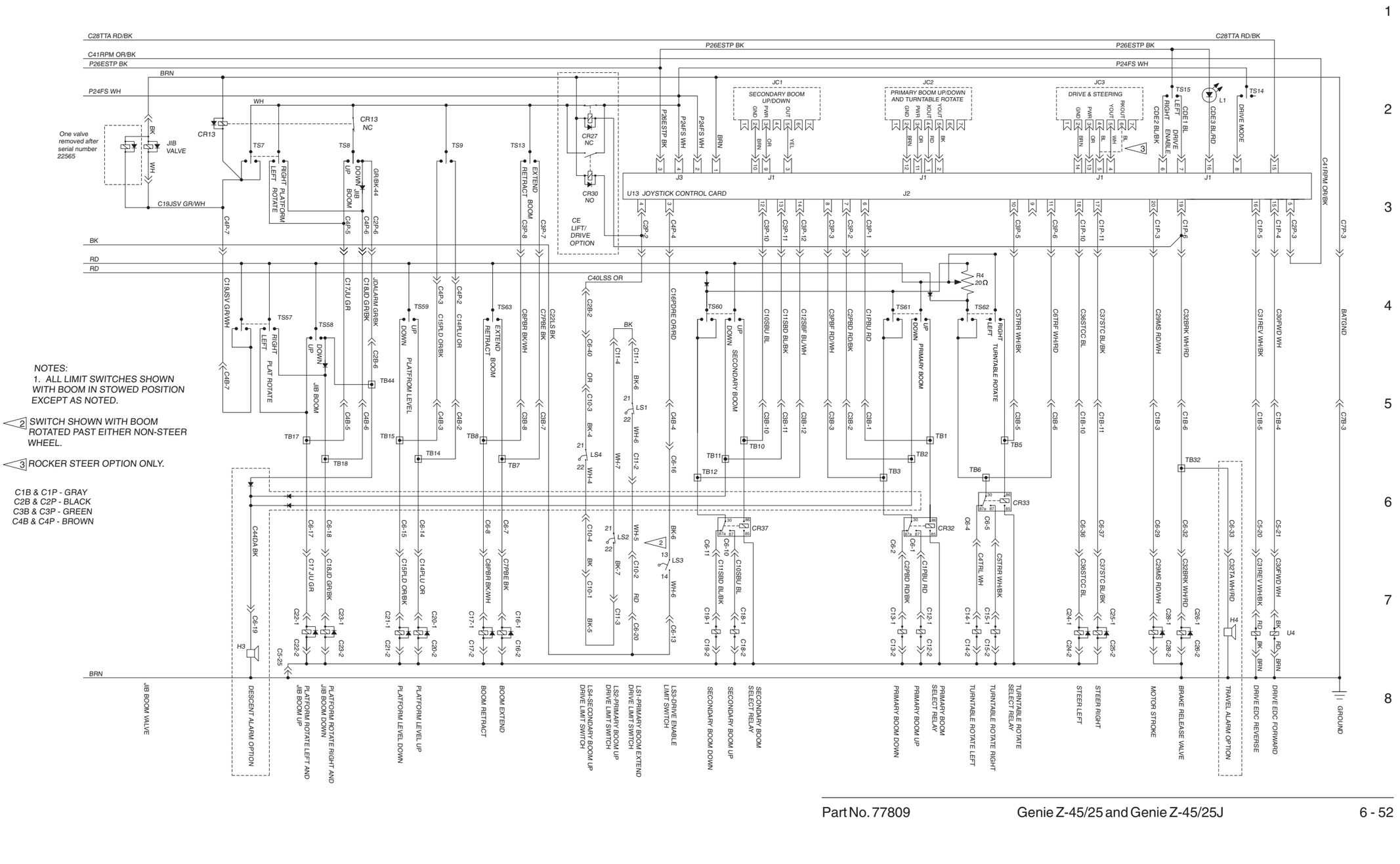
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REV A

Electrical Schematic, Z-45/25J, CE Models

Deutz F3L-1011F Models (after serial number 22049)



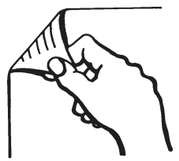
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Electrical Schematic, Z-45/25J, CE Models
Deutz F3L-1011F Models (after serial number 22049)



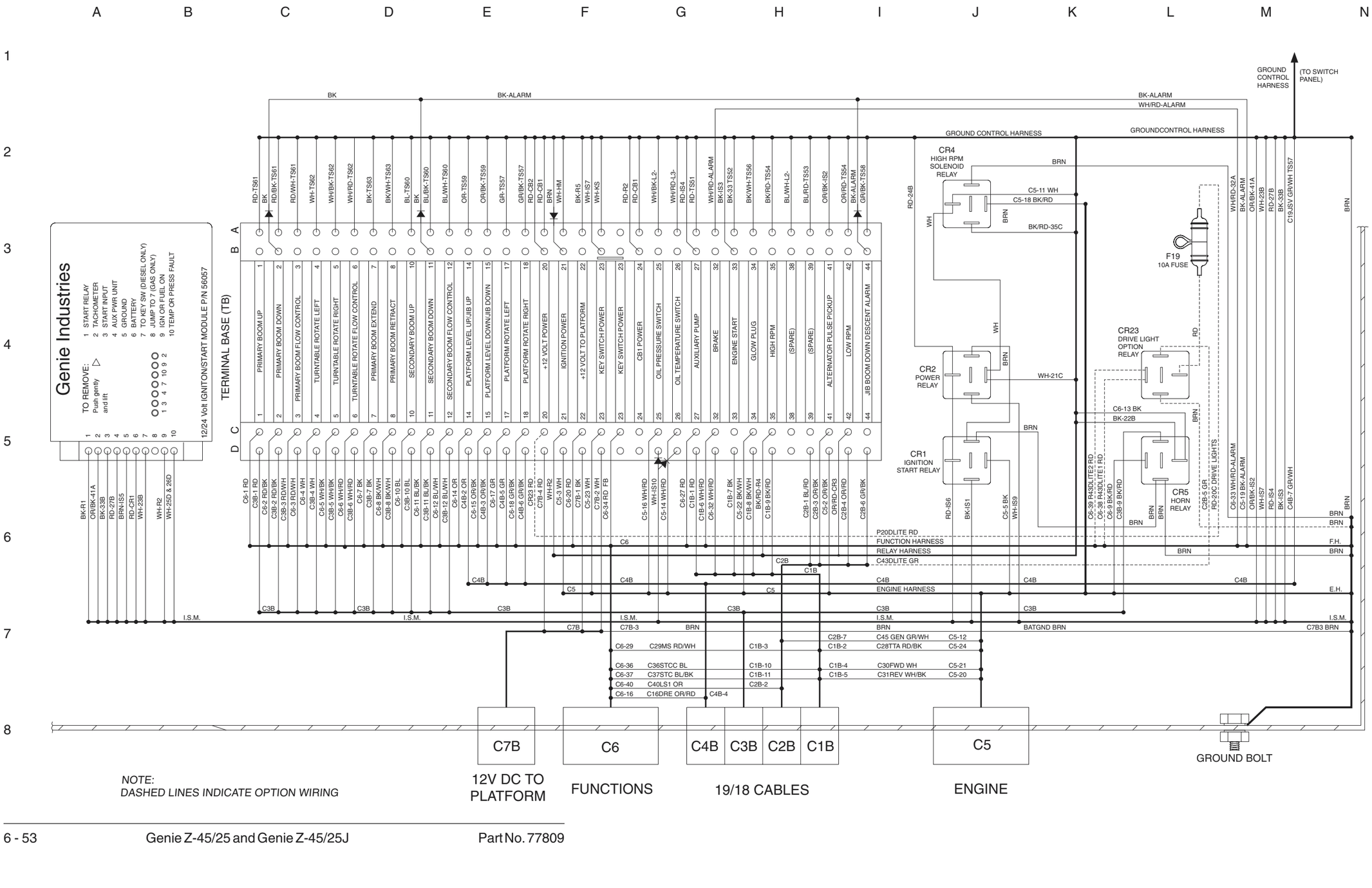
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

Deutz F3L-1011F Models (before serial number 22050)

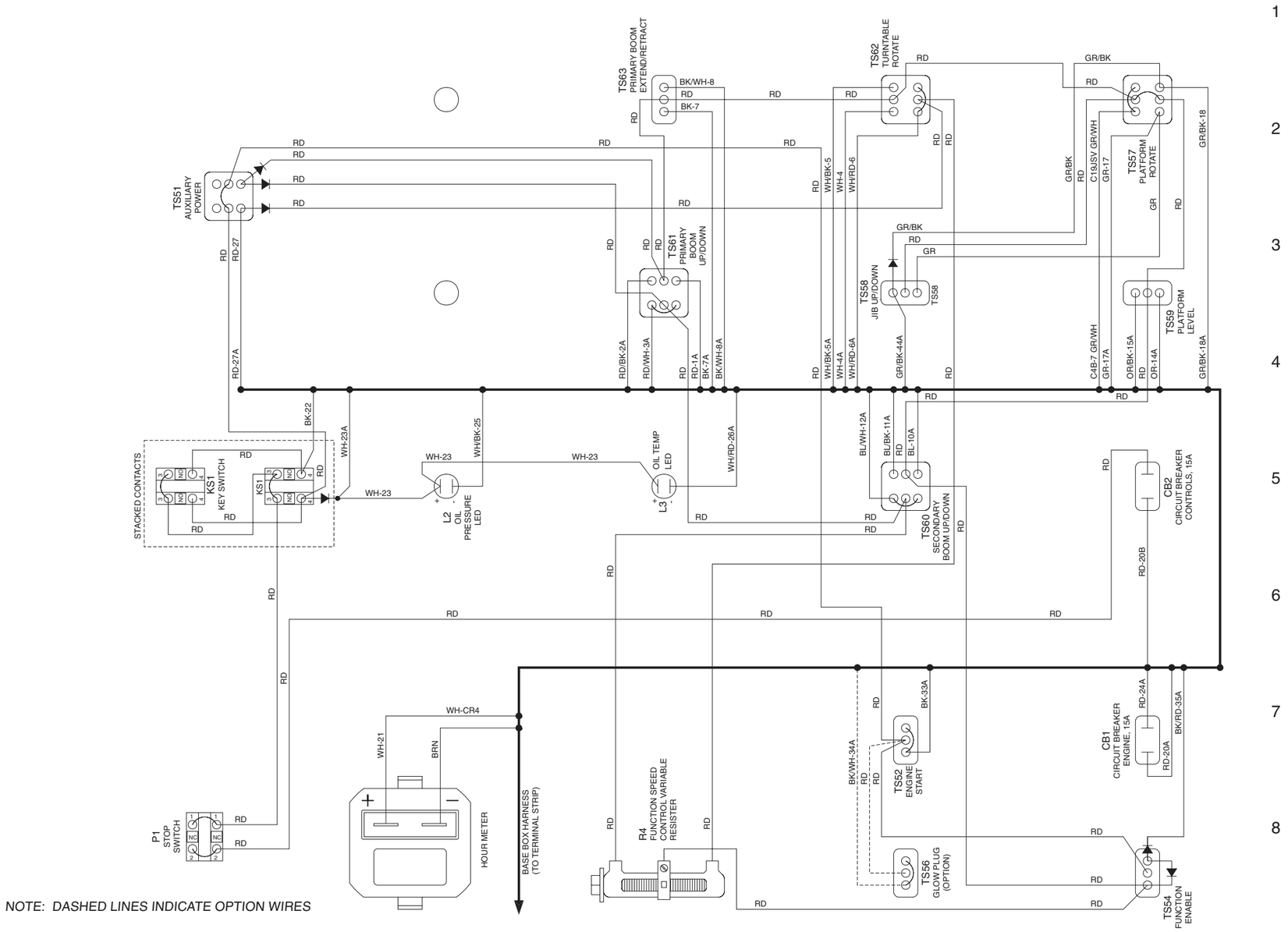


NOTE:
DASHED LINES INDICATE OPTION WIRING

REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

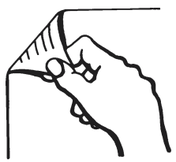
Deutz F3L-1011F Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)



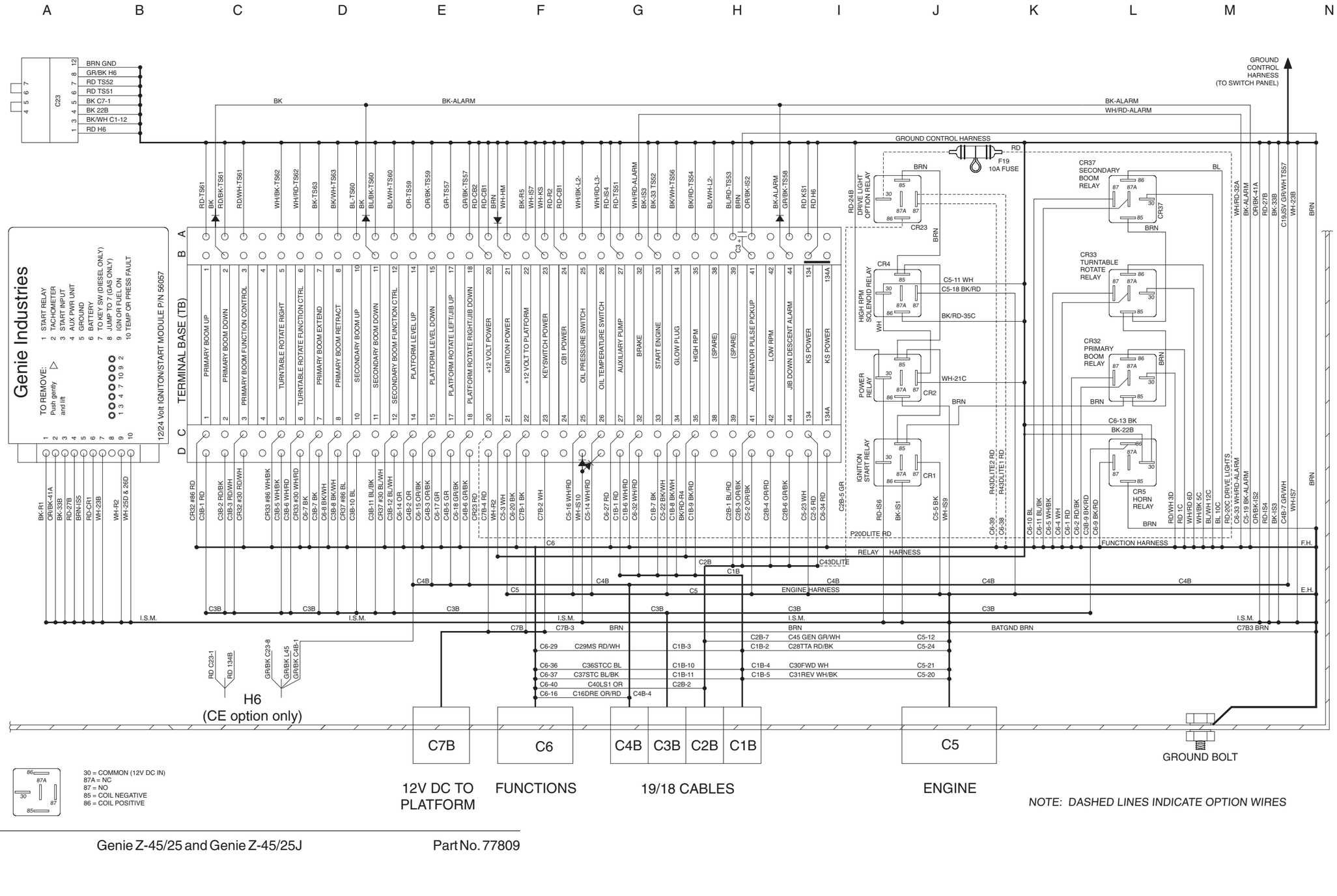
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

Deutz F3L-1011F Models (after serial number 22049)

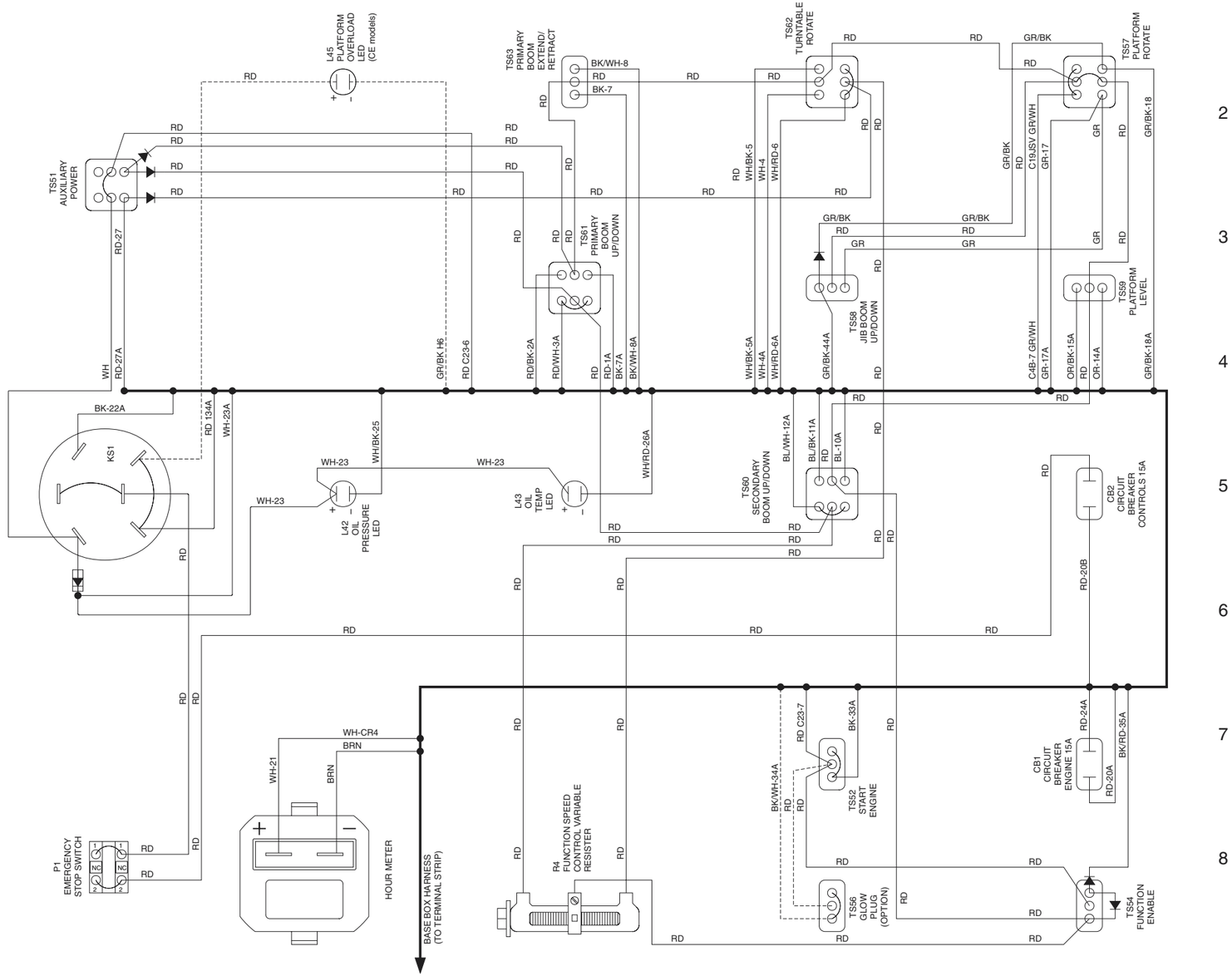


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)

LABEL	DESCRIPTION
CB1	CIRCUIT BREAKER, ENGINE, 15A
CB2	CIRCUIT BREAKER, CONTROLS, 15A
CR1	IGNITION / START RELAY
CR2	IGNITION POWER RELAY
CR4	HIGH IDLE RELAY
CR5	HORN RELAY
HM	HOUR METER
KS1	KEY SWITCH
L42	OIL PRESSURE LED
L43	OIL TEMPERATURE LED
L45	PLATFORM OVERLOAD
P1	RED EMERGENCY STOP BUTTON
R4	SPEED LIMITING VARIABLE RESISTOR 20 OHMS
TS51	AUXILIARY POWER TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH (OPTION)
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB BOOM UP/DOWN TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH



Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)



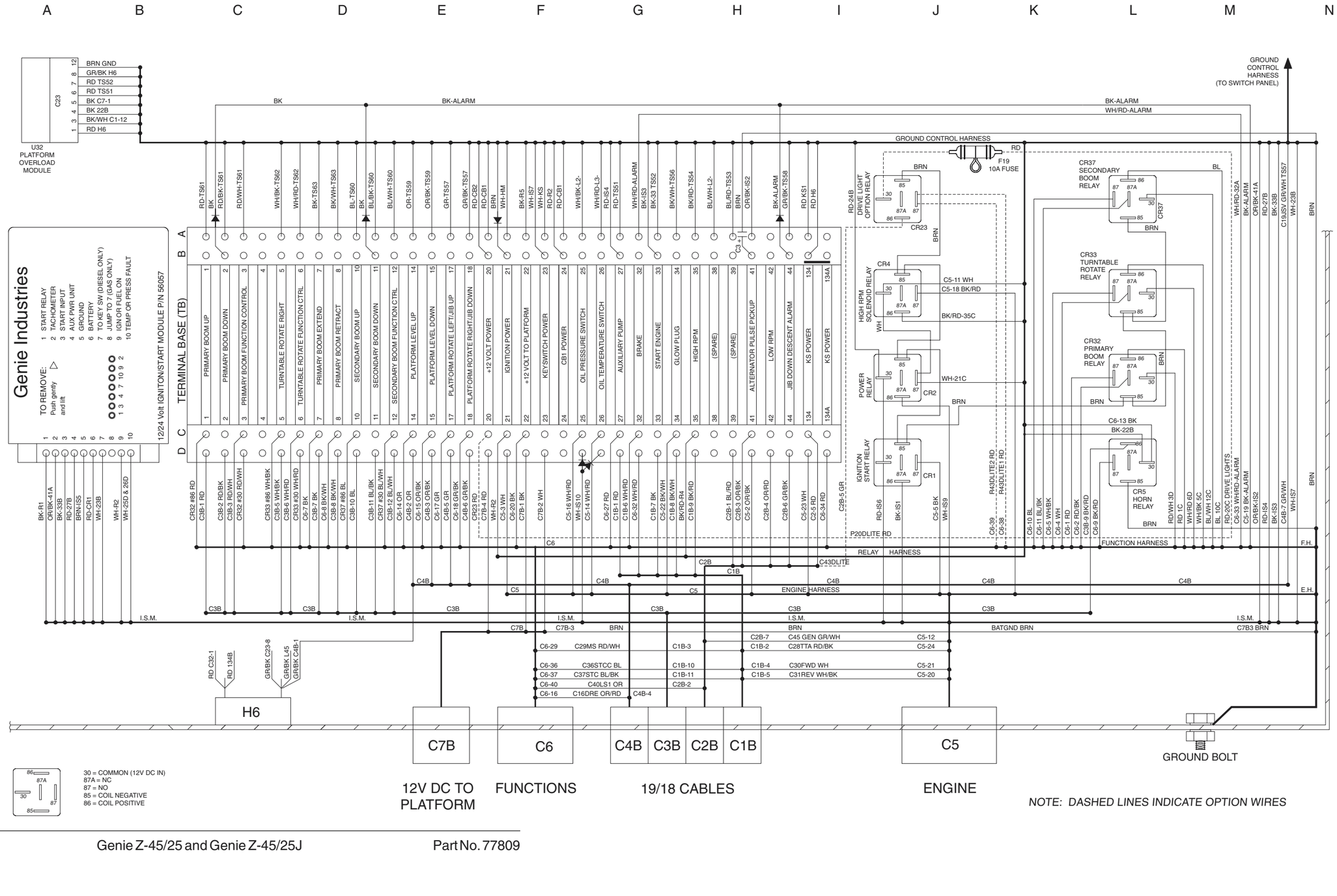
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J, CE Models

Deutz F3L-1011F Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J, CE Models

REV A

Deutz F3L-1011F Models (after serial number 22049)

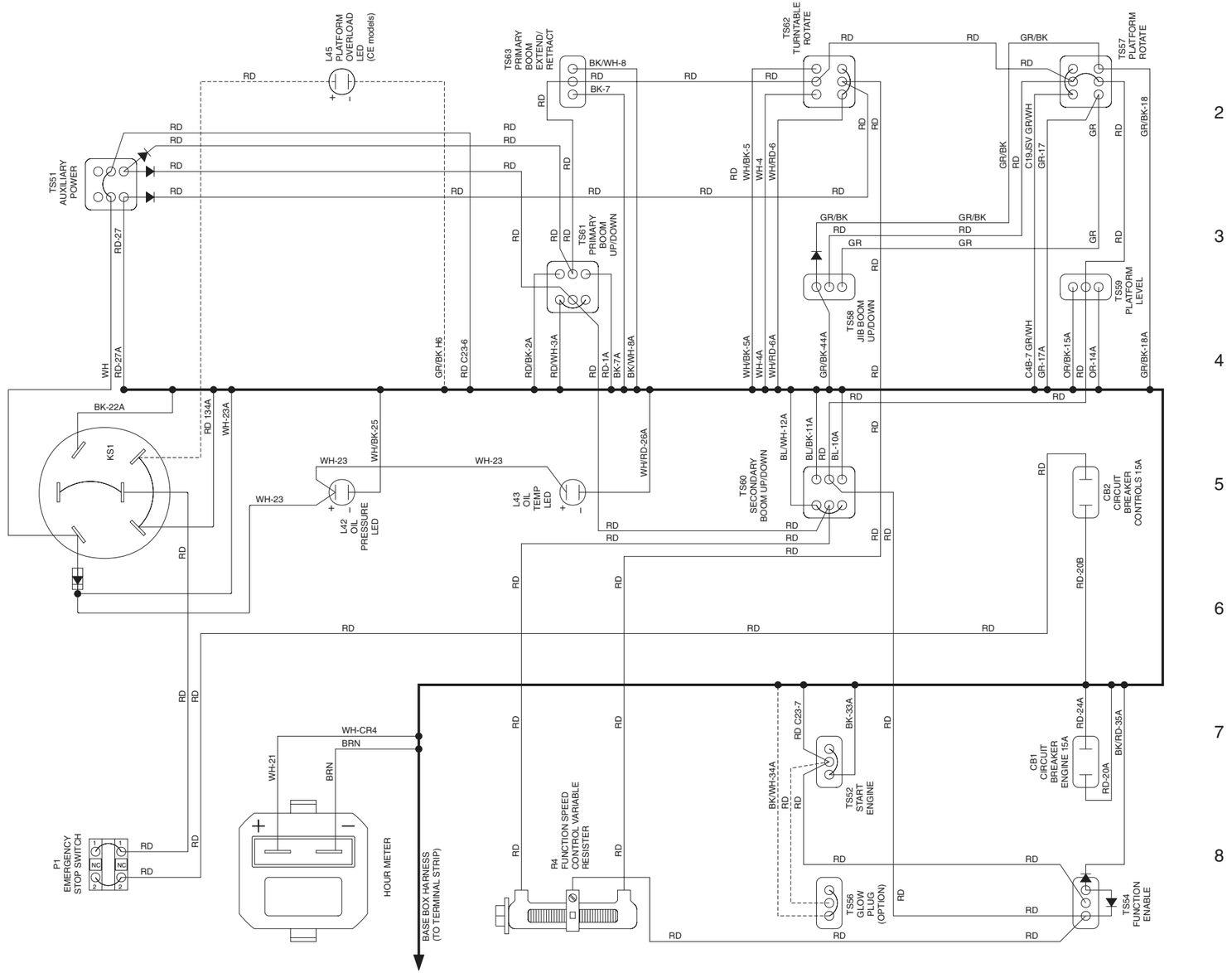


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J, CE Models

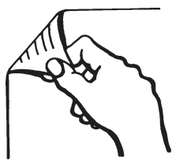
Deutz F3L-1011F Models (after serial number 22049)

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Ground Control Box Switch Panel Wiring Diagram, Z-45/25J, CE Models

Deutz F3L-1011F Models (after serial number 22049)



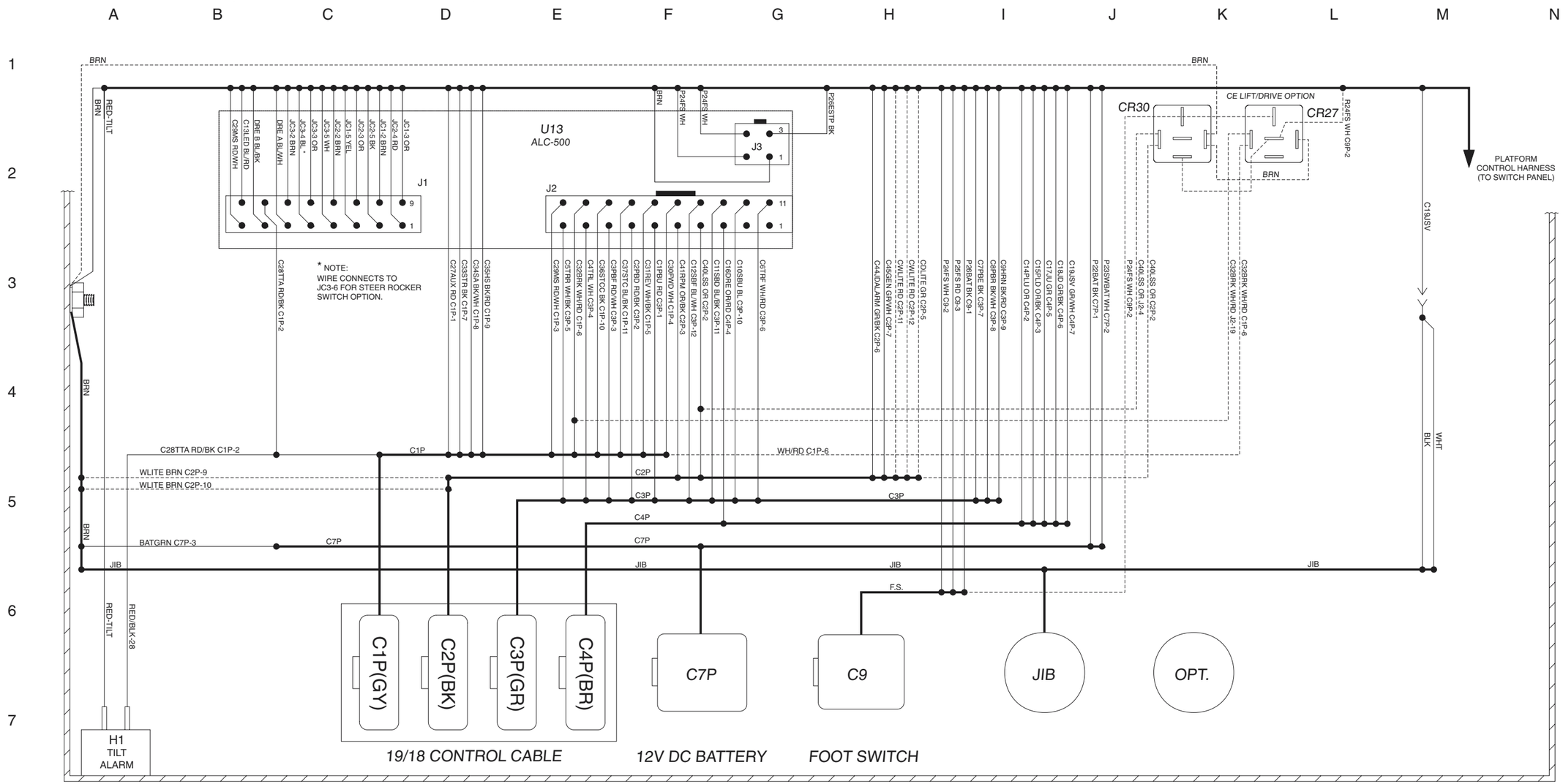
Platform Control Box Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)

Platform Control Box Wiring Diagram, Z-45/25J

REV A

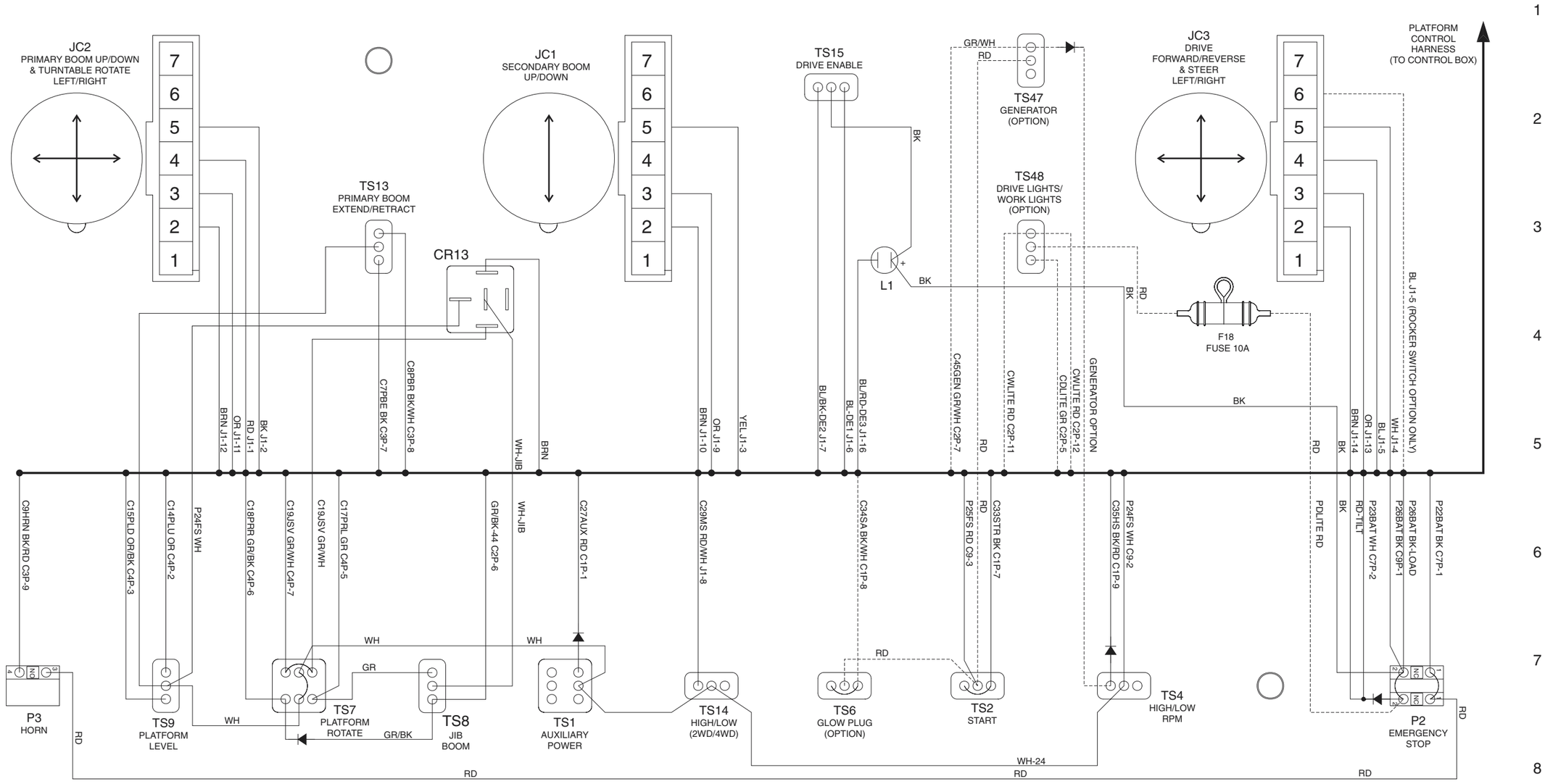
Deutz F3L-1011F Models (before serial number 22050)



REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

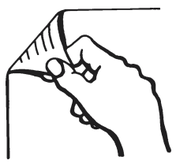
Deutz F3L-1011F Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (before serial number 22050)



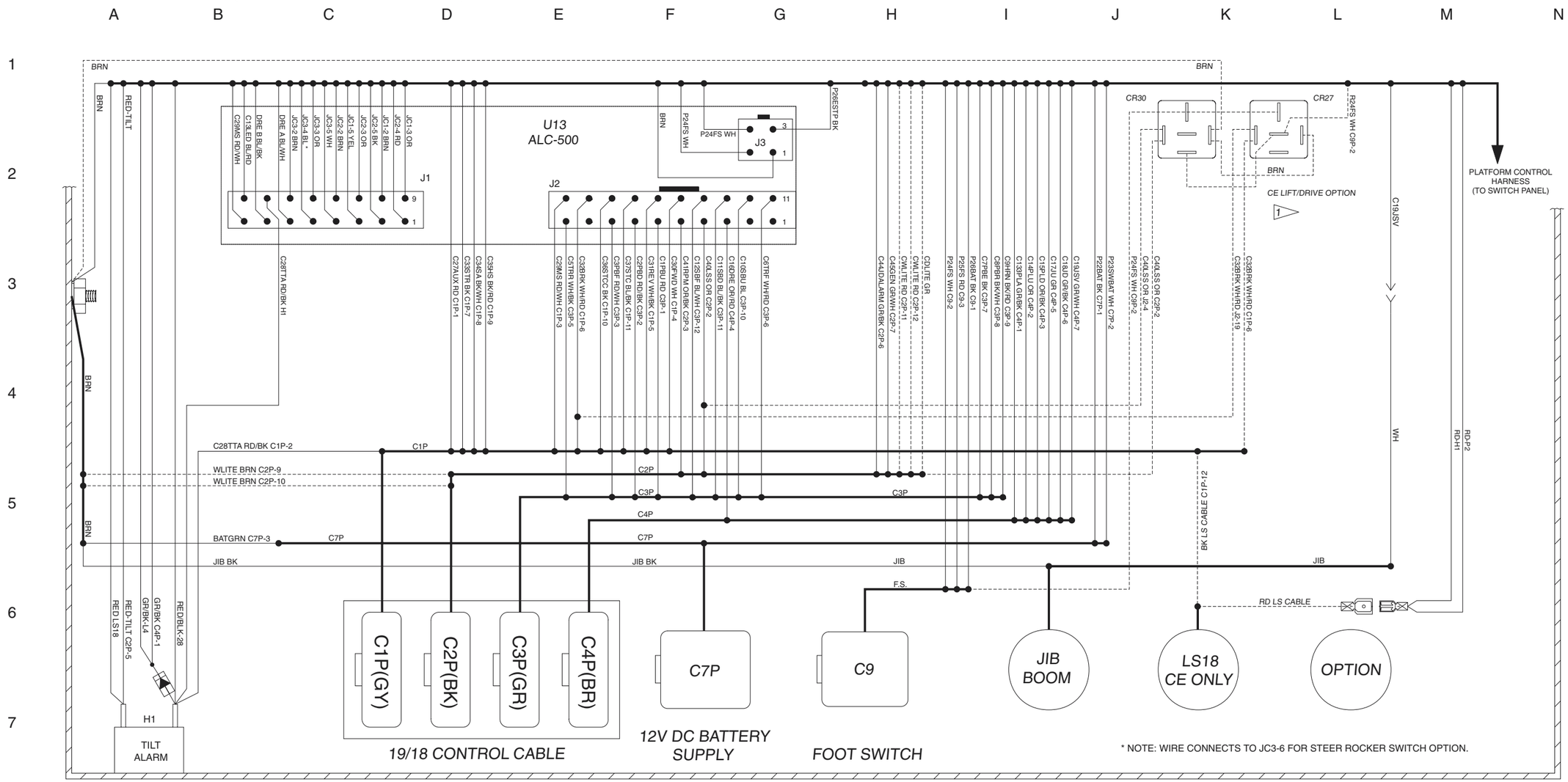
Platform Control Box Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)

Platform Control Box Wiring Diagram, Z-45/25J

REV A

Deutz F3L-1011F Models (after serial number 22049)



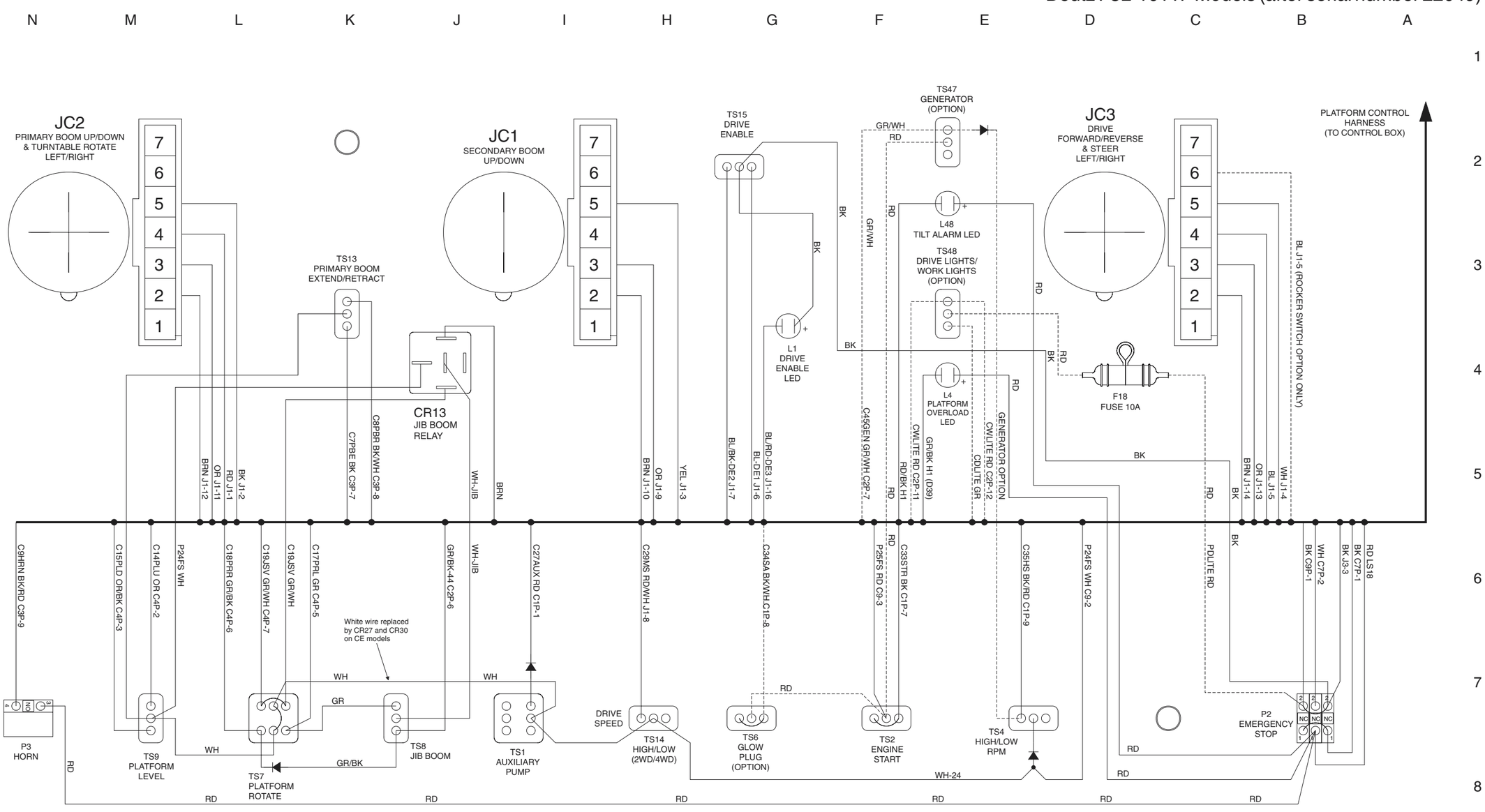
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J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
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CR30	CONTROL RELAY (CE OPTION)
LS18	LOAD SENSE LIMIT SWITCH

REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

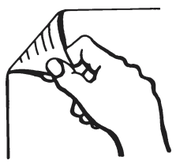
Deutz F3L-1011F Models (after serial number 22049)



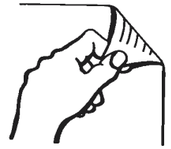
NOTE:
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Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

Deutz F3L-1011F Models (after serial number 22049)



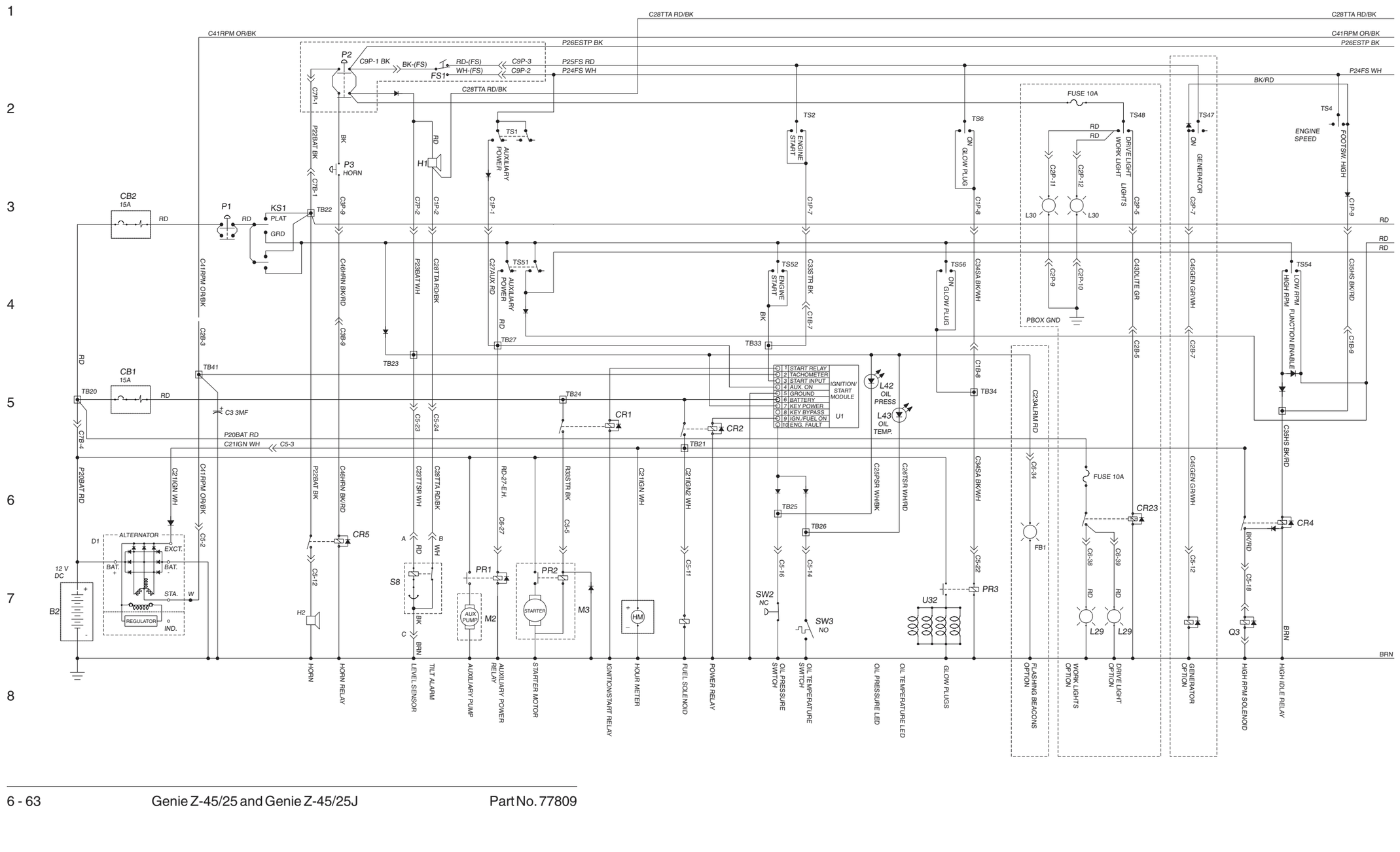




Electrical Schematic, Z-45/25

REV A

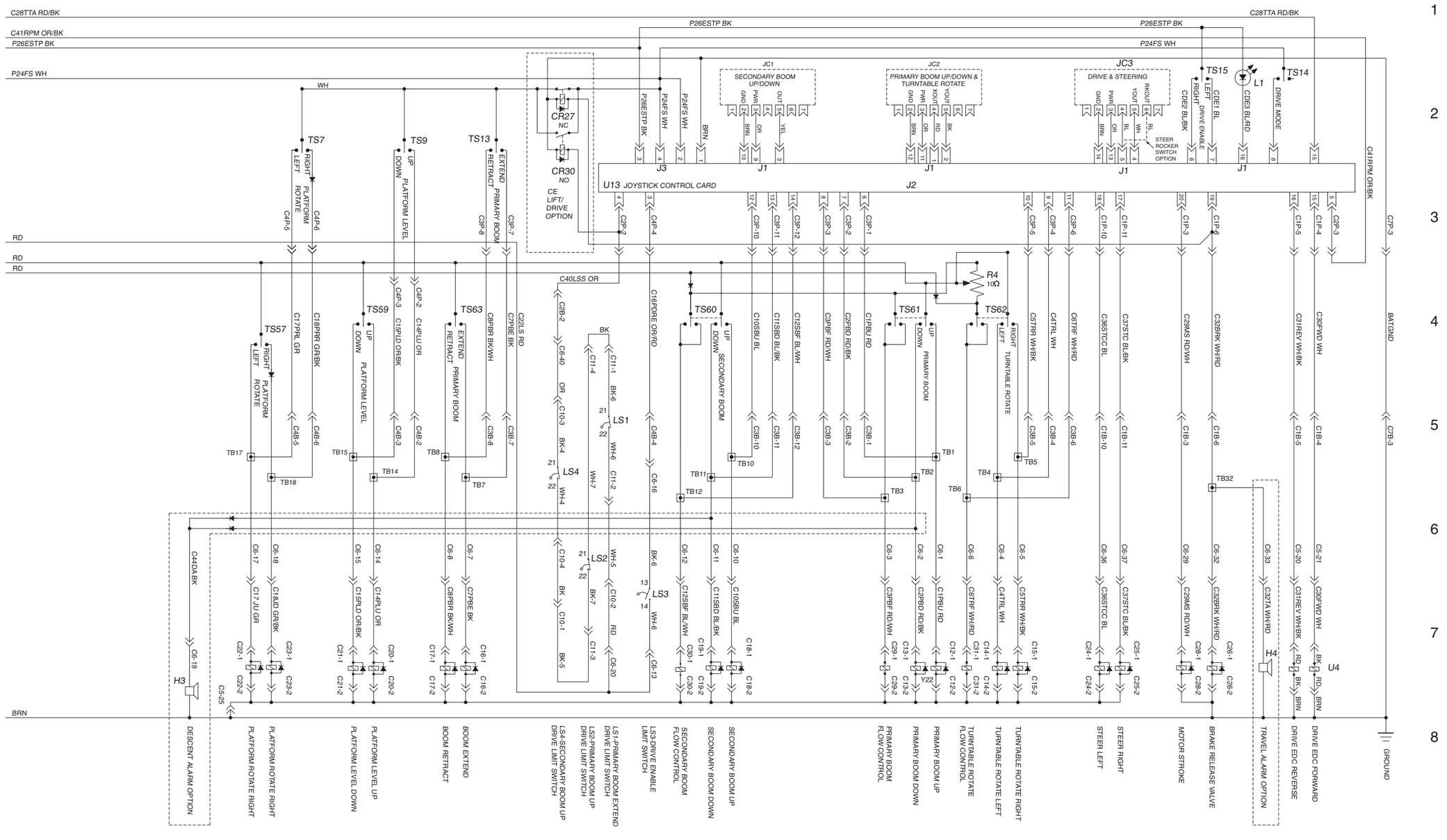
Perkins 104-22 Models (before serial number 22050)



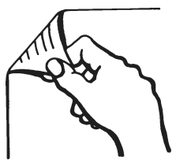
REV A

Electrical Schematic, Z-45/25

Perkins 104-22 Models (before serial number 22050)



Electrical Schematic, Z-45/25
Perkins 104-22 Models (before serial number 22050)



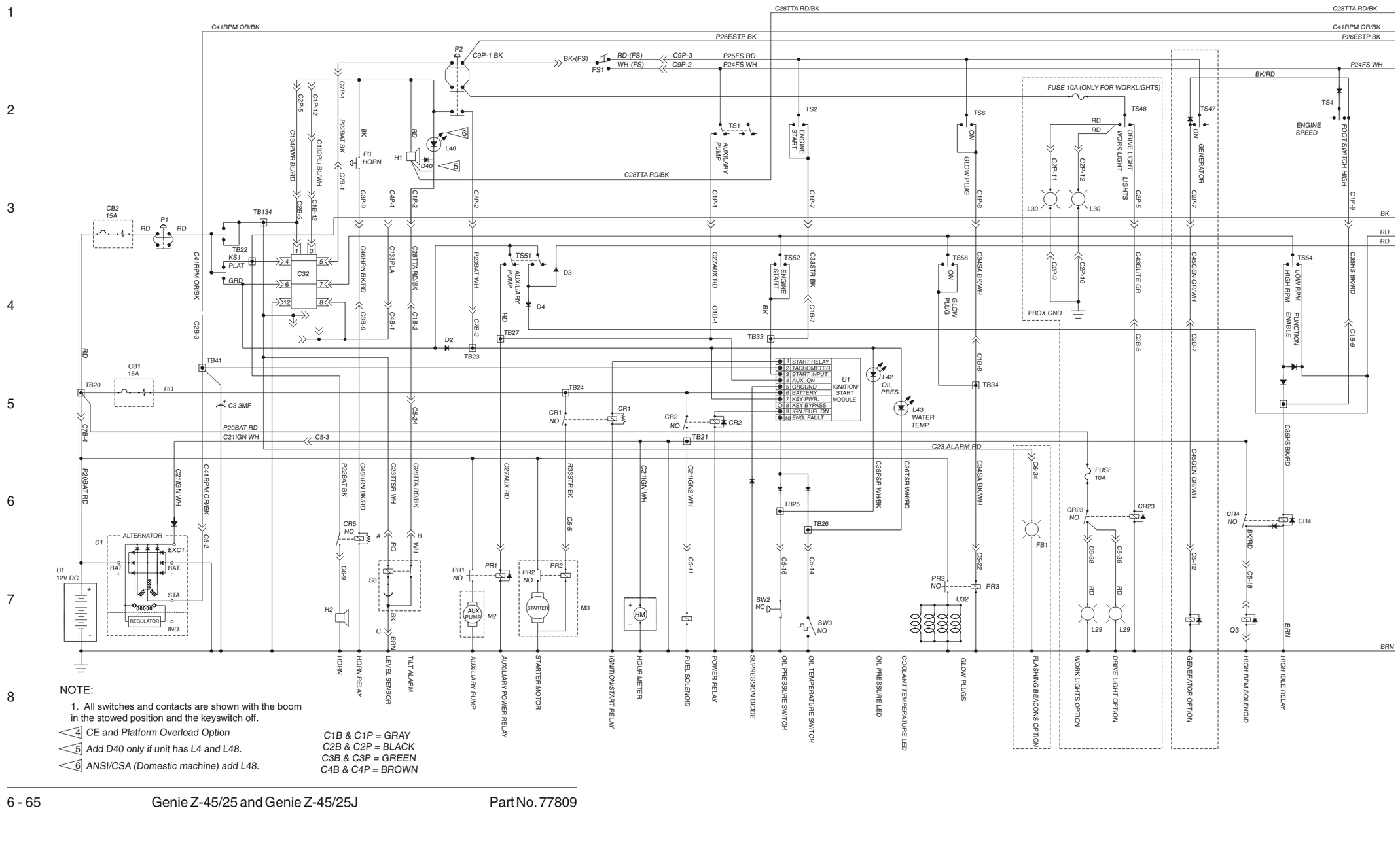




Electrical Schematic, Z-45/25

REV A

Perkins 104-22 Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 *CE and Platform Overload Option*

5 *Add D40 only if unit has L4 and L48.*

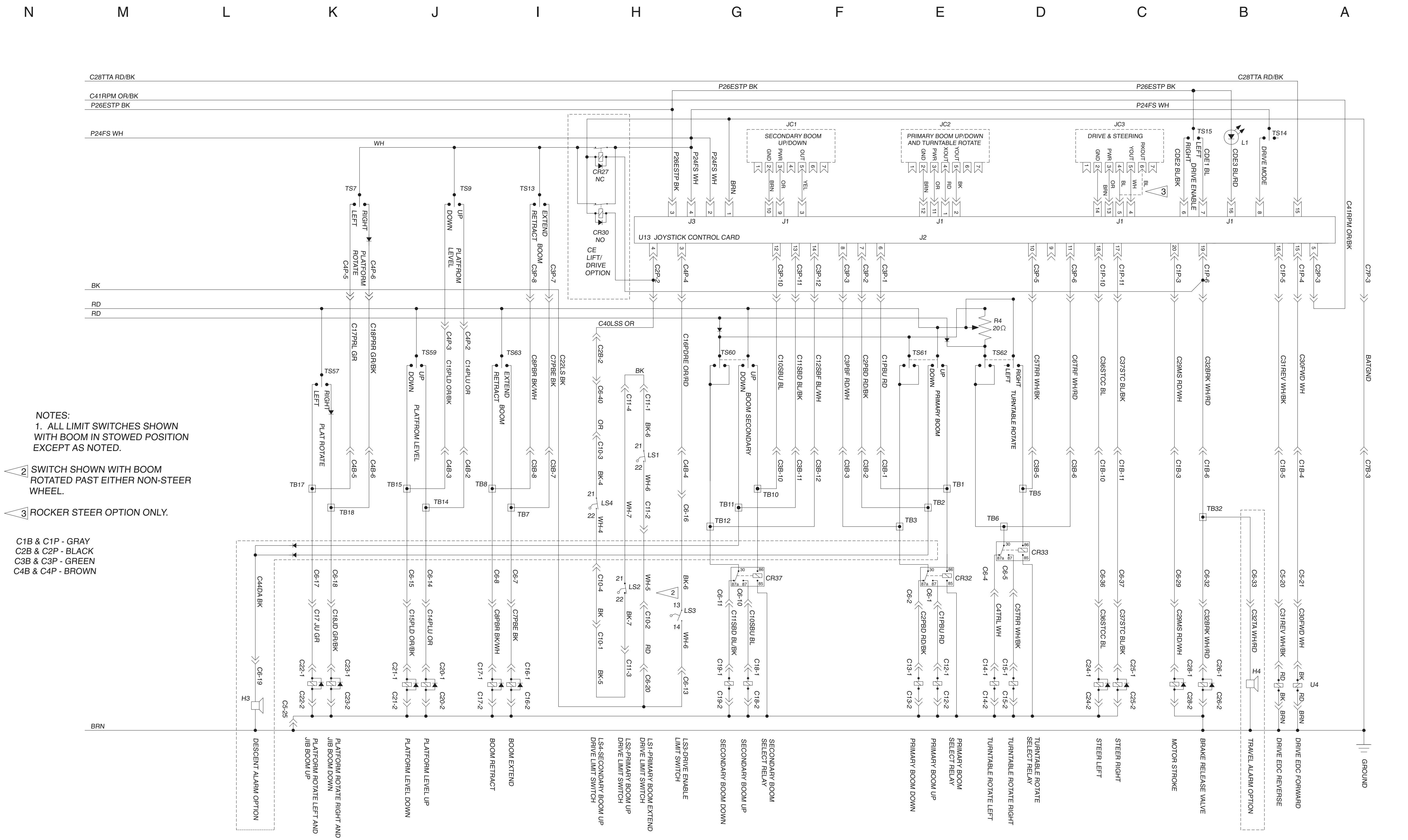
6 *ANSI/CSA (Domestic machine) add L48.*

C1B & C1P = GRAY
C2B & C2P = BLACK
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REV A

Electrical Schematic, Z-45/25

Perkins 104-22 Models (after serial number 22049)

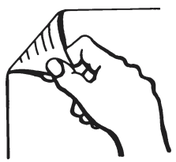


NOTES:
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2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.
3 ROCKER STEER OPTION ONLY.

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Electrical Schematic, Z-45/25

Perkins 104-22 Models (after serial number 22049)



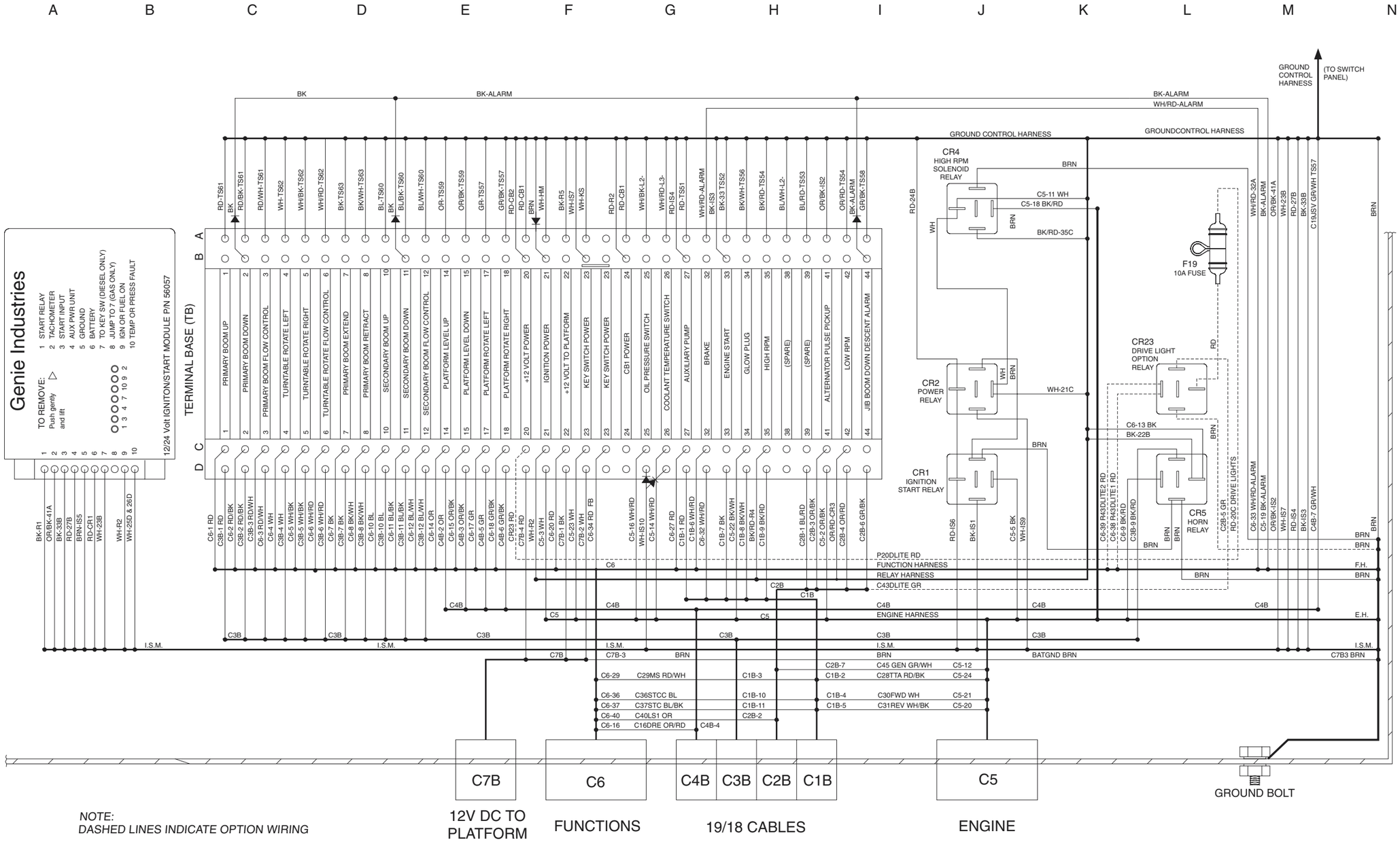
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Perkins 104-22 Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

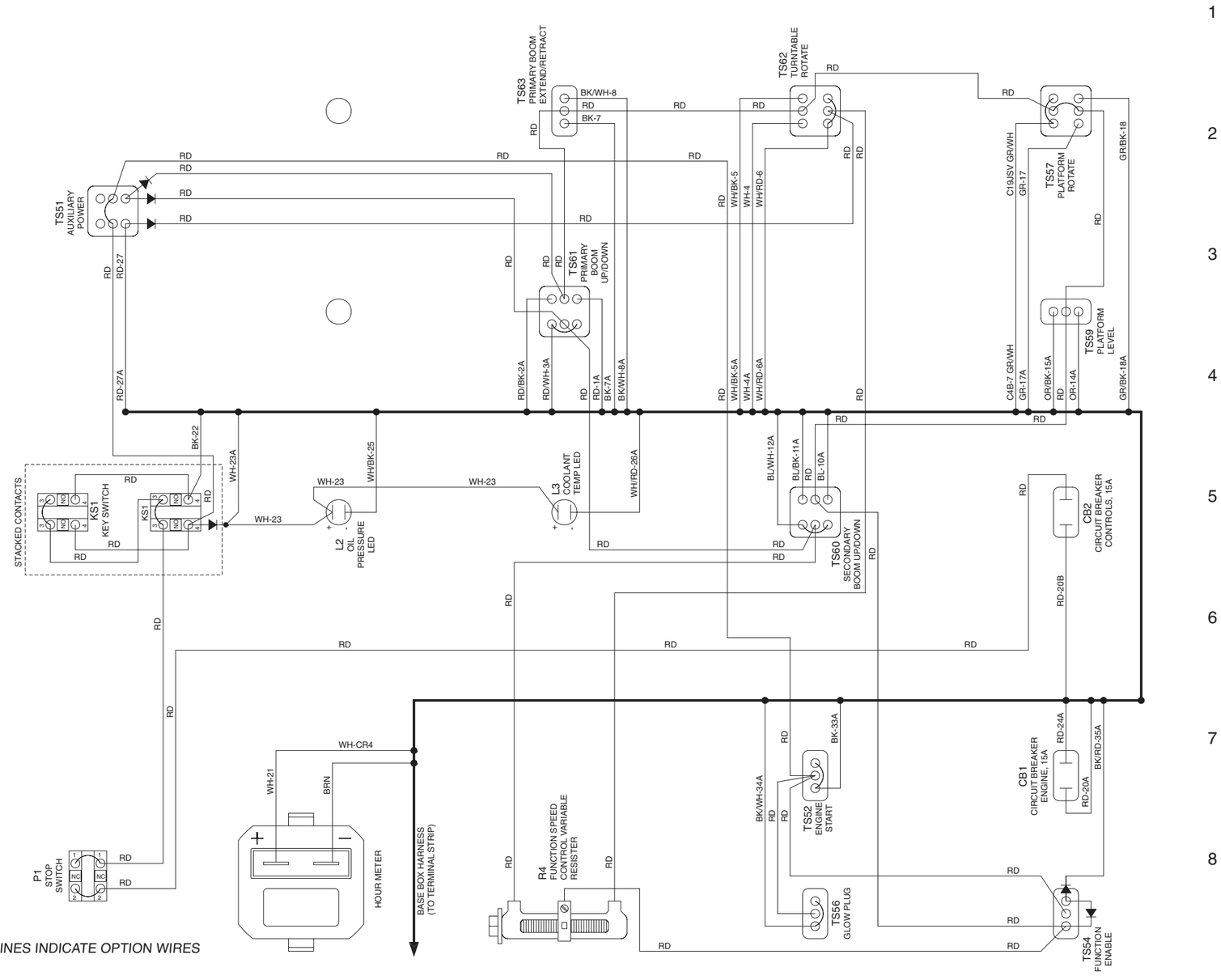
Perkins 104-22 Models (before serial number 22050)



REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

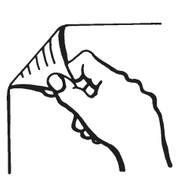
Perkins 104-22 Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Perkins 104-22 Models (before serial number 22050)



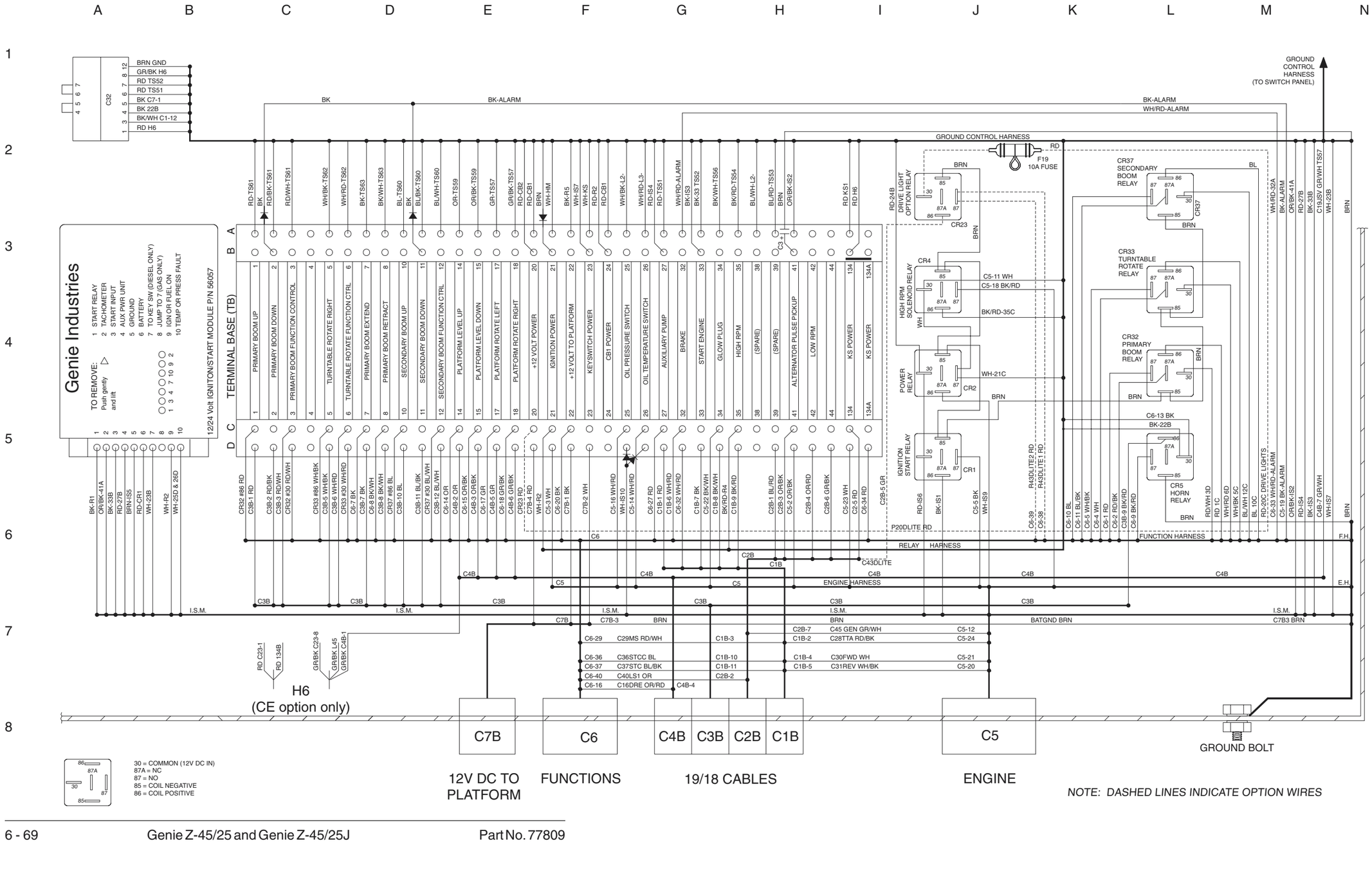
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

Perkins 104-22 Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25

REV A

Perkins 104-22 Models (after serial number 22049)

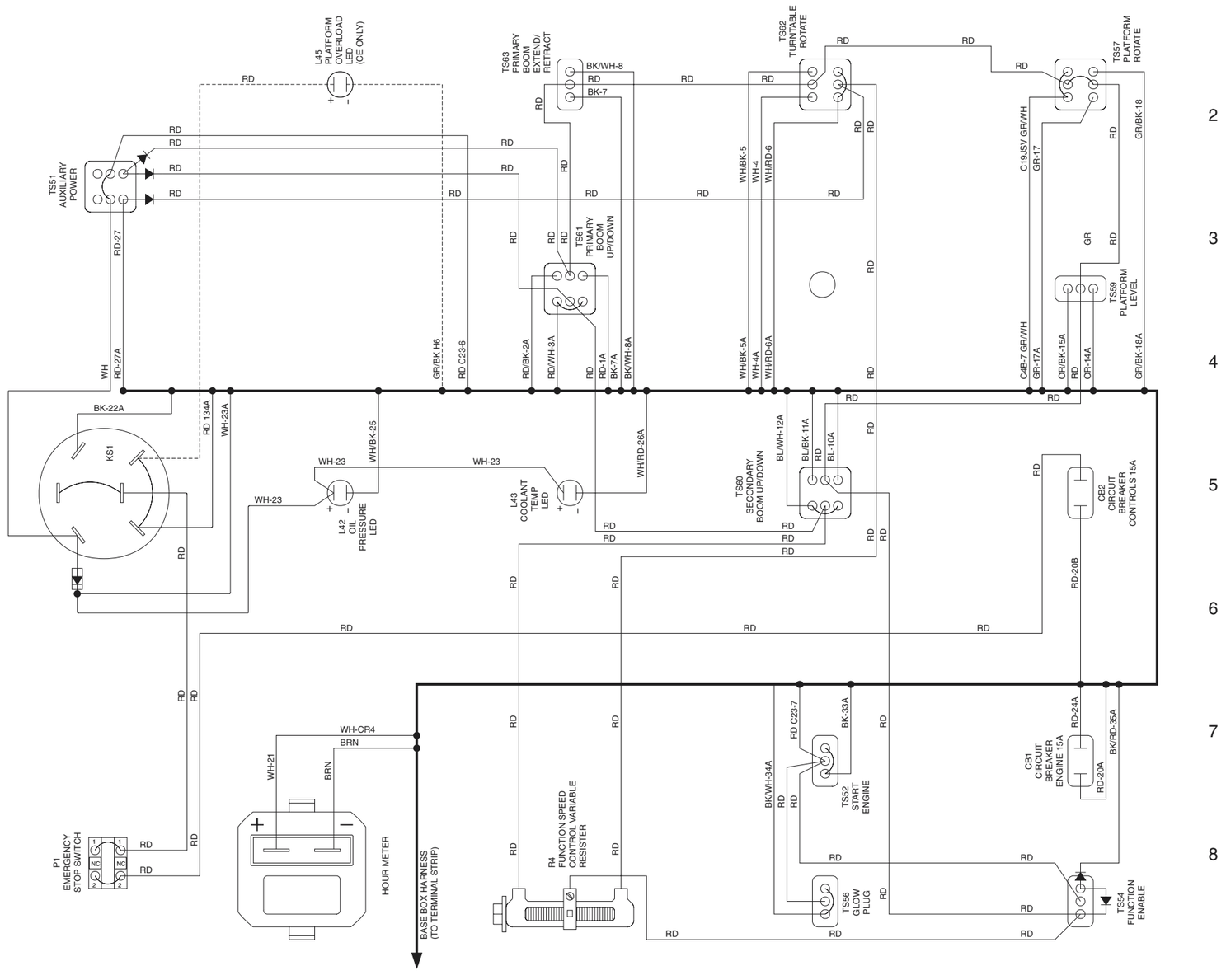


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25

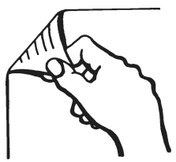
Perkins 104-22 Models (after serial number 22049)

LABEL	DESCRIPTION
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HM	HOUR METER
KS1	KEY SWITCH
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R4	SPEED LIMITING VARIABLE RESISTOR 20 OHMS
TS51	AUXILIARY POWER TOGGLE SWITCH
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TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH



Ground Control Box Switch Panel Wiring Diagram, Z-45/25

Perkins 104-22 Models (after serial number 22049)



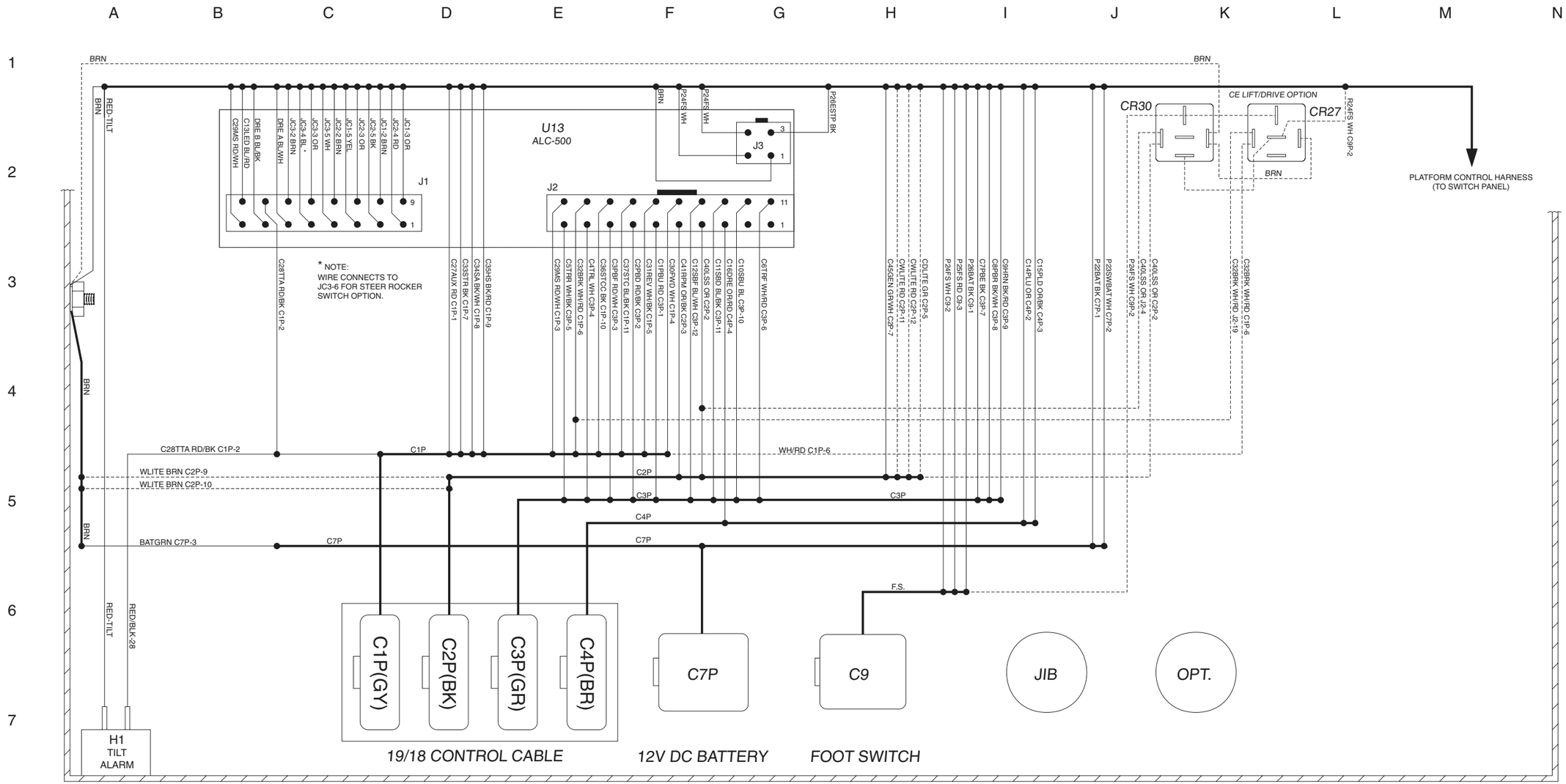
Platform Control Box Wiring Diagram, Z-45/25

Perkins 104-22 Models (before serial number 22050)

Platform Control Box Wiring Diagram, Z-45/25

REV A

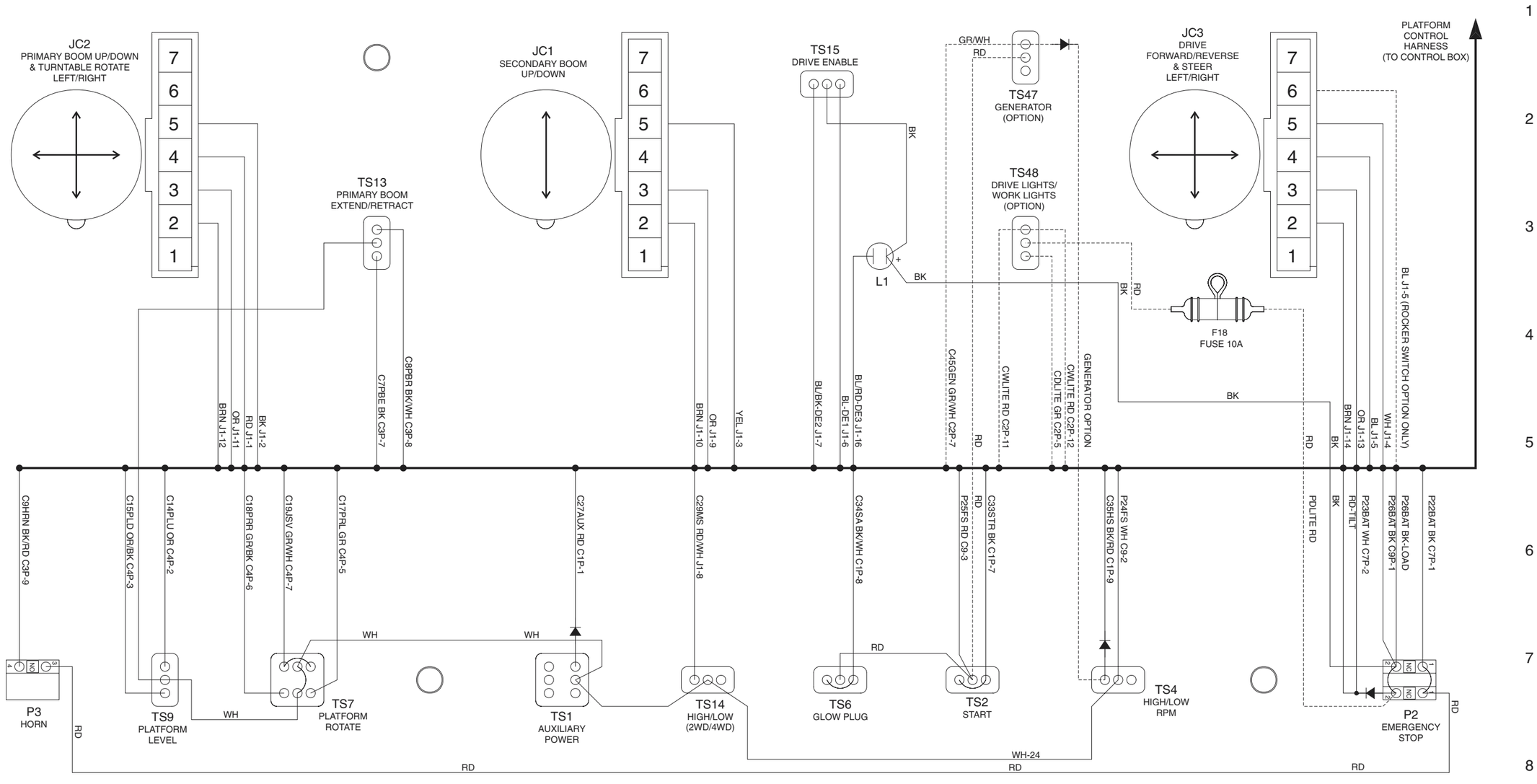
Perkins 104-22 Models (before serial number 22050)



REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

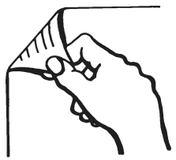
Perkins 104-22 Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Perkins 104-22 Models (before serial number 22050)



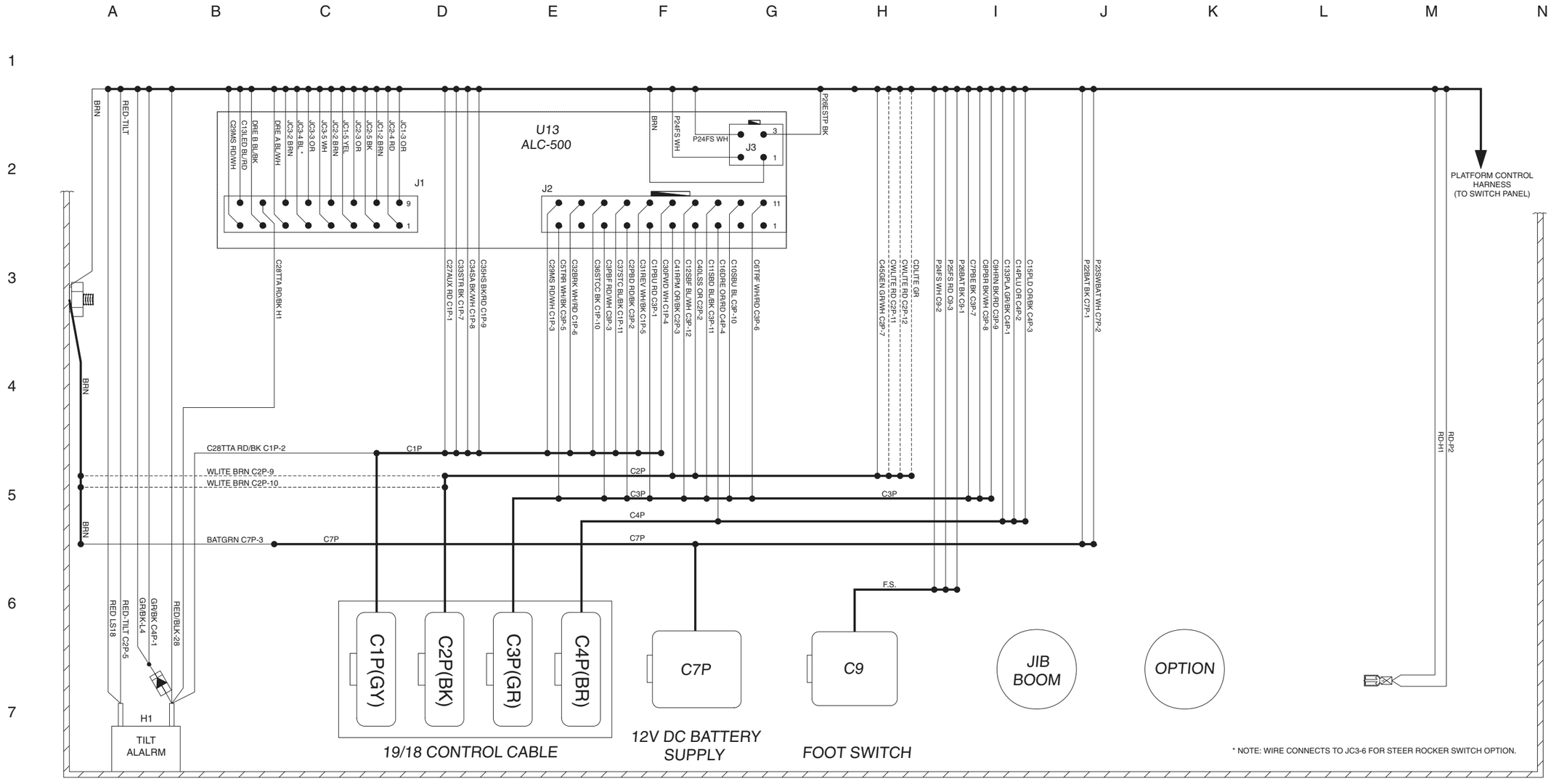
Platform Control Box Wiring Diagram, Z-45/25

Perkins 104-22 Models (after serial number 22049)

Platform Control Box Wiring Diagram, Z-45/25

REV A

Perkins 104-22 Models (after serial number 22049)

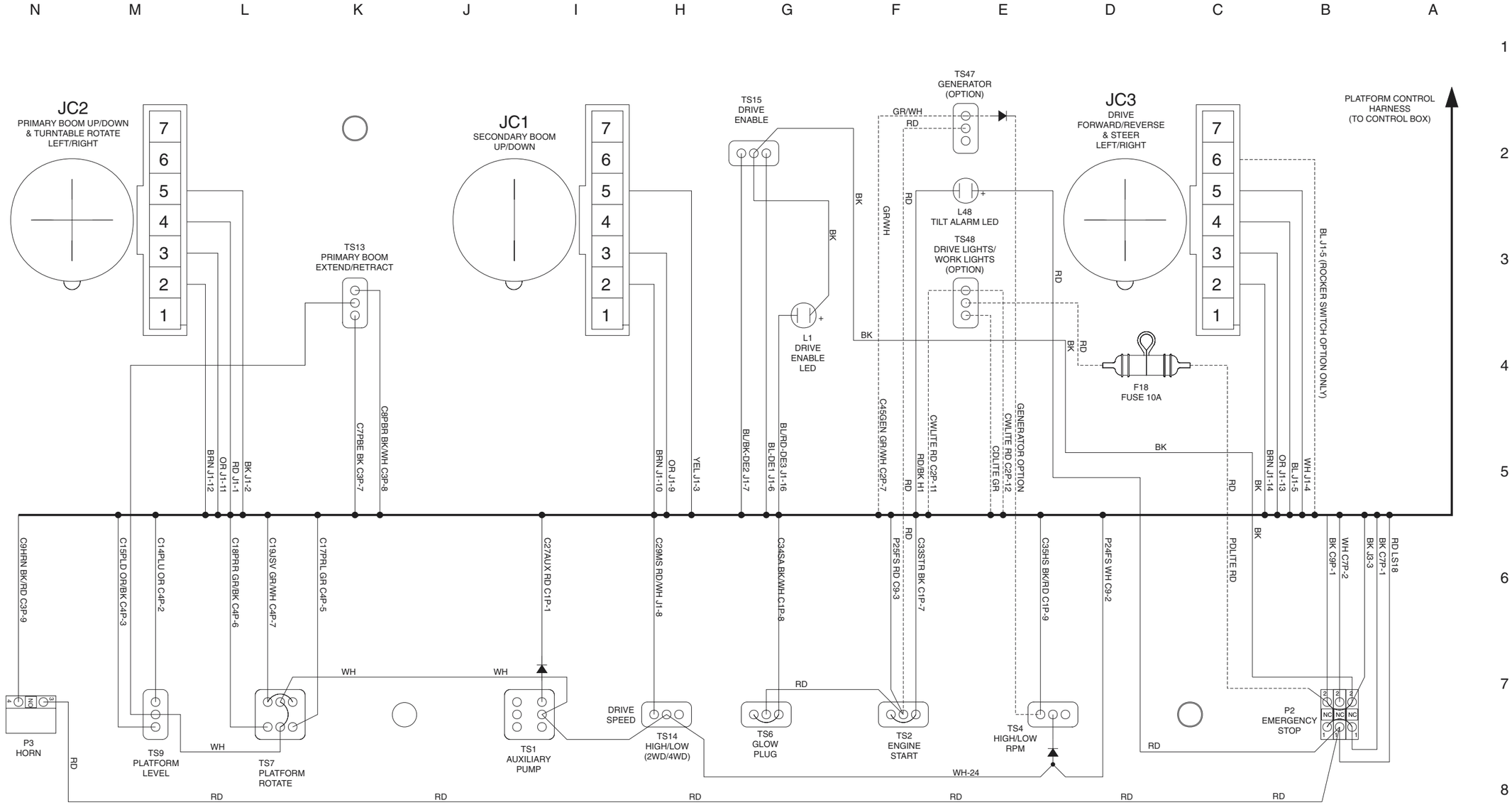


ITEM	DESCRIPTION
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C9	FOOT SWITCH CONNECTOR
C1P - C4P	48 PIN CONNECTOR BLOCK
U13	ALC-500 CONTROL BOARD
J1	CONTROL BOARD INPUT CONNECTOR
J2	CONTROL BOARD OUTPUT CONNECTOR
J3	CONTROL BOARD POWER CONNECTOR

REV A

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

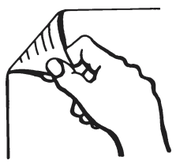
Perkins 104-22 Models (after serial number 22049)

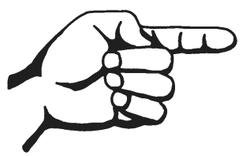


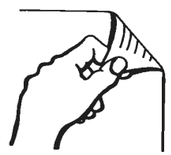
NOTE:
DASHED LINES INDICATE OPTION WIRES

Platform Control Box Switch Panel Wiring Diagram, Z-45/25

Perkins 104-22 Models (after serial number 22049)



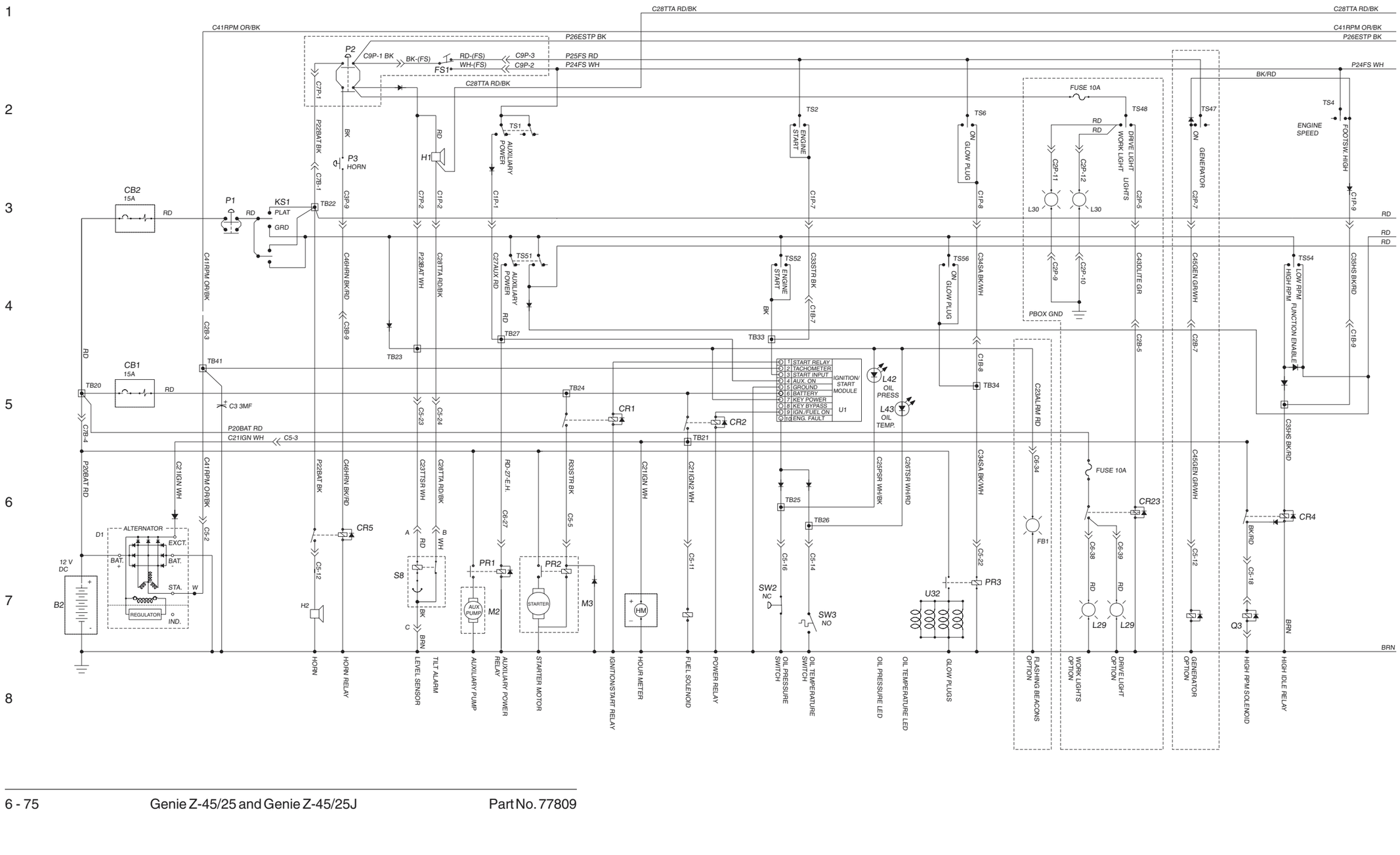




Electrical Schematic, Z-45/25J

REV A

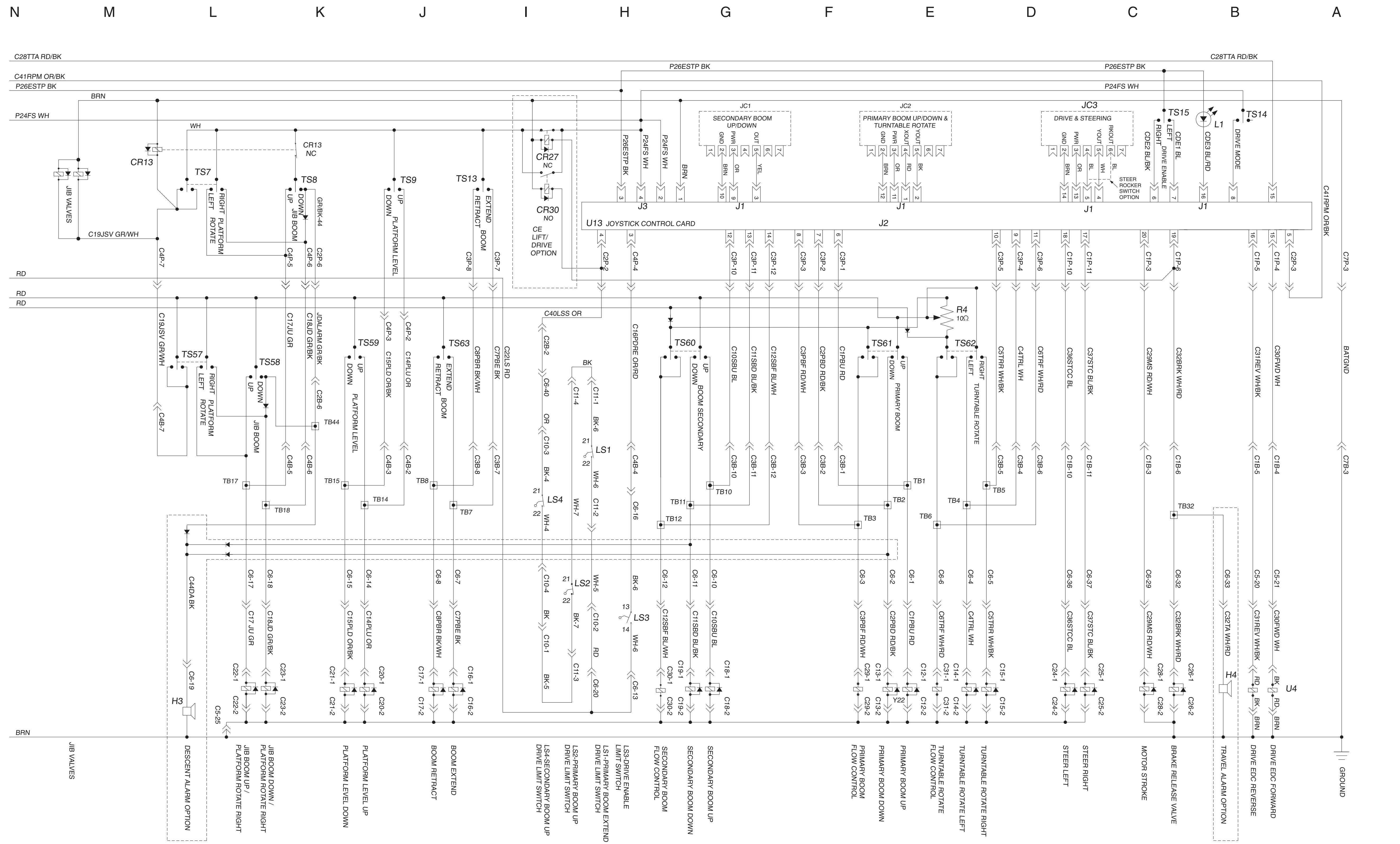
Perkins 104-22 Models (before serial number 22050)



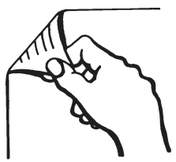
REV A

Electrical Schematic, Z-45/25J

Perkins 104-22 Models (before serial number 22050)



Electrical Schematic, Z-45/25J
Perkins 104-22 Models (before serial number 22050)



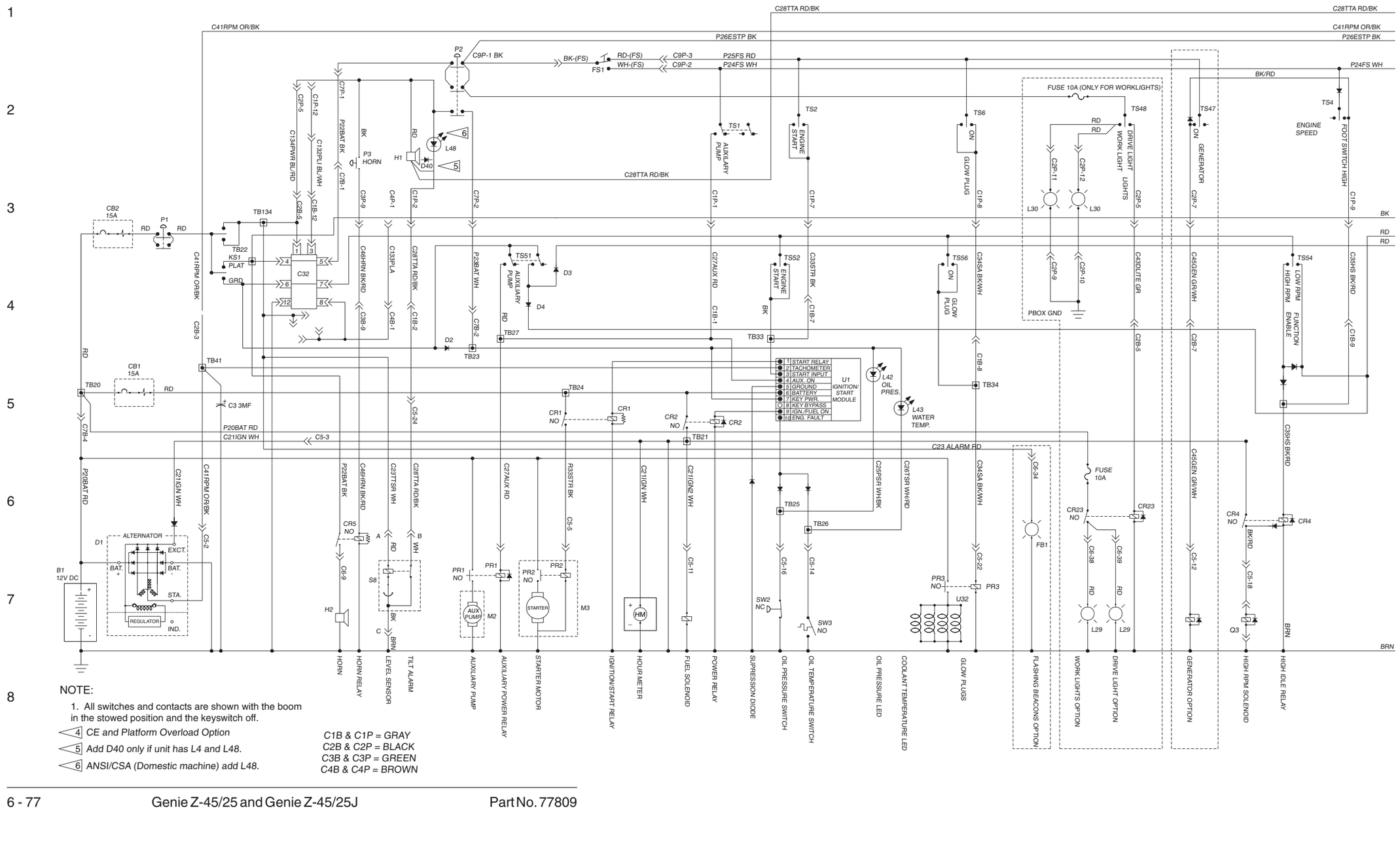




Electrical Schematic, Z-45/25J

REV A

Perkins 104-22 Models (after serial number 22049)



NOTE:

1. All switches and contacts are shown with the boom in the stowed position and the keyswitch off.

4 *CE and Platform Overload Option*

5 *Add D40 only if unit has L4 and L48.*

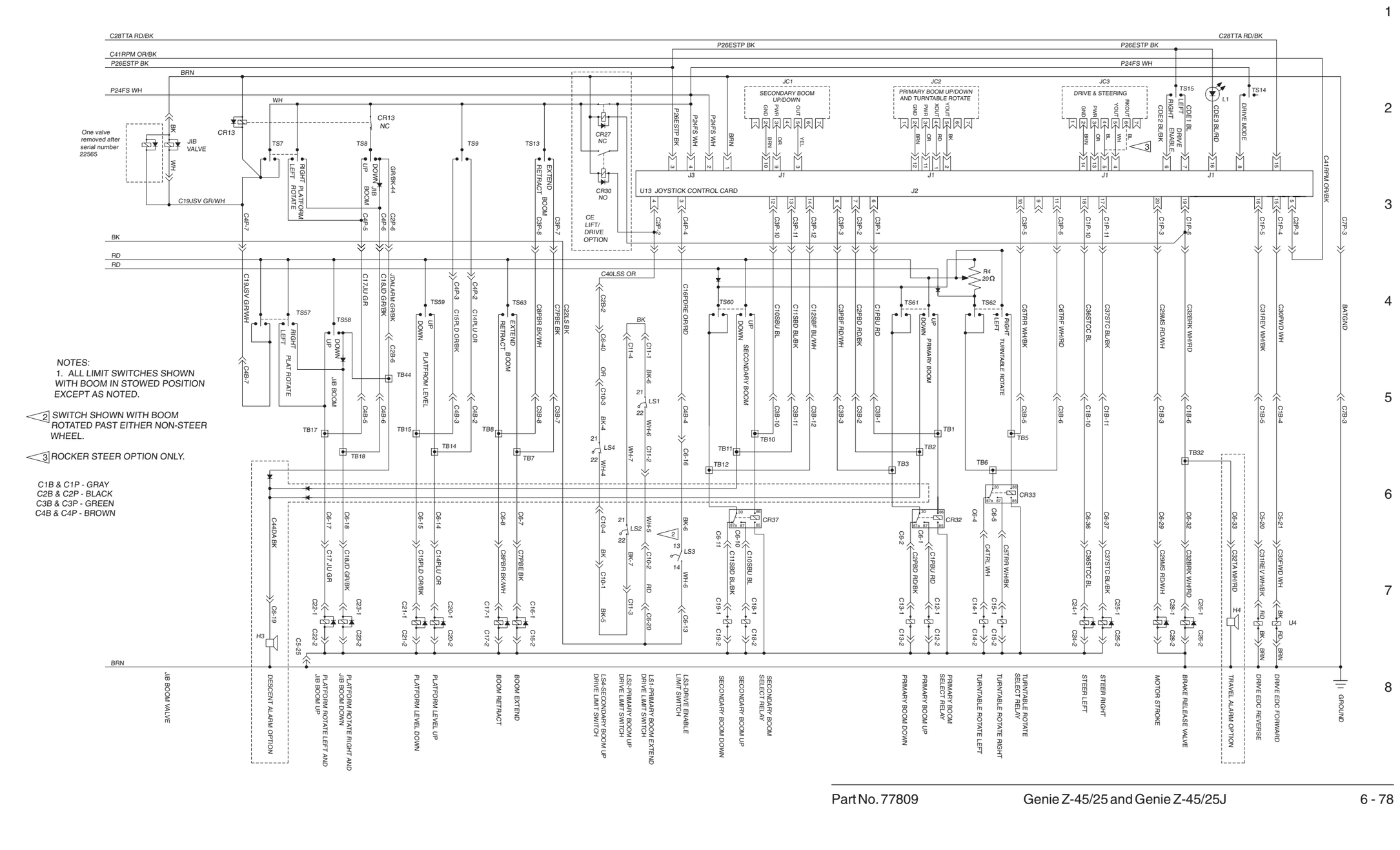
6 *ANSI/CSA (Domestic machine) add L48.*

C1B & C1P = GRAY
C2B & C2P = BLACK
C3B & C3P = GREEN
C4B & C4P = BROWN

REV A

Electrical Schematic, Z-45/25J

Perkins 104-22 Models (after serial number 22049)



NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.

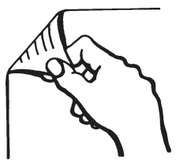
2 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 ROCKER STEER OPTION ONLY.

C1B & C1P - GRAY
C2B & C2P - BLACK
C3B & C3P - GREEN
C4B & C4P - BROWN

Electrical Schematic, Z-45/25J

Perkins 104-22 Models (after serial number 22049)



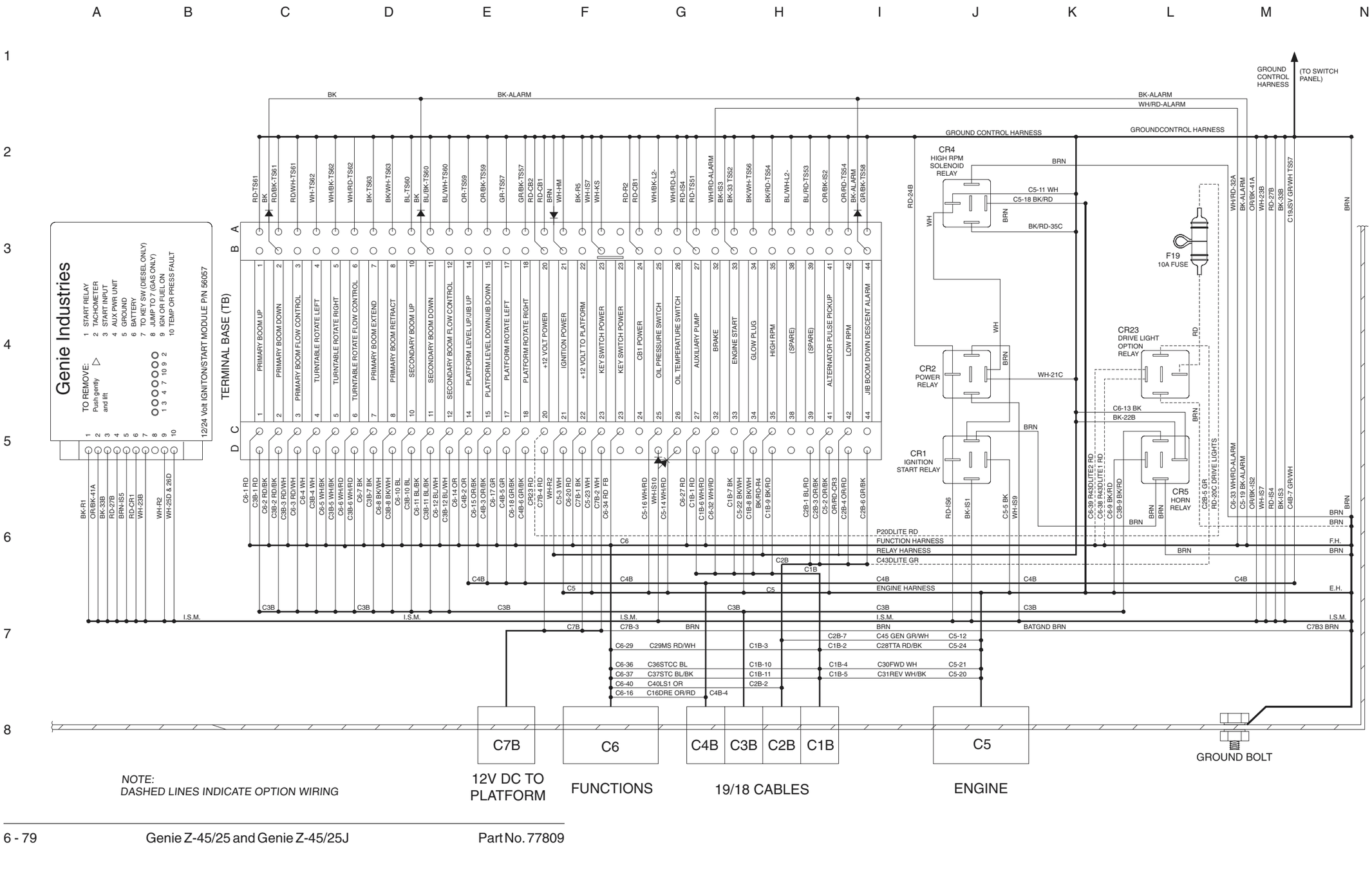
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Perkins 104-22 Models (before serial number 22050)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

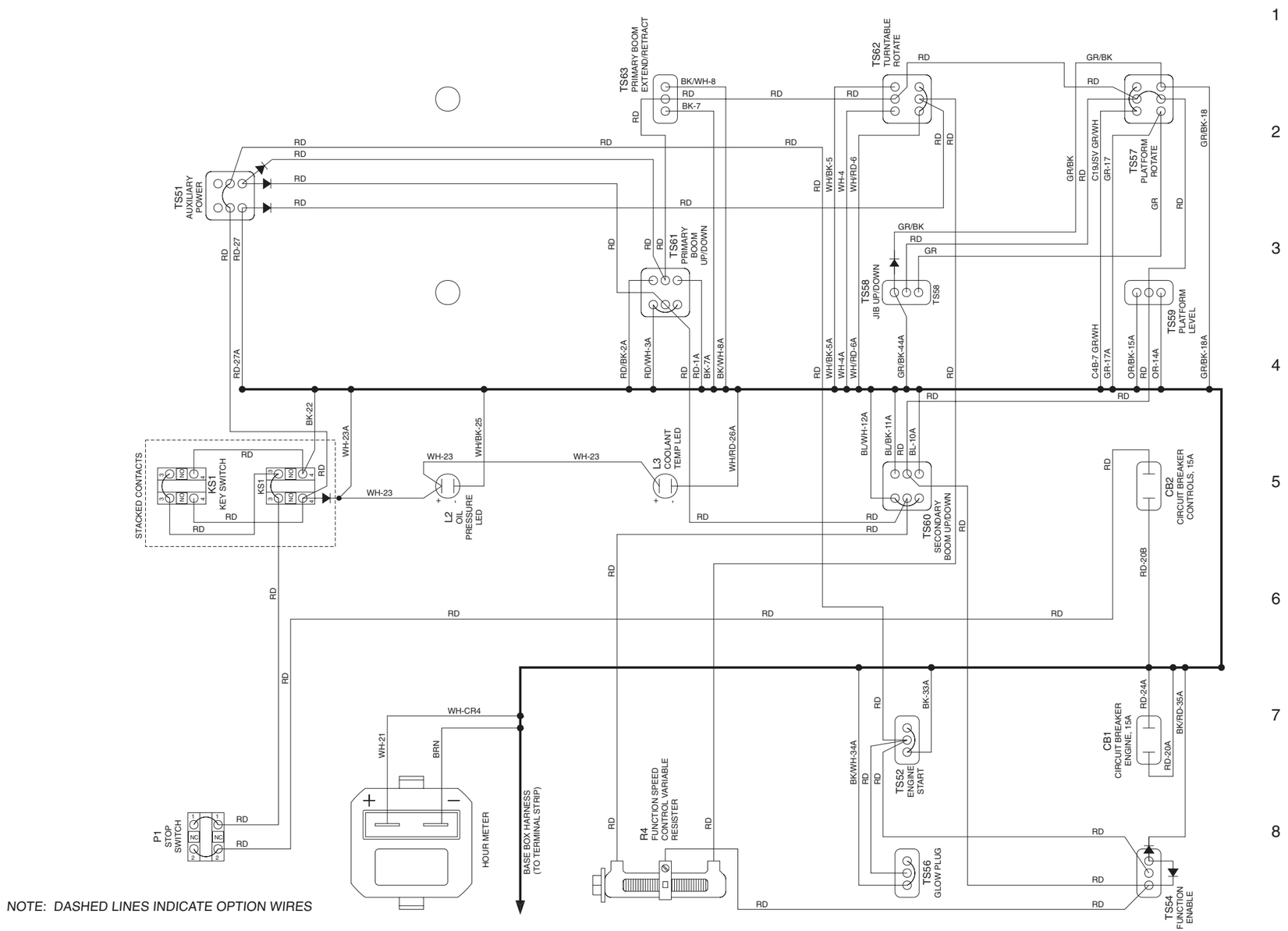
Perkins 104-22 Models (before serial number 22050)



REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

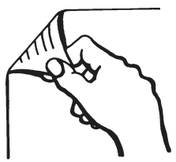
Perkins 104-22 Models (before serial number 22050)



NOTE: DASHED LINES INDICATE OPTION WIRES

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Perkins 104-22 Models (before serial number 22050)



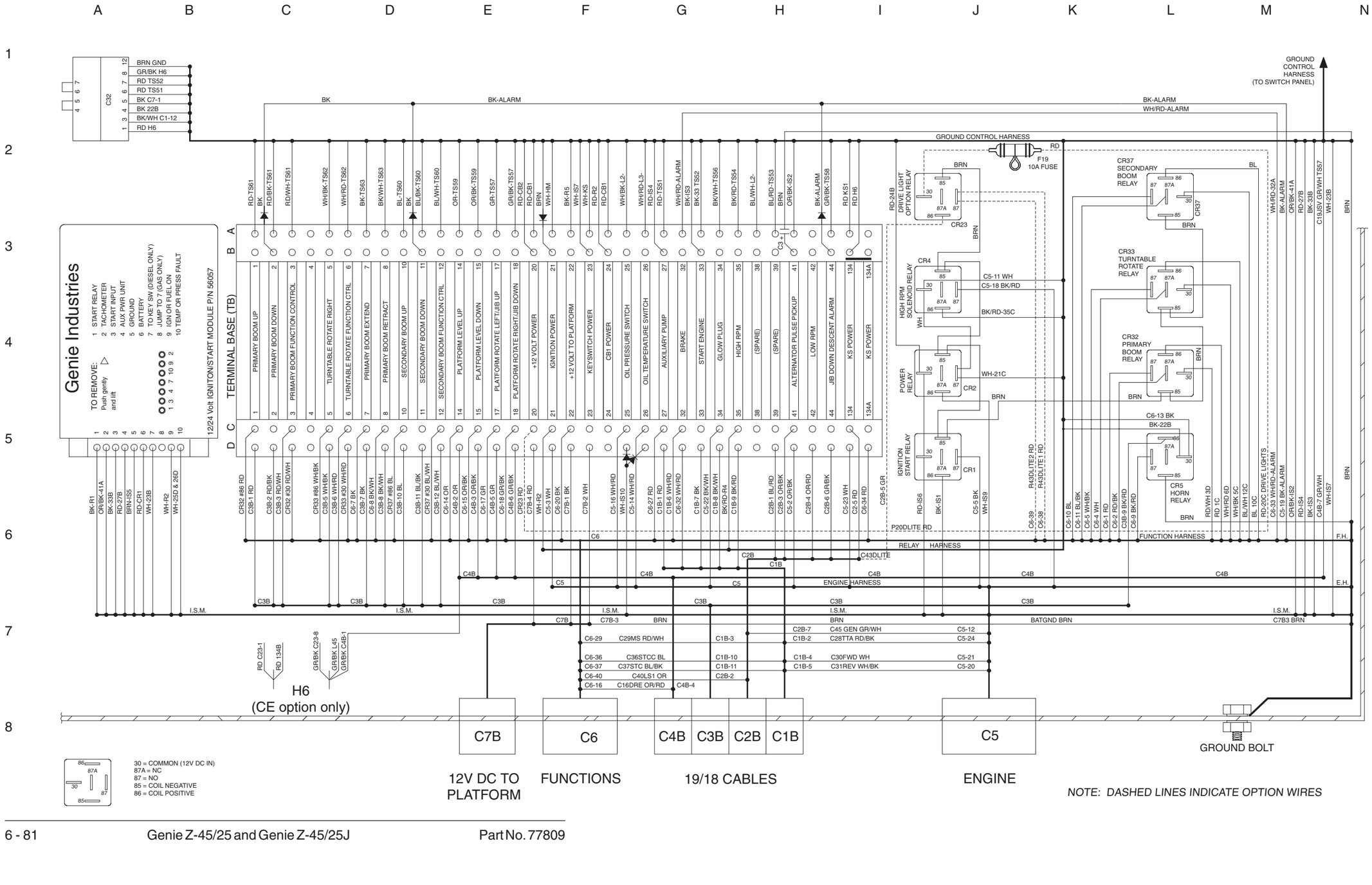
Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

Perkins 104-22 Models (after serial number 22049)

Ground Control Box Terminal Strip Wiring Diagram, Z-45/25J

REV A

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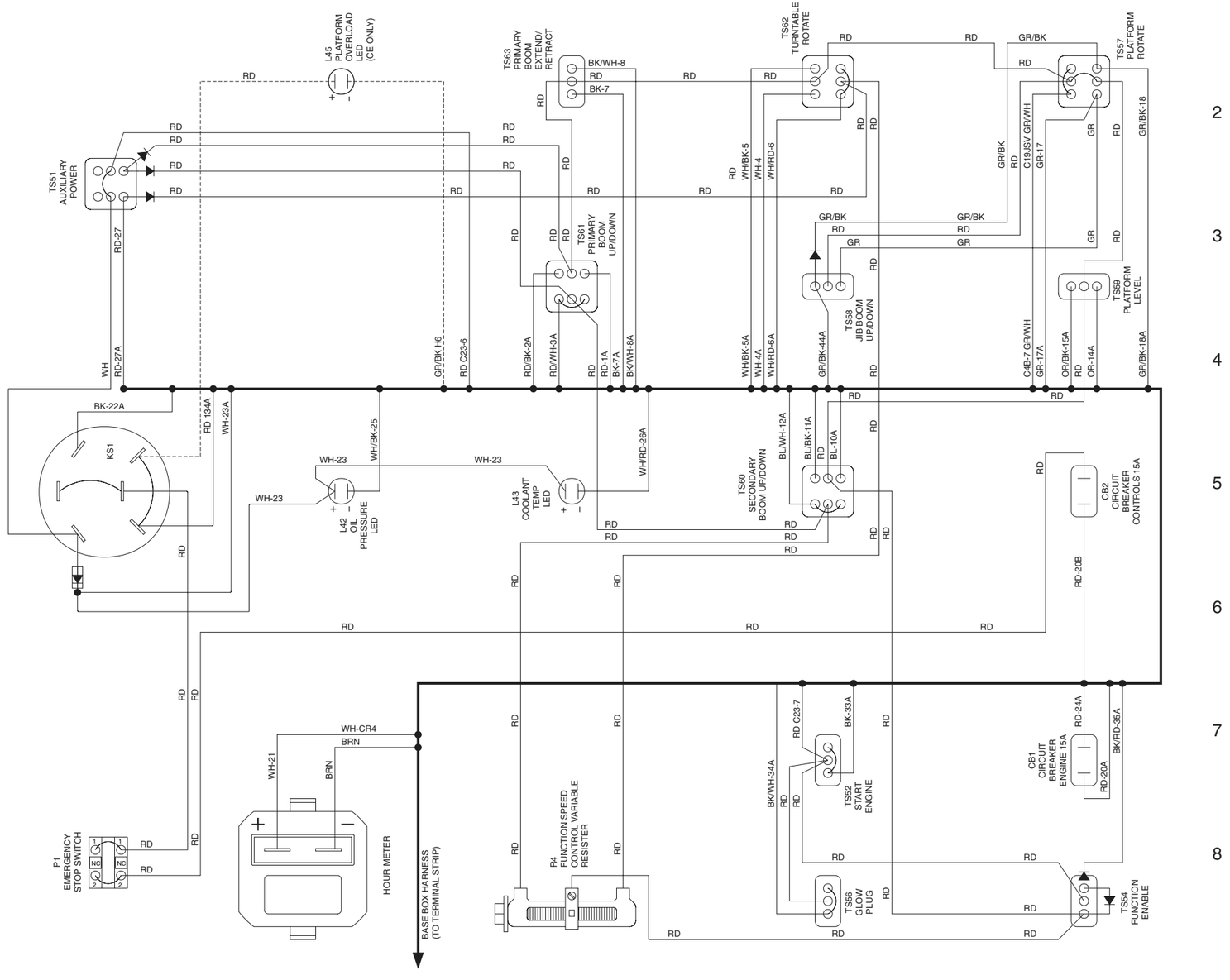


REV A

Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Perkins 104-22 Models (after serial number 22049)

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TS63	PRIMARY BOOM EXTEND/RETRACT TOGGLE SWITCH



Ground Control Box Switch Panel Wiring Diagram, Z-45/25J

Perkins 104-22 Models (after serial number 22049)



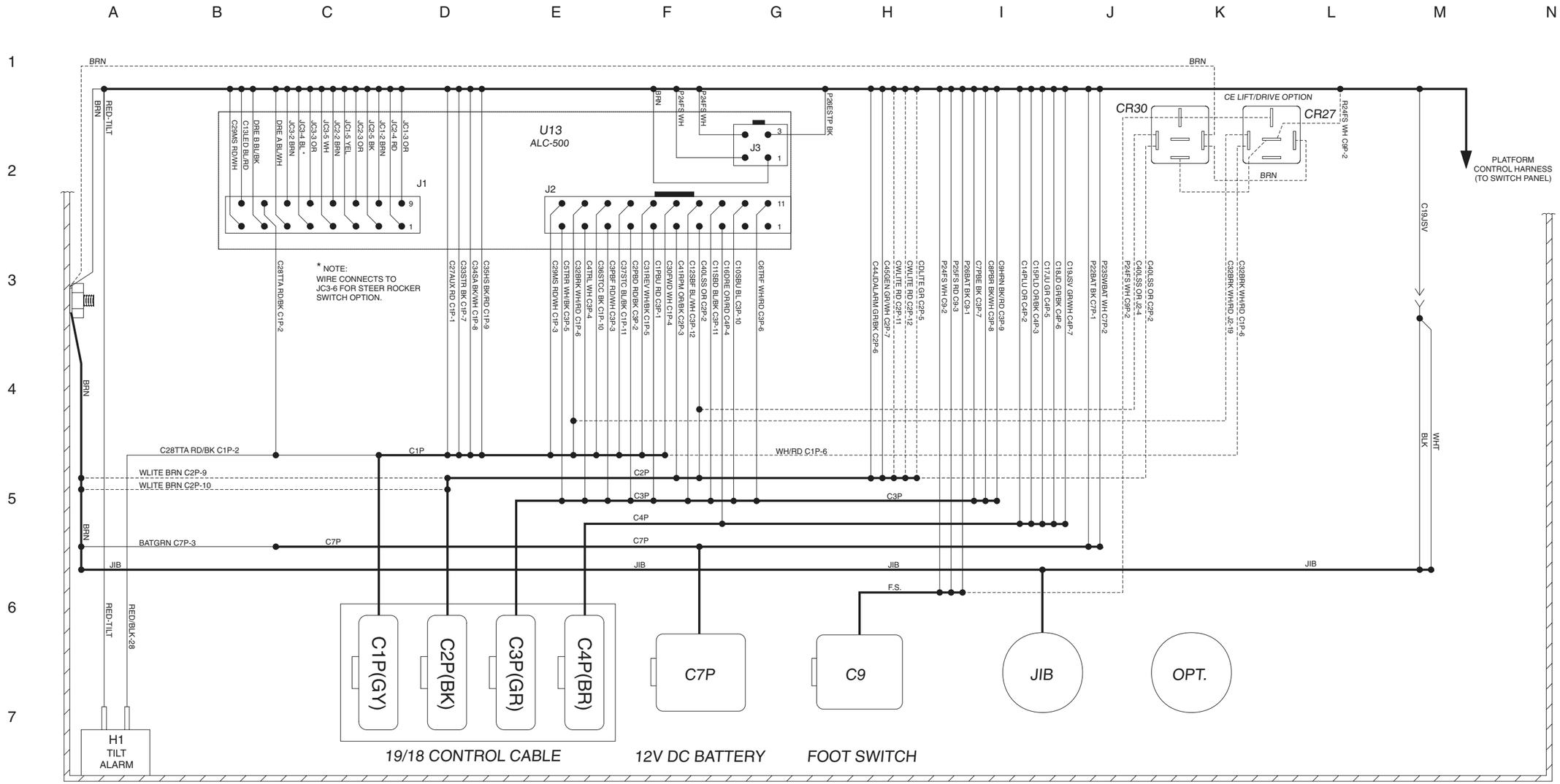
Platform Control Box Wiring Diagram, Z-45/25J

Perkins 104-22 Models (before serial number 22050)

Platform Control Box Wiring Diagram, Z-45/25J

REV A

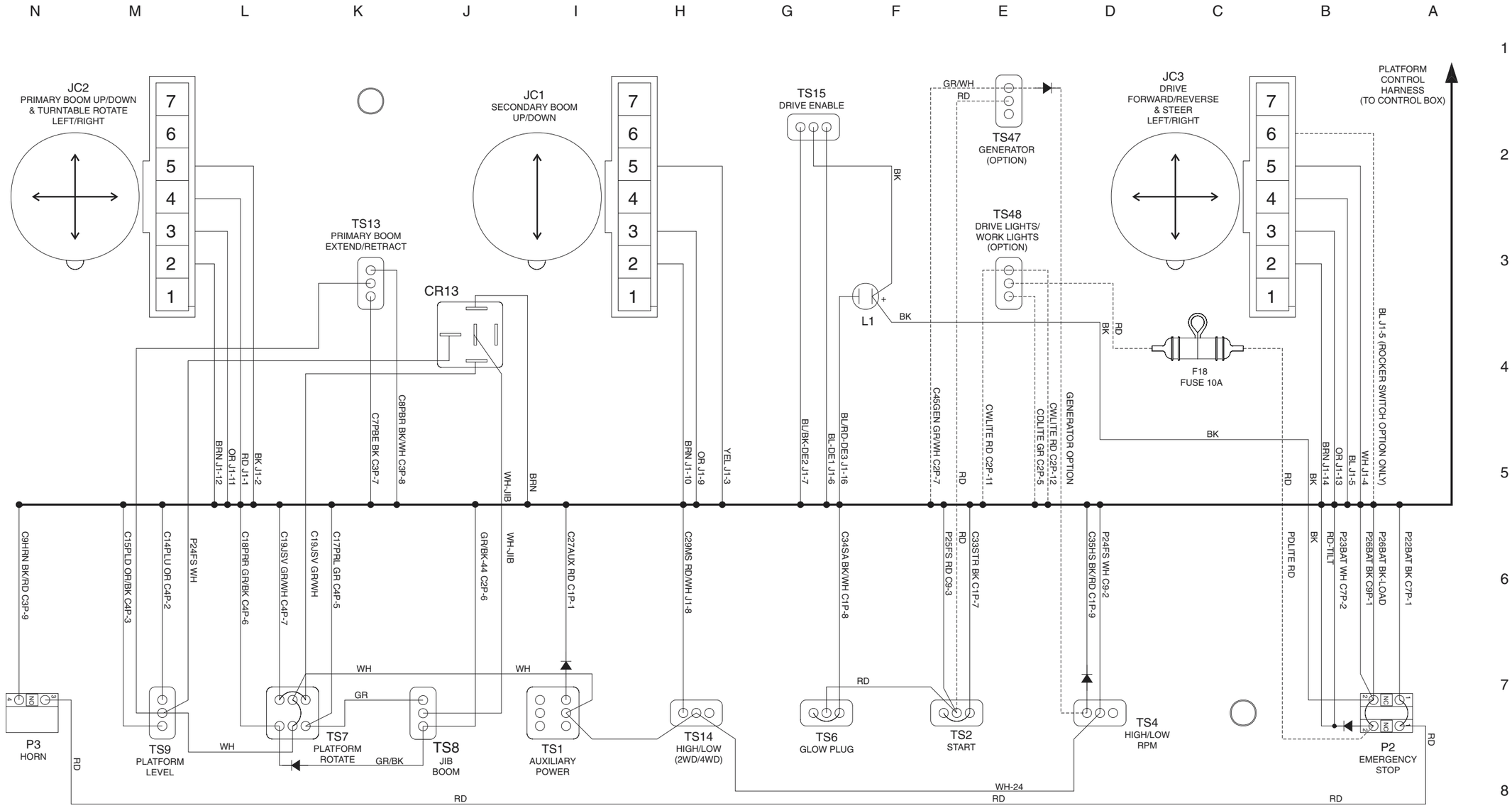
Perkins 104-22 Models (before serial number 22050)



REV A

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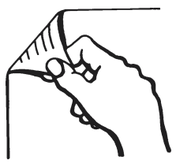
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Platform Control Box Switch Panel Wiring Diagram, Z-45/25J

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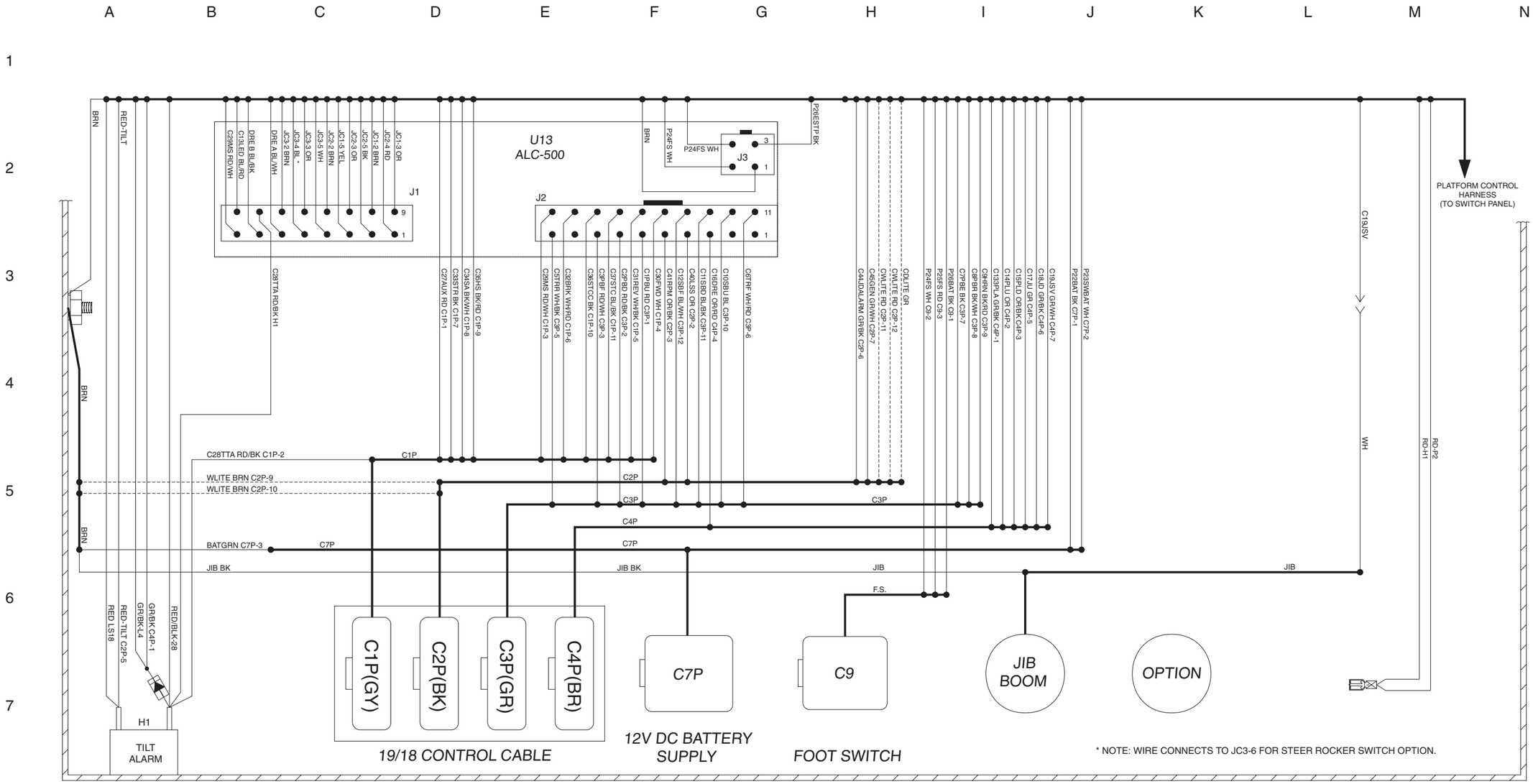
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Platform Control Box Wiring Diagram, Z-45/25J

REV A

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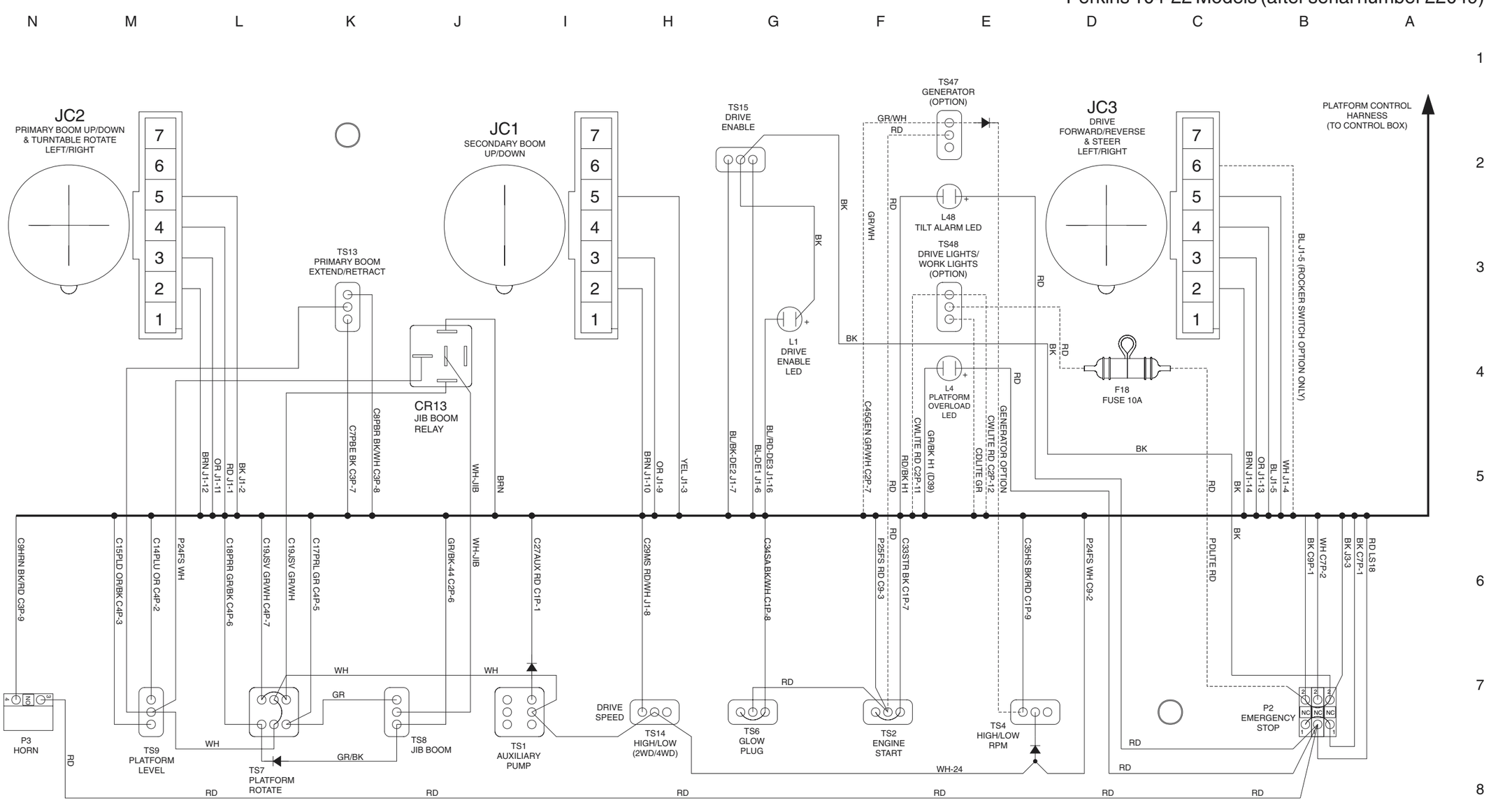


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REV A

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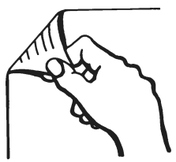
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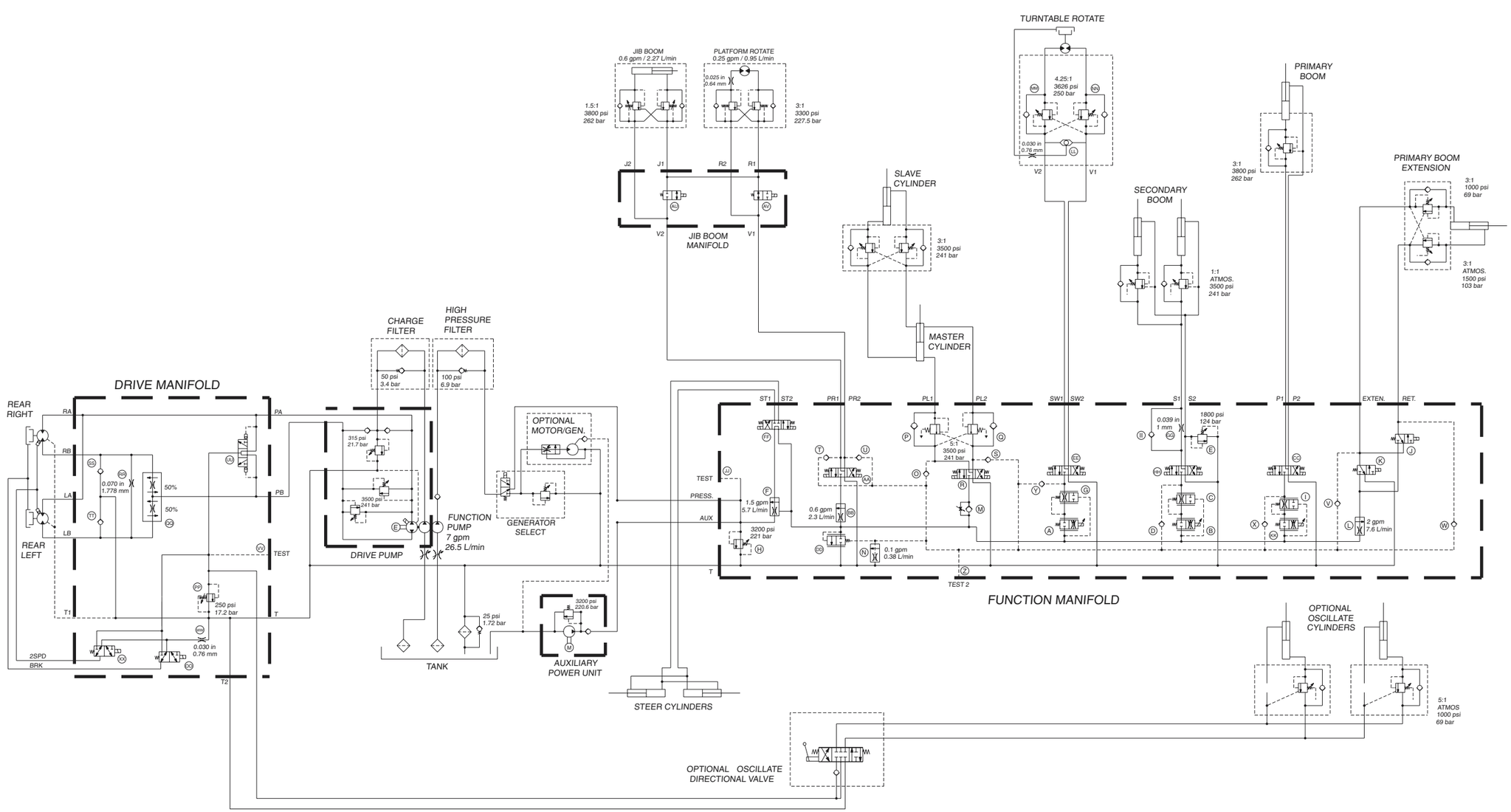
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REV A

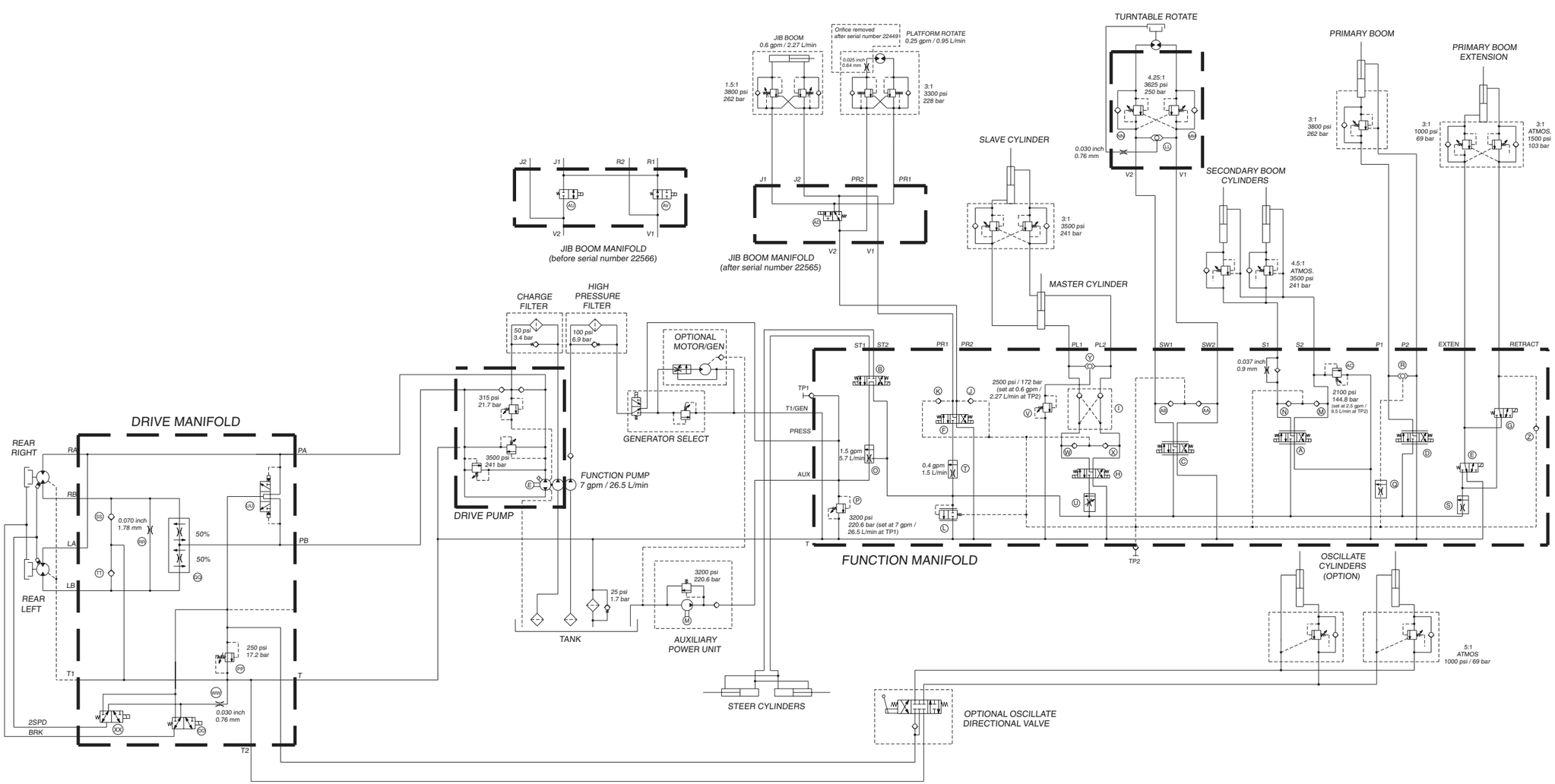
Hydraulic Schematic, 2WD Models
(before serial number 22050)



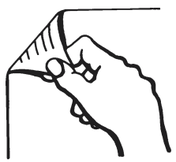
Hydraulic Schematic, 2WD Models
(before serial number 22051)

REV B

Hydraulic Schematic, 2WD Models
(after serial number 22049)

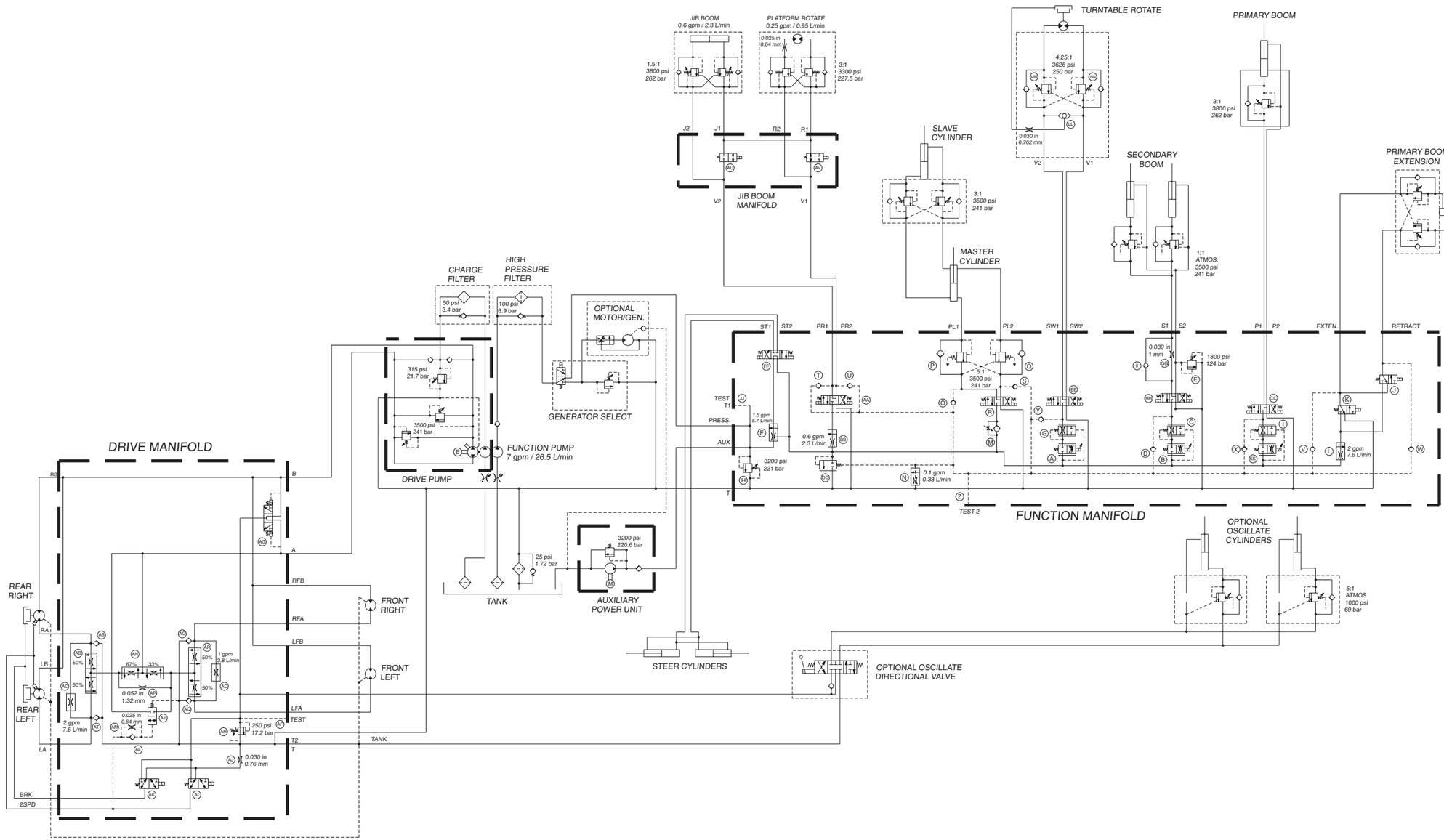


Hydraulic Schematic, 2WD Models
(after serial number 22050)



REV A

Hydraulic Schematic, 4WD Models
(before serial number 22050)



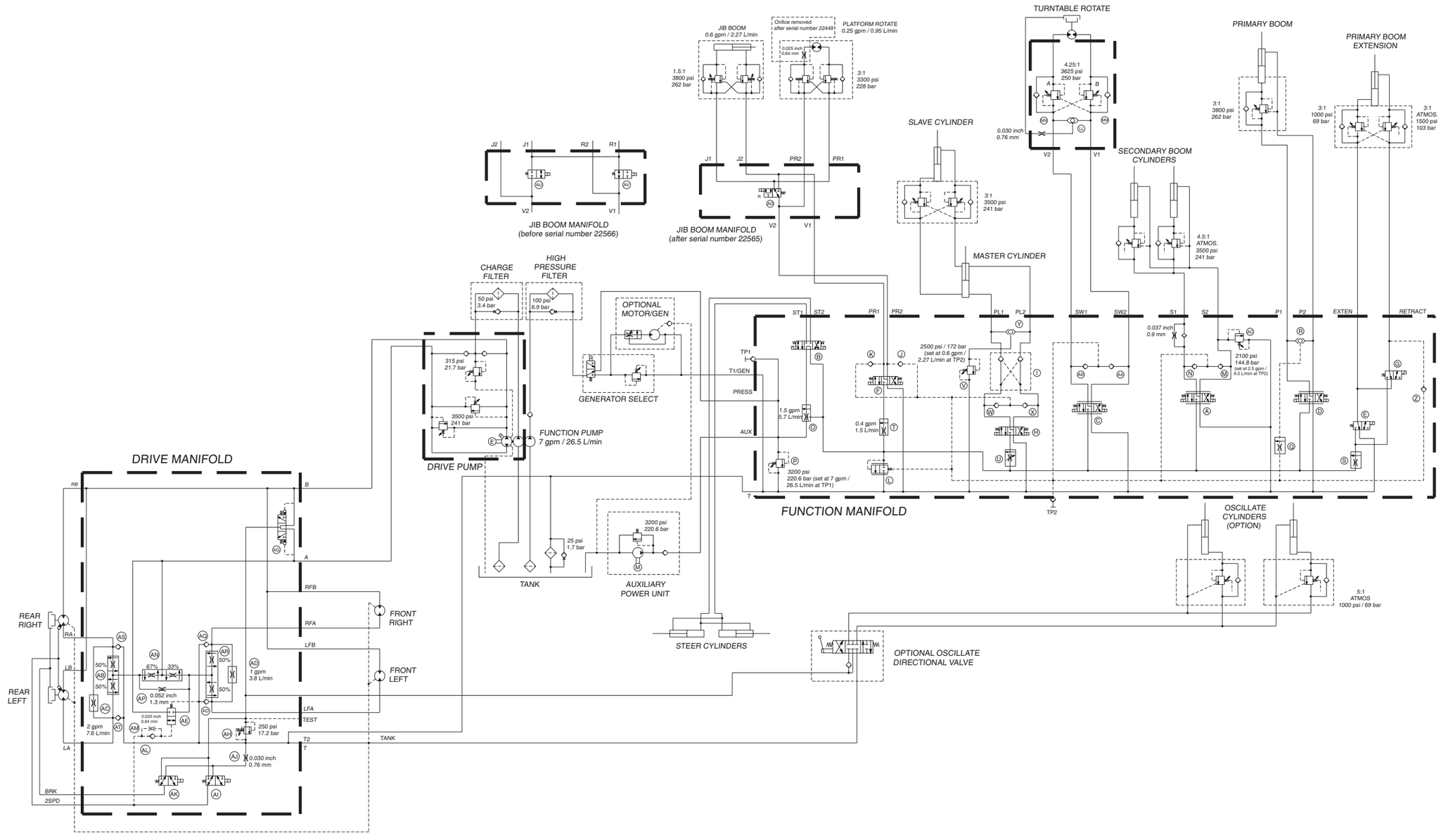
Hydraulic Schematic, 4WD Models
(before serial number 22340)

REV B

Hydraulic Schematic, 4WD Models
(after serial number 22049)

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

1 2 3 4 5 6 7 8



Hydraulic Schematic, 4WD Models
(after serial number 22339)

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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