Genie®
A TEREX BRAND

Service Manual

Serial Number Range

Z-45/25
Z-45/25J
Bi-Energy Power

from Z452507-31015
to Z452507A-34010

from Z452507A-34011
to Z452510A-39313

Part No. 237061
Rev A1
March 2013

Introduction

Important

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

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

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

Compliance

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

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

Technical Publications

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

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

Contact Us:

http://www.genielift.com
e-mail: awp.techpub@terex.com

Serial Number Information

Genie offers the following Service Manuals for these models:

Title	Part No.
Z-45/25 Bi-Energy and Z-45/25J Bi-Energy Service Manual, Second Edition (before serial number 23236)	106488
Z-45/25 Bi-Energy and Z-45/25J Bi-Energy Service Manual, Third Edition (from serial number 23236 to 31014)	110188
Z-45/25 Bi-Energy and Z-45/25J Bi-Energy Service Manual, Fifth Edition (from serial number Z452510A-39314)	237062

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Fourth Edition, First Printing

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Printed in U.S.A.

Revision History

Revision	Date	Section	Procedure / Schematic Page / Description
A	12/2012		New release
A1	3/2013	Cover	Update serial break information

REFERENCE EXAMPLES:

Kubota Engine_Section 2_Specifications.
A-6,B-3,C-7_Section 3_Maintenance Procedure.
3-2, 6-4, 9-1_Section 4_Repair Procedure.
Fault Codes_Section 5.
6-35, 6-56, 6-104_Section 6_Schematic Page #.

Electronic Version

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

REVISION HISTORY, CONTINUED

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Fault Codes_Section 5.
6-35, 6-56, 6-104_Section 6_Schematic Page #.

Electronic Version

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

Serial Number Legend

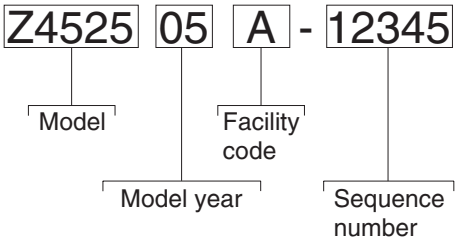
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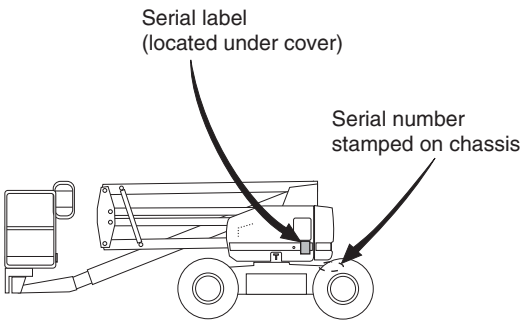
Model: Z-45/25
Serial number: Z452512A-12345
Model year: 2005 **Manufacture date:** 04/12/05
Electrical schematic number: ESXXXX
Machine unladen weight:

Rated work load (including occupants): XXX lb / XXX kg
Maximum number of platfrm occupants: X
Maximum allowable side force : XXX lb / XXX N
Maximum allowable inclination of the chassis:
0 deg
Maximum wind speed : XX mph/ XX m/s
Maximum platform height : XX ft / XX m
Maximum platform reach : XX ft / XX m
Gradeability: N/A
Country of manufacture: USA
This machine complies with:

Terex South Dakota, Inc.
18340 NE 76th St.
PO Box 97030
Redmond, WA 98052
USA

PN - 77055





Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate operator's manual on your machine 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.

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 Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.



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



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

Workplace Safety



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



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



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



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



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



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

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Specifications

Machine Specifications

Tires and wheels	
Wheel diameter	14.5 inches
Wheel width	7 inches
Wheel lugs	9 @ 5/8 -18
Lug nut torque (lubricated) (dry)	 83 ft-lbs 112.5 Nm 110 ft-lbs 149 Nm
Tire size	9-14.5 LT
Tire ply rating	Tread 8 Sidewall 6
Tire contact area	43.5 sq in 280 sq cm
Overall tire diameter	28 in 71 cm

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

Fluid capacities	
Fuel tank	9 gallons 34.1 liters
Hydraulic tank	8 gallons 30.3 liters
Hydraulic system (including tank)	11 gallons 41.6 liters
Drive hubs (refer to tag on drive hub to determine type)	
EW1 type	17 fl oz 0.51 liter
W1 type	23 fl oz 0.68 liter
Drive hub oil type:	EP 80-90W gear oil API service classification GL5

Batteries	
Type	6V DC
Group	L-16
Quantity	8
Capacity	350 AH
Reserve capacity @ 25A rate	750 minutes

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SPECIFICATIONS

Performance Specifications

Drive speeds, maximum	
Drive speed, stowed	3 mph 4.8 km/h 40 ft/9 sec 12.2 m/9 sec
Drive speed, boom raised or extended	0.6 mph 1 km/h 40 ft/45 sec 12.2 m/45 sec
Braking distance, maximum	
High range on paved surface	5 to 7 ft 1.5 to 2 m
Gradeability	See Operator's Manual

Boom function speeds, maximum from platform controls	
Jib boom up, Z-45/25J	33 to 39 seconds
Jib boom down, Z-45/25J	22 to 28 seconds
Primary boom up	32 to 40 seconds
Primary boom down	26 to 30 seconds
Secondary boom up	38 to 46 seconds
Secondary boom down	38 to 46 seconds
Primary boom extend	14 to 18 seconds
Primary boom retract	17 to 21 seconds
Turntable rotate, 355° primary boom retracted	95 to 125 seconds
Platform rotate, 180°, Z-45/25	6 to 10 seconds
Platform rotate, 160°, Z-45/25J	6 to 10 seconds

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Hydraulic Specifications

Hydraulic Oil Specifications	
Hydraulic oil type	Chevron Rando HD MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200
Cleanliness level, minimum	15/13
Water content, maximum	200 ppm

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

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

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

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

Note: Use Shell Tellus S2 V46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

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

Function pump	
Type:	Fixed displacement gear pump
Displacement	0.183 cu in 3 cc
Flow rate	2.1 gpm 7.9 L/min
Hydraulic tank return filter	10 micron with 25 psi / 1.7 bar bypass

Function manifold	
System relief valve pressure	3200 psi 220.6 bar
Secondary boom down relief valve pressure	2100 psi 138 bar
Platform level flow regulator	0.6 gpm 2.27 L/min
Jib boom/platform rotate flow regulator	0.4 gpm 1.5 L/min

Auxiliary pump	
Type:	fixed displacement gear pump
Displacement	0.5 gpm 1.9 L/min

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SPECIFICATIONS

Manifold Component Specifications

Plug torque	
SAE No. 2	36 in-lbs / 4 Nm
SAE No. 4	10 ft-lbs / 13 Nm
SAE No. 6	14 ft-lbs / 19 Nm
SAE No. 8	38 ft-lbs / 51 Nm
SAE No. 10	41 ft-lbs / 55 Nm
SAE No. 12	56 ft-lbs / 76 Nm

Valve Coil Resistance Specification	
Description	**Specification**
Solenoid valve, 3 position 4 way, 20V DC (schematic items B, C, D, E, F and H)	25 to 29 Ω
Solenoid valve, 2 position 3 way, 20V DC (schematic items A, K, S and AA)	25 to 29 Ω
Proportional solenoid valve, 24V DC (schematic item I)	17 to 21 Ω

Machine Torque Specifications

Platform rotator	
3/4 -10 center bolt, GR 8	380 ft-lbs 515 Nm
3/8 -16 bolts, GR 8	44 ft-lbs 60 Nm

Turntable rotate assembly	
Rotate bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
Drive motor/brake mounting bolts, dry	110 ft-lbs 149 Nm
Drive motor/brake mounting bolts, lubricated	80 ft-lbs 108 Nm

Drive motor and hubs	
Drive hub mounting bolts, lubricated	180 ft-lbs 244 Nm
Drive motor mounting bolts, lubricated	55 ft-lbs 75 Nm

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SPECIFICATIONS

Kubota Z482-E2B Engine

Displacement	29.23 cu in 0.48 liters
Number of cylinders	2
Bore and stroke	2.64 x 2.68 inches 67 x 68 mm
Horsepower, gross intermittent	13.3 @ 3600 rpm 9.9 kW
Firing order	1 - 2
Compression ratio	23:1
Compression pressure	412 to 469 psi 28.4 to 32.3 bar
Low idle	2000 rpm
High idle	3000 rpm
Governor	centrifugal mechanical
Valve clearance, cold	0.0057 to 0.0072 in 0.145 to 0.185 mm
Engine coolant	
Capacity	2.9 quarts 2.8 liters
Lubrication system	
Oil pressure	36 to 64 psi 2.48 to 4.41 bar
Oil capacity (including filter) **Z482-E2B**	2.2 quarts 2.1 liters

Lubrication system	
Units ship with 10W-40. Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator's Manual on your machine.	
Injection system	
Injection pump make	Bosch MD
Injection timing	21° BTDC
Injection pump pressure	1991 psi 137 bar
Fuel requirement	
For fuel requirements, refer to the engine Operator's Manual on your machine.	
Starter motor	
Brush length, new	0.5188 in 13 mm
Brush length, minimum	0.3346 in 8.5 mm
Battery	
Type	12V DC, Group 70
Quantity	1
Cold cranking ampere	450A
Reserve capacity @ 25A rate	125 minutes
Alternator Output	12V DC, 150 watts
Fan belt deflection	1/4 to 3/8 inch 7 to 9 mm

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SPECIFICATIONS

Generator

Generator output with engine @ 3000 rpm	54V DC, 100A
Generator pulley to engine pulley offset, maximum	1/16 inch 1.6 mm
Belt deflection, maximum	1/4 inch 6.5 mm

Generator Torque Specifications

Generator pulley retaining nut torque	80-90 ft-lbs 108-122 Nm
Engine pulley retaining bolts	108 in-lbs 12.2 Nm
#10 screw	25 in-lbs 2.8 Nm
#10 nut	25 in-lbs 2.8 Nm
#4 nut	8-10 in-lbs 0.9-1.1 Nm
Voltage regulator mounting fasteners	25 in-lbs 2.8 Nm

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SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok™ ORFS or 37° JIC fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

Seal-Lok™ Fittings
(hose end - ORFS)

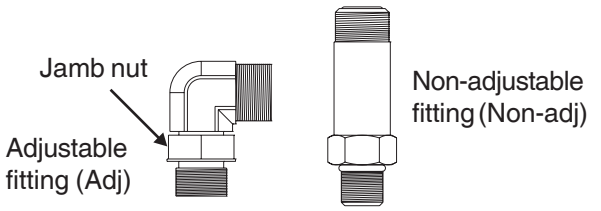
SAE Dash size	Torque
-4	10 ft-lbs / 13.6 Nm
-6	30 ft-lbs / 40.7 Nm
-8	40 ft-lbs / 54.2 Nm
-10	60 ft-lbs / 81.3 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 245 Nm

JIC 37° Fittings
(swivel nut or hose connection)

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

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

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



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

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

SPECIFICATIONS

SAE FASTENER TORQUE CHART

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

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

METRIC FASTENER TORQUE CHART

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

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

Scheduled Maintenance Procedures



Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, six months, annually and every 2 years as specified on the *Maintenance Inspection Report.*

⚠WARNING Failure to properly complete each inspection when required may cause death, serious injury or substantial machine damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Use only Genie approved replacement parts.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Turntable secured with the turntable rotation lock
  - Key switch in the off position with the key removed
  - Wheels chocked
  - All external AC power disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend



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

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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



Indicates that tools will be required to perform this procedure.



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



Indicates that a cold motor, pump or engine will be required to perform this procedure.



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



Indicates that dealer service will be required to perform this procedure.

Maintenance Schedule

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

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

Maintenance Inspection Report

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

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

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

Make copies of this form to use for each Pre-Delivery Preparation.

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

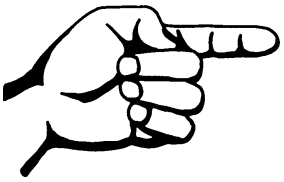
Inspector company

Genie
A TEREX BRAND

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

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

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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

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

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

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist A		Y	N	R
A-1	Pre-operation inspection			
A-2	Function tests			
A-3	Generator belts and pulleys			
Perform after 50 hours:				
A-4	30 Day Service			
Perform every 50 hours:				
A-5	Perform engine maintenance			
Perform every 75 hours:				
A-6	Perform engine maintenance			
Perform every 100 hours:				
A-7	Grease rotation bearing			
A-8	Perform engine maintenance			
Perform every 150 hours:				
A-9	Perform engine maintenance			
Perform every 200 hours:				
A-10	Perform engine maintenance			

Checklist B		Y	N	R
B-1	Radiator			
B-2	Exhaust system			
B-3	Batteries			
B-4	Electrical wiring			
B-5	Lug nut torque			
B-6	Brake configuration			
B-7	Drive hub oil level			
B-8	Engine RPM			
B-9	Ground control override			
B-10	Platform leveling			
B-11	Engine idle select			
B-12	Drive brakes			
B-13	Drive speed - stowed			
B-14	Drive speed - raised			
B-15	Alarm package (if equipped)			
B-16	Electrical contactors			
B-17	Hydraulic oil analysis			
Perform every 400 hours:				
B-18	Perform engine maintenance			

Checklist C		Y	N	R
C-1	Perform engine maintenance			
C-2	Grease platform overload (if equipped)			
C-3	Test platform overload (if equipped)			
Perform every 800 hours:				
C-4	Perform engine maintenance			

MAINTENANCE INSPECTION REPORT

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this page 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 D	**Y**	**N**	**R**
D-1 Boom wear pads			
D-2 Free-wheel configuration			
D-3 Drive hub oil			
D-4 Hydraulic return filter			
D-5 Calibrate platform overload system (if equipped)			
D-6 Turntable bearing bolts			
D-7 Turntable bearing wear			
Perform every 1500 hours:			
D-8 Perform engine maintenance			

Checklist E	**Y**	**N**	**R**
E-1 Hydraulic oil			
E-2 Wheel bearings			
E-3 Perform engine maintenance			
Perform every 3000 hours:			
E-4 Perform engine maintenance			

Checklist A Procedures

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 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 Operator's Manual on your machine.

CHECKLIST A PROCEDURES

A-3
Check the Generator Belts and Pulleys

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

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

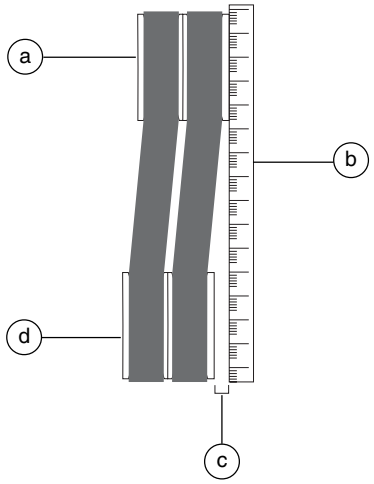
⚠CAUTION Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

Note: Charging the batteries with the engine does not fully charge the batteries. Periodically, use the AC battery charger to fully charge the batteries.

1 Be sure that all fasteners and cables on the generator are tight.

2 Be sure that the pulley mounting fasteners are tight and that the pulleys show no signs of damage or unusual wear.

3 Check to be sure the engine pulley and the generator pulley are aligned within specification using a straightedge. Refer to Section 2, *Specifications*.



a engine pulley
b straightedge
c maximum pulley offset
d generator pulley

Note: If alignment does not meet specification, refer to Repair Procedure 6-3, *How to Install the Engine Drive Pulley* to adjust the pulley alignment.

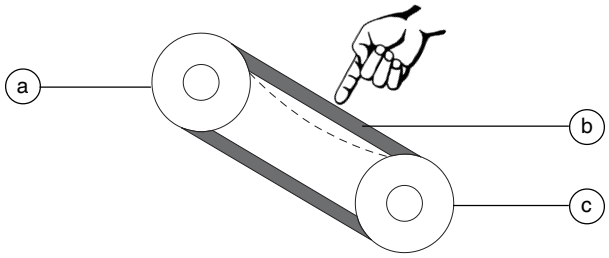
4 Inspect the generator belts for:

- Cracking
- Glazing
- Separation
- Breaks

5 Replace both belts if any damage is found.

6 Check the generator belts for proper tension. Refer to Section 2, *Specifications*.

Note: If the belt deflection is not within specification, see repair procedure 7-2, *How to Adjust the Generator Belts.*



a engine pulley
b generator belts
c generator pulley

7 Check the torque of the pulley retaining nut on the generator. Refer to Section 2, S*pecifications*.

A-4
Perform 30 Day Service



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

1 Perform the following maintenance procedures:

- B-5 Check the Lug Nut Torque (including tires and wheels)
- D-4 Replace the Hydraulic Tank Return Filter
- D-6 Check the Turnable Rotation Bearing Bolts

CHECKLIST A PROCEDURES

A-5
Perform Engine Maintenance



Note: Engine specifications require that this procedure be performed after the first 50 hours.

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

Required maintenance procedures and additional engine information are available in the *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Engine oil
- Engine oil filter

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

A-6
Perform Engine Maintenance



Note: Engine specifications require that this procedure be performed every 75 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Engine oil

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

A-7
Grease the Turntable Rotation Bearing and Rotate Gear

Note: 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 near the ground control box.

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-8
Perform Engine Maintenance

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

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

Required maintenance procedures and additional engine information are available in the *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Air filter
- Fuel filter
- Fan belt

Note: The air filter must be replaced at every sixth cleaning or 600 hours, whichever comes first.

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

CHECKLIST A PROCEDURES

A-9
Perform Engine Maintenance



Note: Engine specifications require that this procedure be performed every 150 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Engine oil filter

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

A-10
Perform Engine Maintenance



Note: 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Radiator hoses and clamps
- Air intake hose

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

Checklist B Procedures

B-1
Check the Radiator



Maintaining the radiator in good condition is essential for good engine performance. Operating a machine with a damaged or leaking radiator may result in engine damage. Also, restricting air flow through the radiator (i.e., dirt or debris) will affect the performance of the cooling system. A frequent check allows the inspector to identify changes in the condition of the radiator that might indicate cooling system problems.

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

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

1 Remove the engine pivot plate latch retainer.

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

3 Inspect the radiator for leaks and physical damage.

4 Clean the radiator fins of debris and foreign materials.

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

6 Install the engine pivot plate latch retainer.

B-2
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 Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

1 Remove the engine pivot plate latch retainer.

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

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.

CHECKLIST B PROCEDURES

B-3
Check the Batteries



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

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

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

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

1 Put on protective clothing and eye wear.

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

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

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

4 Fully charge the battery. Allow the battery to rest 24 hours before performing this procedure to allow the battery cells to equalize.

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

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

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

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 +/- 0.007. The battery is fully charged. Proceed to step 10.

⊠ Result: One or more battery cells display a specific gravity of 1.269 or below. Proceed to step 7.

7 Perform an equalizing charge OR fully charge the batteries and allow the battery to rest at least 6 hours.

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

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

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

⊙ Result: All battery cells display a specific gravity of 1.277 +/- 0.007. The battery is fully charged. Proceed to step 10.

⊠ Result: One or more battery cells display a specific gravity from 1.269 to 1.218. The battery is still usable, but at a lower performance so will need to be recharged more often. Proceed to step 11.

⊠ Result: One or more battery cells display a specific gravity from 1.217 to 1.173. The battery is approaching the end of its life. Proceed to step 11.

⊠ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is 1.172 or less. Replace the battery.

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

11 Install the vent caps and neutralize any electrolyte that may have spilled.

B-4
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/burn hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Open the engine side turntable cover.

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

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

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

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

- Power units
- Inside of the ground control box
- Generator and power units
- Engine wiring harness

CHECKLIST B PROCEDURES

5 Open the ground controls side turntable cover.

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

- Inside of the ground control box
- Hydraulic manifold wiring

7 Inspect for a liberal coating of dielectric grease at the following location:

- All wire harness connectors to the ground control box

8 Raise the secondary boom until the mid-pivot is approximately 10 feet / 3 m off the ground.

9 Remove the center turntable cover.

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

11 Install the center turntable cover.

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

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

- Cable track on the primary, jib and secondary booms
- Jib boom to platform cable harness
- Inside of the platform control box

14 Inspect for a liberal coating of dielectric grease at the following location:

- All wire harness connectors to the platform control box

B-5
Check the Tires, Wheels and Lug Nut Torque



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

⚠ DANGER Tip over hazard. The tires on this machine are foam-filled and are essential to machine stability and safe machine operation. Using an air-filled tire on this machine can compromise machine stability and will cause the machine to tip over.

Note: The tires on this machine are foam-filled and do not need air added to them.

1 Check the tire surface and sidewalls for cuts, cracks, punctures and unusual wear.

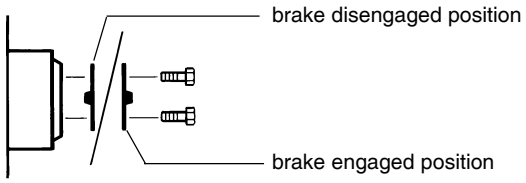
2 Check each wheel for damage, bends and cracked welds.

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

B-6
Confirm the Proper Brake Configuration

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

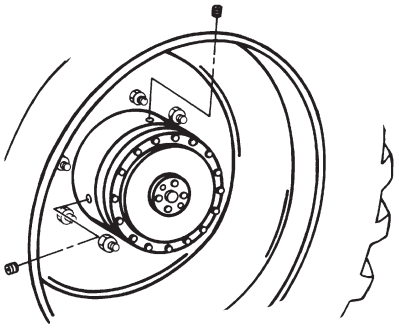
1 Check each drive hub disconnect cap to be sure it is in the engaged position.



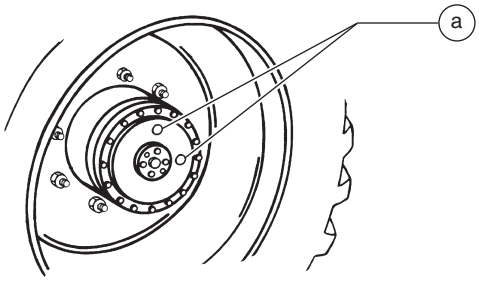
B-7
Check the Oil Level in the Drive Hubs

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 one of the plugs is located on top and the other one is at 90 degrees.



models with pipe plugs



a models with o-ring plugs

CHECKLIST B PROCEDURES

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 **Models with pipe plugs:** Apply pipe thread sealant to the plugs and install the plugs.

Models with O-ring plugs: Install the plugs into the drive hub.

5 Repeat steps 1 through 4 for the other drive hub.

6 Check the torque of the drive hub mounting bolts. Refer to Section 2, *Specifications*.

B-8
Check and Adjust the Engine RPM



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.

1 Remove the engine pivot plate latch retainer.

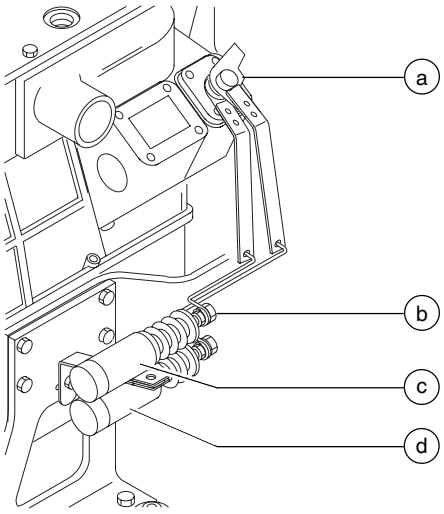
2 Open the engine pivot plate latch and swing the engine pivot plate out away from the machine.

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

⊙ Result: Low idle should be 2000 rpm.

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

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



a low idle adjustment screw (not shown)
b high idle adjustment nut
c rpm solenoid
d fuel shut off solenoid

5 Move the engine idle control switch to high idle (rabbit symbol) from the ground controls.

⊙ Result: High idle should be 3000 rpm.

Skip to step 7 if the high idle rpm is correct.

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

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

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

8 Install the engine pivot plate latch retainer.

CHECKLIST B PROCEDURES

B-9
Test the Ground Control Override

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

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

2 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

3 Operate each boom function through a partial cycle at the ground controls.

⊙ Result: All boom functions should operate.

B-10
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 is controlled by the master cylinder located at the base of the primary boom. A platform self-leveling failure creates an unsafe working condition.

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

2 Lower the boom to the stowed position.

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

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

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

B-11
Test the Engine Idle Select

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

Low idle (turtle symbol): Low idle and slow battery charging.

High idle (rabbit symbol): High idle and quickest battery charging.

Foot switch activated high idle (rabbit and foot switch symbols): Activates high idle only when the foot switch is pressed down.

1 Start the engine from the ground controls. Move the engine idle select toggle switch to high idle (rabbit symbol).

⊙ Result: The engine should change to high idle.

2 Release the engine idle select toggle switch.

⊙ Result: The engine should return to low idle.

3 Turn the key switch to platform controls.

4 At the platform controls, move the engine idle select toggle switch to high idle (rabbit symbol).

⊙ Result: The engine should change to high idle.

5 Move the engine idle select toggle switch to low idle (turtle symbol).

⊙ Result: The engine should change to low idle.

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

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

7 Press down the foot switch.

⊙ Result: The engine should change to high idle.

CHECKLIST B PROCEDURES

B-12
Test the Drive Brakes

Proper brake action is essential to safe machine operation. The machine uses drive motor regenerative braking to stop the machine. Hydraulically-released individual wheel brakes hold the machine once it has stopped. The drive motor regenerative braking should operate smoothly, free of hesitation and jerking. Hydraulically-released individual wheel brakes can appear to operate normally when not fully operational.

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-6, *Confirm the Proper Brake Configuration*.

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

1 Mark a test line on the ground for reference.

2 Lower the boom into the stowed position.

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

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

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

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

B-13
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.

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

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

2 Lower the boom into the stowed position.

3 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.

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

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

B-14
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.

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

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

2 Raise the platform more than 5 feet / 1.5 m.

3 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.

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

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

B-15
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.

Note: 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.

CHECKLIST B PROCEDURES

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

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

7 Press down the foot switch. 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 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-16
Check the Electrical Contactors



Maintaining the electrical contactors in good condition is essential to safe machine operation. Failure to locate a worn or damaged contactor could result in an unsafe working condition and component damage.

1 Remove the drive chassis cover from the non-steer end of the machine and locate the electrical contactors mounted on the component mounting panel.

2 Visually inspect the contact points of each contactor for the following items:

- Excessive burns
- Excessive arcs
- Excessive pitting

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

Note: Replace the contactors if any damage is found.

B-17
Perform Hydraulic Oil Analysis



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

Note: Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.** See E-1, *Test or Replace the Hydraulic Oil.*

CHECKLIST B PROCEDURES

B-18
Perform Engine Maintenance



Note: 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

• Fuel filter

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

Checklist C Procedures

C-1
Perform Engine Maintenance



Note: 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Radiator
- Fan belt

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

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



Note: 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.

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

CHECKLIST C PROCEDURES

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

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

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

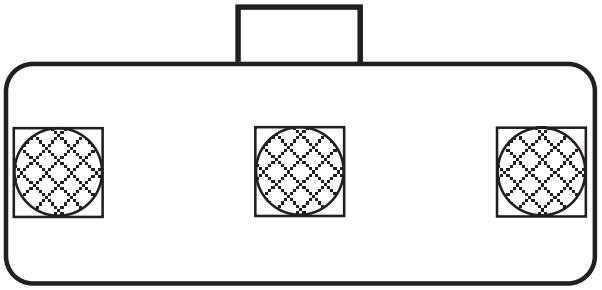
Note: Perform this procedure with the machine on a firm, level surface.

1 Turn the key switch to platform control.

2 Level the platform from the platform controls.

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 10 lbs / 4.5 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-5, *Calibrate the Platform Overload System*.

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

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-5, *Calibrate the Platform Overload System*.

Note: 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.

Note: 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.

Note: 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.

Note: If the platform overload system is not operating properly, see D-5, *Calibrate the Platform Overload System.*

CHECKLIST C PROCEDURES

C-4
Perform Engine Maintenance



Note: 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Valve clearance

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

Checklist D Procedures

D-1
Check the Primary 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 extremely worn wear pads may result in component damage and unsafe operating conditions.

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

2 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.

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

Primary boom wear pad specifications	New	Minimum
Top, bottom and side wear pads (platform end of boom)	3/4 inch 19 mm	5/8 inch 15.9 mm
Side and bottom wear pads (pivot end of boom)	5/8 inch 15.9 mm	1/2 inch 12.7 mm
Top wear pads (pivot end of boom)	3/4 inch 19 mm	5/8 inch 15.9 mm

D-2
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 could result in death or serious injury and property damage.

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

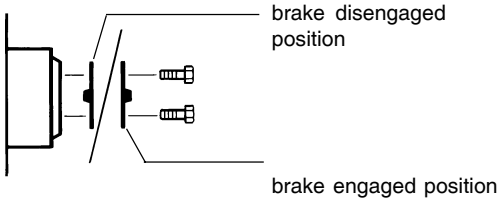
NOTICE Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

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.



CHECKLIST D PROCEDURES

5 Manually rotate each non-steer wheel.

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

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

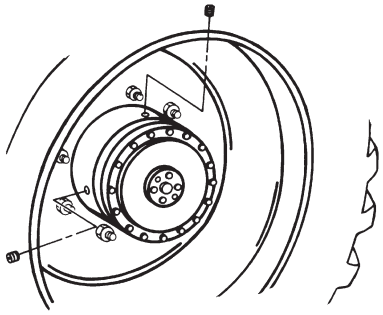
⚠WARNING Collision hazard. Failure to engage the drive hubs could result in death or serious injury and property damage.

D-3
Replace the Drive Hub Oil

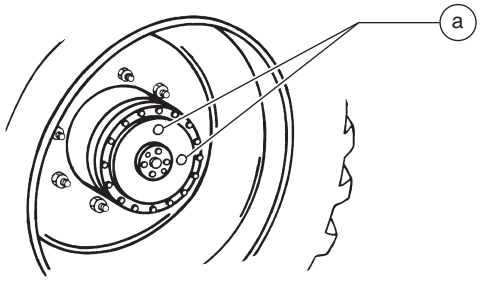
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

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.



models with pipe plugs



a models with o-ring plugs

3 Drive the machine to rotate the hub until one of the plugs is located on top and the other one is at 90 degrees.

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

5 **Models with pipe plugs:** Apply pipe thread sealant to the plugs and install the plugs.

Models with O-ring plugs: Install the plugs into the drive hub.

6 Repeat steps 1 through 5 for the other drive hub.

D-4
Replace the Hydraulic Tank Return Filter



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

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

1 Locate the hydraulic return filter next to the hydraulic tank.

2 Place a suitable container under the hydraulic filter.

3 Remove the filter with an oil filter wrench.

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

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

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

7 Activate any boom function and inspect the filter and related components to be sure that there are no leaks.

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

CHECKLIST D PROCEDURES

D-5
Calibrate the Platform Overload System (if equipped)



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

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.

Note: 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 1 to 2 inches / 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.

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

Note: 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.

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

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

Confirm the setting:

5 Turn the key switch to platform control.

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.

Note: 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.

Note: 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.

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

CHECKLIST D PROCEDURES

D-6
Check the Turntable Rotation Bearing Bolts

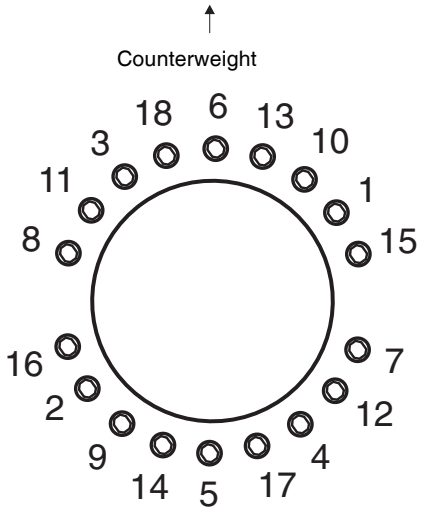
Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

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

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

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

2 Check to be sure that each turntable mounting bolt is torqued in sequence to specification. Refer to Section 2, *Specifications*.

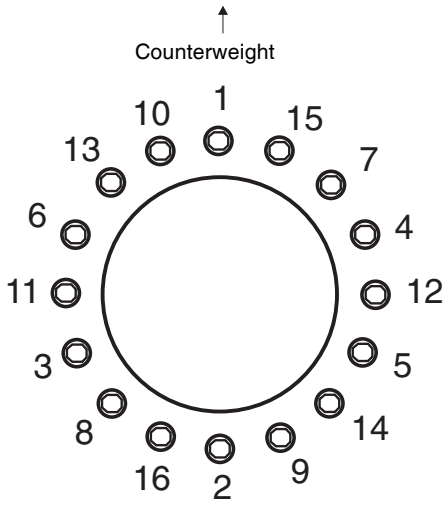


Bolt torque sequence

3 Lower the boom to the stowed position.

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

5 Check to be sure that each bearing mounting bolt under the drive chassis is torqued in sequence to specification. Refer to Section 2, *Specifications*.



Bolt torque sequence

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.

Note: 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-7, *Grease the Turntable Bearing and Rotate Gear.*

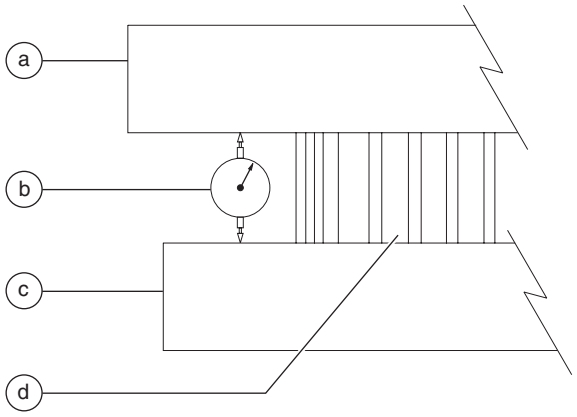
2 Torque the turntable bearing bolts to specification. See D-6, *Check the Turntable Rotation Bearing Bolts.*

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

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

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



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

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

6 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
Perform Engine Maintenance



Note: Engine specifications require that this procedure be performed every 1500 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Fuel injectors

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

Checklist E Procedures

E-1
Test or Replace the Hydraulic Oil



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

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

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

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

1 Place a suitable container under the hydraulic tank.

2 Remove the drain plug from the hydraulic tank.

3 Completely drain the tank into a container of suitable capacity. Refer to Section 2, *Specifications*.

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

4 Tag, disconnect and plug the hydraulic hose from the hydraulic tank filter at the tank.

⚠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.

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

5 Remove the hydraulic tank mounting fasteners.

6 Pull the hydraulic tank out slightly to access the two suction hoses.

7 Tag, disconnect and plug the two suction hoses on the back of the hydraulic tank.

⚠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 Remove the hydraulic tank from the machine.

NOTICE Component damage hazard. The hydraulic tank is plastic and may become damaged if allowed to fall.

9 Remove the suction strainer from the tank and clean it using a mild solvent.

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

11 Install the suction strainer and drain plug using a thread sealer on the threads.

12 Place the hydraulic tank onto the machine.

13 Install the hydraulic hoses.

14 Install the hydraulic tank retaining strap.

NOTICE Component damage hazard. The hydraulic tank may become damaged if the tank strap fasteners are over tightened.

15 Fill the tank with hydraulic oil until the fluid is within the FULL and ADD marks on the hydraulic tank. Do not overfill.

16 Clean up any oil that may have spilled. Properly discard of oil.

17 Operate all machine functions through a full cycle and check for leaks.

E-2
Grease the Steer Axle Wheel Bearings



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

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

7 Tighten the castle nut to 150 ft-lbs / 203 Nm to seat the bearings.

8 Loosen the castle nut and re-tighten to 35 ft-lbs / 47 Nm.

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

⊙ Result: If there is no side to side or up and down movement, continue with step 10 and grease the wheel bearings.

⊠ Result: If there is side to side or up and down movement, continue to step 10 and replace the wheel bearings with new ones.

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

10 Remove the castle nut.

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

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

13 Pack both bearings with clean, fresh grease.

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

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

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

16 Slide the hub onto the yoke spindle.

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

17 Place the outer bearing into the hub.

18 Install the washer and castle nut.

19 Tighten the castle nut to 150 ft-lbs / 203 Nm to seat the bearings.

20 Loosen the castle nut and re-tighten to 35 ft-lbs / 47 Nm.

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

Note: Always use a new cotter pin when installing a castle nut.

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

E-3
Perform Engine Maintenance



Note: Engine specifications require that this procedure be performed every 2000 hours or every two years, 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Radiator coolant
- Radiator hoses and clamps
- Fuel lines and clamps
- Air intake hose

To access the engine:

1 Remove the engine pivot plate latch retainer.

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

E-4
Perform Engine Maintenance



Note: 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 *Kubota Z482-E2B Operator's Manual* (Kubota part number 16676-89167).

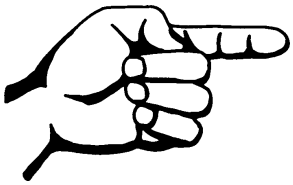
Kubota Z482-E2B Operator's Manual	
Genie part number	52958

- Injector pump

To access the engine:

1 Remove the engine pivot plate latch retainer.

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



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Repair Procedures



Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any maintenance or repair procedure.
- ☑ 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. Then to re-assemble, perform the disassembly steps in reverse order.

Symbols Legend



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

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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

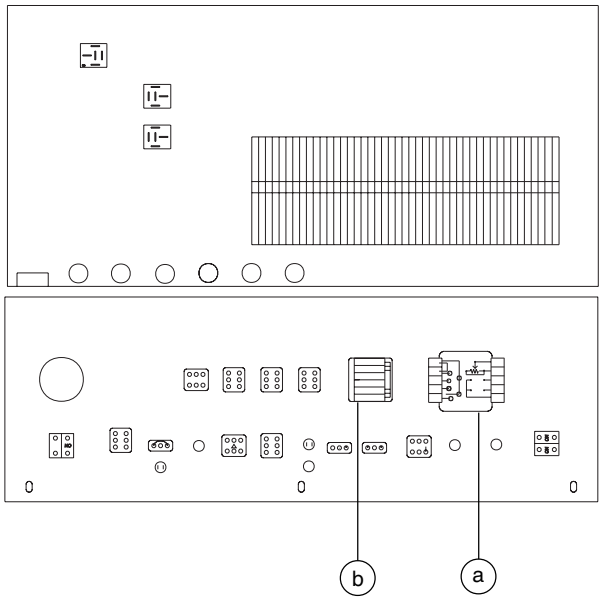
⊠ Indicates that an incorrect result has occurred after performing a series of steps.

Platform Controls

1-1 Controllers

Platform Controls

The drive joystick is connected to the drive motor controller located under the non-steer end drive chassis cover. The drive motor controller can also recognize machine drive malfunctions and display controller fault codes by flashing an LED at the ground controls. Refer to Section 5, *Fault Codes* for a list of fault codes and additional information. There are no adjustments needed on the drive joystick controller. For further information or assistance, consult the Genie Industries Service Department.



a boom function speed controller
b drive joystick

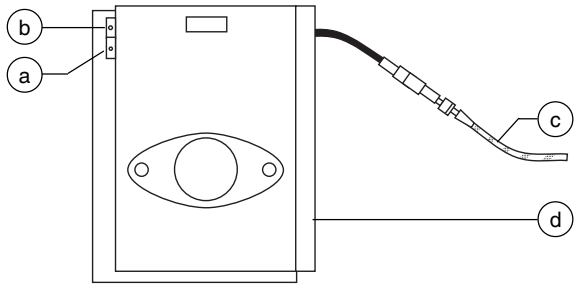
Boom Function Speed Controller Adjustments

Note: Do not adjust the controllers unless the static battery supply voltage is above 24V DC at the platform red Emergency Stop button.

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

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

2 Open the platform control box lid and locate the boom function speed controller.



a threshold adjustable trimpot
b max-out adjustable trimpot
c white/red wire to TP6
d boom function speed controller

3 Disconnect the blk/red wire of the boom function speed controller from the wht/red wire.

4 Connect the red (+) lead from an amp meter to the blk/red wire. Connect the black (-) lead to the wht/red wire.

5 Turn the boom function speed controller to the CREEP position.

6 Set the threshold: With the boom in the stowed position, press down the foot switch and move the primary boom toggle switch in the down position until the amperage reading appears. Adjust the amperage to 0.17 to 0.18A. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

7 Turn the boom function speed controller to the 9 position.

8 Set the max-out: Press down the foot switch, then move the primary boom toggle switch in the down position. Adjust the amperage to 0.54 to 0.55A. Turn the max-out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

Boom function speed controller specifications

Threshold	0.17 to 0.18A
Max-out	0.54 to 0.55A

Platform Components

2-1
Platform Leveling Slave Cylinder

The slave cylinder and the rotator pivot are the two primary supports for the platform. The slave cylinder keeps the platform level through the entire range of boom motion. It operates in a closed-circuit hydraulic loop with the master cylinder. The slave cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Platform Leveling Slave Cylinder

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

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

1 **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.

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

4 Tag, disconnect and plug the hydraulic hoses from the slave cylinder at the unions 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.

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 slave cylinder barrel-end pivot pin. Do not remove the pin.

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

7 Place a block under the slave cylinder for support. Protect the cylinder rod from damage.

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

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

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

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

10 Carefully pull the cylinder out of the primary boom.

How to Bleed the Slave Cylinder

1 Raise the primary boom to a horizontal position.

2 Move the platform level switch up and down through two platform leveling cycles to remove any air that might be in the system.

2-2 Platform Rotator

How to Bleed the Platform Rotator

Note: This procedure will require two people.

1 Move the function enable toggle switch to either side and activate the platform rotate toggle switch to the right then the left through two platform rotation cycles, then hold the switch to the right position until the platform is fully rotated to the right.

2 Place a suitable container underneath the platform rotator.

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

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

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

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

PLATFORM COMPONENTS

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

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

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

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

7 Clean up any hydraulic oil that may have spilled.

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

Jib Boom Components, Z-45/25J

3-1
Jib Boom

How to Remove the Jib Boom

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

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

1 Remove the platform.

2 Tag and disconnect the electrical connectors from the jib boom/platform rotate select manifold mounted to the platform support.

3 Tag, disconnect and plug all of the hydraulic hoses from the jib boom/platform rotate select valve manifold. Cap the fittings on the manifold and pull the hoses out through the platform rotator.

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

4 Remove the platform mounting weldment.

5 Attach a lifting strap from an overhead crane to the platform rotator for support.

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

7 Remove the pin retaining fasteners from both platform rotator pivot pins. Do not remove the pins.

8 Use a soft metal drift to remove the leveling arm pivot pin and let the leveling arms hang down.

9 Use a soft metal drift to remove the platform rotator pivot pin and remove the platform rotator from the machine.

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

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

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

13 Support the barrel end of the jib boom lift cylinder with a suitable lifting device.

14 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.

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

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

⚠WARNING Crushing hazard. The jib boom could fall when the barrel-end pivot pin is removed if not properly supported by the overhead crane.

17 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 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.

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

19 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 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

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

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

1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Then lower the jib boom until the platform is resting on the blocks just enough to support the platform.

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

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

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

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

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

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

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

⚠WARNING Crushing hazard. The jib boom could fall when the barrel-end pivot pin is removed if not properly supported by the overhead crane.

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 jib boom lift 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

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

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

1 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 of the counterbalance valve manifold at 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.

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

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

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

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

PRIMARY BOOM COMPONENTS

4 Remove the hose clamp on the primary boom bellcrank.

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

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

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

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

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

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

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

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

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

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

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

11 Raise the boom to a horizontal position.

12 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 suitable 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 fasteners.

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 not properly attached to the overhead crane.

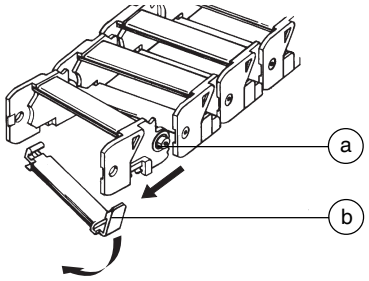
NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

PRIMARY BOOM COMPONENTS

How to Repair the Primary Boom Cable Track

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

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



a link separation point
b lower clip

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

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

3 Repeat steps 1 and 2 for each link to be removed.

4-2 Primary Boom

How to Remove the Primary Boom

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

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

Note: When removing a hose assembly or fitting, the O-ring 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-45/25:** Remove the platform rotator and platform mounting weldment.

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

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

4 Raise the primary boom to a horizontal position.

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

6 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.

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

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

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

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

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

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

12 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.

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

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

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

16 Place support blocks under the primary boom lift cylinder.

17 Remove the pin retaining fasteners 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.

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

19 Remove the pin retaining fasteners from the primary boom pivot pin.

20 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.

PRIMARY BOOM COMPONENTS

How to Disassemble the Primary Boom

Note: 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.

Note: 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.

Note: 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.

Note: 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.

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

1 Raise the primary boom to a horizontal position.

2 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.

4 Raise the primary boom with the overhead crane slightly to take the pressure off the primary boom lift cylinder pivot pins.

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

6 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.

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

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

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

9 Lower the rod end of 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.

10 Support the barrel end of the primary boom lift cylinder with an overhead crane or similar lifting device.

11 Remove the primary boom lift cylinder barrel-end pivot pin retaining fasteners. 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.

PRIMARY BOOM COMPONENTS

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.

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

1 Raise the primary boom to a horizontal position.

2 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 of the boom, 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.

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

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

Note: 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

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

1 Raise the secondary boom until 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.

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

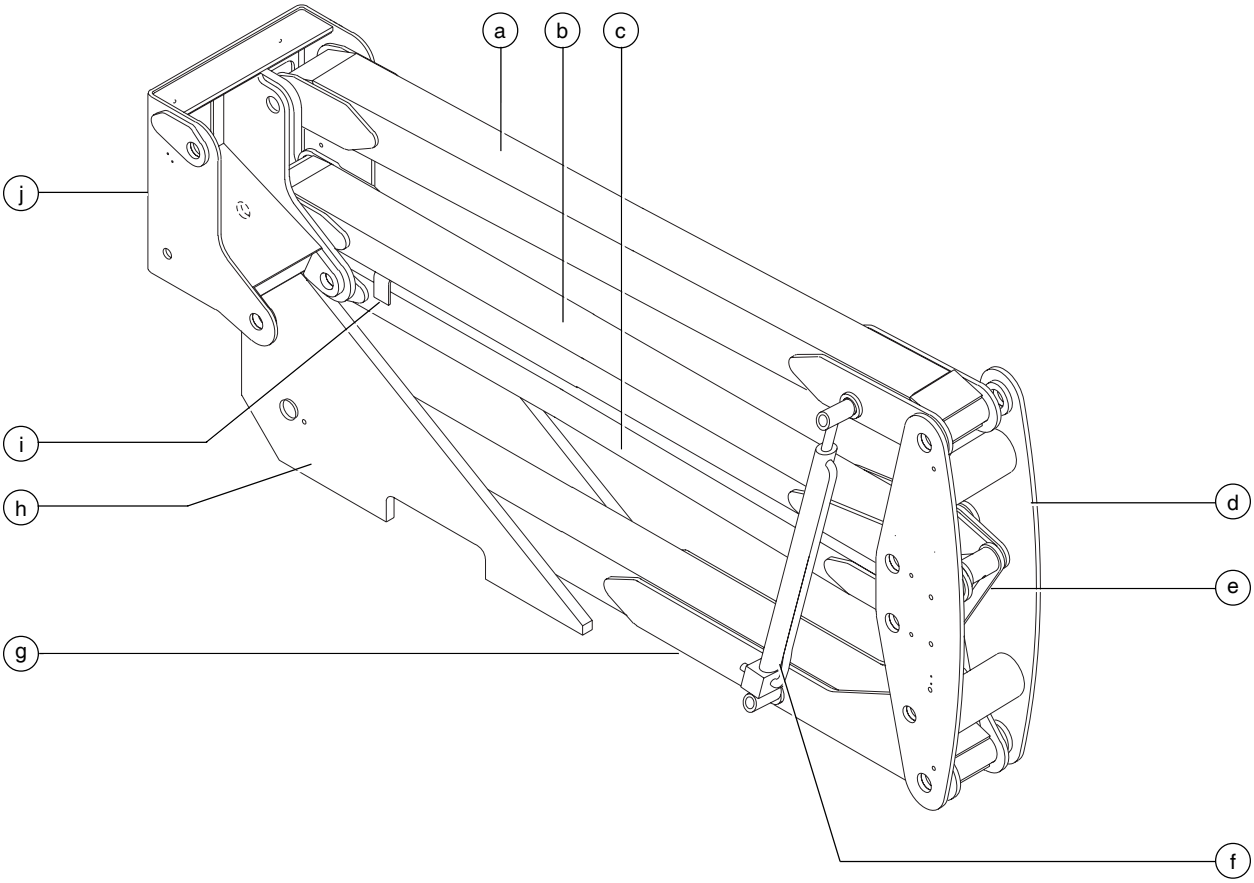
6 Remove the pin retaining fastener from the rod-end pivot pin.

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



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

5-1
Secondary Boom

How to Disassemble the Secondary Boom

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

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

Note: When removing a hose assembly or fitting, the O-ring 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 4-2, *How to Remove the Primary Boom*.

4 Remove the master cylinder. See 4-5, *How to Remove the Platform Leveling Master Cylinder*.

5 Attach a lifting strap from an overhead crane 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.

SECONDARY BOOM COMPONENTS

10 Remove the pin retaining fasteners from both sides of the secondary boom lift cylinder rod-end pivot pin and barrel-end pivot pin. Do not remove the pins.

11 Attach a strap from an overhead crane to the lug on the rod end of one of the secondary boom lift cylinders for support. Do not apply any lifting pressure.

12 Use a soft metal drift to drive the barrel-end pivot pin half way out. Lower the barrel end of the secondary boom lift cylinder and let it hang down.

13 Use a soft metal drift to drive the rod-end pivot pin half way out.

14 Remove the secondary boom lift cylinder from the machine.

15 Repeat steps 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.

NOTICE 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 midpoint 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 the 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.

SECONDARY BOOM COMPONENTS

23 Pull all of the cables and hoses out through the upper pivot.

NOTICE 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.

NOTICE 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.

SECONDARY BOOM COMPONENTS

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.

42 Pull all of the cables and hoses from the number 3 arm and lay them over the turntable counterweight.

NOTICE 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 filler cap.

45 Using an approved hand-operated pump, drain the fuel tank into a container of suitable capacity. Refer to Section 2, *Specifications*.

⚠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.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

Note: Be sure to only use a hand-operated pump suitable for use with gasoline and diesel fuel.

46 Tag, disconnect and plug the fuel hoses from the fuel tank. Clean up any fuel that may have spilled.

47 Remove the fuel tank mounting fasteners. Carefully remove the fuel tank from the machine.

NOTICE Component damage hazard. The fuel tank is plastic and may become damaged if allowed to fall.

Note: Clean the fuel tank and inspect for cracks and other damage before installing it onto the machine.

SECONDARY BOOM COMPONENTS

48 Remove the retaining fastener from the ground control box and function manifold pivot plate.

49 Lower the ground control box and function manifold pivot plate to access the number 3 arm pivot pin.

50 Attach the lifting strap from the overhead crane to the centerpoint of the number 3 arm for support. Do not lift it.

51 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 riser.

52 Remove the pin retaining fasteners from the number 3 arm at the turntable riser. Do not remove the pin.

53 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.

54 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.

55 Remove the upper and lower hose and cable covers from the number 3 arm.

56 Remove the secondary boom drive speed limit switch mounting fasteners from the number 4 arm at the mid-pivot end. Do not disconnect the wiring.

57 Remove the pin retaining fasteners from the number 4 arm at the turntable riser. Do not remove the pin.

58 Attach a lifting strap from the overhead crane to the center point of the number 4 arm. Do not lift it.

59 Use a slide hammer to remove the number 4 arm from the turntable riser through the ground controls side bulkhead.

60 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.

SECONDARY BOOM COMPONENTS

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.

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

1 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.

NOTICE 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.

Kubota Z482-E and Z482-E2B Engines

6-1 Timing Adjustment

Complete information to perform this procedure is available in the *Kubota Z482-E Workshop Manual* (Kubota part number 97897-01165).

Kubota Z482-E Workshop Manual	
Genie part number	52956

6-2 RPM Adjustment

See the scheduled maintenance procedure B-8, *Check and Adjust the Engine RPM.*

6-3 Engine Drive Pulley

How to Remove the Engine Drive Pulley

1 Remove the engine pivot plate latch retainer.

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

3 Loosen the tension adjustment bolt on the generator.

4 Pull the generator away from the machine and remove the belts from the generator pulley.

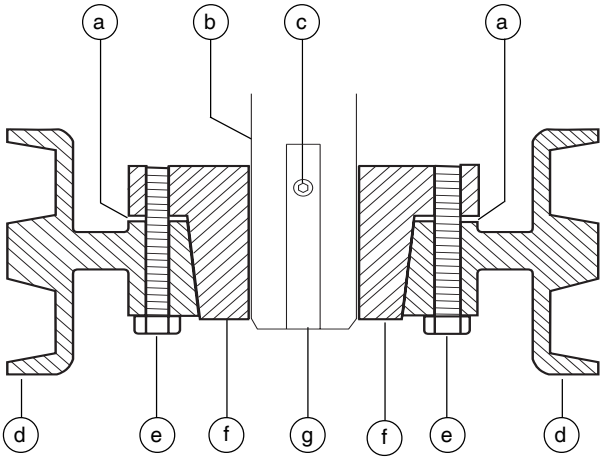
5 Remove the 3 bolts that attach the engine drive pulley to the shaft bushing.

6 Install the same 3 bolts that were removed in step 5 into the threaded holes of the engine drive pulley.

7 Carefully tighten each bolt evenly until the engine drive pulley slides off the shaft.

NOTICE Component damage hazard. The engine drive pulley and/or shaft can be damaged if the bolts are not tightened evenly.

8 Loosen the set screw on the pulley bushing, then slide the pulley bushing off of the engine shaft.



a gap
b shaft
c set screw
d engine drive pulley
e engine drive pulley bolt
f shaft bushing
g woodruff key

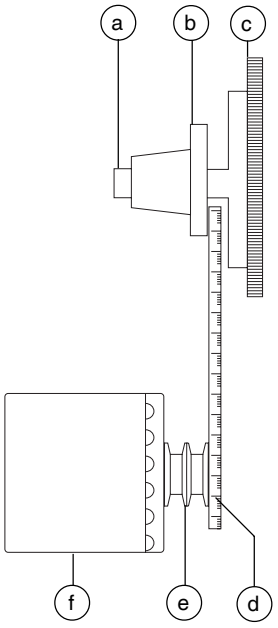
KUBOTA Z482-E AND Z482-E2B ENGINES

How to Install the Engine Drive Pulley

Note: The generator pulley must already be installed before performing this procedure. See 7-1, *How to Install the Generator Pulley*.

1 Align the woodruff key on the engine shaft with the slot in the pulley bushing and slide the pulley bushing onto the engine shaft. Do not tighten the set screw.

2 Align the flywheel side of the pulley bushing on the engine shaft with the outer face of the generator pulley using a straightedge.



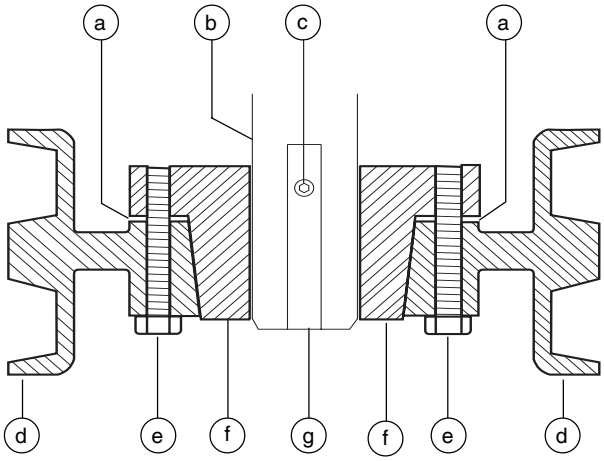
a pulley shaft
b pulley bushing
c engine flywheel
d straightedge
e generator pulley
f generator

3 Tighten the set screw on the pulley bushing hand tight.

4 Slide the engine pulley onto the pulley bushing.

5 Install the pulley mounting bolts and tighten them to specification. Refer to Section 2, *Specifications*.

NOTICE Component damage hazard. Do not overtighten the pulley mounting bolts. There must be a gap visible between the engine drive pulley and the pulley bushing.



a gap
b shaft
c set screw
d engine drive pulley
e pulley mounting bolt
f pulley bushing
g woodruff key

6 Check the alignment between the engine drive pulley and the generator pulley using a straightedge. Refer to Section 2, *Specifications*.

Note: If the pulley alignment is not within specification, remove the engine pulley and repeat steps 2 through 6. See *How to Remove the Engine Drive Pulley*.

Generator

7-1 Generator Pulley

How to Remove the Generator Pulley

1 Remove the engine pivot plate latch retainer.

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

3 Loosen the tension adjustment bolt on the generator.

4 Pull the generator away from the machine and remove the belts from the generator pulley.

5 Disconnect the battery cables from the engine battery.

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

6 Remove the engine battery hold down, then remove the battery from the machine.

7 Remove the generator pulley retaining nut from the generator shaft.

8 Slide the pulley off of the generator shaft.

How to Install the Generator Pulley

Note: The pulley on the generator must be installed before installing the engine drive pulley.

1 Align the woodruff key on the generator shaft with the slot in the pulley and slide the pulley all the way onto the generator shaft.

2 Install the flat washer and pulley retaining nut onto the generator shaft, then torque the nut to specification. Refer to Section 2, *Specifications*.

3 Adjust the tension of the generator belts. See 7-2, *How to Adjust the Generator Belts.*

GENERATOR

7-2 Generator Belts

How to Adjust the Generator Belts

1 Disconnect the battery packs.

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

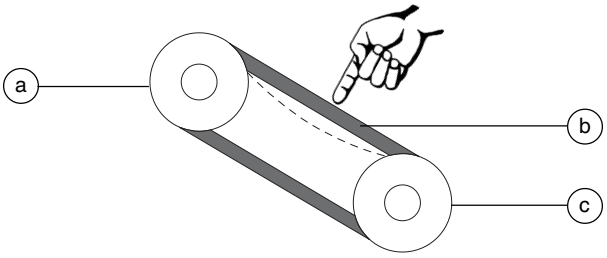
2 Remove the engine pivot plate latch retainer.

3 Open the engine pivot plate latch and swing the engine out away from the machine to access the generator belts.

4 Loosen the tension adjustment bolt on the generator.

5 Push the generator towards the machine and tighten the adjustment bolt.

6 Check the generator belts for proper tension. Refer to Section 2, *Specifications*. If the belt deflection is not within specification, perform steps 4 and 5 and re-check the belt tension.



a engine pulley
b generator belts
c generator pulley

7-3 Generator Voltage Regulator

How to Adjust the Generator Voltage Regulator

The voltage regulator regulates the output voltage of the generator. A properly adjusted voltage regulator is essential to good generator performance and service life. A defective or improperly adjusted voltage regulator could result in component damage.

Note: Be sure the batteries are fully charged before performing this procedure.

1 Remove the engine pivot plate latch retainer.

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

3 Connect the positive lead of a voltmeter to the POS terminal on the generator and the negative lead of the voltmeter to the NEG terminal on the generator.

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

4 Start the engine from the ground controls and move the rpm select toggle switch to the maintained high idle position. Check the voltage on the generator.

⊙ Result: The voltage should be 54V DC.

5 If the voltage reading is not 54V DC, insert a small flat blade screwdriver into the potentiometer located inside of the generator. Use the access hole on the back of the generator labeled VOLT ADJ.

NOTICE Component damage hazard. Be sure that the screwdriver is properly inserted into the potentiometer or the generator and/or voltage regulator may become damaged.

6 Carefully adjust the potentiometer to obtain a 54V DC voltage reading. Turn the potentiometer clockwise to increase the voltage or counterclockwise to decrease the voltage. Do not rotate the potentiometer past the internal stops.

NOTICE Component damage hazard. The voltage regulator inside the generator will become damaged if the potentiometer is rotated past the internal stops.

Note: The maximum range of motion of the potentiometer on the voltage regulator is 280° and the maximum allowed torque is 5 oz-in / 0.035 Nm.

How to Replace the Voltage Regulator

1 Disconnect the battery packs from the machine.

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

2 Remove the engine pivot plate latch retainer.

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

4 Tag and disconnect the positive and negative battery cables from the generator.

5 Loosen the tension adjustment bolt on the generator.

6 Pull the generator away from the machine and remove the belts from the generator pulley.

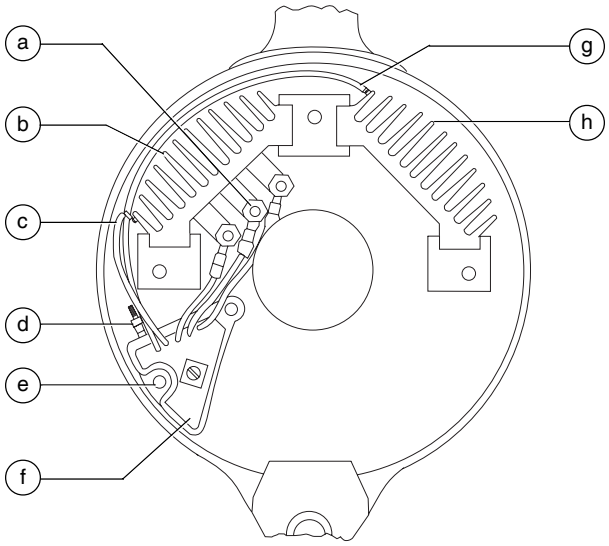
7 Remove the generator mounting fasteners then remove the generator from the machine.

8 Remove the 3 nuts from the battery cable terminal posts.

9 Remove the 3 screws that hold the plastic cover onto the generator. Carefully remove the cover.

GENERATOR

10 Locate the 3 white wires that lead from the voltage regulator to the negative rectifier assembly.



a white wires (#10 nuts)
b negative rectifier assembly
c black wire (#10 screw)
d black wire (#4 nut)
e voltage regulator mounting fastener (#8 screw)
f voltage regulator
g red wire (#10 screw)
h positive rectifier assembly

11 Remove the nuts on those 3 wires from the negative rectifier assembly, then remove the wires.

Note: Do not remove the spacers from the underneath the wires on the negative rectifier assembly.

12 Locate the red wire that leads from the voltage regulator to the positive rectifier assembly.

13 Remove the screw that attaches the red wire to the positive rectifier assembly.

14 Remove the #4 nut that attaches the black wire to the voltage regulator.

15 Remove the voltage regulator mounting screws.

16 Remove the voltage regulator while carefully guiding the red and black wires from underneath the bottom support of the positive and negative rectifier assembly.

17 Install the new voltage regulator by following the previous steps in reverse order.

18 Apply Loctite® removable thread sealant onto the voltage regulator mounting fasteners and torque to specification. Refer to Section 2, *Specifications*.

19 Torque all other fasteners to specification. Refer to Section 2, *Specifications*.

20 Install the plastic cover onto the generator then install the generator onto the machine.

21 Adjust the generator belts. See 7-2, *How to Adjust the Generator Belts.*

22 Adjust the voltage regulator. See *How to Adjust the Voltage Regulator.*

NOTICE Component damage hazard. The voltage regulator and/or generator may become damaged if the voltage regulator is not properly adjusted after replacement.

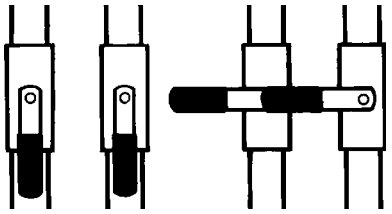
Hydraulic Pumps

8-1 Auxiliary Pump

How to Remove the Auxiliary Pump

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

1 **Models with hydraulic tank shutoff valves:** Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.



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

Models without hydraulic tank shutoff valves: Remove the drain plug from the hydraulic tank and completely drain the tank into a container of suitable capacity. Refer to Section 2, *Specifications*.

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

2 Remove the engine pivot plate latch retainer.

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

4 Tag, disconnect and plug the hydraulic hoses from the auxiliary 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.

5 Remove the auxiliary pump mounting bolts. Carefully remove the pump.

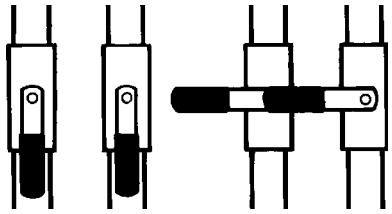
HYDRAULIC PUMPS

8-2 Function Pump

How to Remove the Function Pump

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

1 **Models with hydraulic tank shutoff valves:** Locate the two hydraulic tank valves at the hydraulic tank through the access hole underneath the turntable. Close the valves.



open closed

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

Models without hydraulic tank shutoff valves: Remove the drain plug from the hydraulic tank and completely drain the tank into a container of suitable capacity. Refer to Section 2, *Specifications*.

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

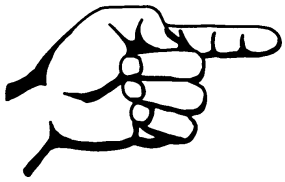
2 Remove the engine pivot plate latch retainer.

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

4 Tag, disconnect and plug the hydraulic hoses from 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.

5 Remove the function pump mounting bolts. Carefully remove the pump.



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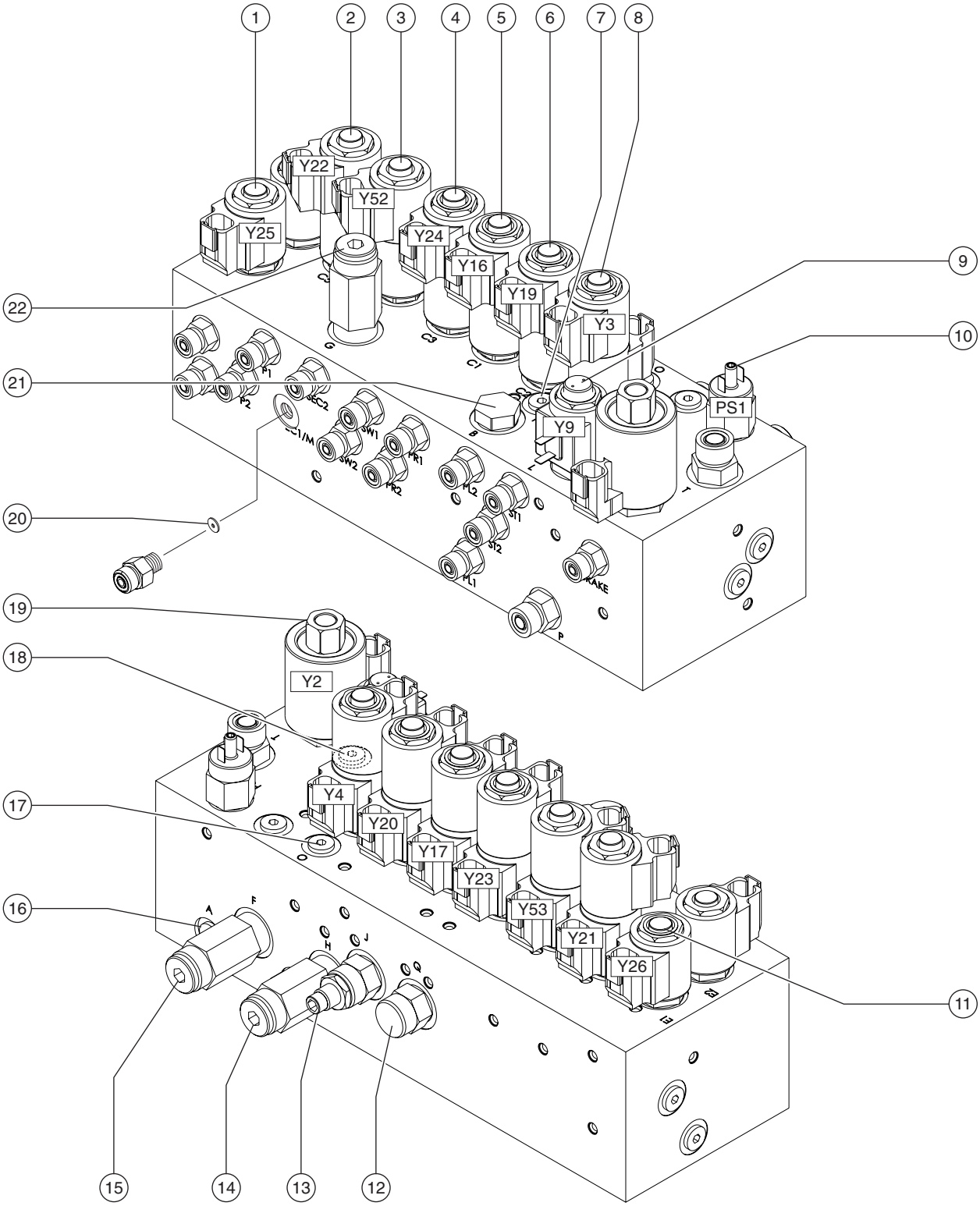
Manifolds

9-1
Function Manifold Components

The function manifold is located next to the hydraulic tank underneath the ground controls side cover.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	A	Primary boom retract	20 ft-lbs / 27 Nm
2	Solenoid valve, 3 position 4 way	B	Primary boom up/down	25 ft-lbs / 34 Nm
3	Solenoid valve, 3 position 4 way	C	Secondary boom up/down	25 ft-lbs / 34 Nm
4	Solenoid valve, 3 position 4 way	D	Turntable rotate left/right	25 ft-lbs / 34 Nm
5	Solenoid valve, 3 position 4 way	E	Platform rotate left/right and jib boom up/down (Z-45/25J)	25 ft-lbs / 34 Nm
6	Solenoid valve, 3 position 4 way	F	Platform level up/down	25 ft-lbs / 34 Nm
7	Shuttle valve	G	Platform level circuit	4-5 ft-lbs / 5.5-6.7 Nm
8	Solenoid valve, 3 position 4 way	H	Steer left/right	25 ft-lbs / 34 Nm
9	Proportional solenoid valve	I	Controls flow to functions	27 ft-lbs / 37 Nm
10	Pressure switch	J	Brake circuit	
11	Solenoid valve, 2 position 3 way	K	Primary boom extend	20 ft-lbs / 27 Nm
12	Flow regulator valve, 0.4 gpm / 1.5 L/min	L	Platform rotate and turntable rotate circuits	20 ft-lbs / 27 Nm
13	Needle valve	M	Platform level circuit	20 ft-lbs / 27 Nm
14	Relief valve, 2500 psi / 172 bar	N	Platform level circuit	20 ft-lbs / 27 Nm
15	Relief valve, 3200 psi / 220.6 bar	O	System relief	20 ft-lbs / 27 Nm
16	Check valve, 5 psi / 0.3 bar	P	Brake circuit	12-14 ft-lbs / 16-19 Nm
17	Orifice, 0.060 inch / 1.5 mm	Q	Steer circuit	
18	Orifice, 0.030 inch / 0.76 mm	R	Proportional valve circuit	
19	Solenoid valve, 2 position 3 way	S	Brake circuit	20 ft-lbs / 27 Nm
—	Orifice, 0.030 inch / 0.76 mm (from serial number 22566 to 22628 and after serial number 23235) (located under item S)	T	Brake circuit	
20	Orifice, 0.037 inch / 0.94 mm	U		
21	Check valve, pilot operated	V	Platform level circuit	20 ft-lbs / 27 Nm
22	Relief valve, 2100 psi / 145 bar	W	Secondary boom down circuit	20 ft-lbs / 27 Nm

MANIFOLDS


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Y25
Y24
Y16
Y19
Y3
Y9
PS1
Y2
Y4
Y20
Y17
Y23
Y53
Y21
Y26
BRAKE

MANIFOLDS

9-2 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold.

2 Move and hold the function enable toggle switch to either side and hold the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

3 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (item O).

4 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.

5 Repeat steps 2 through 4 and recheck relief valve pressure.

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold.

2 Move and hold the function enable toggle switch to either side and hold the secondary boom up/down toggle switch in the down direction with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

3 Turn the machine off. Hold the secondary boom down relief valve with a wrench and remove the cap (item W).

4 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Then install the relief valve cap.

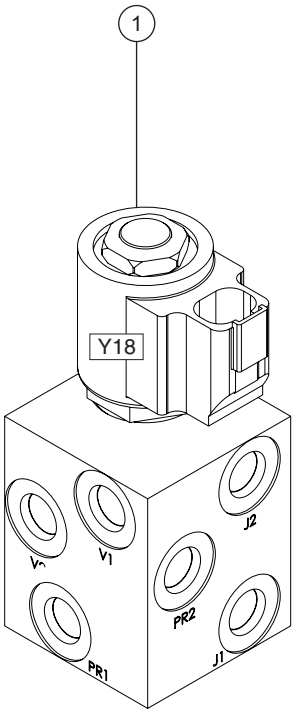
⚠WARNING Tip-over hazard. Do not adjust the relief valve higher than specified.

5 Repeat steps 2 through 4 and recheck relief valve pressure.

9-3
Jib Boom / Platform Rotate Manifold Components

The jib boom / platform rotate manifold is mounted to platform support.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	AA	Jib boom / platform rotate select	20 ft-lbs / 27 Nm

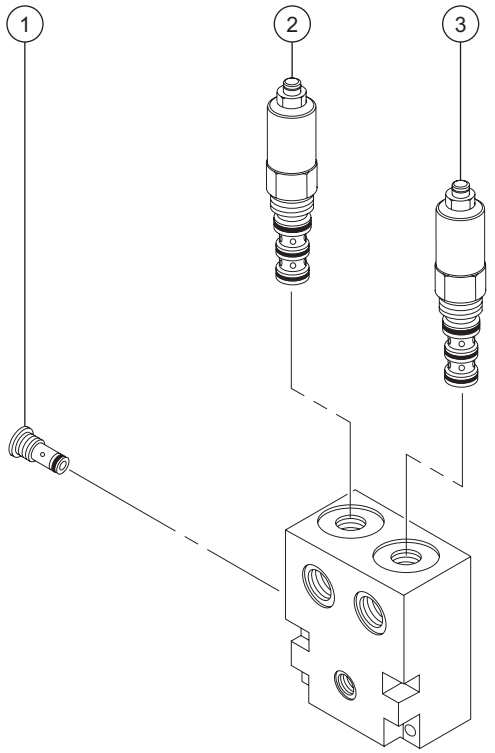


MANIFOLDS

9-4
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	X	Turntable rotation brake release	10-13 ft-lbs / 14-18 Nm
2	Counterbalance valve	Y	Turntable rotate right	30-35 ft-lbs / 41-47 Nm
3	Counterbalance valve	Z	Turntable rotate left	30-35 ft-lbs / 41-47 Nm



9-5
Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

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

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance.

⊙ Result: The resistance should be within specification, plus or minus 30%.

⊙ Result: If the resistance is not within specification, plus or minus 30%, replace the coil.

Valve Coil Resistance Specification

Solenoid valve, 3 position 4 way, 20V DC (schematic items B, C, D, E, F and H)	25 to 29 Ω
Solenoid valve, 2 position 3 way, 20V DC (schematic items A, K, S and AA)	25 to 29 Ω
Proportional solenoid valve, 24V DC (schematic item I)	17 to 21 Ω

How to Test a Coil Diode

Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

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

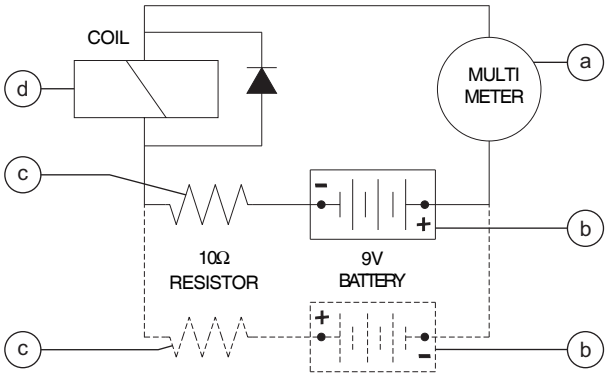
1 Test the coil for resistance. See *How to Test a Coil.*

MANIFOLDS

2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

Resistor, 10Ω
Genie part number 27287

Note: The battery should read 9V DC or more when measured across the terminals.



a multimeter
b 9V DC battery
c 10Ω resistor
d coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

3 Set a multimeter to read DC current.

Note: The multimeter, when set to read DC current, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V DC battery. Note and record the current reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

⊠ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Turntable Rotation Components

10-1
Turntable Rotation Assembly

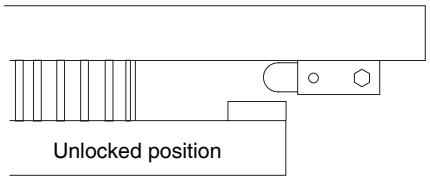
How to Remove the Turntable Rotation Assembly

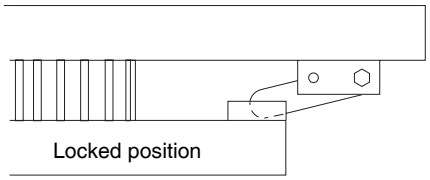
When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section 2, *Hydraulic Hose and Fitting Torque Specifications.*

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.

⚠WARNING Crushing hazard. The machine could tip over when the turntable rotation assembly is removed if the turntable rotation lock is not in the locked position.





3 Remove the engine pivot plate latch retainer.

4 Open the engine pivot plate latch and swing the engine out and away from the machine to access the turntable rotation assembly.

5 Remove the retaining fasteners from the center turntable cover. Remove the cover from the machine.

6 Disconnect the battery backs from the machine.

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

7 Place a suitable container under the engine plate.

8 Tag and disconnect the fuel hose from the fuel filter and drain the fuel tank into a suitable container. Refer to Section 2, *Specifications.*

9 Tag, disconnect and plug the fuel hoses from the fuel tank.

10 Remove the fuel tank strap fasteners and remove the tank strap.

11 Remove the fuel tank from the machine.

12 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.

TURNTABLE ROTATION COMPONENTS

13 Attach a lifting strap from and overhead crane or other suitable lifting device to the turntable rotation assembly.

14 Remove the turntable rotation assembly mounting fasteners.

15 Carefully remove the turntable rotation assembly from the machine.

⚠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.

⚠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.

Motor Controller

11-1 Motor Controller

The drive motor controller is located under the non-steer end drive chassis cover. The drive motor controller can recognize machine drive malfunctions and display controller fault codes by flashing a LED at the ground controls and on the motor controller. See the Troubleshooting section of this manual for a list of fault codes and additional information. There are no adjustments needed on the drive joystick controller. For further information or assistance, consult the Genie Industries Service Department.

How to Test the Motor Controller

Note: Use the following procedure to test the motor controller. If the motor controller is found to be faulty, note which test failed and which fault code (if any) was present at the time of failure.

1 Turn the key switch to the off position and disconnect the battery packs from the machine.

2 Remove the chassis cover from the non-steer end of the machine.

3 Tag and disconnect all power cables from the motor controller.

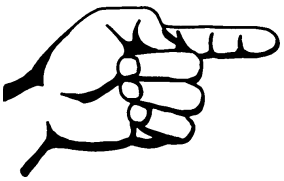
⚠WARNING Electrocution/burn hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

4 Press the release tab on the motor controller harness connector and remove the motor controller harness connector from the motor controller.

5 Connect the leads from an ohmmeter to test each motor controller terminal combination listed below and check for resistance.

⊙ Result: All desired results must be 500 kilohms or more. If any test has a result less than 500 kilohms, replace the motor controller.

Test	Desired result (in kilohms)
F1 to F2	500kΩ or more
F1 to B-	500kΩ or more
F1 to M-	500kΩ or more
F1 to B+	500kΩ or more
F2 to B-	500kΩ or more
F2 to M-	500kΩ or more
F2 to B+	500kΩ or more
B- to M-	500kΩ or more
M- to B+	500kΩ or more
Pin 17 to B-	500kΩ or more
Pin 20 to B-	500kΩ or more



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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:
  - Boom in stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - 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 in the appropriate Operator's Manual on your machine before attempting any maintenance or repair procedure.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate fault code thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

Note: Perform all troubleshooting on a firm level surface.

FAULT CODES

⚠DANGER Tip-over hazard. When adjusting the raised drive speed settings, the maximum raised drive speed must not exceed specification. Refer to Section 2, *Specifications*. If the machine is allowed to drive faster than specification, the machine could become unstable and will tip over.

Note: Additional troubleshooting of the fault codes may by accomplished by using the hand-held pendant motor controller programmer (Genie part number 128551).

Note: When using the hand-held pendant motor controller programmer, the M1 MAX SPEED needs to be set to 33. If needed, adjust the M1 MAX SPEED higher or lower to achieve the maximum raised drive speed. Refer to Section 2, *Specifications*.

The controller status indicator light will flash a fault code to aid in troubleshooting. This indicator light is mounted on the left side of the ground control box.

Fault codes are two digits. The controller status indicator light will blink the first digit of a two digit code, pause for 1 second, and then blink the second digit. There will be a 2 second pause between codes.

For example: the indicator light blinks 4 consecutive times, pauses for 1 second, and then blinks 1 time. That would indicate Fault Code 41.

Fault Code Chart

Fault Code	Programmer	Condition	Possible Causes	Solution
Indicator LED is OFF or is ON but not blinking	Communication Error	Machine will not drive	The key switch or red Emergency Stop button(s) was cycled on and off faster than 5 seconds OR controller sensed an internal error during start up.	Push in the ground control red Emergency Stop button to the OFF position and wait for 5 seconds. Pull out the red Emergency Stop button to the ON position. If problem persist, replace the motor controller.
01		Normal operation		
12	HW Failsafe 1-2-3	Machine will not drive	The motor controller failed self test.	Replace the motor controller.
13	M- shorted	Machine will not drive	The motor controller has an internal short between M- and B- terminals.	Test the motor controller, refer to Repair Procedure 11-1.
	Field open	Machine will not drive	Drive motor wiring is loose OR drive motor is defective OR motor controller has an internal short.	Check for loose or open connections at the drive motors and motor controller OR replace the defective drive motor OR test the motor controller. Refer to Repair Procedure 11-1.
	Arm sensor	Machine will not drive	Defective motor controller.	Replace the motor controller.
	FLD sensor	Machine will not drive	Defective motor controller.	Replace the motor controller.

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FAULT CODE CHART

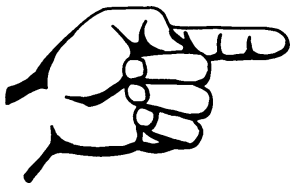
Fault Code	Programmer	Condition	Possible Causes	Solution
21	Throttle fault 1	Machine will not drive	Open in the WH/RD wire #32, pin 14 OR the RD/WH wire #29, pin 16 between the motor controller and the drive joystick OR pin 14 is internally shorted to power or ground OR the potentiometer on the joystick is defective.	Consult the Genie service department.
	Throttle fault 2	Machine will not drive	WH/Rd wire #32, pin 14 is shorted to power or ground OR the potentiometer on the drive joystick is defective.	Consult the Genie service department.
31	CONT DRVR OC	Machine will not drive	Main contactor PR1 coil is defective OR brake release relay CR5 is defective OR motor controller is defective.	Replace PR1 contactor OR CR5 relay OR motor controller.
32	Main cont welded	Machine will not drive	Main contactor PR1 contacts stuck closed OR green wire at pin 17 on the motor controller is shorted to ground OR an open in the drive motor armature wiring OR the motor controller has an internal short to ground.	Consult the Genie service department.
33	Precharge fault	Machine will not drive	External short between B+ terminal on motor controller and ground OR motor controller is defective.	Repair short between B+ terminal and ground OR replace motor controller. Note: Short can be on any part of the circuit connected to the B+ terminal on the motor controller.



Continued on next page

FAULT CODE CHART

Fault Code	Programmer	Condition	Possible Causes	Solution
34	Missing contactor	Machine will not drive	Motor controller does not detect the main contactor PR1 OR the brake release relay CR5.	Consult the Genie service department.
	Main CONT DNC	Machine will not drive	Main contactor PR1 or brake release relay CR5 did not close OR open in OR/RD wire to PR1 and/or CR5 OR PR1 and/or CR5 is defective.	Consult the Genie service department.
41	Low battery voltage	Machine will not drive	Battery supply voltage to motor controller is less than 32V DC.	Completely charge batteries OR check battery cable condition OR check for corrosion and/or loose connections at the battery terminals and the motor controller.
42	Overvoltage	Machine will not drive	Battery supply voltage to motor controller is more than 55V DC OR machine is being operated with the battery charger plugged in OR 48V DC alternator voltage regulator is improperly adjusted or is defective while the machine is being operated with the engine running.	Be sure the battery charger is disconnected OR check for loose and/or poor battery cable connections OR adjust the 48V DC voltage regulator OR replace the regulator.
43	Thermal cutback	Machine will not drive	Machine being operated outside of temperature range of -13°F to 185°F / -25°C to 85°C OR machine is being driven under an excessive load OR ,motor controller is not being cooled sufficently.	Operate machine within specified temperature limits OR check for debris around motor controller preventing proper cooling OR check for mechanical restrictions causing excessive load on the machine.



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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 in the appropriate Operator's Manual on your machine before attempting any maintenance or repair procedure.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section.

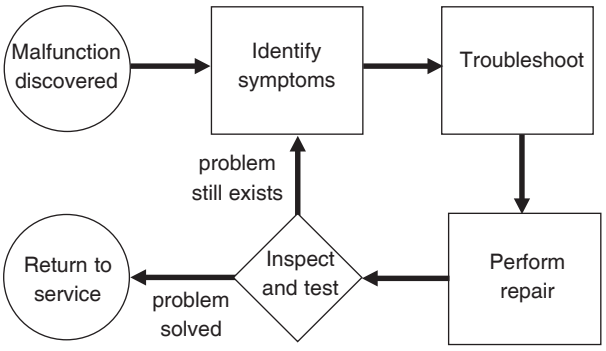
Electrical Schematics

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

Hydraulic Schematics

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

General Repair Process



Electrical Symbols Legend

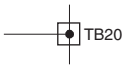


Wire color with cable number



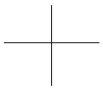
Terminal


Quick disconnect terminal

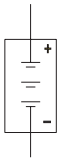


T-circuits connect at terminal

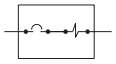

Connection no terminal


Circuits crossing no connection


Diode



Battery

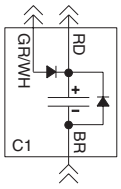

Circuit breaker



Fuse

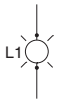


Resistor



Capacitor


LED



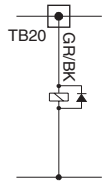
Work light
Drive light



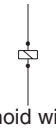
Limit switch normally closed held open

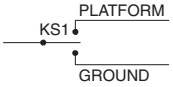


Limit switch normally open held closed

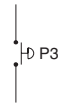


Solenoid with ground suppresion

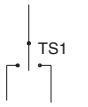

Solenoid without ground suppresion



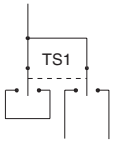
Key switch



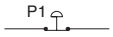
Horn button normally open



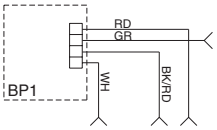
Toggle switch SPDT



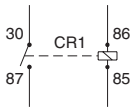
Toggle switch DPDT



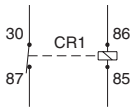
Red Emergency Stop button normally closed



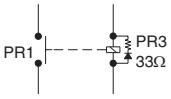
Boom function speed controller



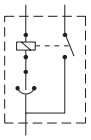
Relay normally open



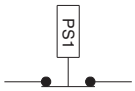
Relay normally closed



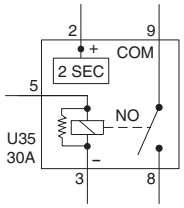
Contactor normally open


Tilt sensor


Horn / Alarm



Pressure switch normally closed



Time delay capacitor

Hydraulic Symbols Legend


Pressure gauge


Filter

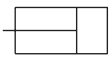

Fixed displacement pump


Spring applied hydraulically released brake


Bi-directional motor



Pump prime mover (motor)

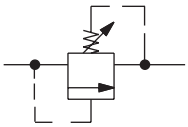

Cylinder

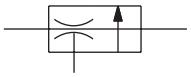


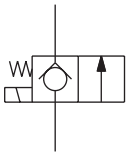
Orifice with size

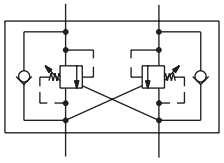

Variable orfice or shut-off valve

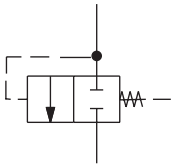

Check valve

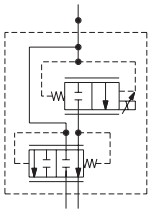

Relief valve

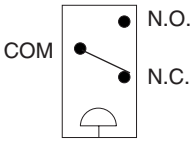

Priority flow regulator


2 position, 2 way solenoid valve

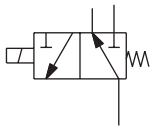

Counterbalance valve

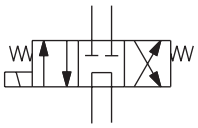

Differrential sensing valve

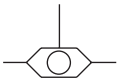

Solenoid operated proportional valve

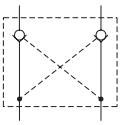


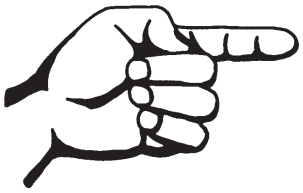
Pressure switch


2 position, 3 way solenoid operated directional valve


3 position, 4 way solenoid operate directional valve


Shuttle valve


Check valve, pilot operated

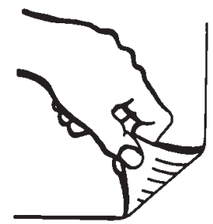


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Electrical Schematic, (ANSI / CSA / AS)

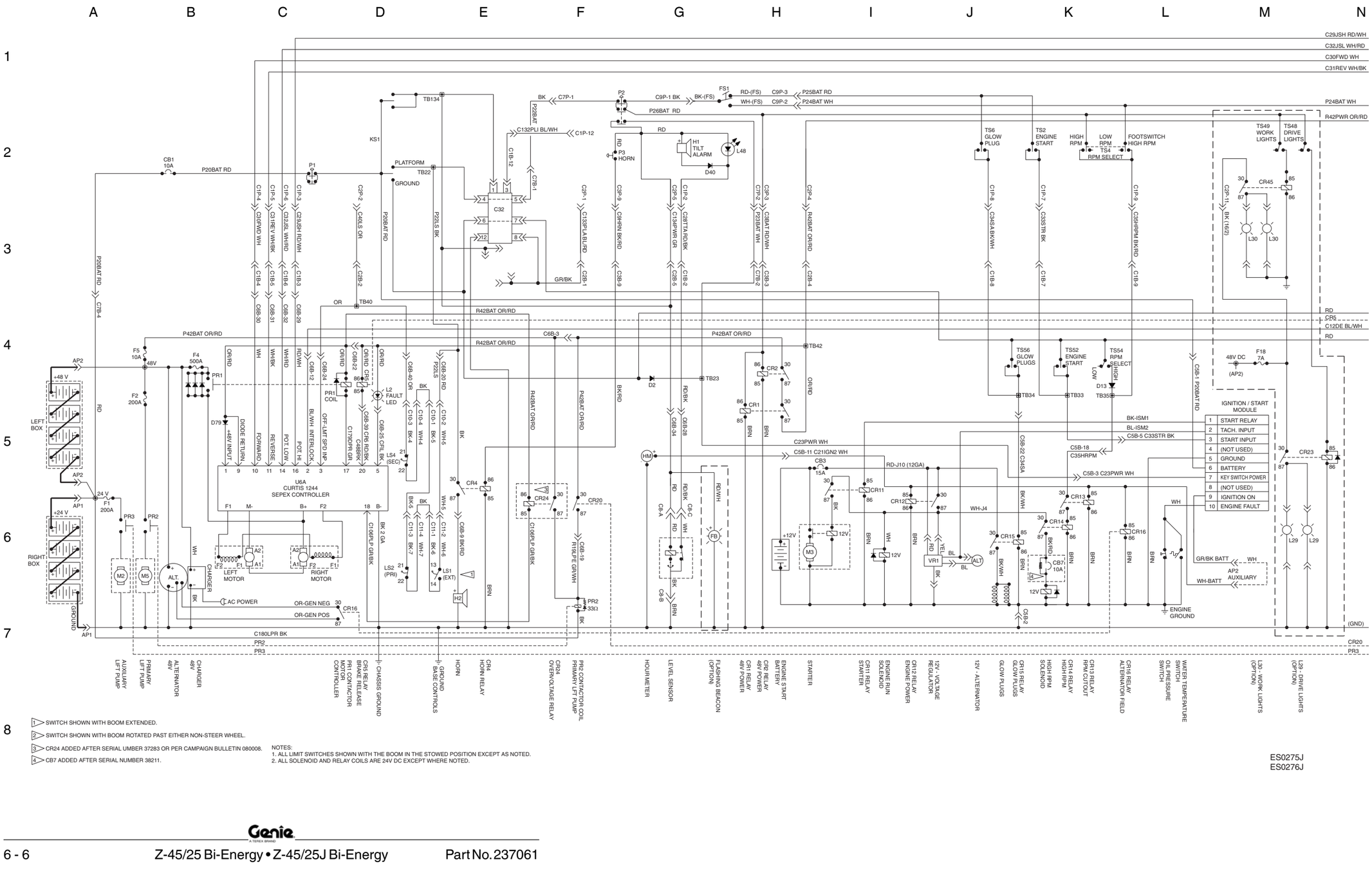
(from serial number Z452507-31015 to Z452507A-34514)





Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507-31015 to Z452507A-34514)



1 SWITCH SHOWN WITH BOOM EXTENDED.

A SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 CR24 ADDED AFTER SERIAL UMBER 37283 OR PER CAMPAIGN BULLETIN 080008.

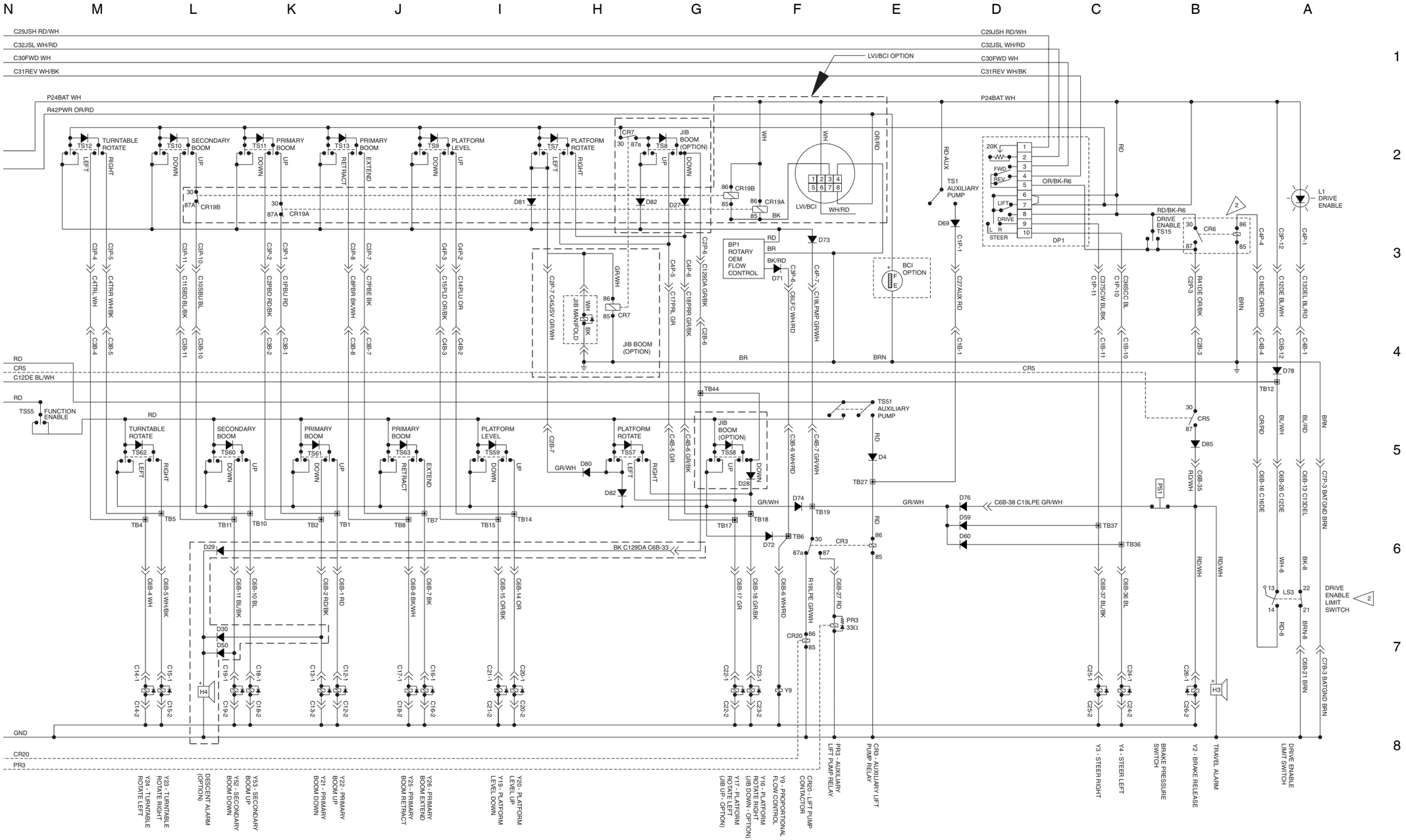
4 CB7 ADDED AFTER SERIAL NUMBER 38211.

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN THE STOWED POSITION EXCEPT AS NOTED.
2. ALL SOLENOID AND RELAY COILS ARE 24V DC EXCEPT WHERE NOTED.

ES0275J
ES0276J

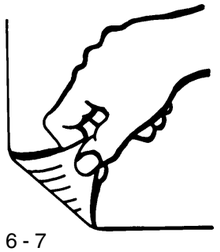
Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507-31015 to Z452507A-34514)



Electrical Schematic, (ANSI / CSA / AS)

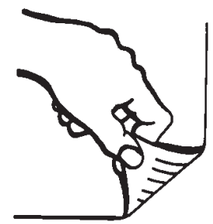
(from serial number Z452507-31015 to Z452507A-34514)



Ground Control Box Terminal Strip Wiring Diagram, (ANSI / CSA / AS),

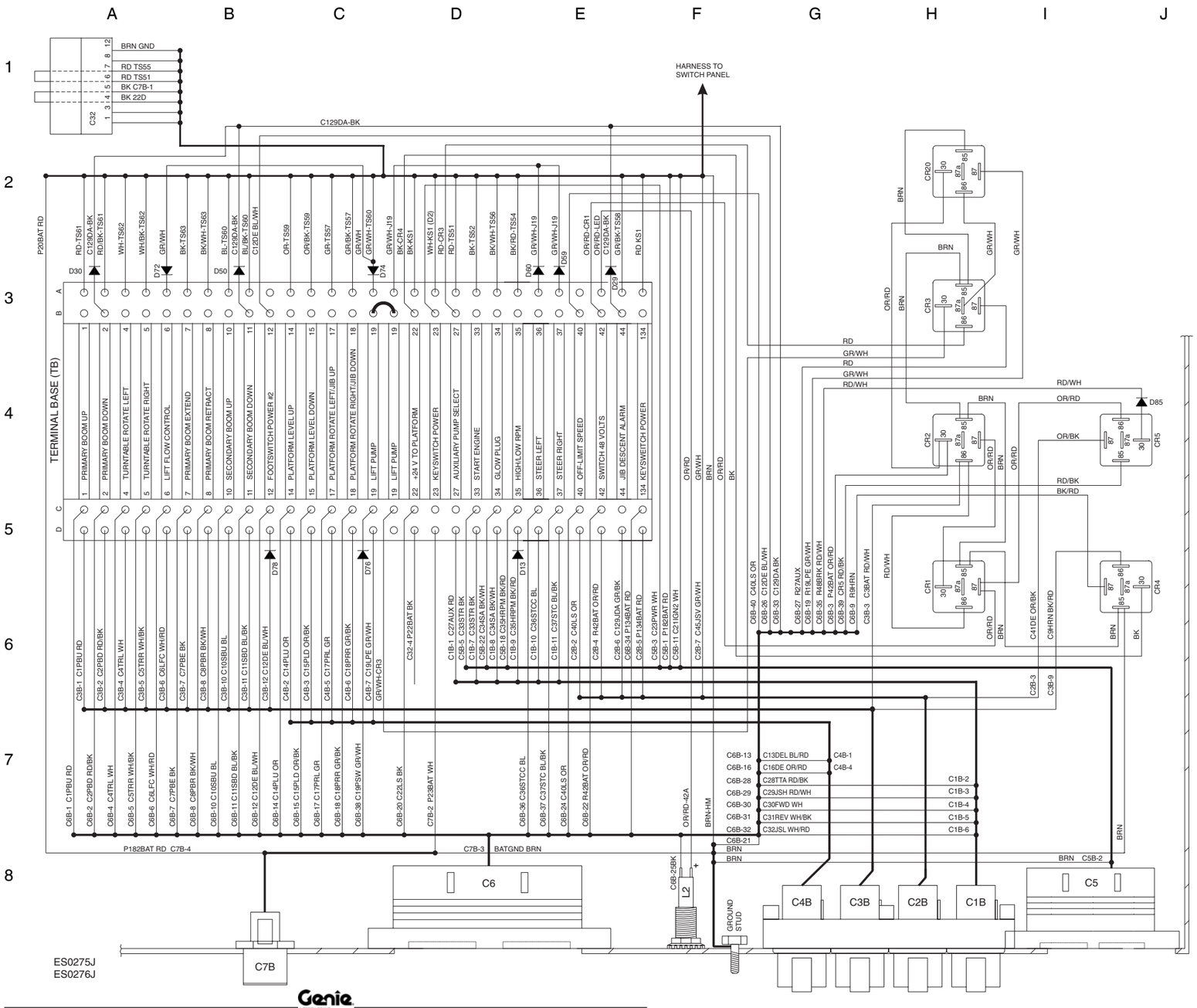
(from serial number Z452507-31015 to Z452507A-34514)





Ground Control Box Terminal Strip Wiring Diagram, (ANSI / CSA / AS)

(from serial number Z452507-31015 to Z452507A-34514)



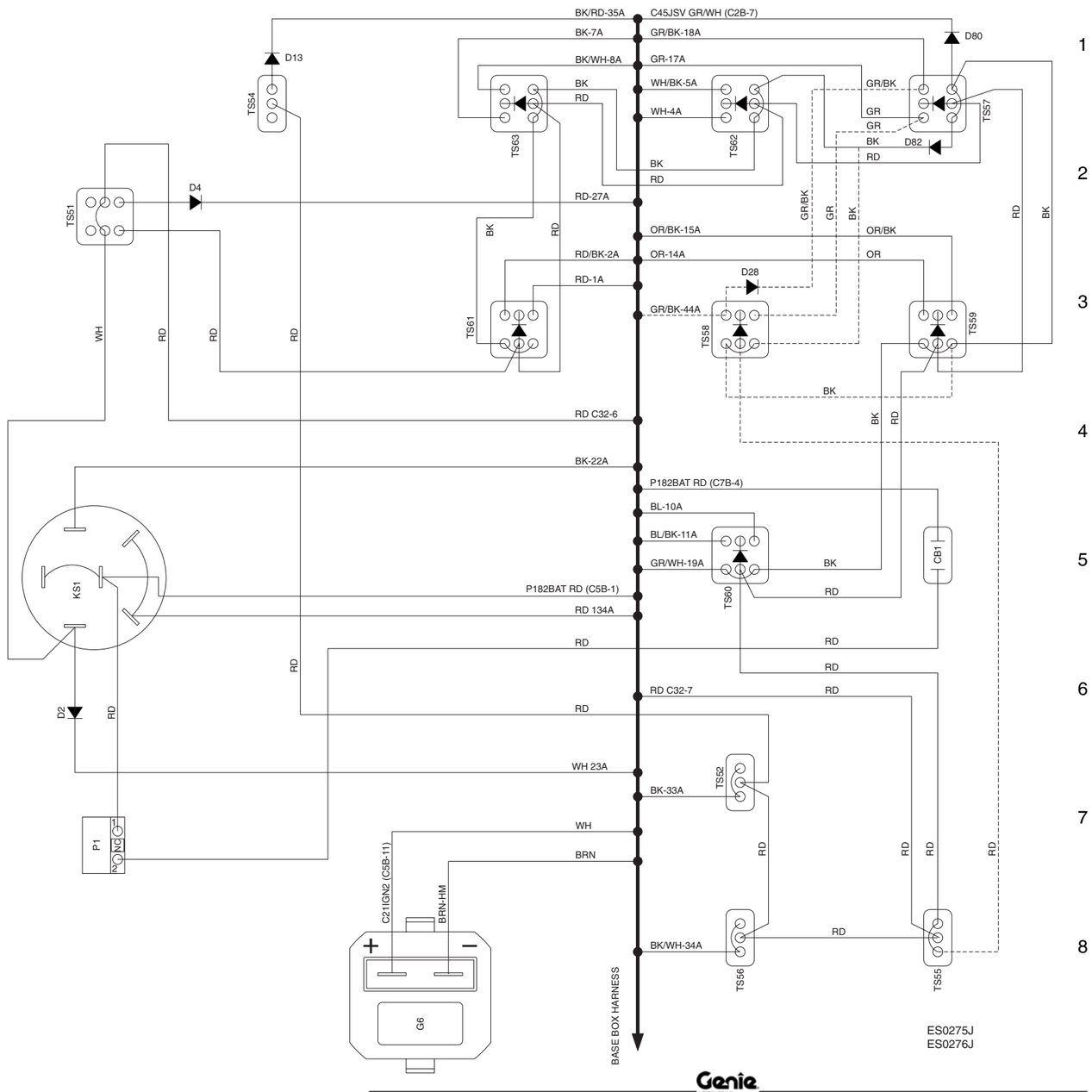
Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS)

(from serial number Z452507-31015 to Z452507A-34514)

COMPONENT INDEX - GROUND CONTROLS

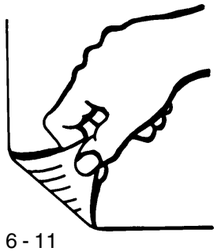
LABEL	DESCRIPTION
CB1	CONTROLS CIRCUIT BREAKER, 15A
CR1	48V DC POWER RELAY
CR2	48V DC POWER RELAY
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY PUMP RELAY
G6	HOURMETER
KS1	KEY SWITCH
L2	LED - FAULT INDICATOR
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM SELECT TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS58	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS),

(from serial number Z452507-31015 to Z452507A-34514)



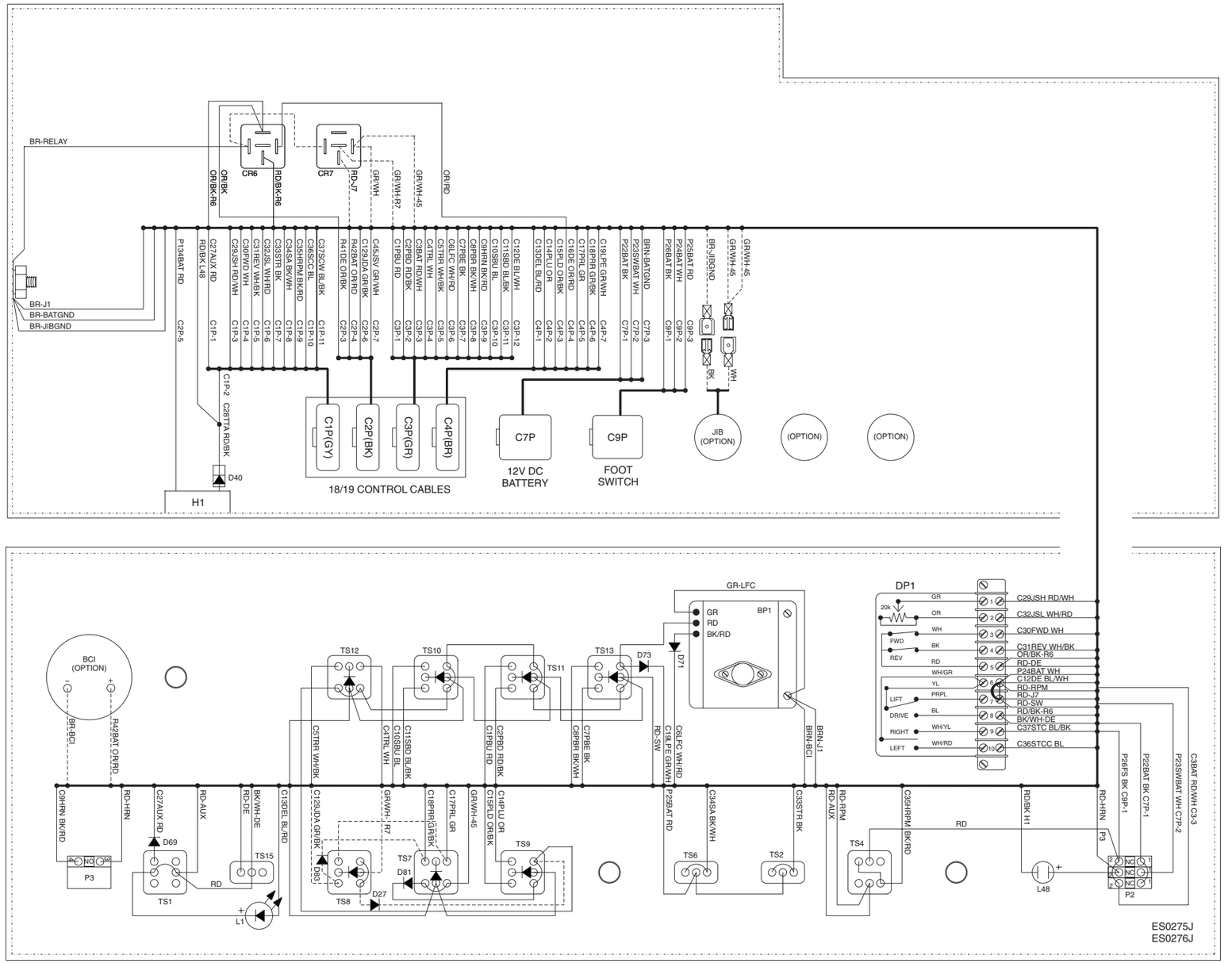
Platform Control Box Wiring Diagram, (ANSI / CSA / AS),

(from serial number Z452507-31015 to Z452507A-34514)

COMPONENT INDEX - PLATFORM CONTROLS

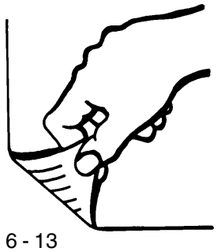
LABEL	DESCRIPTION
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
CR6	DRIVE ENABLE RELAY
CR7	JIB SELECT RELAY (OPTION)
DP1	DRIVE / STEER JOYSTICK
H1	TILT ALARM
L1	LED - DRIVE ENABLE
L48	LED - TILT ALARM
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS2	ENGINE START TOGGLE SWITCH
TS4	ENGINE RPM SELECT TOGGLE SWITCH
TS6	GLOW PLUG TOGGLE SWITCH
TS7	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS9	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS10	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Platform Control Box Wiring Diagram, (ANSI / CSA / AS),

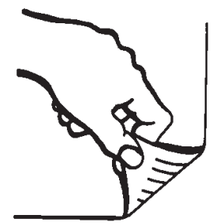
(from serial number Z452507-31015 to Z452507A-34514)



Electrical Schematic, (CE)

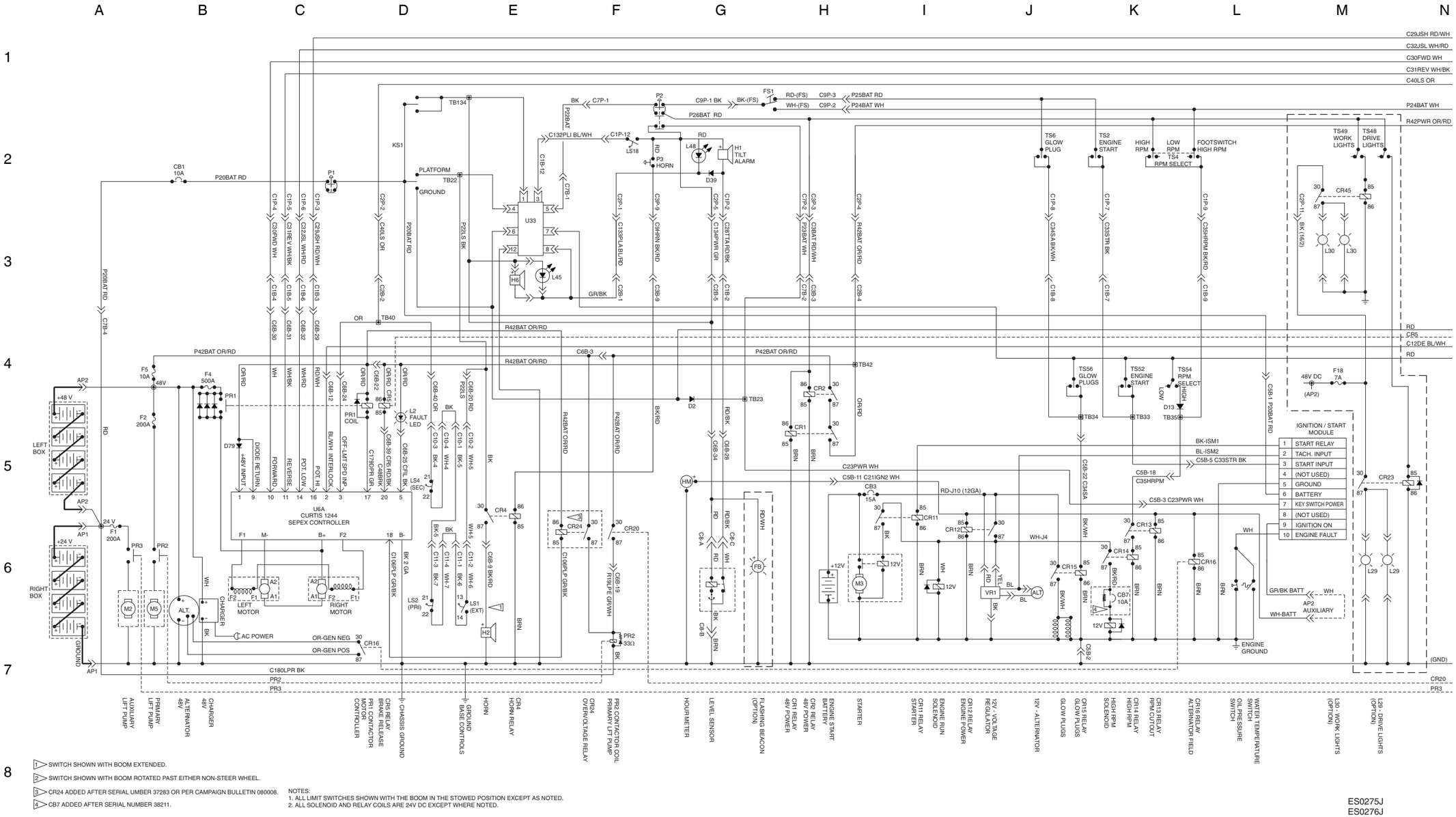
(from serial number Z452507-31015 to Z452507A-34514)





Electrical Schematic, (CE)

(from serial number Z452507-31015 to Z452507A-34514)



1 SWITCH SHOWN WITH BOOM EXTENDED.

A SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 CR24 ADDED AFTER SERIAL UMBER 37283 OR PER CAMPAIGN BULLETIN 080008.

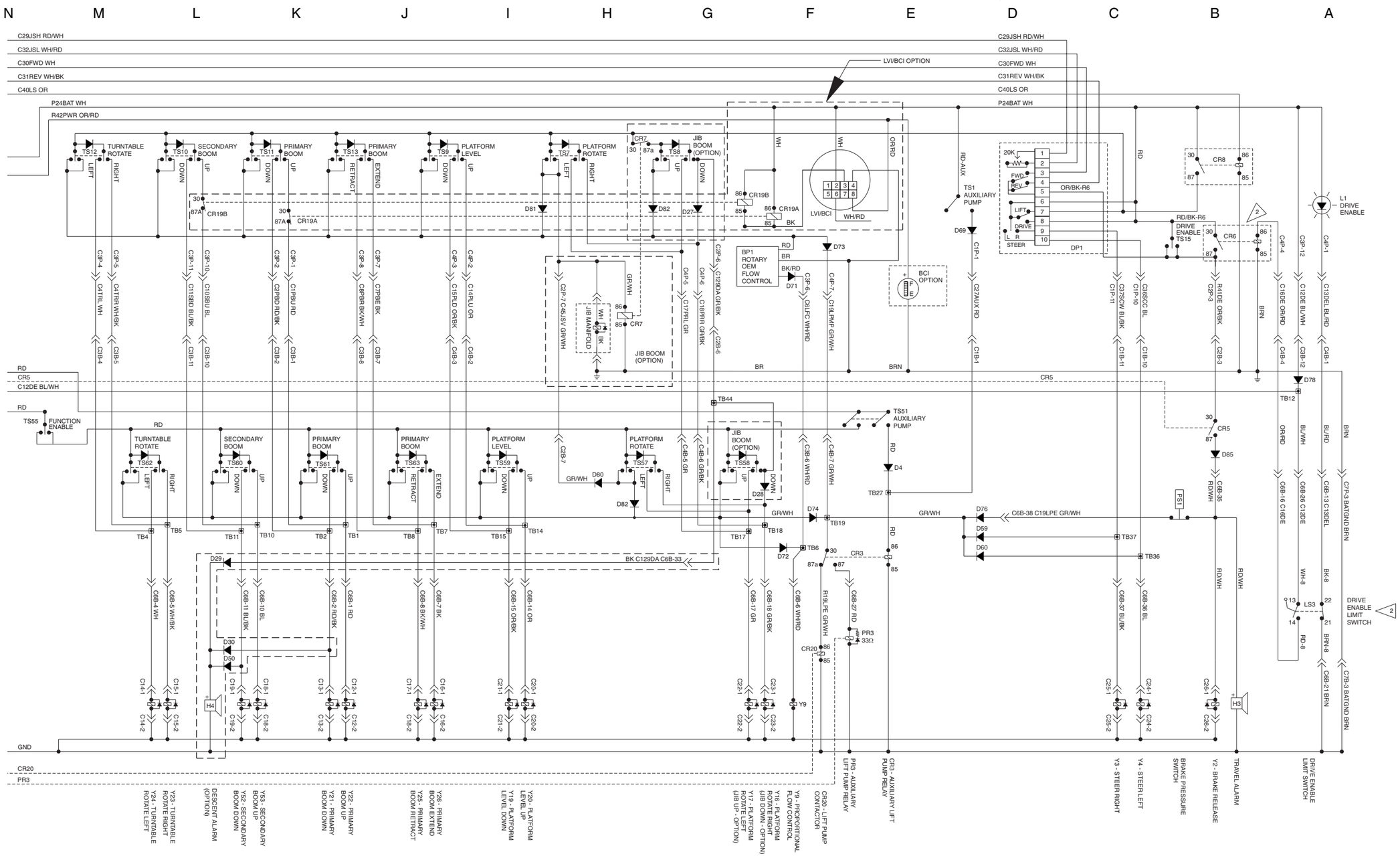
4 CB7 ADDED AFTER SERIAL NUMBER 38211.

NOTES:
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2. ALL SOLENOID AND RELAY COILS ARE 24V DC EXCEPT WHERE NOTED.

ES0275J
ES0276J

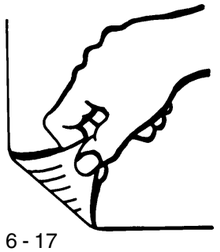
Electrical Schematic, (CE)

(from serial number Z452507-31015 to Z452507A-34514)



Electrical Schematic, (CE)

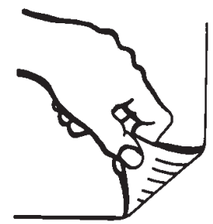
(from serial number Z452507-31015 to Z452507A-34514)



Ground Control Box Terminal Strip Wiring Diagram, (CE)

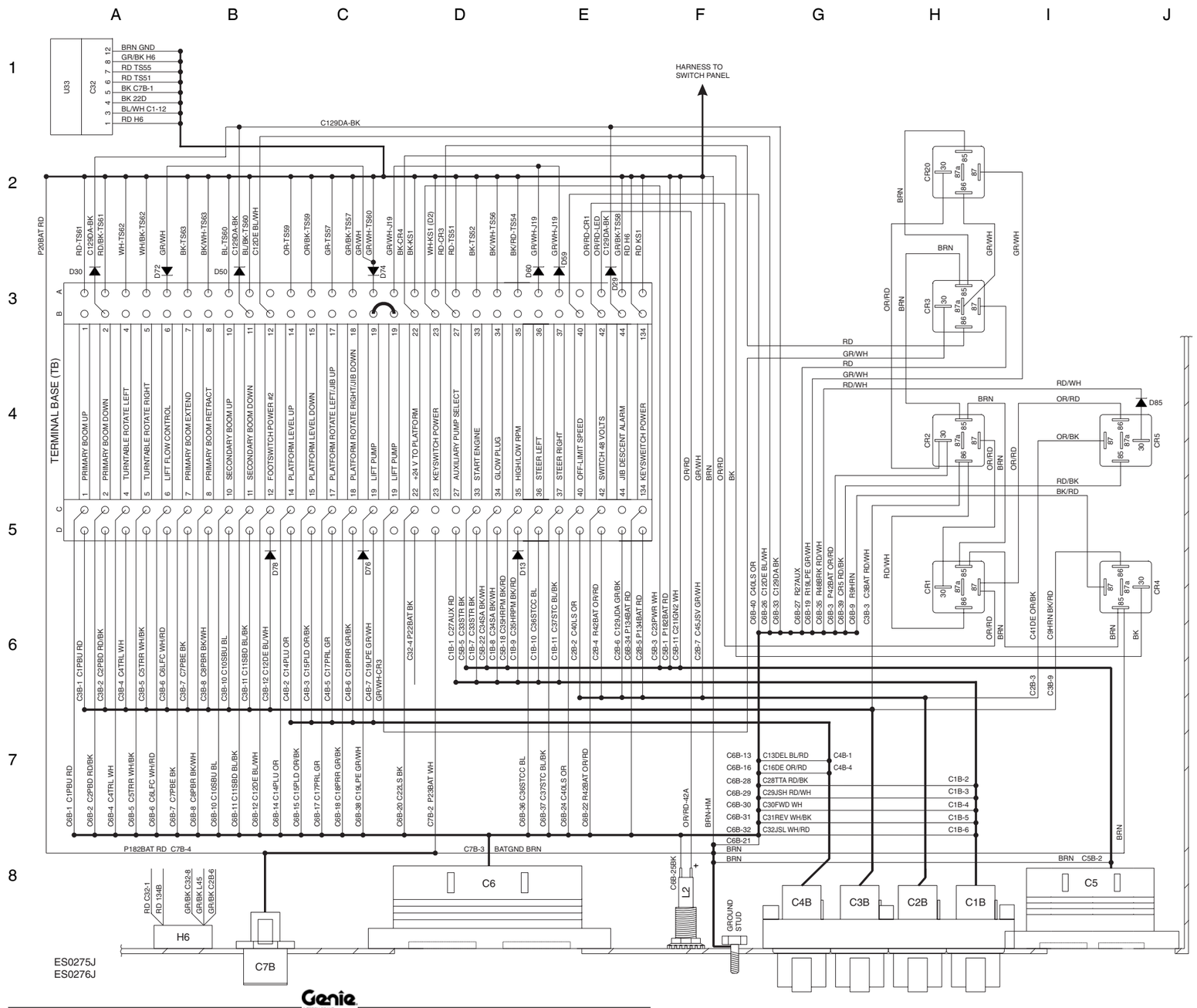
(from serial number Z452507-31015 to Z452507A-34514)





Ground Control Box Terminal Strip Wiring Diagram, (CE)

(from serial number Z452507-31015 to Z452507A-34514)



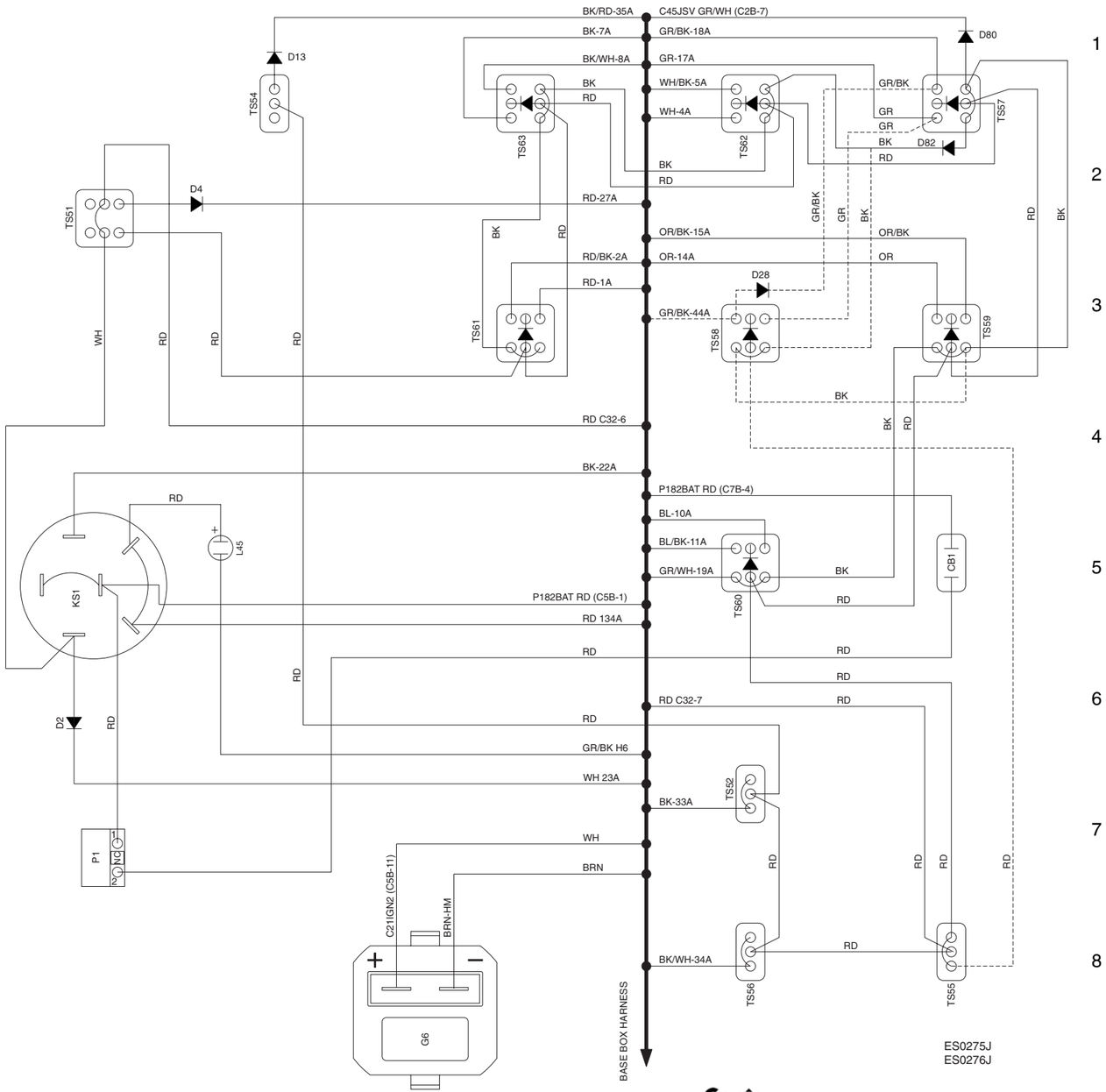
Ground Control Box Switch Panel Wiring Diagram, (CE)

(from serial number Z452507-31015 to Z452507A-34514)

COMPONENT INDEX - GROUND CONTROLS

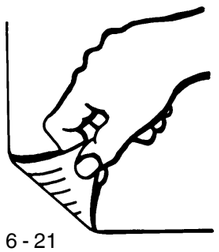
LABEL	DESCRIPTION
CB1	CONTROLS CIRCUIT BREAKER, 15A
CR1	48V DC POWER RELAY
CR2	48V DC POWER RELAY
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY PUMP RELAY
G6	HOURMETER
KS1	KEY SWITCH
L2	LED - FAULT INDICATOR
L45	LED - PLATFORM OVERLOAD
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM SELECT TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS58	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Ground Control Box Switch Panel Wiring Diagram, (CE)

(from serial number Z452507-31015 to Z452507A-34514)



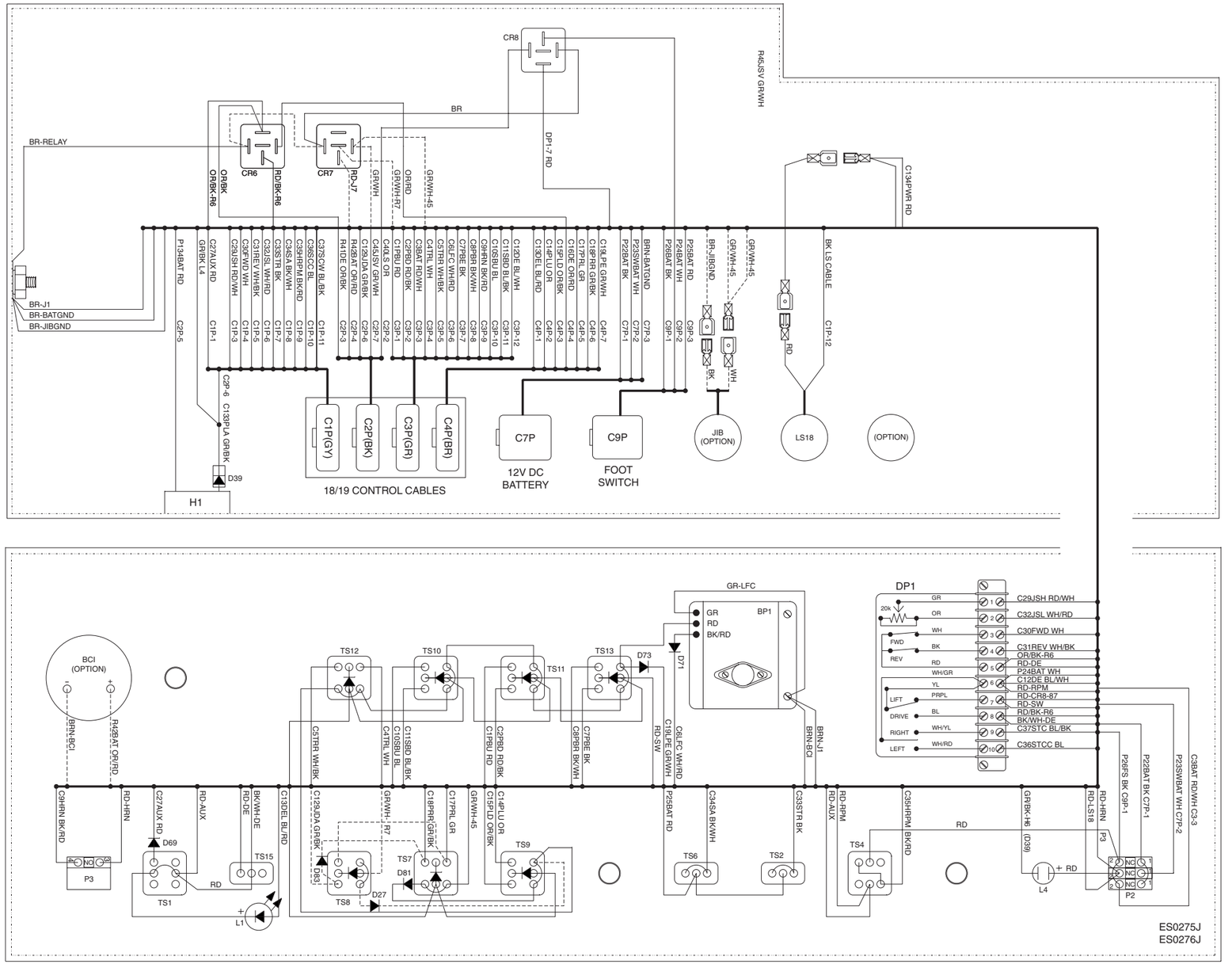
Platform Control Box Wiring Diagram, (CE)

(from serial number Z452507-31015 to Z452507A-34514)

COMPONENT INDEX - PLATFORM CONTROLS

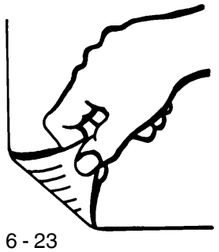
LABEL	DESCRIPTION
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
CR6	DRIVE ENABLE RELAY
CR7	JIB SELECT RELAY (OPTION)
CR8	LIFT / DRIVE RELAY
DP1	DRIVE / STEER JOYSTICK
H1	TILT ALARM
L1	LED - DRIVE ENABLE
L4	LED - PLATFORM OVERLOAD
LS18	LIMIT SWITCH - PLATFORM OVERLOAD
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS2	ENGINE START TOGGLE SWITCH
TS4	ENGINE RPM SELECT TOGGLE SWITCH
TS6	GLOW PLUG TOGGLE SWITCH
TS7	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS9	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS10	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Platform Control Box Wiring Diagram, (CE)

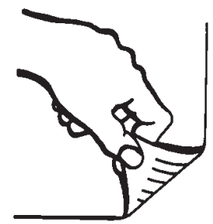
(from serial number Z452507-31015 to Z452507A-34514)



Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507A-34515)





Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507A-34515)

1 SWITCH SHOWN WITH BOOM EXTENDED.

A SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 CR24 ADDED AFTER SERIAL UMBER 37283 OR PER CAMPAIGN BULLETIN 080008.

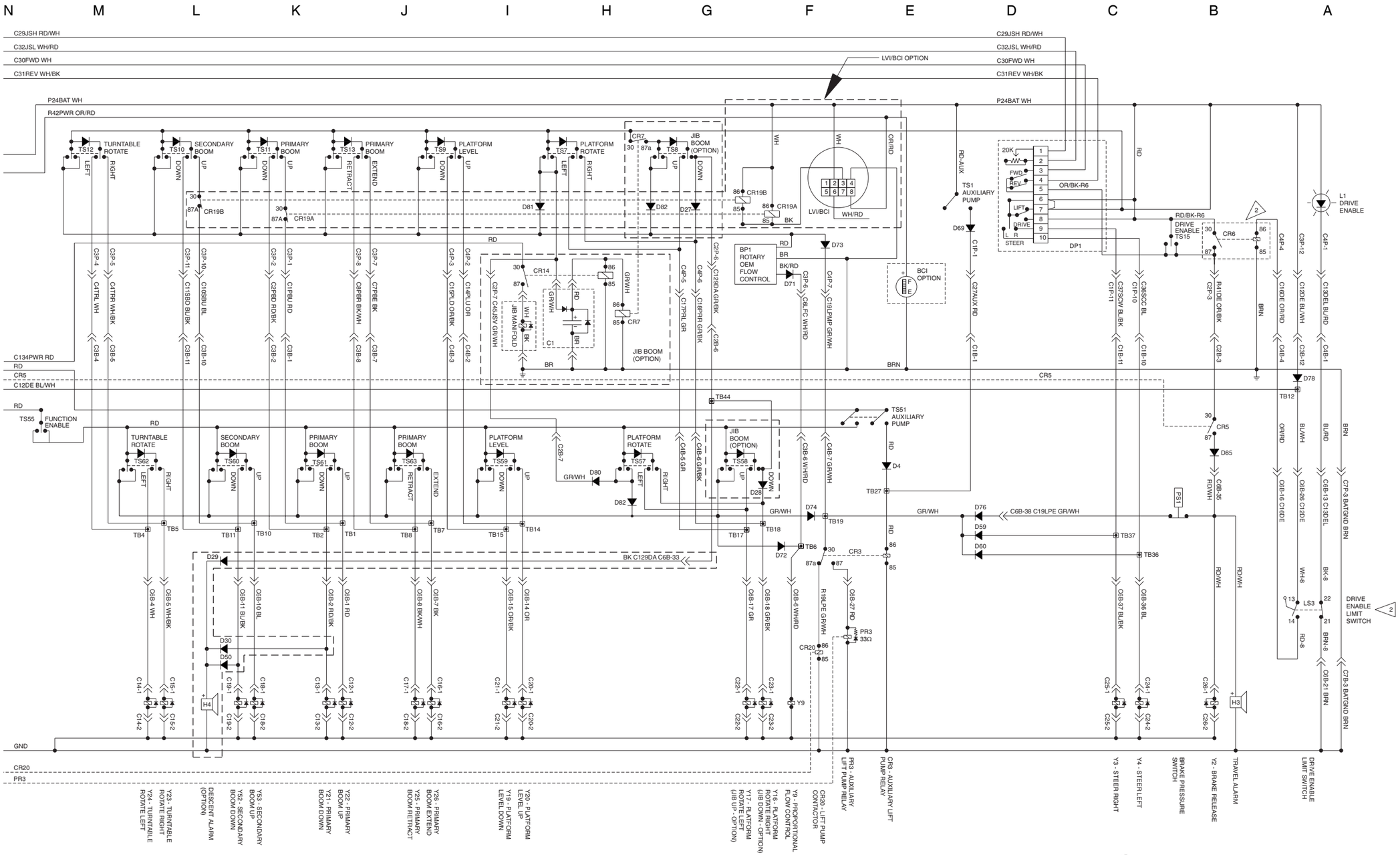
4 CB7 ADDED AFTER SERIAL NUMBER 38211.

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN THE STOWED POSITION EXCEPT AS NOTED.
2. ALL SOLENOID AND RELAY COILS ARE 24V DC EXCEPT WHERE NOTED.

ES0275L
ES0276M

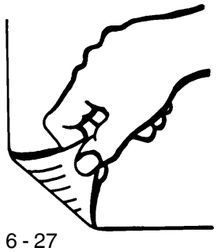
Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507A-34515)



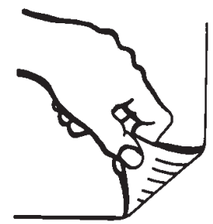
Electrical Schematic, (ANSI / CSA / AS)

(from serial number Z452507A-34515)

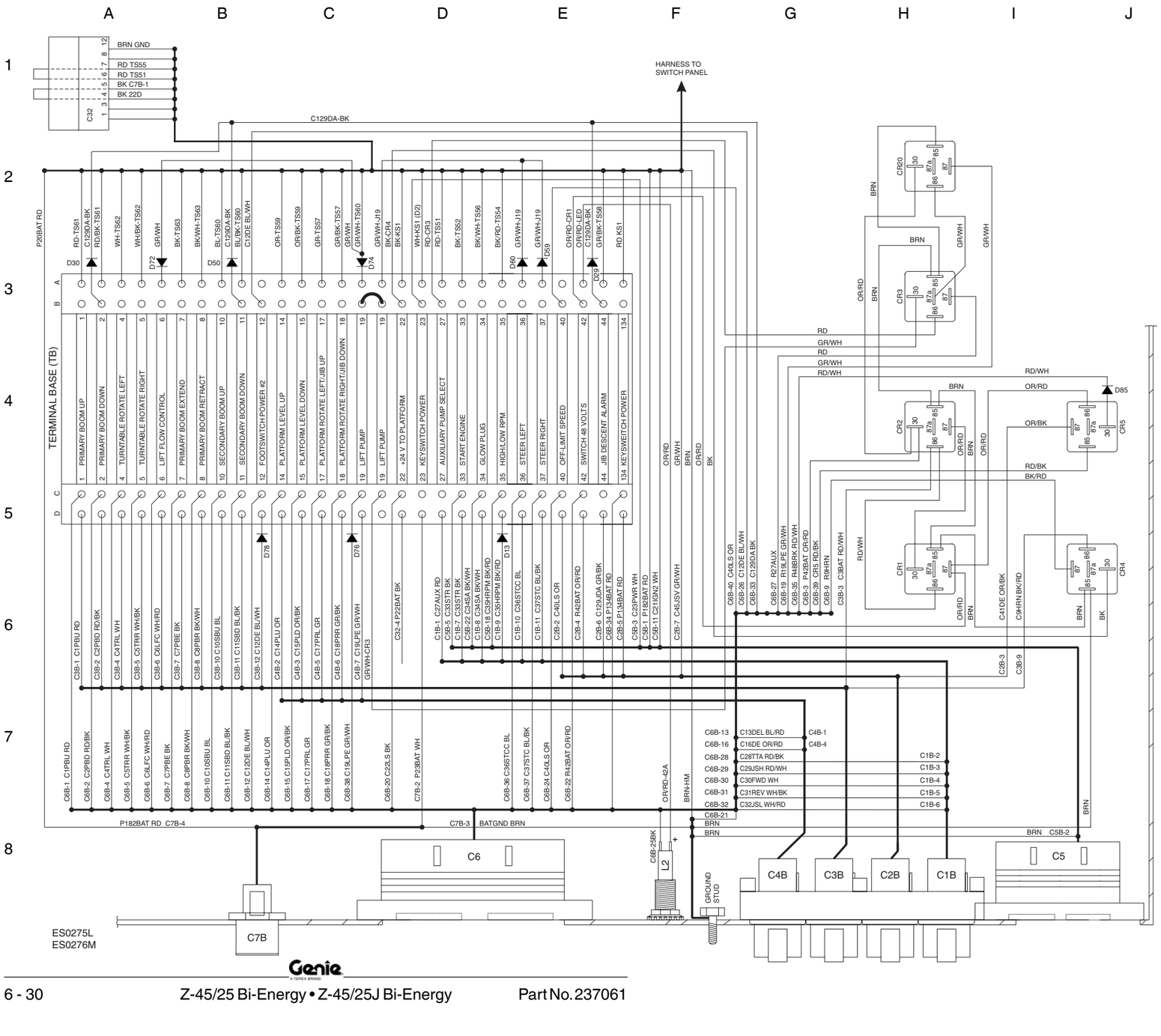


Ground Control Box Terminal Strip Wiring Diagram, (ANSI / CSA / AS), (from serial number Z452507A-34515)





Ground Control Box Terminal Strip Wiring Diagram, (ANSI / CSA / AS), (from serial number Z452507A-34515)

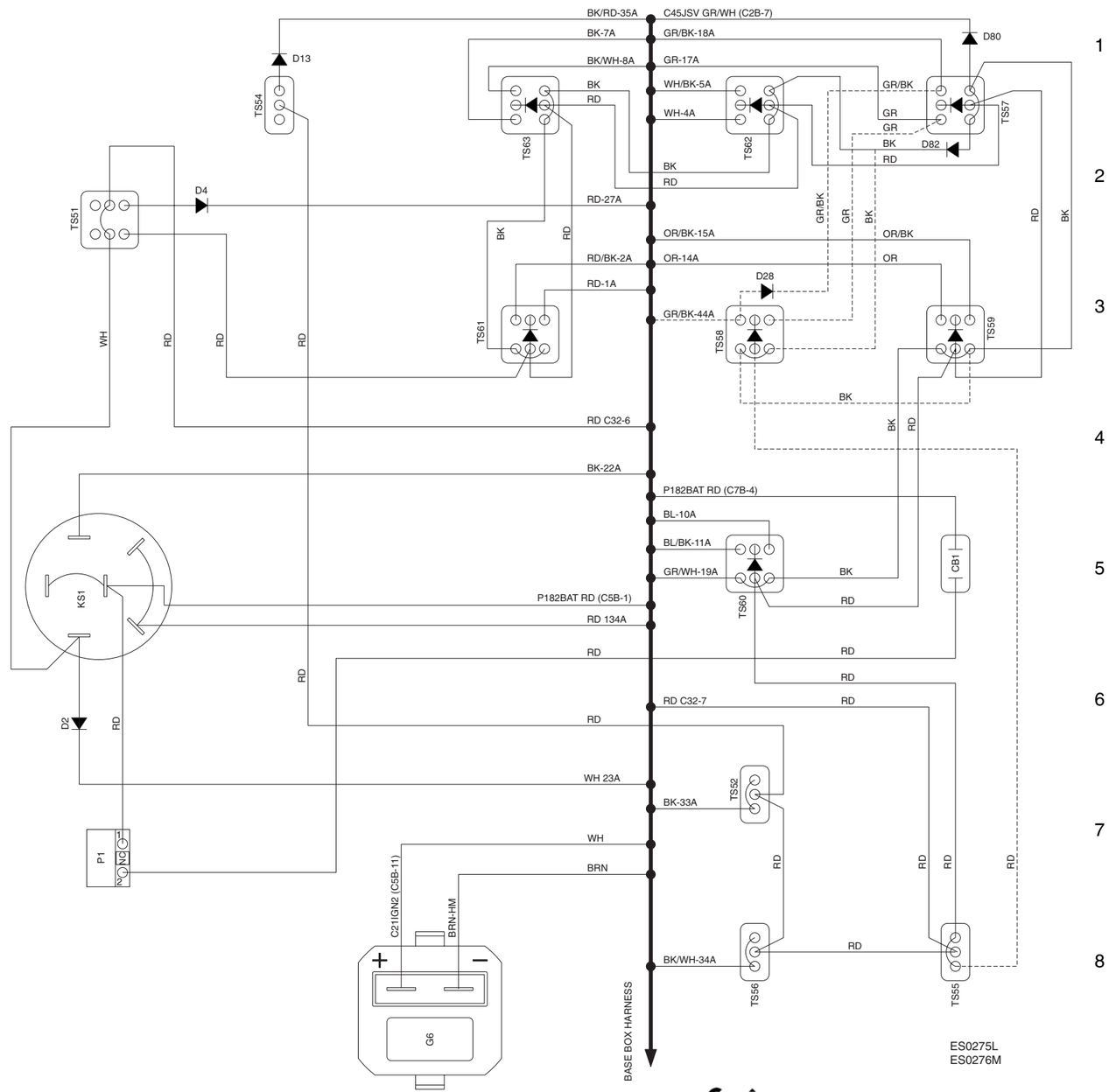


Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS), (from serial number Z452507A-34515)

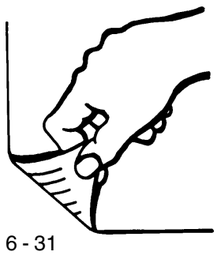
COMPONENT INDEX - GROUND CONTROLS

LABEL	DESCRIPTION
CB1	CONTROLS CIRCUIT BREAKER, 15A
CR1	48V DC POWER RELAY
CR2	48V DC POWER RELAY
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY PUMP RELAY
G6	HOURMETER
KS1	KEY SWITCH
L2	LED - FAULT INDICATOR
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM SELECT TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS58	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS), (from serial number Z452507A-34515)



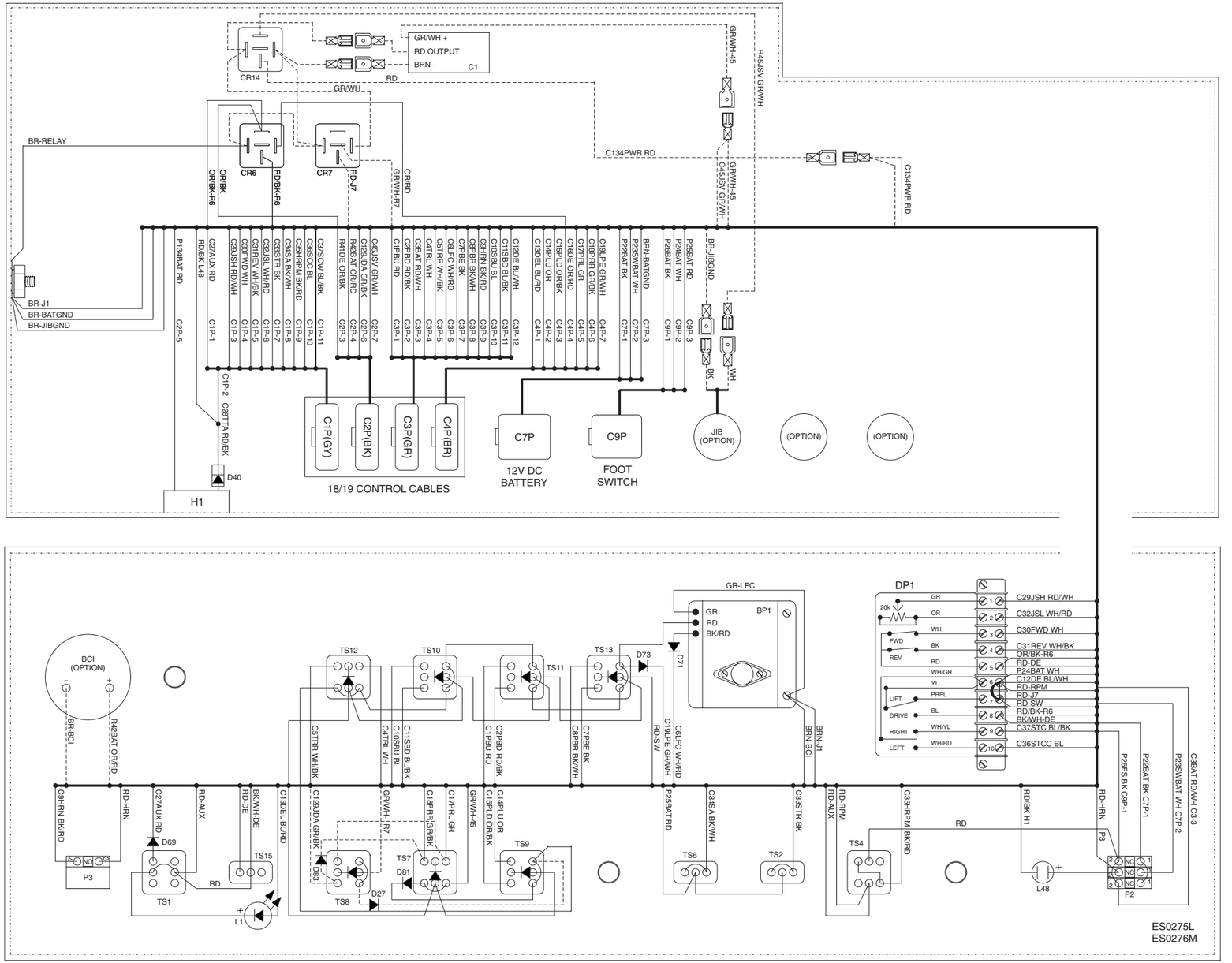
Platform Control Box Wiring Diagram, (ANSI / CSA / AS)

(from serial number Z452507A-34515)

COMPONENT INDEX - PLATFORM CONTROLS

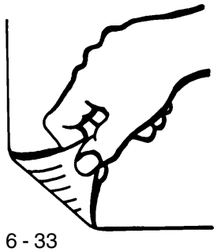
LABEL	DESCRIPTION
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
C1	TIME DELAY CAPACITOR
CR6	DRIVE ENABLE RELAY
CR7	JIB SELECT RELAY (OPTION)
CR14	JIB VALVE RELAY
DP1	DRIVE / STEER JOYSTICK
H1	TILT ALARM
L1	LED - DRIVE ENABLE
L48	LED - TILT ALARM
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS2	ENGINE START TOGGLE SWITCH
TS4	ENGINE RPM SELECT TOGGLE SWITCH
TS6	GLOW PLUG TOGGLE SWITCH
TS7	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
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TS10	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Platform Control Box Wiring Diagram, (ANSI / CSA / AS)

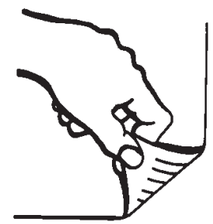
(from serial number Z452507A-34515)



Electrical Schematic, (CE)

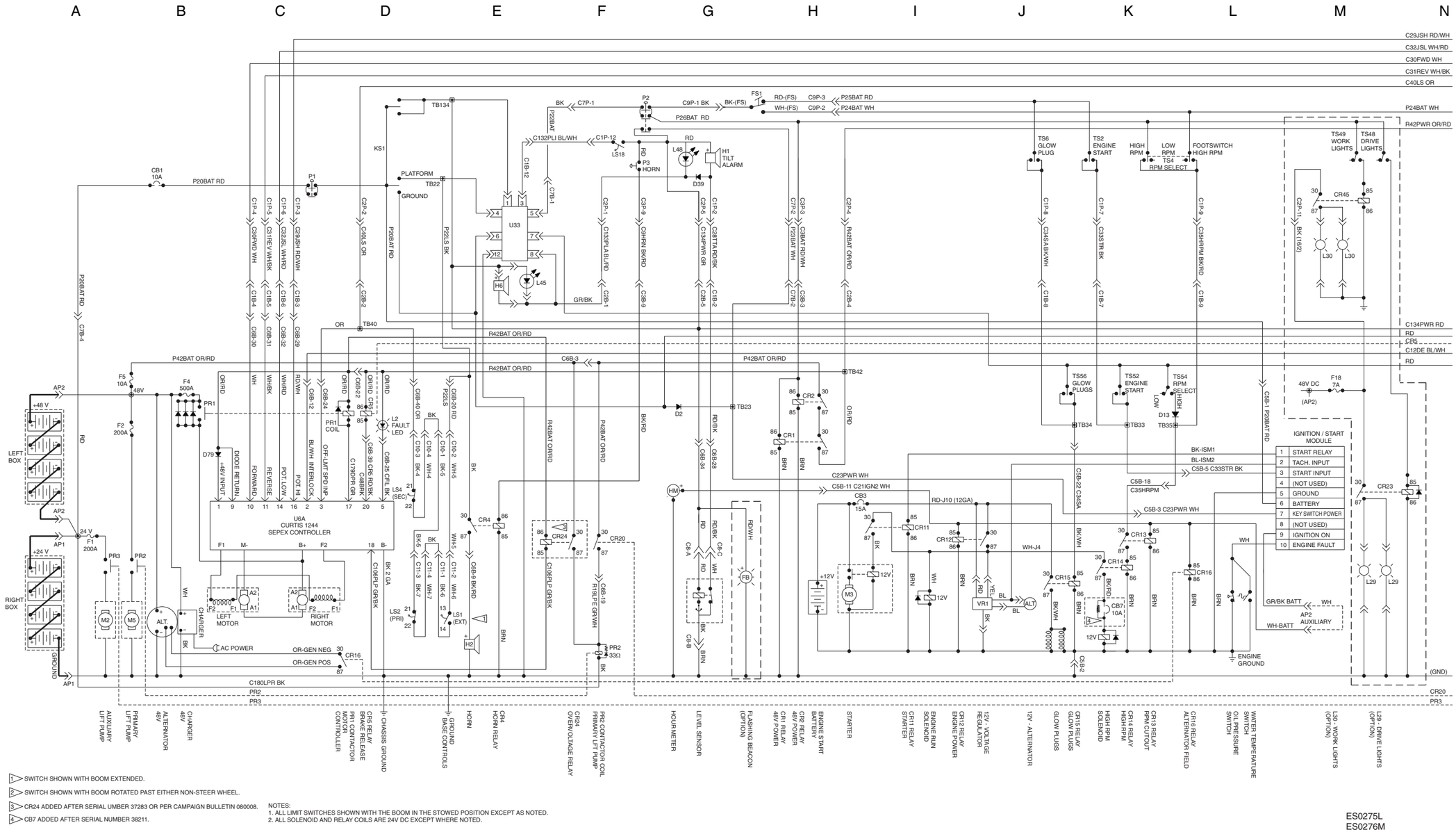
(from serial number Z452507A-34515)





Electrical Schematic, (CE)

(from serial number Z452507A-34515)



1 SWITCH SHOWN WITH BOOM EXTENDED.

A SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

3 CR24 ADDED AFTER SERIAL UMBER 37283 OR PER CAMPAIGN BULLETIN 080008.

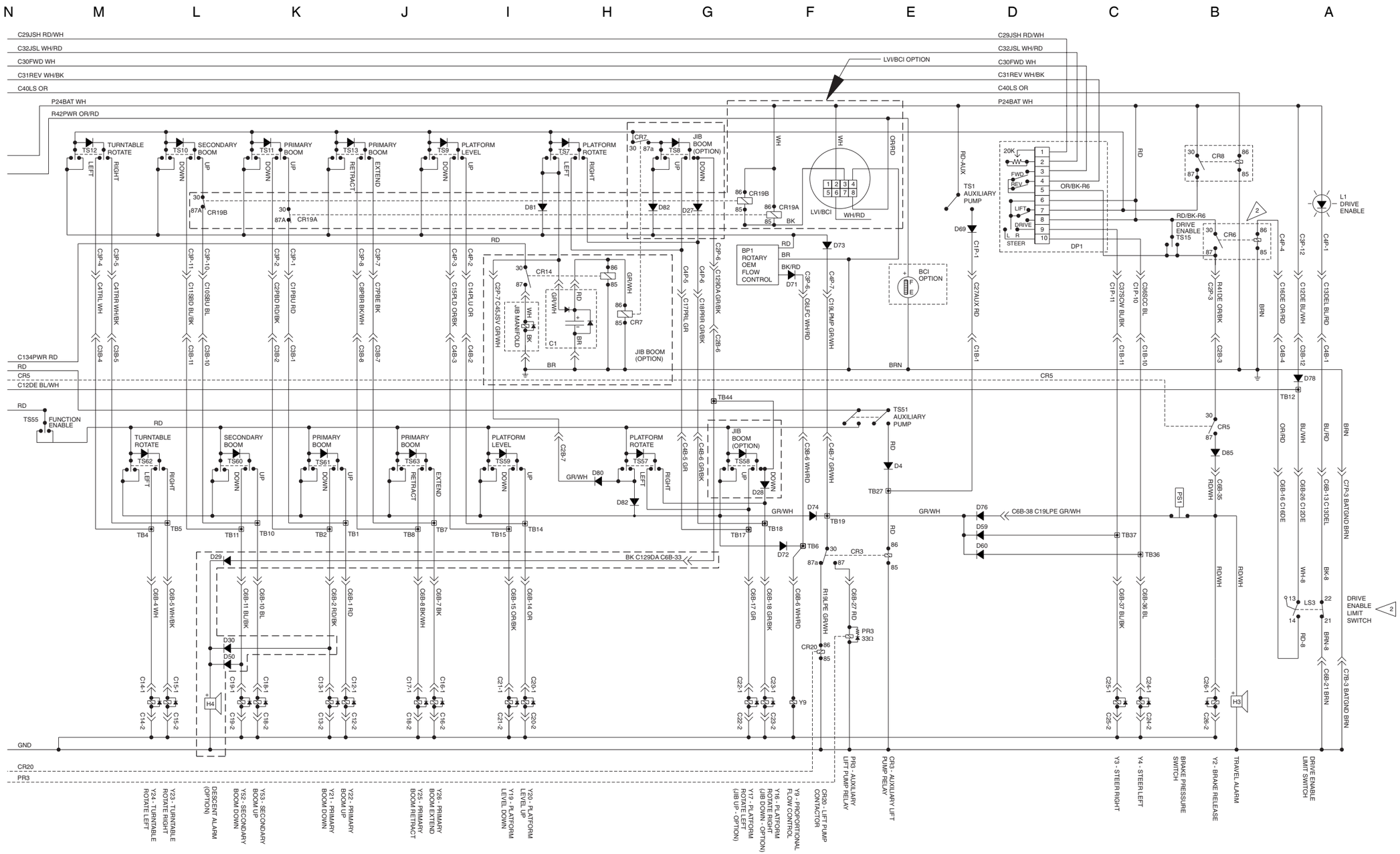
4 CB7 ADDED AFTER SERIAL NUMBER 38211.

NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH THE BOOM IN THE STOWED POSITION EXCEPT AS NOTED.
2. ALL SOLENOID AND RELAY COILS ARE 24V DC EXCEPT WHERE NOTED.

ES0275L
ES0276M

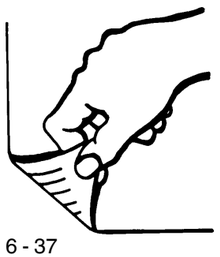
Electrical Schematic, (CE)

(from serial number Z452507A-34515)



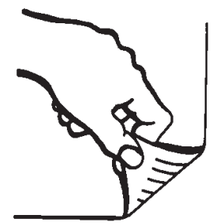
Electrical Schematic, (CE)

(from serial number Z452507A-34515)



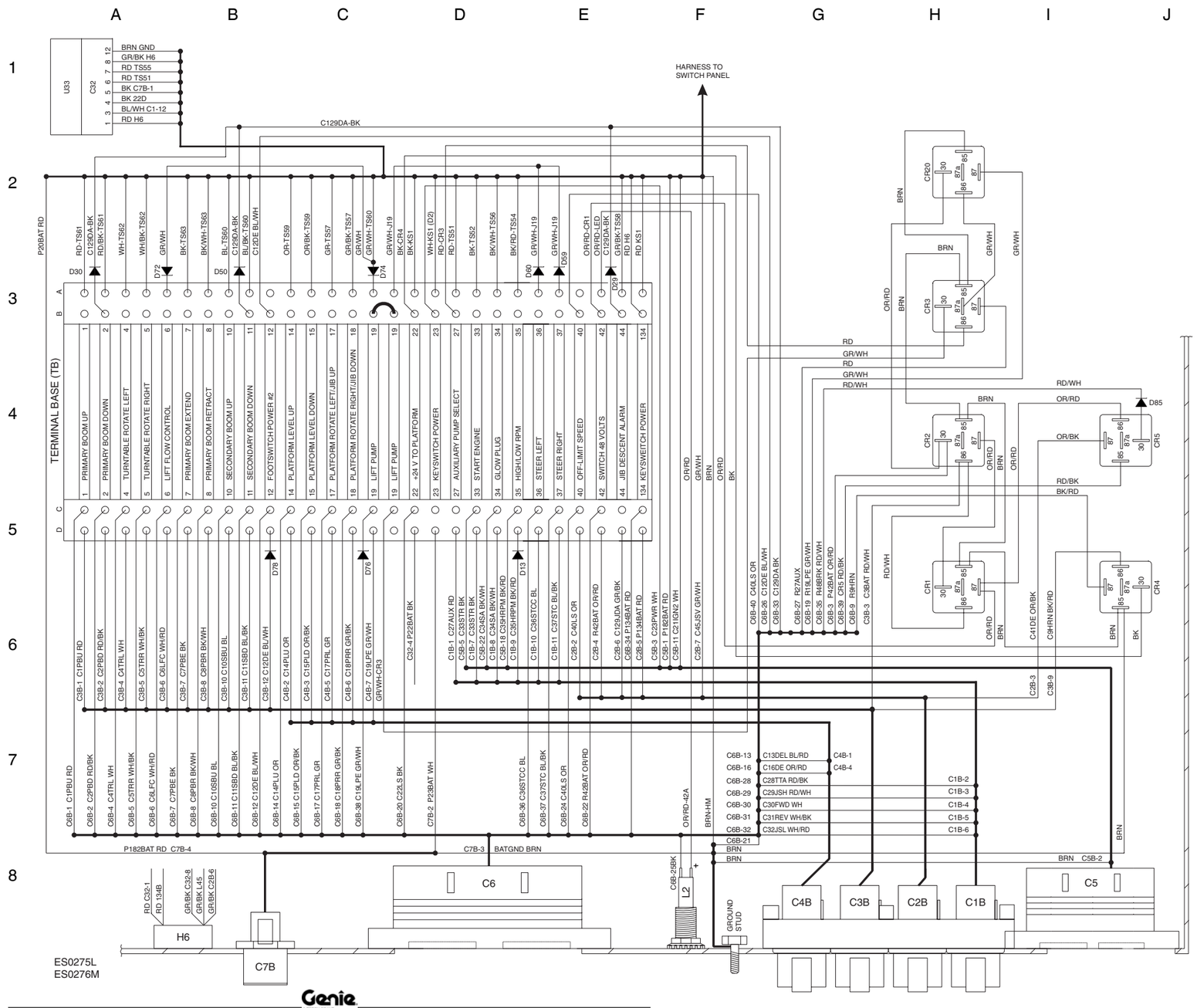
Ground Control Box Terminal Strip Wiring Diagram, (CE)
(from serial number Z452507A-34515)





Ground Control Box Terminal Strip Wiring Diagram, (CE)

(from serial number Z452507A-34515)



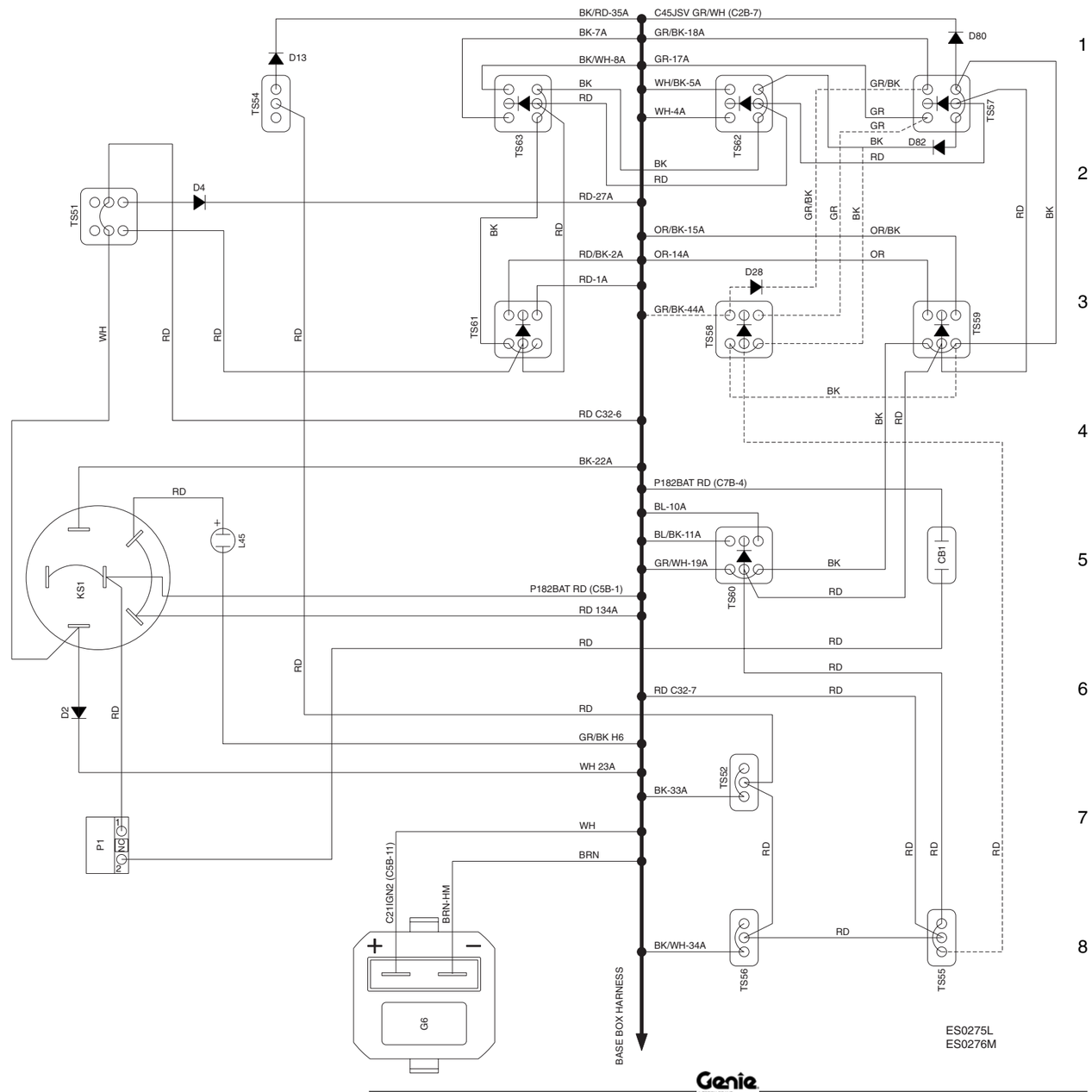
Ground Control Box Switch Panel Wiring Diagram, (CE)

(from serial number Z452507A-34515)

COMPONENT INDEX - GROUND CONTROLS

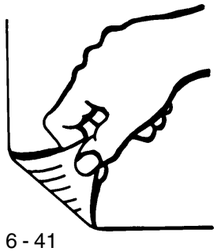
LABEL	DESCRIPTION
CB1	CONTROLS CIRCUIT BREAKER, 15A
CR1	48V DC POWER RELAY
CR2	48V DC POWER RELAY
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY PUMP RELAY
G6	HOURMETER
KS1	KEY SWITCH
L2	LED - FAULT INDICATOR
L45	LED - PLATFORM OVERLOAD
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM SELECT TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS58	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.



Ground Control Box Switch Panel Wiring Diagram, (CE)

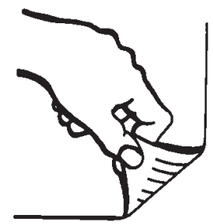
(from serial number Z452507A-34515)



Platform Control Box Wiring Diagram, (CE)

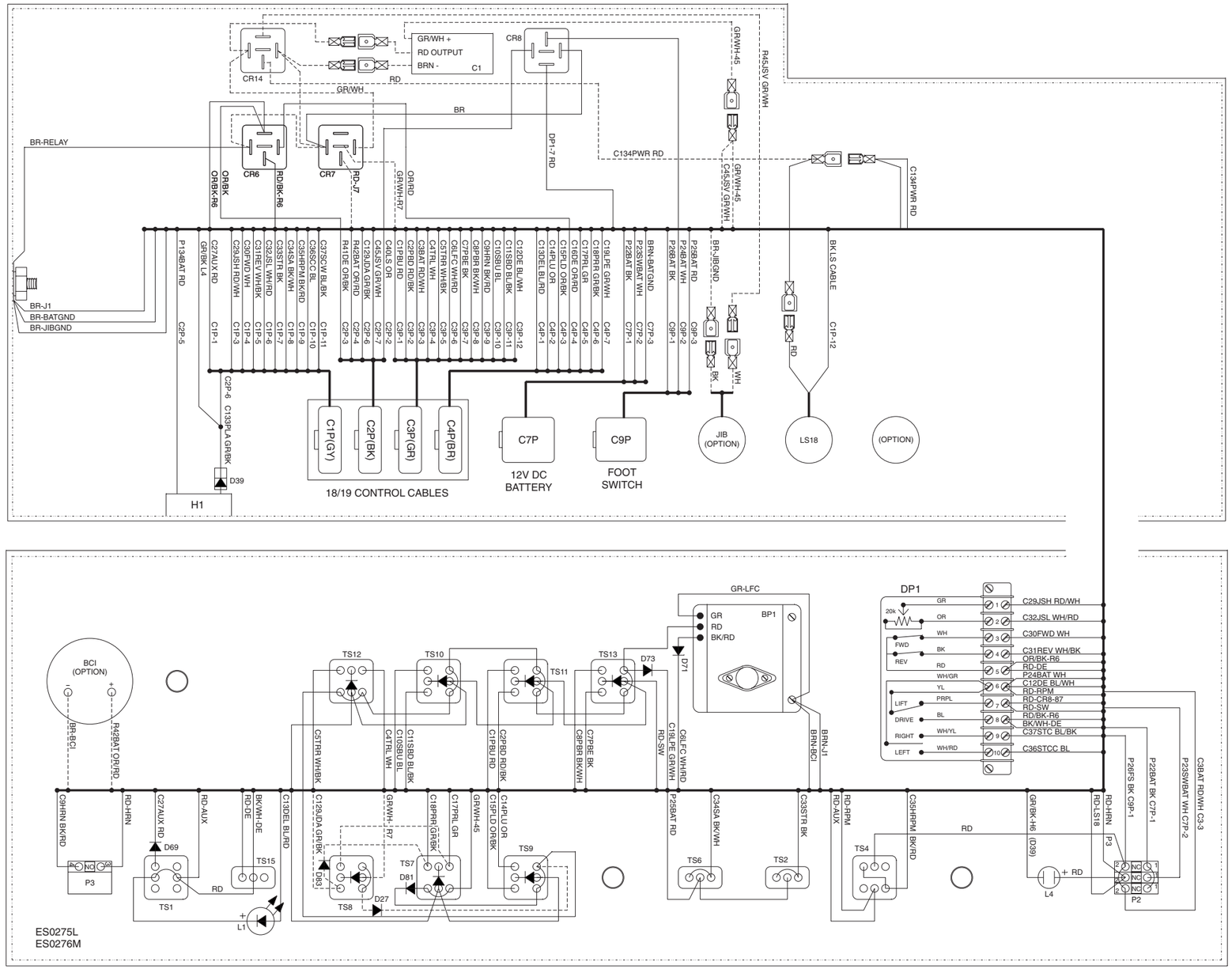
(from serial number Z452507A-34515)





Platform Control Box Wiring Diagram, (CE)

(from serial number Z452507A-34515)



COMPONENT INDEX - PLATFORM CONTROLS

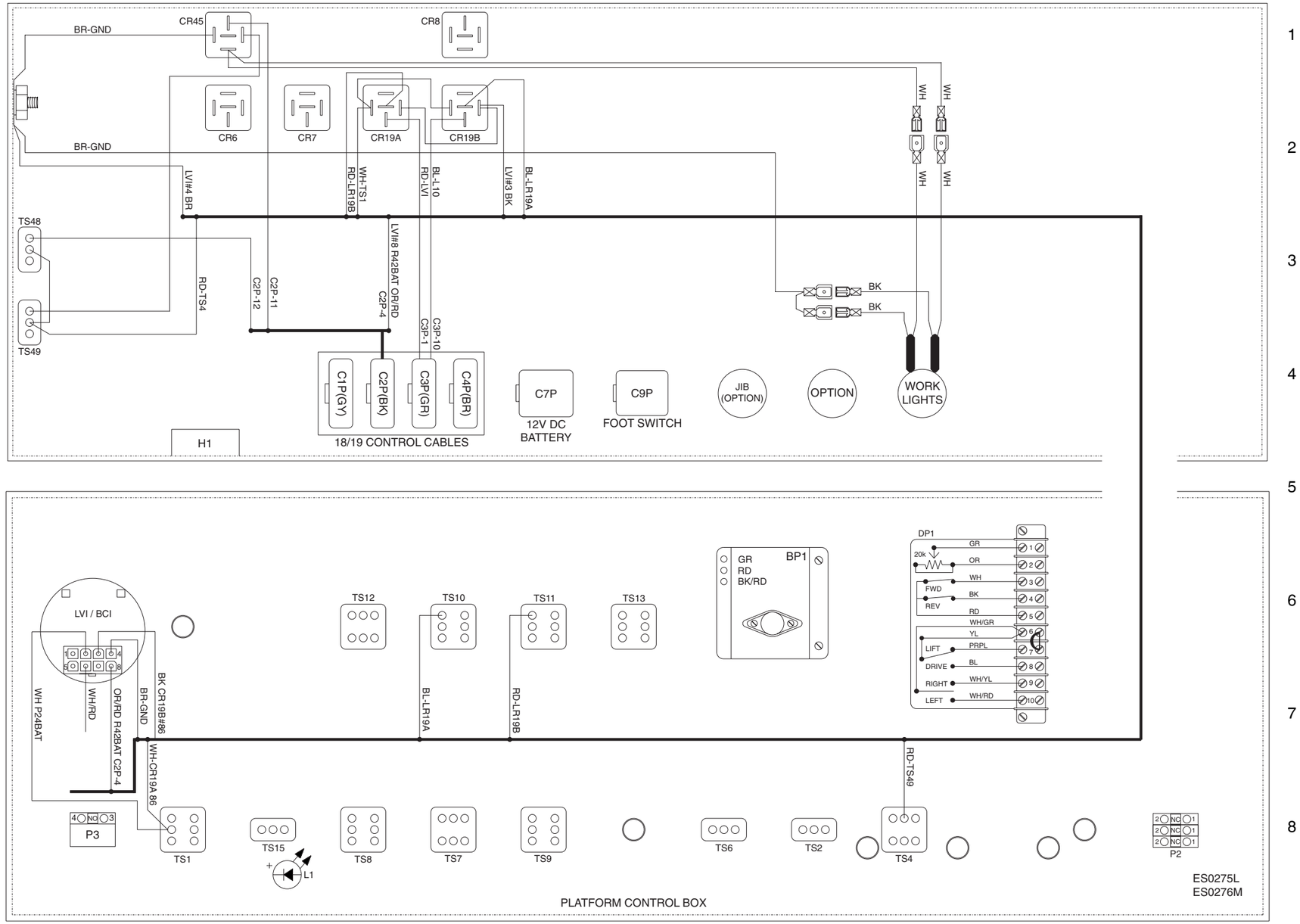
LABEL	DESCRIPTION
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
C1	TIME DELAY CAPACITOR
CR6	DRIVE ENABLE RELAY
CR7	JIB SELECT RELAY (OPTION)
CR8	LIFT / DRIVE RELAY
CR14	JIB VALVE RELAY
DP1	DRIVE / STEER JOYSTICK
H1	TILT ALARM
L1	LED - DRIVE ENABLE
L4	LED - PLATFORM OVERLOAD
LS18	LIMIT SWITCH - PLATFORM OVERLOAD
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS2	ENGINE START TOGGLE SWITCH
TS4	ENGINE RPM SELECT TOGGLE SWITCH
TS6	GLOW PLUG TOGGLE SWITCH
TS7	PLATFORM ROTATE CW / CCW TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
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TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE CW / CCW TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH

NOTE: DASHED LINES INDICATE OPTIONS.

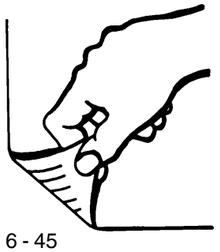
Platform Options Wiring Diagram

COMPONENT INDEX - PLATFORM CONTROLS

LABEL	DESCRIPTION
BCI	BATTERY CHARGE INDICATOR (OPTION)
CR19A	SECONDARY BOOM UP CUTOUT RELAY
CR19B	PRIMARY BOOM UP CUTOUT RELAY
CR45	WORK LIGHTS RELAY
LVI	LOW VOLTAGE INTRRUPT
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS4	ENGINE RPM SELECT TOGGLE SWITCH
TS10	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS48	DRIVE LIGHTS TOGGLE SWITCH
TS49	WORK LIGHTS TOGGLE SWITCH

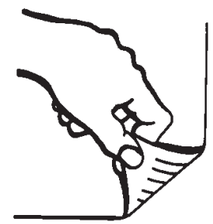


Platform Options Wiring Diagram

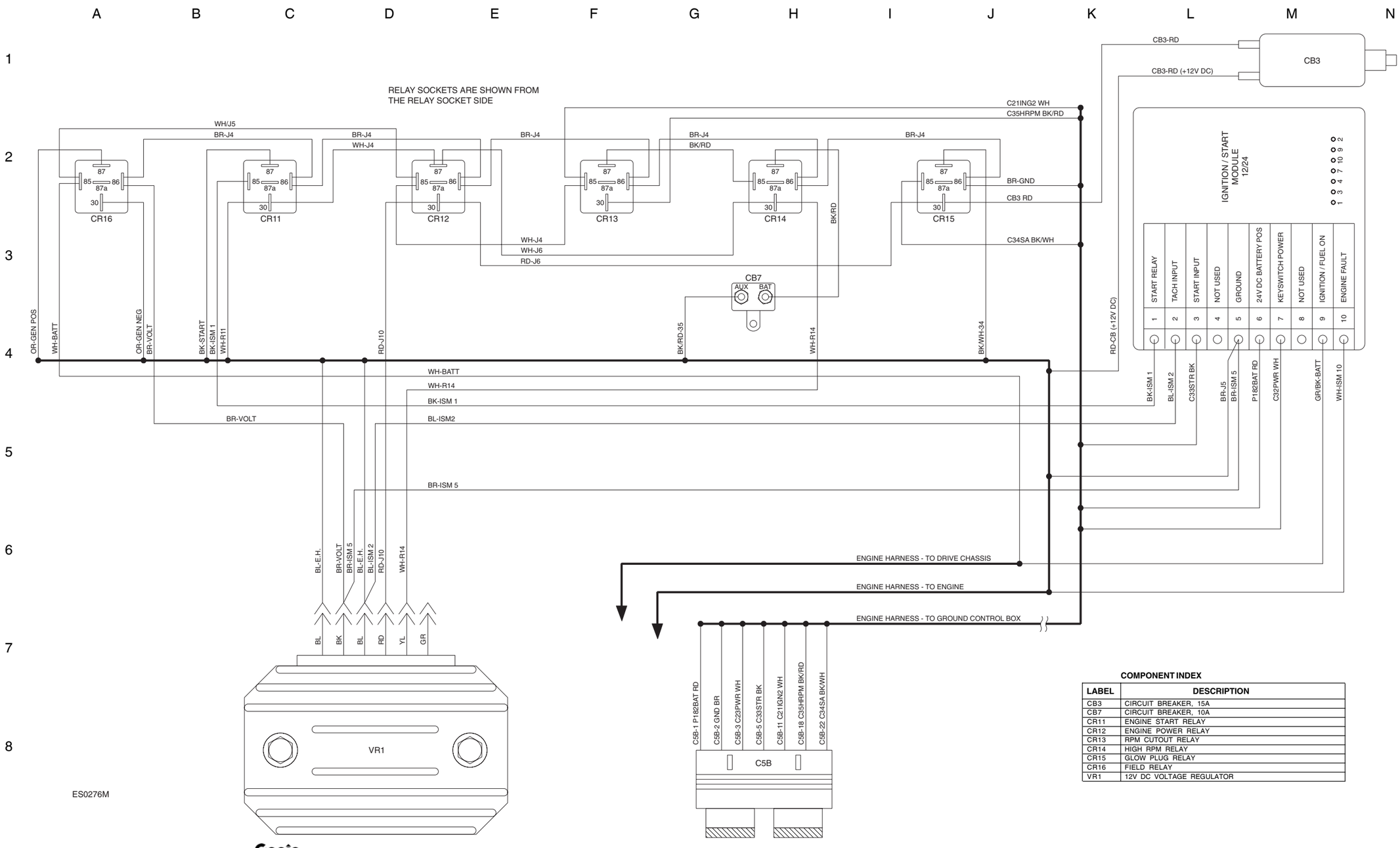


Engine Panel Wiring Diagram





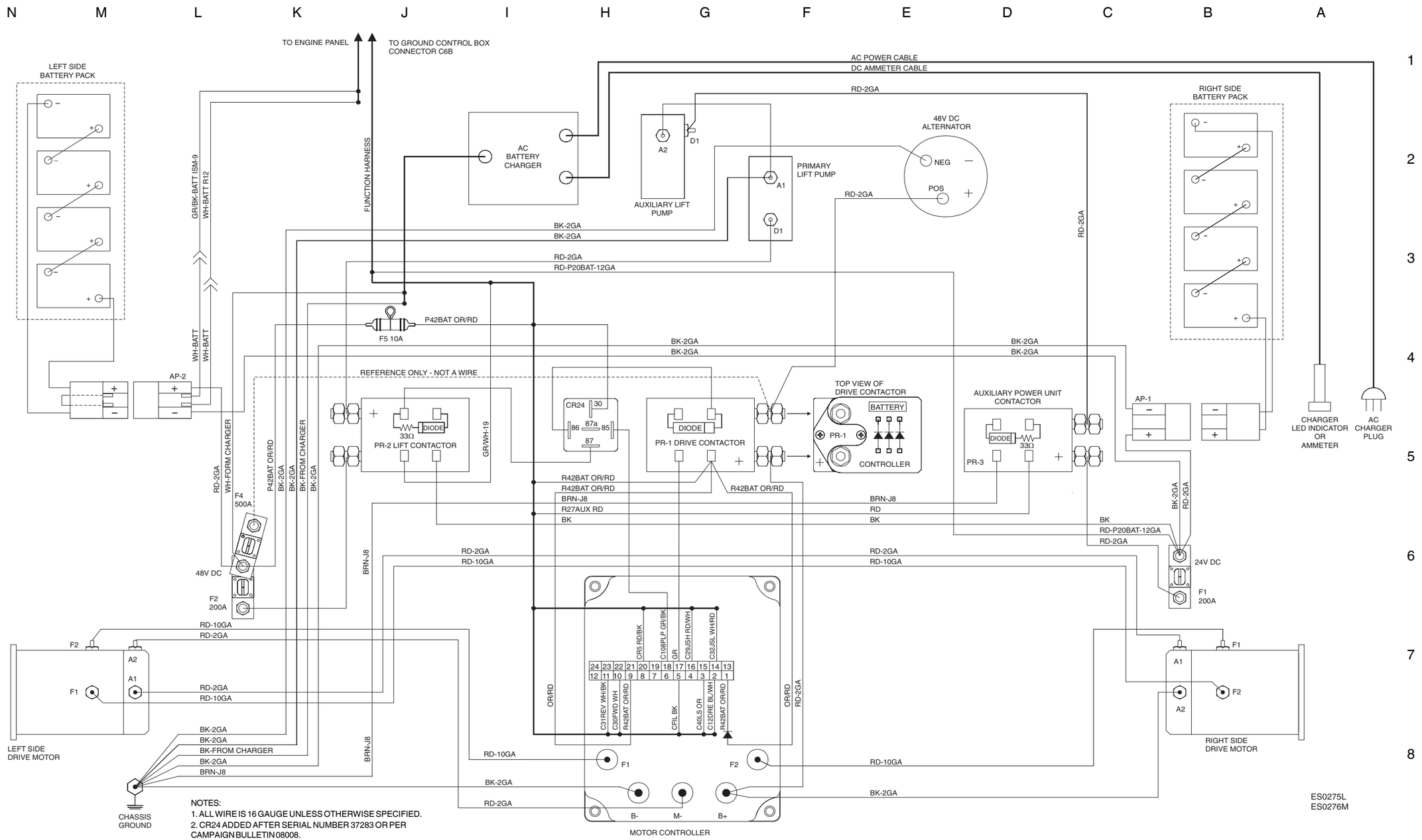
Engine Panel Wiring Diagram



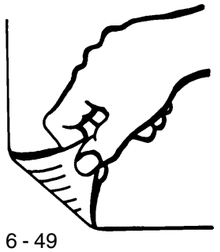
COMPONENT INDEX

LABEL	DESCRIPTION
CB3	CIRCUIT BREAKER, 15A
CB7	CIRCUIT BREAKER, 10A
CR11	ENGINE START RELAY
CR12	ENGINE POWER RELAY
CR13	RPM CUTOUT RELAY
CR14	HIGH RPM RELAY
CR15	GLOW PLUG RELAY
CR16	FIELD RELAY
VR1	12V DC VOLTAGE REGULATOR

Power Panel Wiring Diagram

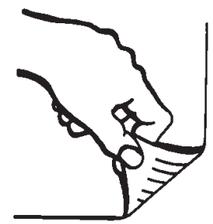


Power Panel Wiring Diagram

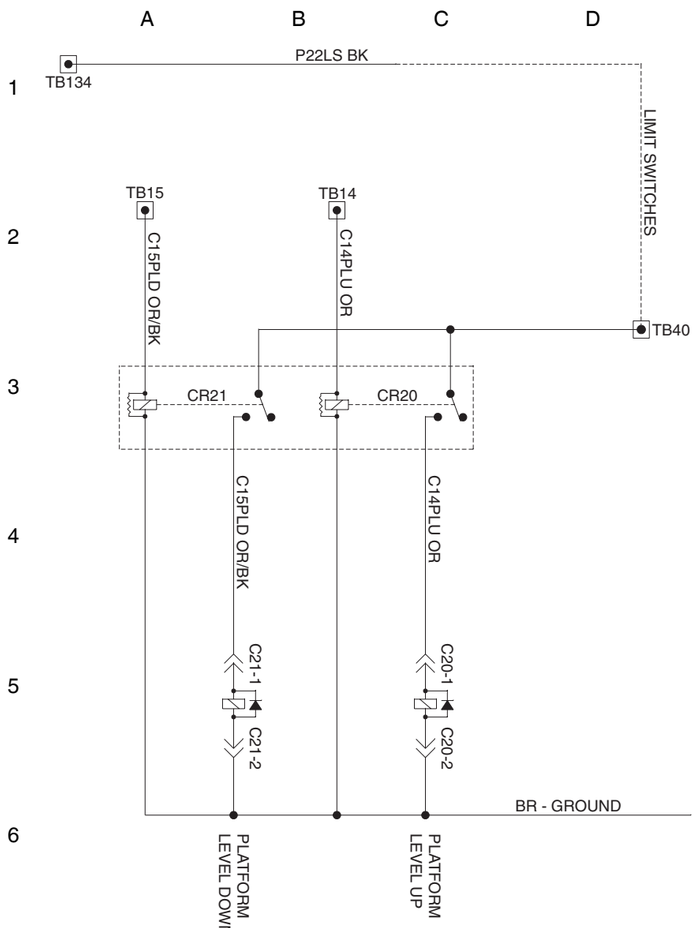


CTE Option Wiring Diagram, (CE)

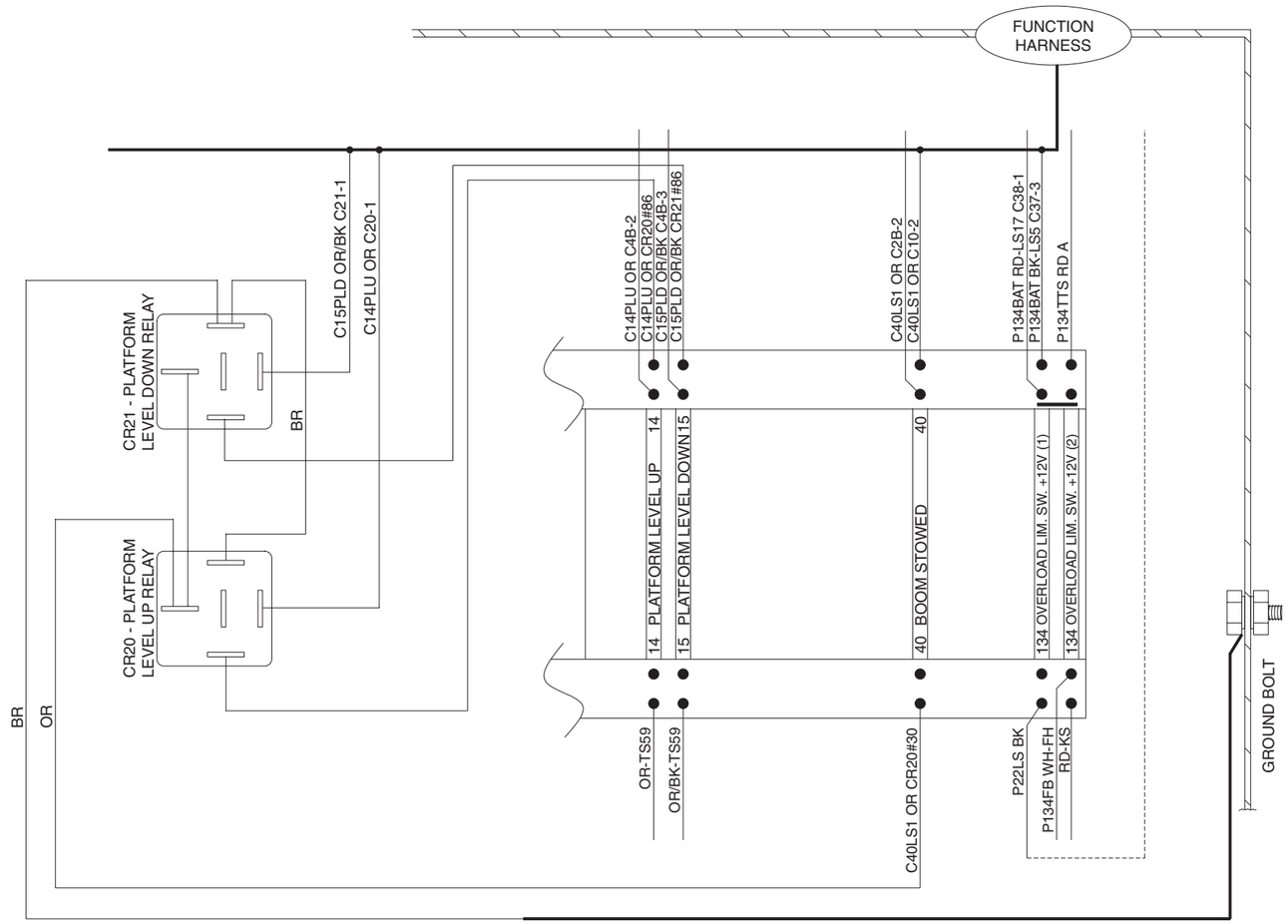




CTE Option Wiring Diagram, (CE)



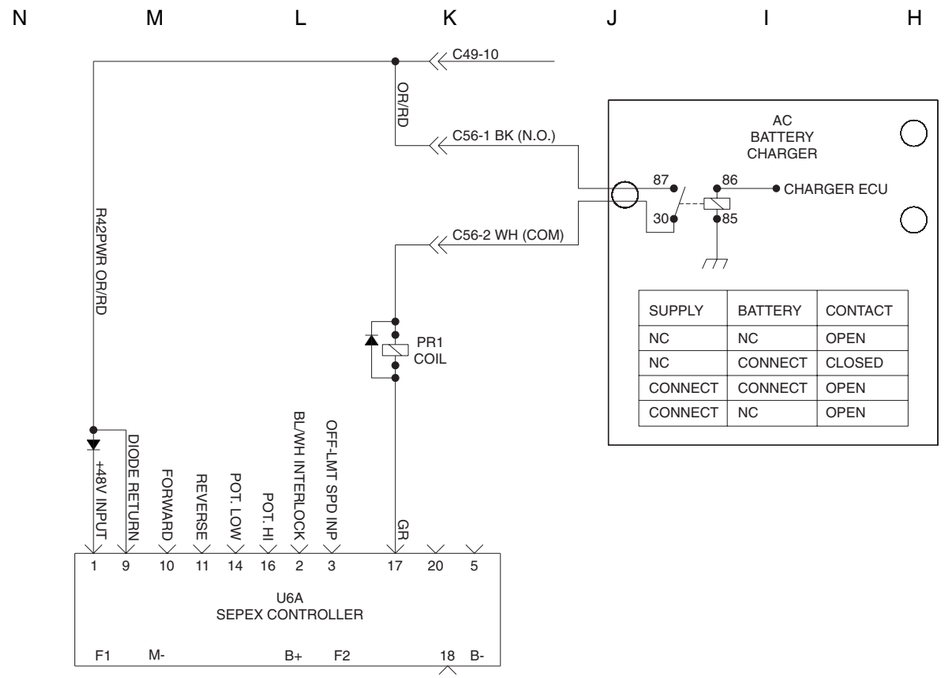
PLATFORM LEVEL CUTOUT



WIRING DIAGRAM

ES0275L
ES0276M

Charger Interlock Option

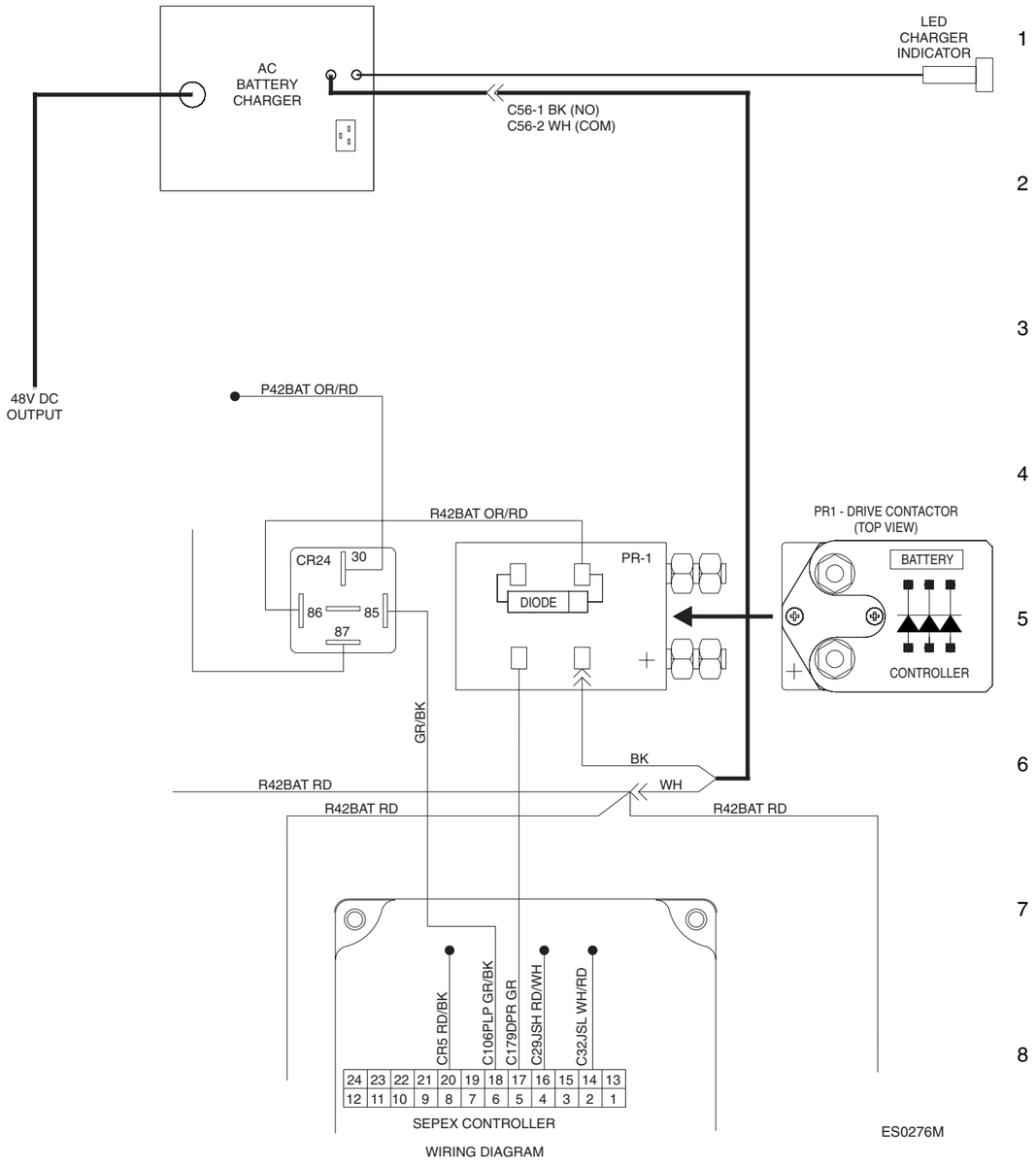


SUPPLY	BATTERY	CONTACT
NC	NC	OPEN
NC	CONNECT	CLOSED
CONNECT	CONNECT	OPEN
CONNECT	NC	OPEN

SCHEMATIC

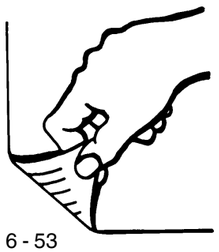
BATTERY INDICATOR LED
1. LED IS RED DURING PHASES I1 AND P (BULK CHARGE). (20% BATTERY CHARGED)
2. LED IS YELLOW DURING PHASES U AND I2. (80% BATTERY CHARGED)
3. LED IS GREEN AT THE END OF CHARGE. (100% BATTERY CHARGED)
4. LED FLASHES GREEN DURING CYCLE EQUALIZATION.
5. LED IS OFF WHEN THE CHARGER IS NOT POWERED.
6. LED FLASHES RED, INDICATES DEFECT / FAULT.

INTERLOCK RELAY (N.O.), 10A CONTACT
1. CHARGER NOT CONNECTED TO BATTERY OR MAIN SUPPLY, CONTACT OPEN.
2. CHARGER CONNECTED TO BATTERY, CONTACT CLOSED.
3. CHARGER CONNECTED TO BATTERY AND MAIN SUPPLY, CONTACT OPEN.

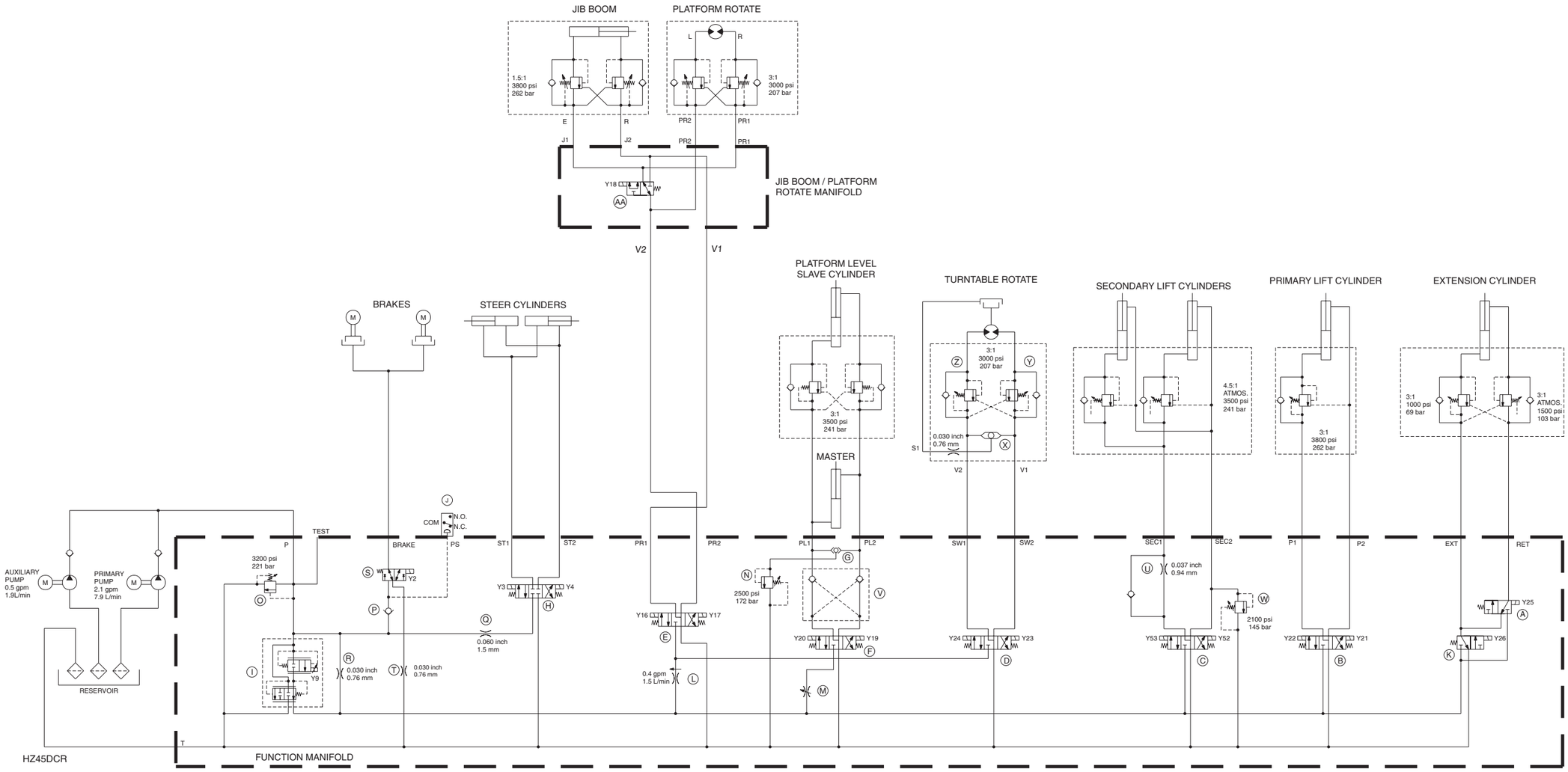


WIRING DIAGRAM

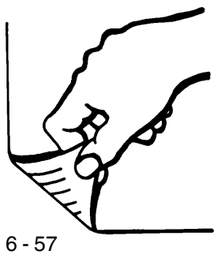
Charger Interlock Option



Hydraulic Schematic



Hydraulic Schematic



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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Genie North America
Phone 425.881.1800
Toll Free USA and Canada
800.536.1800
Fax 425.883.3475

Genie Australia Pty Ltd.
Phone +61 7 3375 1660
Fax +61 7 3375 1002

Genie China
Phone +86 21 53853768
Fax +86 21 53852569

Genie Singapore
Phone +65 67533544
Fax +65 67533544

Genie Japan
Phone +81 3 6436 2020
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Genie Korea
Phone +82 2 558 7267
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Genie Brasil
Phone +55 11 4082 5600
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Phone 0044 1476 584 333
Fax 0044 1476 584 330

Genie Mexico City
Phone +52 55 5666 5242
Fax +52 55 5666 3241