Genie®
A TEREX BRAND

Service and Repair Manual

Serial Number Range

Z®-45/25 DC

from Z452513A-48153
to Z452516N-57199

Z®-45/25J DC

from Z452513B-3078
to Z452516M-6699

from Z452513D-101
to Z452516D-939

from Z4525D-940
from Z4525M-6700
from Z4525N-57200

This manual includes:
Repair procedures
Fault Codes
Electrical and
Hydraulic Schematics

For detailed maintenance procedures, refer to the appropriate Maintenance Manual for your machine.

Part No. 1268530GT
Rev A3
November 2017

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any procedure.

This manual provides troubleshooting and repair procedures for qualified service professionals.

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

Compliance

Machine Classification

Group B/Type 3 as defined by ISO 16368

Machine Design Life

Unrestricted with proper operation, inspection and scheduled maintenance.

Technical Publications

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

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

Contact Us:

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Find a Manual for this Model

Go to http://www.genielift.com

Use the links to locate Service Manuals, Maintenance Manuals, Service and Repair Manuals, Parts Manuals and Operator's Manuals.

1268530GT Rev A, September 2016

First Edition, First Printing

Revision History

Revision	Date	Section	Procedure / Page / Description
A	9/2015		Initial Release
A1	9/2016	Introduction	Serial Number Legend
A2	9/2016	Repair	10-1
A3	11/2017	Specifications	Machine Specifications

Reference Examples:
Section – Repair Procedure, 4-2
Section – Fault Codes, All charts
Section – Schematics, Legends and schematics

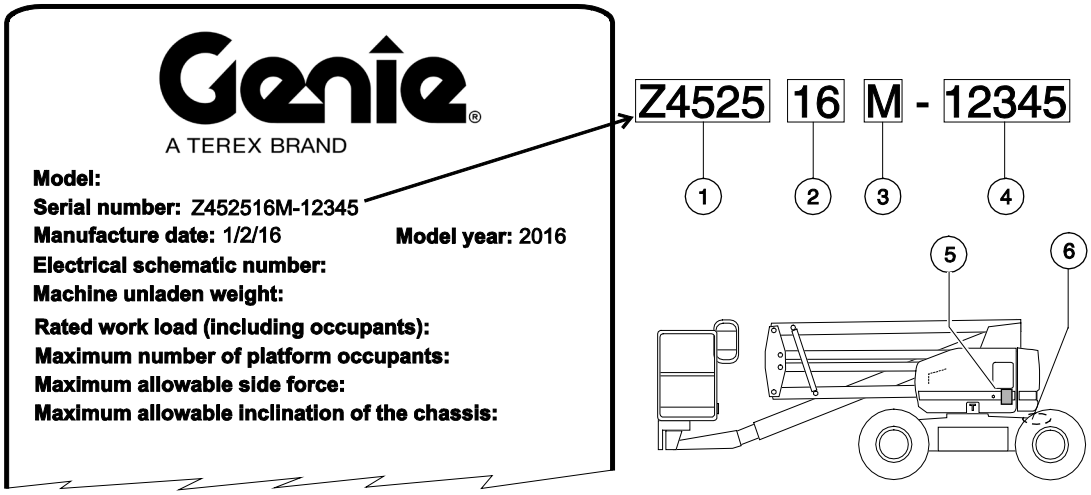
Electronic Version

Click on any content or procedure in the Table of Contents to view the update.

Introduction

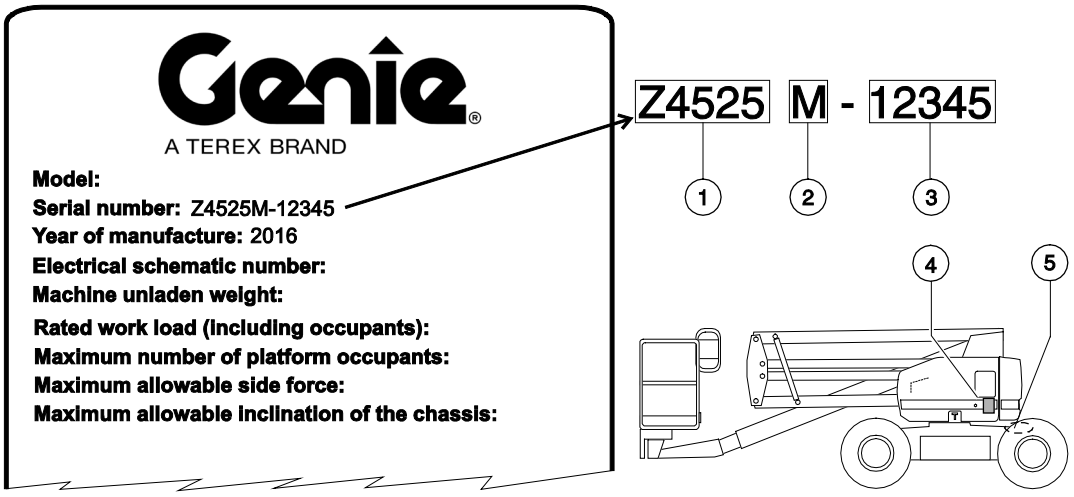
Serial Number Legend

To August 31, 2016



1 Model
2 Model year
3 Facility code
4 Sequence number
5 Serial label (located under cover)
6 Serial number (stamped on chassis)

From September 1, 2016



1 Model
2 Facility code
3 Sequence number
4 Serial label (located under cover)
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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.

Safety Rules

Personal Safety

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

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

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

⚠DANGER Indicates a 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

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.

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

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

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

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

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

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

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Specifications

Machine Specifications

Tires and wheels	
Tire size	9-14.5 LT
Tire ply rating	Tread 8 Sidewall 6
Overall tire diameter	28 in 71 cm
Wheel diameter	14.5 in 37 cm
Wheel width	7 in 18 cm
Wheel lugs	9 @ 5/8 -18
Lug nut torque, lubricated	83 ft-lbs 112.5 Nm
Lug nut torque, dry	110 ft-lbs 149 Nm
Tire contact area	43.5 sq in 280 sq cm
Fluid capacities	
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 503 cc
W1 type	23 fl oz 680 cc
Turntable rotation drive hub	25.5 fl oz 750 CC
Drive hub oil type: SAE 90 multipurpose hypoid gear oil API service classification GL5	
Batteries	
Type	6V DC
Group	L-16
Quantity	8
Capacity	350 AH
Reserve capacity @ 25A rate	750 minutes
Weight, each	106 lbs 48 kg

Performance Specifications

Drive speed, maximum	
Stowed position	3 mph 4.8 km/h 40 ft / 9 sec 12.2 m / 9 sec
Raised or extended	0.6 mph 0.98 km/h 40 ft / 45 sec 12.2 m / 45 sec
Gradeability	See Operator's Manual
Braking distance, maximum	
High range on paved surface	5 to 7 ft 1.5 to 2 m
Joystick function speeds, maximum from platform controls	
Jib boom up, Z-45/25J	26 to 40 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
Primary boom extend	14 to 18 seconds
Primary boom retract	17 to 21 seconds
Secondary boom up	38 to 46 seconds
Secondary boom down	38 to 46 seconds
Turntable rotate, 355ø 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

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

Specifications

Hydraulic Oil Specifications

Hydraulic Fluid Specifications	
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 prevention, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.	
Cleanliness level, minimum	ISO 15/13
Water content, maximum	250 ppm
Recommended Hydraulic Fluid	
Hydraulic oil type	Chevron Rando HD Premium
Viscosity grade	32
Viscosity index	200
Optional Hydraulic Fluids	
Mineral based	Shell Tellus S2 V 32 Shell Tellus S2 V 46 Shell Tellus S4 VX 32 Shell Shell Donax TG (Dexron III) Chevron 5606A
Biodegradable	Petro Canada Environ MV 46
Fire resistant	UCON Hydrolube HP-5046

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

NOTICE

Optional fluids may not have the same hydraulic lifespan and may result in component damage.

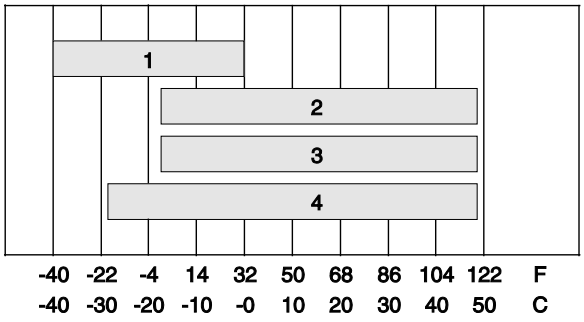
Note: Extended machine operation can cause the hydraulic fluid temperature to increase beyond it's maximum allowable range. If the hydraulic fluid temperature consistently exceeds 200°F / 90°C an optional oil cooler may be required.

NOTICE

Do not top off with incompatible hydraulic fluids. Hydraulic fluids may be incompatible due to the differences in base additive chemistry. When incompatible fluids are mixed, insoluble materials may form and deposit in the hydraulic system, plugging hydraulic lines, filters, control valves and may result in component damage.

Note: Do not operate the machine when the ambient air temperature is consistently above 120°F / 49°C.

Hydraulic Fluid Temperature Range



Ambient air temperature

1 Chevron hydraulic oil 5606A
2 Petro-Canada Environ MV 46
3 UCON Hydrolube HP-5046D
4 Chevron Rando HD premium oil MV

Specifications

Chevron Rando HD Premium Oil MV Fluid Properties

ISO Grade	32
Viscosity index	200
Kinematic Viscosity cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 7.5 33.5
Brookfield Viscosity cP @ -4°F / -20°C cP @ -22°F / -30°C	 1040 3310
Flash point	375°F / 190°C
Pour point	-58°F / -50°C
Maximum continuous operating temperature	171°F / 77°C

Note: A hydraulic oil heating system is recommended when the ambient temperature is consistently below 0°F / -18°C.

Note: Do not operate the machine when the ambient temperature is below -20°F / -29°C with Rando HD Premium MV.

Chevron 5606A Hydraulic Oil Fluid Properties

ISO Grade	15
Viscosity index	300
Kinematic Viscosity cSt @ 200°F / 100°C cSt @ 104°F / 40°C cSt @ -40°F / -40°C	 5.5 15.0 510
Flash point	180°F / 82°C
Pour point	-81°F / -63°C
Maximum continuous operating temperature	124°F / 51°C

Note: Use of Chevron 5606A hydraulic fluid, or equivalent, is required when ambient temperatures are consistently below 0°F / -17°C unless an oil heating system is used.

NOTICE

Continued use of Chevron 5606A hydraulic fluid, or equivalent, when ambient temperatures are consistently above 32°F / 0°C may result in component damage

Specifications

Petro-Canada Environ MV 46 Fluid Properties

ISO Grade	46
Viscosity index	154
Kinematic Viscosity cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 8.0 44.4
Flash point	482°F / 250°C
Pour point	-49°F / -45°C
Maximum continuous operating temperature	180°F / 82°C

Shell Tellus S4 VX Fluid Properties

ISO Grade	32
Viscosity index	300
Kinematic Viscosity cSt @ 200°F / 100°C cSt @ 104°F / 40°C	 9 33.8
Brookfield Viscosity cSt @ -4°F / -20°C cSt @ -13°F / -25°C cSt @ -40°F / -40°C	 481 702.4 2624
Flash point	>100
Pour point	-76°F / -60°C
Maximum continuous operating temperature	103°F / 75°C

UCON Hydrolube HP-5046 Fluid Properties

ISO Grade	46
Viscosity index	192
Kinematic Viscosity cSt @ 149°F / 65°C cSt @ 104°F / 40°C cSt @ 0°F / -18°C	 22 46 1300
Flash point	None
Pour point	-81°F / -63°C
Maximum continuous operating temperature	189°F / 87°C

Hydraulic Component Specifications

Function pump	
Type	Fixed displacement gear pump
Displacement per revolution	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, maximum	3200 psi 220.6 bar
Secondary boom down relief valve pressure	2100 psi 145 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 per revolution	0.5 gpm 1.9 L/min

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

Specifications

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

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

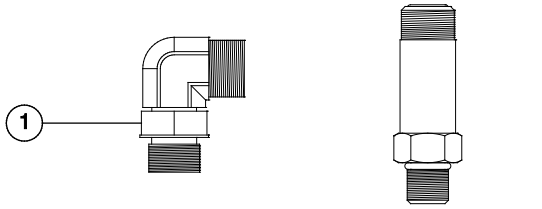
(swivel nut or hose connection)

SAE Dash Size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 ¼
-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



Adjustable Fitting

Non-adjustable fitting

1 jam nut

SAE O-ring Boss Port

(tube fitting - installed into Steel)

SAE Dash Size		Torque
-4	ORFS / 37° (Adj) ORFS (Non-adj) 37° (Non-adj)	15 ft-lbs / 20.3 Nm 26 ft-lbs / 35.3 Nm 22 ft-lbs / 30 Nm
-6	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	35 ft-lbs / 47.5 Nm 29 ft-lbs / 39.3 Nm
-8	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	60 ft-lbs / 81.3 Nm 52 ft-lbs / 70.5 Nm
-10	ORFS (Adj / Non-adj) 37° (Adj / Non-adj)	100 ft-lbs / 135.6 Nm 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

Torque Procedure

Seal-Lok™ fittings

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

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

2 Lubricate the O-ring before installation.

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

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

5 Tighten the nut or fitting to the appropriate torque. Refer to the appropriate torque chart in this section.

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

JIC 37° fittings

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

2 Using a permanent ink marker, make a reference mark on one the flats of the hex nut and continue the mark onto the body of the hex fitting. Refer to Illustration 1.

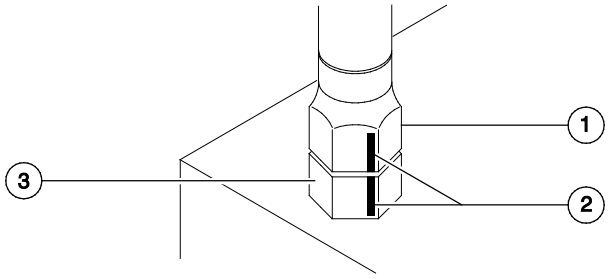


Illustration 1

1 hex nut
2 reference mark
3 body hex fitting

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

Note: Use the JIC 37° Fitting table in this section to determine the correct number of flats, for the proper tightening position.

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

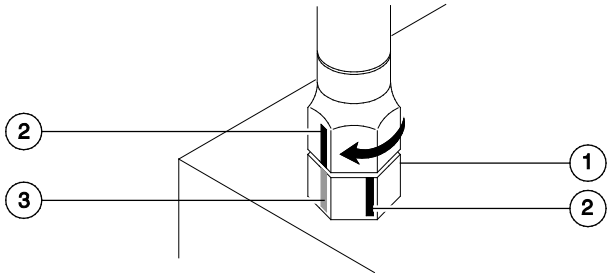


Illustration 2

1 body hex fitting
2 reference mark
3 second mark

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

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

Specifications

SAE FASTENER TORQUE CHART

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

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

METRIC FASTENER TORQUE CHART

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

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

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.

☑ Be sure that all necessary tools and parts are available and ready for use.

☑ Use only Genie approved replacement parts.

☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.

Machine Configuration:

☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:

- Machine parked on a firm, level surface
- Key switch in the off position with the key removed
- The red Emergency Stop button in the off position at both the ground and platform controls
- Wheels chocked
- All external AC power supply disconnected from the machine
- Boom in the stowed position
- Turntable secured with the turntable rotation lock

Repair Procedures

About This Section

Most of the procedures in this section should only be performed by 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 a 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.

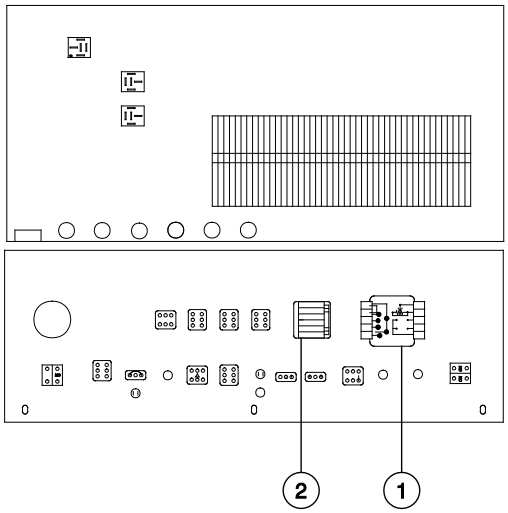
NOTICE Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⊙ 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.

1-1 Controllers

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 the Fault Codes section 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 Product Support.



1 boom function speed controller
2 drive joystick

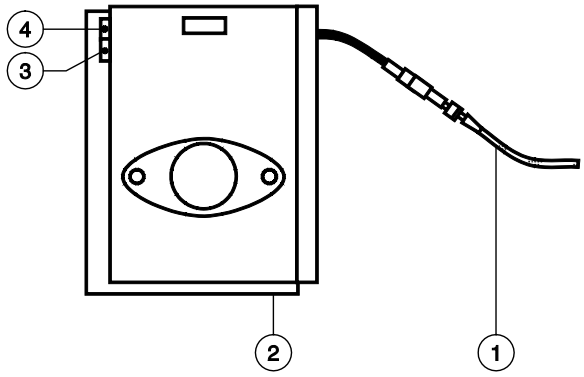
Boom Function Speed Controller Adjustments

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

Note: Do not adjust the boom function speed controller unless the static battery supply voltage is above 24V DC.

1 Turn the key switch to platform controls 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.



1 white/red wire to TP6
2 boom function speed controller
3 threshold trimpot
4 max out trimpot

Platform Controls

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	0.45 to 0.46A

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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *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 **Z-45/25:** Support the platform rotator with a suitable lifting device.

Platform Components

9 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.

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

11 Carefully pull the cylinder out of the primary boom.

How to Bleed the Slave Cylinder

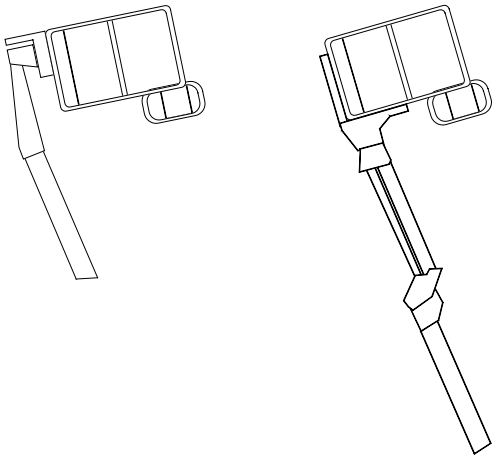
Note: This procedure will have to be preformed outside.

1 **Z45/25J**: Raise the jib to a horizontal postion and raise the secondary boom 3 feet.

Z45/25: Raise the secondary boom 4 feet.

2 Move the function enable toggle switch to either side. Simultaneously activate and hold the primary boom up and platform level up toggle switches until the primary boom is fully raised.

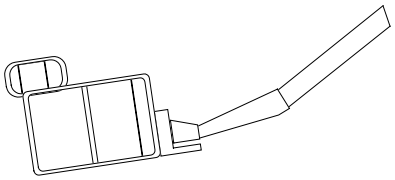
⊙ The platform should be facing in an upward position. As shown.



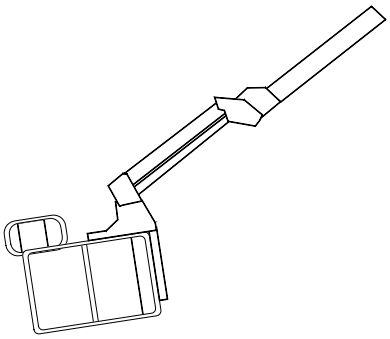
Z45/25 **Z45/25J**

3 While still holding the function enable toggle switch, simultaneously activate the primary boom down and platform level down toggle switches until the primary boom is fully lowered.

⊙ The platform should be facing in a down position. As shown.



Z45/25



Z45/25J

2-2 Platform Rotator

How to Bleed the Platform Rotator

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

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

2 Place a suitable container underneath the platform rotator.

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

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

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.

3-1
Jib Boom

How to Remove the Jib Boom

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

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

1 Remove the platform.

2 Disconnect the electrical connector from the jib boom/platform rotate select valve 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.

Jib Boom Components

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 may become unbalanced and fall when it is removed from the machine if it is not properly supported by 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 may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead crane.

3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

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

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

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

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

2 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.

Jib Boom Components

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 may become unbalanced and fall when it is removed from the machine if it is 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 may become unbalanced and fall when it is removed from the machine if it is not properly supported by 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *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 "PR1" and "PR2" ports on the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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

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

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

Primary Boom Components

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.

Primary Boom Components

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

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

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 on the counterbalance valve manifold located on the platform rotator. Cap the fittings on the manifold.

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

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

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

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

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

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

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

Primary Boom Components

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.

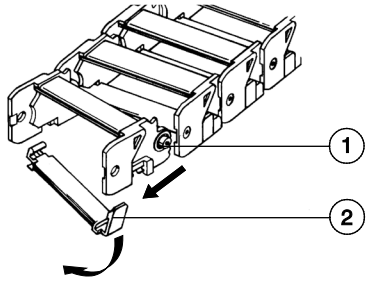
NOTICE Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

Primary Boom Components

How to Repair the Primary Boom Cable Track

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

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



1 link separation point
2 lower clip

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

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

3 Repeat steps 1 and 2 for each link.

4-2 Primary Boom

How to Remove the Primary Boom

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

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

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

1 Remove the platform.

2 **Z-45/25:** Remove the platform rotator and platform mounting weldment.

Z-45/25J: Remove the jib boom. Refer to Repair Procedure, *How to Remove the Jib Boom*.

3 Remove the cable track. Refer to Repair Procedure, *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.

Primary Boom Components

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

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. Refer to Repair Procedure, *How to Remove the Primary Boom Extension Cylinder*.

1 Remove the primary boom. Refer to Repair Procedure, *How to Remove the Primary Boom*.

2 Place blocks under the 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the 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 become unbalanced and fall if not properly supported by the lifting device.

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

11 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the 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.

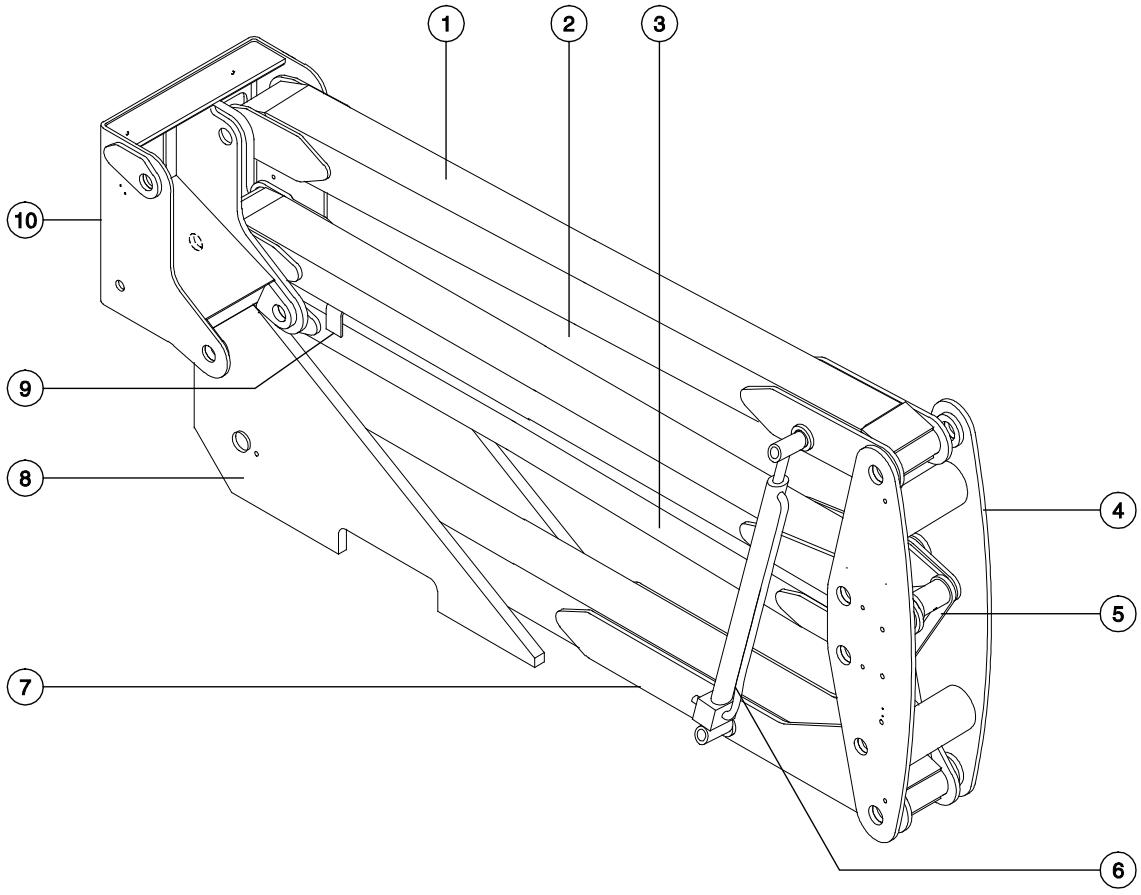
6 Remove the pin retaining fastener from the rod-end pivot pin.

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

1 upper secondary boom (number 1 arm)
2 upper tension link (number 2 arm)
3 lower tension link (number 3 arm)
4 mid-pivot
5 compression link
6 secondary boom lift cylinder (2)
7 lower secondary boom (number 4 arm)
8 turntable pivot
9 boom rest
10 upper pivot

5-1
Secondary Boom

How to Disassemble the Secondary 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.

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

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

1 Remove the platform.

2 **Z-45/25J:** Remove the jib boom. Refer to Repair Procedure, *How to Remove the Jib Boom*.

3 Remove the primary boom. Refer to Repair Procedure, *How to Remove the Primary Boom*.

4 Remove the master cylinder. Refer to Repair Procedure, *How to Remove the 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 lifting device.

9 Tag, disconnect and plug the hydraulic hoses on both of the secondary boom lift cylinders. Cap the fittings on the cylinders.

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

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

Secondary Boom Components

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 mid-point between the upper pivot and mid-pivot.

18 Remove the pin retaining fasteners from the number 1 arm pivot pins at the mid-pivot and the upper pivot. Do not remove the pins.

19 Use a soft metal drift to drive both pins out.

20 Remove the number 1 arm from the machine.

⚠WARNING Crushing hazard. The number 1 arm could become unbalanced and fall when removed from the machine if not properly attached to the overhead crane.

⚠WARNING 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 the4 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 81/2 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.

⚠WARNING 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 Specifications, *Machine 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 (if equipped) on the fitting and/or hose end must be replaced. All connections must be torqued to specification during installation. Refer to Specifications, *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.

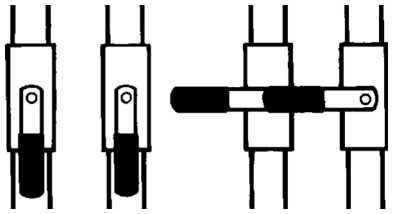
NOTICE Component damage hazard. When removing a secondary boom lift cylinder from the machine, be careful not to damage the counterbalance valve at the barrel end of the cylinder.

6-1 Auxiliary Pump

How to Remove the Auxiliary Pump

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

1 **Models 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 shut-off valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

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

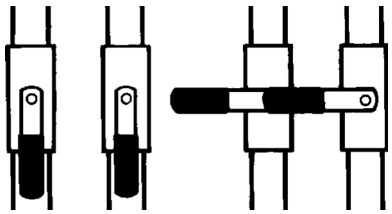
Hydraulic Pumps

6-2
Function Pump

How to Remove the Function Pump

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

1 **Models 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 shut-off valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

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

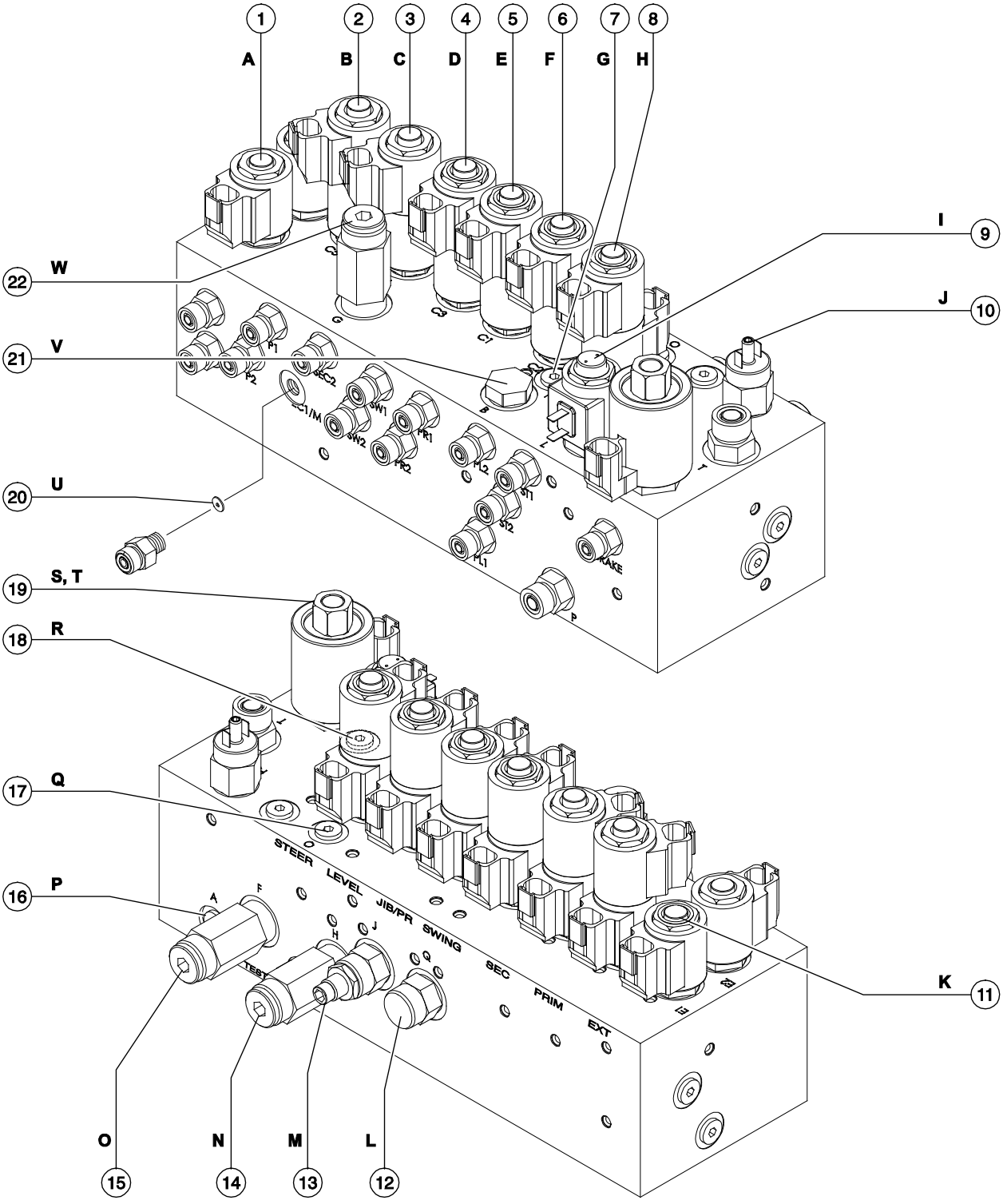
5 Remove the function pump mounting bolts. Carefully remove the pump.

7-1
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 andjib 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 turntablerotate 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(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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7-2 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

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

Note: Refer to Function Manifold Component list to locate the system relief valve.

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.

3 Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications*.

4 Turn the machine off. Hold the system relief valve with a wrench and remove the cap.

5 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.

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

7 Remove the pressure gauge.

How to Adjust the Secondary Boom Down Relief Valve

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

Note: Refer to Function Manifold Component list to locate the secondary boom down relief valve.

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.

3 Observe the pressure reading on the pressure gauge. Refer to Specifications, *Hydraulic Specifications*.

4 Turn the machine off. Hold the secondary boom down relief valve with a wrench and remove the cap.

5 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.

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

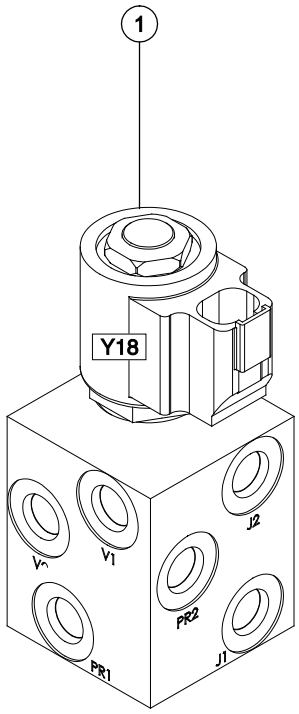
7 Remove the pressure gauge.

Manifolds

7-3
Jib Boom / Platform Rotate Manifold Components

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

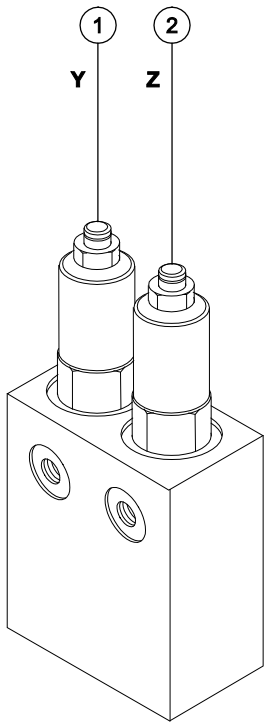
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	AA	Jib boom / platform rotate select	20 ft-lbs / 27 Nm



7-4
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	Counterbalance valve	Y	Turntable rotate right	30-35 ft-lbs / 41-47 Nm
2	Counterbalance valve	Z	Turntable rotate left	30-35 ft-lbs / 41-47 Nm



Manifolds

7-5
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

8-1
Turntable Rotation Assembly

How to Remove the Turntable Rotation Assembly

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

1 Raise the 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.

⚠ DANGER Tip-over 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 Specifications, Machine 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.

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

14 Remove the turntable rotation assembly mounting fasteners.

15 Carefully remove the turntable rotation assembly from the machine.

⚠ DANGER Tip-over 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 Controllers

9-1 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 Fault Code 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 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.

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

4 Set an ohmmeter to diode test mode.

5 Connect the leads from an ohmmeter to test each motor controller terminal combination listed below and check the forward / reverse bias (diode test).

⊙ Result: All desired results must be within the specified range. If any test has a result not within the specified range, replace the motor controller.

Forward Bias:

Test		**Desired result**
Positive Lead	Negative Lead	
M-	B+	0.4 to 0.45
B-	M-	0.4 to 0.45
F1	B+	0.45 to 0.5
F2	B+	0.45 to 0.5
B-	F1	0.45 to 0.5
B-	F2	0.45 to 0.5

Reverse Bias:

Test		**Desired result**
Positive Lead	Negative Lead	
B+	M-	Rises to .0L V
M-	B-	Rises to .0L V
B+	F1	Rises to .0L V
B+	F2	Rises to .0L V
F1	B-	Rises to .0L V
F2	B-	Rises to .0L

Steer Axle Components

10-1 Hub and Bearings

How to Remove the Hub and Bearings

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

2 Block the non-steer wheels and place a lifting jack under the steer axle.

3 Raise the machine. Place blocks under the drive chassis for support.

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

5 Remove the dust cap, cotter pin and castle nut.

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

6 Pull the hub off the yoke spindle. The washer and outer bearing should fall loose from the hub.

7 Place the hub on a flat surface and gently pry the grease seal out of the hub. Remove the inner bearing.

Note: When removing a bearing, always use a new inner bearing seal.

How to Install the Hub and Bearings

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

1 Be sure that both bearings are packed with clean, fresh grease.

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

3 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.

4 Slide the hub onto the yoke spindle.

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

5 Fill the hub cavity with clean, fresh grease.

6 Place the outer bearing into the hub.

7 Install the washer and castle nut.

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

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

Steer Axle Components

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

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

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

11 Install the dust cap, then the tire and wheel assembly.

12 Lower the machine and remove the blocks.

13 Torque the wheel lug nuts to specification. Refer to Specifications, *Machine Specifications.*

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 procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Key switch in the off position with the key removed
  - The red Emergency Stop button in the off position at both the ground and platform controls
  - Wheels chocked
  - All external AC power supply disconnected from the machine
  - Boom in the stowed position
  - Turntable secured with the turntable rotation lock
  - Welder disconnected from the machine (if equipped with the weld cable to platform option)

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate fault code thoroughly. Attempting short cuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

Fault Codes

Fault Codes

⚠ DANGER Tip-over hazard. When adjusting the raised drive speed settings, the maximum raised drive speed must not exceed 0.6 mph / 1Km/h or 40 feet / 45 seconds / 12.2 meters / 45 seconds. If the machine is allowed to drive faster than specification, the machine could become unstable and will tip over.

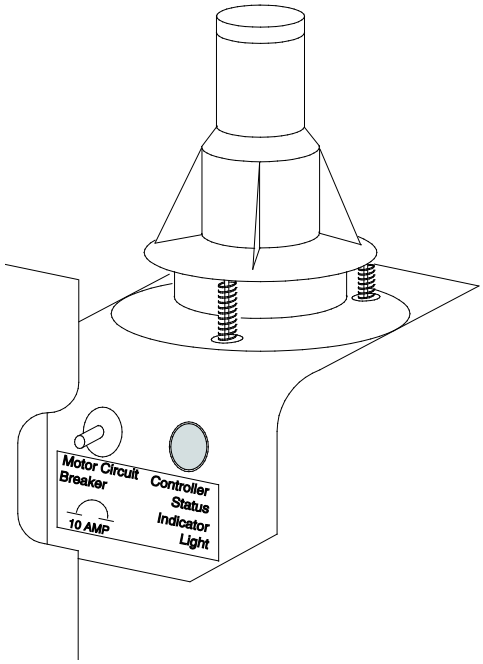
Note: Additional troubleshooting of the fault codes may by accomplished by using the hand-held pendant motor controller programmer (Genie part number 128551).

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 of 0.6 mph / 1Km/h or 40 feet / 45 seconds / 12.2 meters / 45 seconds.

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 Diagnostic Display	Condition	Possible Causes	Solution
Fault code LED is off or is on, but not blinking	COMMUNICATION ERROR	Machine will not drive.	The key switch or 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 ground control red Emergency Stop button to the on position. If problem persists, replace the motor controller.
1		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 a internal short between M- and B- terminals.	Test the motor controller. See Repair Section.
	FIELD OPEN	Machine will not drive.	Motor wiring is loose OR 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. See Repair Section.
	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.

Fault Codes

Fault Code Chart

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
21	THROTTLE FAULT 1	Machine will not drive.	Open in wht/red wire #32 at pin 14 or red/wht wire #29 at pin 16 on the motor controller going from drive joystick to pins 14 and 16 at the motor controller OR pin 14 is internally shorted to power or ground OR the potentiometer on the drive joystick is defective.	Consult Genie Product Support.
	THROTTLE FAULT 2	Machine will not drive.	Pin 14 (wht/red #32) is shorted to power or ground OR the potentiometer on the drive joystick is defective.	Consult Genie Product Support.
31	CONT DRVR OC	Machine will not drive.	Main contactor (PR1) coil defective OR brake release relay CR5 defective.	Replace main contactor PR1 or brake release relay CR5 OR replace the motor controller.
32	MAIN CONT WELDED	Machine will not drive.	Main contactor (PR1) contacts stuck closed OR grn wire at pin 17 on motor controller shorted to ground OR open in motor armature wiring OR motor controller has an internal short to ground.	Consult Genie Product Support.
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 on motor controller and ground OR replace motor controller. Note: Short can be on any part of circuit connected to the B+ terminal on the motor controller.

Fault Code Chart

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
34	MISSING CONTACTOR	Machine will not drive.	Motor controller does not detect the main contactor PR1 or brake release relay CR5.	Consult Genie Product Support.
	MAIN CONT DNC	Machine will not drive.	Main contactor PR1 or brake release relay CR5 did not close OR open in org/red wire to PR1 and/or CR5 OR main contactor and/or brake release relay is defective.	Consult Genie Product Support.
41	LOW BATTERY	Machine will not drive.	Battery supply voltage to motor controller less than 32V DC.	Completely charge batteries OR check battery cable condition OR check for corrosion or loose connections at battery terminals and motor controller.
42	OVERVOLTAGE	Machine will not drive.	Battery supply voltage to motor controller more than 55V DC OR machine is being operated with the battery charger plugged in.	Be sure the battery charger is disconnected OR check for loose battery cables or poor connections.
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 being driven under excessive load OR motor controller is not being cooled sufficiently.	Operate machine within specified temperature limits OR check for debris around motor controller preventing proper cooling of the controller 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.
- ☑ 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.

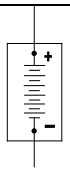
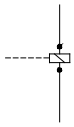
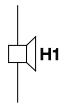
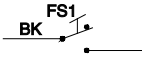
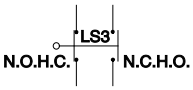
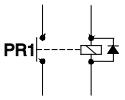
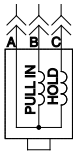
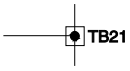
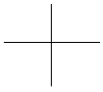
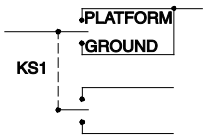
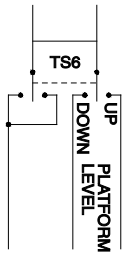
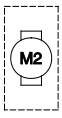
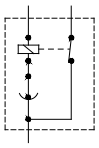
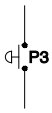
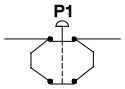
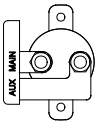
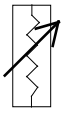
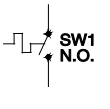
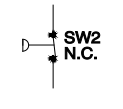
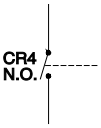
Electrical Schematics

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

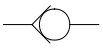
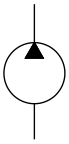
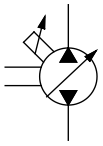
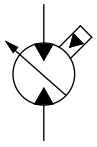
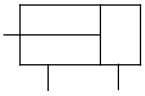
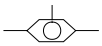
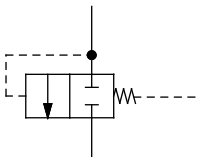
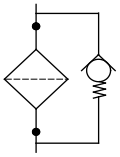
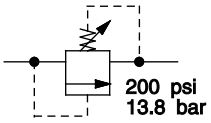
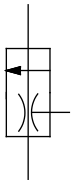
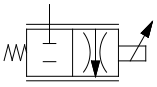
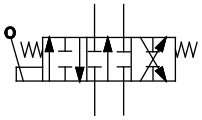
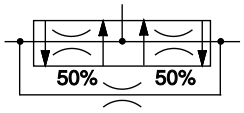
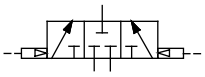
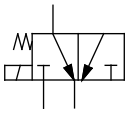
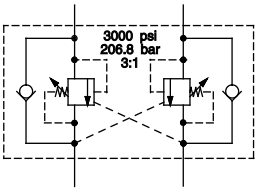
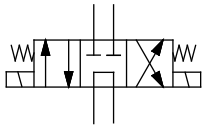
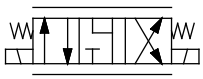
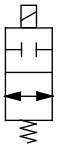
Hydraulic Schematics

⚠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.

Electrical Symbol Legend

				
Battery	Coil, solenoid or relay	Horn or alarm	Flashing beacon	Gauge
				
Diode	Hour meter	LED	Fuse with amperage	Foot switch
				
T-circuits connect	Limit Switch	Power relay	Coil with suppression	Fuel or RPM solenoid
				
Connection - no terminal	T-circuits connect at terminal	Circuits crossing - no connection	Quick disconnect terminal	Circuit breaker with amperage
				
Key switch	Toggle switch DPDT	Toggle switch SPDT	Pump or Motor	Tilt sensor
				
Horn button - normally open	Emergency stop button - normally closed	Resistor with ohm value	Battery seperator	Gauge sending unit
				
Oil temperature switch normally open	Coolant temperature switch - normally open	Oil pressure switch normally closed	Control relay contact normally open	Diode starting aid, glow plug or flame ignitor

Hydraulic Symbols Legend

 Orifice with size	 Check valve	 Shut off valve	 Brake
 Pump, fixed displacement	 Pump, bi-directional variable displacement	 Motor, bi-directional	 Motor, 2 speed bi-directional
 Double acting cylinder	 Pump, prime mover (engine or motor)	 Shuttle valve. 2 position, 3 way	 Differential sensing valve
 Filter with bypass relief valve	 Relief valve with pressure setting	 Priority flow regulator valve	 Solenoid operated proportional valve
 Directional valve (mechanically activated)	 Flow divider/combiner valve	 Pilot operated 3 position, 3 way shuttle valve	 Solenoid operated 2 position, 3 way directional valve
 Counterbalance valve with pressure and pilot ratio	 Solenoid operated 3 position, 4 way directional valve	 Solenoid operated 3 position, 4 way proportional directional valve	 2 position, 2 way solenoid valve

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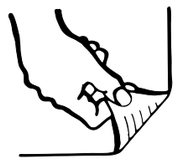
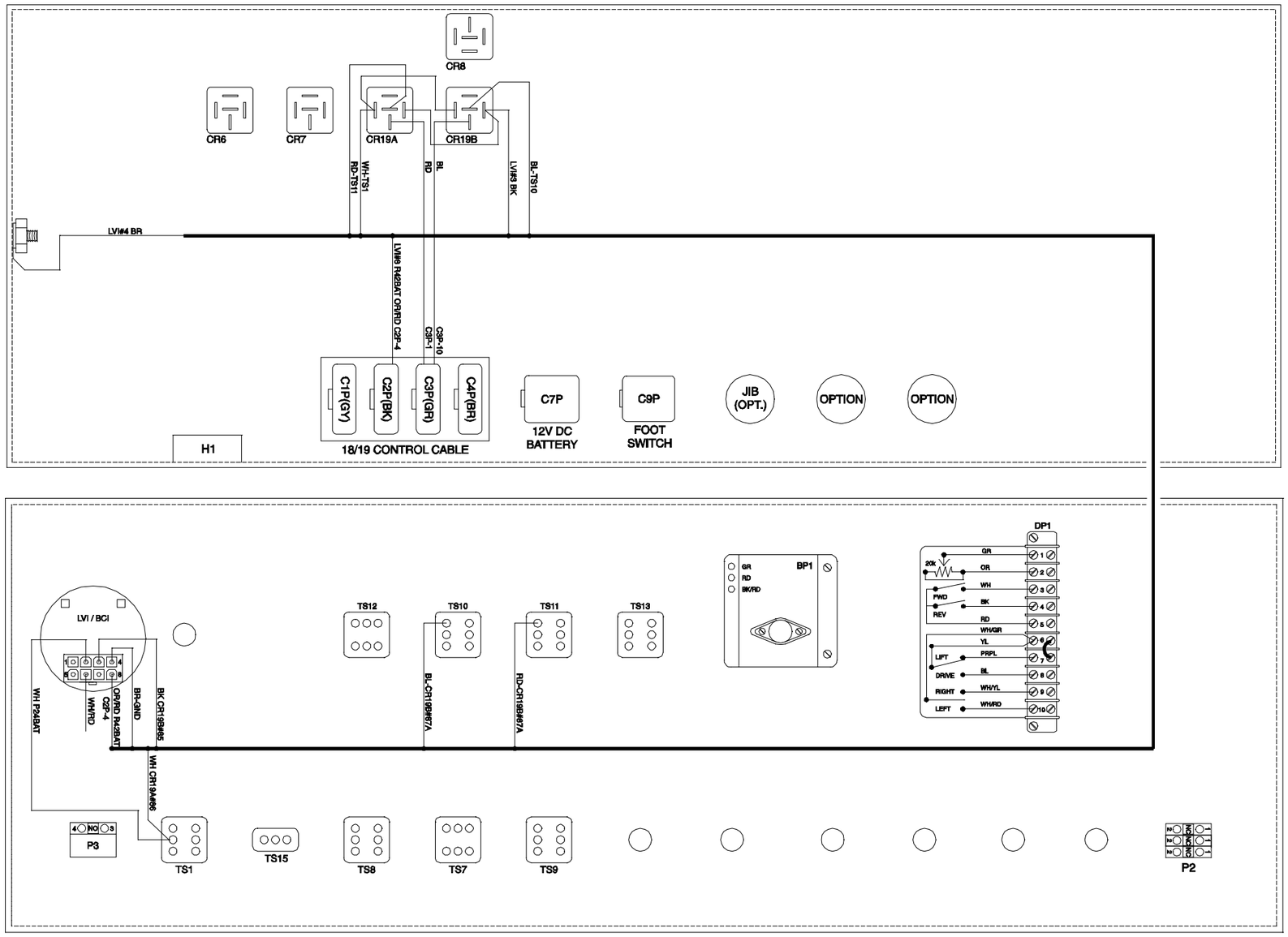
Platform Options Wiring Diagram



Platform Options Wiring Diagram

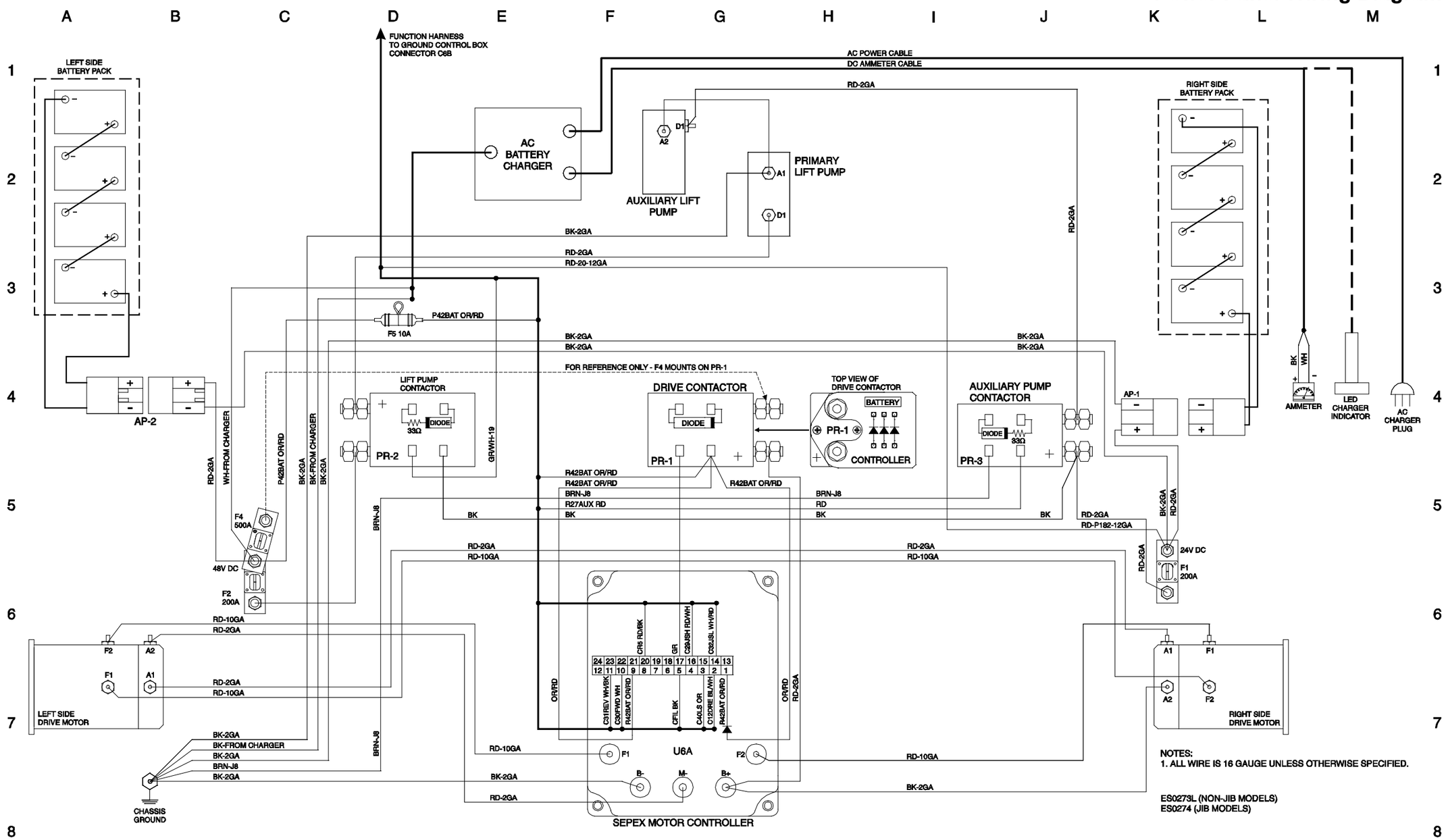


COMPONENT INDEX

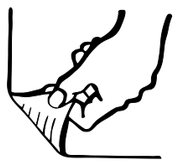
CR19A	PRIMARY BOOM UP CUTOUT RELAY
CR19B	SECONDARY BOOM UP CUTOUT RELAY
LVI / BCI	LOW VOLTAGE INTERRUPT AND BATTERY CHARGE INDICATOR
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS10	SECONDARY BOOM TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH

ES0273L (NON-JIB MODELS)
ES0274M (JIB MODELS)

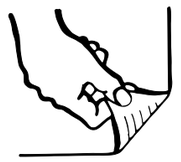
Power Panel Wiring Diagram



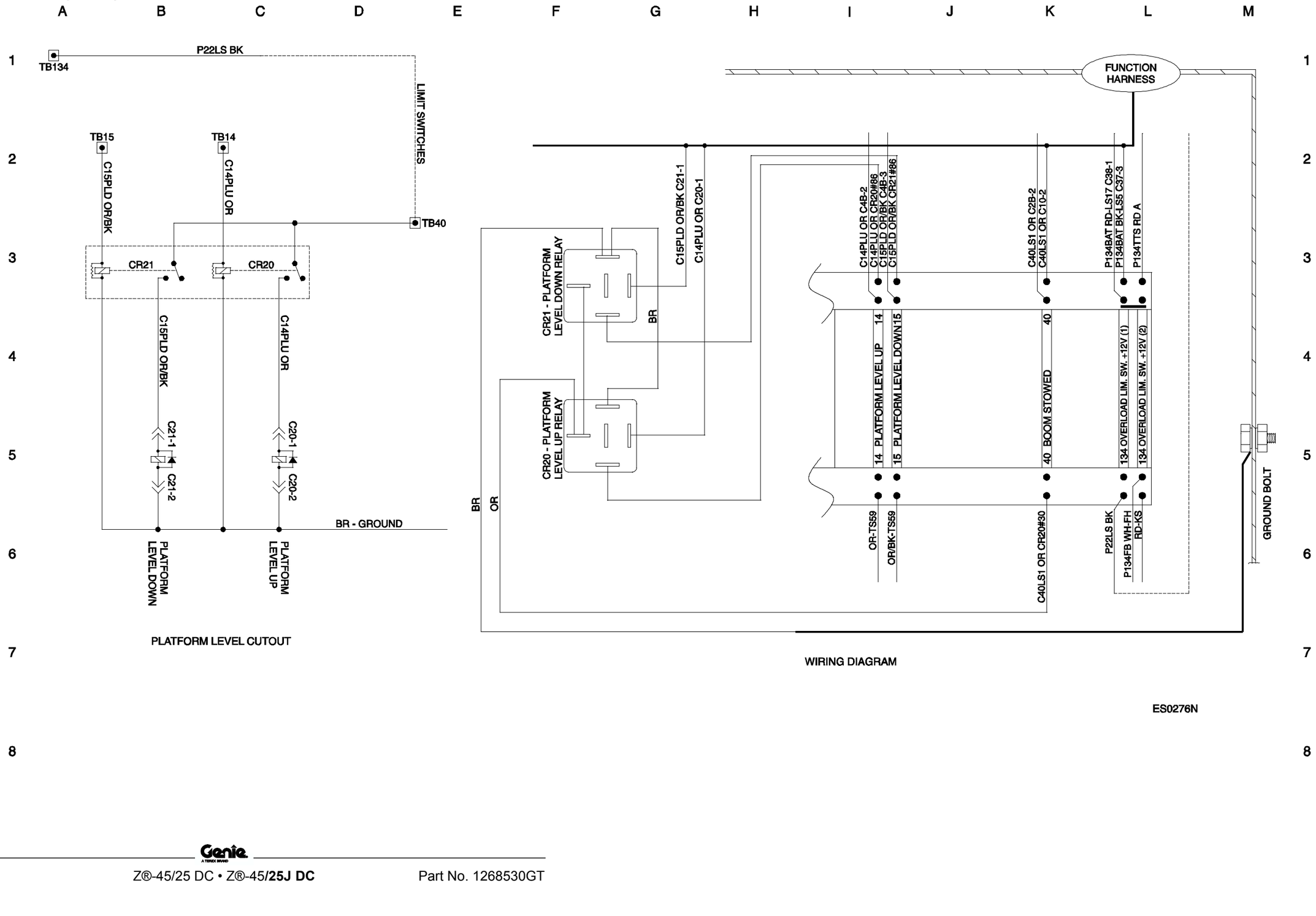
Power Panel Wiring Diagram



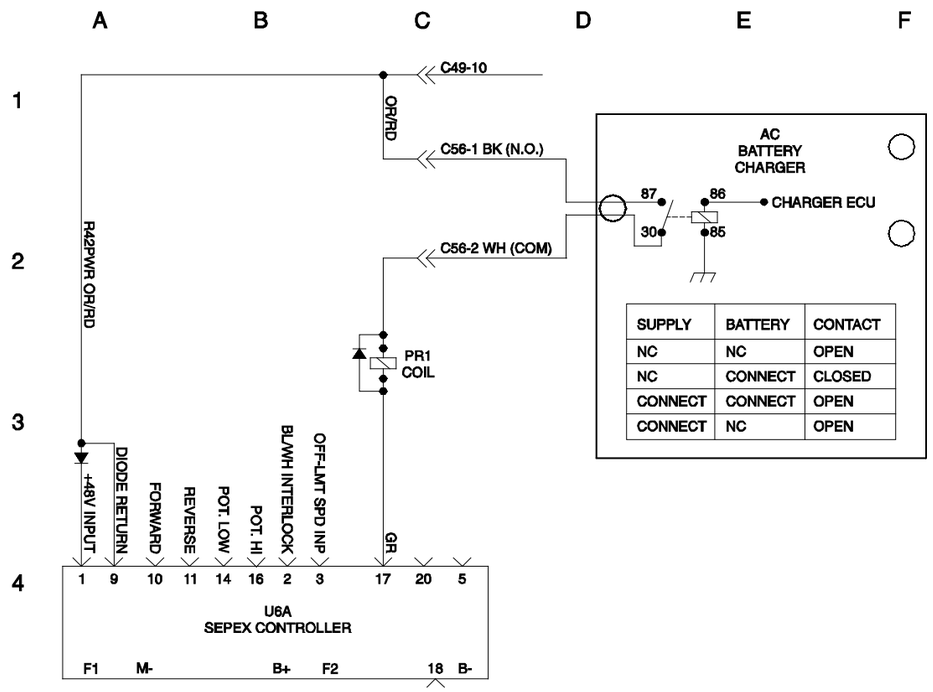
CTE Option Wiring Diagram, (CE)



CTE Option Wiring Diagram, (CE)



Charger Interlock Option

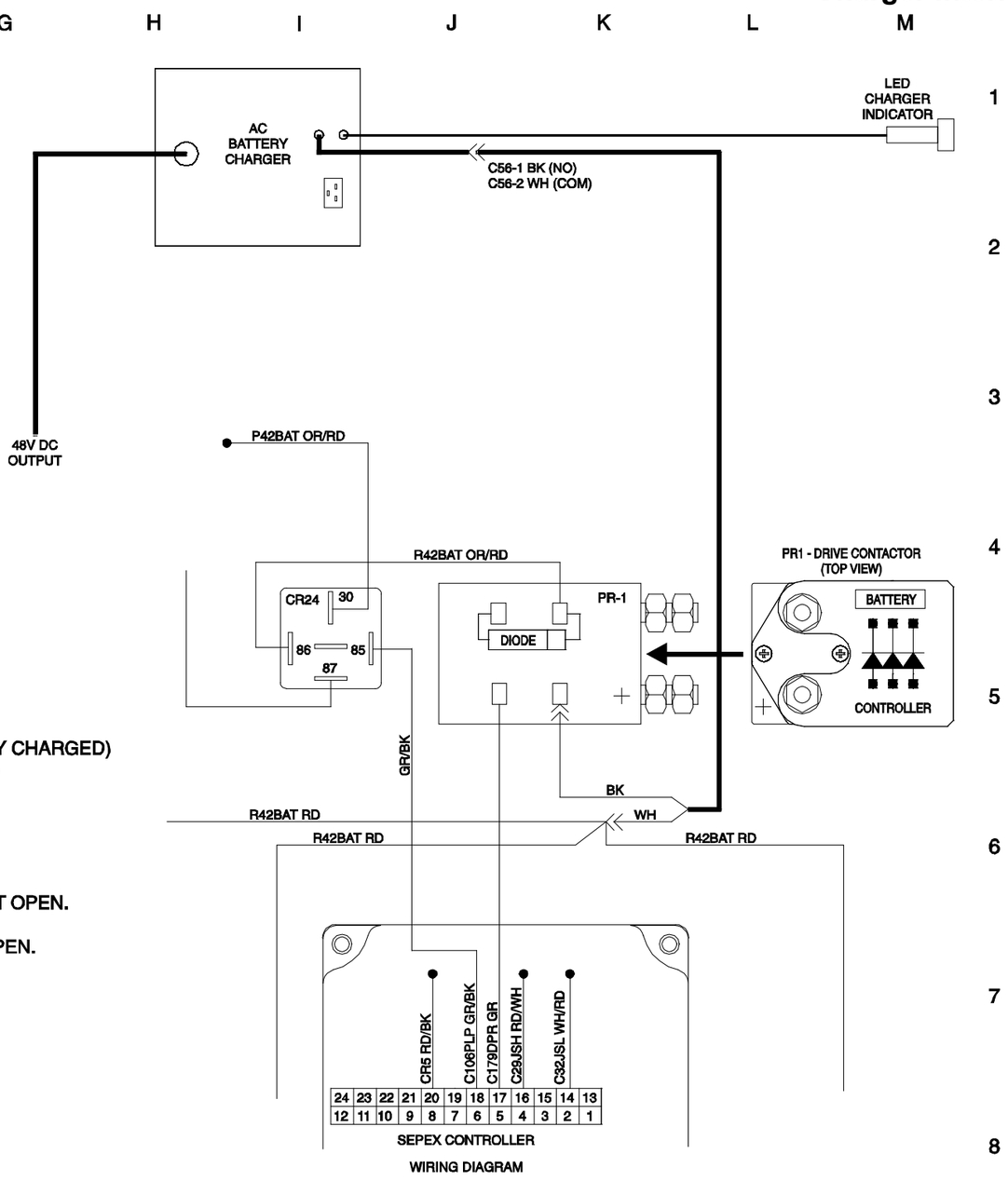


SCHEMATIC

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.

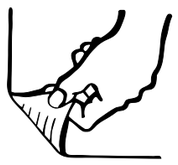
INTERLOCK RELAY (N.O.), 10A CONTACT
1. CHARGER NOT CONNECTED TO BATTERY OR MAIN SUPPLY, CONTACT OPEN.
2. CHARGER CONNECTED TO BATTERY, CONTACT CLOSED.
3. CHARGER CONNECTED TO BATTERY AND MAIN SUPPLY, CONTACT OPEN.

ES0276N

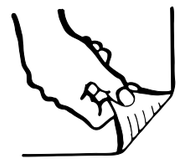


WIRING DIAGRAM

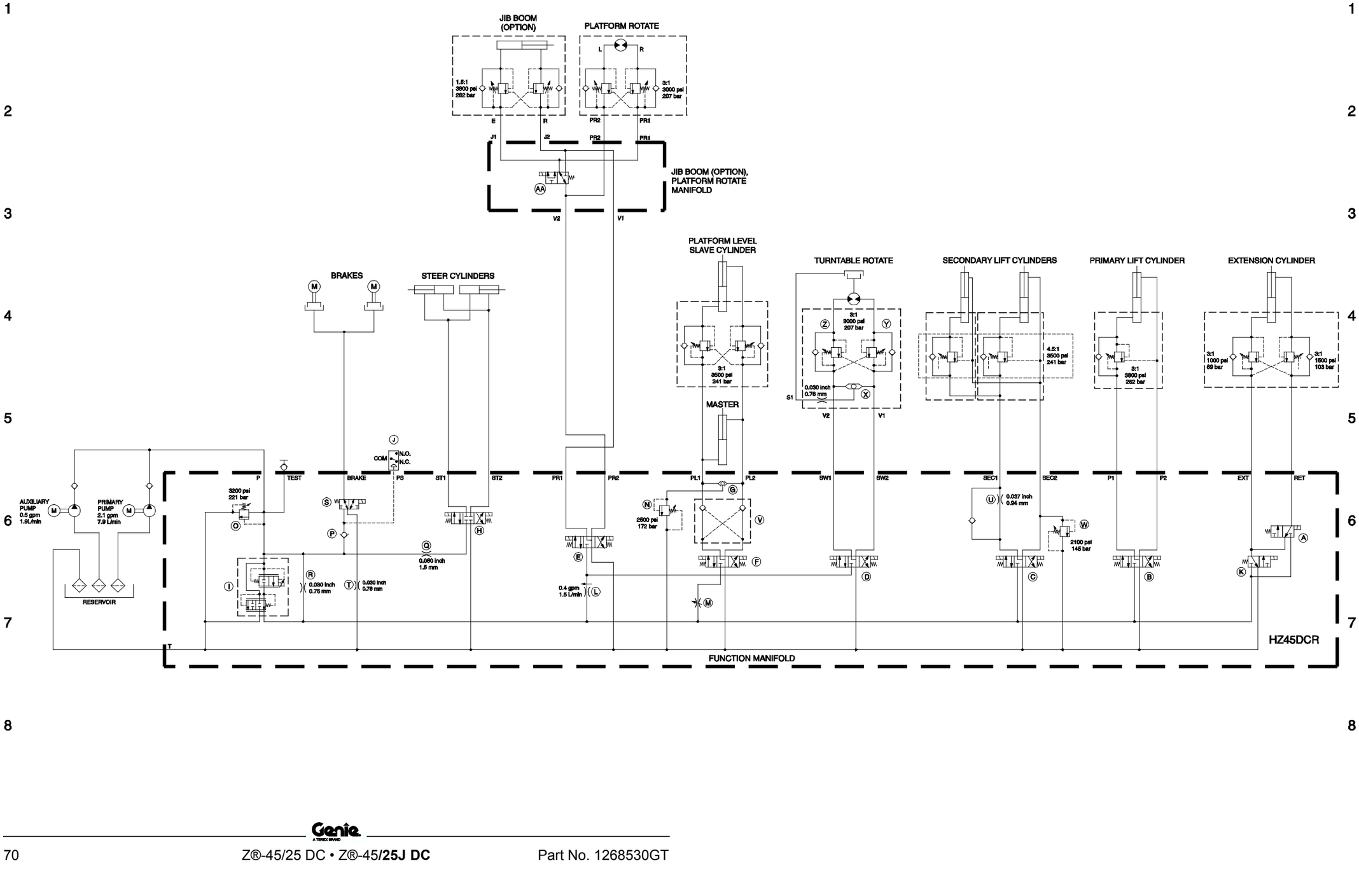
Charger Interlock Option



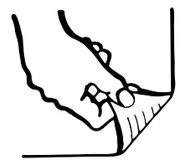
Hydraulic Schematic



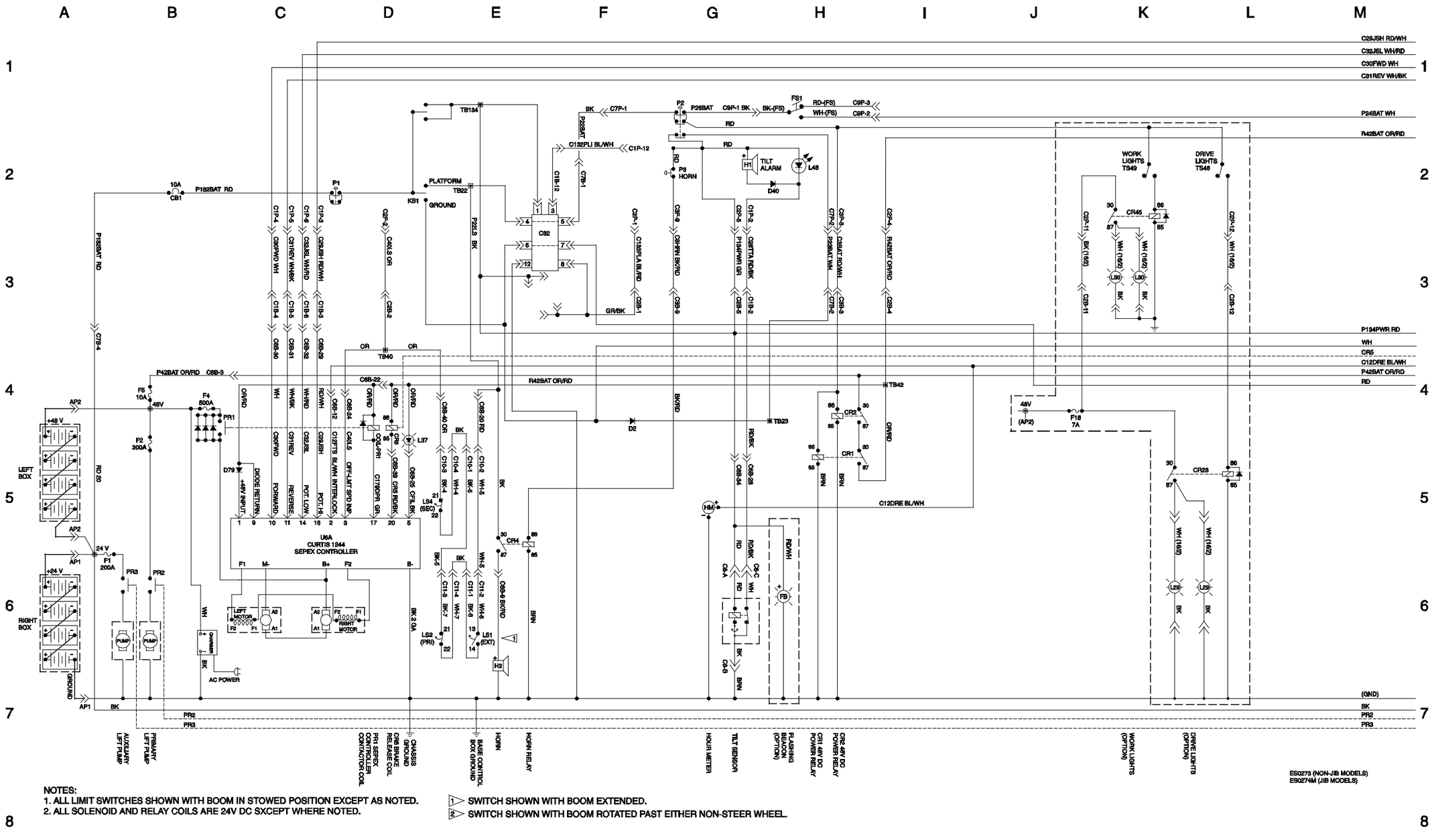
Hydraulic Schematic



Electrical Schematic, (ANSI / CSA / AS)



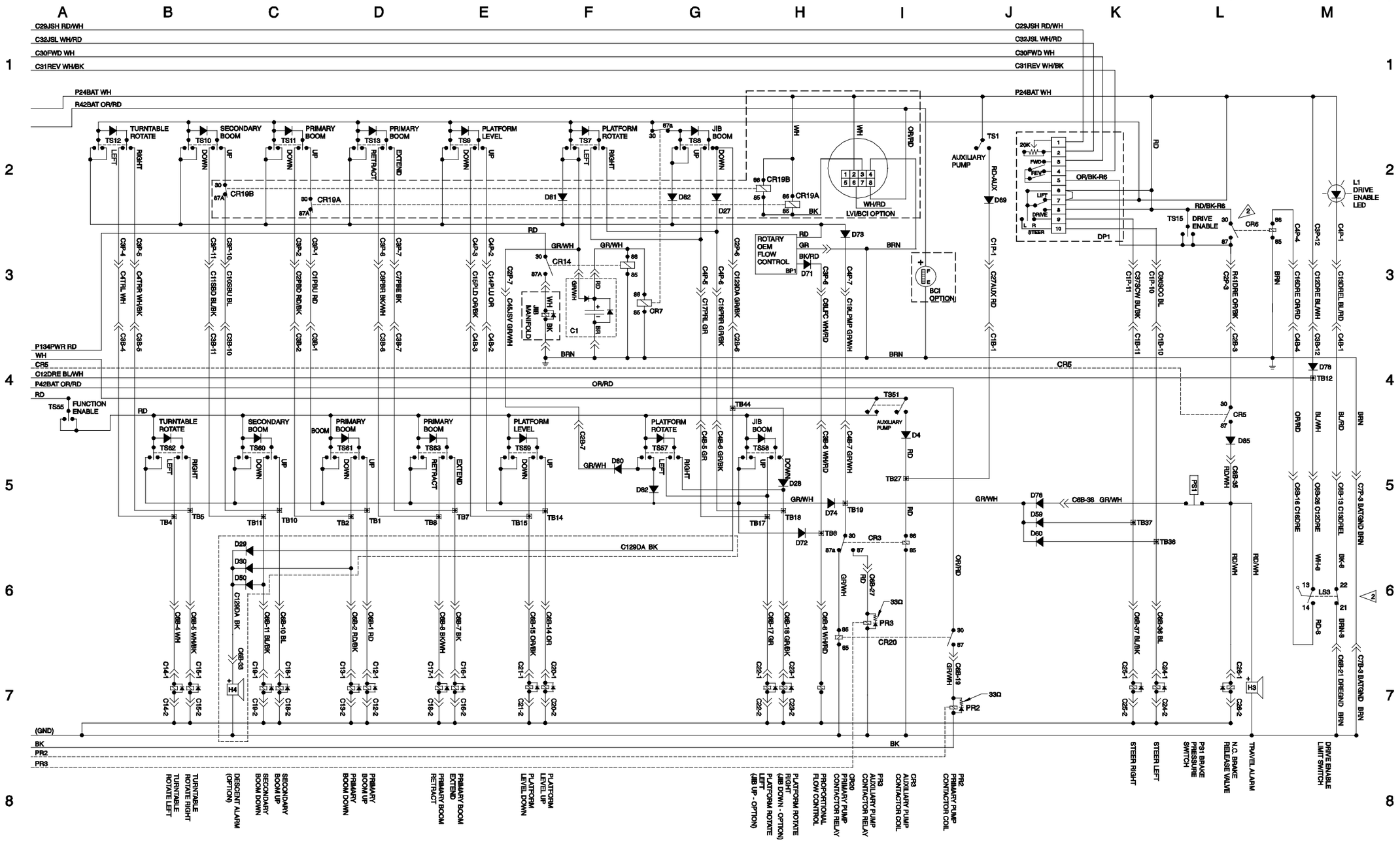
Electrical Schematic, (ANSI / CSA / AS)



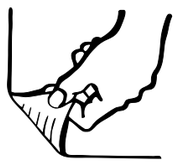
NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.
2. ALL SOLENOID AND RELAY COILS ARE 24V DC SXCEPT WHERE NOTED.

(1) SWITCH SHOWN WITH BOOM EXTENDED.
(2) SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

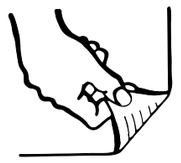
Electrical Schematic, (ANSI / CSA / AS)



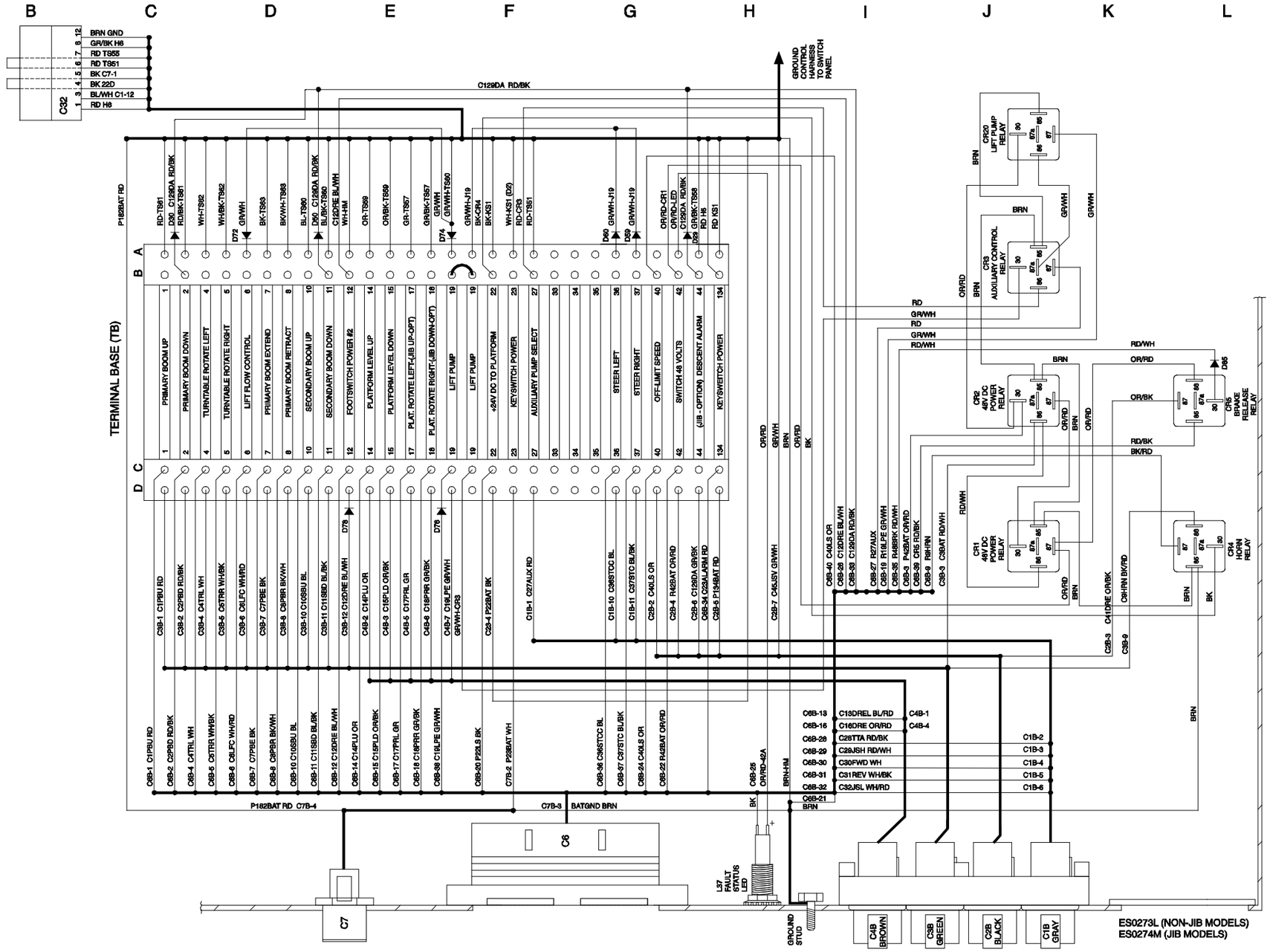
Electrical Schematic, (ANSI / CSA / AS)



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



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

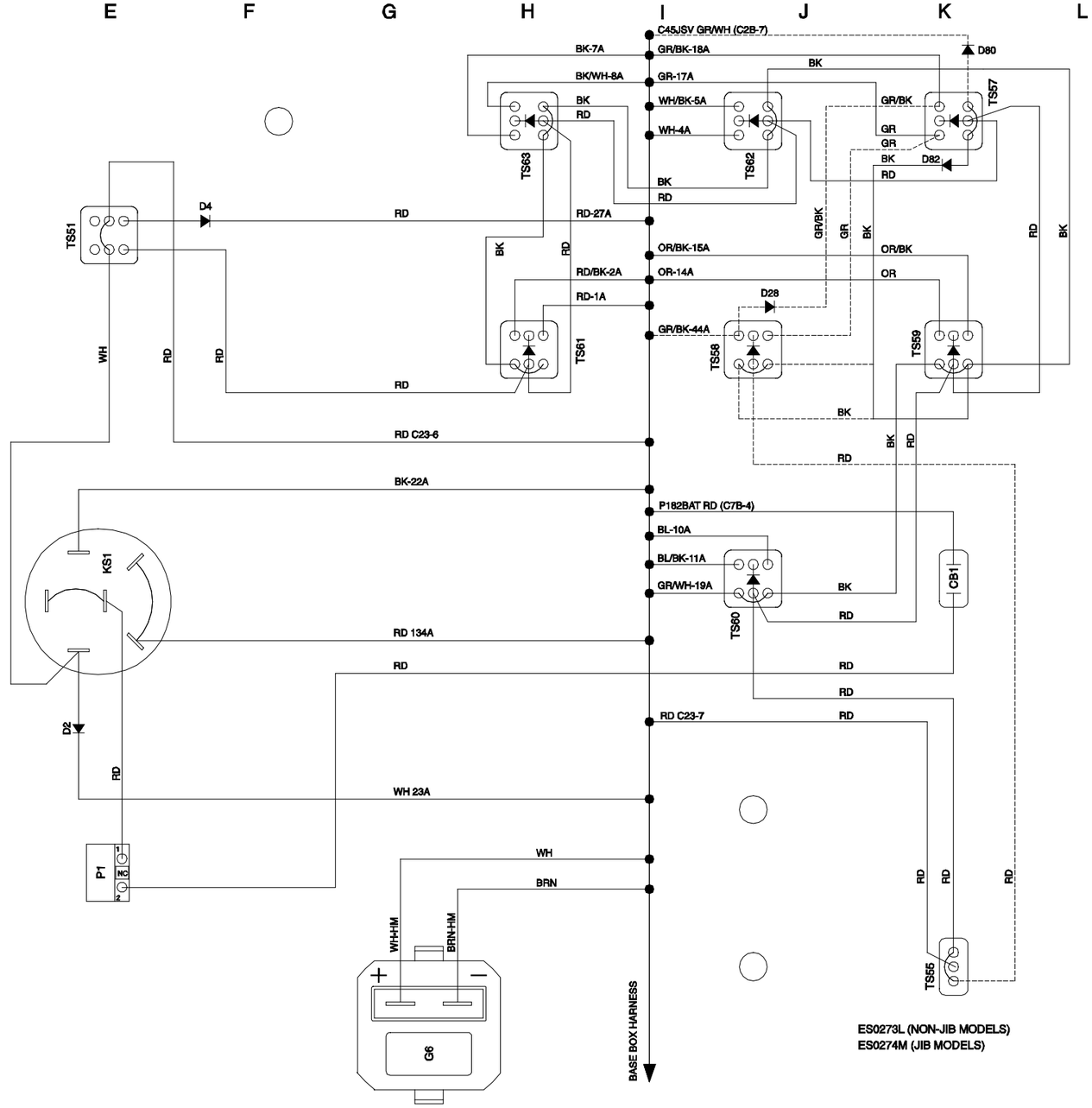


Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS)

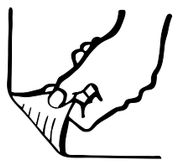
COMPONENT INDEX

CB1	10A CIRCUIT BREAKER
CR1	POWER RELAY, 48V
CR2	POWER RELAY, 48V
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY LIFT PUMP RELAY
G6	HOUR METER
KS1	KEY SWITCH
L37	LED, DRIVE CONTROLLER FAULT STATUS
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH

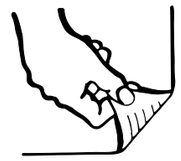
NOTE: DASHED LINES INDICATE OPTIONS.



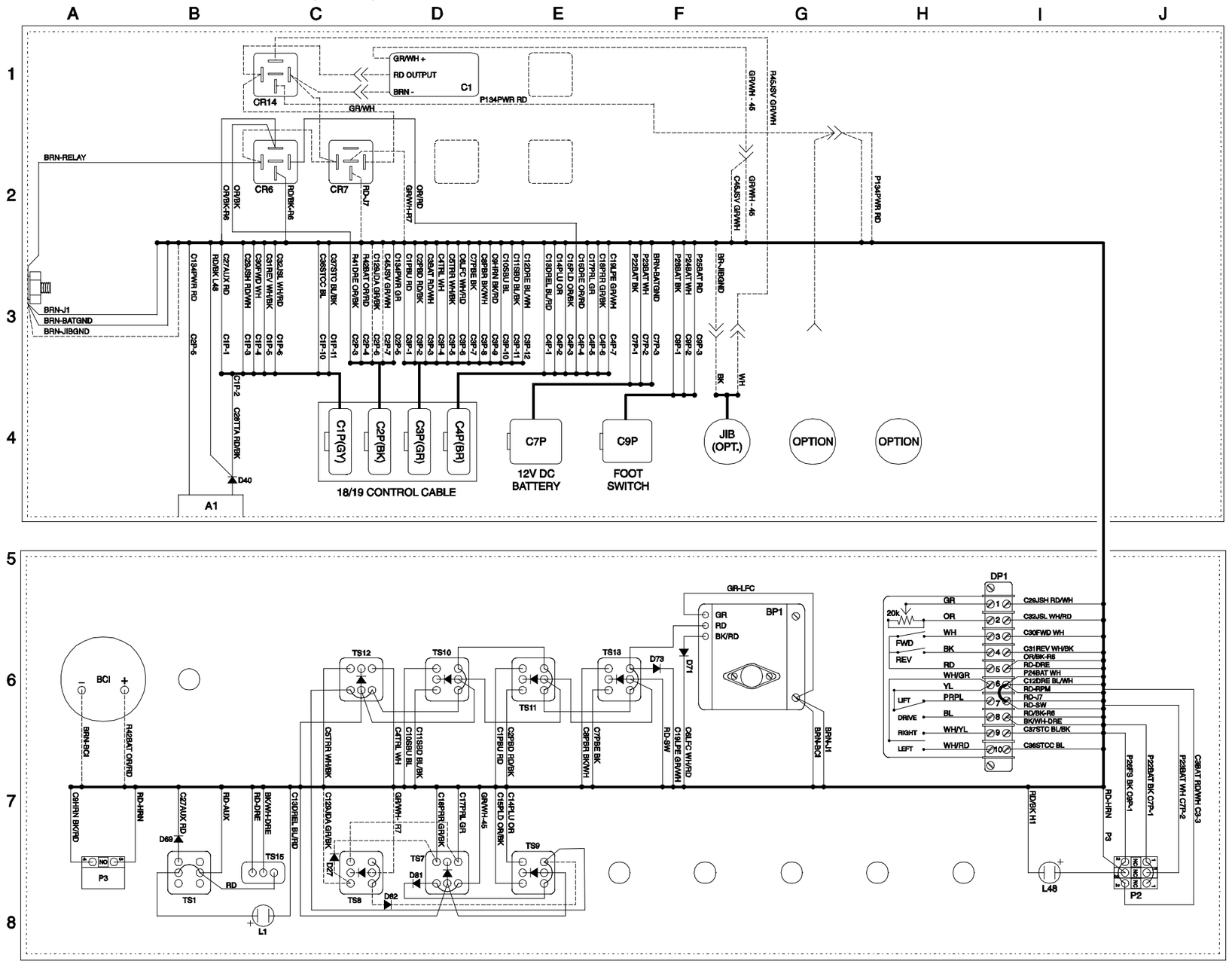
Ground Control Box Switch Panel Wiring Diagram, (ANSI / CSA / AS)



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



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



NOTES:
1. DASHED LINES INDICATE OPTIONS.

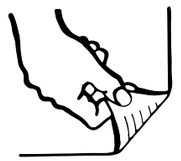
2. JIB TIME DELAY (C1 AND CR14) ADDED AT SERIAL NUMBER 34515 OR WAS FEILD INSTALLED.

COMPONENT INDEX

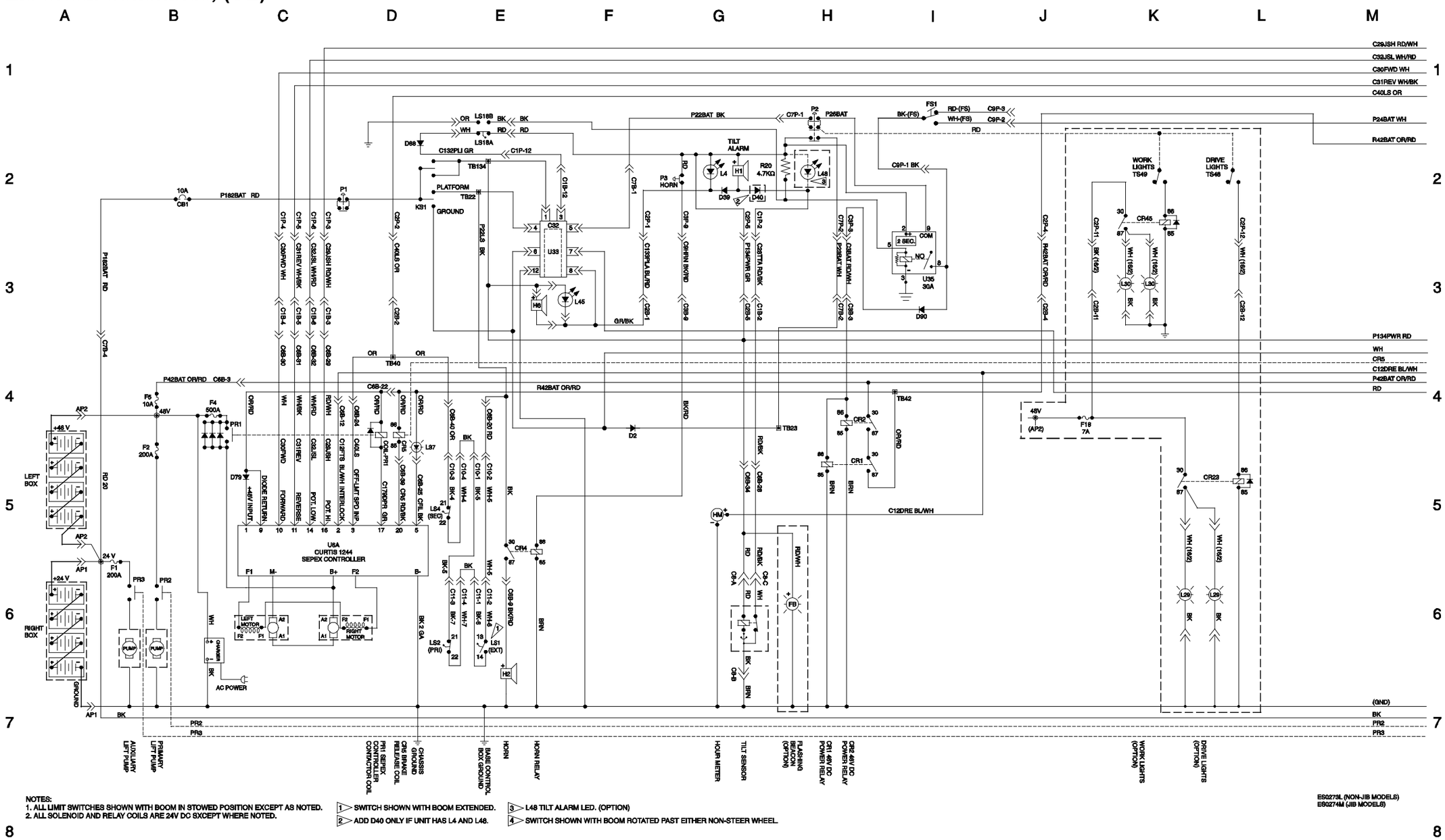
A1	TILT ALARM
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
C1	CAPACITOR, TIME DELAY (JIB OPTION)
CR6	RELAY - DRIVE ENABLE
CR7	RELAY - JIB (OPTION)
CR14	RELAY - JIB (OPTION)
DP1	JOYSTICK - DRIVE / STEER
H1	TITL ALARM
L1	LED - DRIVE ENABLE
L48	LED - TILT ALARM
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS7	PLATFORM ROTATE TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS9	PLATFORM LEVEL TOGGLE SWITCH
TS10	SECONDARY BOOM TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH

ES0273L (NON-JIB MODELS)
ES0274M (JIB MODELS)

Electrical Schematic, (CE)



Electrical Schematic, (CE)

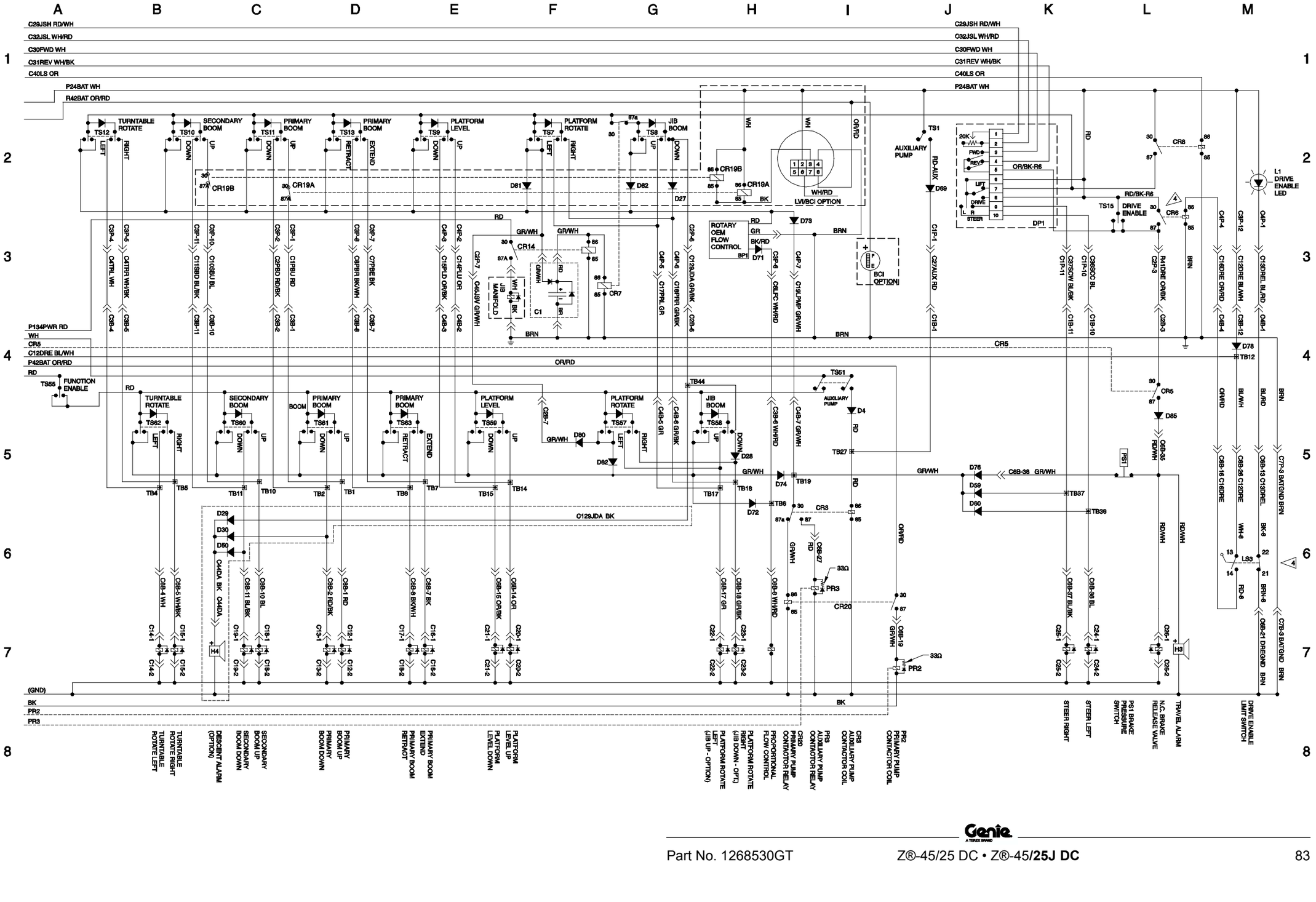


NOTES:
1. ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.
2. ALL SOLENOID AND RELAY COILS ARE 24V DC SXCEPT WHERE NOTED.

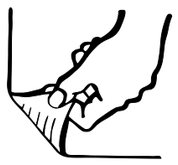
1> SWITCH SHOWN WITH BOOM EXTENDED.
2> ADD D40 ONLY IF UNIT HAS L4 AND L48.
3> L48 TILT ALARM LED. (OPTION)
4> SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.

ES0273L (NON-JIB MODELS)
ES0274M (JIB MODELS)

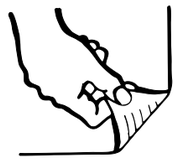
Electrical Schematic, (CE)



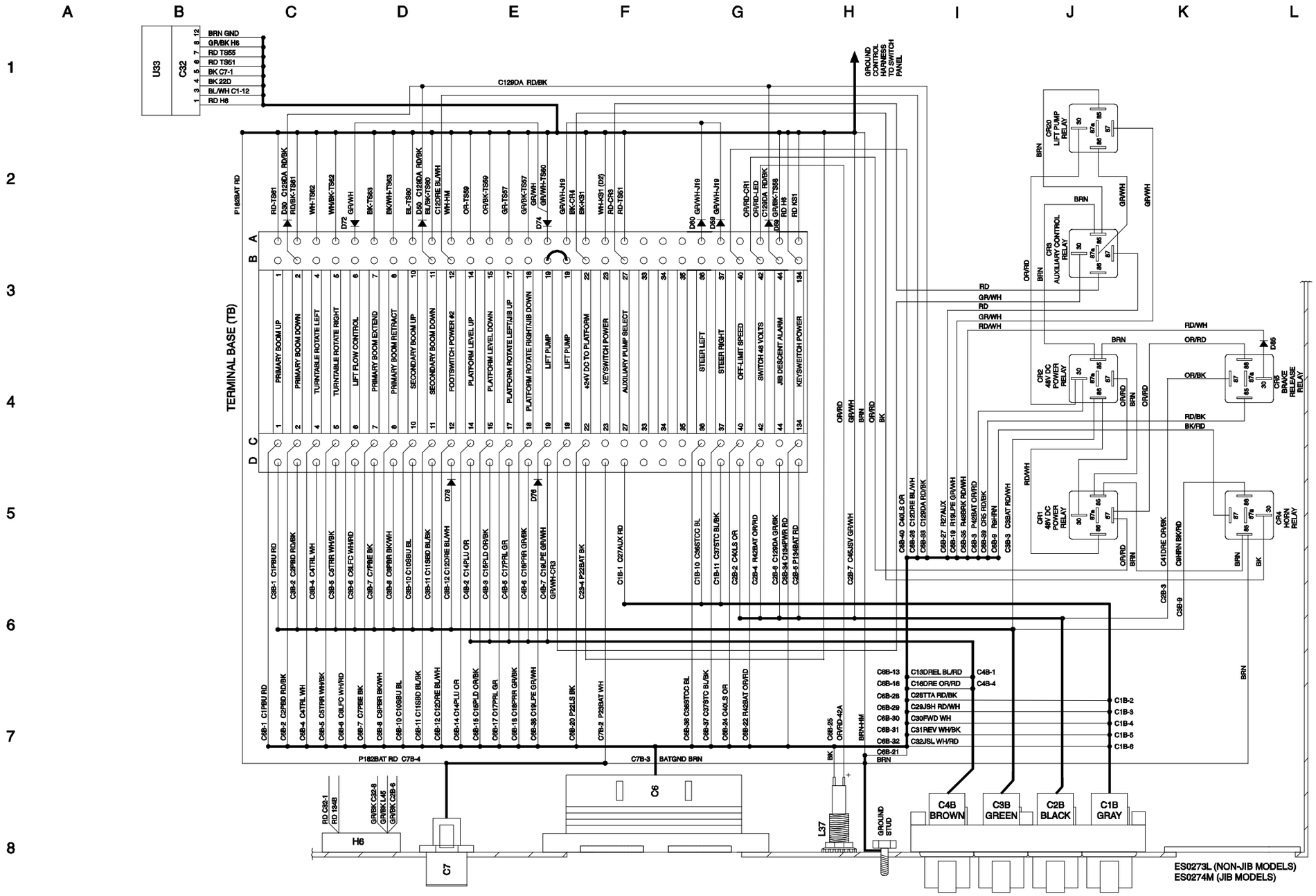
Electrical Schematic, (CE)



Ground Control Box Terminal Strip Wiring Diagram, (CE)



Ground Control Box Terminal Strip Wiring Diagram, (CE)

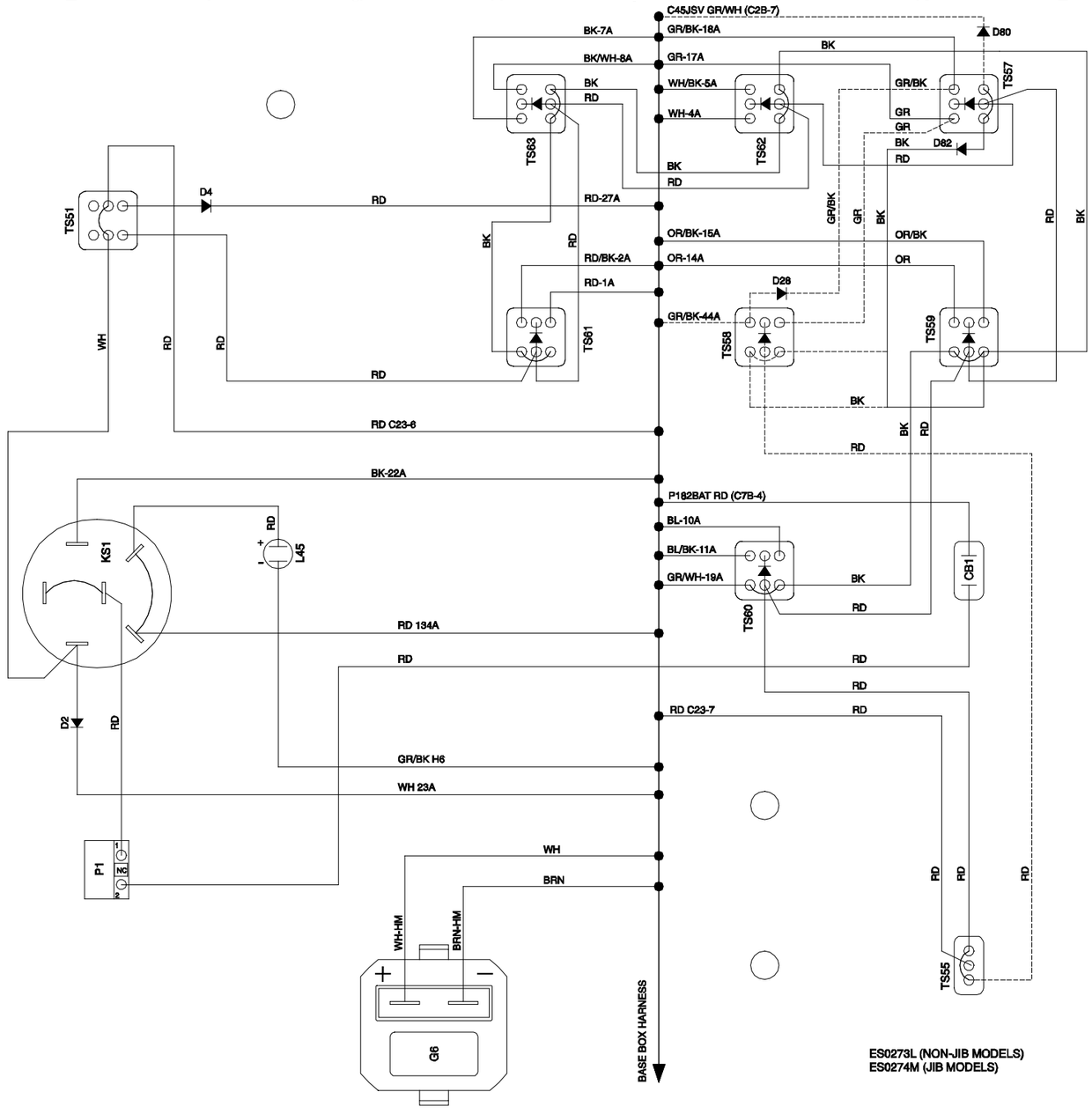


Ground Control Box Switch Panel Wiring Diagram, (CE)

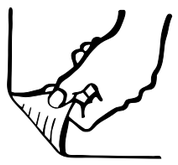
COMPONENT INDEX

CB1	10A CIRCUIT BREAKER
CR1	POWER RELAY, 48V
CR2	POWER RELAY, 48V
CR3	AUXILIARY PUMP RELAY
CR4	HORN RELAY
CR5	BRAKE RELEASE RELAY
CR20	PRIMARY LIFT PUMP RELAY
G6	HOUR METER
H6	PLATFORM OVERLOAD ALARM
KS1	KEY SWITCH
L37	LED - DRIVE CONTROLLER FAULT STATUS
L45	LED - PLATFORM OVERLOAD
P1	EMERGENCY STOP BUTTON
TS51	AUXILIARY PUMP TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB UP / DOWN TOGGLE SWITCH (OPTION)
TS59	PLATFORM LEVEL UP / DOWN TOGGLE SWITCH
TS60	SECONDARY BOOM UP / DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
U33	LOAD SENSE MODULE

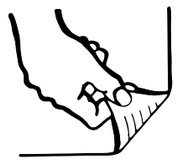
NOTE: DASHED LINES INDICATE OPTIONS.



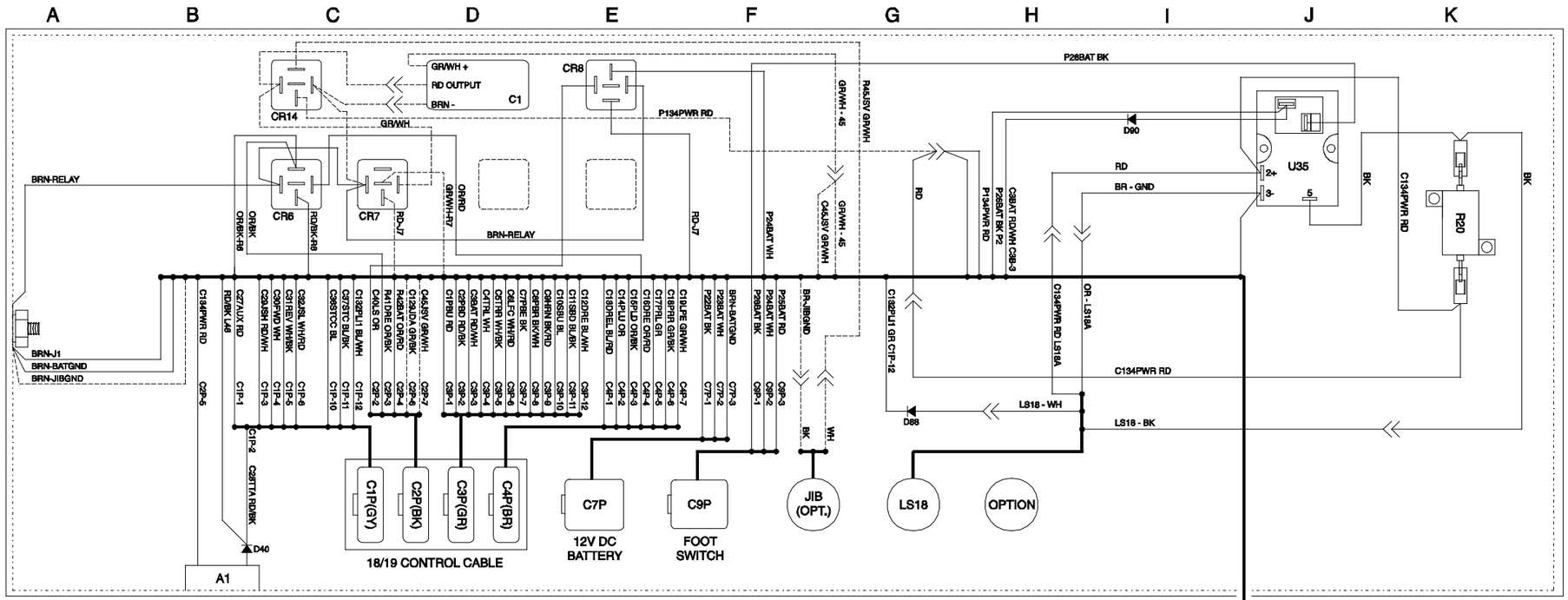
Ground Control Box Switch Panel Wiring Diagram, (CE)



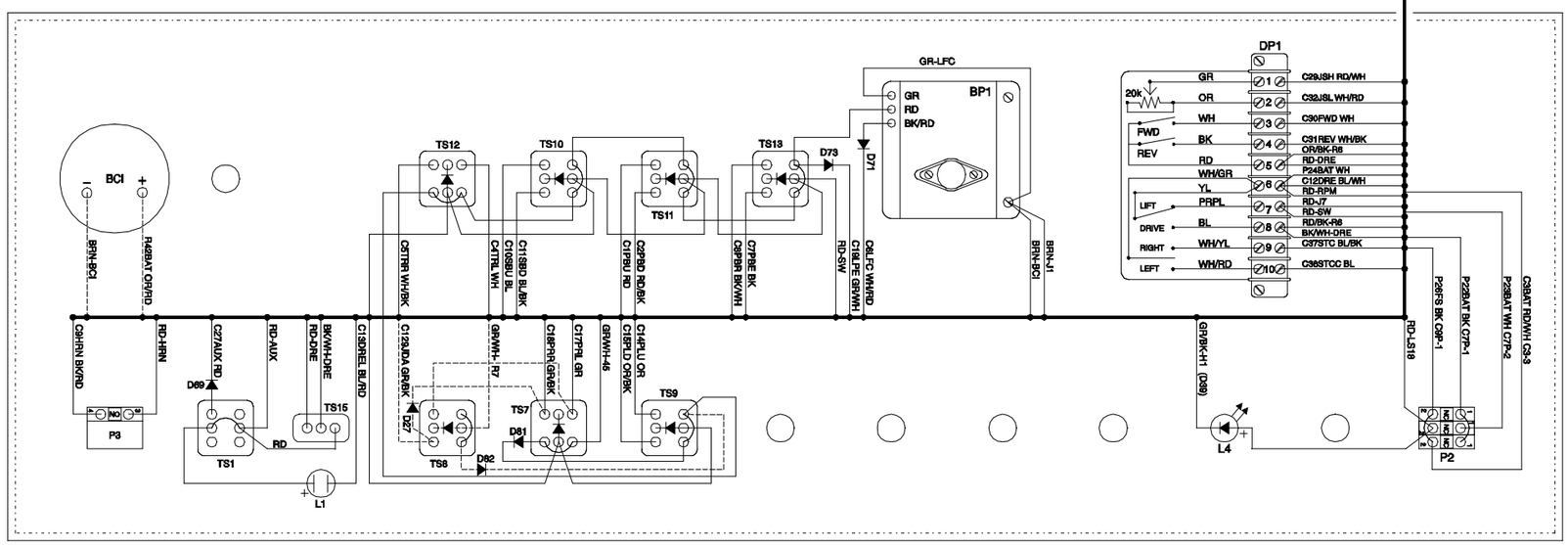
Platform Control Box Wiring Diagram, (CE)



Platform Control Box Wiring Diagram, (CE)



NOTES:
1. DASHED LINES INDICATE OPTIONS.



COMPONENT INDEX

A1	TILT ALARM
BCI	BATTERY CHARGE INDICATOR (OPTION)
BP1	ROTARY FLOW CONTROL DIAL
C1	CAPACITOR, TIME DELAY (JIB OPTION)
CR6	RELAY - DRIVE ENABLE
CR7	RELAY - JIB (OPTION)
CR8	RELAY - LIMIT SWITCH
CR14	RELAY - JIB (OPTION)
DP1	JOYSTICK - DRIVE / STEER
H1	TITL ALARM
L1	LED - DRIVE ENABLE
L4	LED - PLATFORM OVERLOAD
LS18	PLATFORM OVERLOAD LIMIT SWITCH
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
R20	RESISTOR - 4700Ω
TS1	AUXILIARY PUMP TOGGLE SWITCH
TS7	PLATFORM ROTATE TOGGLE SWITCH
TS8	JIB BOOM UP / DOWN TOGGLE SWITCH (OPTION)
TS9	PLATFORM LEVEL TOGGLE SWITCH
TS10	SECONDARY BOOM TOGGLE SWITCH
TS11	PRIMARY BOOM UP / DOWN TOGGLE SWITCH
TS12	TURNTABLE ROTATE TOGGLE SWITCH
TS13	PRIMARY BOOM EXTEND / RETRACT TOGGLE SWITCH
TS15	DRIVE ENABLE TOGGLE SWITCH
U35	TIME DELAY RELAY

ES0273L (NON-JIB MODELS)
ES0274M (JIB MODELS)

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