



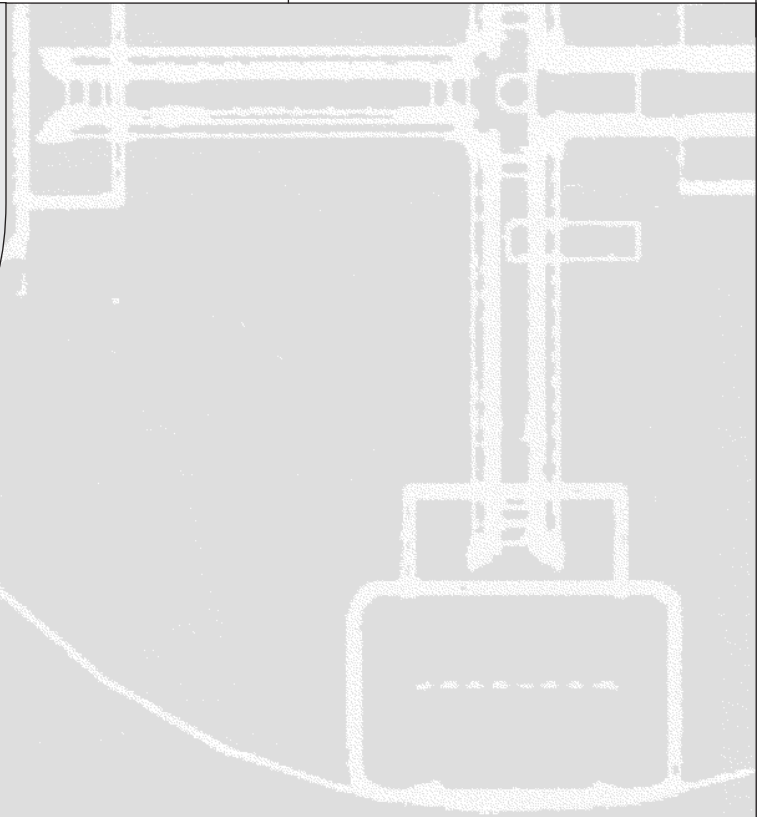
Service Manual

Part No. 36540
Rev C
August 2008



ZTM-34/22N
(before serial number 6291)

ZTM-34/22 DC
(before serial number 5427)



Genie® Z-34/22 Genie® Z-34/22N

Important

Read, understand and obey the safety rules and operating instructions in the *Genie Z-34/22 & Genie Z-34/22N Operator's Manual* before attempting any maintenance or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting 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.

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

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and other manuals. Please write to the technical publications team in care of Genie Industries, PO Box 97030, Redmond WA 98073-9730 USA.

If you have any questions, please contact Genie Industries.

Contact us:

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


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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the *Genie Z-34/22 & Genie Z-34/22N Operator's Manual* will result in death or serious injury.

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

▲ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

▲ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

▲ CAUTION

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

CAUTION

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

NOTICE

Indicates special operation or maintenance information.

Workplace Safety



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.



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.

Theory of Operation

Power Source

The Genie Z-34/22 & Genie Z-34/22N are powered by eight six-volt (315 AH) batteries, separated into two groups of four. Each group of four batteries is wired in series to produce 24V DC. The two battery groups are then joined to produce 48V DC. The drive system uses 48V DC and the control system uses 24V DC.

Hydraulic System

All machine functions are performed by the hydraulic system. The hydraulic system is powered by a single-section gear pump. When the pump is activated, it supplies hydraulic fluid under pressure to the function manifold, where the control valves are located. To protect from over-pressurization of the hydraulic system, the pump is provided with a pressure relief valve, set at 3200 psi (221 bar).

Activating a machine function is accomplished by actuating or moving a toggle switch and/or control handle, which sends voltage to the appropriate directional control valve. The directional valve determines which direction the hydraulic fluid will travel. The amount of hydraulic fluid volume is determined by the proportional valve input voltage from the boom function speed controller at the platform controls. Each boom lift cylinder incorporates a counterbalance valve to prevent movement in the event of a hydraulic line failure.

Electrical System

Drive system

All Z-34/22 and Z-34/22N machines utilize a DC drive motor on each non-steer wheel. The two motors are connected in series and are controlled by a solid-state motor controller. The motor controller regulates the amount of current applied to the drive motors based upon the position of the drive controller (joystick), which allows proportional drive speed control.

Z-34/22 machines (before serial number 1734) and Z-34/22N machines (before serial number 2227) use series-wound DC drive motors and a solid state motor controller designed for series motors. A mechanical forward/reverse contactor provides directional control of the drive motors. These machines also have a proportional braking system, which is active in the drive controller (joystick) range between neutral position and half way to full deflection in both drive directions. The drive controller has a 0-5 V DC voltage output which activates the motor controller, as well as a proportional coil output for the brake system.

Z-34/22 machines (after serial number 1733) and Z-34/22N machines (after serial number 2226) use separately excited (Sepex) DC drive motors and a Sepex motor controller. No forward/reverse contactor is required in this system, as the controller does the switching automatically. The Sepex drive system utilizes regenerative braking, which means that the drive motors are used to slow down and stop the machine. The resulting

THEORY OF OPERATION

energy is then returned to the batteries.

Regenerative braking allows the use of a simple, non-proportional parking brake which applies after the machine has come to a stop, or if the Emergency Stop button is pushed in to the OFF position.

The Sepex motor controller also incorporates self diagnostics. An LED on the motor controller will flash a fault code when a fault is present to aid in troubleshooting. Refer to the fault code chart in Section Five.

Limit switches

There are two types of limit switches, which are found in various locations on the machine: drive speed limit switches and a drive enable limit switch.

The function of a drive speed limit switch is to limit the raised machine drive speed to 0.6 miles per hour (1 km/h) when either the primary or secondary boom is raised more than 2 feet (0.6 m) OR when the primary boom is extended more than 12 inches (30 cm).

The function of the drive enable limit switch is to limit the ability of the machine to drive when the boom is rotated outside the area between the non-steer wheels.

Machine Controls

The Z-34/22 and Z-34/22N machines are equipped with operational controls which are found in two locations: the ground controls, located opposite the hydraulic tank side of the machine, and the platform controls, located in the platform. All lift and drive functions are available at the platform controls. Only boom functions are available at the ground controls. Moving a boom function toggle switch in the direction indicated on the control panel decal will determine which boom function will operate and its direction of travel.

The platform controls incorporates a rotary boom function speed controller which, by varying the position of the controller, controls the amount of voltage to the boom function proportional valve. This controller determines the speed at which the function will operate.

The drive controller (joystick) is fitted with a potentiometer that communicates the drive controller position with the motor controller. A thumb rocker switch on the top of the drive controller is used for steering.

Washing electronic components is not suggested. Instead, use compressed air to remove debris.

CAUTION Component damage hazard. Avoid shock or impact to the motor controller. Internal damage may not be visible from the outside.

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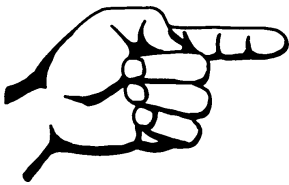
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Specifications

Machine Specifications

Stowed dimensions	Z-34/22N	Z-34/22
Length	18 ft 7 in 5.7 m	18 ft 6 in 5.6 m
Width	4 ft 10 in 1.5 m	5 ft 8 in 1.7 m
Height	6 ft 7 in 2 m	6 ft 7 in 2 m
Machine Weight	11,500 lbs 5216 kg	10,500 lbs 4763 kg
Ground clearance	5 ³ / ₄ in 14.6 cm	6 in 15.2 cm

Platform dimensions

Length	56 in	142 cm
Width	30 in	76 cm
Maximum capacity	500 lbs	227 kg

Operational dimensions

Height, platform maximum	34 ft 4 in 10.5 m	34 ft 8 in 10.6 m
Height, working maximum	40 ft 4 in 12.3 m	40 ft 8 in 12.4 m
Horizontal reach, maximum	22 ft 4 in 6.8 m	22 ft 4 in 6.8 m
Turntable tailswing	0	0
Wheelbase	6 ft 2 in 1.9 m	6 ft 2 in 1.9 m
Turning radius (outside)	12 ft 9 in 3.9 m	13 ft 1 in 4 m
Turning radius (inside)	6 ft 1.8 m	5 ft 8 in 1.7 m
Turntable rotation (degrees)	355°	355°
Platform rotation (degrees)	160°	160°

Tires and wheels, Z-34/22

Tire size	9-14.5 LT	
Tire ply rating	Tread 8	Sidewall 6
Tire contact area	43.5 sq in	280 sq cm
Overall tire diameter	28 in	37 cm
Wheel diameter	14.5 in	45 cm
Wheel width	7 in	18 cm

Tires and wheels, Z-34/22N

Tire size (solid rubber)	22 x 7 x 17.75 in 56 x 18 x 45 cm	
Load range	7600 lbs	3447 kg
Tire contact area	35 sq in	226 sq cm
Overall tire diameter	22 in	56 cm
Wheel diameter	17.75 in	45 cm
Wheel width	7 in	18 cm

Wheel lugs

Front	8 @ ⁵ / ₈ -18	
Rear	9 @ ⁵ / ₈ -18	

Lug nut torque	125 ft-lbs	169.5 Nm
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Fluid Capacities

Z-34/22 before serial number 809 and Z-34/22N before serial number 1116:

Hydraulic tank capacity	5 gallons 18.9 liters
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Hydraulic system (including tank)	7 gallons 26.5 liters
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Z-34/22 after serial number 808 and Z-34/22N after serial number 1115:

Hydraulic tank capacity	4 gallons 15.1 liters
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Hydraulic system (including tank)	6 gallons 22.7 liters
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Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

SPECIFICATIONS

Performance Specifications

Drive speeds (maximum) Z-34/22

(before serial number 1734)

Drive speed, stowed	4 mph	6.4 km/h
35:1 torque hubs	40 ft/6.8 sec	12.2 m/6.8 sec

Drive speed, stowed	3.1 mph	5 km/h
49:1 torque hubs	40 ft/9.1 sec	12.2 m/9.1 sec

(after serial number 1733)

Drive speed, stowed	3.7 mph	6 km/h
47:1 torque hubs	40 ft/7.5 sec	12.2 m/7.5 sec

Drive speed,	0.6 mph	1 km/h
booms raised or extended	40 ft/40 sec	12.2 m/40 sec

Drive speeds (maximum) Z-34/22N

(before serial number 2227)

Drive speed, stowed	3.4 mph	5.5 km/h
35:1 torque hubs	40 ft/8 sec	12.2 m/8 sec

Drive speed, stowed	2.8 mph	4.5 km/h
49:1 torque hubs	40 ft/10 sec	12.2 m/10 sec

(after serial number 2226)

Drive speed, stowed	3.1 mph	5 km/h
47:1 torque hubs	40 ft/9 sec	12.2 m/9 sec

Drive speed,	0.6 mph	1 km/h
booms raised or extended	40 ft/40 sec	12.2 m/40 sec

Gradeability (boom stowed)**Z-34/22** (before serial number 1734)

49:1 drive hubs	35%
35:1 drive hubs	30%

Z-34/22 (after serial number 1733)

47:1 drive hubs	30%
-----------------	-----

Z-34/22N (before serial number 2227)

49:1 drive hubs	25%
35:1 drive hubs	20%

Z-34/22N (after serial number 2226)

47:1 drive hubs	30%
-----------------	-----

Boom function speeds, maximum from platform controls (with 500 lbs in platform)

Z-34/22 before serial number 1734 and

Z-34/22N before serial number 2227

Jib boom up	30 to 40 seconds
-------------	------------------

Jib boom down	15 to 25 seconds
---------------	------------------

Primary boom up	25 to 35 seconds
-----------------	------------------

Primary boom down	15 to 25 seconds
-------------------	------------------

Primary boom extend	25 to 35 seconds
---------------------	------------------

Primary boom retract	15 to 25 seconds
----------------------	------------------

Secondary boom up	15 to 25 seconds
-------------------	------------------

Secondary boom down	10 to 15 seconds
---------------------	------------------

Turntable rotate - 355°	50 to 70 seconds
-------------------------	------------------

Platform rotate - 160°	5 to 10 seconds
------------------------	-----------------

Platform level up	10 to 20 seconds
-------------------	------------------

Platform level down	10 to 20 seconds
---------------------	------------------

Boom function speeds, maximum from platform controls (with 500 lbs in platform)

Z-34/22 after serial number 1733 and

Z-34/22N after serial number 2226

Jib boom up	23 to 29 seconds
-------------	------------------

Jib boom down	20 to 26 seconds
---------------	------------------

Primary boom up	15 to 21 seconds
-----------------	------------------

Primary boom down	12 to 18 seconds
-------------------	------------------

Primary boom extend	21 to 27 seconds
---------------------	------------------

Primary boom retract	12 to 18 seconds
----------------------	------------------

Secondary boom up	16 to 22 seconds
-------------------	------------------

Secondary boom down	12 to 18 seconds
---------------------	------------------

Turntable rotate - 355°	57 to 63 seconds
-------------------------	------------------

Platform rotate - 160°	17 to 23 seconds
------------------------	------------------

Platform level up	10 to 20 seconds
-------------------	------------------

Platform level down	10 to 20 seconds
---------------------	------------------

SPECIFICATIONS

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
------------------------	-------------------

Lift pump

Type	Fixed displacement gear pump
------	------------------------------

Displacement per revolution	0.153 cu in 2.5 cc
--------------------------------	-----------------------

Displacement (2500 psi/172 bar)	1.6 gpm 6 l/min
------------------------------------	--------------------

Hydraulic reservoir return line filter	10 micron with 25 psi (1.7 bar) bypass
---	---

Function manifold

Function relief valve pressure	3200 psi 221 bar
-----------------------------------	---------------------

Primary boom down relief

Z-34/22

(before serial number 3216)	1400 psi	97 bar
(after serial number 3215)	1600 psi	110 bar

Z-34/22N

(before serial number 3767)	1400 psi	97 bar
(after serial number 3766)	1600 psi	110 bar

Secondary boom down relief valve pressure	1600 psi 110 bar
--	---------------------

Primary boom extend relief valve pressure	1800 psi 124 bar
--	---------------------

Z-34/22

(before serial number 2901)	1800 psi	124 bar
(from serial number 2901 to 3215)	2800 psi	193 bar

Z-34/22N

(before serial number 3533)	1800 psi	124 bar
(from serial number 3533 to 3766)	2800 psi	193 bar

Turntable rotate relief valve pressures

Z-34/22

(before serial number 674)	1750 psi	121 bar
(from serial number 674 to 1733)	Not adjustable	
(after serial number 1733)	1100 psi	76 bar

Z-34/22N

(before serial number 935)	1750 psi	121 bar
(from serial number 935 to 2226)	Not adjustable	
(after serial number 2226)	1100 psi	76 bar

Auxiliary pump

Type	Fixed displacement gear pump	
------	------------------------------	--

Displacement	0.75 gpm	2.8 l/min
--------------	----------	-----------

SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok® O-ring face seal fittings and hose ends. Machines that utilize Parker Seal-Lok® O-ring face seal hoses and fittings require that the fittings and hose ends be torqued to specification when they are removed and installed, or when new hoses or fittings are installed.

Hydraulic Hose and Fitting Torque Specifications						
SAE O-ring Boss Port - tube fitting				Seal-Lok® - hose end		
SAE Dash Size	Installing into...	ft. lbs.	Nm	SAE Dash Size	ft. lbs.	Nm
-4	Aluminum	11	14.9	-4	18	24.4
	Steel	16	21.7	-6	27	36.6
-6	Aluminum	23	31.2	-8	40	54.2
	Steel	35	47.5	-10	63	85.4
-8	Aluminum	40	54.2	-12	90	122
	Steel	60	81.3	-16	120	162.7
-10	Aluminum	69	93.6	-20	140	190
	Steel	105	142.4	-24	165	223.7
-12	Aluminum	93	126.1			
	Steel	140	190			
-16	Aluminum	139	188.5			
	Steel	210	284.7			
-20	Aluminum	172	233.2			
	Steel	260	352.5			
-24	Aluminum	208	282			
	Steel	315	427.1			

Torque Procedure

- 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.
- 2 Lubricate the O-ring before installation.
- 3 Be sure that the face seal O-ring is seated and retained properly.
- 4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.
- 5 Tighten the nut or fitting to the appropriate torque per given size, as shown in the table above.
- 6 Operate all machine functions and inspect the hoses and fittings and related components to be sure that there are no leaks.



NOTICE

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

SPECIFICATIONS





SAE FASTENER TORQUE CHART

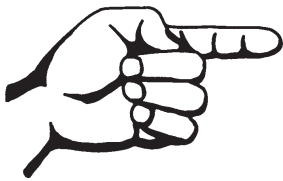
• This chart is to be used as a guide only unless noted elsewhere in this manual •

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

METRIC FASTENER TORQUE CHART

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

Size (mm)	Class 4.6 				Class 8.8 				Class 10.9 				Class 12.9 			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	195	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



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Scheduled Maintenance Inspections



Observe and Obey:

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

⚠ WARNING

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

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the hourly and quarterly inspections.

About This Section

The Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, hourly, quarterly, annual and two year. To account for repeated procedures, the *Maintenance Tables* and the *Maintenance Inspection Report* have been divided into four subsections—A, B, C, D. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Table or Checklist
Daily	A
Hourly and Quarterly	A + B
Annual	A + B + C
Two year	A + B + C + D

Maintenance Tables

The maintenance tables contained in this section provide summary information on the specific physical requirements for each inspection.

Complete step-by-step instructions for each scheduled maintenance procedure are provided in section 4, *Scheduled Maintenance Procedures*.

Maintenance Inspection Report

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

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

Maintenance Tables

Table A























		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
A-1	Inspect the Operator's and Safety Manuals					
A-2	Inspect the Decals and Placards					
A-3	Inspect for Damage and Loose or Missing Parts					
A-4	Check the Hydraulic Oil Level					
A-5	Check for Hydraulic Leaks					
A-6	Test the Platform and Ground Controls					
A-7	Test the Auxiliary Power Operation					
A-8	Test the Tilt Sensor					
A-9	Test the Limit Switches					
A-10	Test the Lift/Drive Select Switch (if equipped)					
A-11	Perform 30 Day/50 Hour Service					

Table B

B-1	Check the Batteries					
B-2	Inspect the Electrical Wiring					
B-3	Inspect the Tires and Wheels (including lug nut torque)					
B-4	Confirm the Proper Brake Configuration					
B-5	Check the Oil Level in the Drive Hubs					

MAINTENANCE TABLES

Table B, continued

		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
B-6	Test the Key Switch					
B-7	Test the Emergency Stop Buttons					
B-8	Test the Ground Control Override					
B-9	Test the Platform Self-leveling					
B-10	Test the Horn					
B-11	Test the Foot Switch					
B-12	Test the Drive Enable System					
B-13	Test the Drive Brakes					
B-14	Test the Drive Speed - Stowed Position					
B-15	Test the Drive Speed - Raised or Extended Position					
B-16	Test the Alarm Package (if equipped)					
B-17	Test the Turntable Rotation Stop					
B-18	Check the Electrical Contactors					
B-19	Perform Hydraulic Oil Analysis See D-1 <i>Test or Replace the Hydraulic Oil</i>					
Every 250 hours, perform the following maintenance procedure:						
B-20	Replace the Hydraulic Tank Return Filter					

MAINTENANCE TABLES

Table C













		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
C-1	Check the Primary Boom Wear Pads					
C-2	Check the Turntable Rotation Bearing Bolts					
C-3	Check the Free-wheel Configuration					
C-4	Grease the Turntable Rotation Bearing and Worm Drive Gear					
C-5	Replace the Drive Hub Oil					
C-6	Bleed the Platform Rotator					

Table D

D-1	Test or Replace the Hydraulic Oil					
D-2	Grease the Steer Axle Wheel Bearings					

Maintenance Inspection Report

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

Instructions

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

<input type="checkbox"/>	Daily Inspection: A
<input type="checkbox"/>	Hourly/Quarterly Inspection: A+B
<input type="checkbox"/>	Annual Inspection: A+B+C
<input type="checkbox"/>	2 Year Inspection: A+B+C+D

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the maintenance tables in this section and the step-by-step procedures in section 4 to learn how to perform these inspections.
- If any inspection receives an "N", tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the "R" box.

Legend

Y = yes, acceptable
N = no, remove from service
R = repaired

Comments

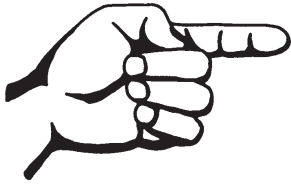
Checklist A				
Y N R				
Refer to Table A				
A-1 Operator's and Safety manuals				
A-2 Decals and placards				
A-3 Damage and loose or missing parts				
A-4 Hydraulic oil level				
A-5 Hydraulic leaks				
A-6 Platform and ground controls				
A-7 Auxiliary power				
A-8 Tilt sensor				
A-9 Limit switches				
A-10 Lift/Drive select switch (if equipped)				
A-11 30 Day/50 Hour Service				

Checklist B				
Y N R				
Refer to Table B				
B-1 Batteries				
B-2 Electrical wiring				
B-3 Tires and wheels				
B-4 Brake configuration				
B-5 Drive hub oil level				
B-6 Key switch				
B-7 Emergency stop				
B-8 Ground control override				

B-9 Platform leveling				
B-10 Horn				
B-11 Foot switch				
B-12 Drive enable system				
B-13 Drive brakes				
B-14 Drive speed-stowed				
B-15 Drive speed-raised				
B-16 Alarm package (if equipped)				
B-17 Turntable stop				
B-18 Electrical contactors				
B-19 Hydraulic oil analysis				
Perform quarterly or every 250 hours:				
B-20 Hydraulic return filter				

Checklist C				
Y N R				
Refer to Table C				
C-1 Boom wear pads				
C-2 Turntable bearing bolts				
C-3 Free-wheel configuration				
C-4 Grease rotation bearing				
C-5 Drive hub oil				
C-6 Platform rotator				

Checklist D				
Y N R				
Refer to Table D				
D-1 Hydraulic oil				
D-2 Wheel bearings				



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Scheduled Maintenance Procedures



Observe and Obey:

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

⚠ WARNING

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

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
 - Machine parked on a flat level surface
 - Boom in the stowed position
 - Turntable rotated with the boom between the non-steering wheels
 - Key switch in the OFF position with the key removed
 - Wheels chocked

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend



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

⚠ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

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

CAUTION

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

NOTICE

Green—used to indicate operation or maintenance information.

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

Table A Procedures

A-1

Inspect the Operator's and Safety Manuals

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

- 1 Check to be sure the storage container is present and in good condition.
- 2 Check to make sure that the operator's, responsibilities and safety manuals are present and complete in the storage container in the platform.
- 3 Examine the pages of each manual to be sure that they are legible and in good condition.
- 4 Always return the manuals to the storage container after use.

NOTICE

Contact your authorized Genie distributor or Genie Industries if replacement manuals are needed.

A-2

Inspect the Decals and Placards

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

- 1 Refer to the *Decals* section in the *Genie Z-34/22 & Genie Z-34/22N Operator's Manual* and use the decal list and illustrations to determine that all decals and placards are in place.
- 2 Inspect all decals for legibility and damage. Replace any damaged or illegible decal immediately.

NOTICE

Contact your authorized Genie distributor or Genie Industries if replacement decals are needed.

TABLE A PROCEDURES

A-3**Inspect for Damage and Loose or Missing Parts**

Daily machine condition inspections are essential to safe machine operation and good machine performance. Failure to locate and repair damage, and discover loose or missing parts may result in an unsafe operating condition.

- 1 Inspect the entire machine for damage and improperly installed or missing parts including:

- Electrical components, wiring and electrical cables
- Hydraulic power units, reservoir, hoses, fittings, cylinders and manifolds
- Drive and turntable motors and drive hubs.
- Boom wear pads
- Tires and wheels
- Limit switches, alarms and horn
- Nuts, bolts and other fasteners
- Platform entry mid-rail/gate
- Beacon and alarms (if equipped)

Check entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine
- Battery packs and connections
- Compartment covers and latches

A-4**Check the Hydraulic Oil Level**

Maintaining the hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil levels can damage hydraulic components. Daily checks allow the inspector to identify changes in oil level that might indicate the presence of hydraulic system problems.

**Z-34/22 before serial number 572 and
Z-34/22N before serial number 572:**

- 1 Be sure that the boom is in the stowed position.
 - 2 Remove the breather cap with dipstick from the hydraulic tank.
 - 3 Visually inspect the dipstick.
- ⊙ Result: The hydraulic oil level should be at the FULL mark on the dipstick.

**Z-34/22 from serial number 572 to 808 and
Z-34/22N from serial number 572 to 1115:**

- 1 Be sure that the boom is in the stowed position, then visually inspect the sight glass on the hydraulic tank.
- ⊙ Result: The hydraulic oil level should be within the top and bottom of the sight glass.

TABLE A PROCEDURES

**Z-34/22 after serial number 808 and
Z-34/22N after serial number 1115:**

- 1 Be sure that the boom is in the stowed position.
 - 2 Visually inspect the hydraulic tank.
- ⊙ Result: The hydraulic oil level should be within the FULL and ADD marks on the hydraulic tank.

Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
--------------------	-------------------

**Z-34/22 before serial number 809 and
Z-34/22N before serial number 1116:**

Hydraulic tank capacity	5 gallons 18.9 liters
-------------------------	--------------------------

Hydraulic system (including tank)	7 gallons 26.5 liters
--------------------------------------	--------------------------

**Z-34/22 after serial number 808 and
Z-34/22N after serial number 1115:**

Hydraulic tank capacity	4 gallons 15.1 liters
-------------------------	--------------------------

Hydraulic system (including tank)	6 gallons 22.7 liters
--------------------------------------	--------------------------

A-5**Check for Hydraulic Leaks**

Detecting hydraulic fluid leaks is essential to operational safety and good machine performance. Undiscovered leaks can develop into hazardous situations, impair machine functions and damage machine components.

- 1 Inspect for hydraulic oil puddles, dripping or residue on or around the following areas:
 - Hydraulic tank—filter, fittings, hoses and turntable surface
 - Compartments—hydraulic power unit, auxiliary power unit, pumps, suction filter, fittings, hoses, and turntable surface
 - All hydraulic cylinders
 - All hydraulic manifolds
 - Primary, secondary and jib booms
 - The underside of the turntable
 - The underside of the drive chassis
 - Ground area under the machine

TABLE A PROCEDURES

A-6**Test the Platform and Ground Controls**

Testing the machine functions and the Emergency Stop buttons for malfunctions is essential for safe machine operation. An unsafe working condition exists if any function fails to operate properly or either Emergency Stop button fails to stop all the machine functions. Each function should operate smoothly and be free of hesitation, jerking and unusual noise.

Z-34/22N before serial number 304 and Z-34/22 before serial number 153:

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

⦿ Result: Beacon (if equipped) should flash.

- 2 Attempt to activate each boom and platform function toggle switch.

⦿ Result: All machine functions should operate through a full cycle. The descent alarm (if equipped) should sound while the boom is lowering.

- 3 Push in the Emergency Stop button to the OFF position.

⦿ Result: No function should operate. The machine should stop.

- 4 Turn the key switch to platform controls and pull out the Emergency Stop button to the ON position at both the ground and platform controls.

⦿ Result: Beacon (if equipped) should flash.

- 5 Move the lift/drive select toggle switch to the lift position (if equipped).

- 6 Press down the foot switch and operate each machine function through a full cycle.

⦿ Result: All machine functions should operate smoothly.

- 7 Push in the Emergency Stop button to the OFF position.

⦿ Result: No function should operate. The machine should stop.

NOTICE

As a safety feature, selecting and operating the ground controls will override the platform controls, including the Emergency Stop button.

NOTICE

Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the primary boom is raised past the drive speed limit switch.

TABLE A PROCEDURES

**Z-34/22N after serial number 303 and
Z-34/22 and after serial number 152:**

- 1 Turn the key switch to ground controls and pull out the Emergency Stop button to the **ON** position at both the ground and platform controls.

⦿ Result: Beacon (if equipped) should flash.

- 2 Do not hold the function enable switch to either side. Attempt to activate each boom and platform function toggle switch.

⦿ Result: All boom and platform functions should **not** operate.

- 3 Hold the function enable switch to either side and activate each boom and platform function toggle switch.

⦿ Result: All machine functions should operate through a full cycle. The descent alarm (if equipped) should sound while the boom is lowering.

NOTICE

Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the boom is raised past the drive speed limit switch.

- 4 Push in the Emergency Stop button to the **OFF** position.

⦿ Result: No function should operate. The machine should stop.

- 5 Turn the key switch to platform control and pull out the Emergency Stop button to the **ON** position at both the ground and the platform controls.

⦿ Result: Beacon (if equipped) should flash.

- 6 Press down the foot switch and operate each machine function through a full cycle.

⦿ Result: All machine functions should operate smoothly.

- 7 Push in the Emergency Stop button to the **OFF** position.

⦿ Result: No function should operate. The machine should stop.

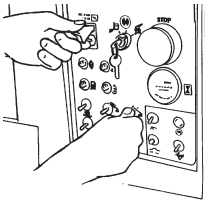
NOTICE

As a safety feature, selecting and operating the ground controls will override the platform controls, including the Emergency Stop button.

TABLE A PROCEDURES

A-7**Test the Auxiliary Power Operation**

Detection of auxiliary power system malfunctions is essential for safe machine operation. An unsafe working condition exists if the auxiliary powered functions do not operate in the event of a main power loss. Auxiliary power is designed for short term emergency use only. Excessive use will result in battery drain and component damage.

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 2 Lift the red auxiliary power switch cover.
- 3 Simultaneously hold the auxiliary power switch in the ON direction while activating each function through a partial cycle.

- ⦿ Result: Each function should operate smoothly.
- 4 Turn the key switch to platform control.
- 5 At the platform controls, pull out the Emergency Stop button to the ON position, then press down the foot switch.

- 6 Lift the red auxiliary power switch cover.
- 7 Simultaneously hold the auxiliary power switch ON while activating each function through a partial cycle.

- ⦿ Result: Each function should operate smoothly.

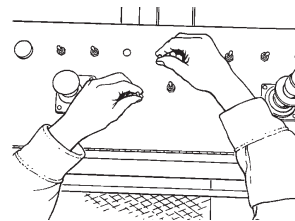


TABLE A PROCEDURES

A-8**Test the Tilt Sensor**

The tilt sensor sounds an alarm in the platform when the incline of the machine exceeds the rating on the serial plate.

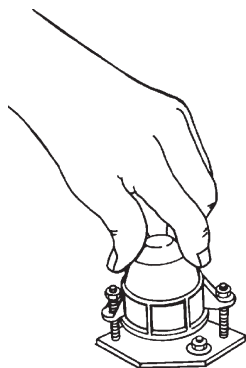
NOTICE

Select a level test area. The tilt alarm should not be sounding prior to test.

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
 - 2 Open the ground control side turntable cover and press down on one side of the tilt sensor. Hold for 5 seconds.
- ☉ Result: The alarm located in the platform should sound.

⚠ WARNING

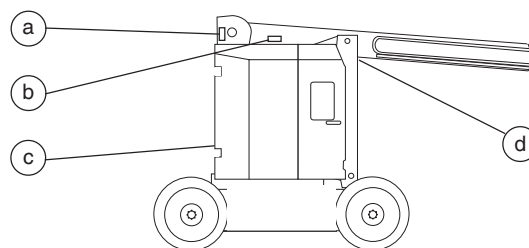
Tip-over hazard. The alarm should be heard at the ground controls. If you can't hear the alarm at the ground controls, replace the alarm in the platform.

**A-9****Test the Limit Switches**

Detecting limit switch malfunctions is essential to safe machine operation. The drive limit switch is used to restrict drive speed when the boom is raised or extended. The drive enable limit switch activates a signal light to inform the operator that the platform is over the steering wheels, and stops drive movement unless the drive enable override switch is used. Improperly functioning limit switches will allow the boom to raise and/or drive into an unsafe position.

Drive Speed Limit Switches

- 1 With the boom in the stowed position, visually inspect the drive speed limit switches for the following:
 - Broken or missing rollers or arms
 - Missing fasteners
 - Loose wiring



- a primary boom drive speed limit switch (LS2)
(Z-34/22 after serial number 367 and Z-34/22N after serial number 540)
- b boom extend drive speed limit switch (LS1)
- c secondary boom drive speed limit switch (LS4)
(Z-34/22 after serial number 366 and Z-34/22N after serial number 539)
- d primary/secondary boom drive speed limit switch (LS2)
(Z-34/22 before serial number 367 and Z-34/22N before serial number 540)

TABLE A PROCEDURES

- 2 Extend the primary boom approximately 12 inches (30 cm).
- 3 Manually activate the boom extend drive speed limit switch.
 - ⊙ Result: The drive speed limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.
- 4 Fully retract the primary boom.
- 5 **Z-34/22 and Z-34/22N machines manufactured before May, 1999:**
Remove the rear turntable cover mounting fasteners, then remove the cover. Manually activate the secondary boom drive speed limit switch.
Z-34/22 and Z-34/22N machines manufactured after April, 1999:
Manually activate the secondary boom drive speed limit switch.
 - ⊙ Result: The drive speed limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.
- 6 Manually activate the primary boom drive limit switch.
 - ⊙ Result: The drive speed limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.
- 7 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at the platform controls.
- 8 Press down the foot switch and slowly move the drive control handle off center.
 - ⊙ Result: The machine should move at normal drive speeds.
- 9 Raise the primary boom approximately 5 feet (1.5 m).
- 10 Slowly move the drive control handle off center.
 - ⊙ Result: The machine should move at a reduced drive speed.
- 11 Lower the primary boom to the stowed position.
- 12 Raise the secondary boom approximately 5 feet (1.5 m).
- 13 Slowly move the drive control handle off center.
 - ⊙ Result: The machine should move at a reduced drive speed.
- 14 Lower the secondary boom to the stowed position.
- 15 Extend the primary boom 12 inches (30 cm).
- 16 Slowly move the drive control handle off center.
 - ⊙ Result: The machine should move at a reduced drive speed.

Raised Drive speed (maximum)

Platform raised	40 ft/40 sec	12.2 m/40 sec
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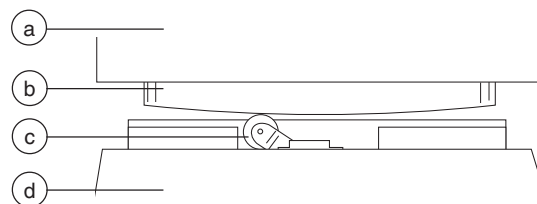
TABLE A PROCEDURES

Drive Enable Limit Switch

- 1 With the boom in the stowed position, visually inspect the drive enable limit switch for the following:
 - Broken or missing roller or arm
 - Missing fasteners
 - Loose wiring
- 2 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 3 At the platform controls, rotate the turntable to the left until the primary boom is past the left non-steer wheel.
 - ⊙ Result: The drive enable indicator light should be ON.
- 4 Move the drive control handle off center.
- ⊙ Result: The drive function should not operate.
- 5 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.
- ⊙ Result: The drive function should operate.

- 6 Manually activate the drive enable limit switch.

- ⊙ Result: The drive enable limit switch roller should move freely and spring return to center. A distinct click should be felt and heard.



- a swing chassis
- b limit switch cam
- c drive enable limit switch (LS3)
- d drive chassis

TABLE A PROCEDURES

A-10**Test the Lift/Drive Select Switch
(if equipped)**

- 1 Move the lift/drive select switch to the lift position.
- 2 Press down the foot switch and move the drive control handle off center.
- ⦿ Result: No drive functions should operate.
- 3 Activate each boom function toggle switch.
- ⦿ Result: All boom functions should operate.
- 4 Move the lift/drive select switch to the drive position.
- 5 Press down the foot switch and activate each boom function toggle switch.
- ⦿ Result: No boom functions should operate.
- 6 Move the drive control handle off center.
- ⦿ Result: The drive functions should operate.

A-11**Perform 30 Day/50 hour Service**

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

- 1 Perform the following maintenance procedures:
 - B-3 Inspect Tires and Wheels (including lug nut torque)
 - B-20 Replace the Hydraulic Tank Return Filter
 - C-2 Check the Turnable Rotation Bearing Bolts

Table B Procedures

B-1

Check the Batteries

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

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

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

NOTICE Perform this test after fully charging the batteries.

- 1 Put on protective clothing and eye wear.
- 2 Disconnect the battery packs from the machine.
- 3 Be sure the battery cable connections are free of corrosion.
- 4 Be sure the battery hold down and cable connections are tight.

- 5 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.
- 6 Result: If any battery cell displays a specific gravity of less than 1.026, the battery must be replaced.
- 6 Check the battery acid level of the battery. If needed, replenish with distilled water to the bottom of the battery fill tube. Do not overfill.
- 7 Install the battery vent caps.
- 8 Check each battery pack and verify that the batteries are wired correctly.
- 9 Connect the battery packs to the machine.

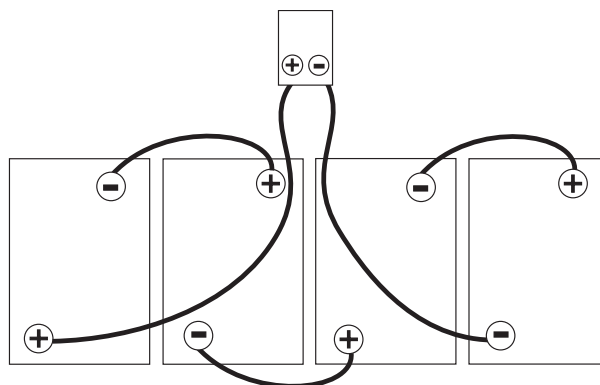


TABLE B PROCEDURES

B-2**Inspect the Electrical Wiring**

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

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

- 1 Inspect the following areas for burnt, chafed, corroded and loose wires:
 - Electrical power panel
 - Electrical relay panel
 - Ground control panel
 - Turntable manifold wiring
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 3 Raise the secondary boom until the lower mid-pivot is approximately 10 feet (3 m) off the ground.
- 4 Inspect the turntable center area for burnt, chafed and pinched cables.
- 5 Lower the boom to the stowed position and turn the machine off.
- 6 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
 - Cable track on the primary boom
 - Primary boom to platform cable harness
 - Inside of the platform control box

TABLE B PROCEDURES

B-3**Inspect the Tires and Wheels
(including lug nut torque)**

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

- 1 Check the tire surface and sidewalls for cuts, cracks, and unusual wear.
- 2 Check each wheel for damage, bends and cracked welds.
- 3 Check each lug nut for proper torque.

Tires and wheels

Lug nut torque, dry	125 ft-lbs	169.5 Nm
Lug nut torque, lubricated	95 ft-lbs	129 Nm

B-4**Confirm the Proper
Brake Configuration**

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

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

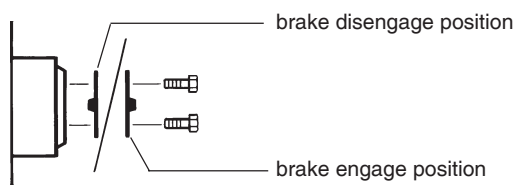


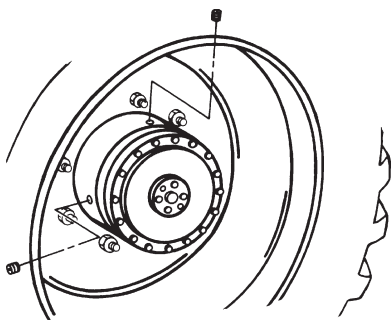
TABLE B PROCEDURES

B-5

Check the Oil Level in the Drive Hubs

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

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



- 2 Remove the plug located at 90 degrees and check the oil level.
- ⦿ Result: The oil level should be even with the bottom of the plug hole.
- 3 If necessary, remove the top plug and add oil until the oil level is even with the bottom of the side plug hole.

- 4 Apply pipe thread sealant to the plugs and install the plugs into the hub.
- 5 Repeat this procedure for each drive hub.

Drive Hub Oil

Capacity (before serial number 1734)		
49:1 and 35:1 models	17 fluid ounces	0.5 liters
(after serial number 1733)		
47:1 models	25.6 fluid ounces	0.76 liters

Type: SAE 90 multipurpose hypoid gear oil - API service classification GL5

TABLE B PROCEDURES

B-6**Test the Key Switch**

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

- 1 Pull out the Emergency Stop button to the **ON** position at both the ground and platform controls.
- 2 Turn the key switch to **platform control**.
- 3 Check the machine functions from the **ground controls**.
- ⦿ Result: The machine functions should **not** operate.
- 4 Turn the key switch to **ground control**.
- 5 Check the machine functions from the **platform controls**.
- ⦿ Result: The machine functions should **not** operate.
- 6 Turn the key switch to the **OFF** position.
- ⦿ Result: No function should operate. The machine should stop.

B-7**Test the Emergency Stop Buttons**

Properly functioning Emergency Stop buttons are essential for safe machine operation. An improperly operating Emergency Stop button will fail to shut off power and stop all machine functions resulting in a hazardous situation.

NOTICE

As a safety feature, selecting and operating the ground controls will override the platform controls, including the Emergency Stop button.

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the **ON** position.
- 2 Push down the Emergency Stop button to the **OFF** position.
- ⦿ Result: No functions should operate. The machine should stop.
- 3 Turn the key switch to platform control and pull out the Emergency Stop button to the **ON** position at both the ground and platform controls.
- 4 Push down the platform Emergency Stop button to the **OFF** position.
- ⦿ Result: No machine functions should operate.

NOTICE

The ground Emergency Stop button will stop all machine operation, even if the key switch is switched to platform control.

TABLE B PROCEDURES

B-8**Test the Ground Control Override**

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

- 1 Push down the platform Emergency Stop button to the **OFF** position.
 - 2 Turn the key switch to ground control and pull out the ground controls Emergency Stop button to the **ON** position.
 - 3 Operate each boom function through a partial cycle at the ground controls.
- ⦿ Result: All boom functions should operate.

B-9**Test the Platform Self-leveling**

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which is controlled by the master cylinder located at the base of the primary boom. A platform self-leveling failure creates an unsafe working condition.

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the **ON** position.
 - 2 Lower the boom to the stowed position.
 - 3 Adjust the platform to a level position using the platform leveling toggle switch.
 - 4 Raise and lower the primary boom through a full cycle.
- ⦿ Result: The platform should remain level at all times to within ± 5 degrees.

TABLE B PROCEDURES

B-10
Test the Horn

A properly functioning horn is essential to safe machine operation. The horn is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning horn will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 2 Push down the horn button at the platform controls.

⦿ Result: The horn should sound.

NOTICE If necessary, the horn can be adjusted to obtain the loudest volume by turning the adjustment screw near the wire terminals on the horn.

B-11
Test the Foot Switch

A properly functioning foot switch is essential to safe machine operation. Machine functions should activate and operate smoothly as long as the foot switch is pressed down, and promptly stop when the foot switch is released. An improperly functioning foot switch can cause an unsafe working condition.

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 2 Without pressing down the foot switch, attempt to operate the machine functions.

⦿ Result: The machine functions should **not** operate.

- 3 Press down the foot switch and operate the machine functions.

⦿ Result: The machine functions should operate.

TABLE B PROCEDURES

B-12**Test the Drive Enable System**

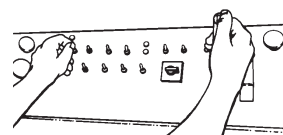
Proper drive enable system operation is essential to safe machine operation. When the primary boom is past the non-steering wheels, drive movement is stopped and the indicator light turns on. The drive enable toggle switch must be used to reactivate drive function and should inform the operator that the machine may move in the opposite direction that the drive and steer controls are moved. An improperly functioning drive enable system may allow the machine to be moved into an unsafe position.

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 2 At the platform controls, rotate the turntable to the right until the primary boom is past the right non-steer wheel.
- ⦿ Result: The drive enable indicator light should come on and remain on while the boom is past the non-steer wheel.
- 3 Move the lift/drive select switch to the drive position.

- 4 Move the drive control handle off center.

- ⦿ Result: The drive function should **not** operate.

- 5 Move and hold the drive enable toggle switch to either side and slowly move the drive control handle off center.



- ⦿ Result: The drive function should operate.

⚠ CAUTION

Collision hazard. Always use the color-coded direction arrows on the platform control panel and the drive chassis to identify which direction the machine will travel.

- 6 Rotate the turntable to the left until the primary boom is past the left-steer wheel.
- ⦿ Result: The drive enable indicator light should come on.
- 7 Repeat steps 3 through 5.

TABLE B PROCEDURES

B-13**Test the Drive Brakes**

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

⚠ WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-4 in this section, *Confirm the Proper Brake Configuration*.

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

- 1 Mark a test line on the ground for reference.
- 2 Lower the boom into the stowed position.
- 3 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 4 Move the lift/drive switch to the DRIVE position (if equipped).
- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the test line.

- 6 Bring the machine to maximum drive speed before reaching the test line. Release the drive joystick when your reference point on the machine crosses the test line.
- 7 Measure the distance between the test line and your machine reference point.

Braking: paved surface

Stopping distance	3 to 4 ft	0.9 to 1.2 m
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NOTICE The brakes must be able to hold the machine on any slope it is able to climb.

TABLE B PROCEDURES

B-14**Test the Drive Speed -
Stowed Position**

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

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

- 1 Create start and finish lines by marking two lines on the ground 40 feet (12.2 m) apart.
- 2 Lower the boom into the stowed position.
- 3 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 4 Move the lift/drive switch to the DRIVE position (if equipped).
- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

- 6 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 7 Continue at full speed and note the time when the machine reference point passes over the finish line.

Drive speeds (maximum) Z-34/22

(before serial number 1734)

Drive speed, stowed	4 mph	6.4 km/h
35:1 torque hubs	40 ft/6.8 sec	12.2 m/6.8 sec

Drive speed, stowed	3.1 mph	5 km/h
49:1 torque hubs	40 ft/9.1 sec	12.2 m/9.1 sec

(after serial number 1733)

Drive speed, stowed	3.7 mph	6 km/h
47:1 torque hubs	40 ft/7.5 sec	12.2 m/7.5 sec

Drive speeds (maximum) Z-34/22N

(before serial number 2227)

Drive speed, stowed	3.4 mph	5.5 km/h
35:1 torque hubs	40 ft/8 sec	12.2 m/8 sec

Drive speed, stowed	2.8 mph	4.5 km/h
49:1 torque hubs	40 ft/10 sec	12.2 m/10 sec

(after serial number 2226)

Drive speed, stowed	3.1 mph	5 km/h
47:1 torque hubs	40 ft/9 sec	12.2 m/9 sec

TABLE B PROCEDURES

B-15
**Test the Drive Speed -
Raised or Extended Position**

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

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

- 1 Create start and finish lines by marking two lines on the ground 40 feet (12.2 m) apart.
- 2 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 3 Raise the primary boom more than 5 feet (1.5 m).
- 4 Move the lift/drive switch to the DRIVE position (if equipped).
- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

- 6 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 7 Continue at full speed and note the time when the machine reference point passes over the finish line.

**Drive speeds (maximum):
raised or extended position**

Drive speed,	0.6 mph	1 km/h
raised or extended	40 ft/40 sec	12.2 m/40 sec

TABLE B PROCEDURES

B-16

Test the Alarm Package (if equipped)

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

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

- 1 Turn the key switch to ground control and pull out the Emergency Stop buttons to the ON position.

⦿ Result: The flashing beacon should be ON and flashing.

- 2 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**

Move the primary boom toggle switch to the down position, hold for a moment and then release it.

Z-34/22 after serial number 152 and Z-34/22N after serial number 303:

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

- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**

Move the secondary boom toggle switch to the DOWN position, hold for a moment and then release it.

Z-34/22 after serial number 152 and Z-34/22N after serial number 303:

Hold the function enable toggle switch to either side. Move the secondary boom toggle switch to the DOWN position, hold for a moment and then release it.

- 4 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**

Move the jib boom toggle switch to the DOWN position, hold for a moment and then release it.

Z-34/22 after serial number 152 and Z-34/22N after serial number 303:

Hold the function enable toggle switch to either side. Move the jib boom toggle switch to the DOWN position, hold for a moment and then release it.

- ⦿ Result: The descent alarm should sound when each control toggle switch is held down.

- 5 Turn the key switch to platform control.

TABLE B PROCEDURES

- 6 At the platform controls pull out the Emergency Stop button to the ON position.

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

- 6 Move the lift/drive switch to the LIFT position (if equipped).

- 7 Press down the foot switch. Move the primary boom toggle switch to the DOWN position, hold for a moment and then release it. Move the secondary boom toggle switch to the DOWN position, hold for a moment and then release it. Move the jib boom toggle switch to the DOWN position, hold for a moment and then release it.

⦿ Result: The descent alarm should sound when each control toggle switch is held down.

- 8 Move the lift/drive switch to the DRIVE position (if equipped).

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

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

B-17

Test the Turntable Rotation Stop

The turntable is capable of rotating the boom 355 degrees and is stopped midpoint between the steering wheels by the rotation stop. Detecting a rotation stop malfunction is essential to safe operation and good machine performance. If the turntable rotates past the rotation stop, component damage may result.

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

- 2 Move the lift/drive switch to the LIFT position (if equipped).

- 3 Rotate the turntable to the left as far as it will go.

⦿ Result: Movement should stop when the primary boom reaches midpoint between the steer tires.

- 4 Rotate the turntable to the right full circle as far as it will go.

⦿ Result: Movement should stop when the primary boom reaches midpoint between the steer tires.

TABLE B PROCEDURES

B-18**Check the Electrical Contactors**

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

- 1 Remove the non-steer drive chassis cover and locate the electrical contactors mounted on the component mounting panel.
- 2 Visually inspect the contact points of each contactor for the following items:
 - Excessive burns
 - Excessive arcs
 - Excessive pitting

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

NOTICE Replace the contactors if any damage is found.

B-19**Perform Hydraulic Oil Analysis**

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

TABLE B PROCEDURES

B-20**Replace the Hydraulic Tank Return Filter****NOTICE**

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

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

CAUTION

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

NOTICE

The hydraulic return filter is located on the bulkhead next to the hydraulic power unit.

Z-34/22 before serial number 810 and Z-34/22N before serial number 1117:

- 1 Clean the area around the oil filter housing, then remove the filter with an oil filter wrench.
- 2 Apply a thin layer of fresh oil to the gasket on the new oil filter. Install the new filter.
- 3 Tighten it securely by hand.

4 Z-34/22 before serial number 153 and Z-34/22N before serial number 304:

Turn the key switch to ground controls and pull out the Emergency Stop button to the ON position. Move the primary boom up toggle switch in the UP direction.

Z-34/22 after serial number 152 and Z-34/22N after serial number 303:

Turn the key switch to ground controls and pull out the Emergency Stop button to the ON position. Hold the function enable toggle switch to either side and move the primary boom up toggle switch in the UP direction.

- 5 Inspect the filter and related components to be sure that there are no leaks. Clean up any oil that may have spilled during the replacement procedure. Properly discard the oil.

Z-34/22 after serial number 809 and Z-34/22N after serial number 1116:

- 1 Clean the area around the oil filter housing located on top of the tank.
- 2 Remove the oil filter housing cover fasteners, then remove the cover.
- 3 Remove the oil filter element from the housing.
- 4 Clean the oil filter housing with a mild solvent.

TABLE B PROCEDURES

- 5 Install the new oil filter element.
- 6 Install the oil filter housing cover and tighten the fasteners.
- 7 Turn the key switch to ground controls and pull out the Emergency Stop button to the **ON** position. Hold the function enable toggle switch to either side and move the primary boom up toggle switch in the **UP** direction.
- 8 Inspect the filter and related components to be sure that there are no leaks. Clean up any oil that may have spilled during the replacement procedure. Properly discard the oil.

Oil filters - Genie part numbers

Z34/22

before serial number 431	45087
from serial number 431 to 809	44788
from serial number 810 to 2265	58995
from serial number 2266 to 3110	74346
after serial number 3110	74634

Z34/22N

before serial number 1117	44788
from serial number 1117 to 3032	58995
from serial number 3033 to 3659	74346
after serial number 3660	74634

Table C Procedures

C-1

Check the Primary Boom Wear Pads

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

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 2 Extend the primary boom approximately 10 inches (25 cm).
- 3 Measure each wear pad. Replace the wear pad if it is less than 0.41 inches (1 cm) thick. If the wear pad is more than 0.41 inches (1 cm) thick, see 4-2, *How to Shim the Primary Boom*, in the Repair Section.
- 4 Extend and retract the primary boom through the entire range of motion to check for tight spots that could cause binding or scraping.

NOTICE

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

C-2

Check the Turntable Rotation Bearing Bolts

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

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

WARNING

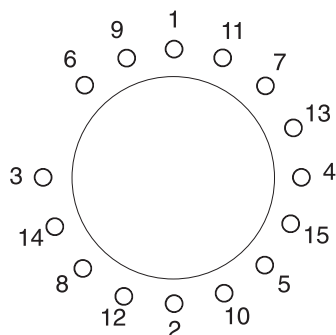
Crushing hazard. Keep hands away from the cylinder and all moving parts when lowering the secondary boom.

NOTICE

The lift cylinder safety chock is available from Genie Industries (Genie part number 36555).

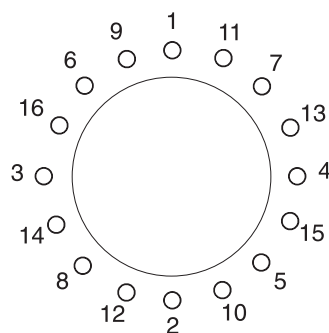
TABLE C PROCEDURES

- 2 Check to ensure that each turntable bearing bolt is torqued in specified order to 190 ft-lbs (258 Nm).

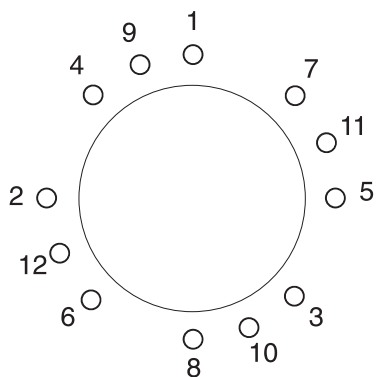


Bolt torque sequence
Z-34/22 before serial number 1735 and
Z-34/22N before serial number 2240

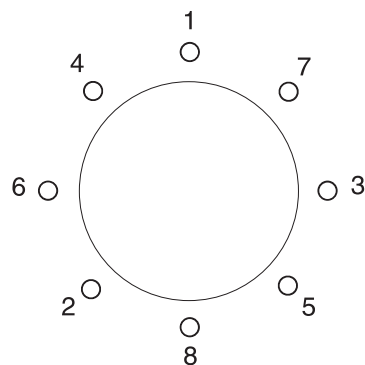
- 5 Check to ensure that each bearing mounting bolt under the drive chassis is torqued in specified order to 190 ft-lbs (258 Nm).



Bolt torque sequence
Z-34/22 before serial number 1735 and
Z-34/22N before serial number 2240



Bolt torque sequence
Z-34/22 after serial number 1734 and
Z-34/22N after serial number 2239



Bolt torque sequence
Z-34/22 after serial number 1734 and
Z-34/22N after serial number 2239

- 3 Raise boom and remove the safety chock.
Lower the boom to the stowed position.
- 4 Swing out the battery packs to expose the turntable bearing bolt access hole.

TABLE C PROCEDURES

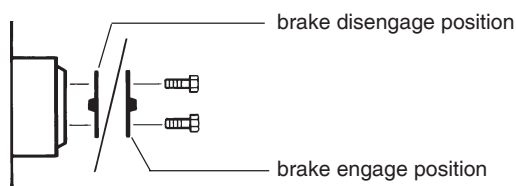
C-3**Check the Free-wheel Configuration**

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

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

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

- 1 Chock the steer wheels to prevent the machine from rolling.
- 2 Center a lifting jack of ample capacity (15000 lbs/6804 kg) under the drive chassis between the non-steering wheels.
- 3 Lift the wheels off the ground and then place jack stands under the drive chassis for support.
- 4 Disengage the drive hubs by turning over the drive hub disconnect caps on each non-steering wheel hub.



- 5 Manually rotate each non-steering wheel.

⦿ Result: Each non-steering wheel should rotate with minimum effort.

- 6 Engage the drive hubs by turning over the drive hub disconnect caps. Carefully remove the jack stands, lower the machine and remove the jack.

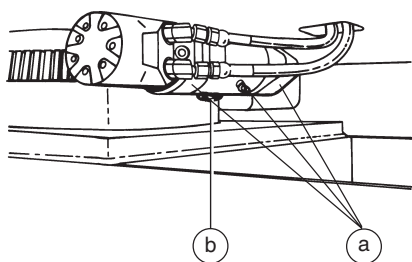
⚠ WARNING Collision hazard. Failure to engage the drive hubs could cause death or serious injury and property damage.

TABLE C PROCEDURES

C-4 Grease the Turntable Rotation Bearing and Worm Drive Gear

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

- 1 Locate the grease fitting mounted on the bulkhead next to the hydraulic power unit.
- 2 Pump grease into the turntable rotation bearing. Rotate the turntable in increments of 4 to 5 inches (10 to 13 cm) at a time and repeat this step until the entire bearing has been greased.
- 3 Locate the 3 grease fittings on the worm drive housing.



a grease fittings
b grease overflow

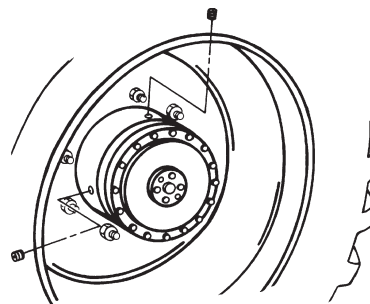
- 4 Pump grease into the gear until you see it coming out of the side of the gear housing.

Lubricant Type	Multipurpose grease
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C-5 Replace the Drive Hub Oil

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

- 1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.
- 2 Remove both plugs and drain the oil.
- 3 Drive the machine until one plug is at the top and the other is at 90 degrees.



- 4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole.

TABLE C PROCEDURES

- 5 Apply pipe thread sealant to the plugs, then install the plugs.
- 6 Repeat this procedure for each drive hub.

Drive Hub Oil		
Capacity		
(before serial number 1734)		
49:1 and 35:1 models	17 fluid ounces	0.5 liters
(after serial number 1733)		
47:1 models	25.6 fluid ounces	0.76 liters
Type: SAE 90 multipurpose hypoid gear oil - API service classification GL5		

C-6
Bleed the Platform Rotator

See Repair procedure 2-3, *How to Bleed the Platform Rotator*.

Table D Procedures

D-1

Test or Replace the Hydraulic Oil

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

NOTICE

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

NOTICE

Perform this procedure with the boom in the stowed position.

NOTICE

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

Z-34/22 before serial number 809 and Z-34/22N before serial number 1116:

- 1 Remove the tank mounting fasteners. Remove the tank from the power unit.

- 2 Completely drain the tank into a suitable container. See capacity specifications.
- 3 Remove the suction strainer and the magnet and then clean the tank with mild solvent.
- 4 Install the suction strainer.
- 5 Place the magnet inside the tank and install the tank on the power unit.
- 6 Fill the tank with hydraulic oil until the level is within the top 2 inches (5 cm) of the hydraulic oil decal. Do not overfill.
- 7 Clean up any oil that may have spilled.

Z-34/22 after serial number 808 and Z-34/22N after serial number 1115:

- 1 Close the hydraulic shut-off valve located at the hydraulic tank.

CAUTION

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

- 2 Place a suitable container under the hydraulic tank. See capacity specifications.

TABLE D PROCEDURES

- 3 Disconnect and plug the hydraulic hose from the hydraulic tank shut-off valve.

⚠ 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 Open the valve on the hydraulic tank and drain the oil into a suitable container.

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

- 5 Tag, disconnect and plug the hydraulic hoses from the hydraulic tank filter. Cap the fittings on the filter.

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

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

- 6 Remove the hydraulic tank mounting fasteners.
7 Remove the hydraulic tank from the machine.

- 8 Remove the tank lid retaining fasteners and remove the lid and filter assembly from the tank.

- 9 Remove the suction strainer from the tank and clean with a mild solvent

- 10 Rinse out the inside of the tank with a mild solvent.

- 11 Install the lid and filter assembly onto the hydraulic tank.

- 12 Install the suction strainer using a thread sealant on the threads.

- 13 Install the hydraulic tank on the machine. Install the hydraulic tank mounting fasteners and torque to 5 ft-lbs (6.8 Nm).

⚠ CAUTION Component damage hazard. The hydraulic tank may become damaged if the tank mounting fasteners are over tightened.

- 14 Install the hydraulic hoses.

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

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

- 17 Open the hydraulic tank shut-off valve.

⚠ CAUTION Component damage hazard. Be sure to open the hydraulic tank shut-off valve after installing the hydraulic tank.

TABLE D PROCEDURES

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

19 Check oil level.

Torque specification

$\frac{1}{4}$ -20 fasteners	5 ft-lbs	6.8 Nm
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Hydraulic Oil Specifications

**Z-34/22 before serial number 809 and
Z-34/22N before serial number 1116:**

Hydraulic tank capacity	5 gallons	18.9 liters
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Hydraulic system (including tank)	7 gallons	26.5 liters
--------------------------------------	-----------	-------------

**Z-34/22 after serial number 808 and
Z-34/22N after serial number 1115:**

Hydraulic tank capacity	4 gallons	15.1 liters
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Hydraulic system (including tank)	6 gallons	22.7 liters
--------------------------------------	-----------	-------------

D-2

Grease the Steer Axle Wheel Bearings

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

- 1 Loosen the wheel lug nuts. Do not remove them.
 - 2 Block the non-steering wheels, then center a lifting jack under the steer axle.
 - 3 Raise the machine approximately 6 inches (15 cm) and place blocks under the drive chassis for support.
 - 4 Remove the lug nuts, then remove the tire and wheel assembly.
 - 5 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.
- ⦿ Result: There should be no side to side or up and down movement.

Skip to step 9 if there is no movement.

- 6 Remove the dust cap from the hub, then remove the cotter pin from the castle nut.

TABLE D PROCEDURES

7 Tighten the castle nut to 35 ft-lbs (47 Nm).

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

- ⊙ Result: If there is no side to side or up and down movement, proceed to step 9 to replace the wheel bearings with new ones.

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

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

9 Remove the castle nut.

NOTICE Always replace the cotter pin with a new one when removing the castle nut.

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

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

12 Pack both bearings with clean, fresh grease.

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

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

NOTICE Always replace the bearing grease seal when removing the hub.

15 Slide the hub onto the yoke spindle.

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

16 Place the outer bearing into the hub.

17 Install the washer and castle nut.

18 Tighten the castle nut to 35 ft-lbs (47 Nm) to seat the bearings.

19 Loosen the castle nut, then tighten to 8 ft-lbs (11 Nm).

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

NOTICE Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

21 Install the dust cap.

22 Install the tire and wheel assembly. Torque the wheel lug nuts to 125 ft-lbs (169.5 Nm).

Troubleshooting Flow Charts



Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a flat level surface
 - Boom in stowed position
 - Turntable rotated with the boom between the non-steering wheels
 - Key switch in the OFF position with the key removed
 - Wheels chocked

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-34/22 & Z-34/22N Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

TROUBLESHOOTING FLOW CHARTS

About This Section

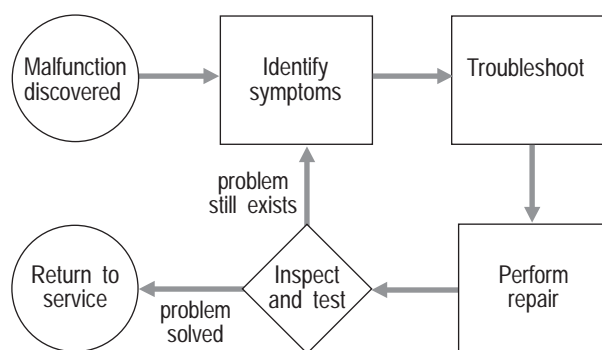
When a malfunction is discovered, the flow charts in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required—voltmeter, ohmmeter, pressure gauges.

The location of terminals mentioned in this section can be found on the appropriate electrical or hydraulic schematics provided in Section 6, *Schematics*.

Since various degrees of a particular function loss may occur, selecting the appropriate flow chart may be troublesome. When a function will not operate with the same speed or power as a machine in good working condition, refer to the flow chart which most closely describes the problem.

On Z-34/22 models after serial number 1733 and Z-34/22N models after serial number 2227, an LED will flash a fault code to aid in troubleshooting. This LED is mounted on the ground controls panel, located behind the side cover on the ground controls side.

General Repair Process



Fault Code Chart

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
Fault Indicator Light is OFF or is ON but not blinking	COMMUNICATION ERROR	Machine will not drive. Controller fault indicator light may or may not be on at the platform controls.	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 Emergency Stop button to the OFF position and wait for 5 seconds. Pull out the ground control Emergency Stop button to the ON position. If problem persists, replace the motor controller.
01		Normal operation.		
12	HW FAILSAFE 1-2-3	Machine will not drive. Controller fault indicator light on at the platform controls.	The motor controller failed self test.	Replace the motor controller.
13	M- SHORTED	Machine will not drive. Controller fault indicator light on at the platform controls.	The motor controller has an internal short between M- and B- terminals.	Test the motor controller. See Repair Section.
	FIELD OPEN	Machine will not drive. Controller fault indicator light on at the platform controls.	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. Controller fault indicator light on at the platform controls.	Defective motor controller.	Replace the motor controller.
	FLD SENSOR	Machine will not drive. Controller fault indicator light on at the platform controls.	Defective motor controller.	Replace the motor controller.

FAULT CODE CHART

(Z-34/22 AFTER SERIAL NUMBER 1733 AND Z-34/22N AFTER SERIAL NUMBER 2226)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
21	THROTTLE FAULT 1	Machine will not drive. Controller fault indicator light on at the platform controls.	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.	See Chart 29A
	THROTTLE FAULT 2	Machine will not drive. Controller fault indicator light on at the platform controls.	Pin 14 (wht/red #32) is shorted to power or ground OR the potentiometer on the drive joystick is defective.	See Chart 29A
31	CONT DRVR OC	Machine will not drive. Controller fault indicator light on at the platform controls.	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. Controller fault indicator light on at the platform controls.	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.	See Chart 29B

FAULT CODE CHART

(Z-34/22 AFTER SERIAL NUMBER 1733 AND Z-34/22N AFTER SERIAL NUMBER 2226)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
33	PRECHARGE FAULT	Machine will not drive. Controller fault indicator light on at the platform controls.	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.
34	MISSING CONTACTOR	Machine will not drive. Controller fault indicator light on at the platform controls.	Motor controller does not detect the main contactor PR1 or brake release relay CR5.	See Chart 29C
	MAIN CONT DNC	Machine will not drive. Controller fault indicator light on at the platform controls.	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.	See Chart 29C
41	LOW BATTERY VOLTAGE	Machine will not drive. Controller fault indicator light on at the platform controls.	Battery supply voltage to motor controller less than 32V.	Completely charge batteries OR check battery cable condition OR check for corrosion or loose connections at battery terminals and motor controller.

FAULT CODE CHART

(Z-34/22 AFTER SERIAL NUMBER 1733 AND Z-34/22N AFTER SERIAL NUMBER 2226)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
42	OVERVOLTAGE	Machine will not drive. Controller fault indicator light on at the platform controls.	Battery supply voltage to motor controller more than 55V 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. Controller fault indicator light on at the platform controls.	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.

Chart 1

All Functions Will Not Operate

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the circuit breaker and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

If the Error Indicator light is on at the platform controls, please refer to the specific chart that relates to the error code that is displayed on the ECM.

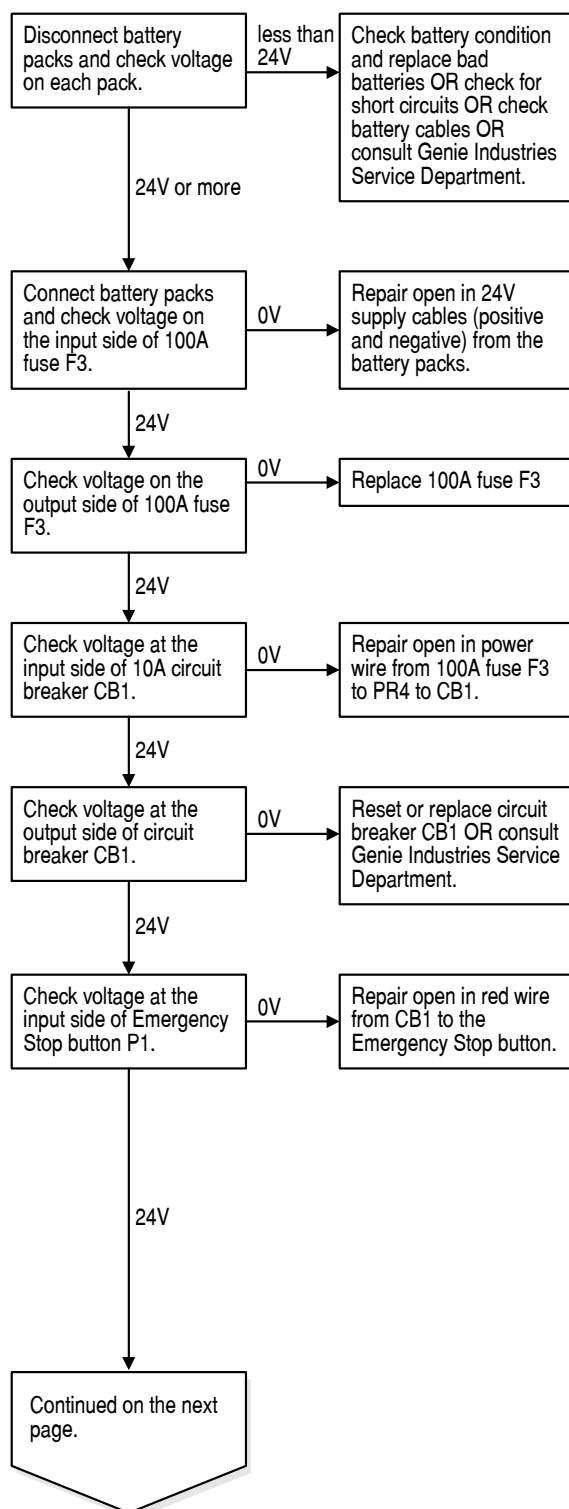


CHART 1

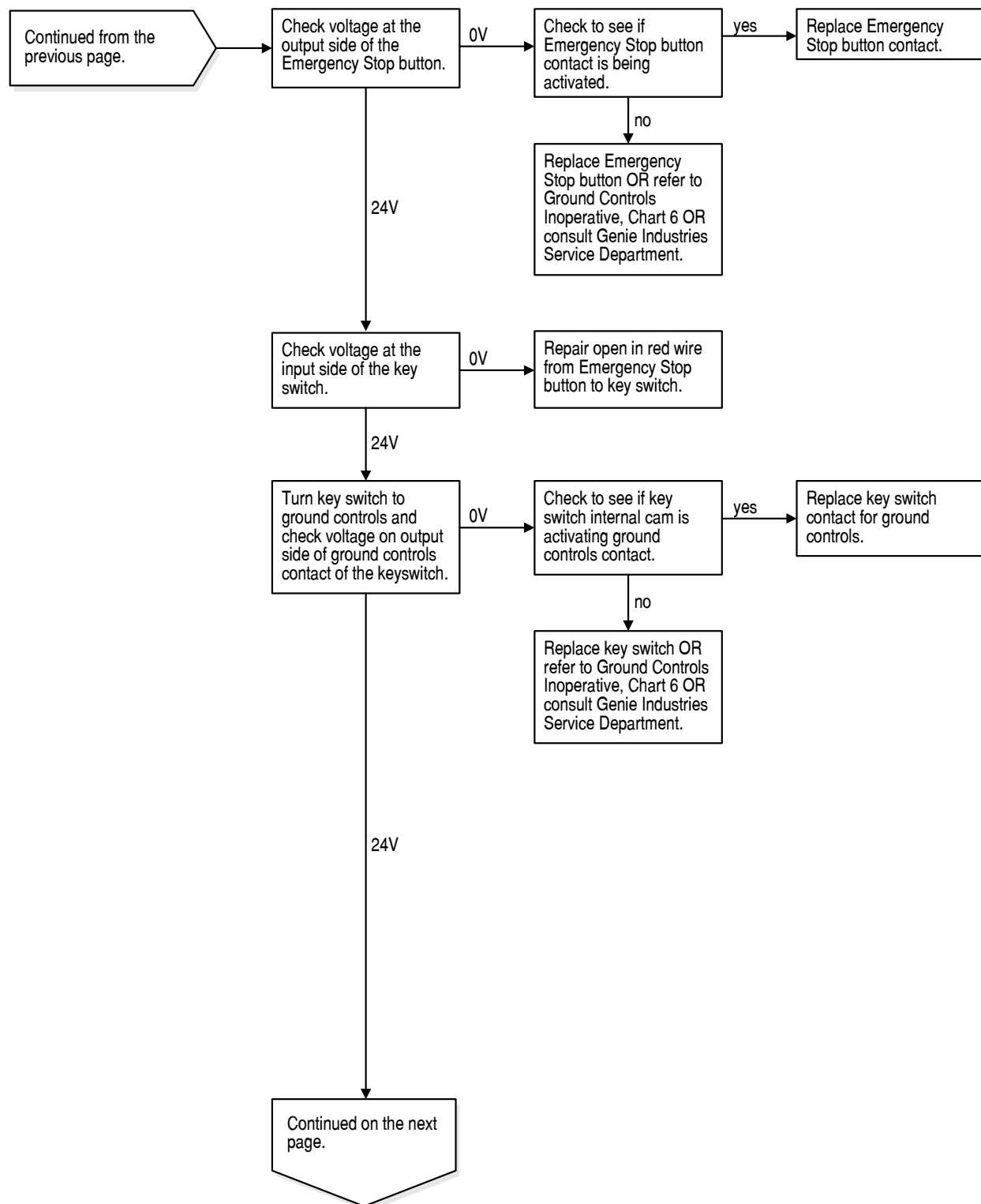


CHART 1

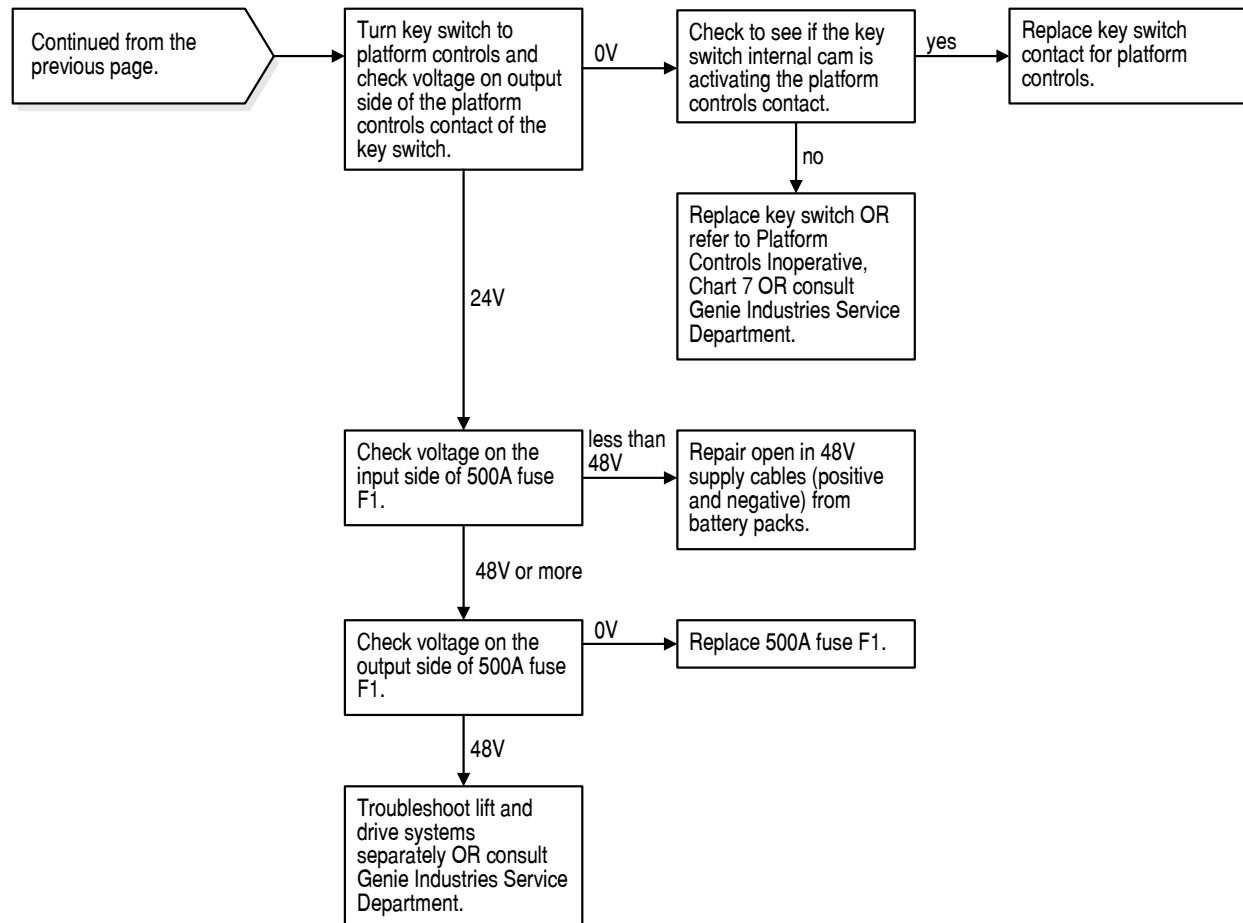


Chart 2

Lift Pump Motor Will Not Operate

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

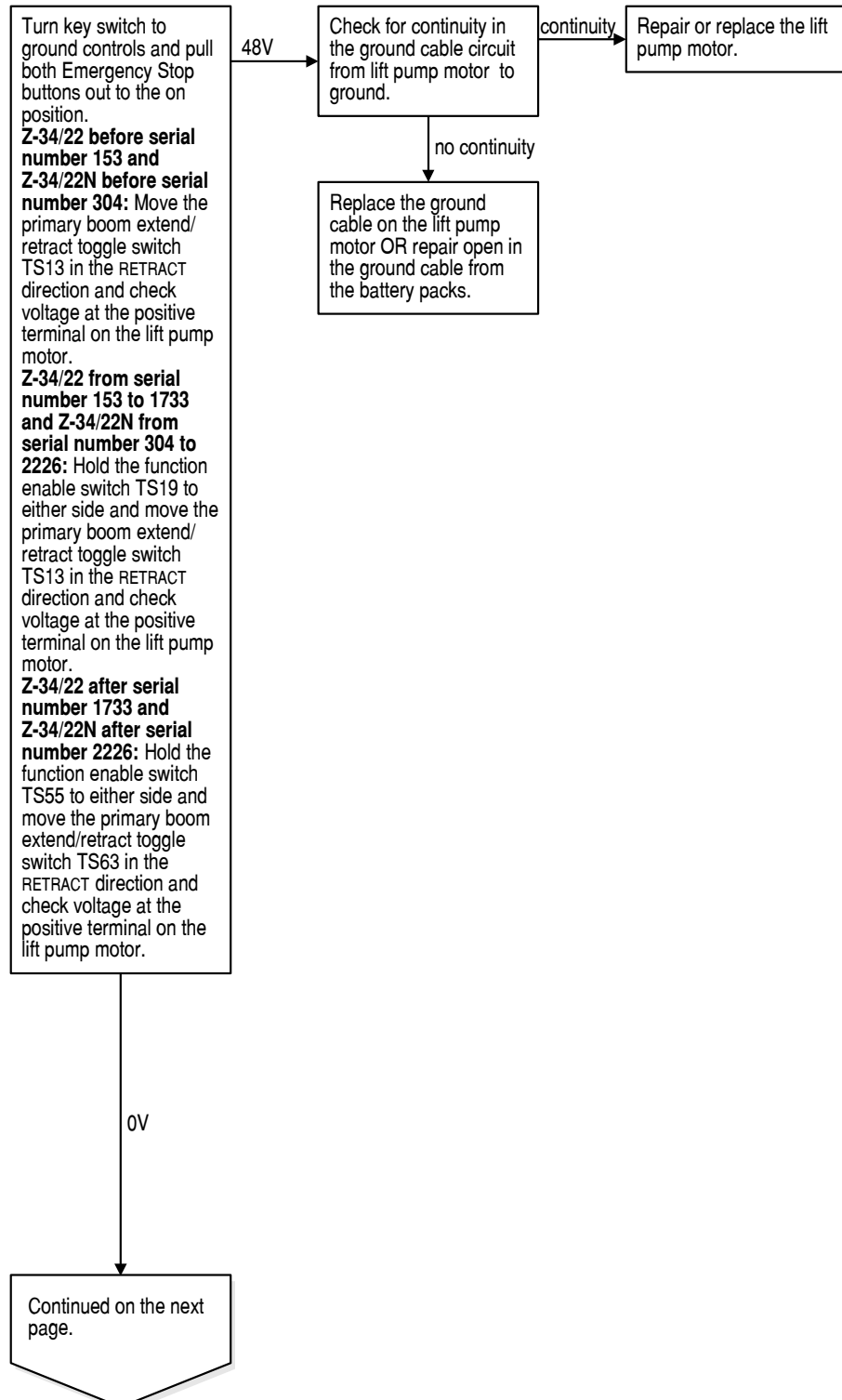


CHART 2

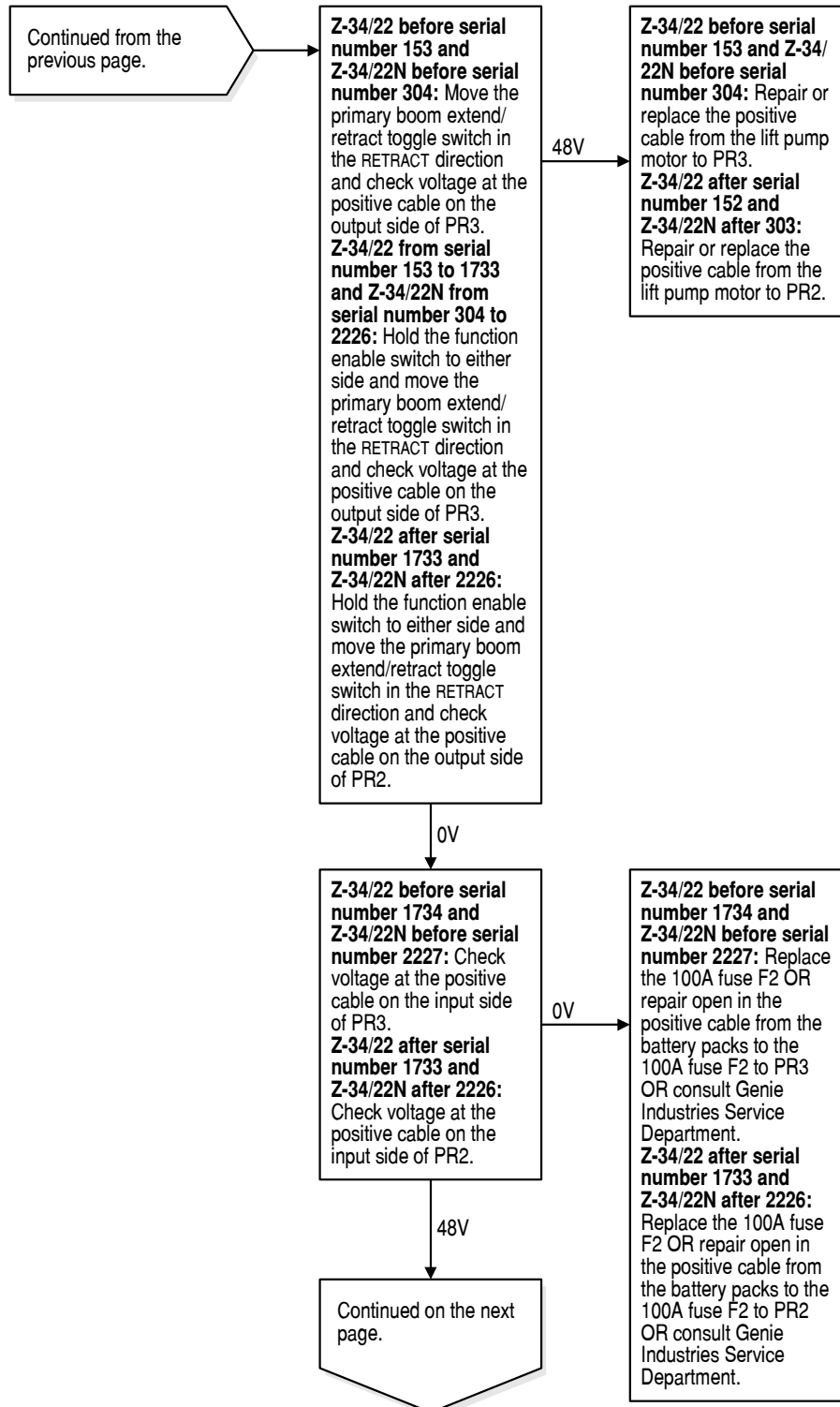


CHART 2

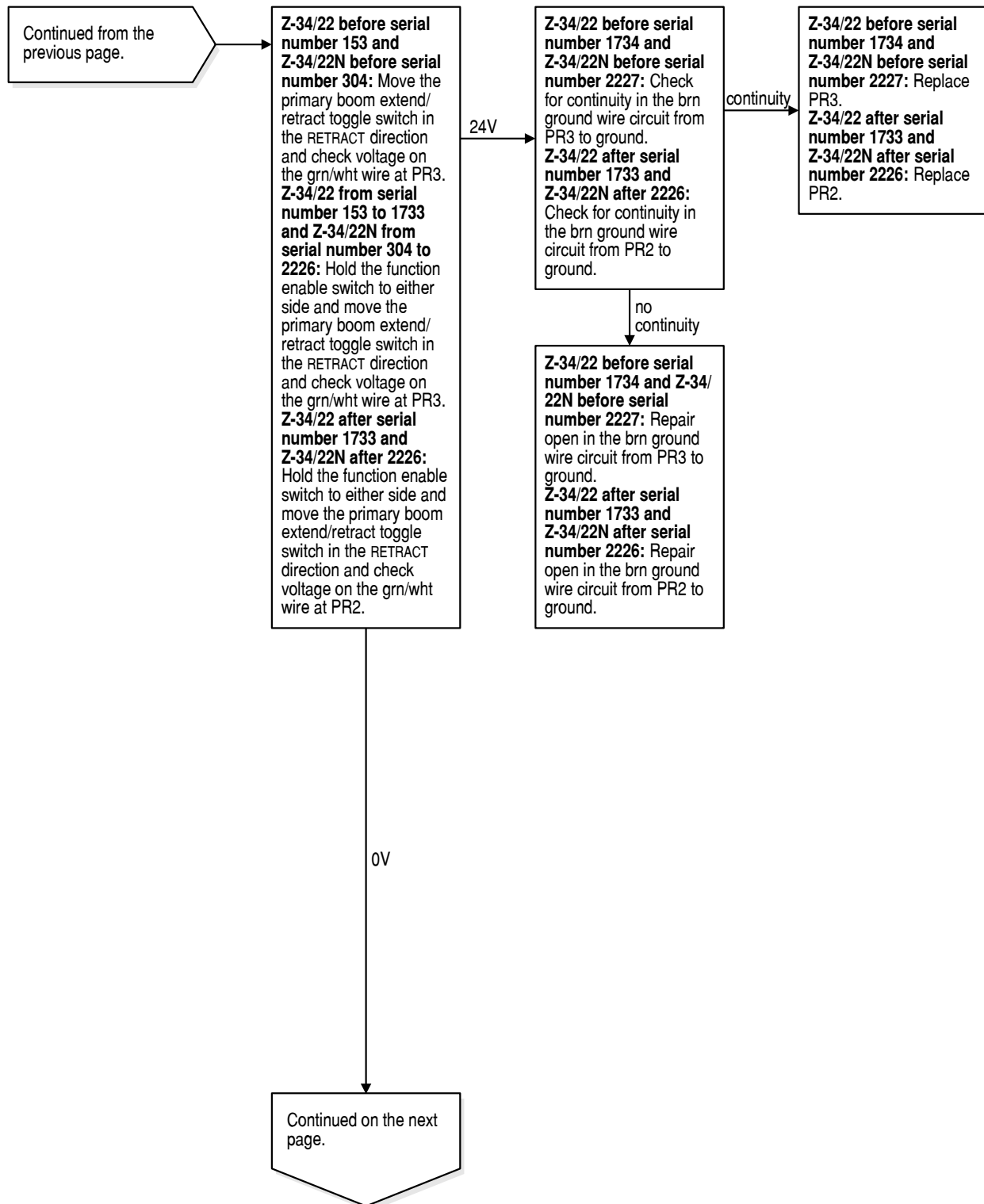


CHART 2

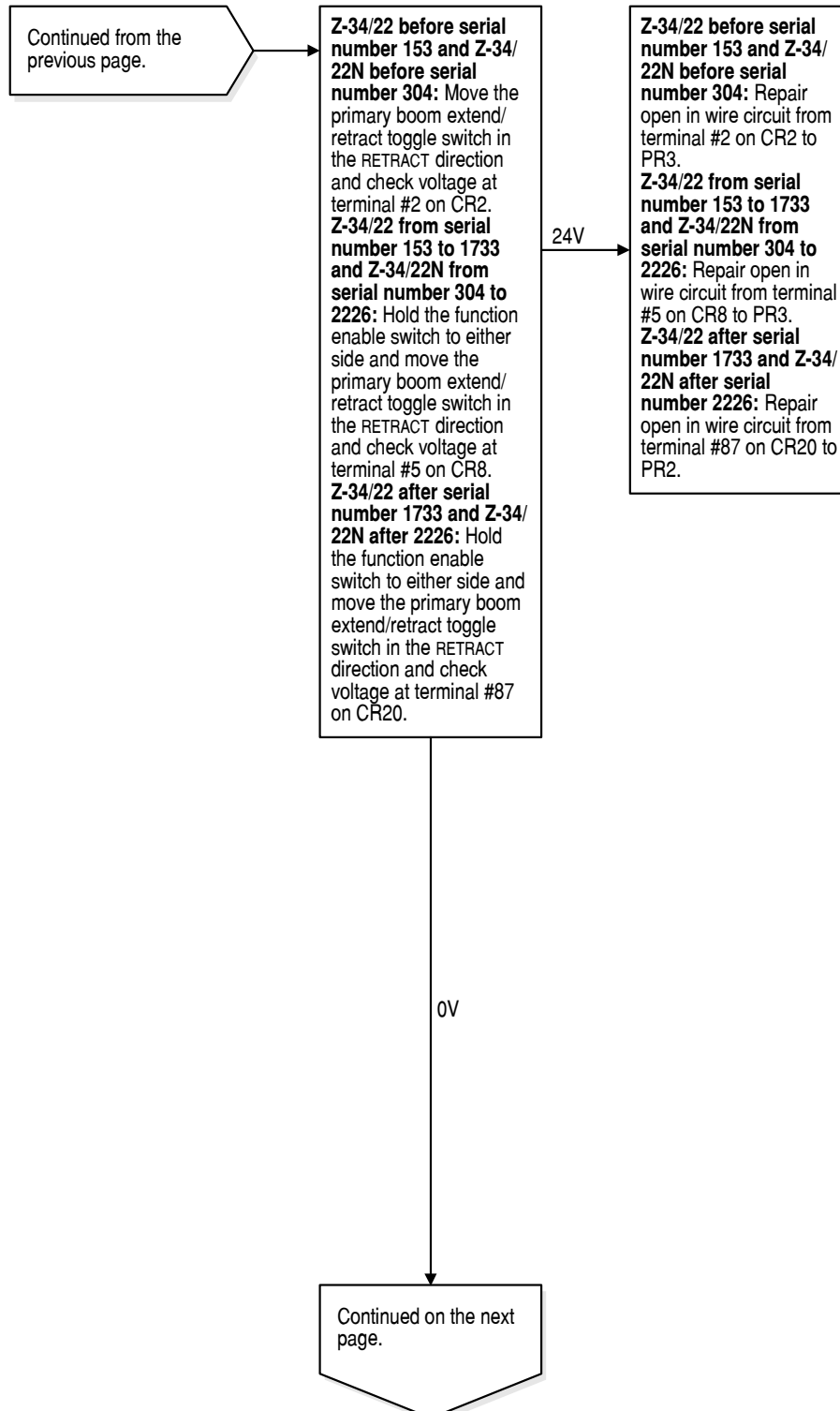


CHART 2

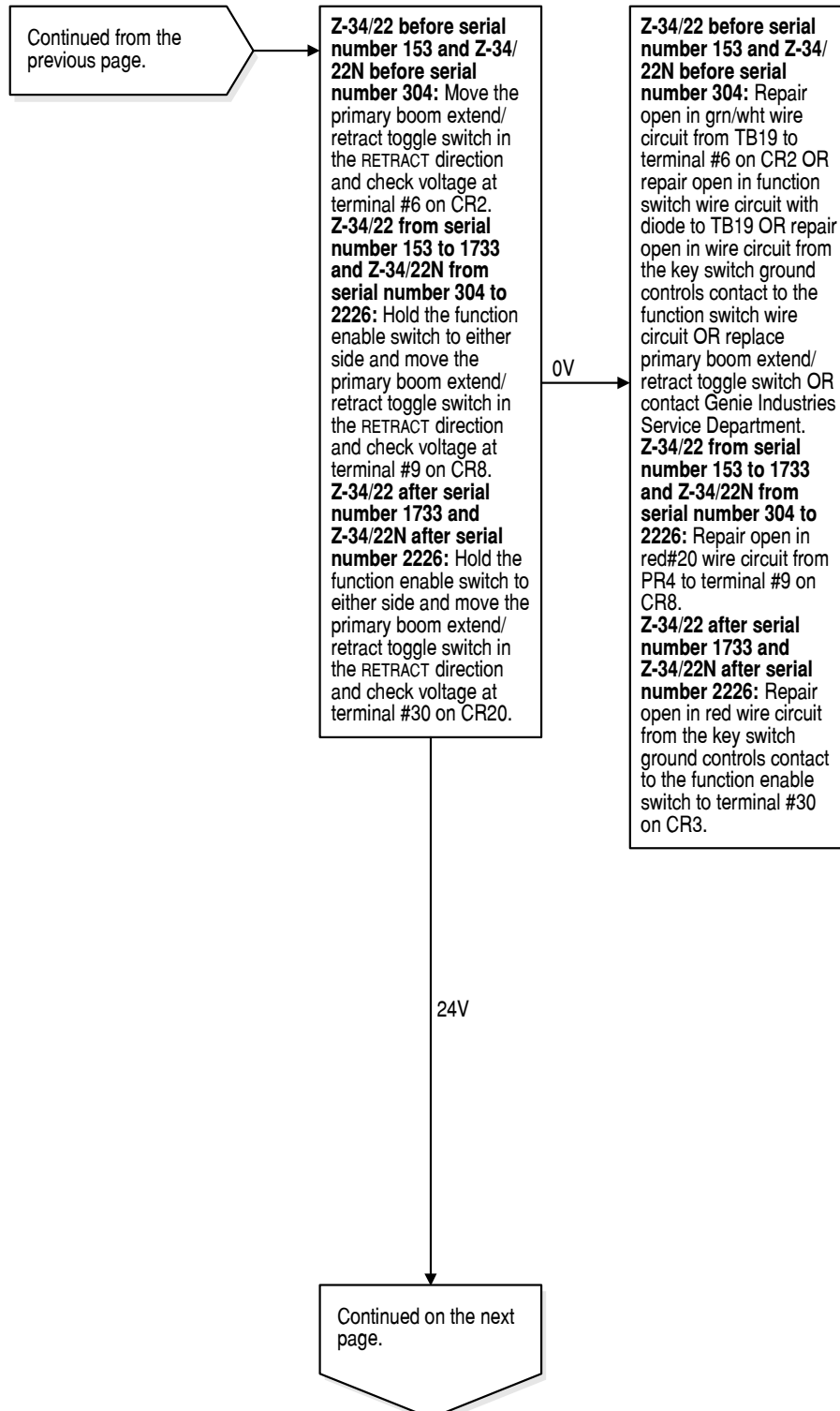


CHART 2

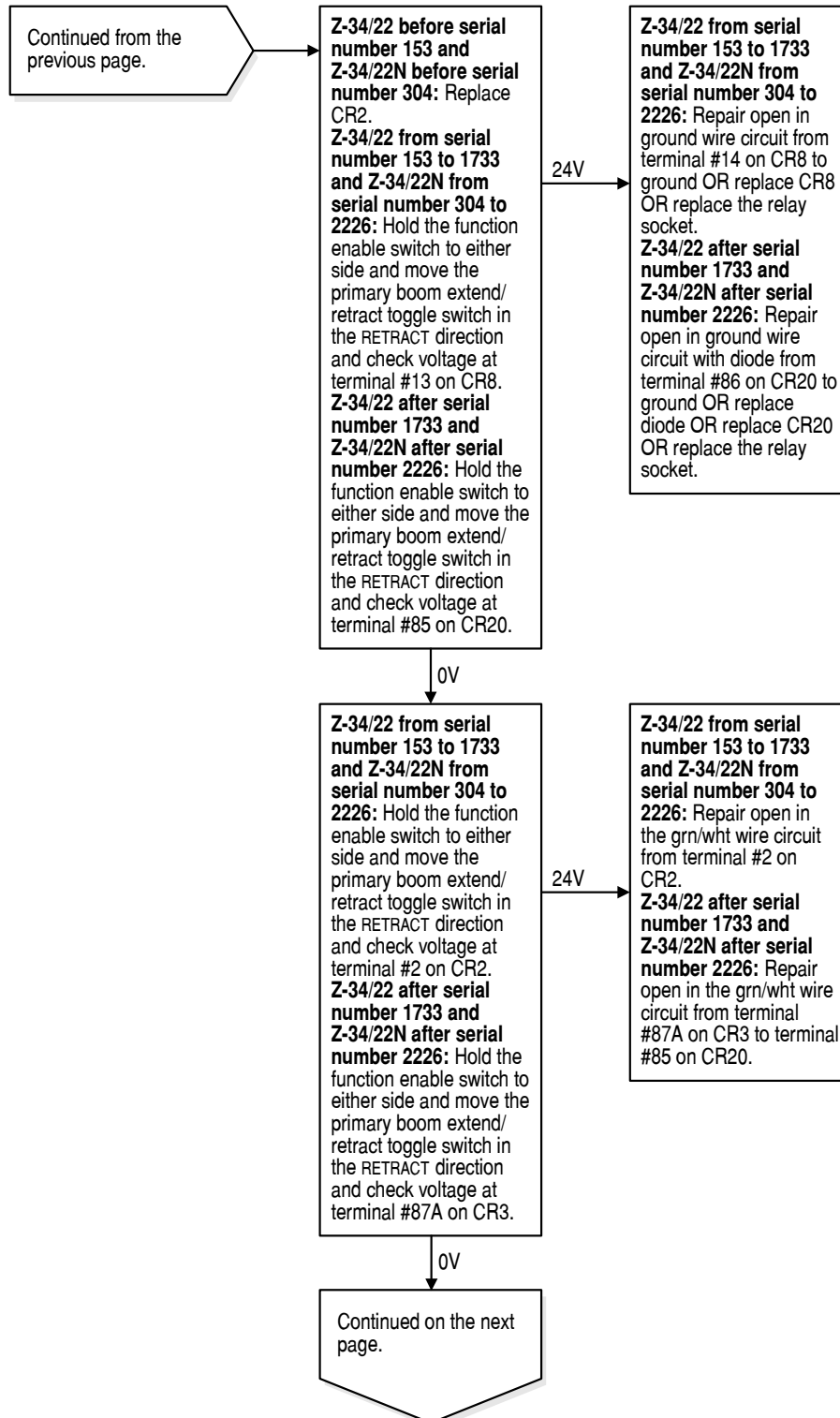


CHART 2

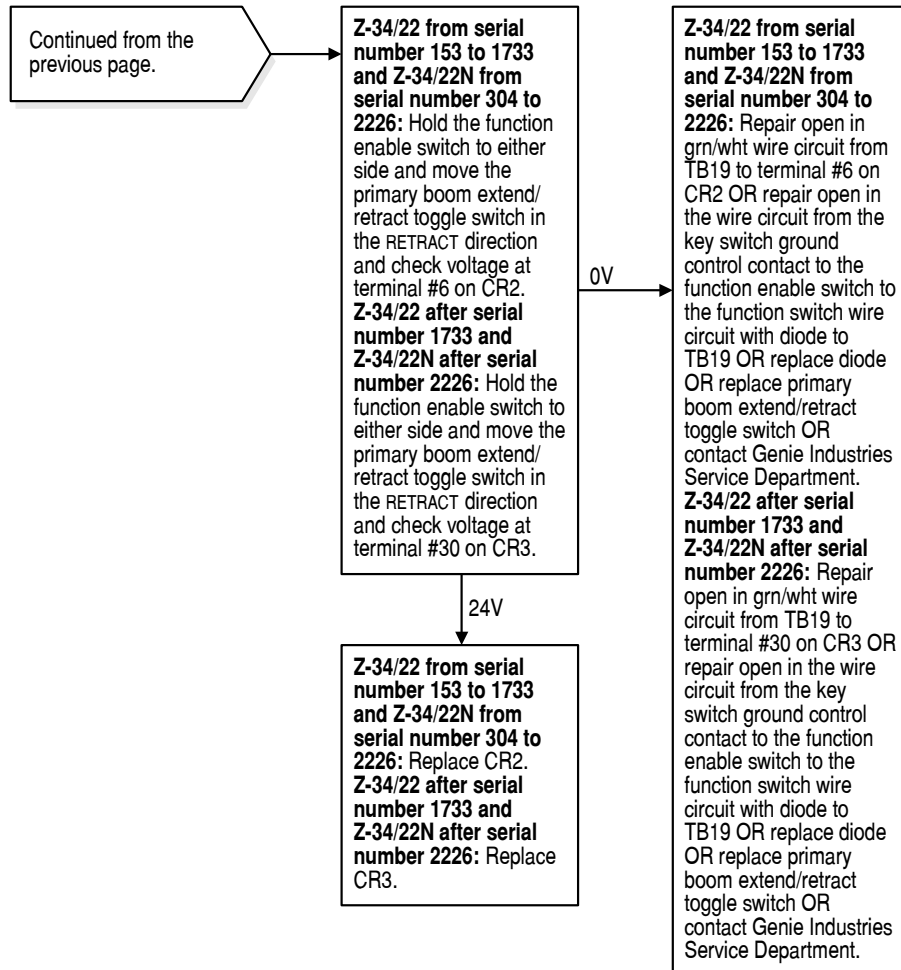


Chart 3

Auxiliary Pump Motor Will Not Operate.

Be sure all other functions operate normally.

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

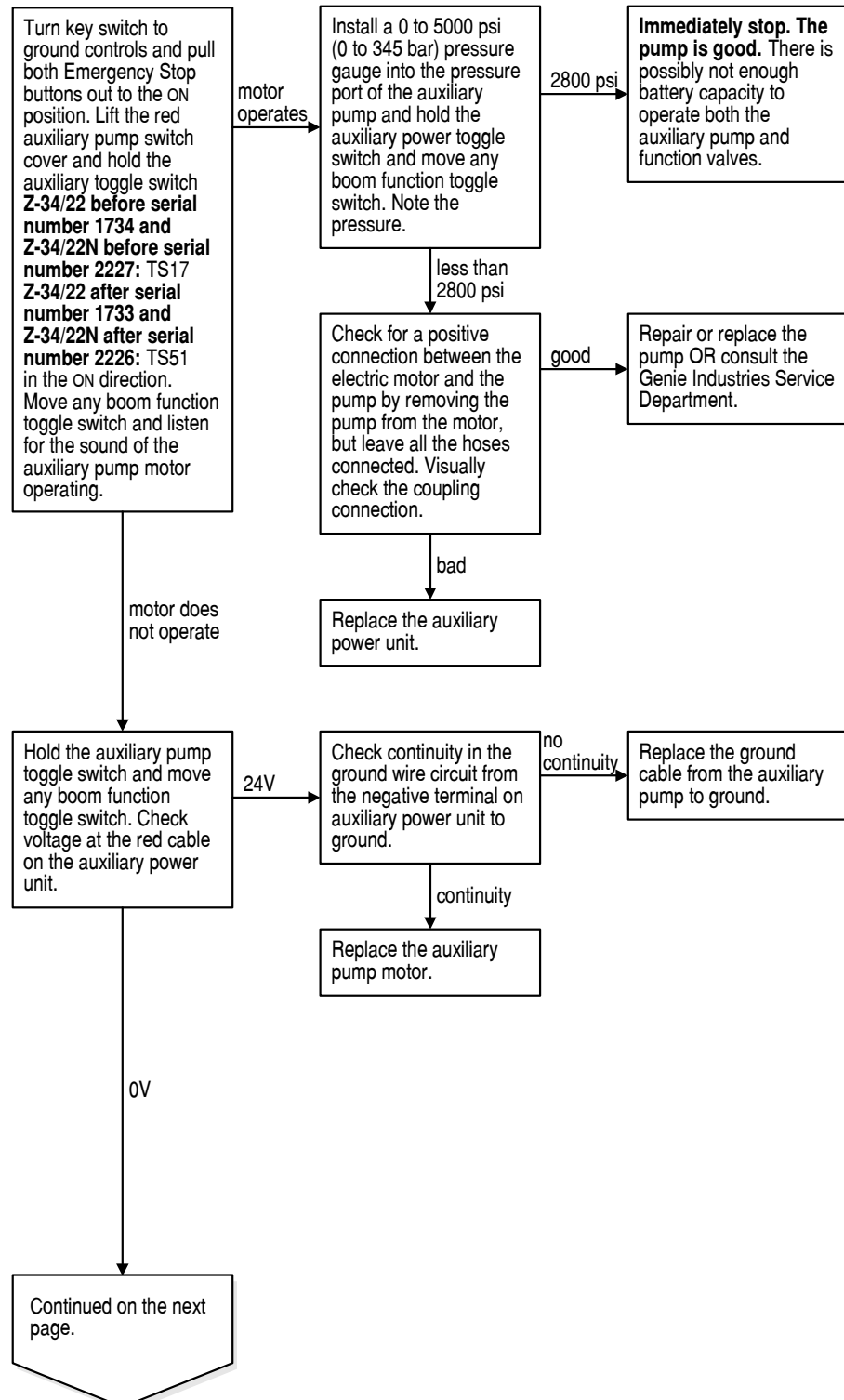


CHART 3

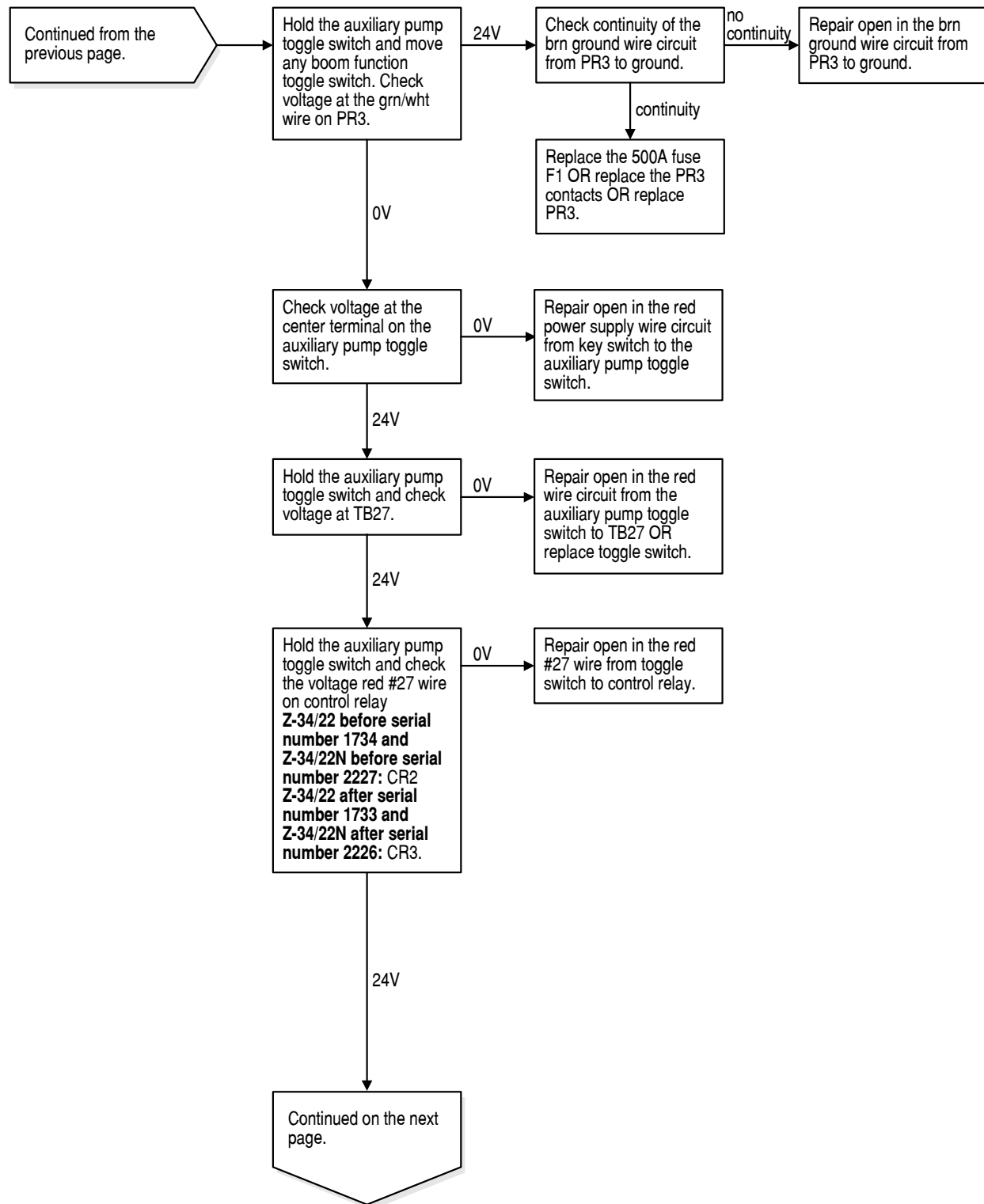


CHART 3

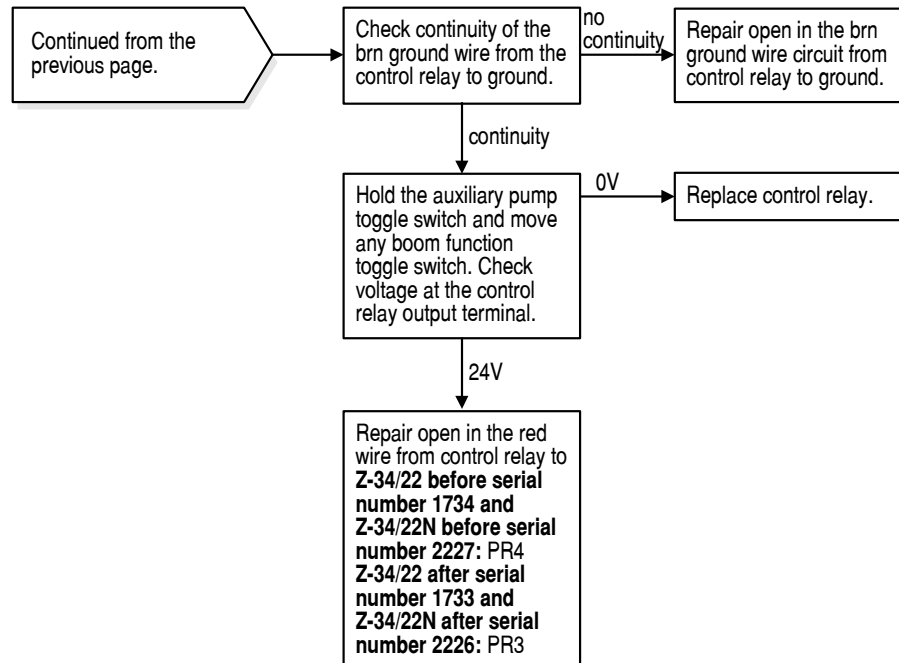


Chart 4

All Functions Inoperative, Power Unit Starts and Runs

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

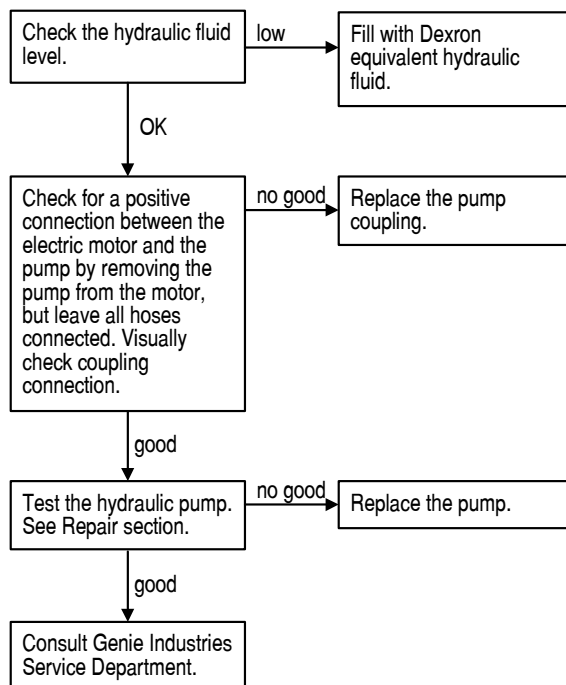


Chart 5

All Lift and Steer Functions Inoperative, Drive Function Operational

Be sure the battery packs are properly connected and fully charged.

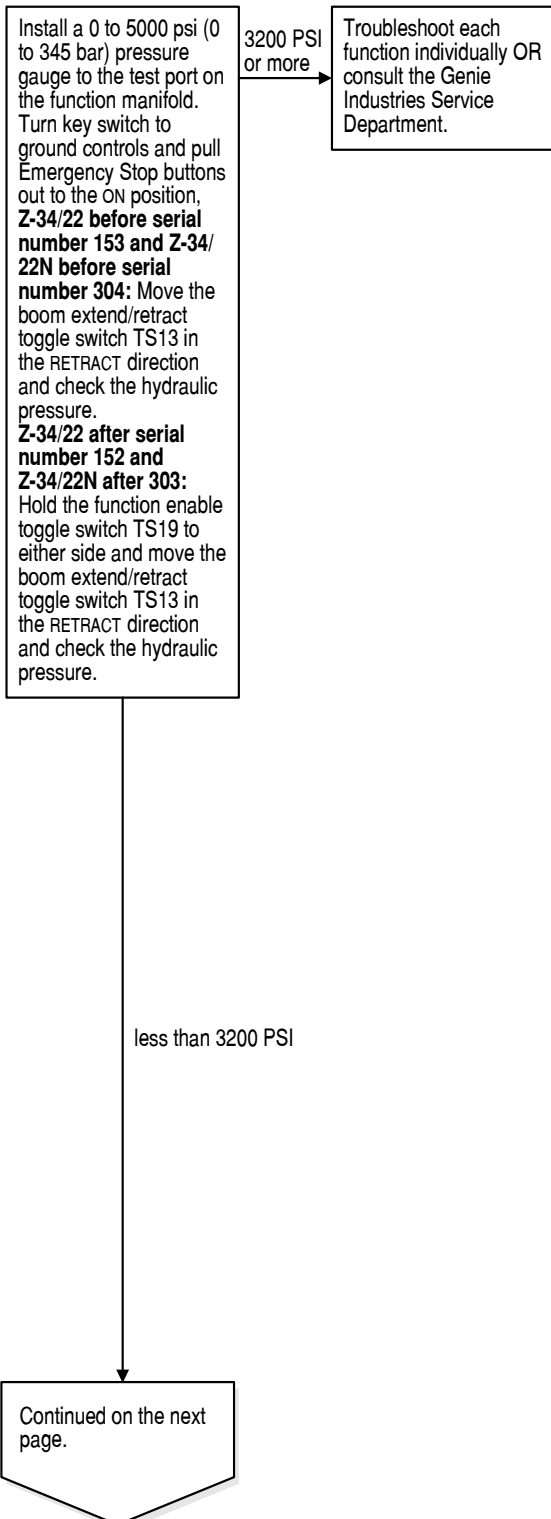


CHART 5

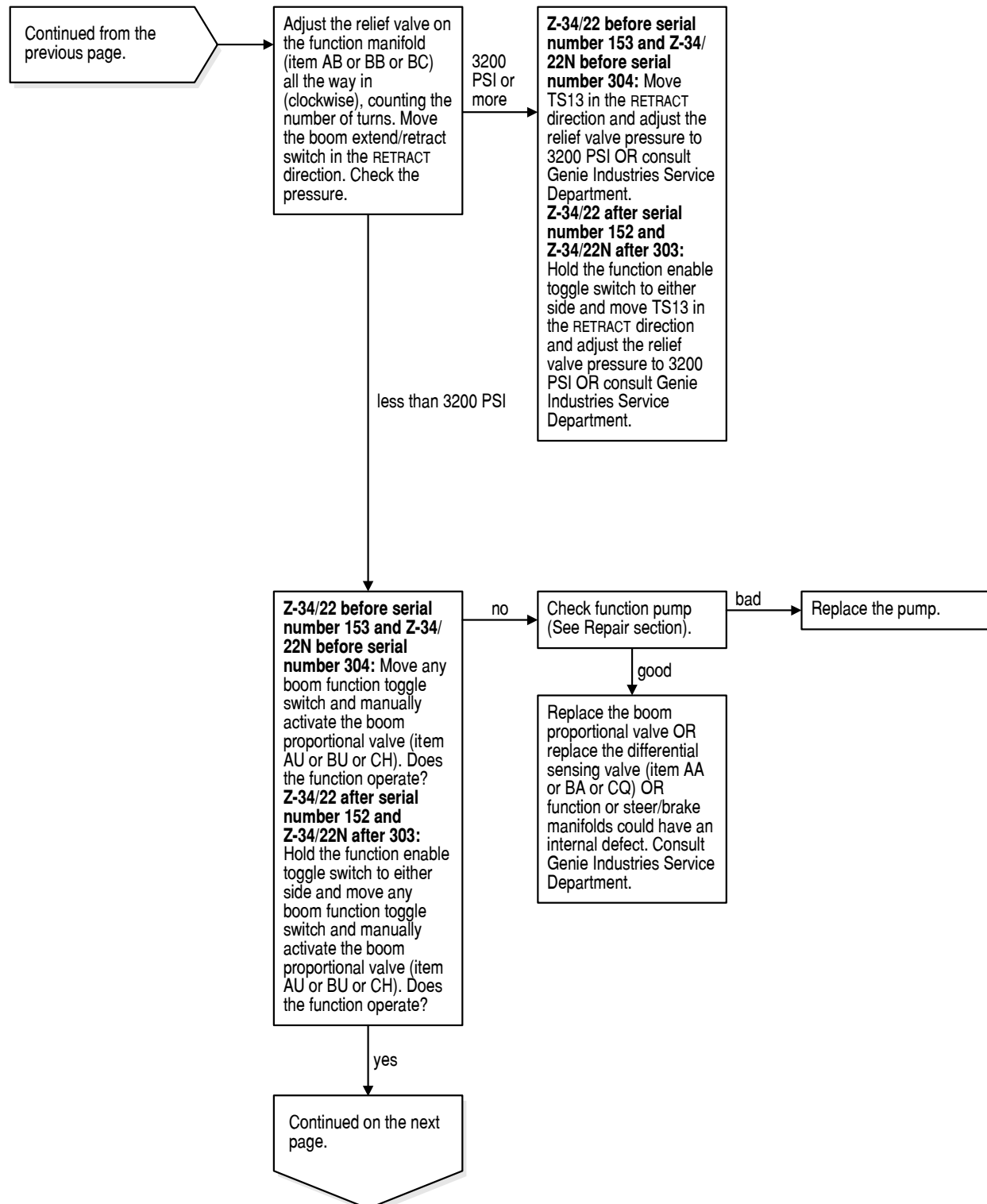


CHART 5

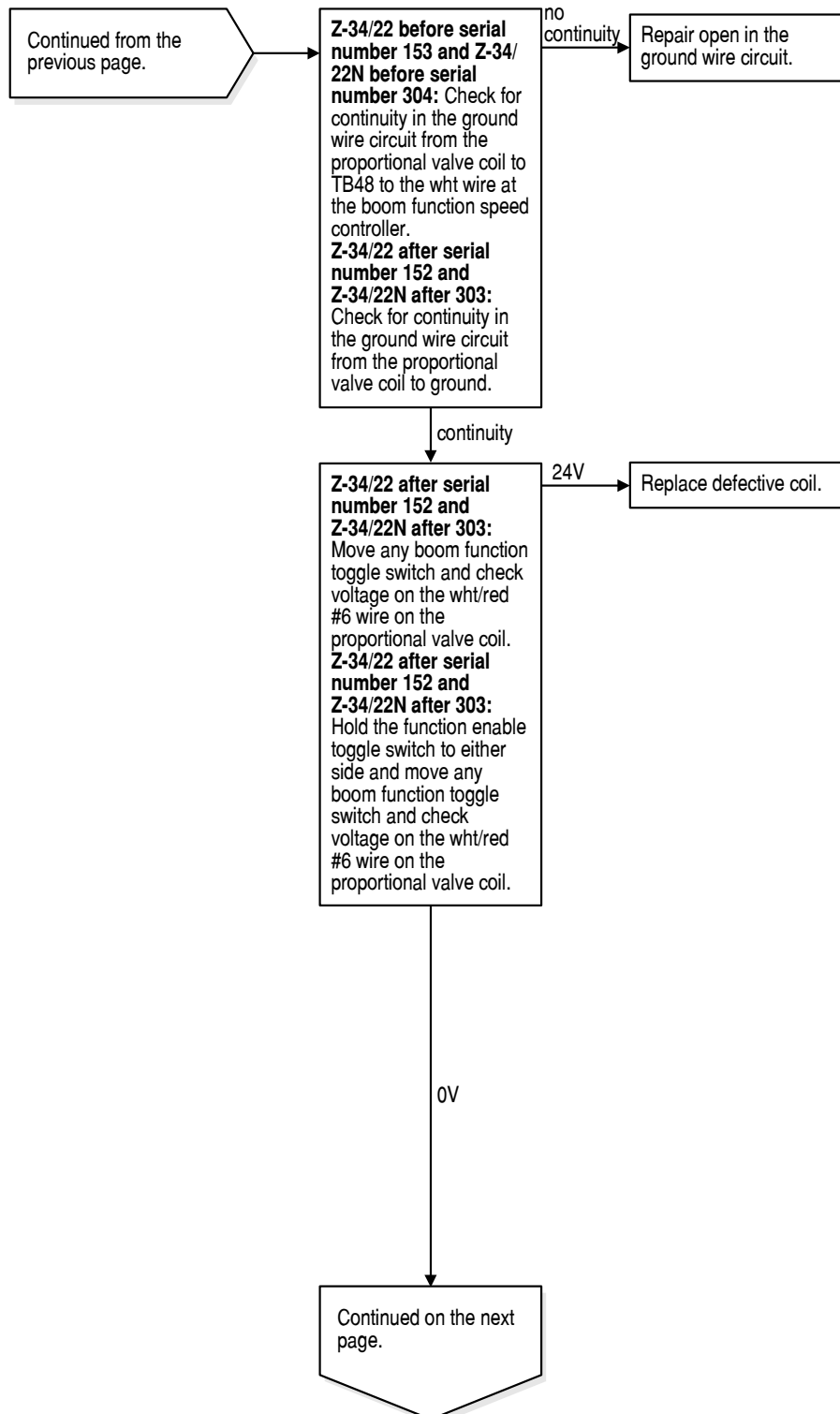


CHART 5

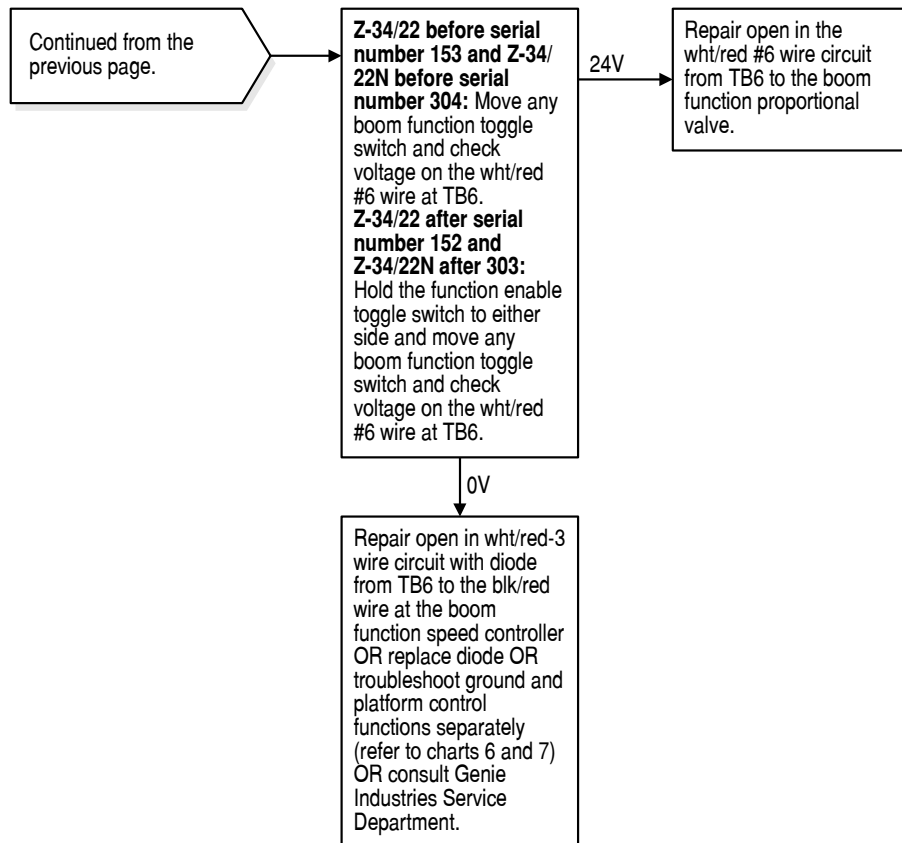


Chart 6

Ground Controls Inoperative, Platform Controls Operate Normally

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

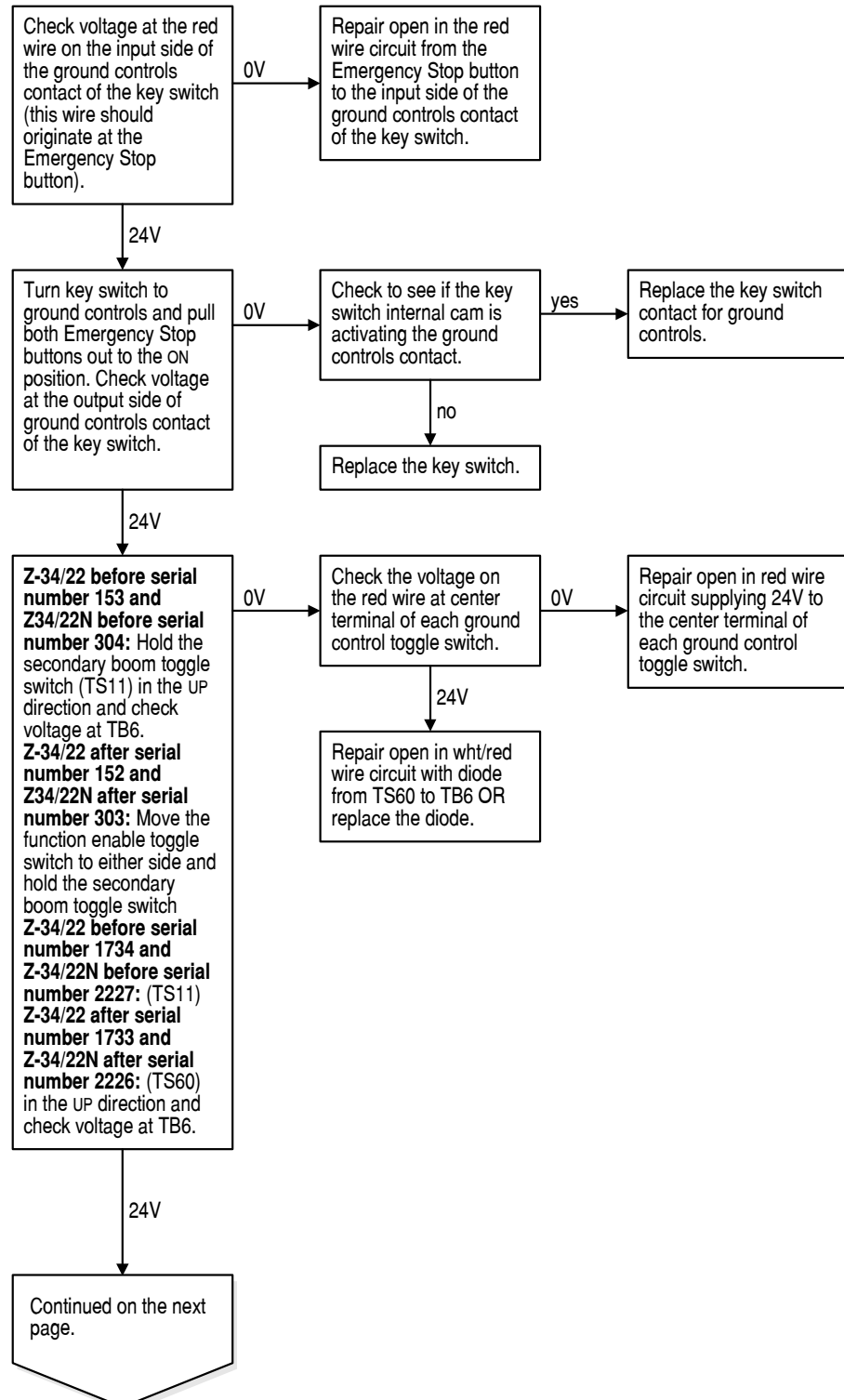


CHART 6

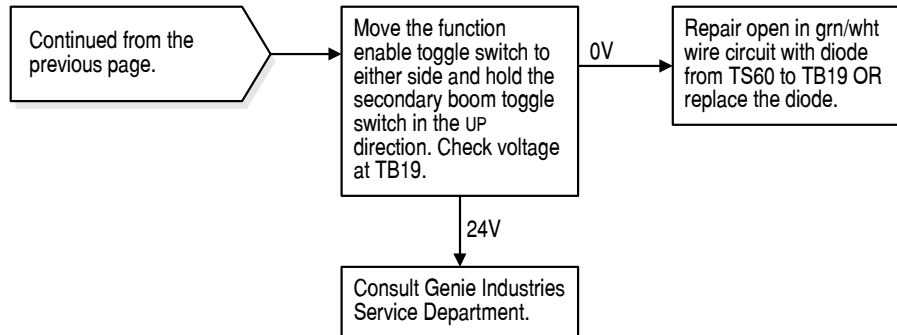


Chart 7

Platform Controls Inoperative, Ground Controls Operate Normally

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

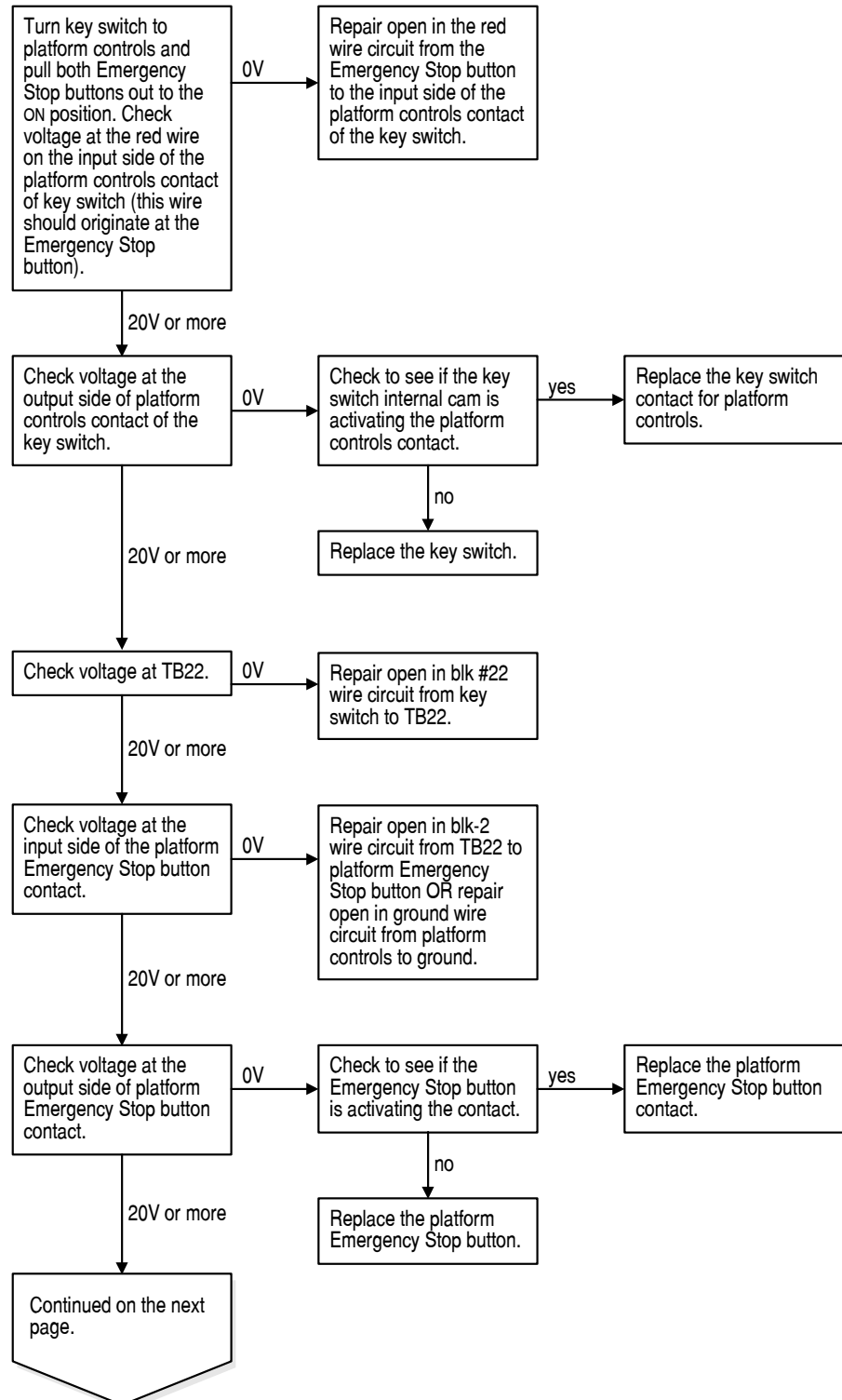


CHART 7

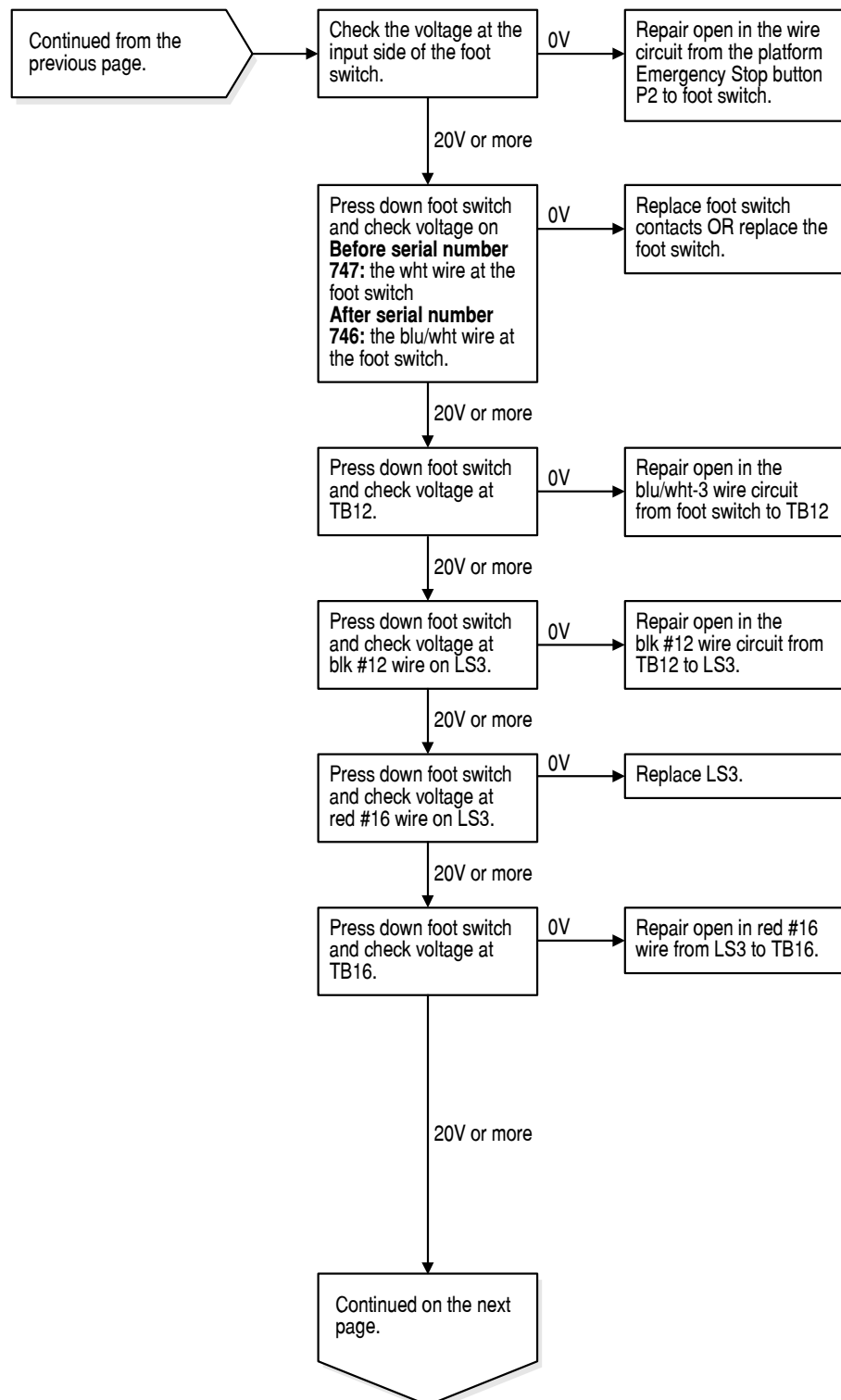


CHART 7

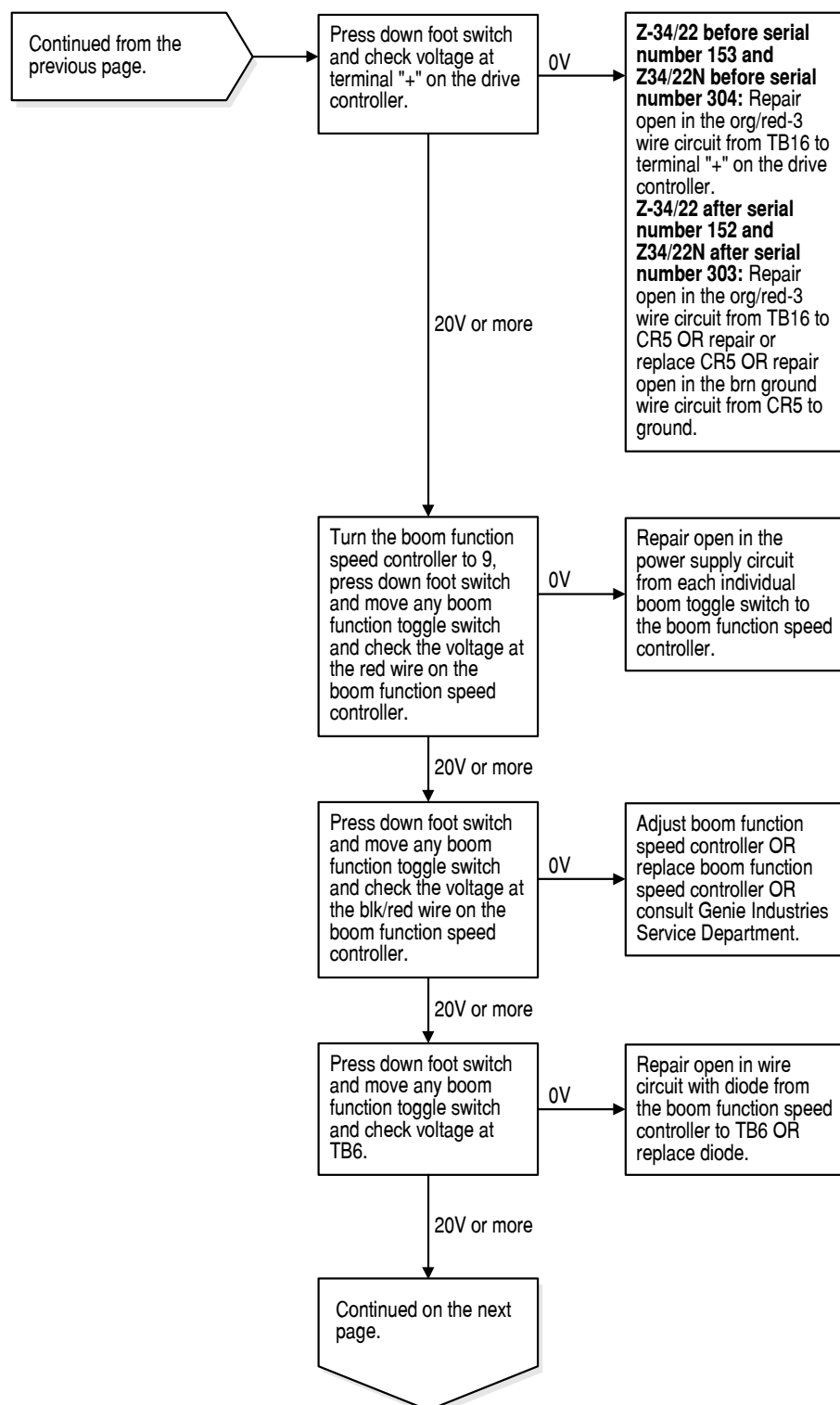


CHART 7

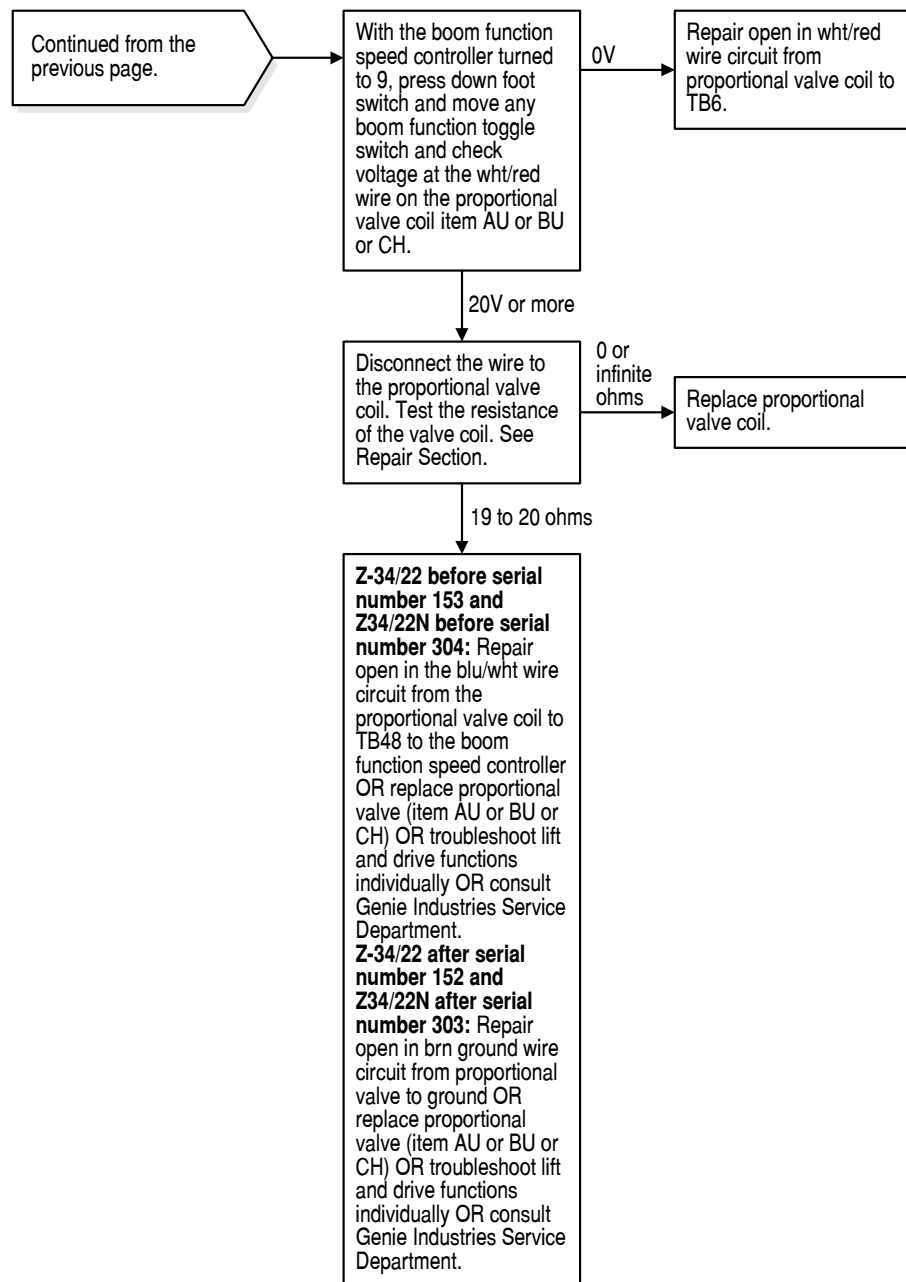


Chart 8

Platform Controls Inoperative, Ground Controls Operate Normally

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

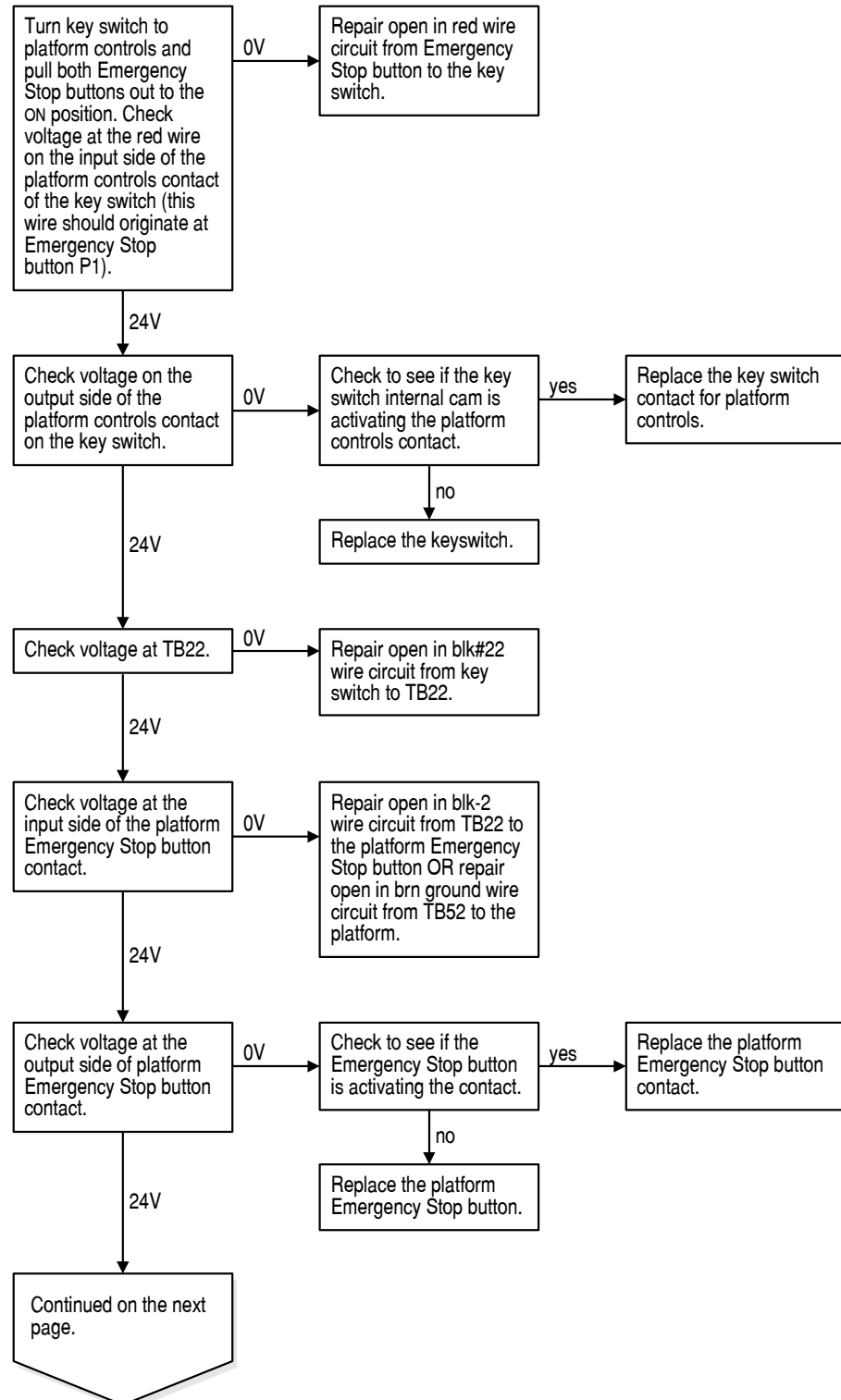


CHART 8

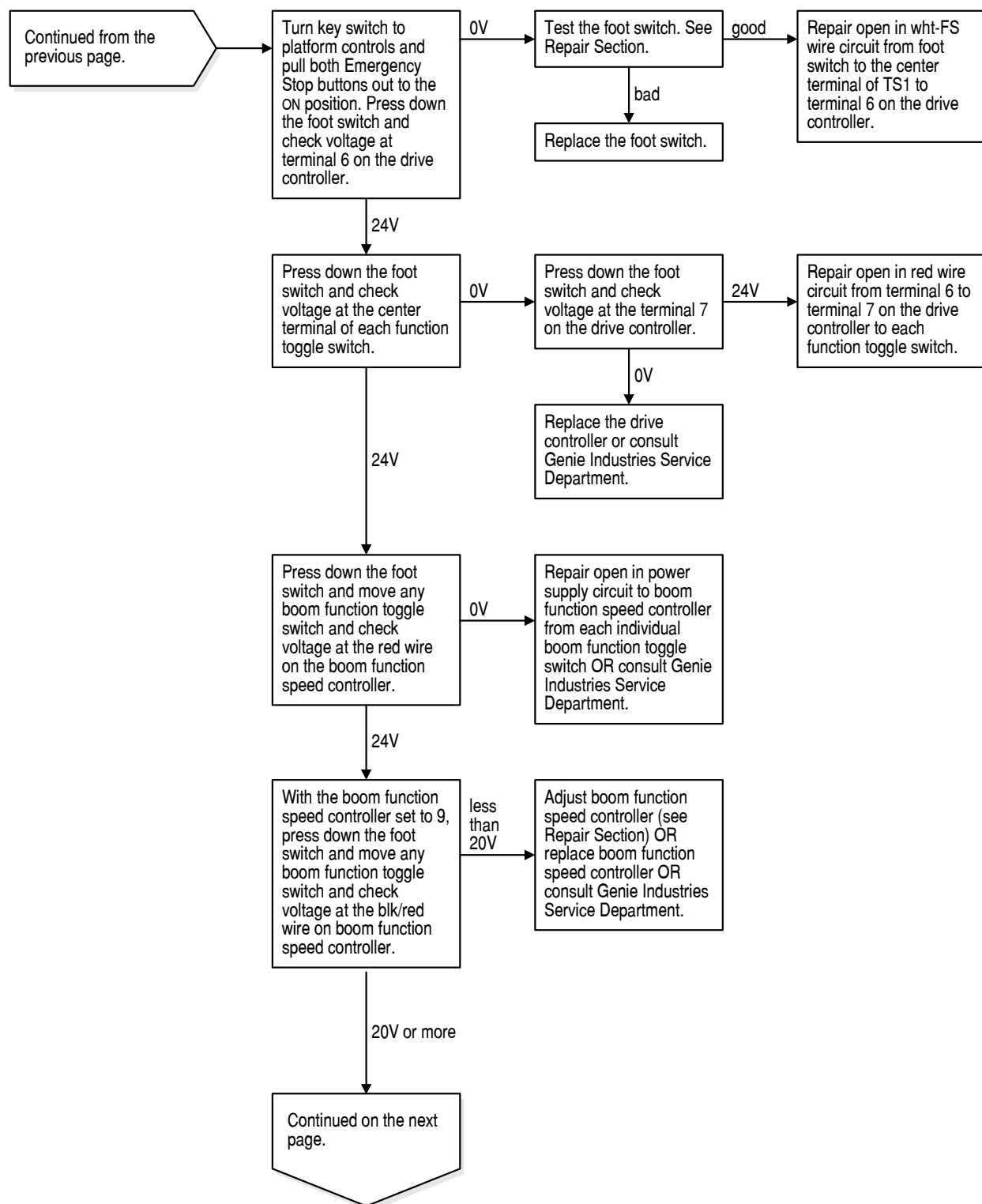


CHART 8

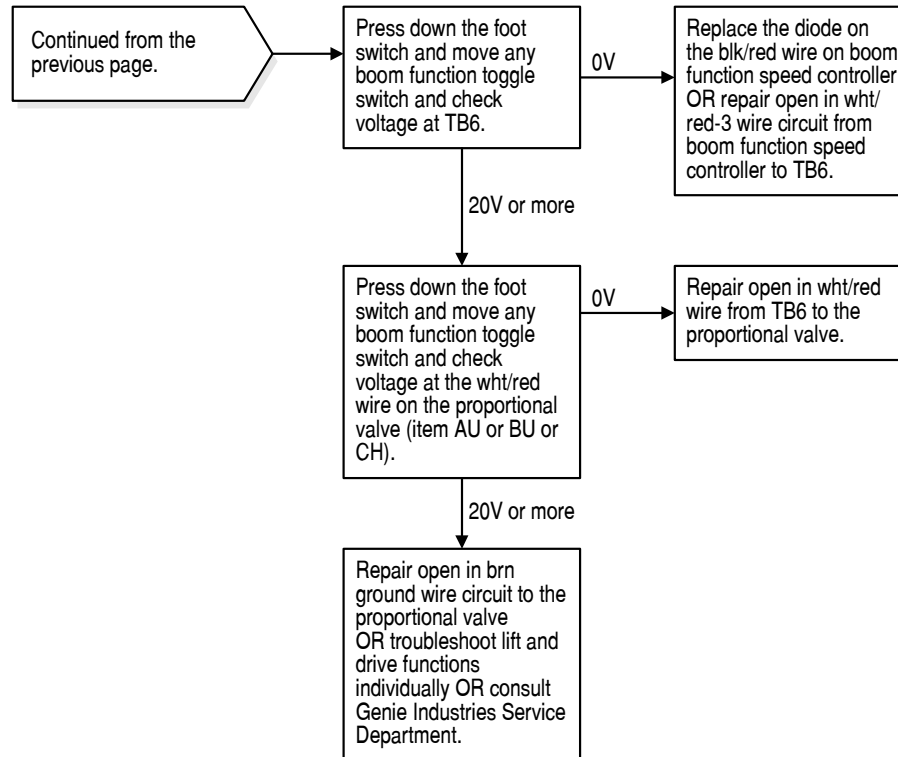


Chart 9

Primary Boom Up Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

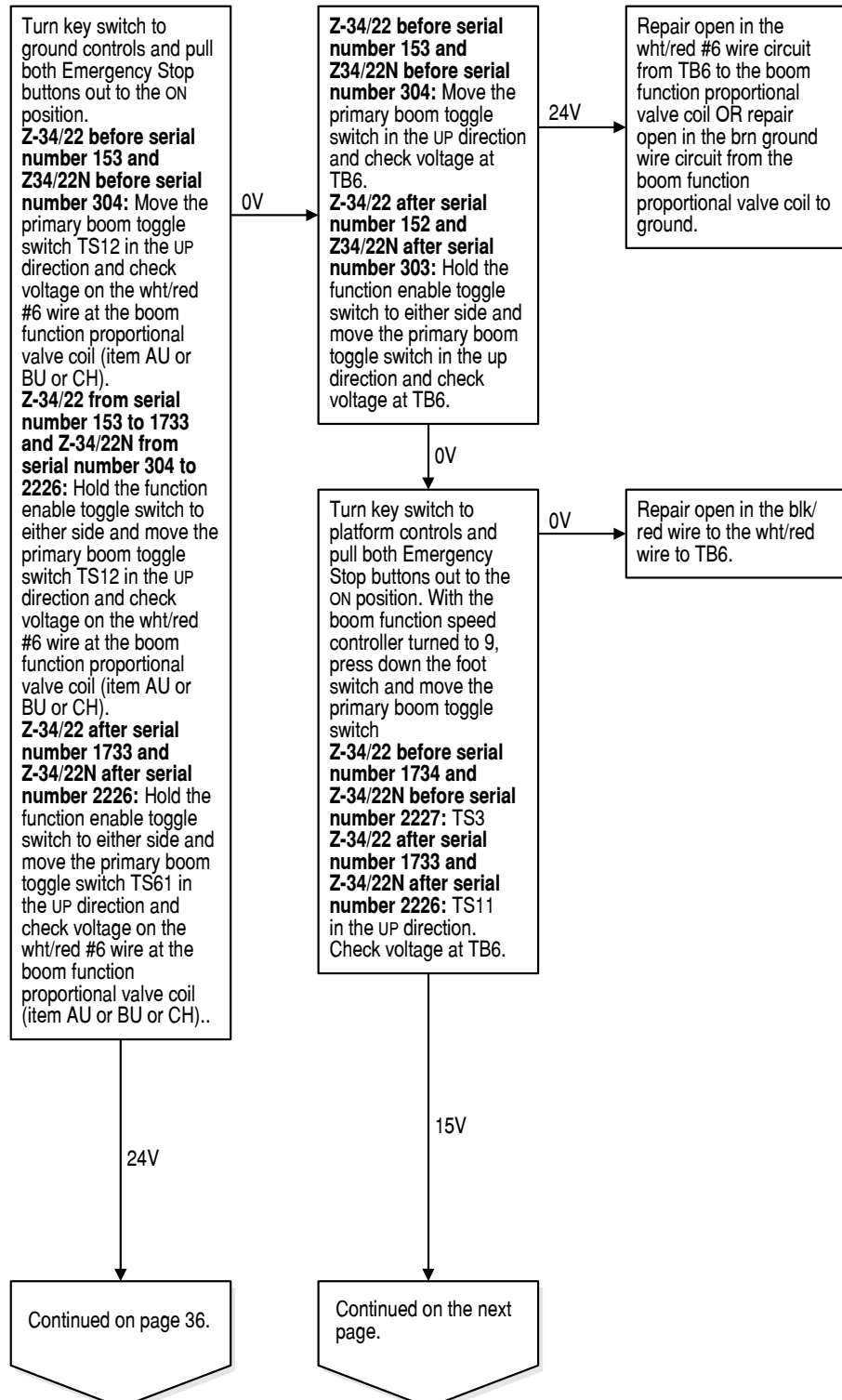


CHART 9

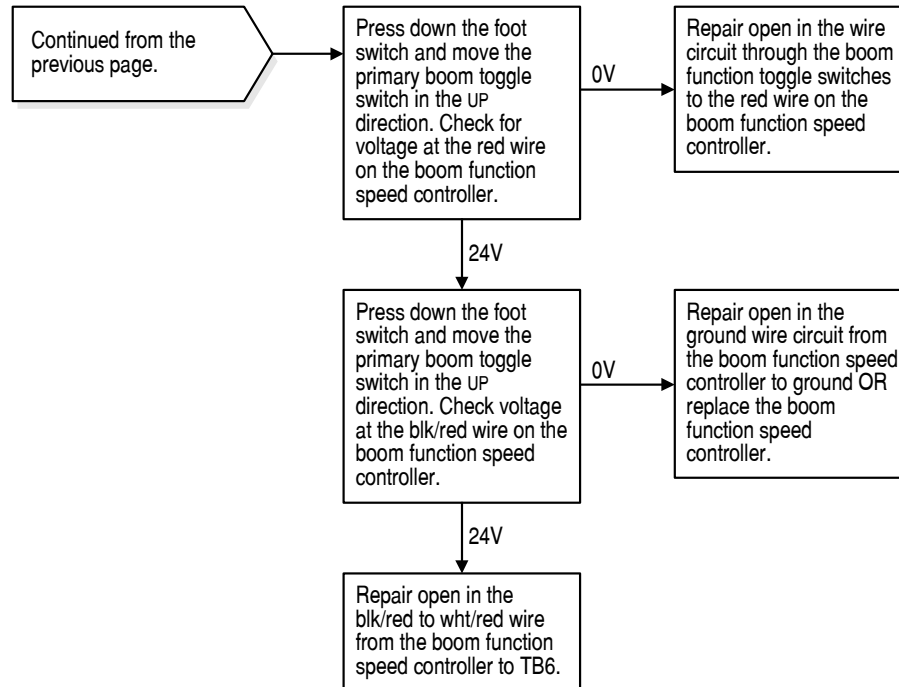


CHART 9

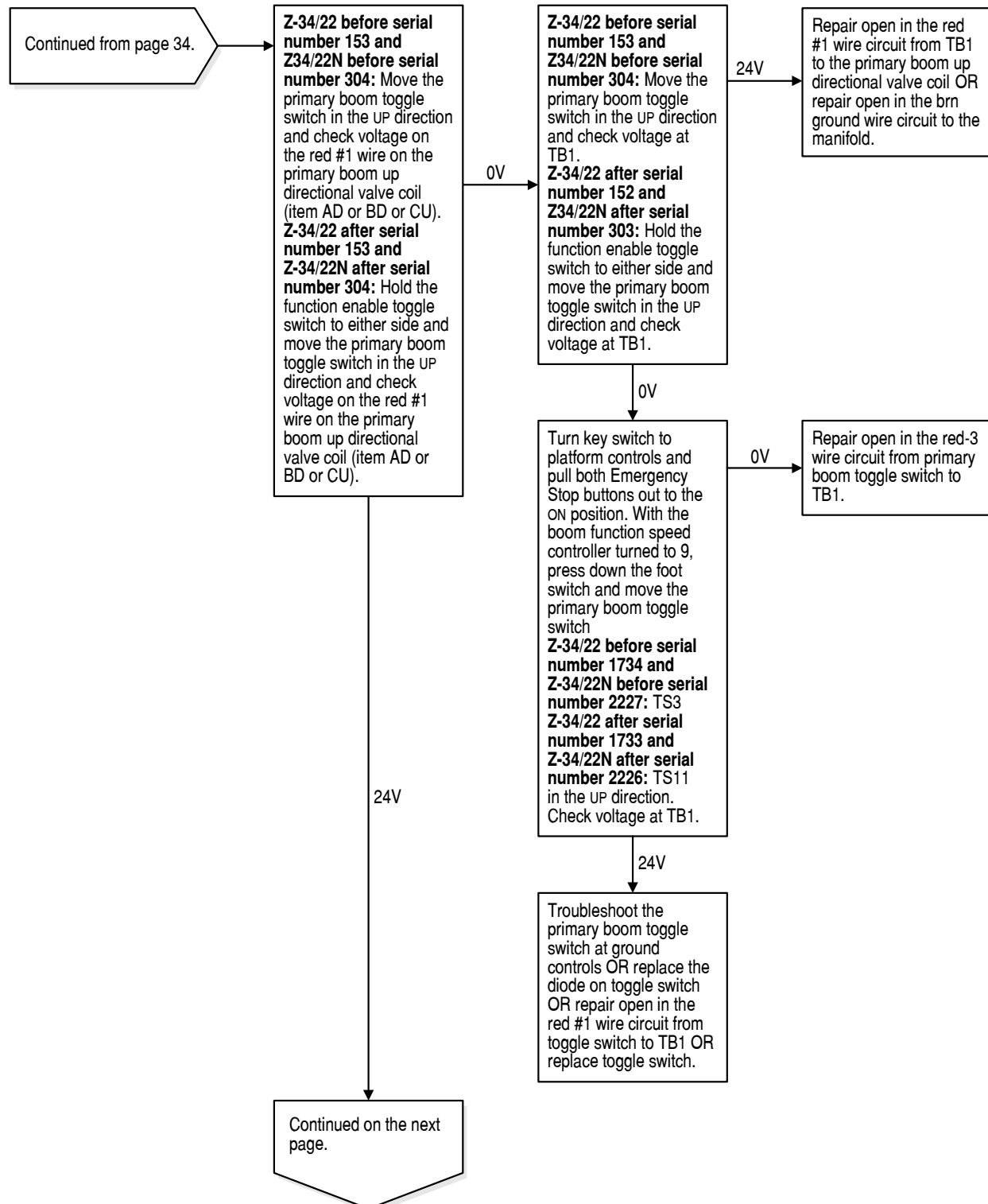


CHART 9

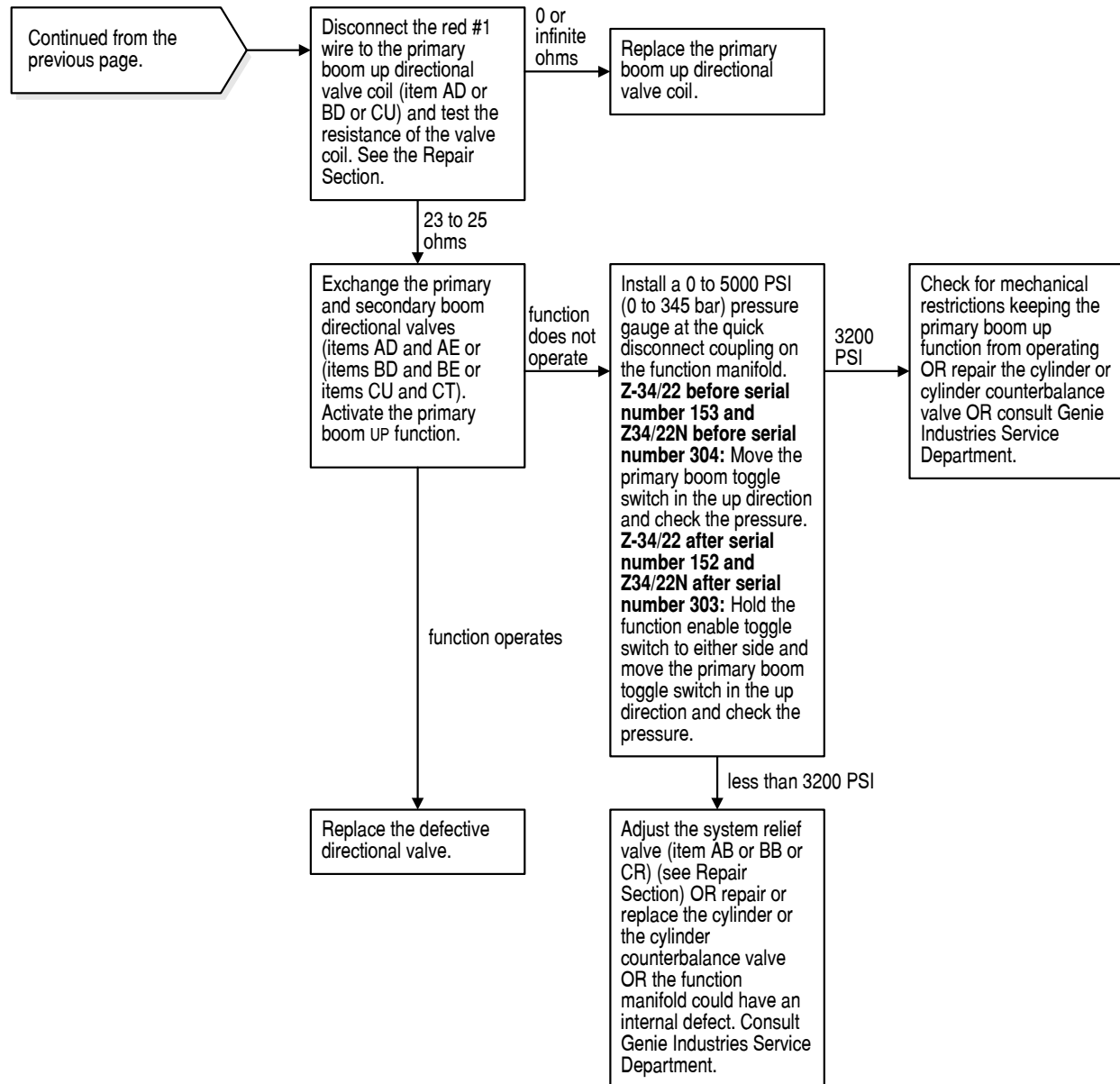


Chart 10

Primary Boom Down Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

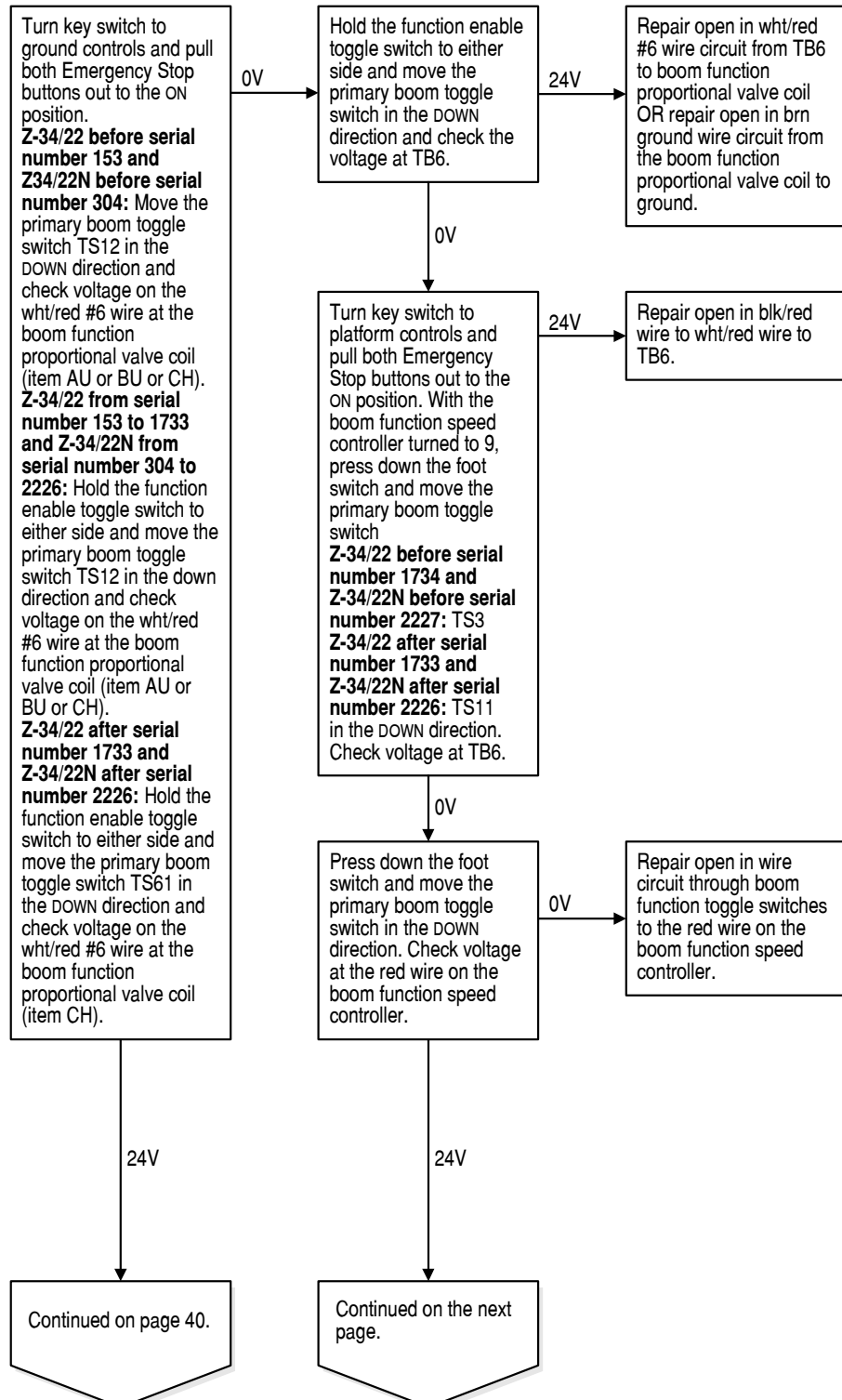


CHART 10

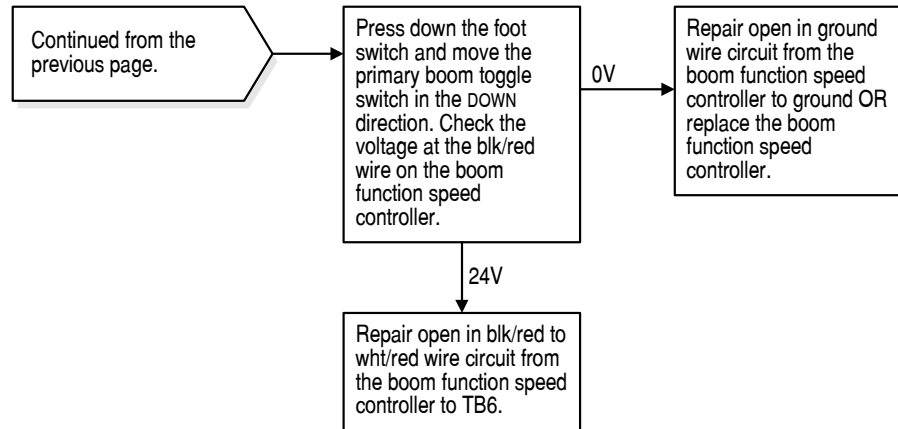


CHART 10

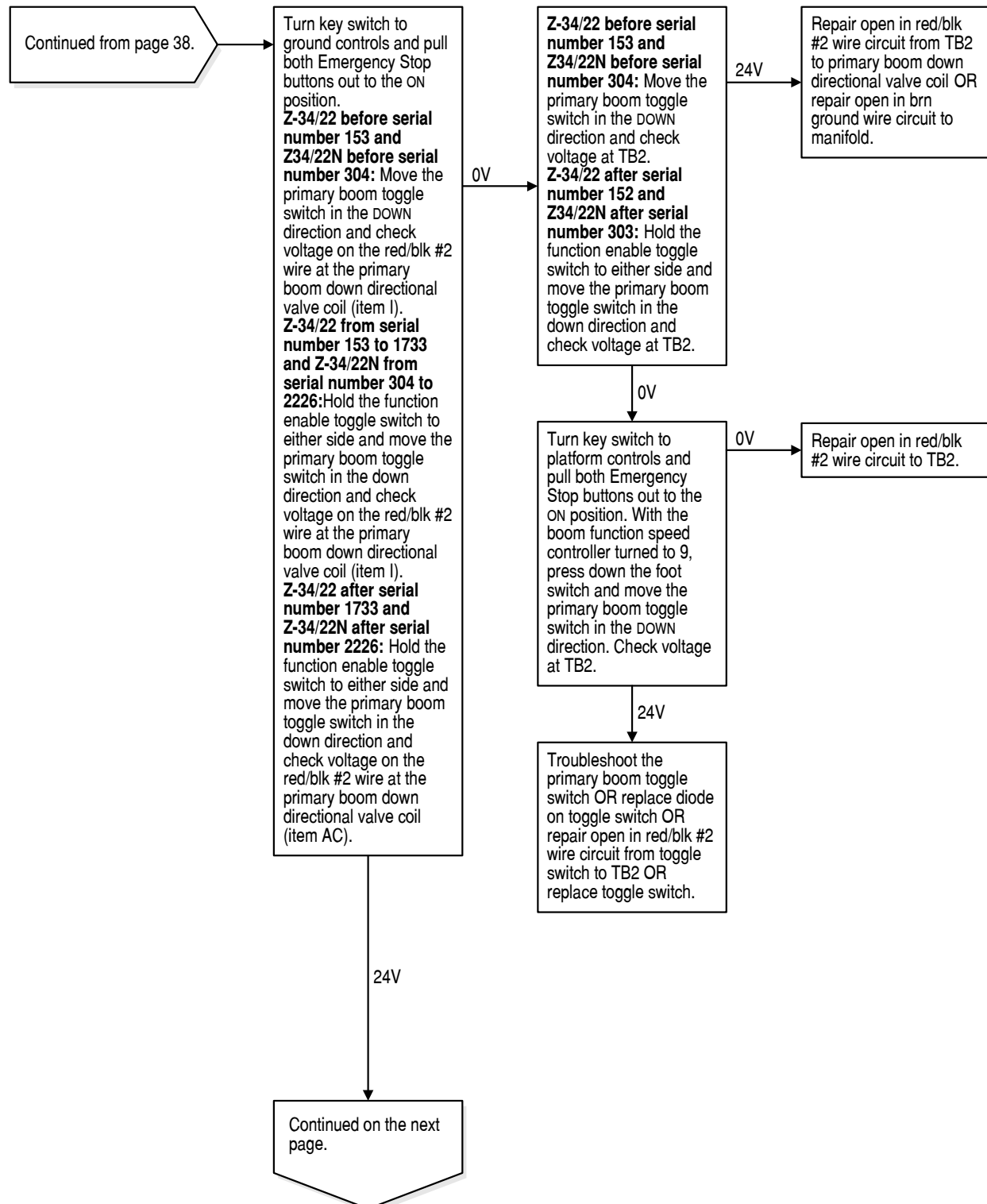


CHART 10

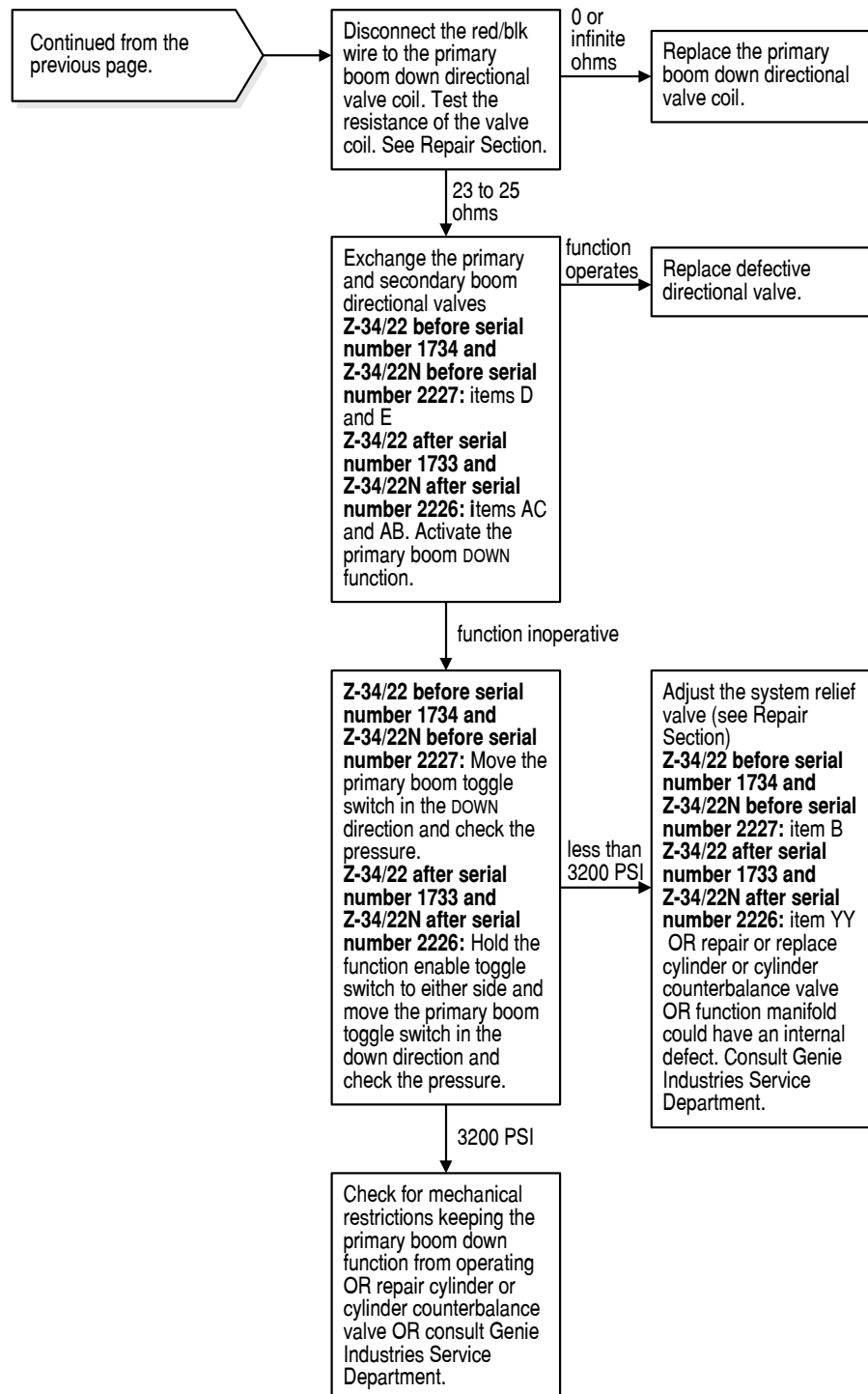


Chart 11

Secondary Boom Up Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

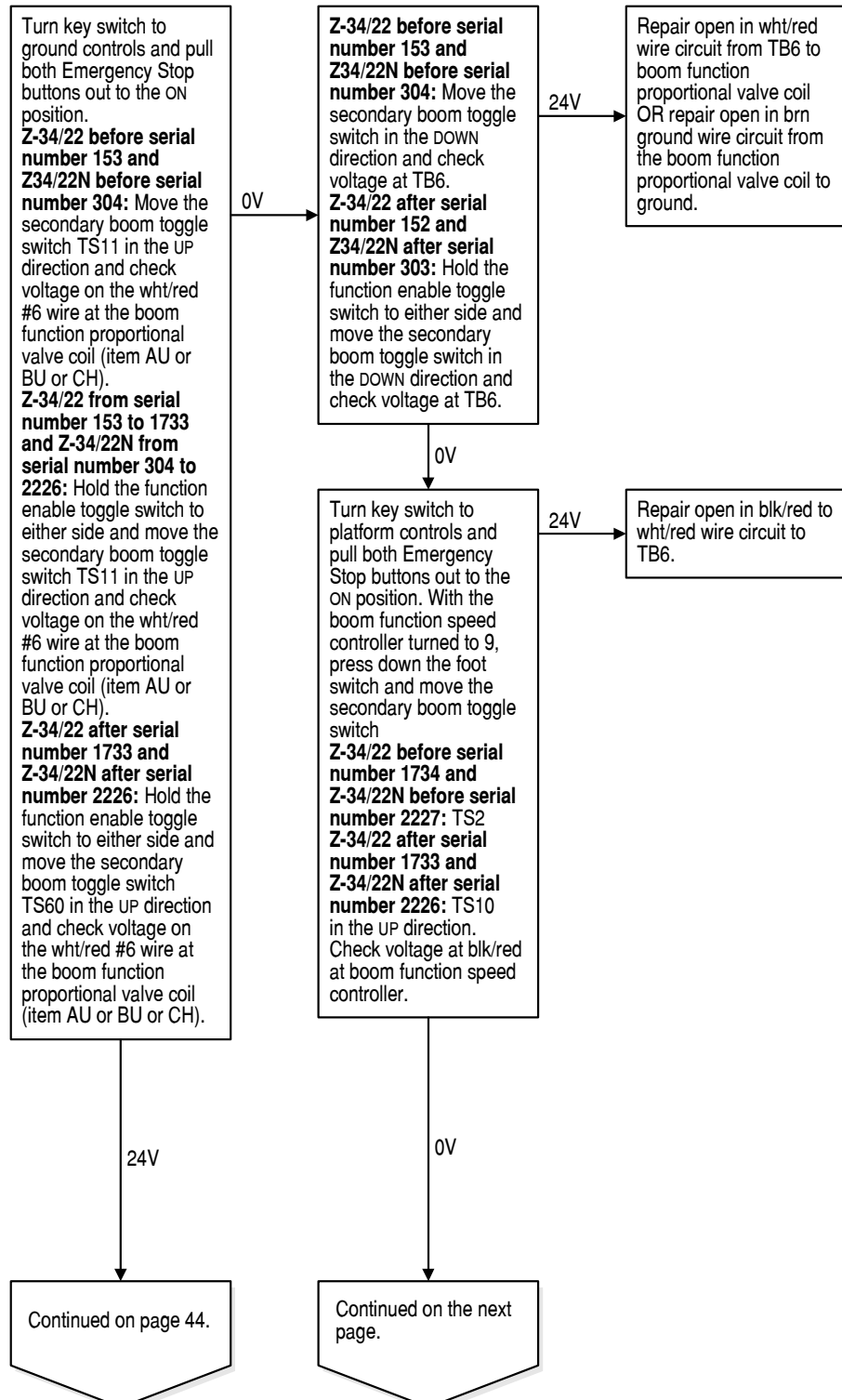


CHART 11

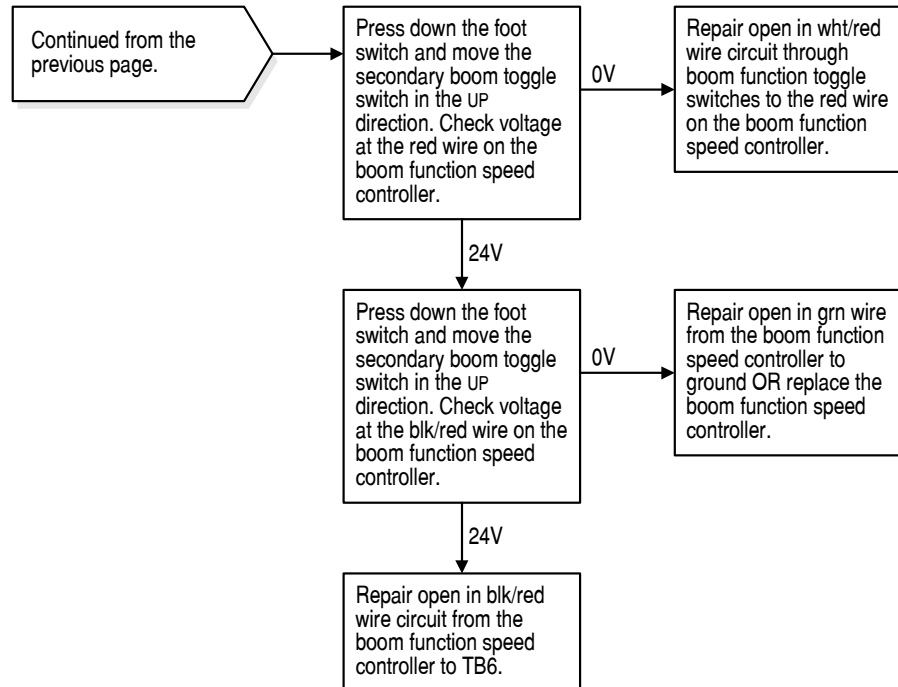


CHART 11

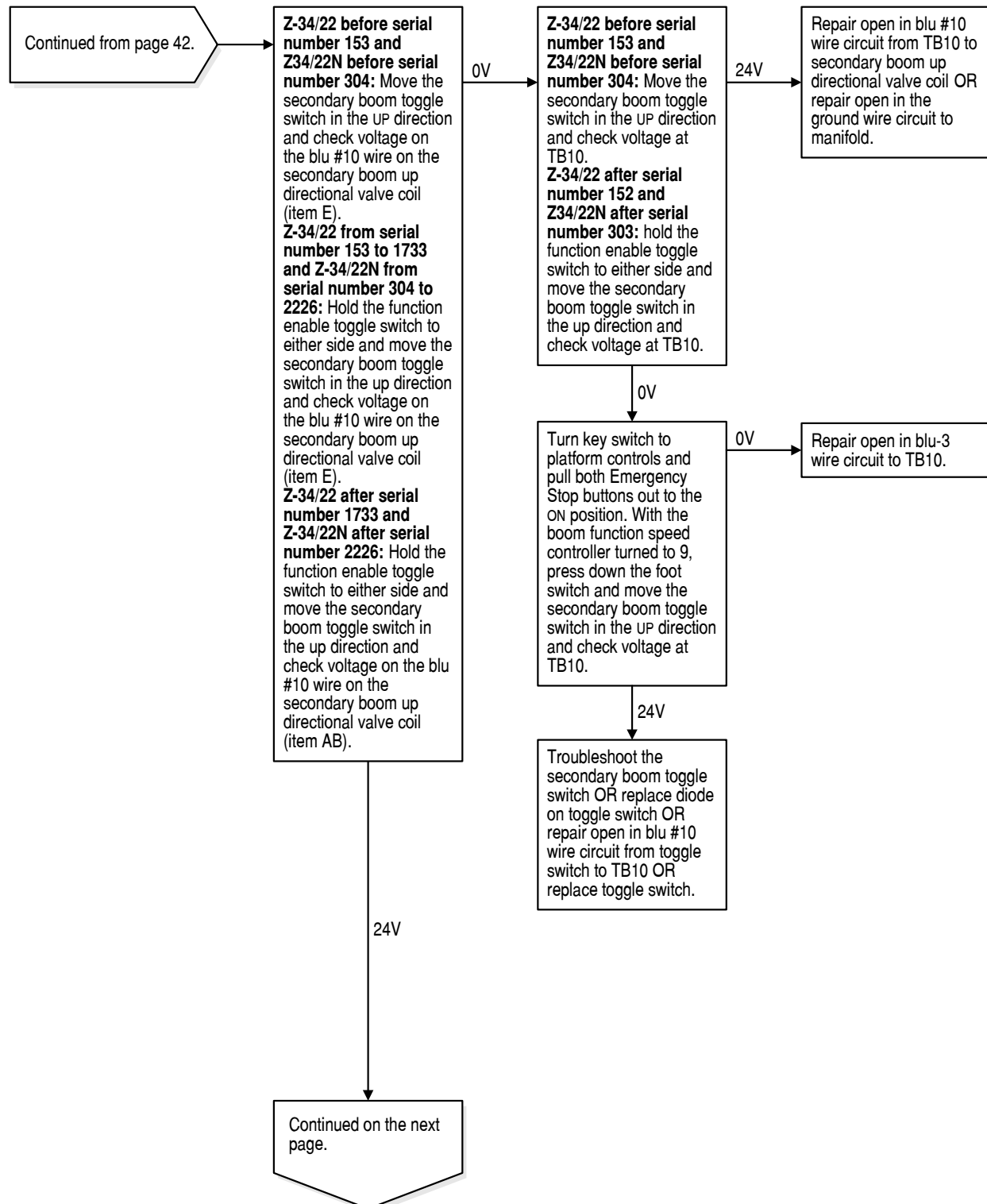


CHART 11

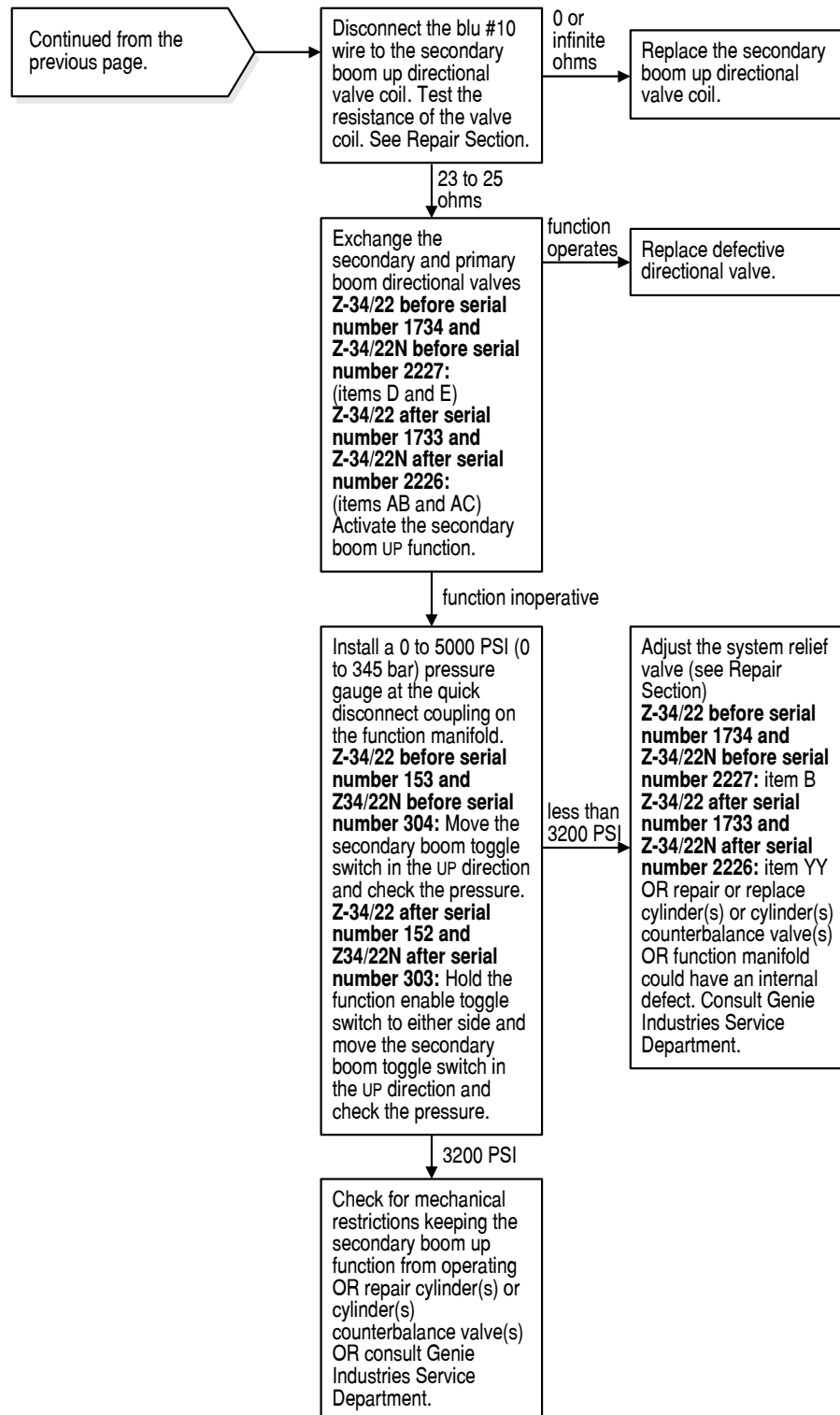


Chart 12

Secondary Boom Down Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

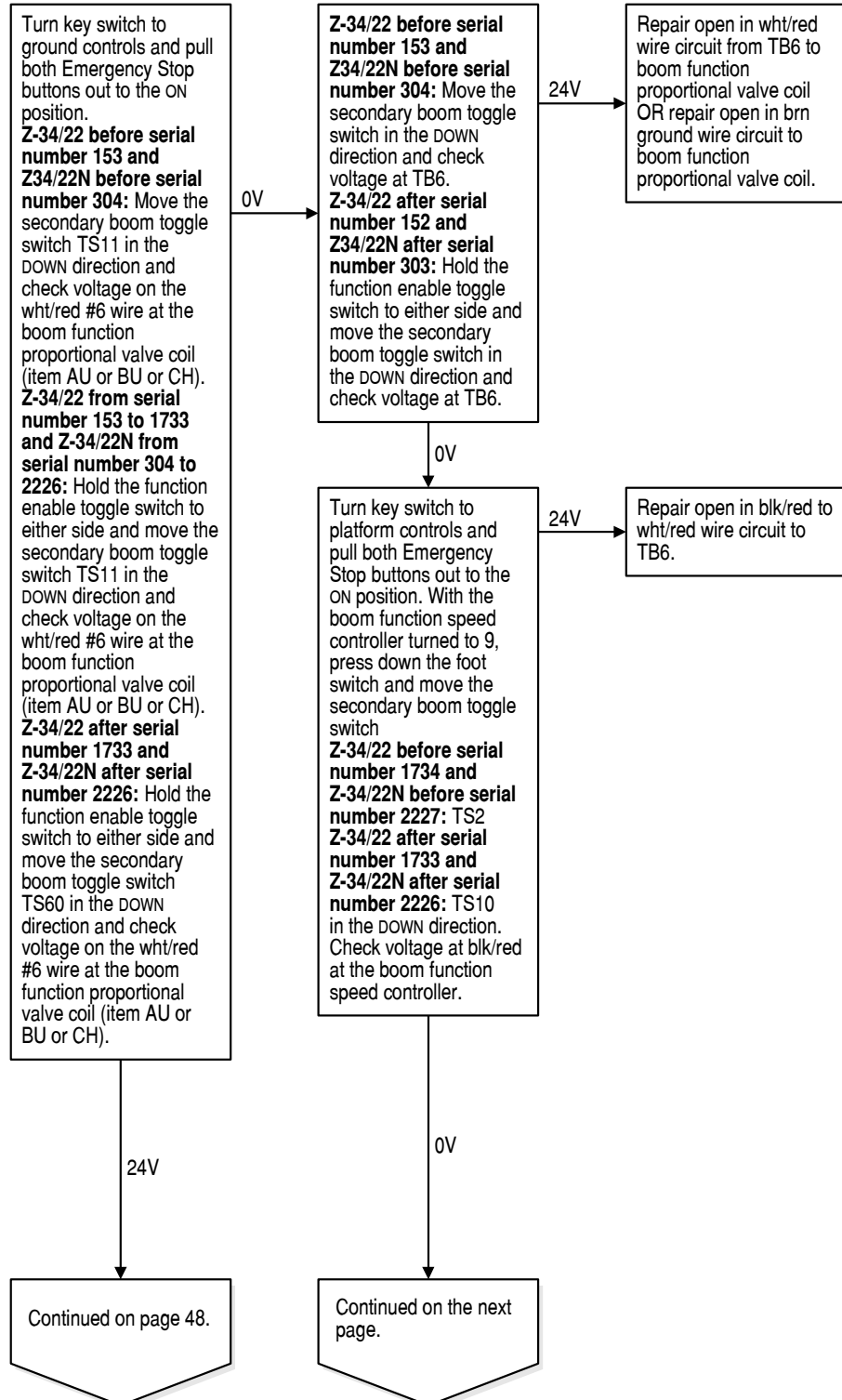


CHART 12

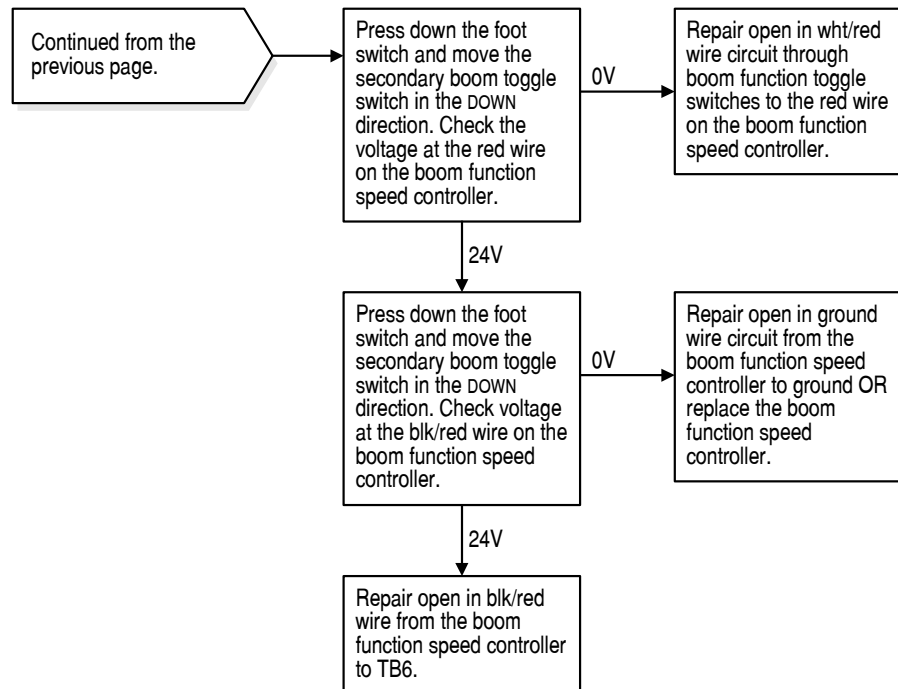


CHART 12

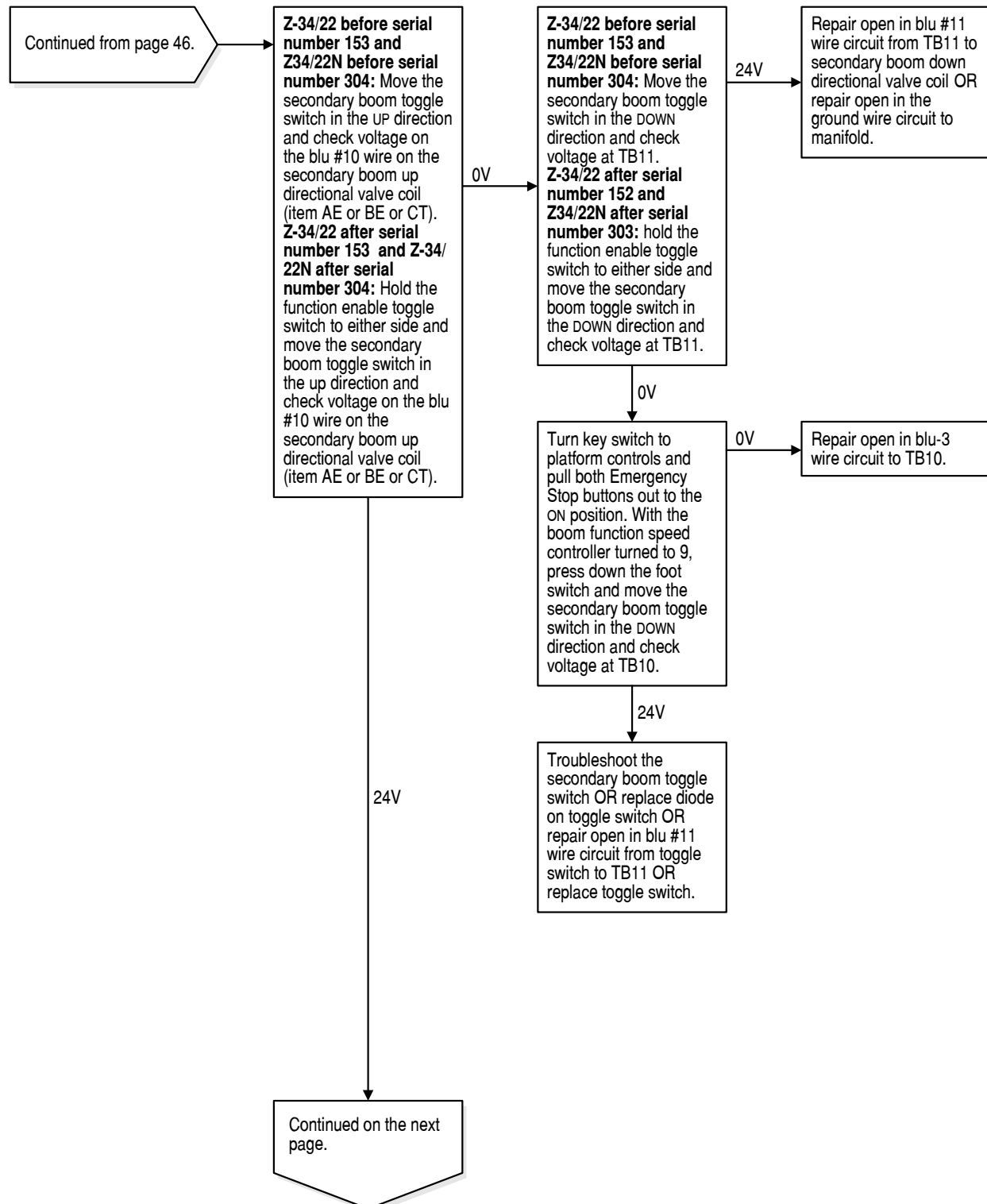


CHART 12

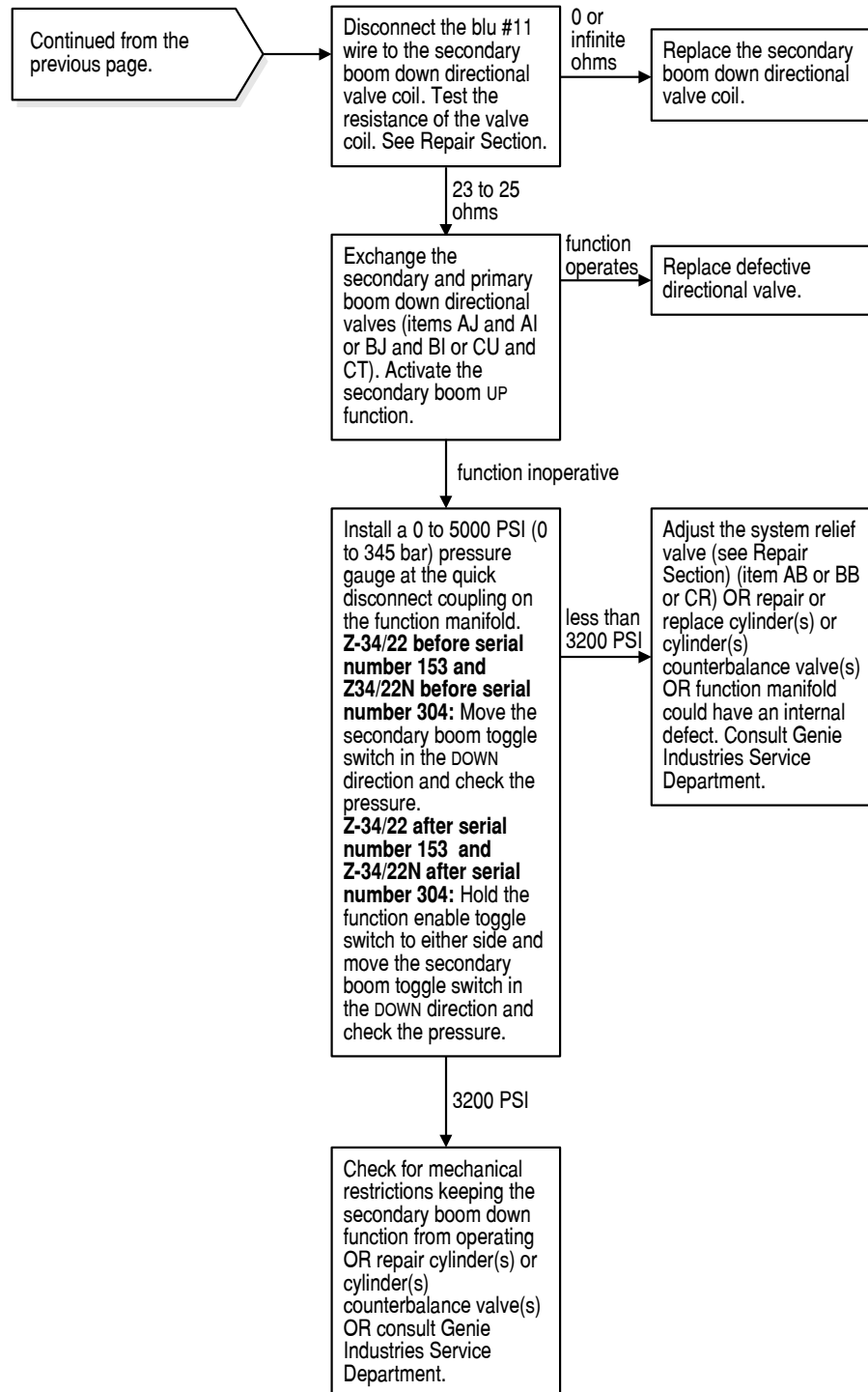


Chart 13

Primary Boom Extend Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

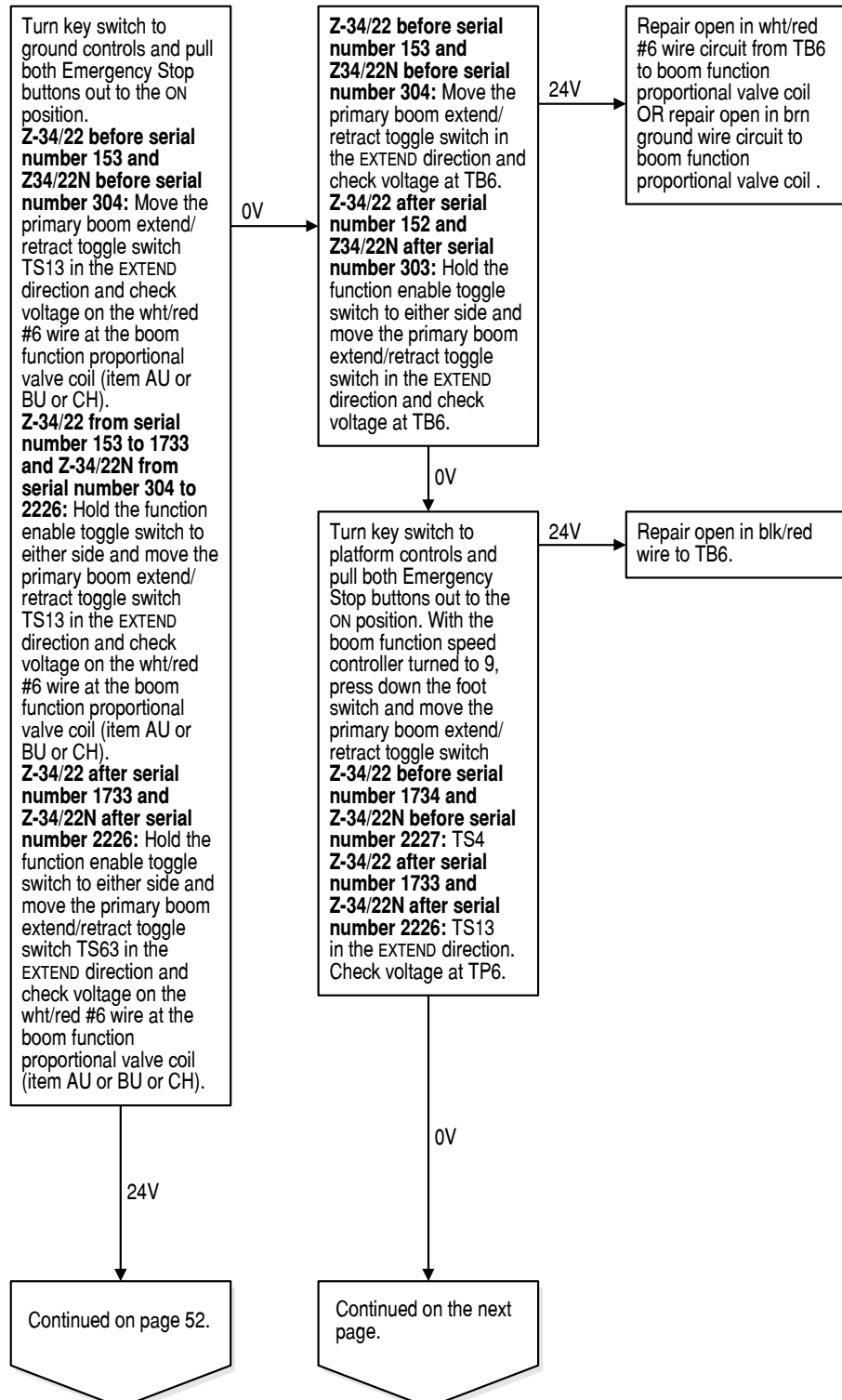


CHART 13

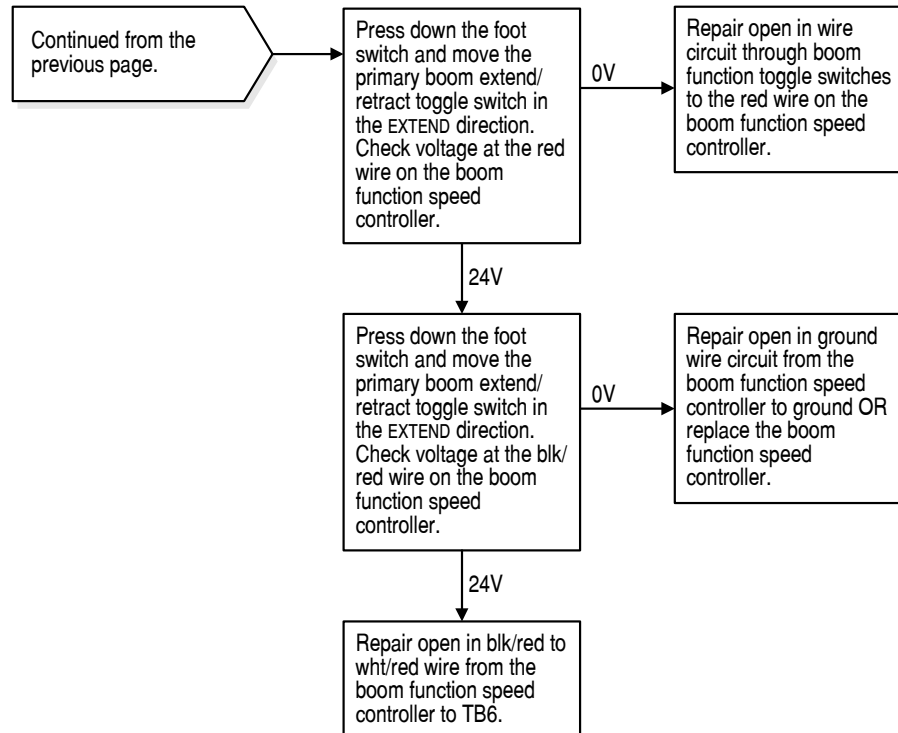


CHART 13

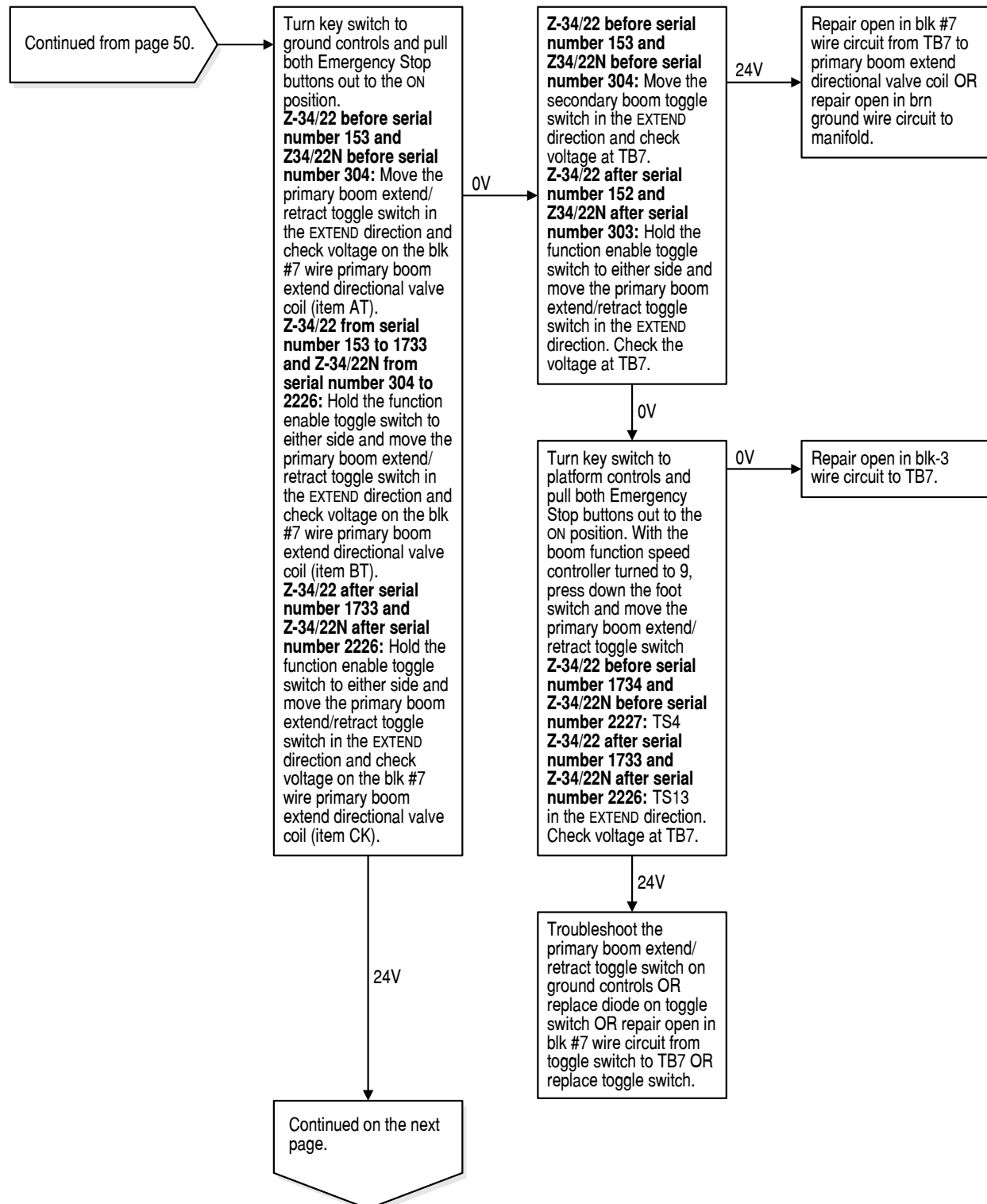


CHART 13

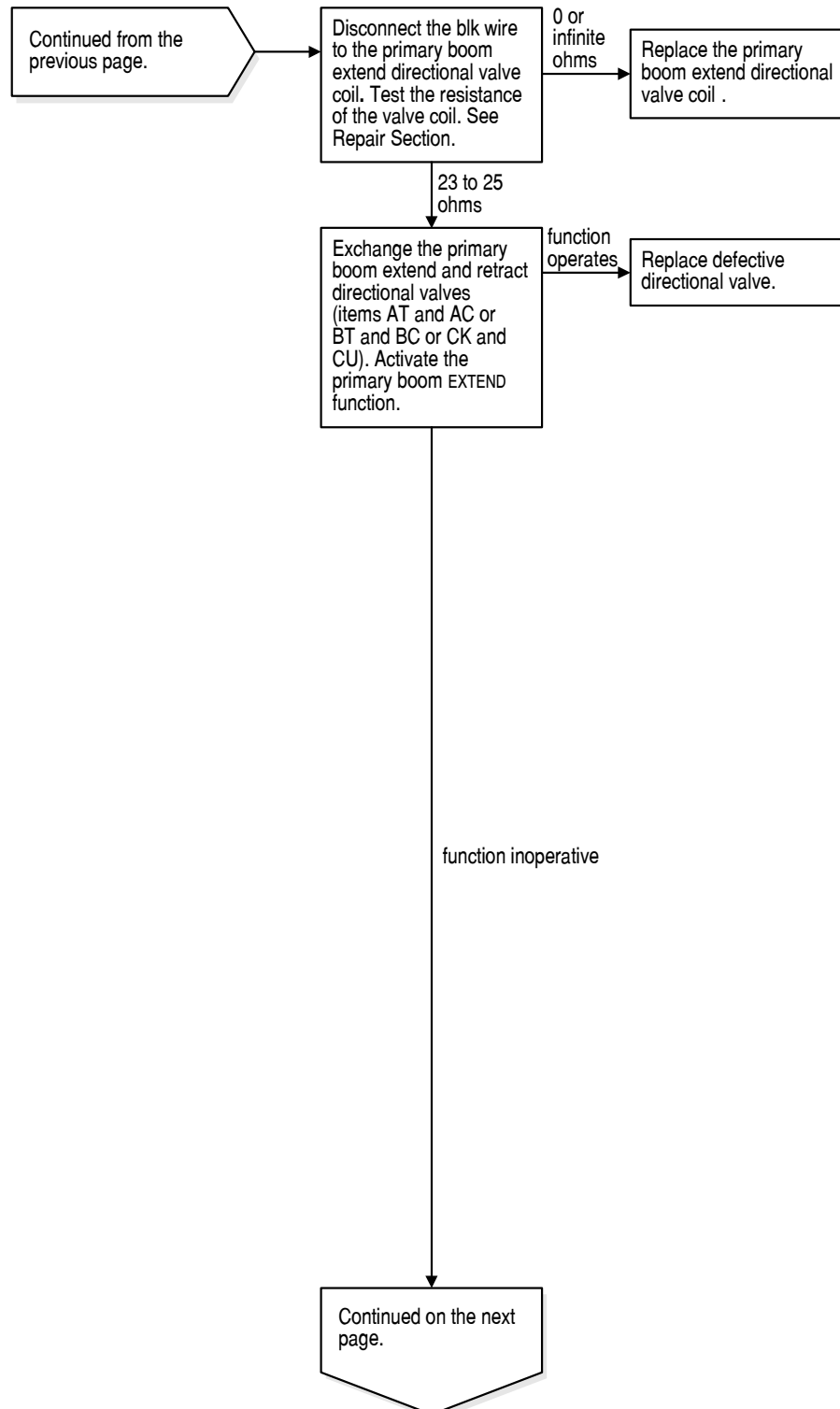


CHART 13

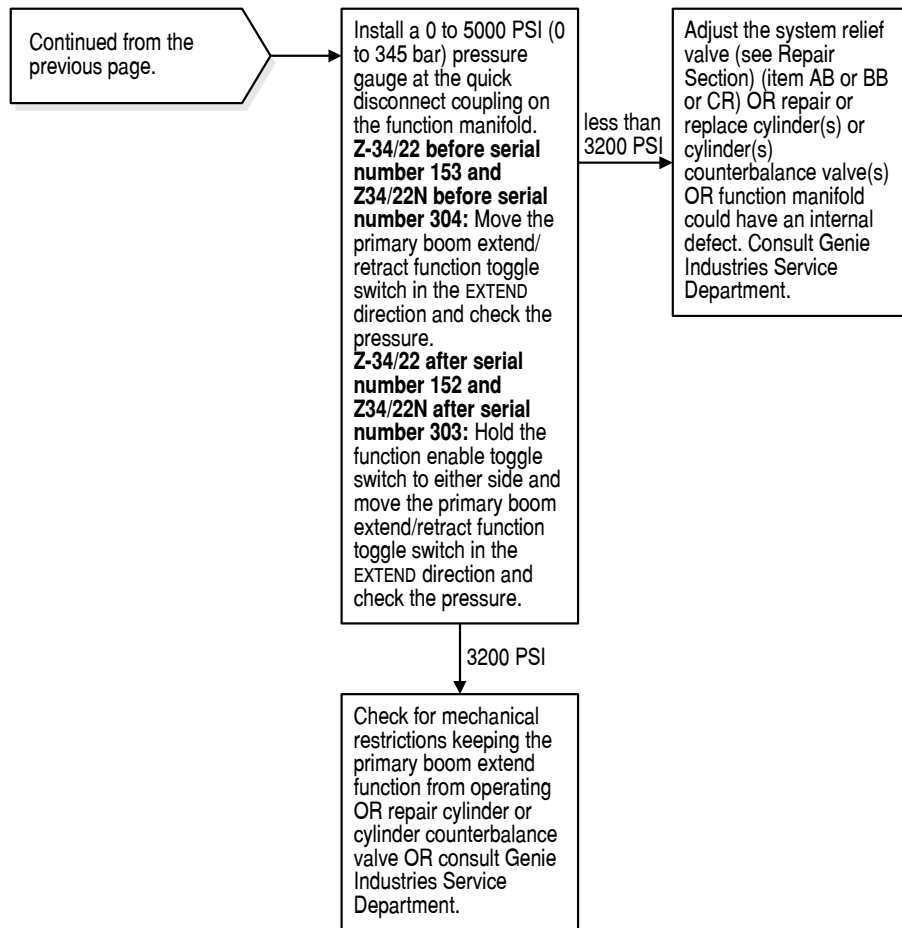


Chart 14

Primary Boom Retract Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

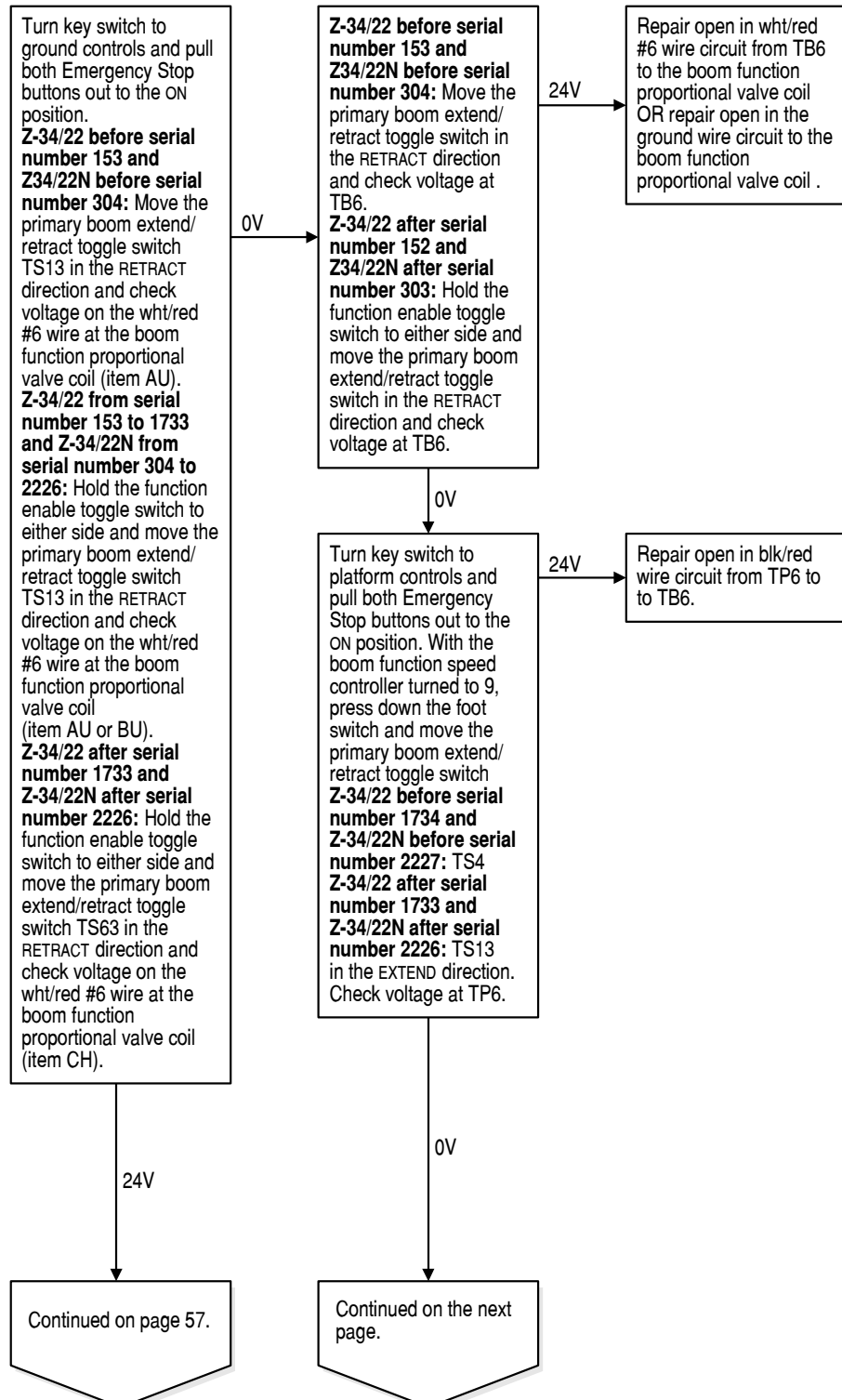


CHART 14

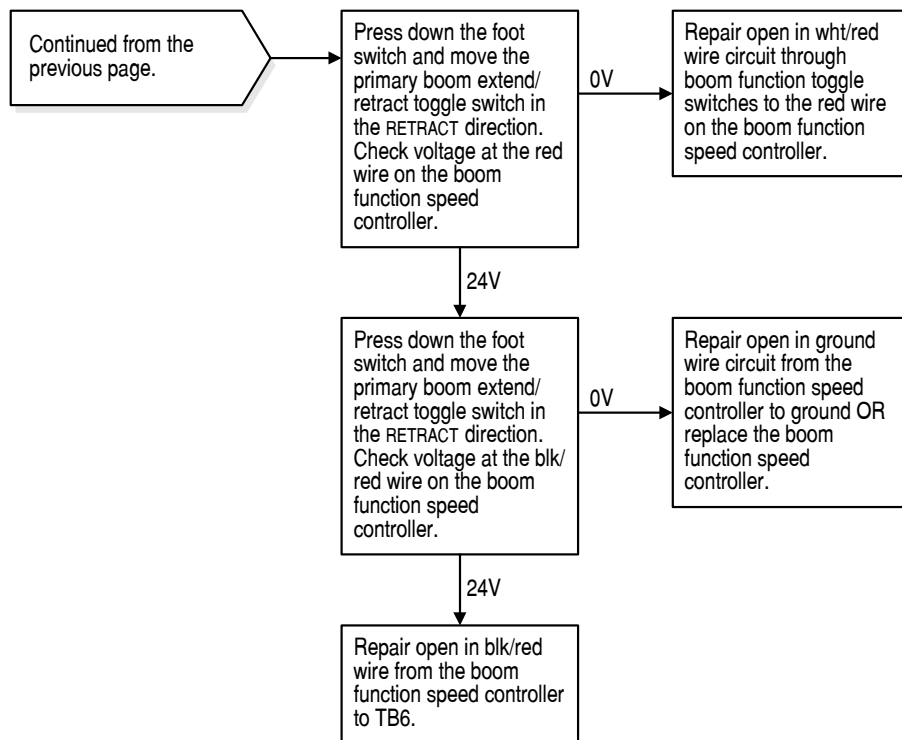


CHART 14

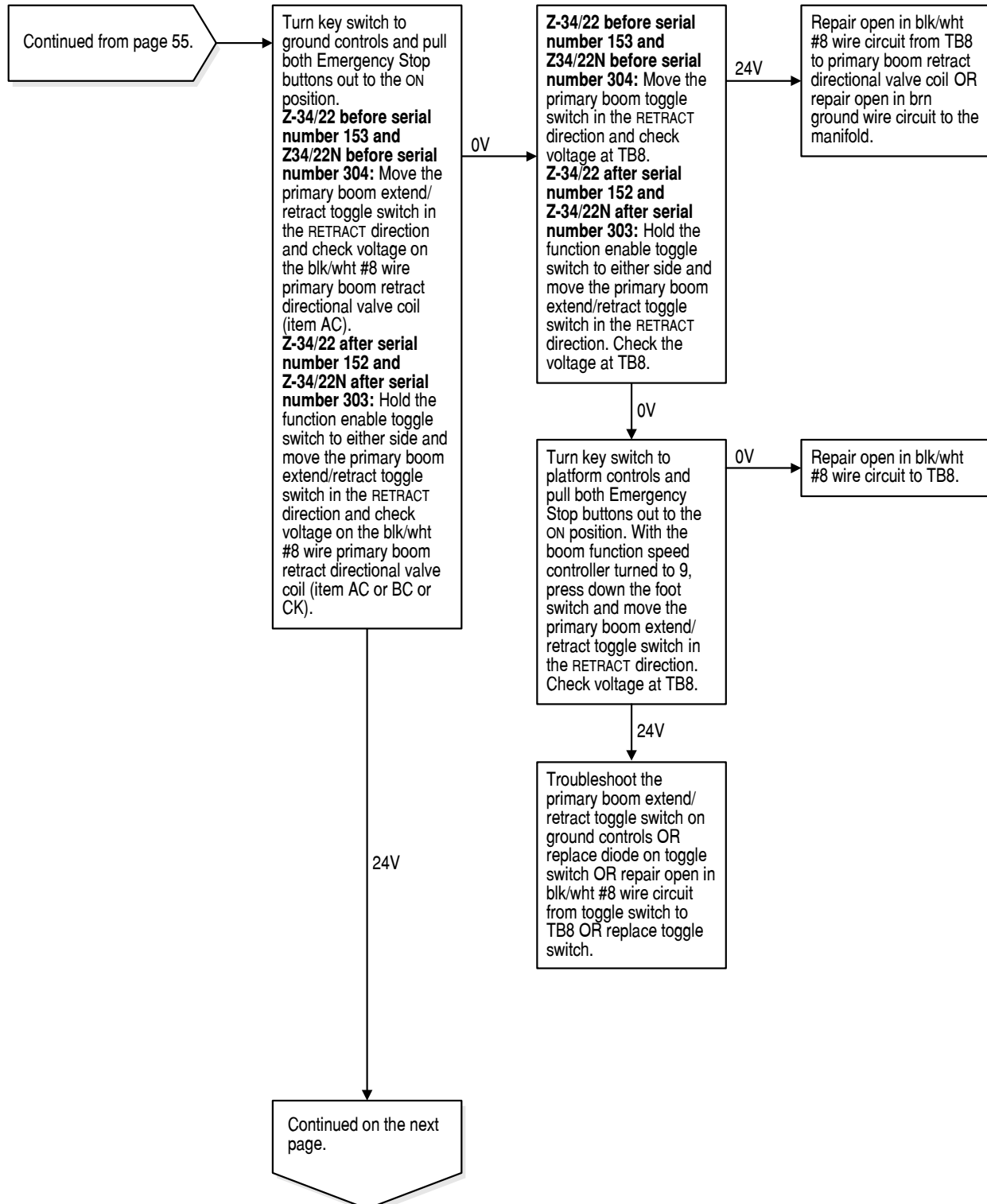


CHART 14

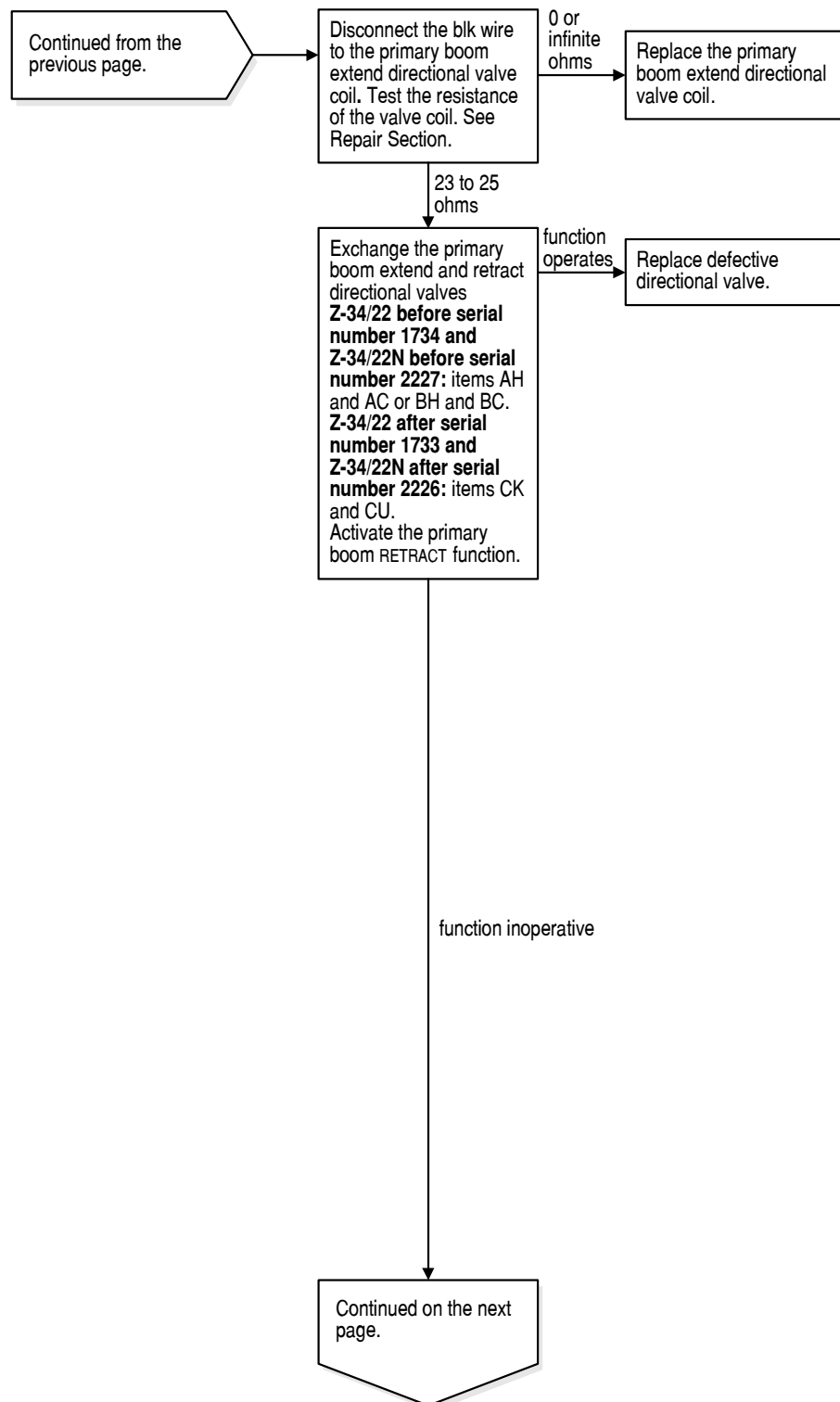


CHART 14

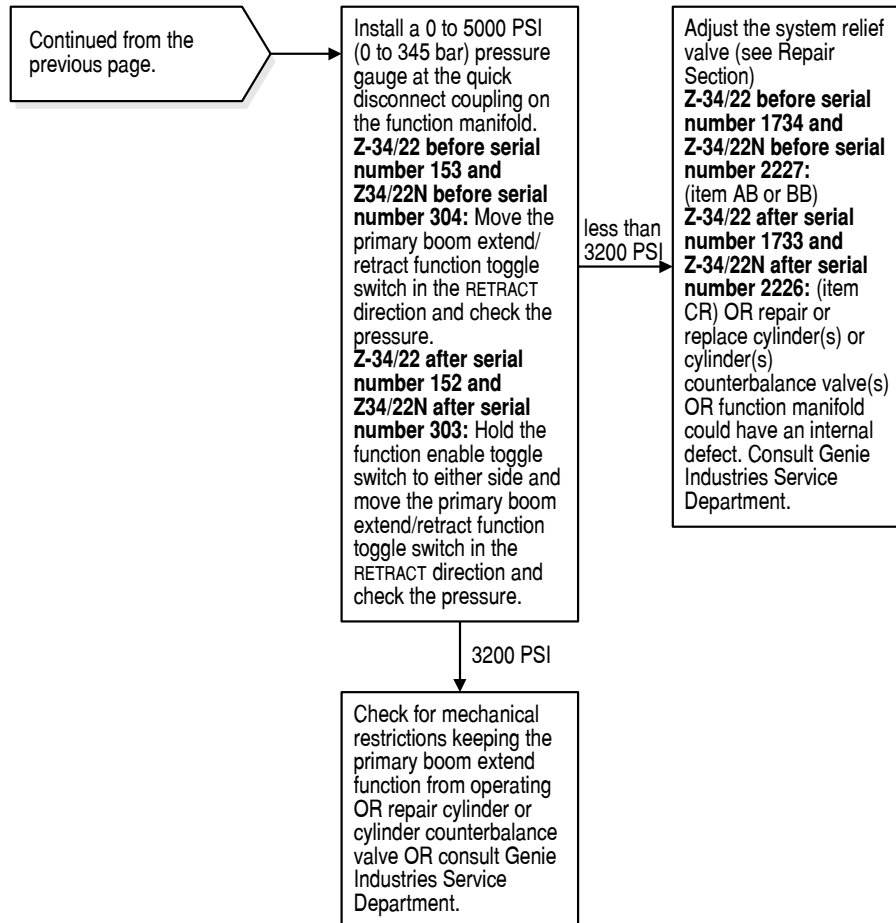


Chart 15

Turntable Rotate Left Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the
Emergency Stop
buttons are pulled
up to the ON
position.

Be sure the battery packs are properly connected and fully charged.

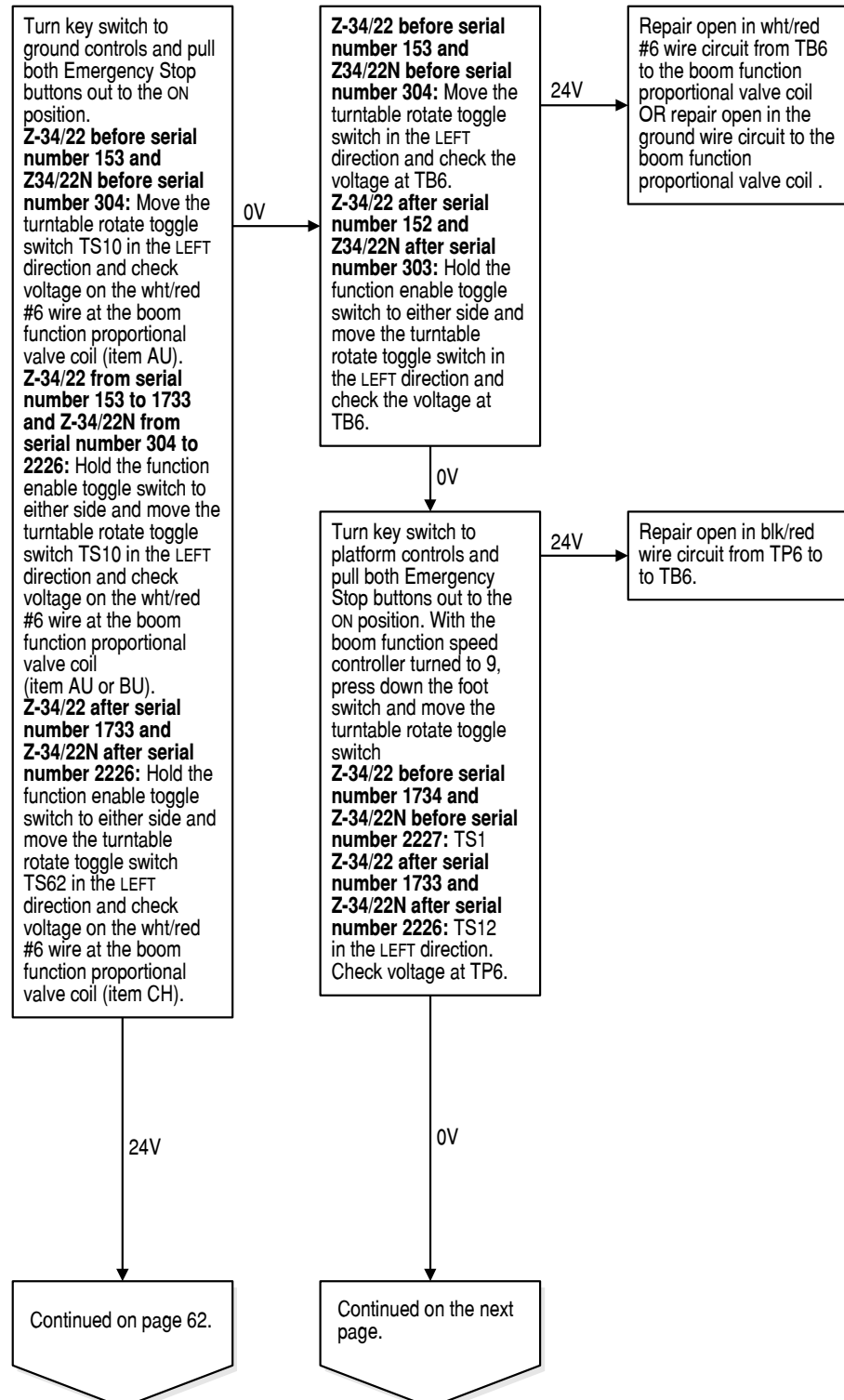


CHART 15

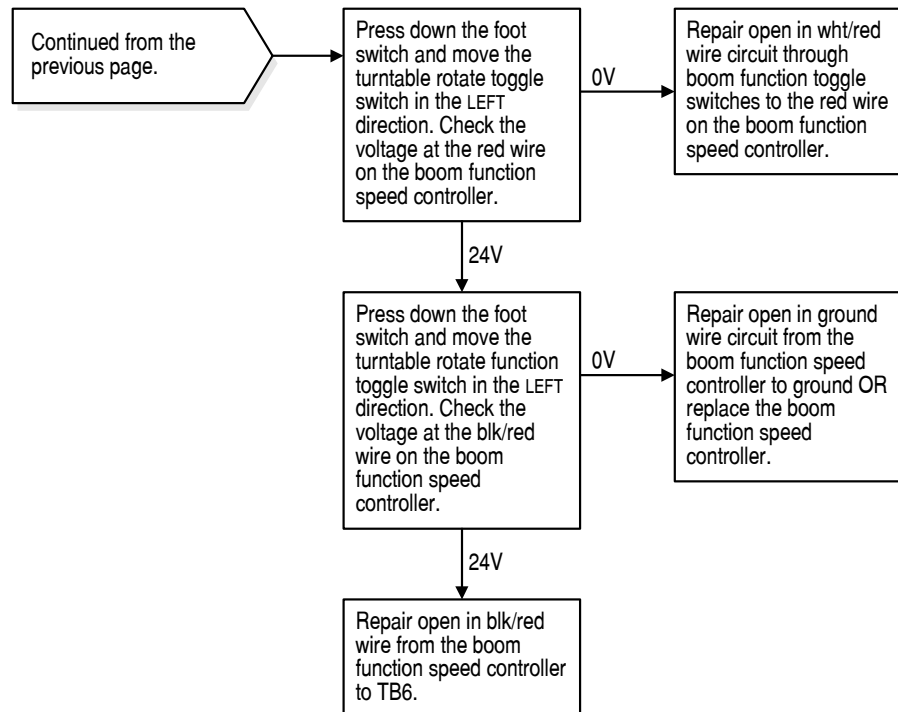


CHART 15

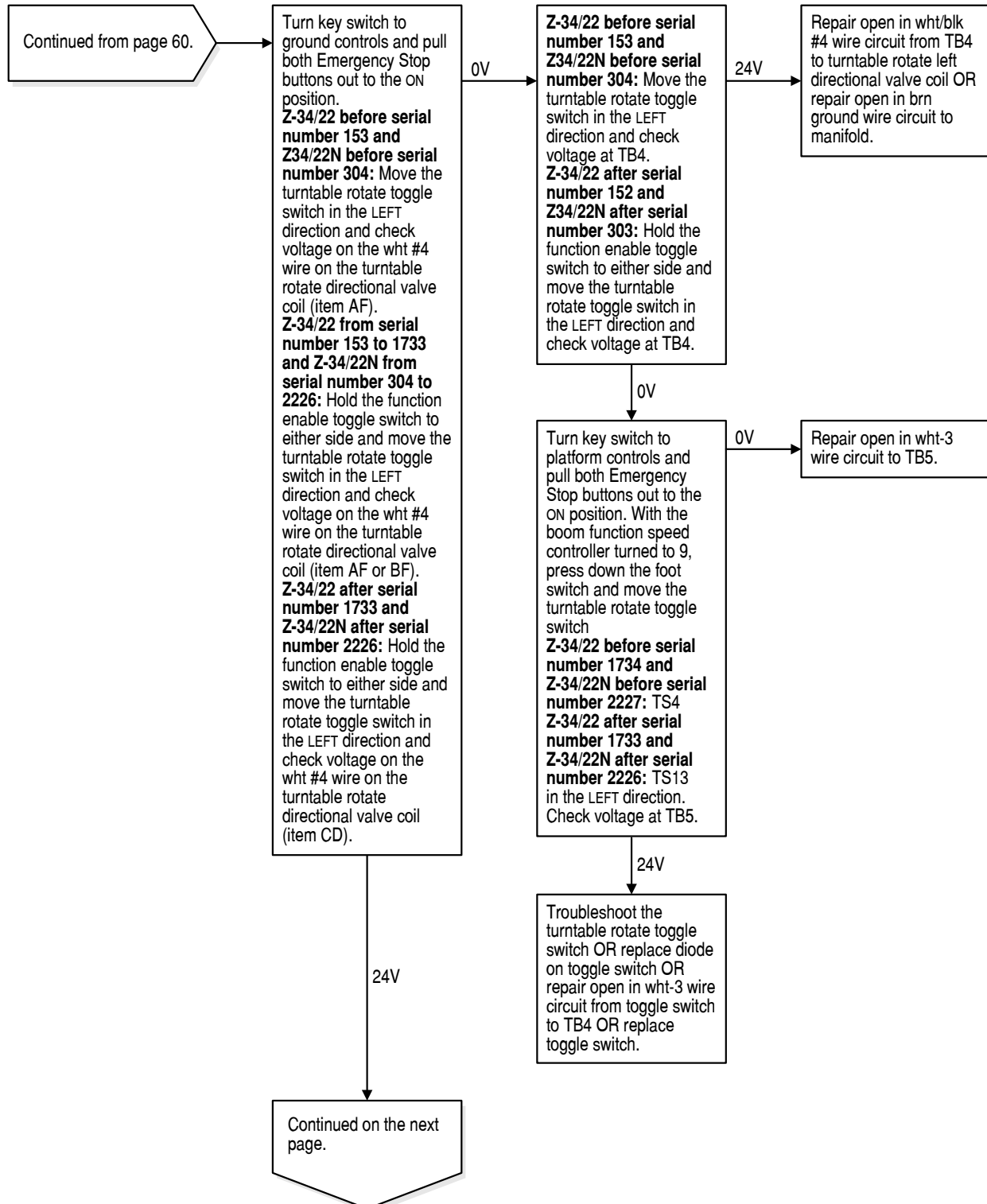


CHART 15

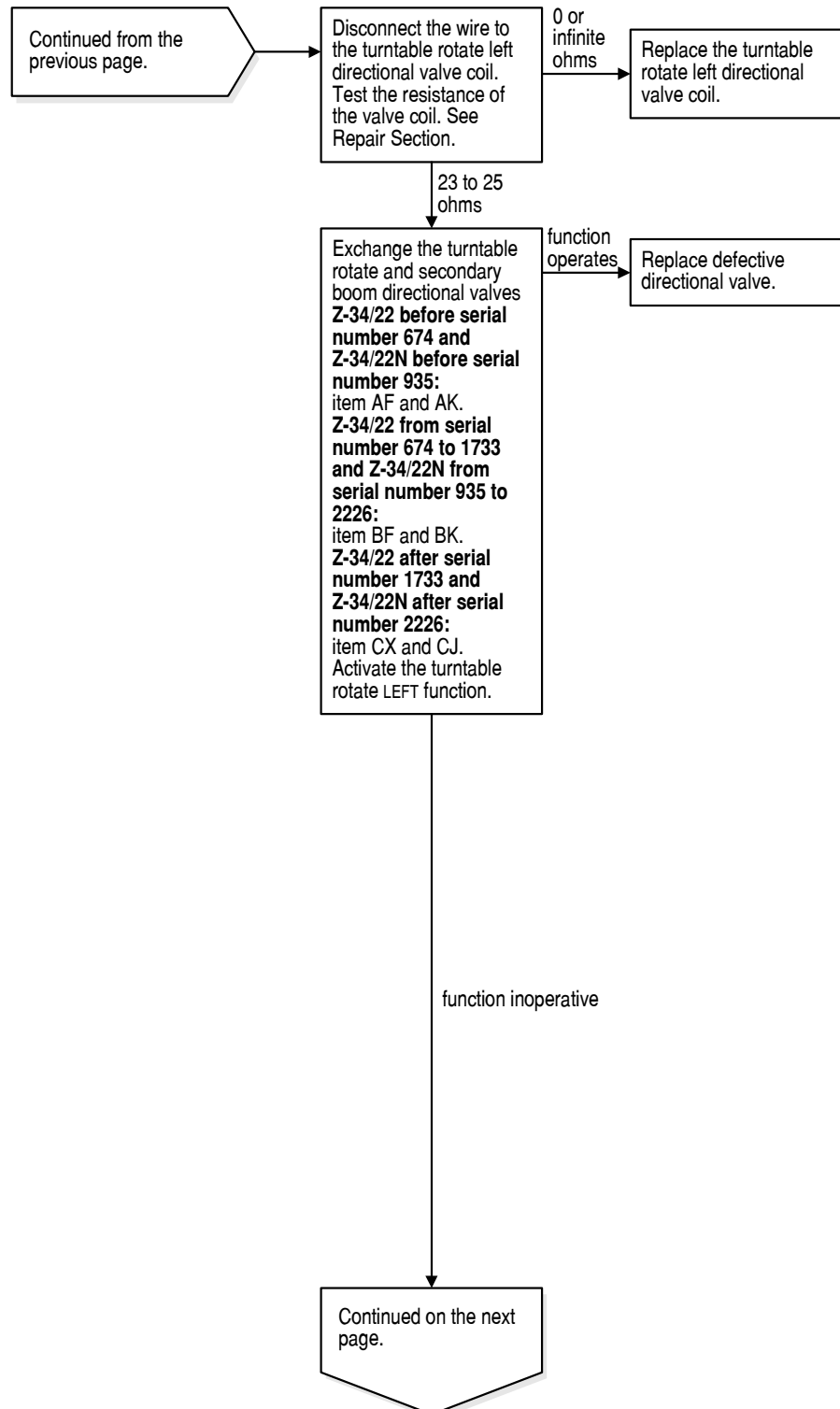


CHART 15

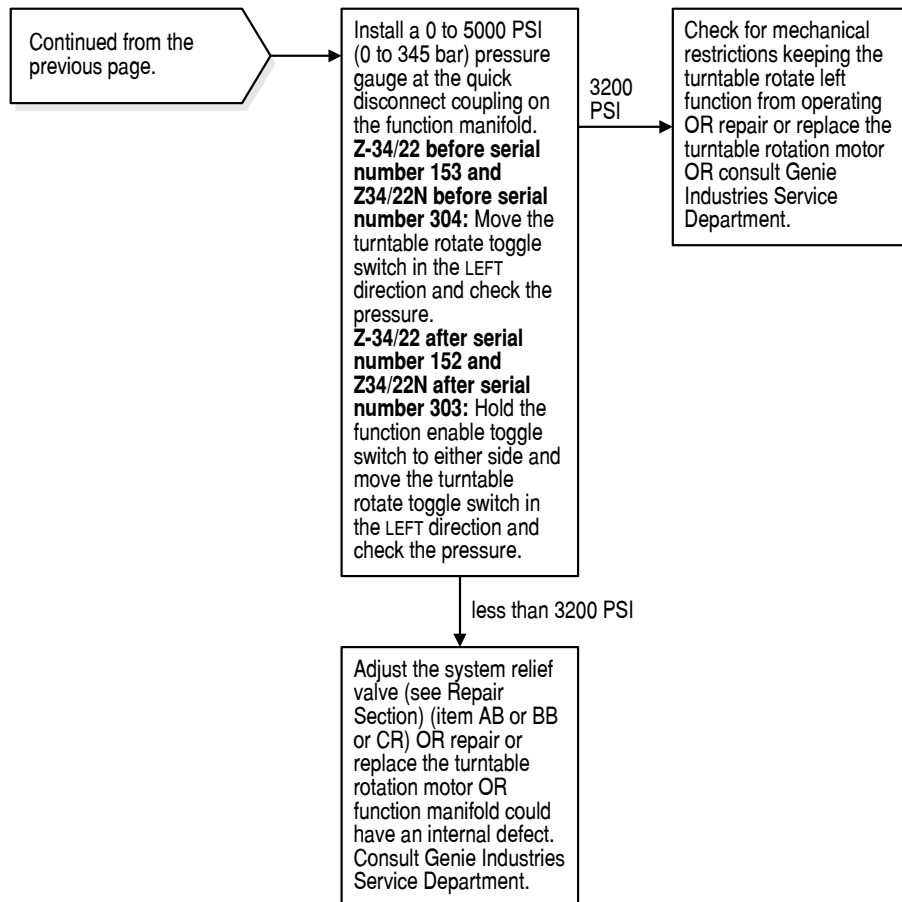


Chart 16

Turntable Rotate Right Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

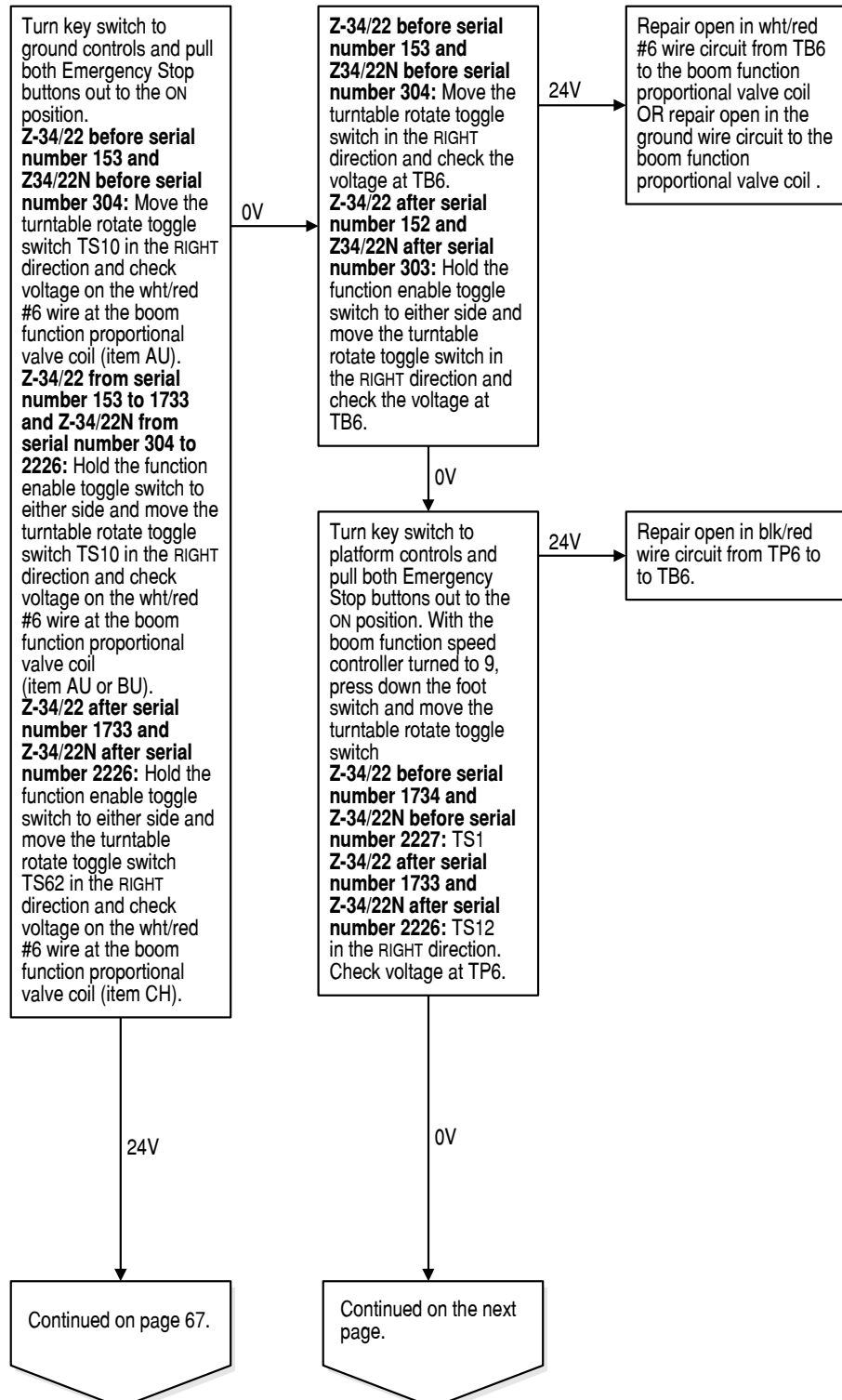


CHART 16

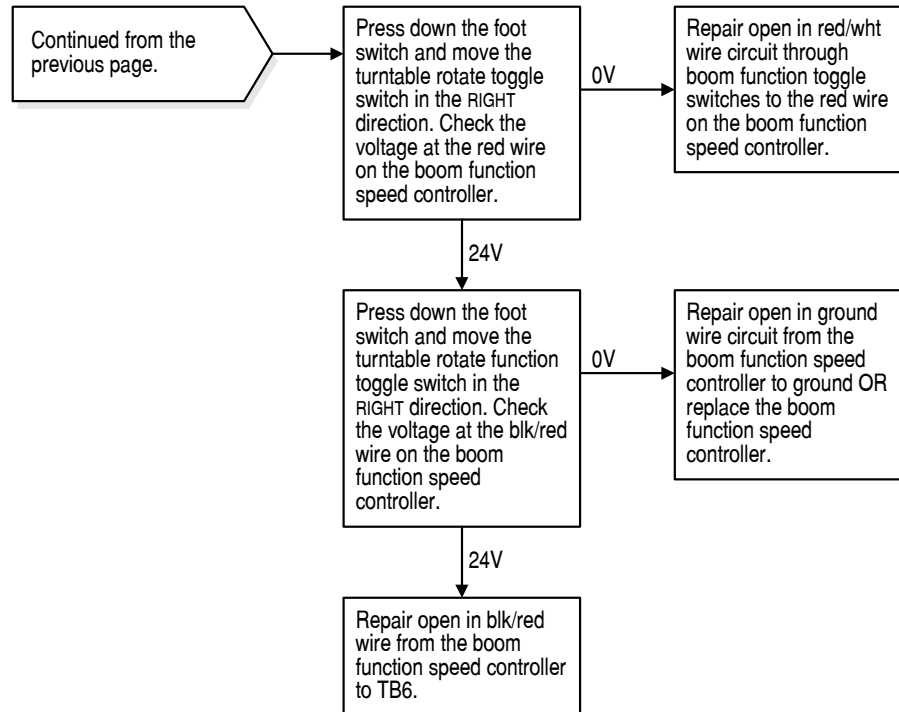


CHART 16

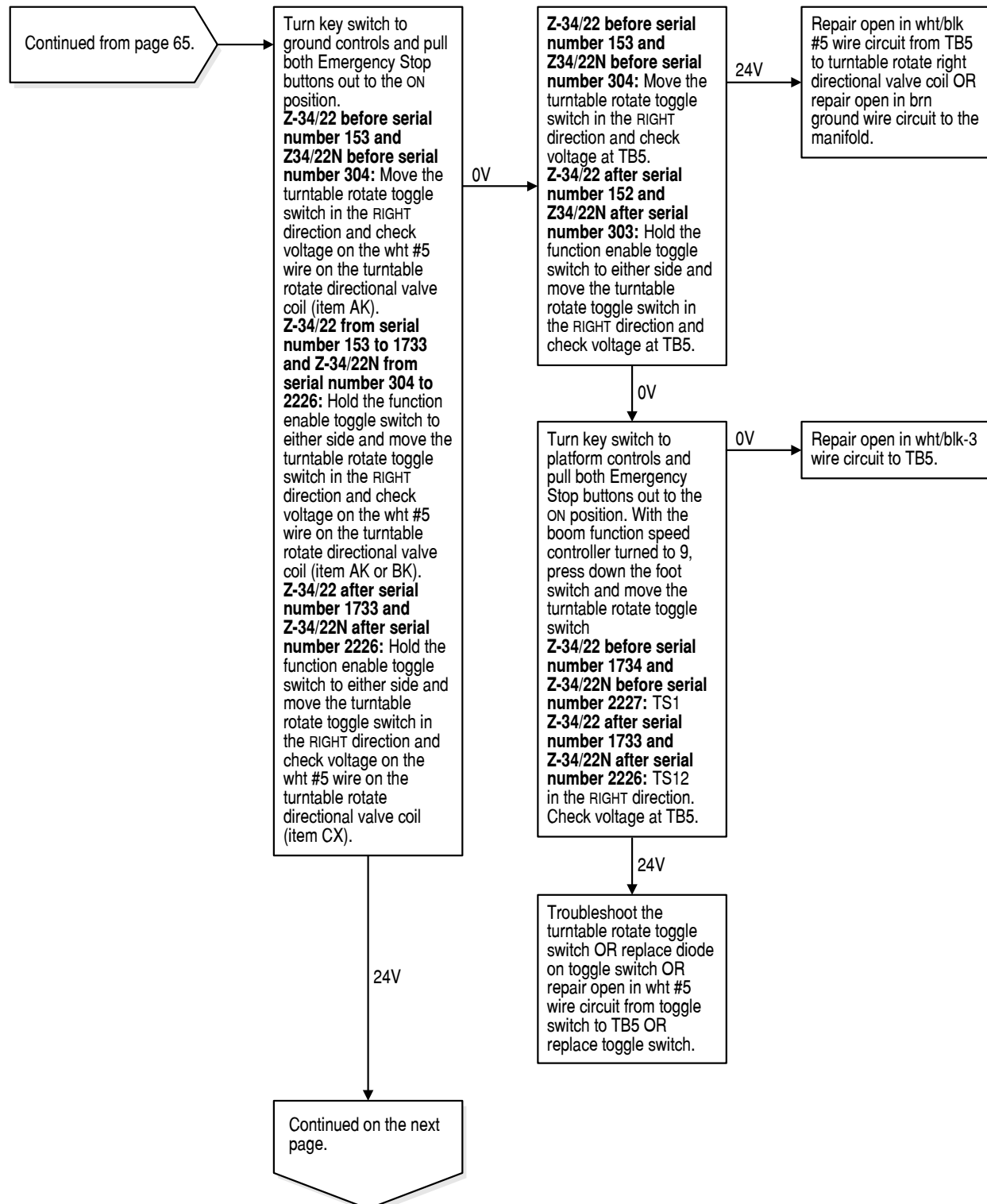


CHART 16

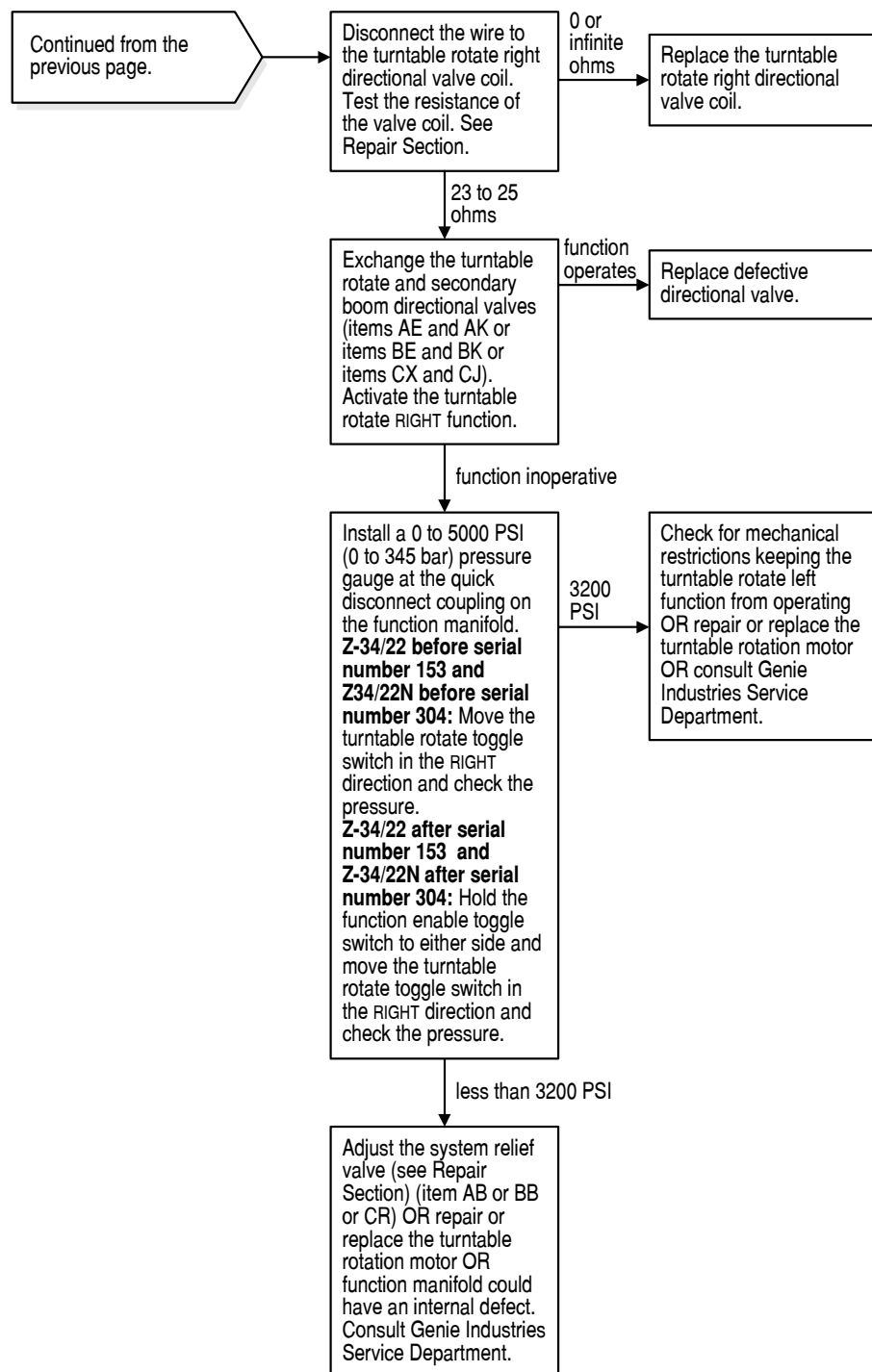


Chart 17

All Platform Level Functions Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

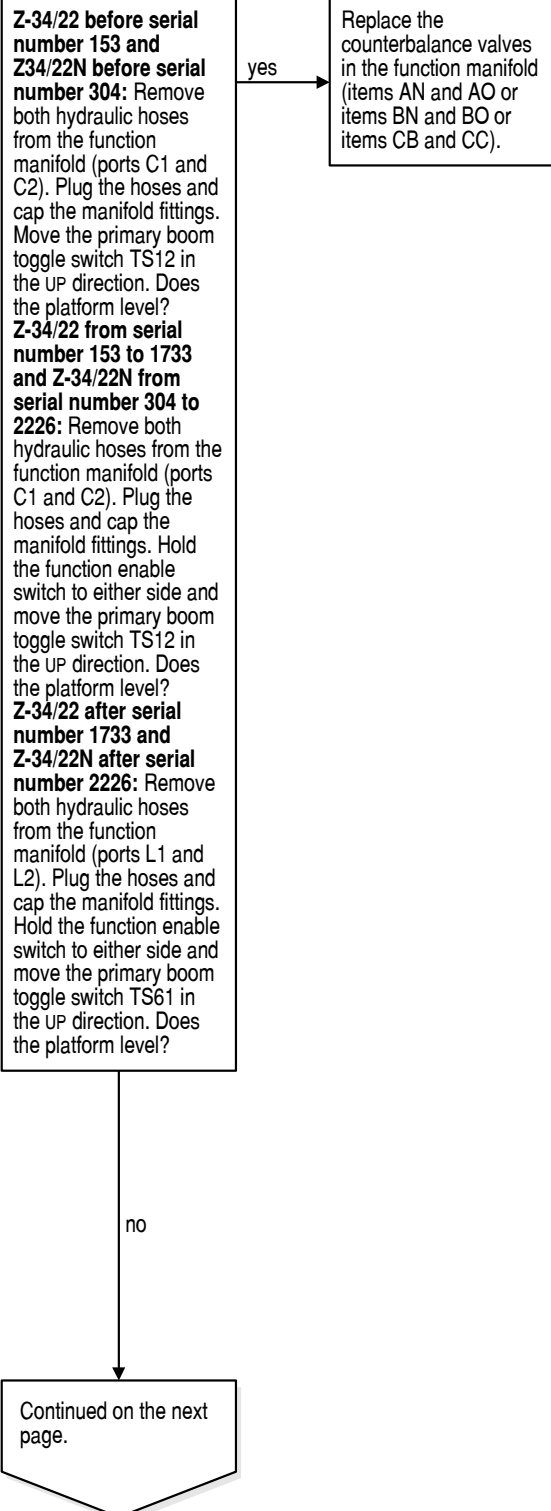


CHART 17

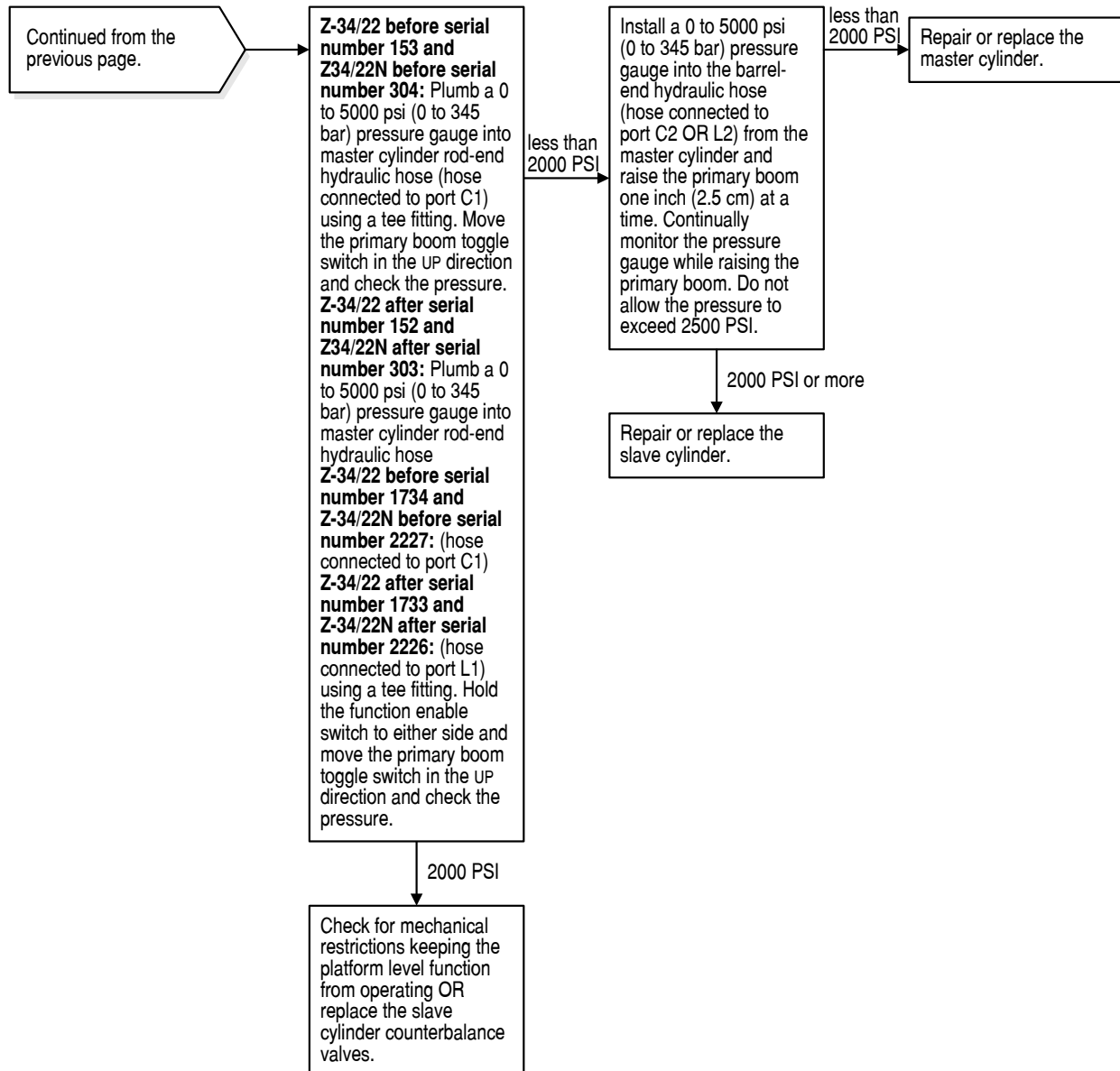


Chart 18

Platform Level Up Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

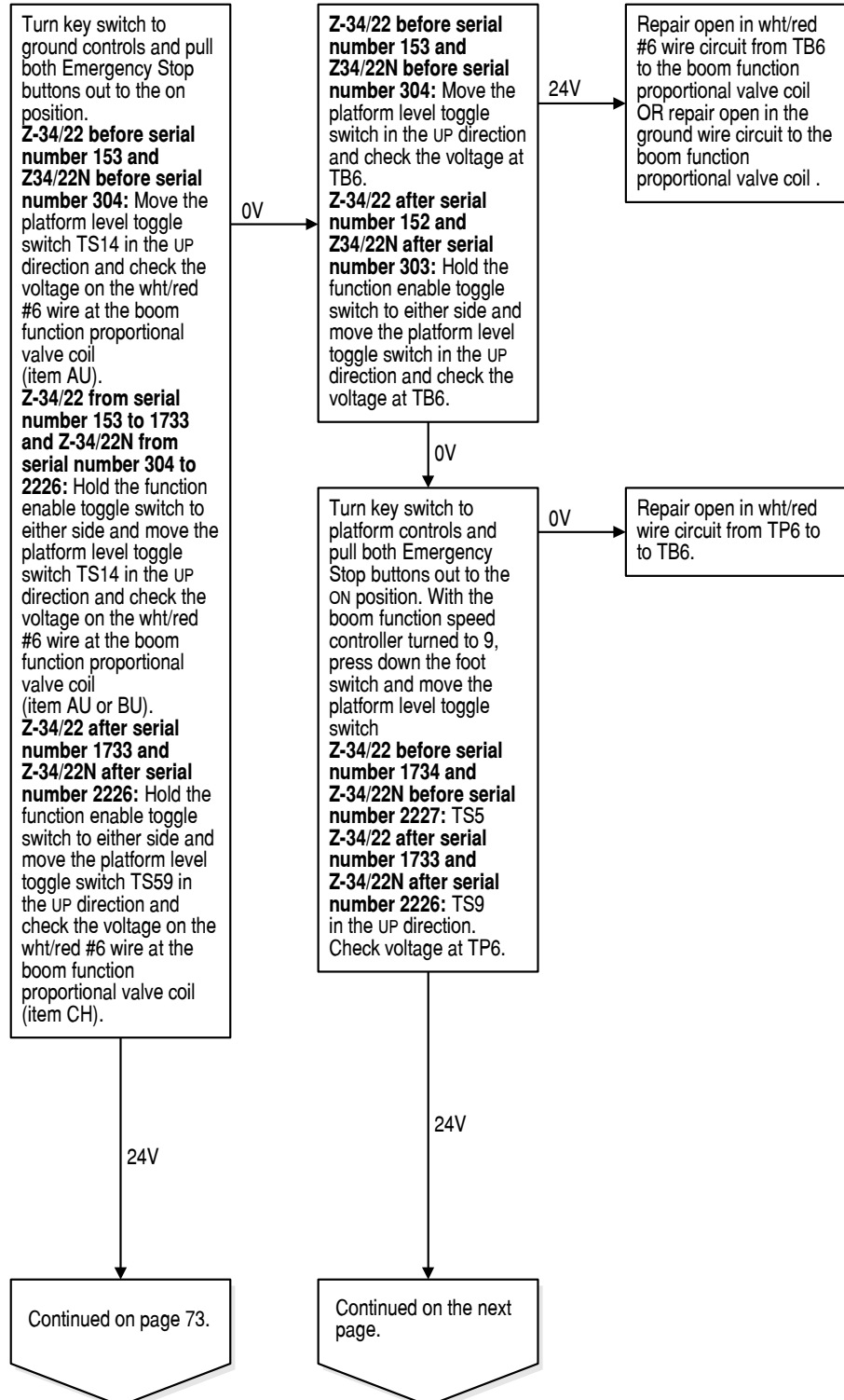


CHART 18

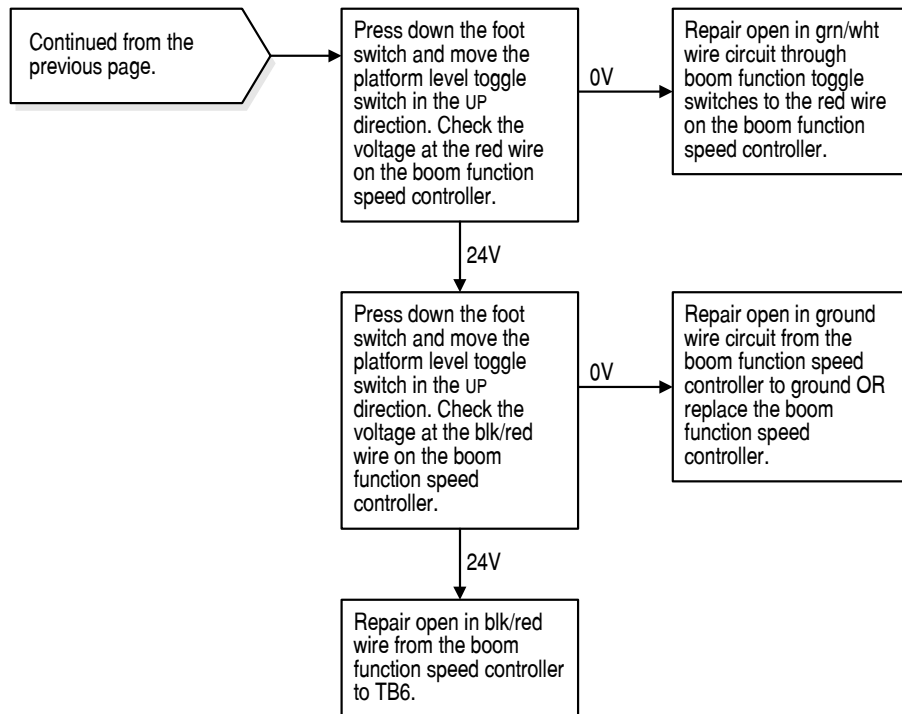


CHART 18

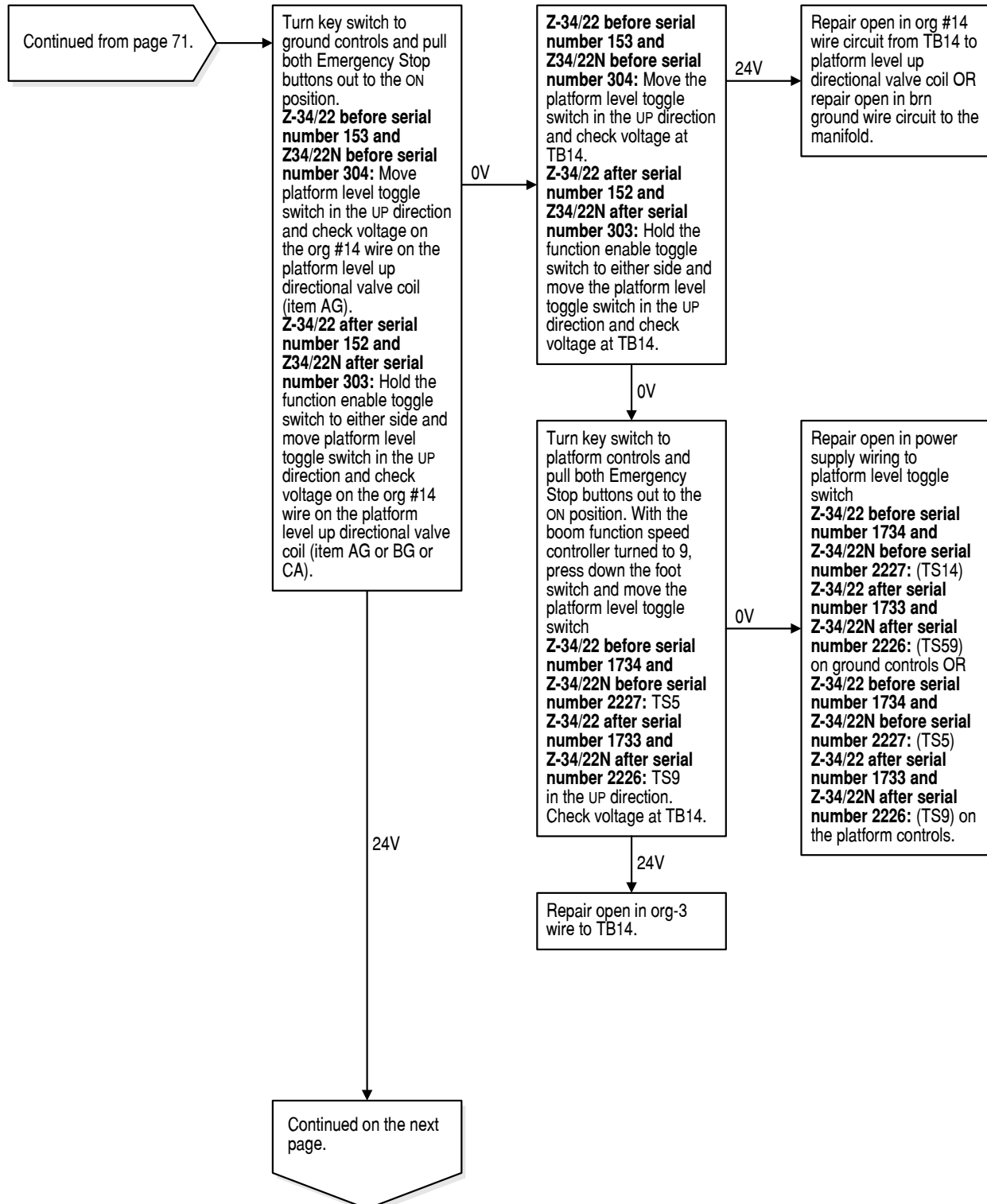


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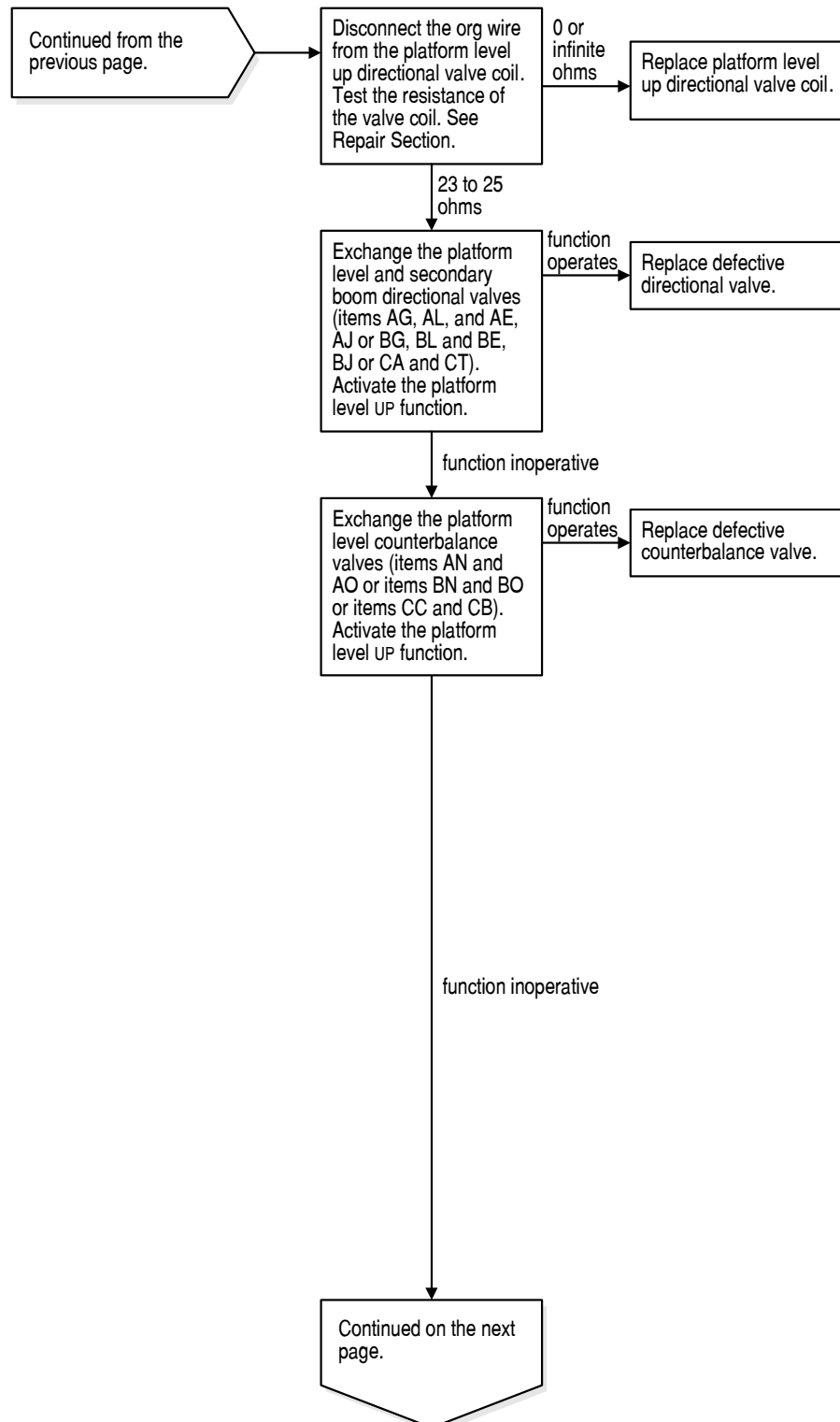


CHART 18

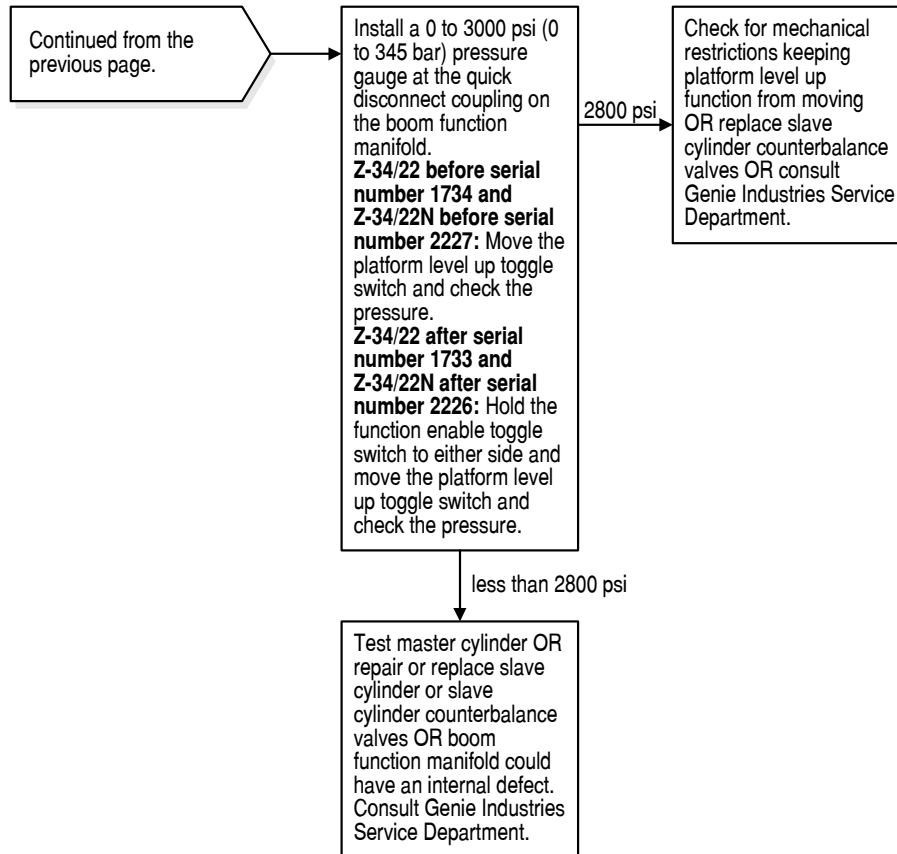


Chart 19

Platform Level Down Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

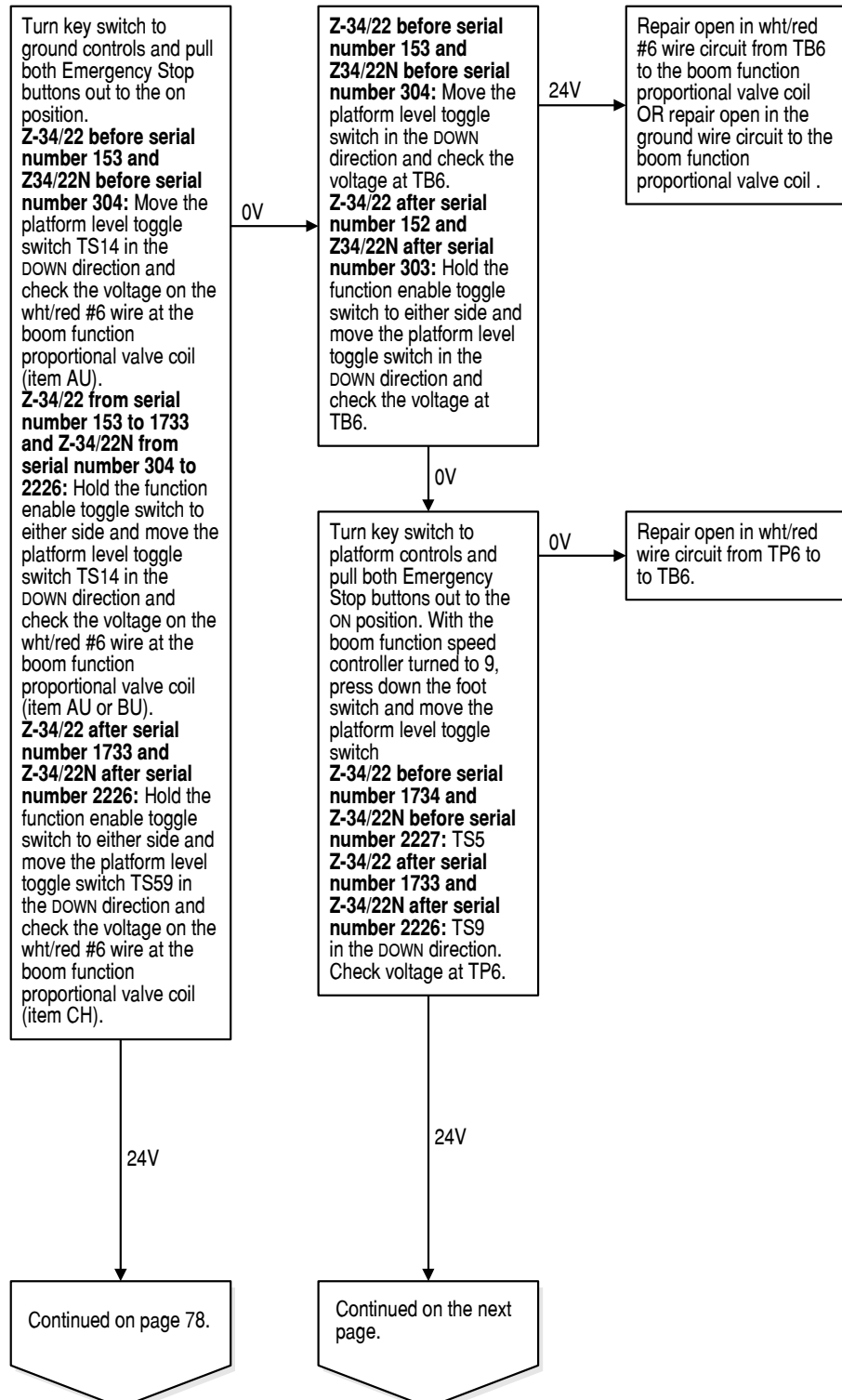


CHART 19

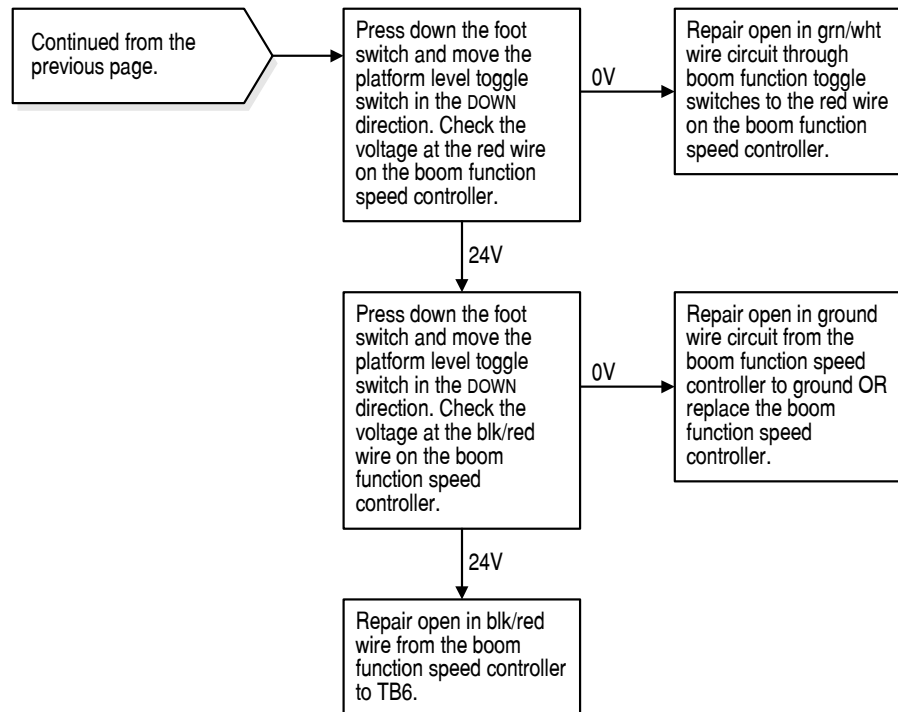


CHART 19

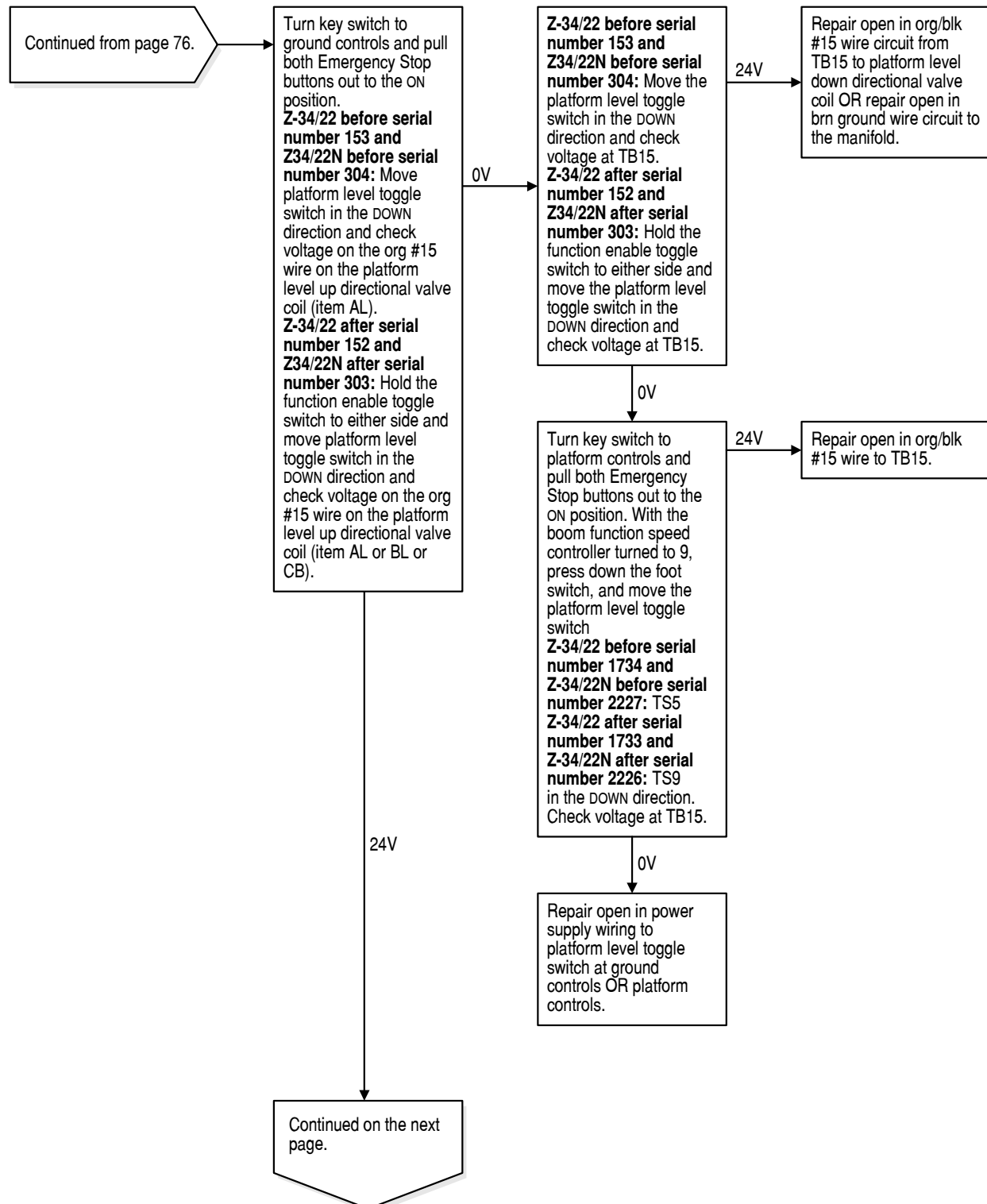


CHART 19

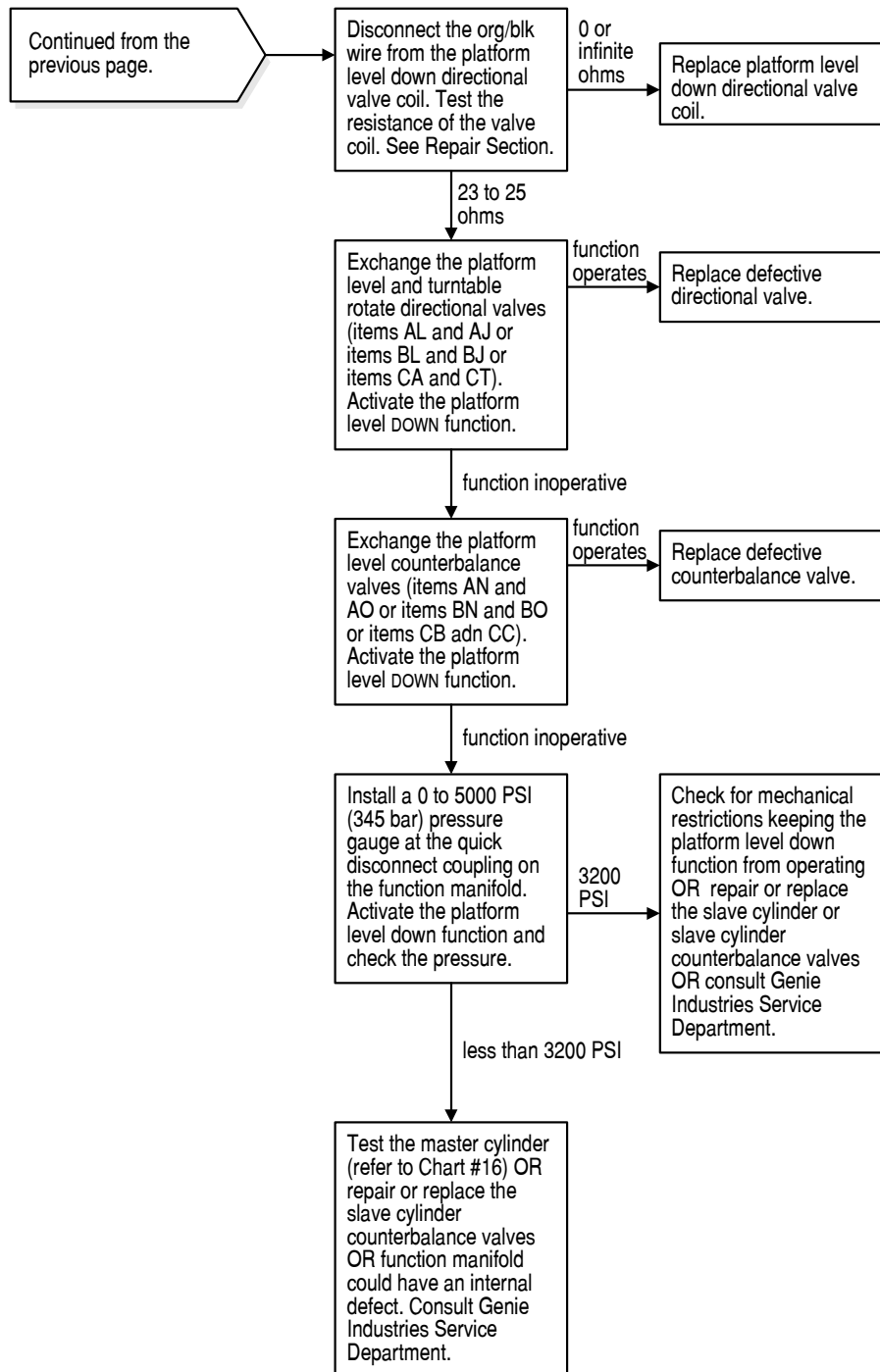


Chart 20

Platform Rotate Left Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

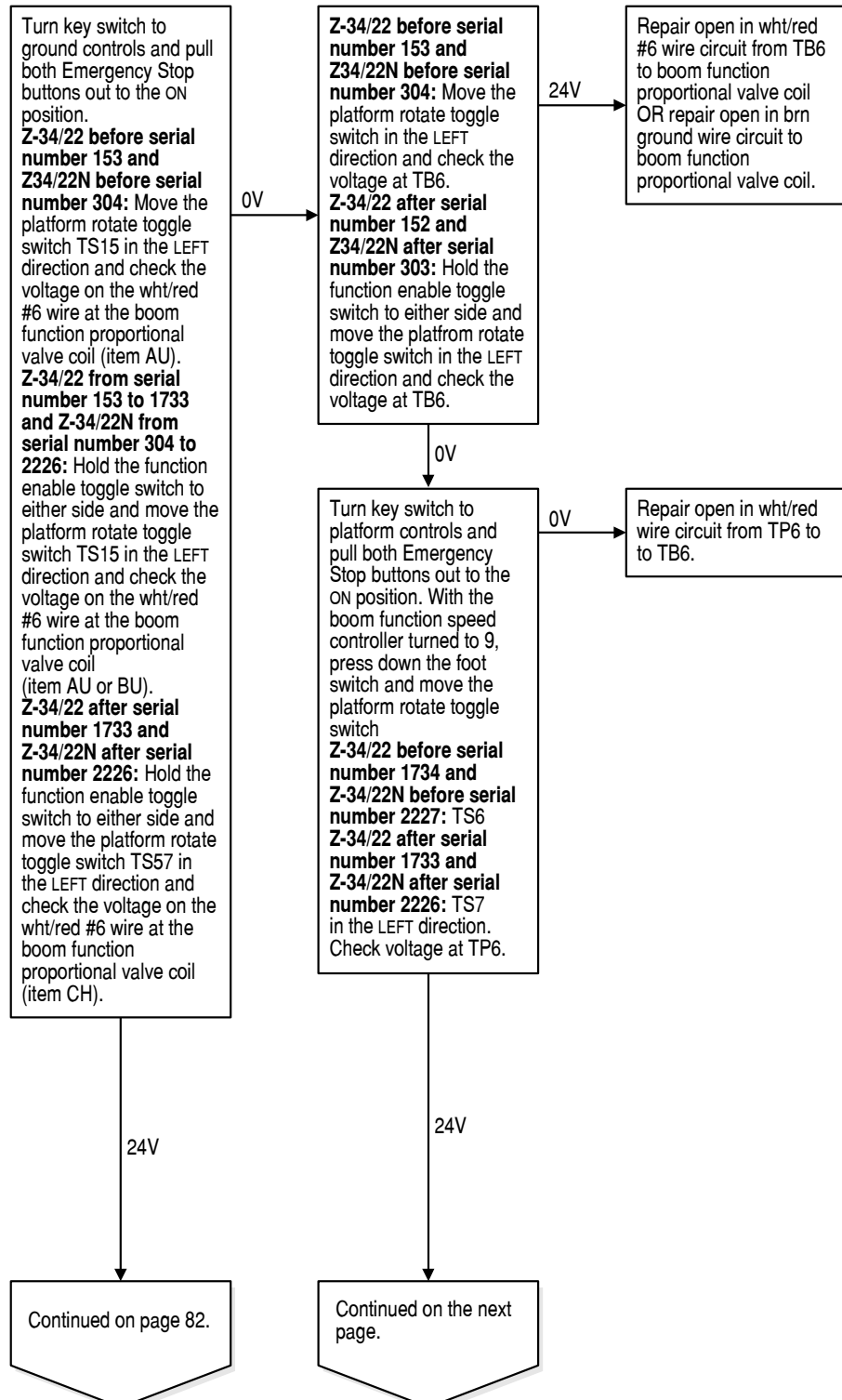


CHART 20

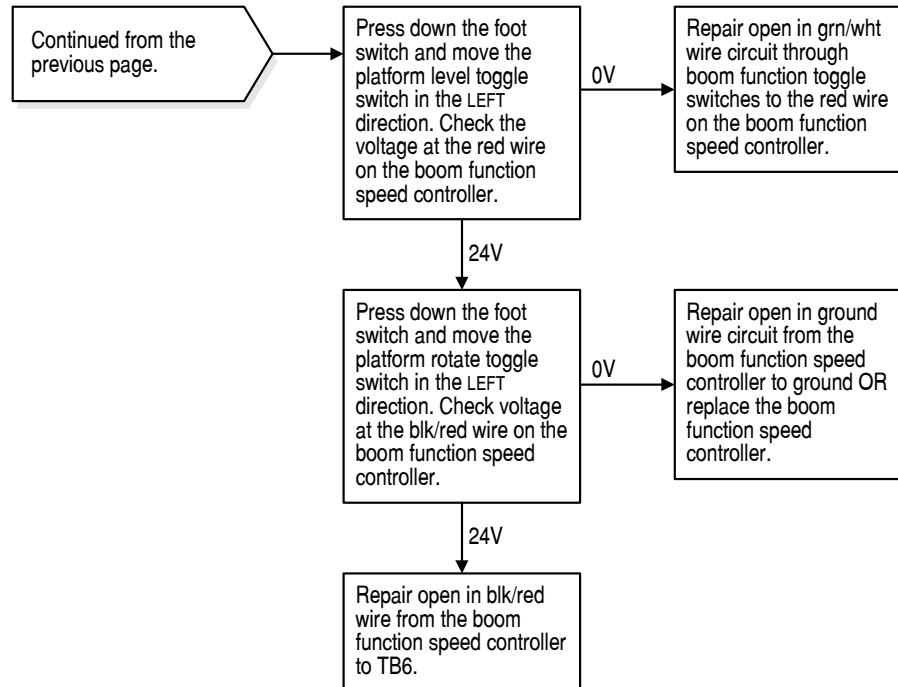


CHART 20

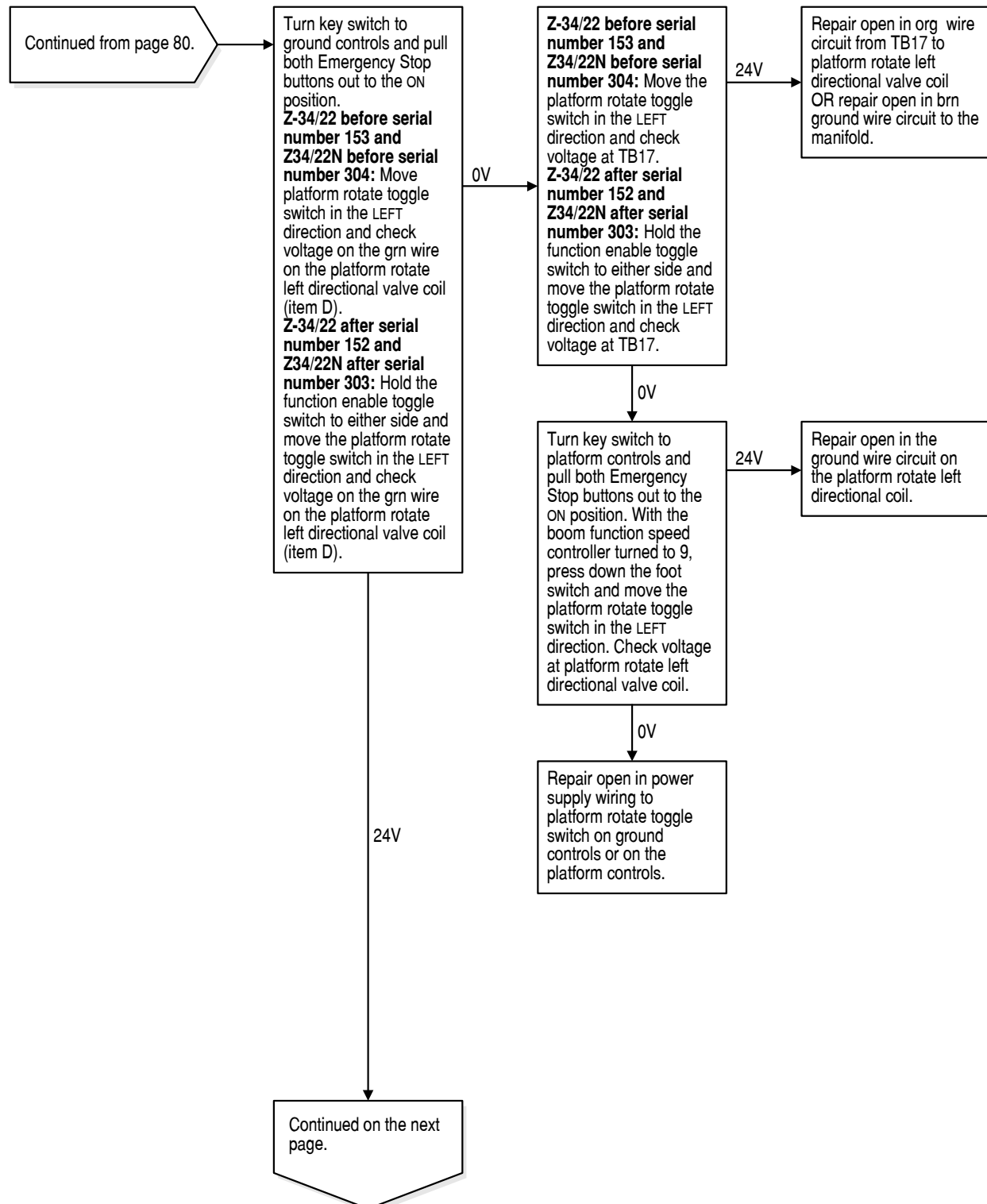


CHART 20

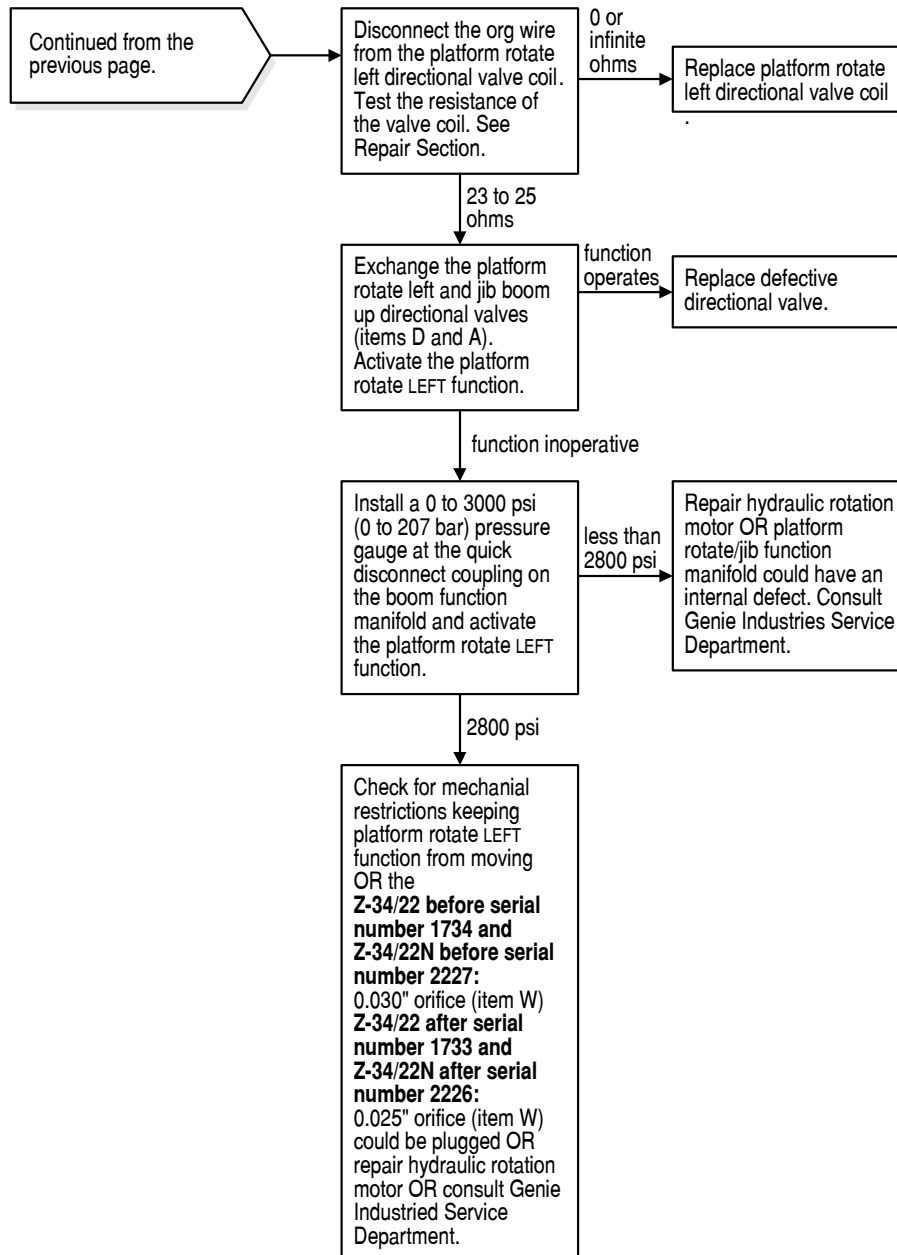


Chart 21

Platform Rotate Right Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

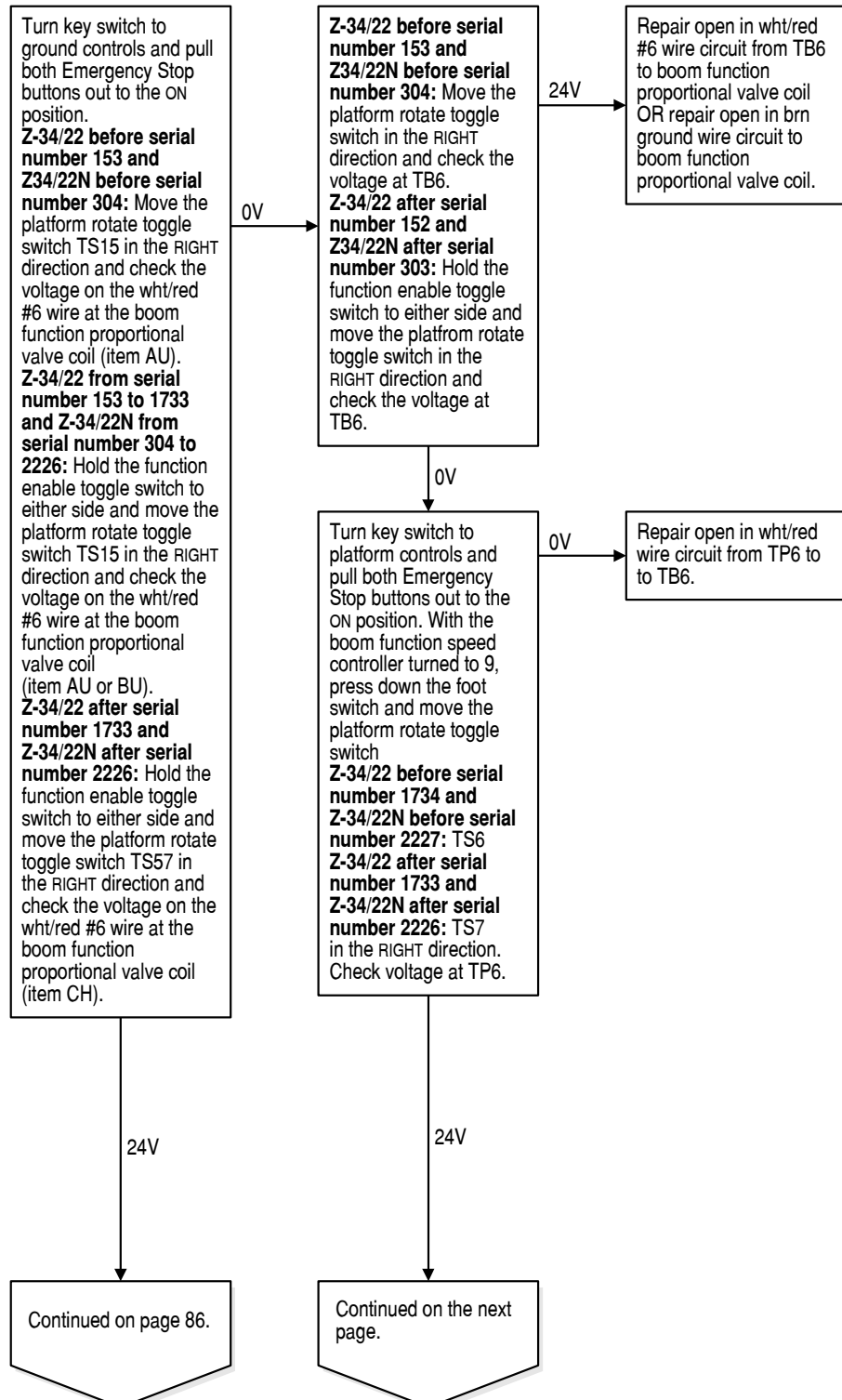


CHART 21

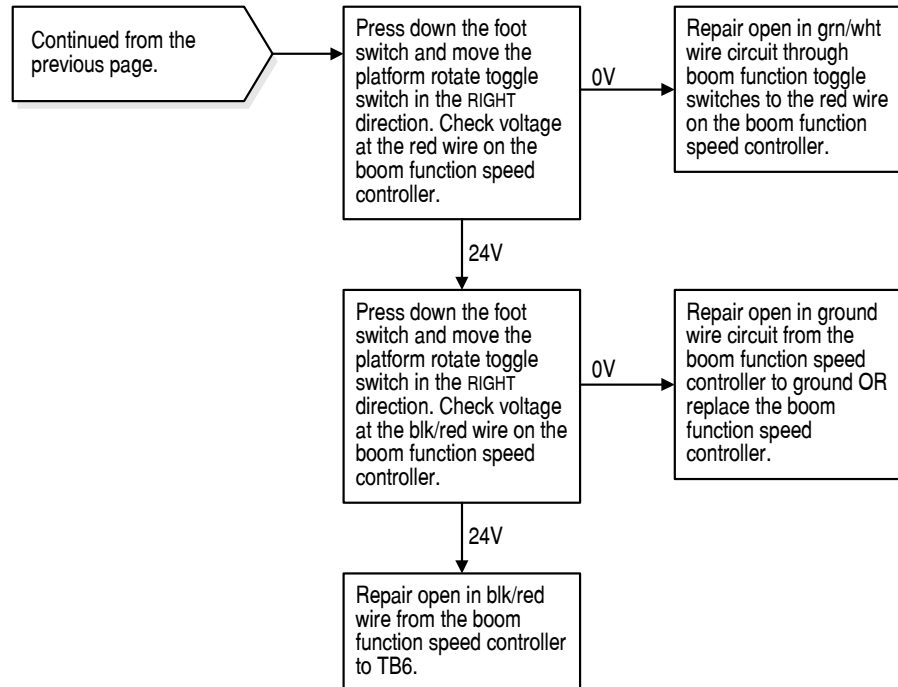


CHART 21

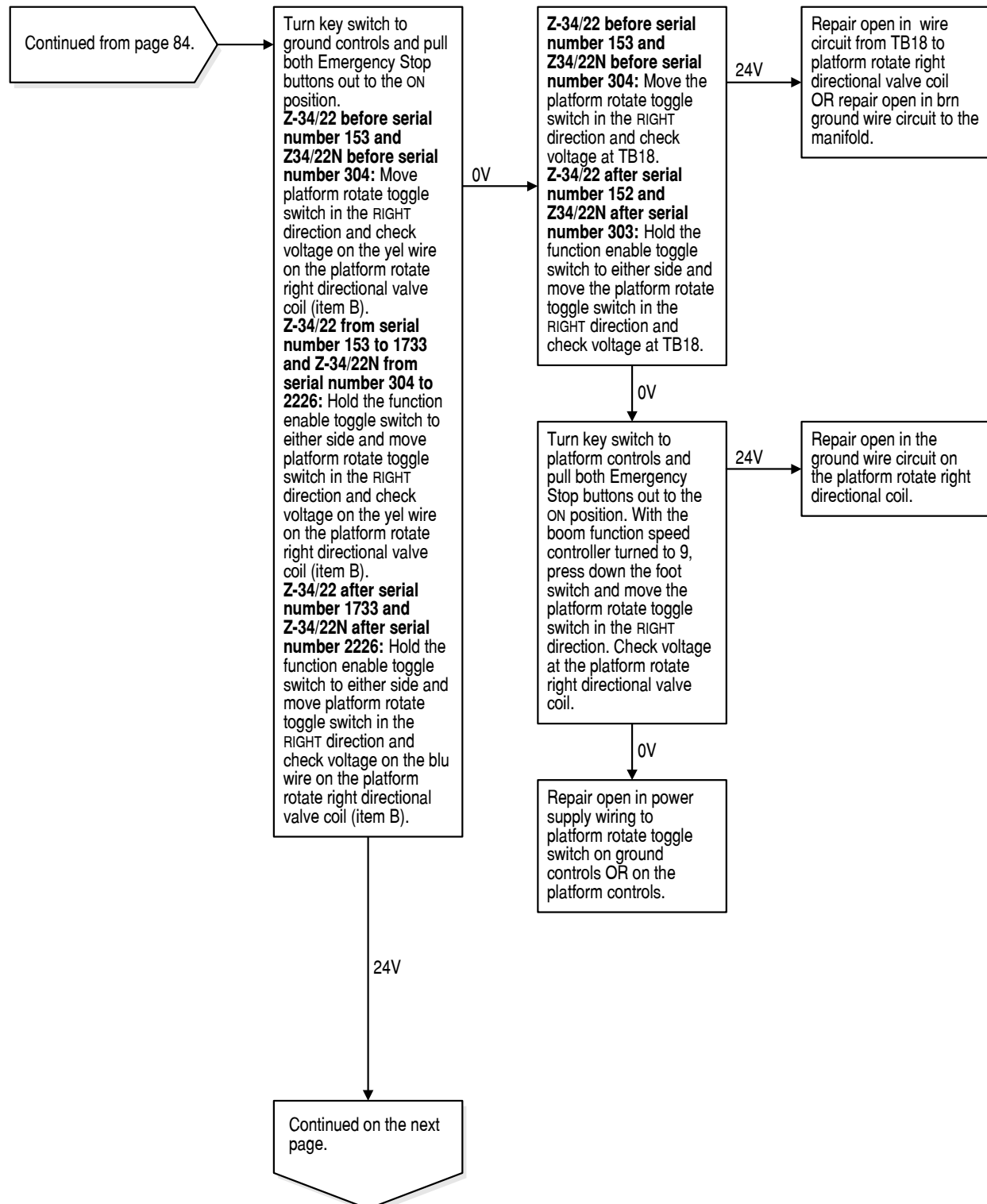


CHART 21

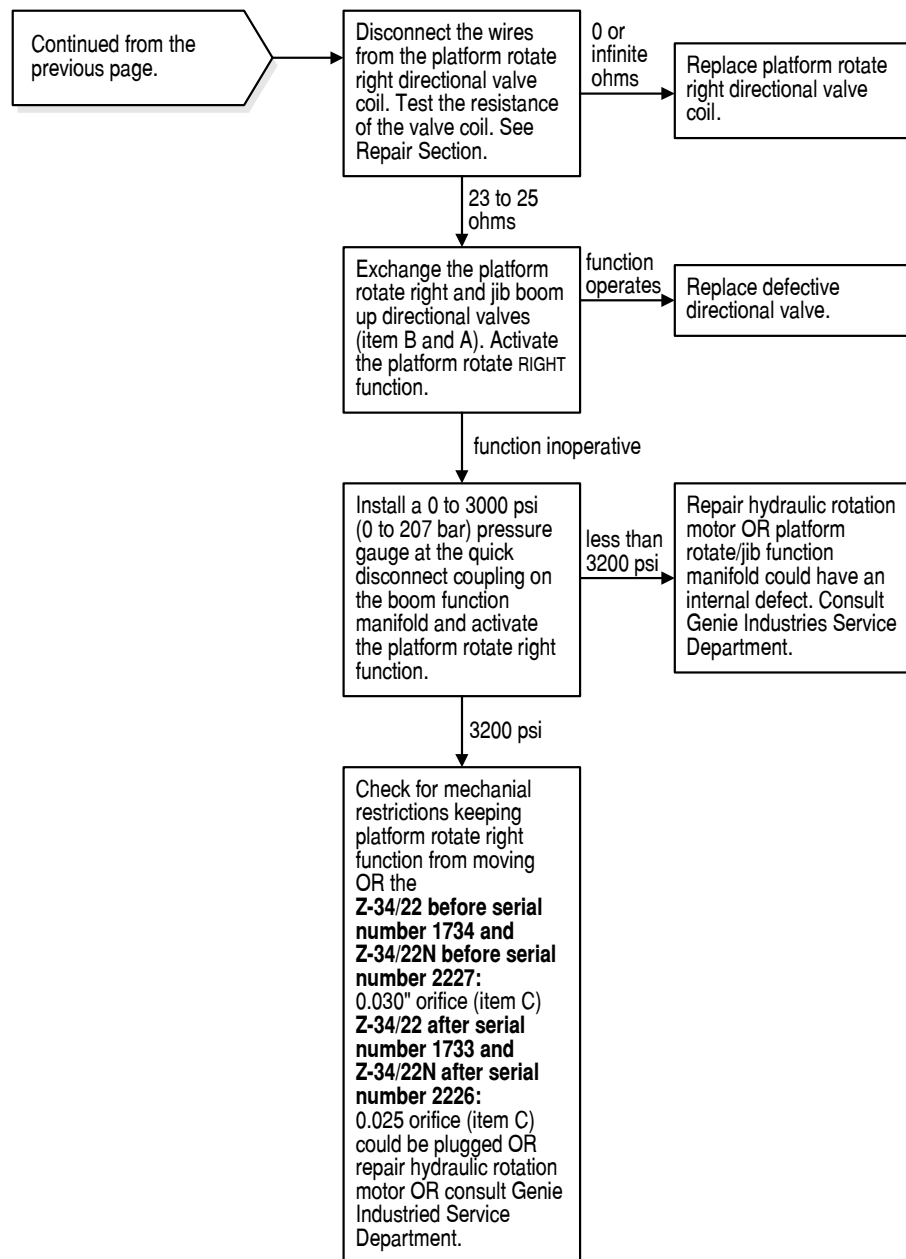


Chart 22

Jib Boom Up Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

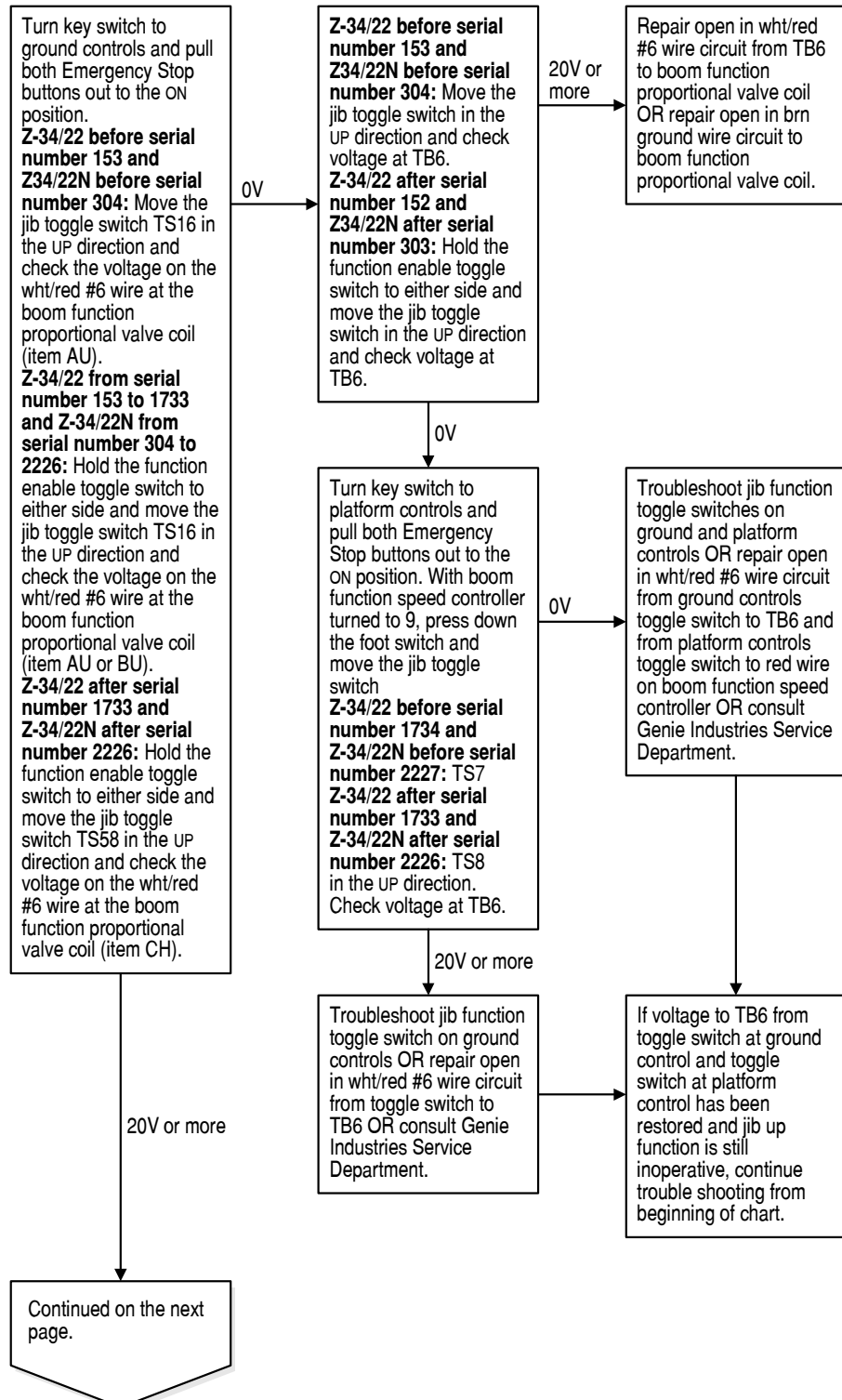


CHART 22

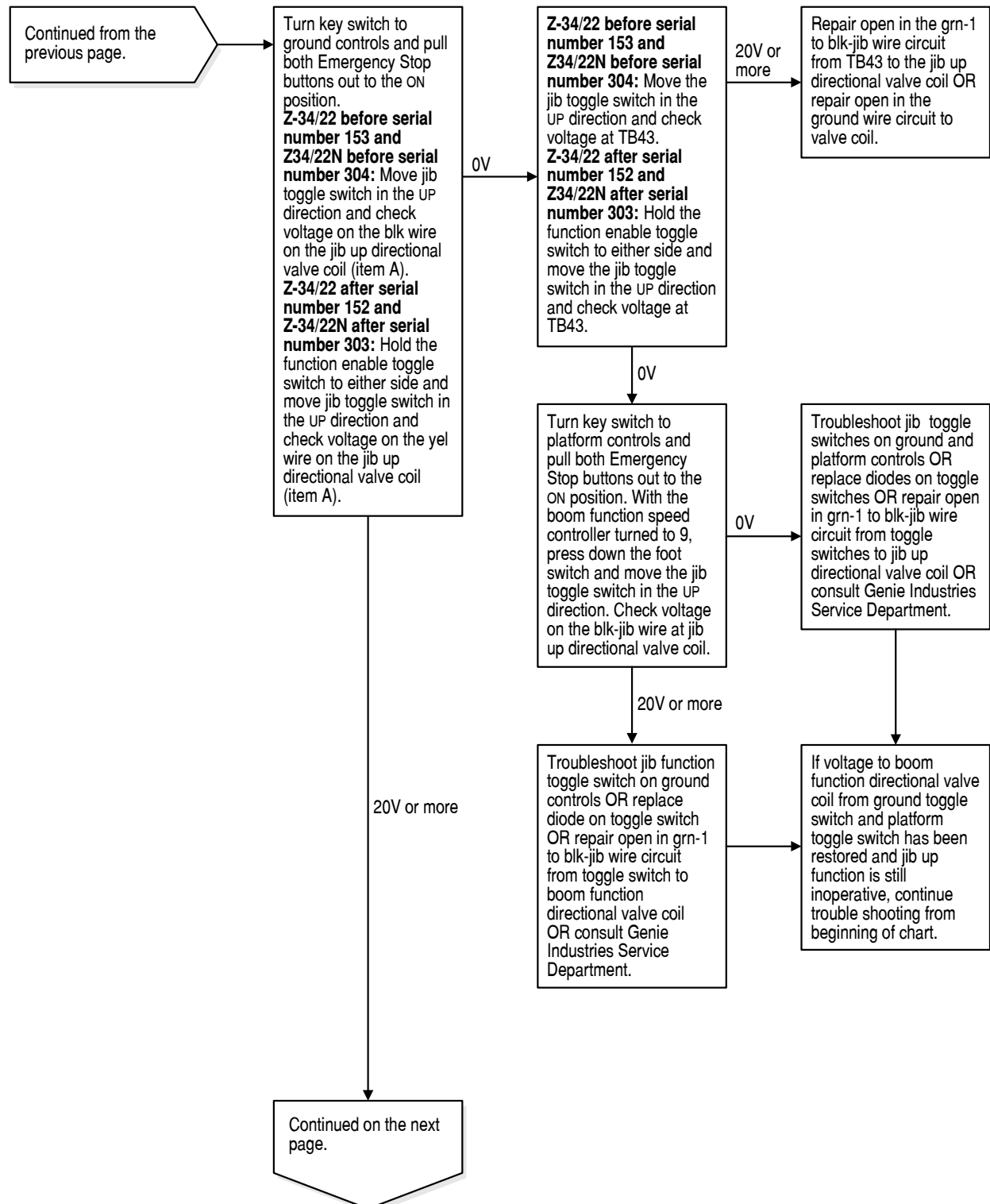


CHART 22

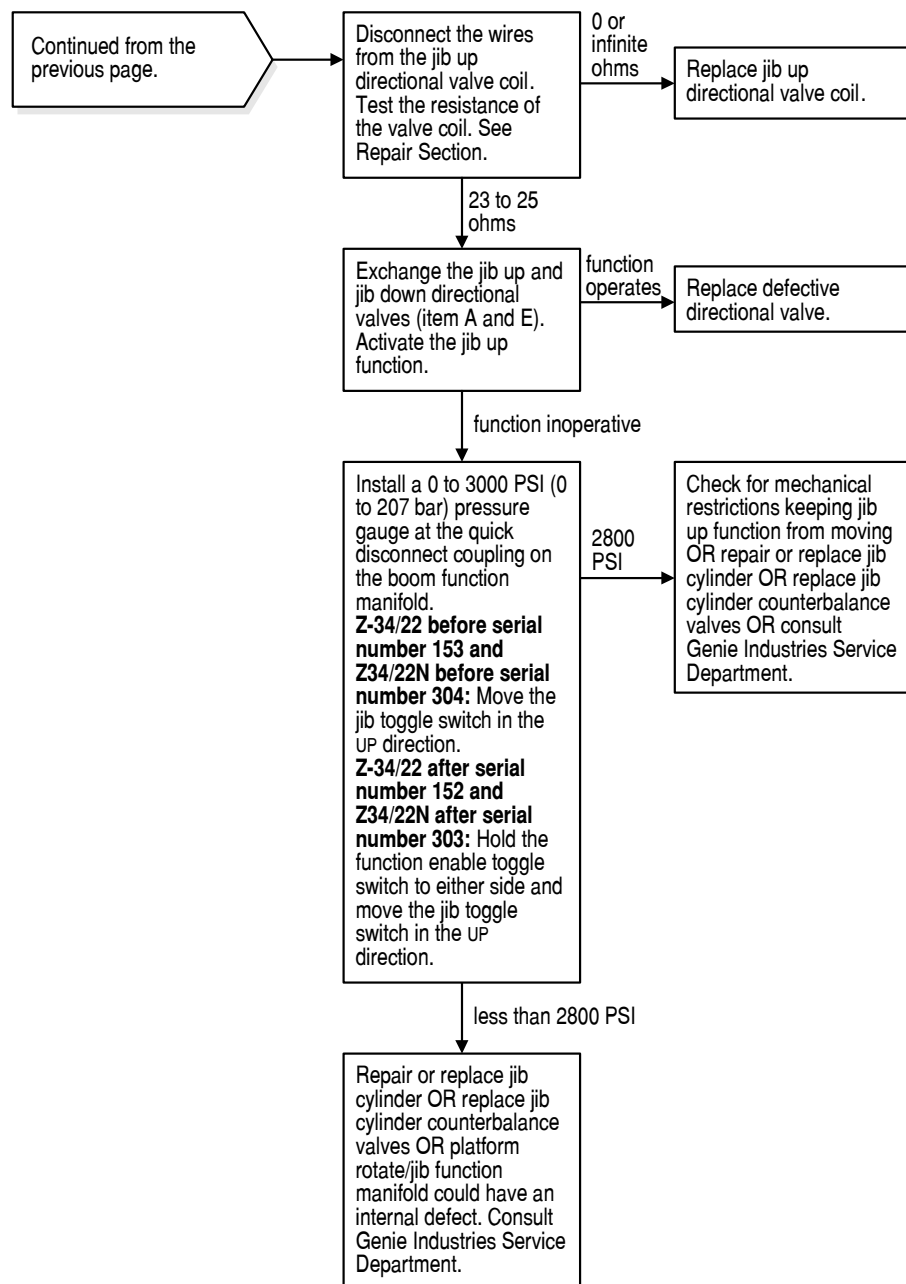


Chart 23

Jib Boom Down Function Inoperative

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

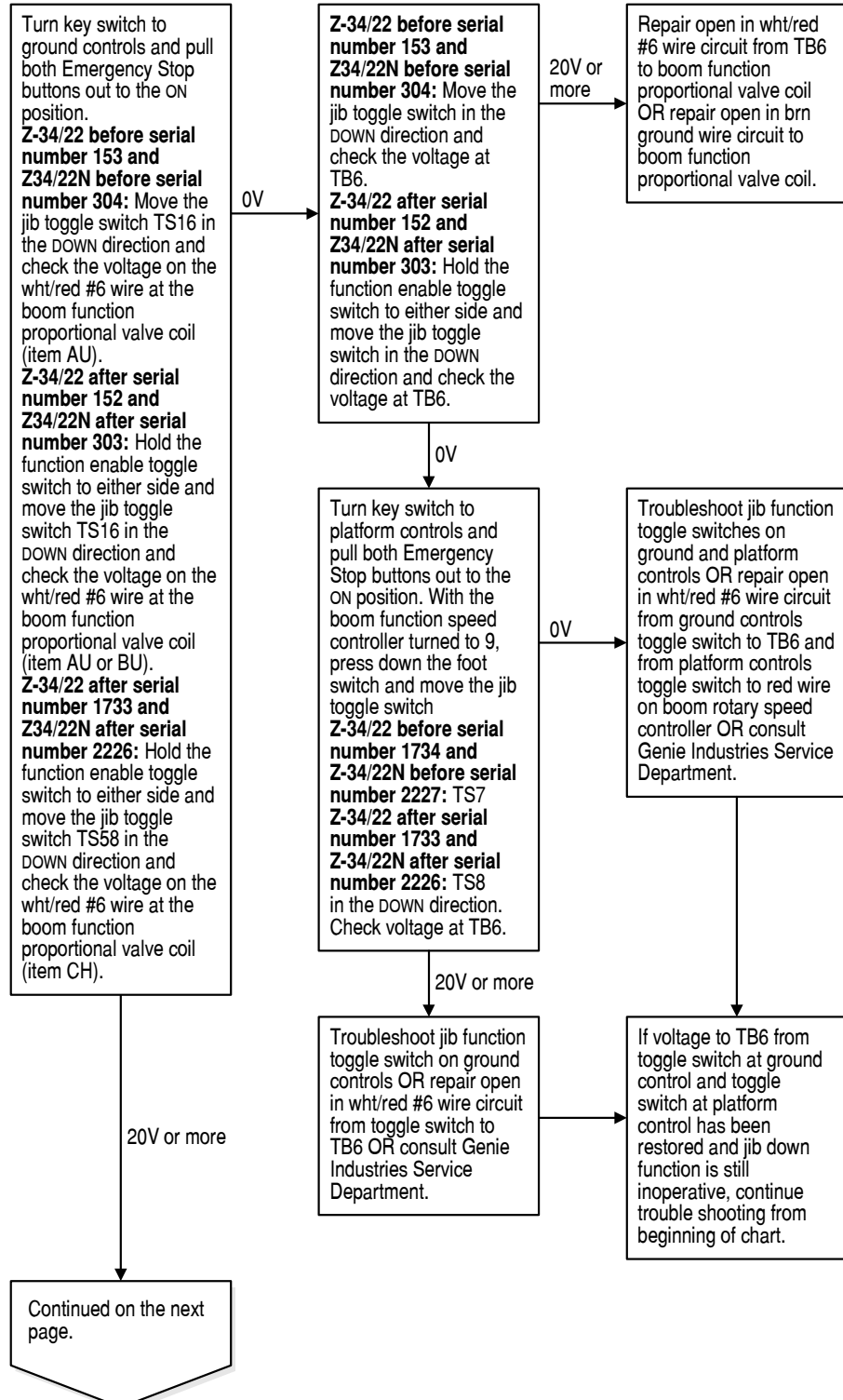


CHART 23

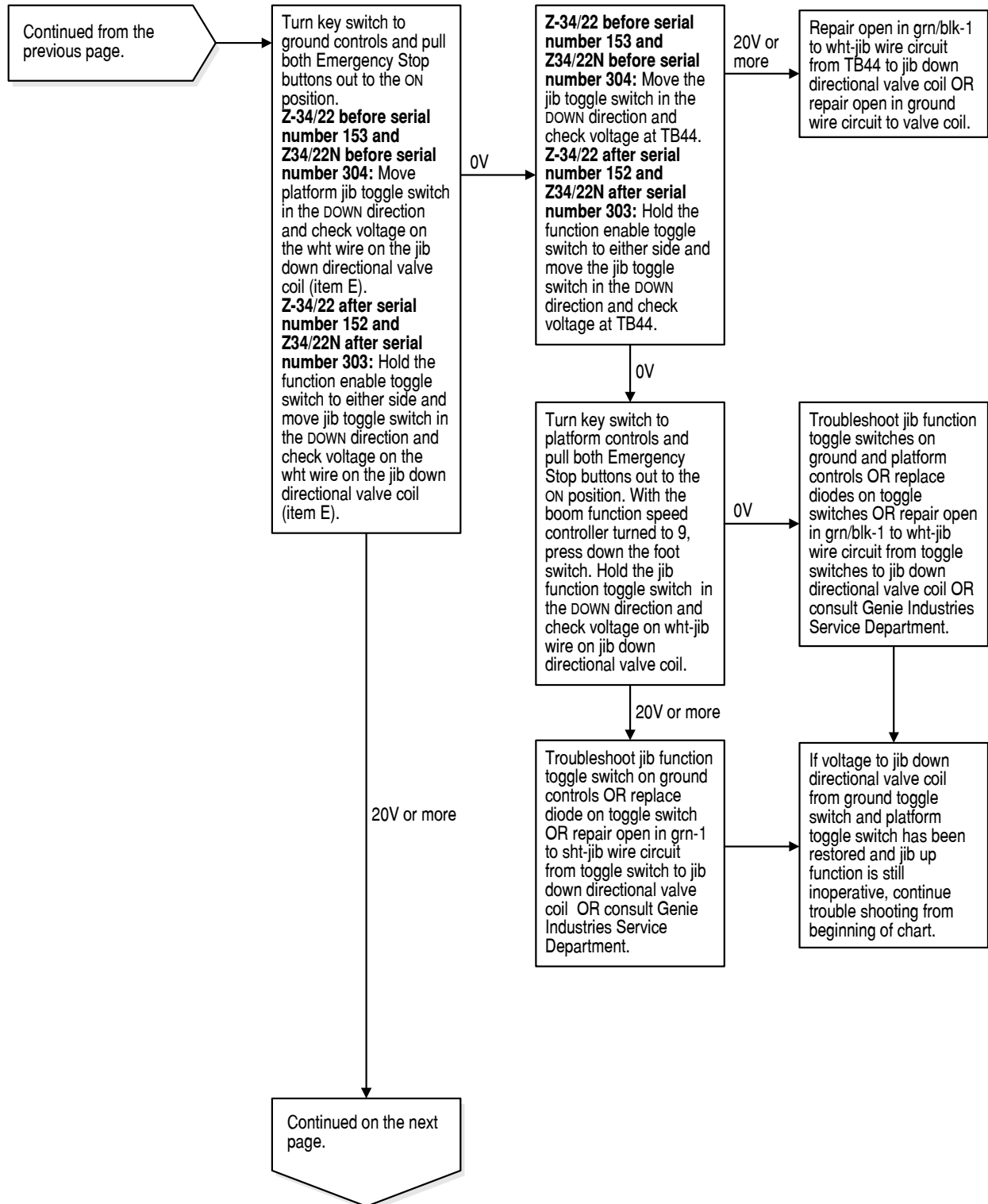


CHART 23

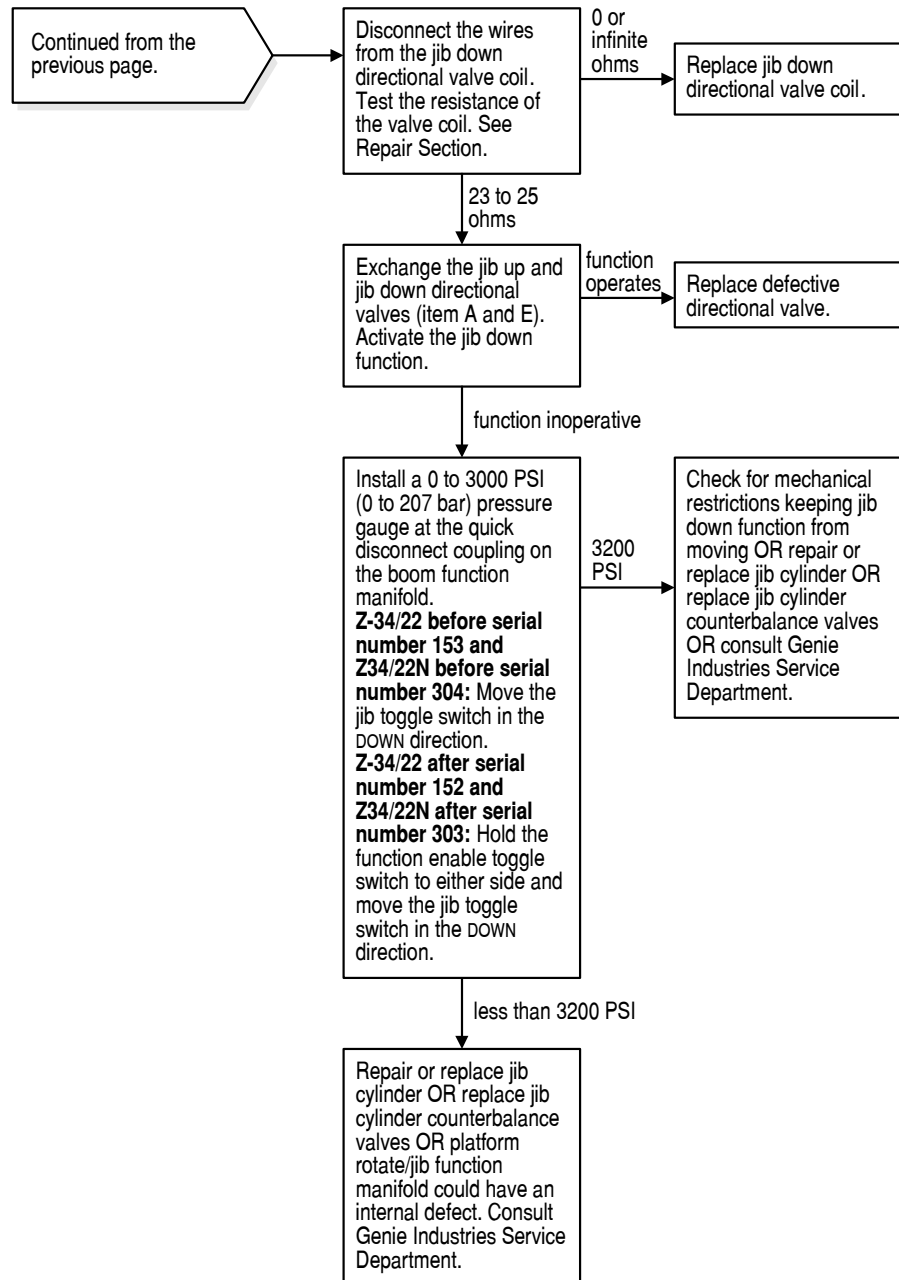


Chart 24

Steer Left Function Inoperative

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

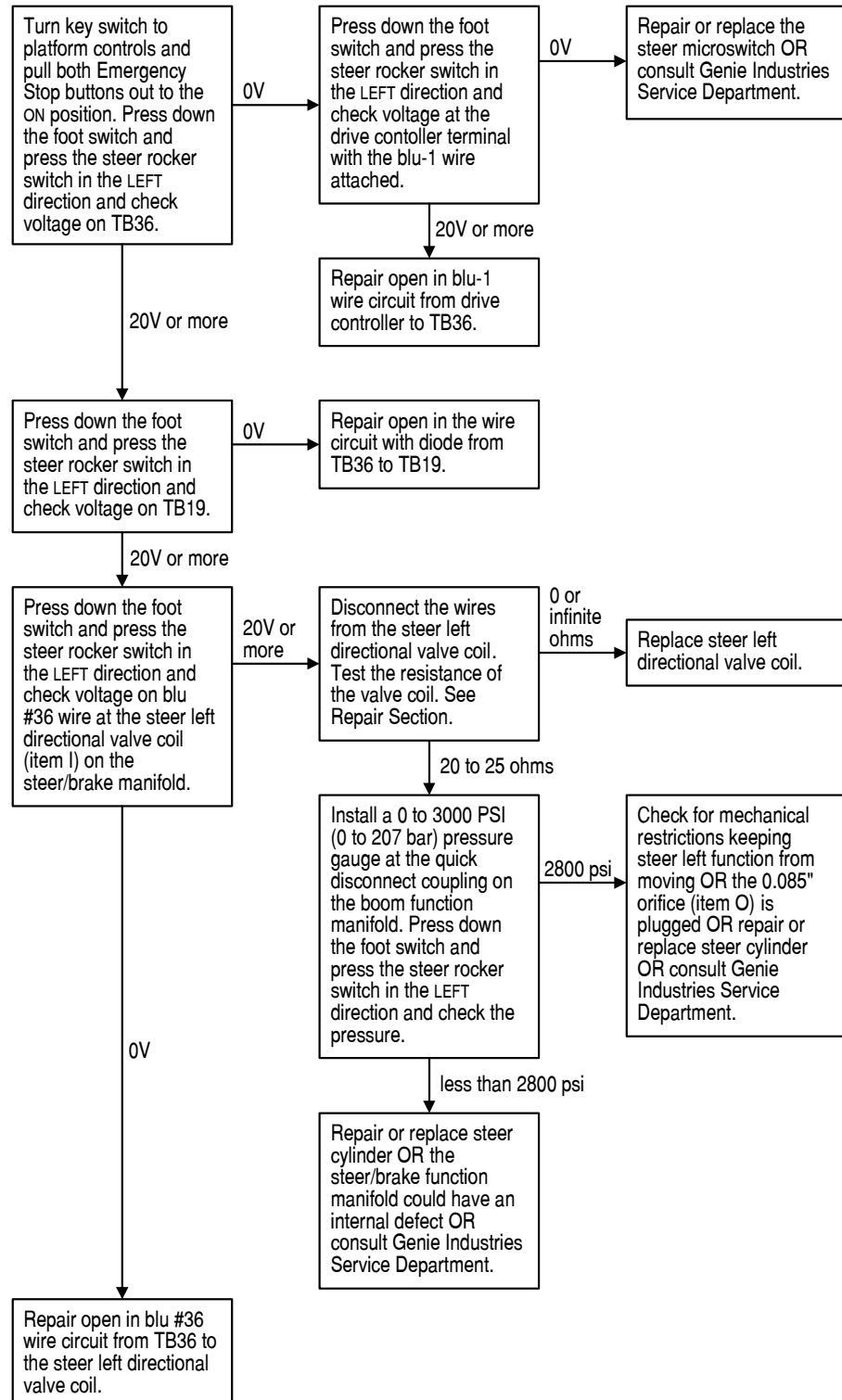


Chart 25

Steer Left Function Inoperative

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

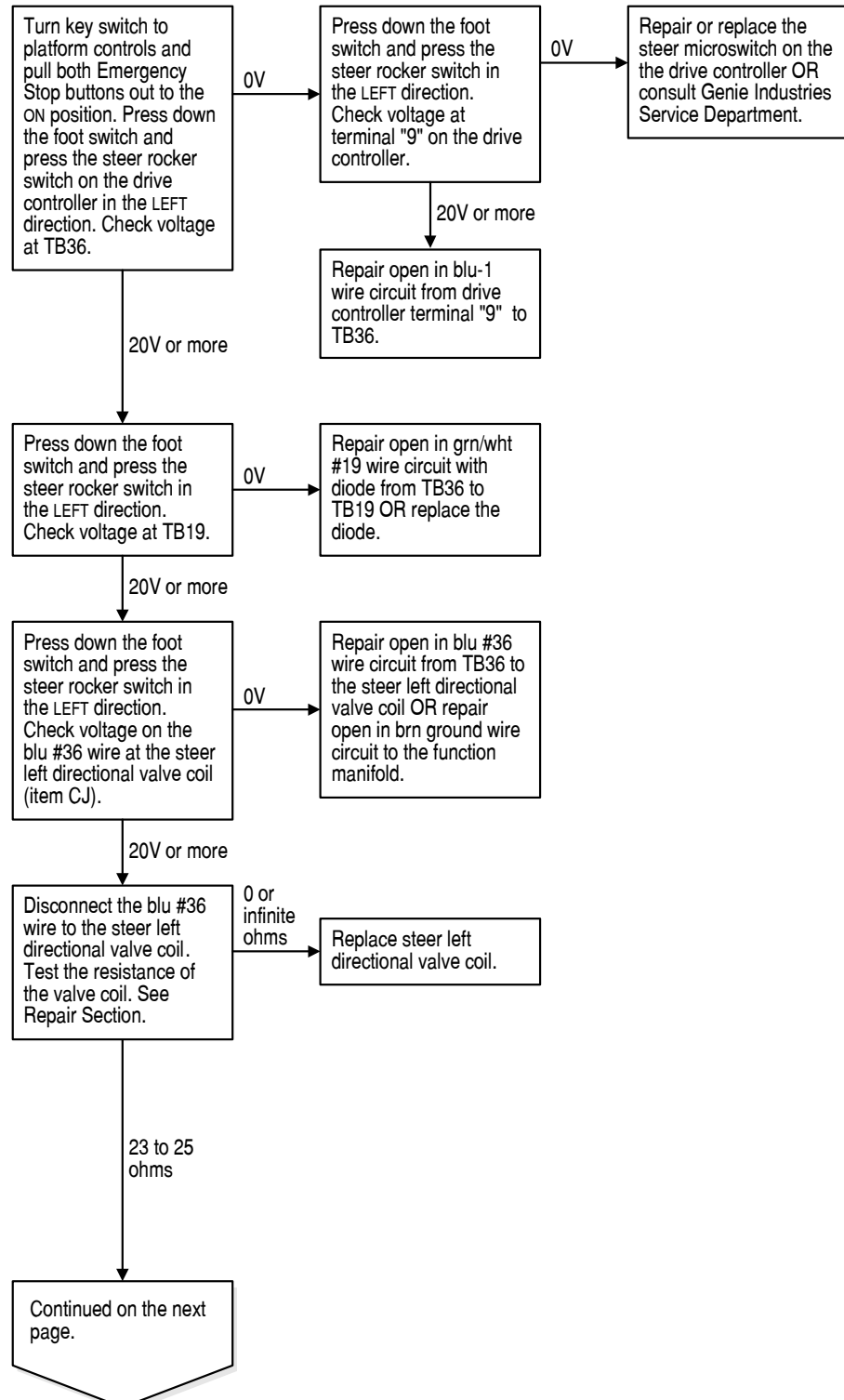


CHART 25

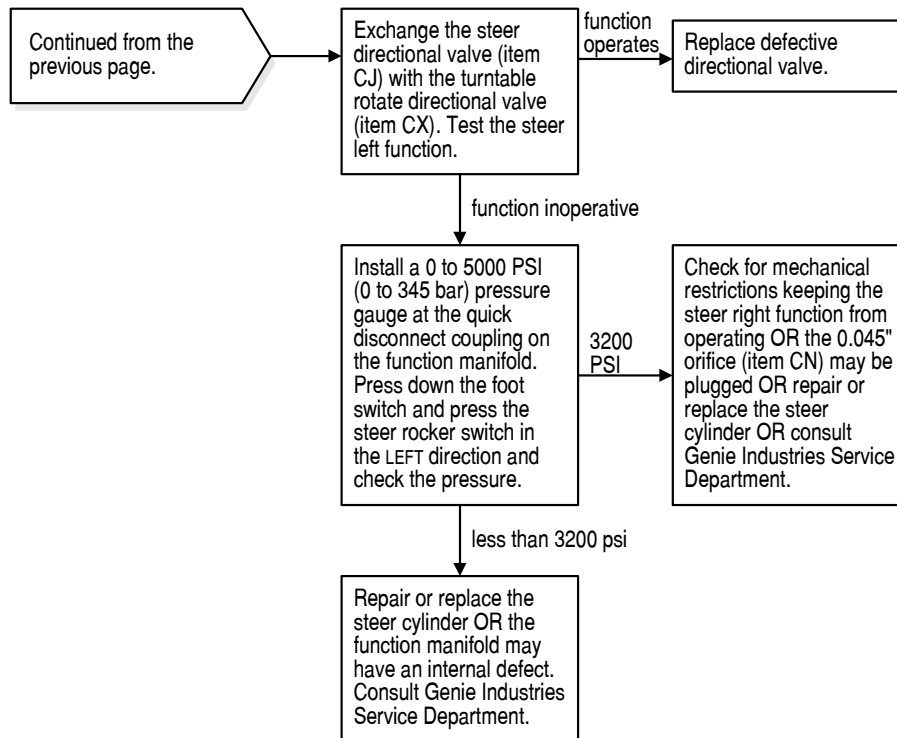


Chart 26

Steer Right Function Inoperative

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

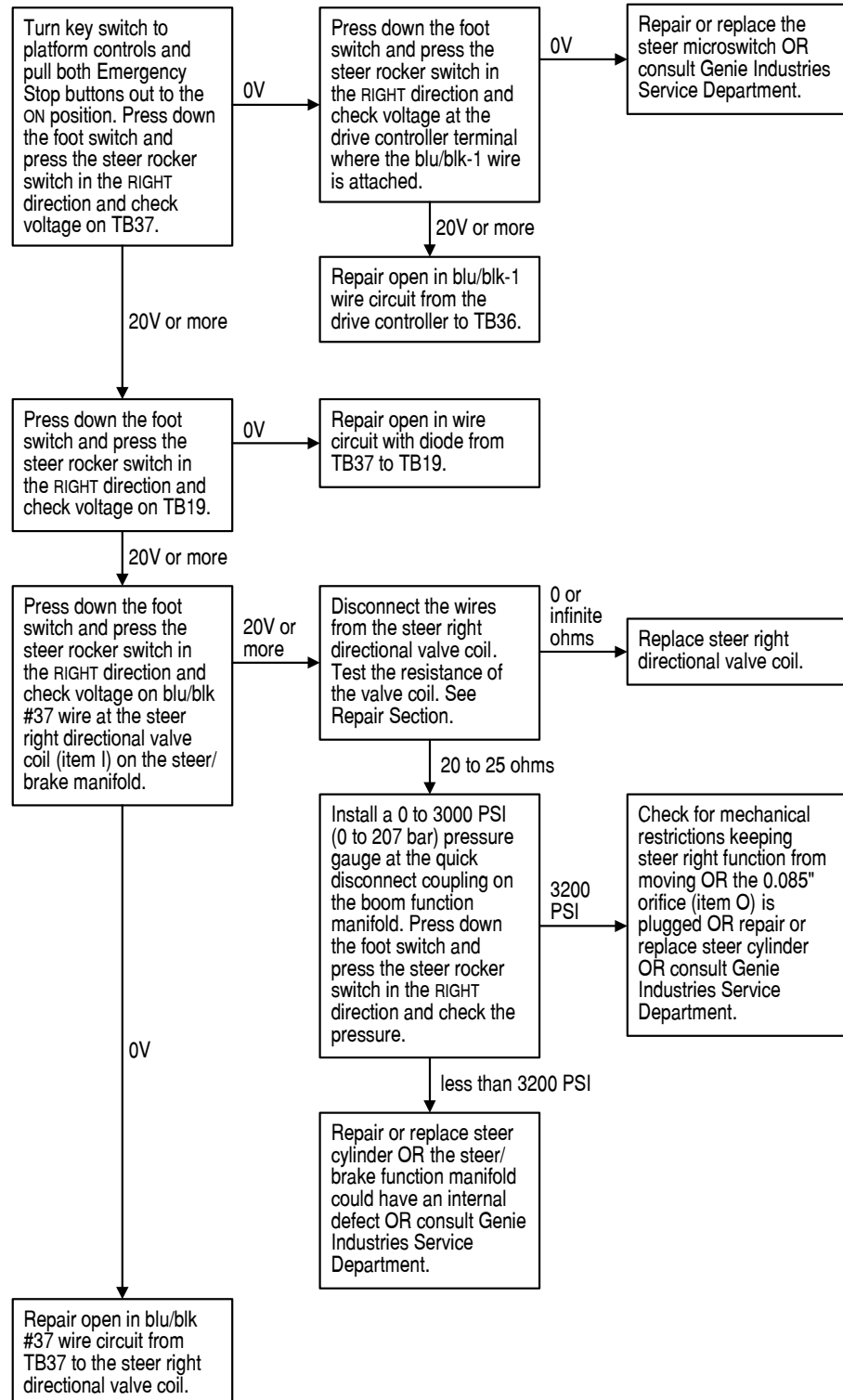


Chart 27

Steer Right Function Inoperative

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

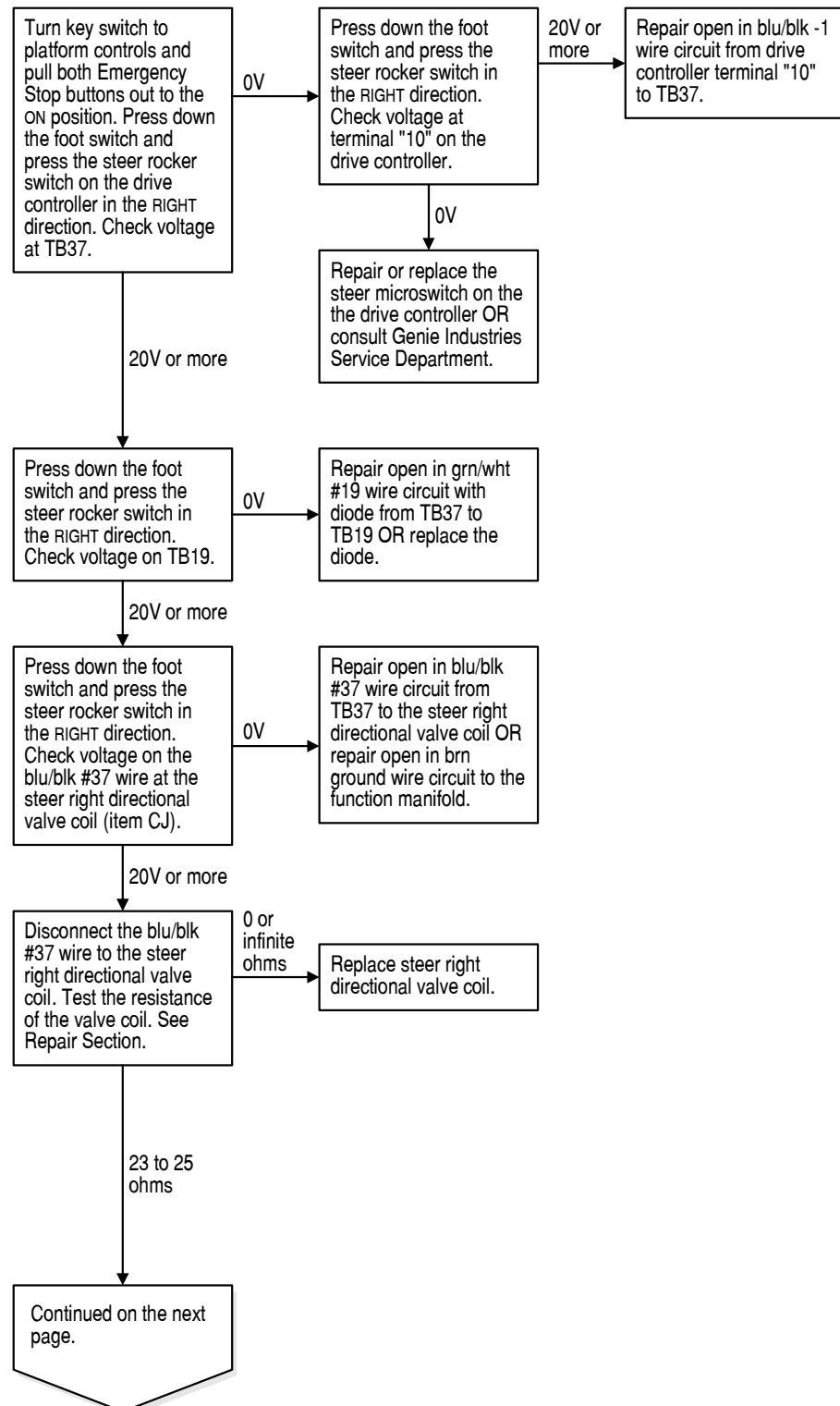


CHART 27

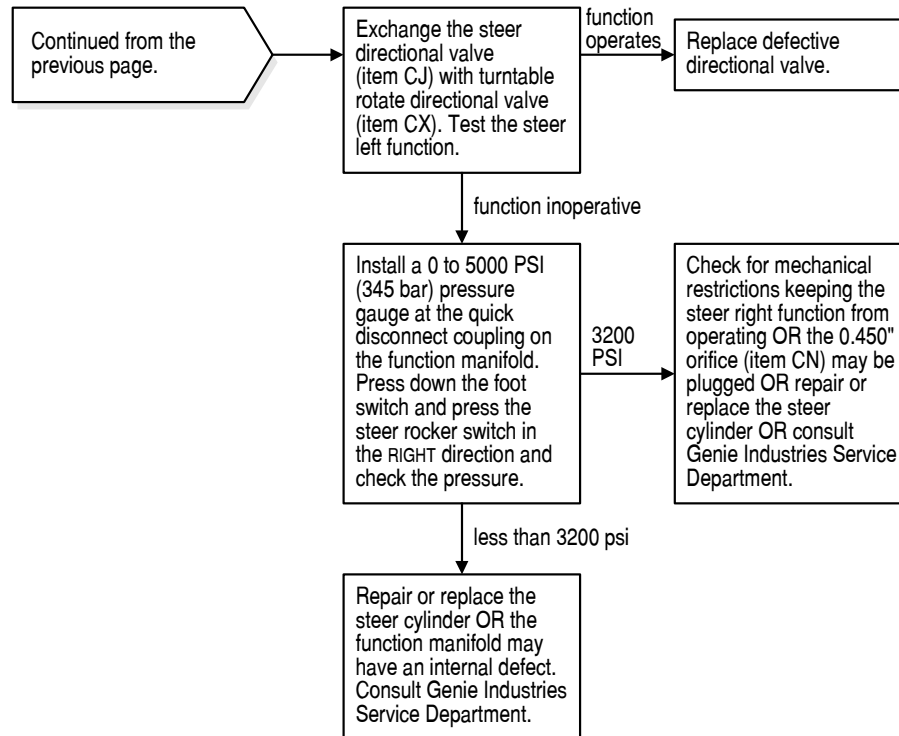


Chart 28

All Drive Functions Inoperative, All Other Functions Operate Normally

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure the unit is in the fully stowed position with the boom located between the drive tires.

Be sure the battery packs are properly connected and fully charged.

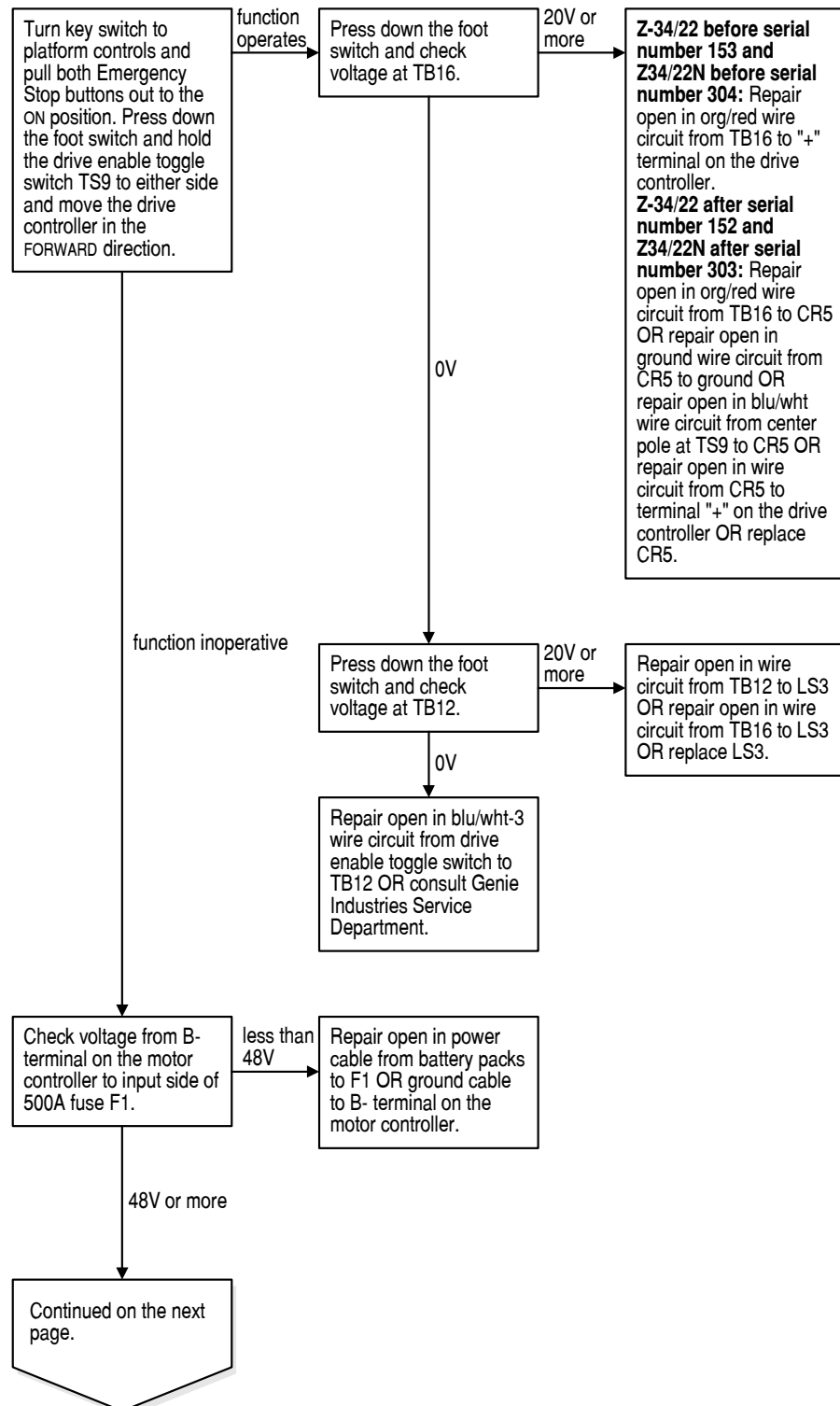


CHART 28

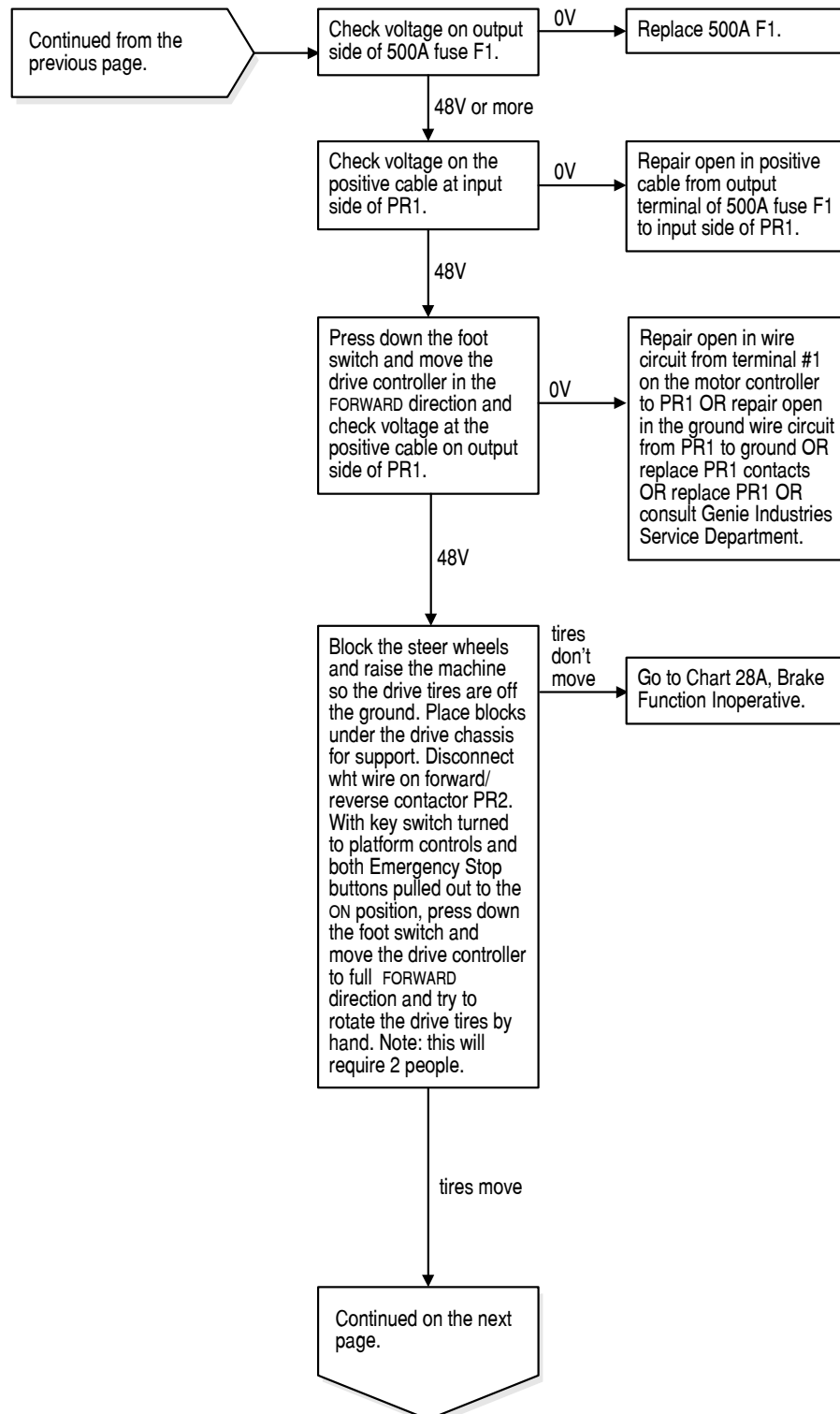


CHART 28

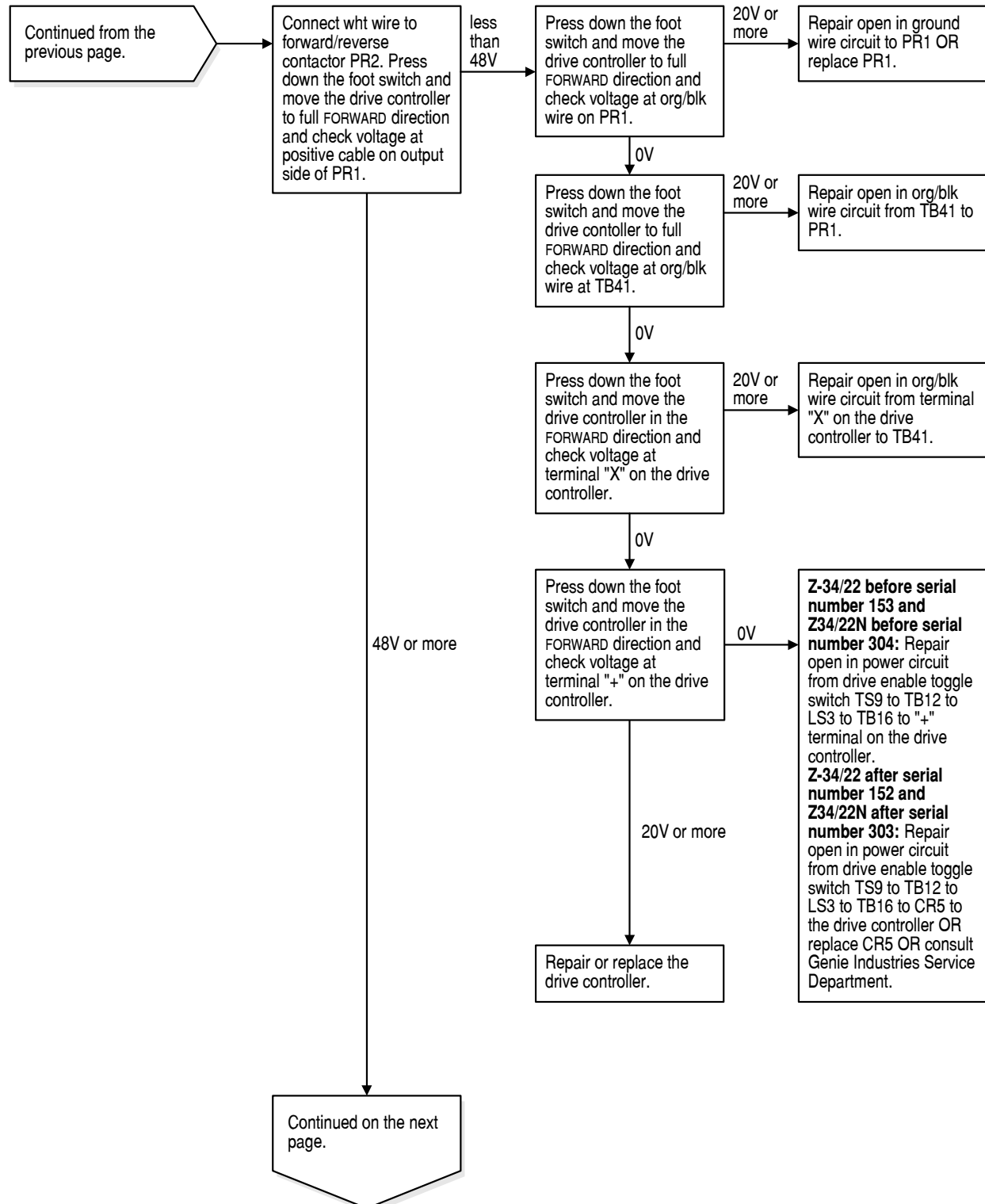


CHART 28

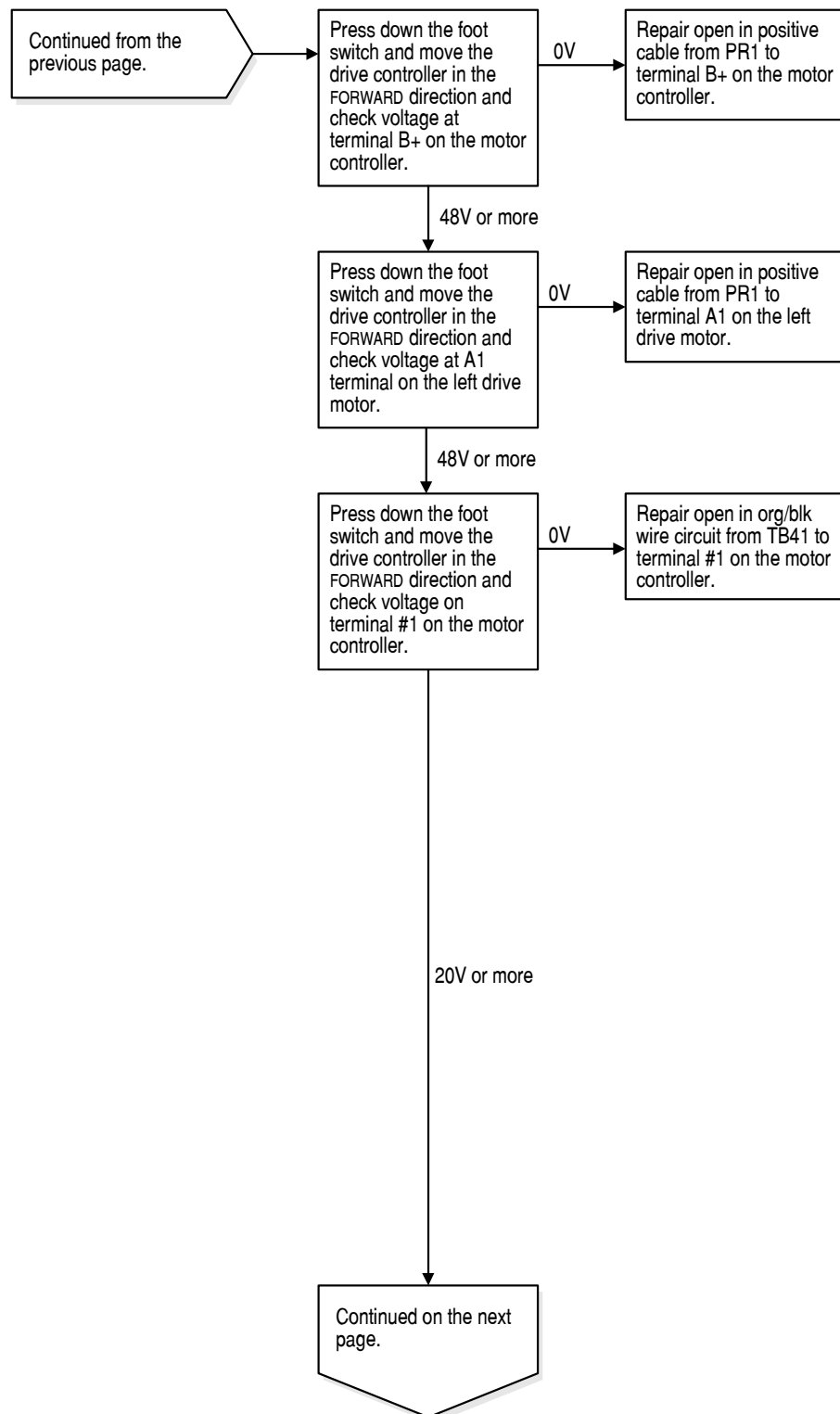


CHART 28

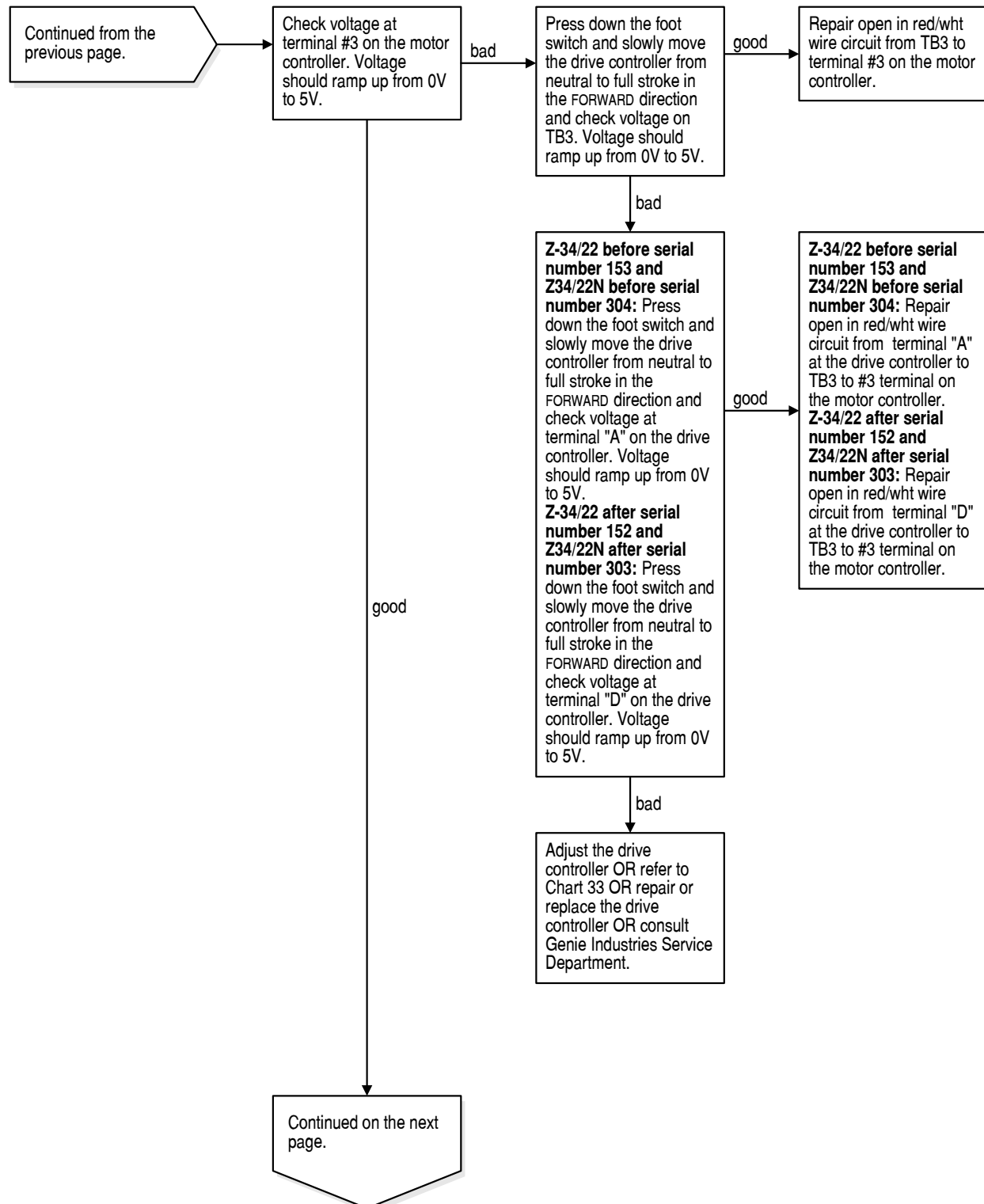


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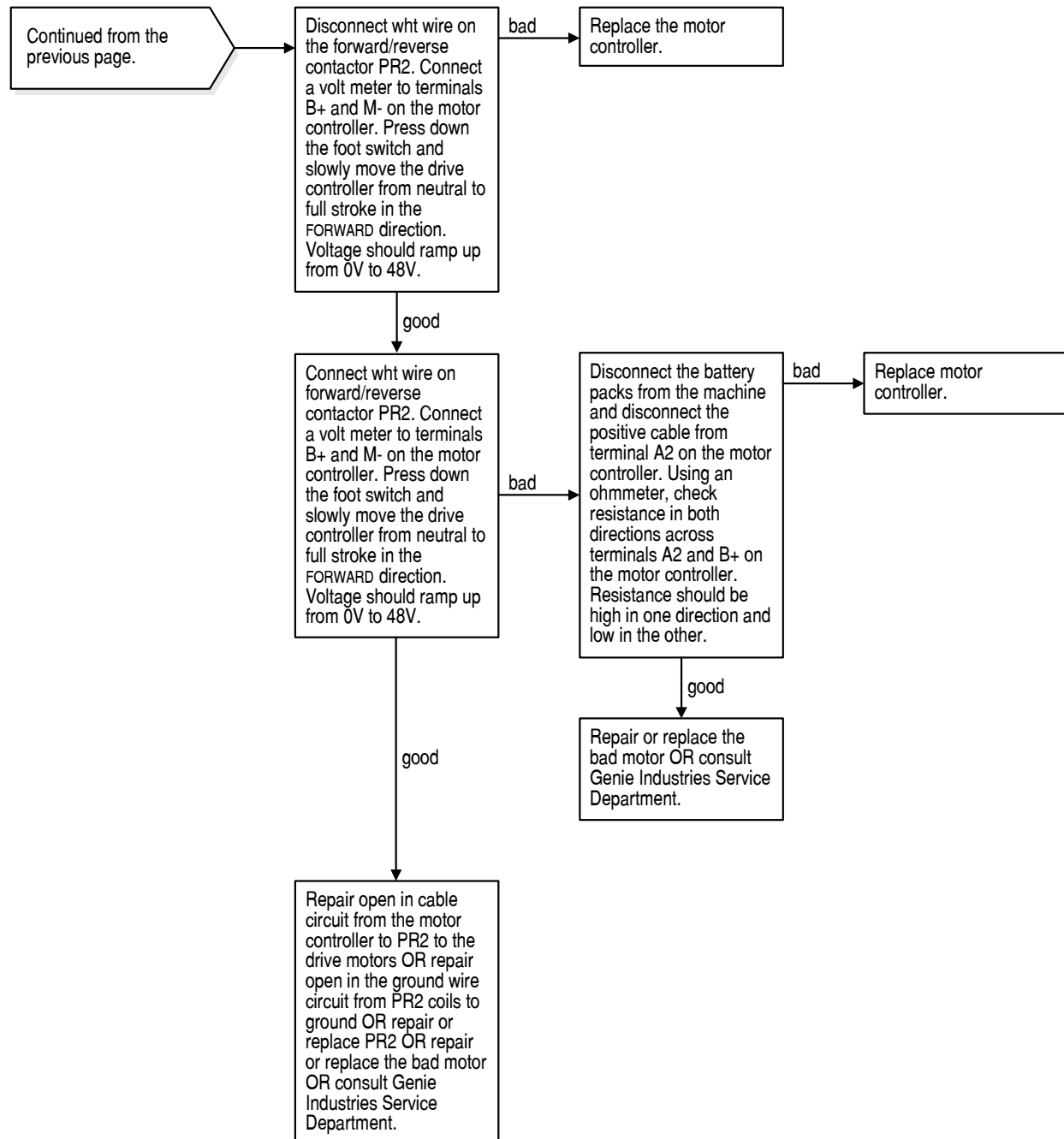


Chart 28A

Brake Function Inoperative

(Z-34/22 before
serial number 1734
and
Z-34/22N before
serial number 2227)

Be sure the drive
hubs are not
disengaged

Be sure the remote
brake release is
removed.

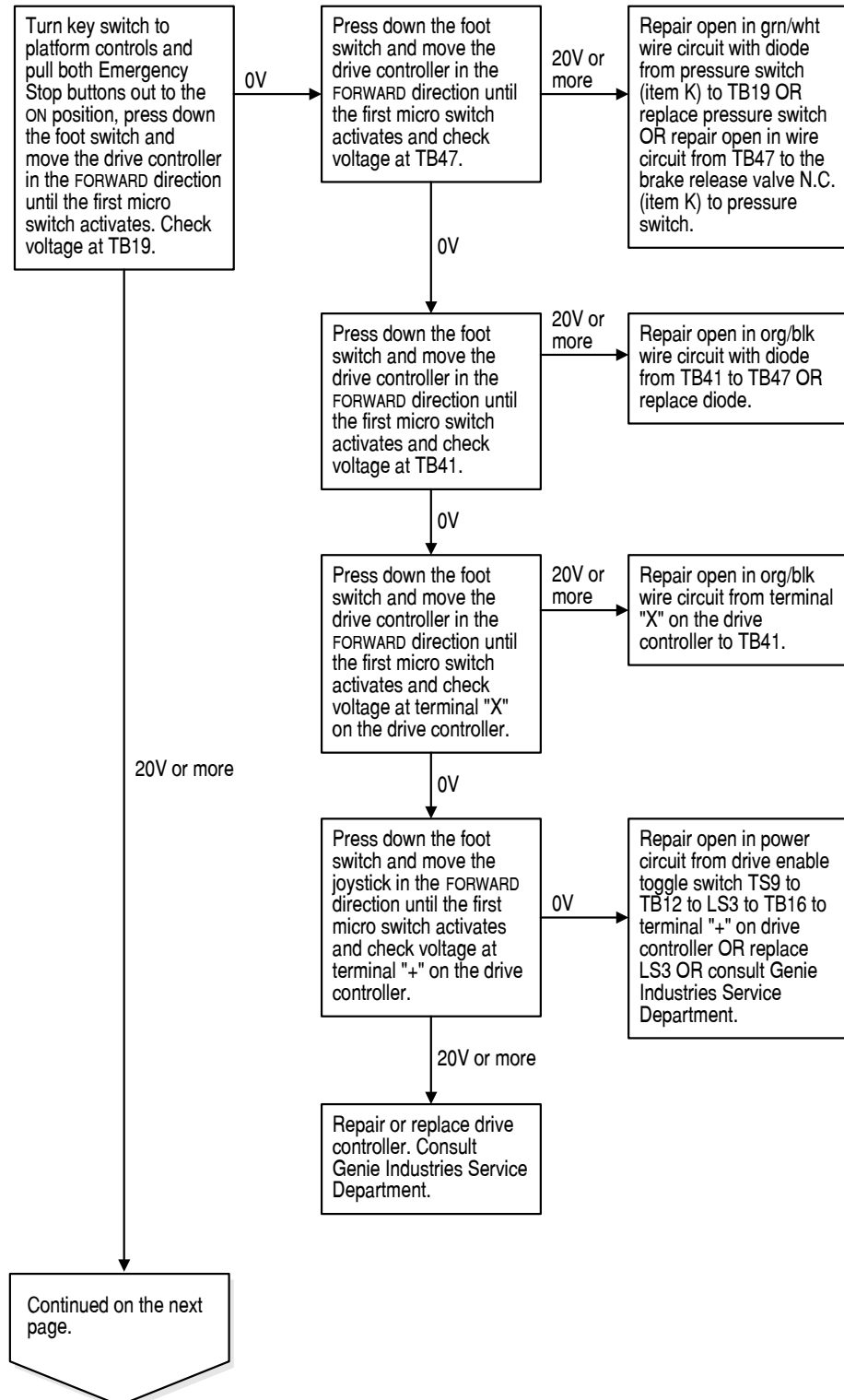


CHART 28A

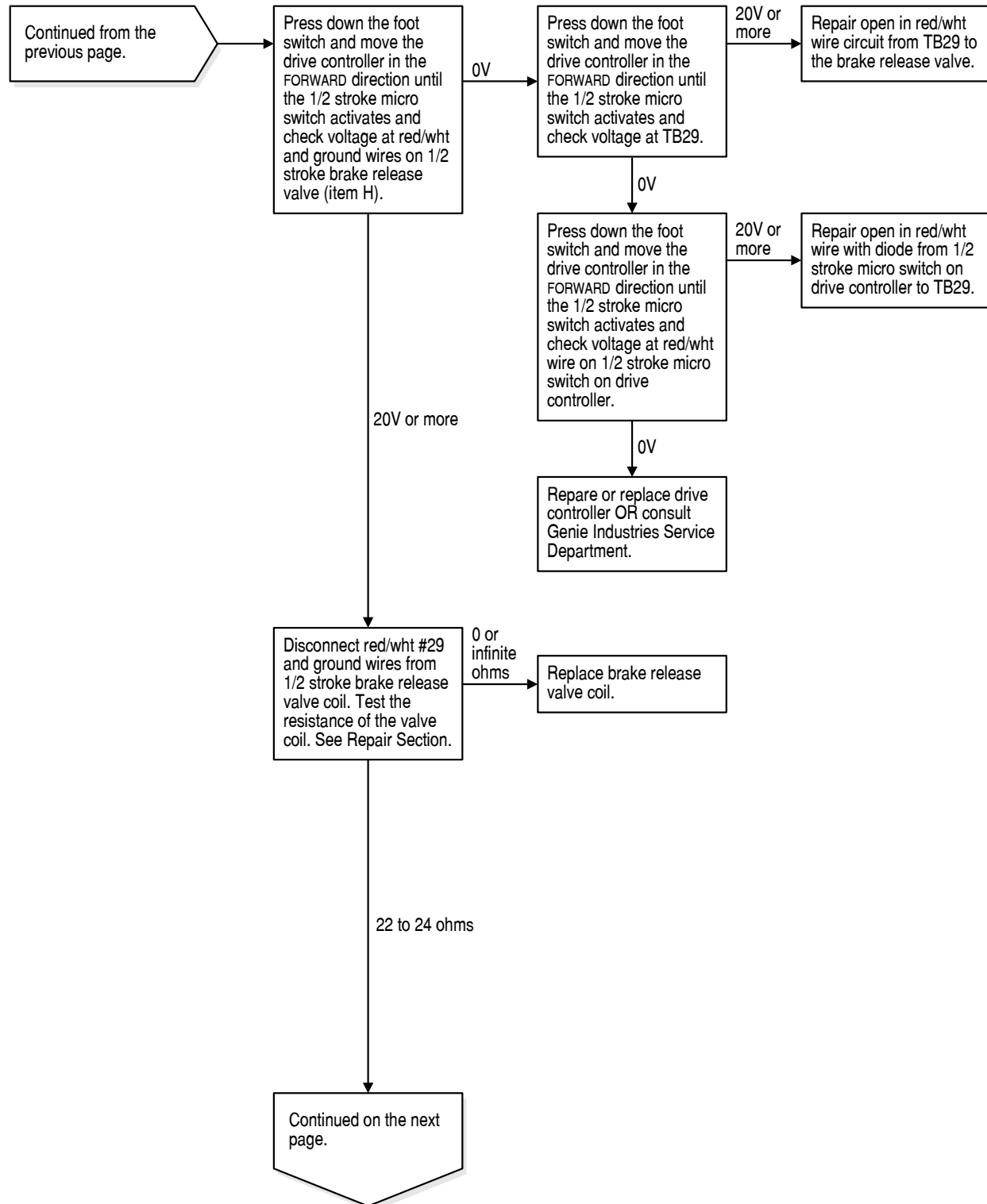


CHART 28A

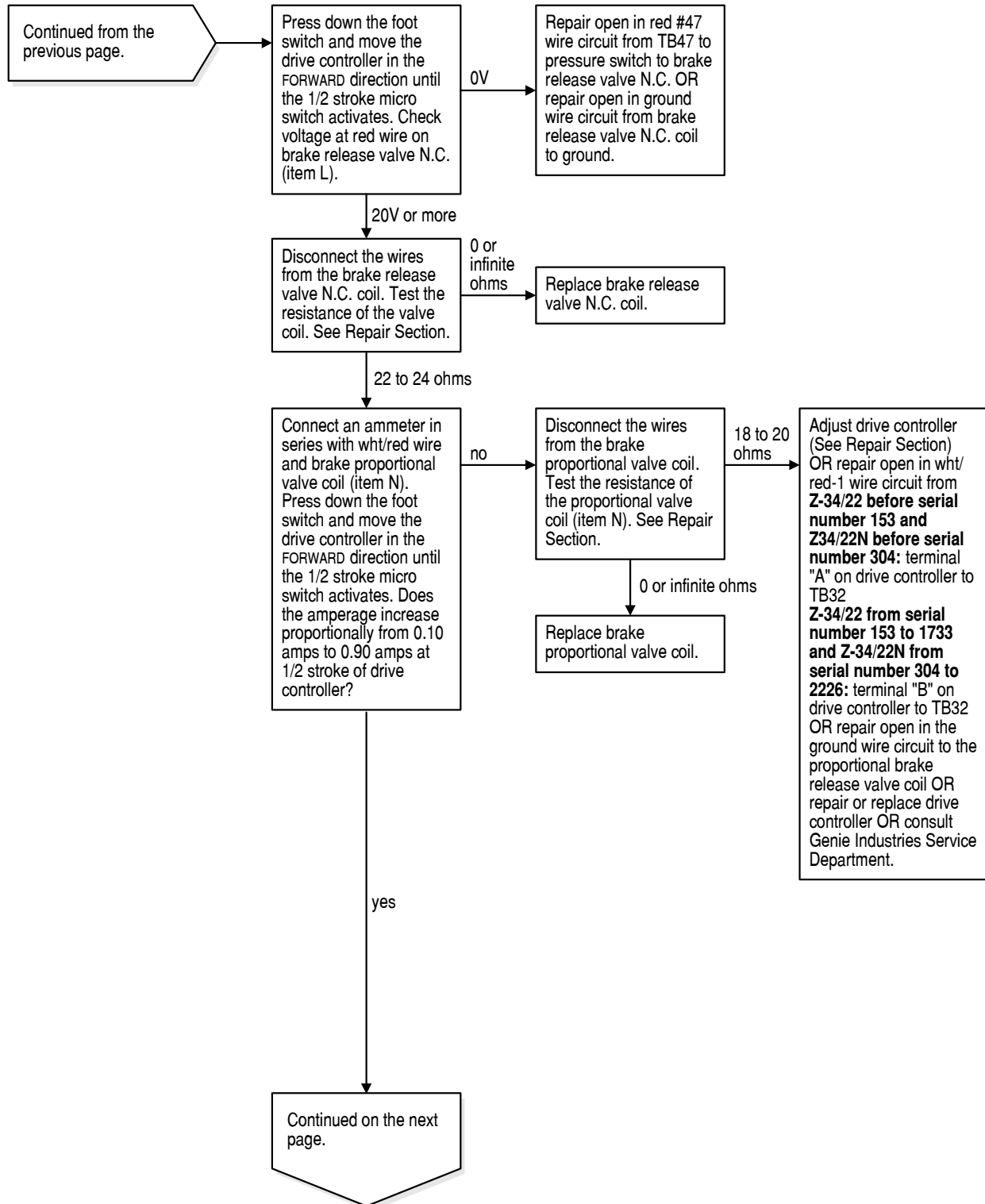


CHART 28A

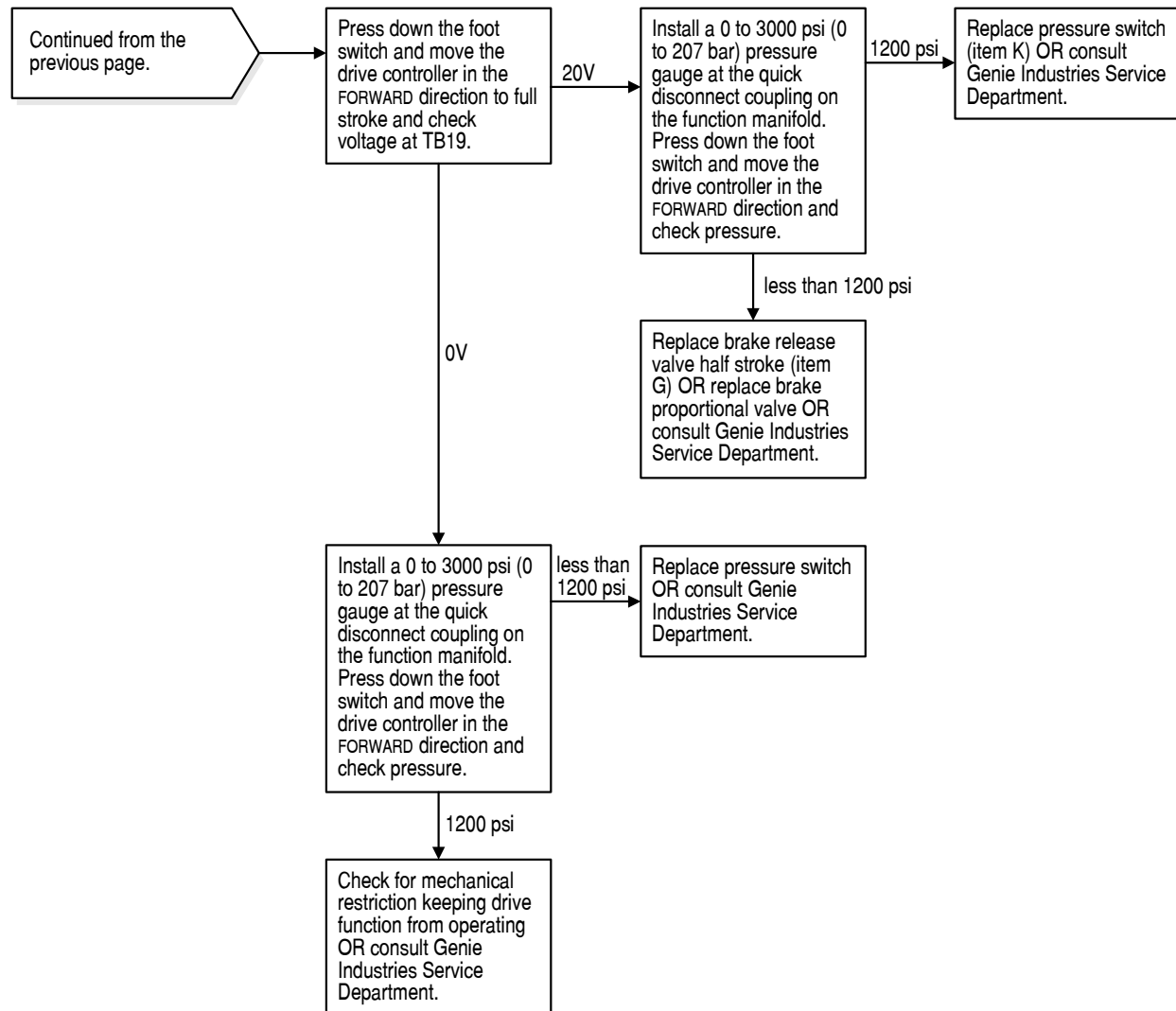


Chart 29

All Drive Functions Inoperative, all Other Functions Operate Normally

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the batteries are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

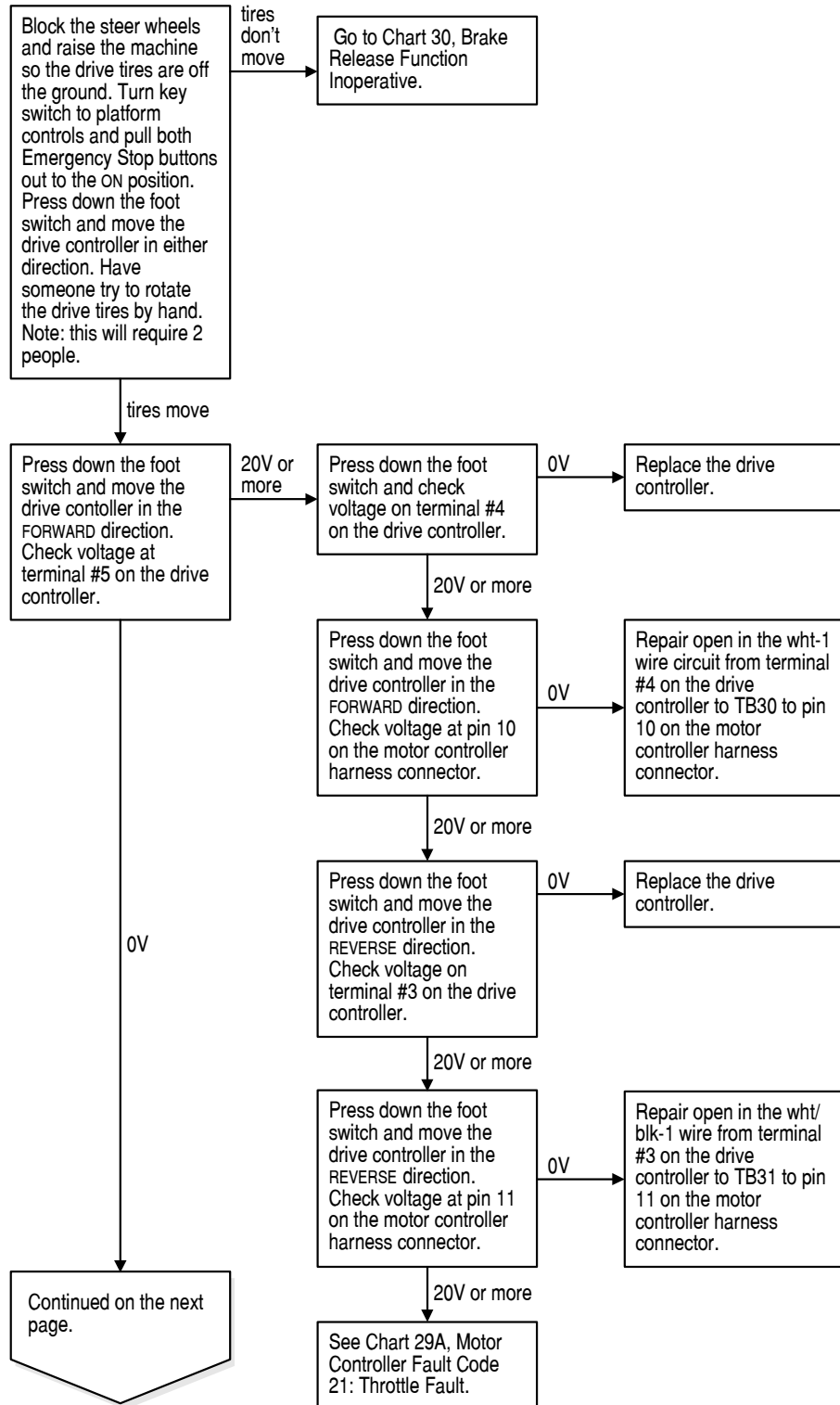


CHART 29

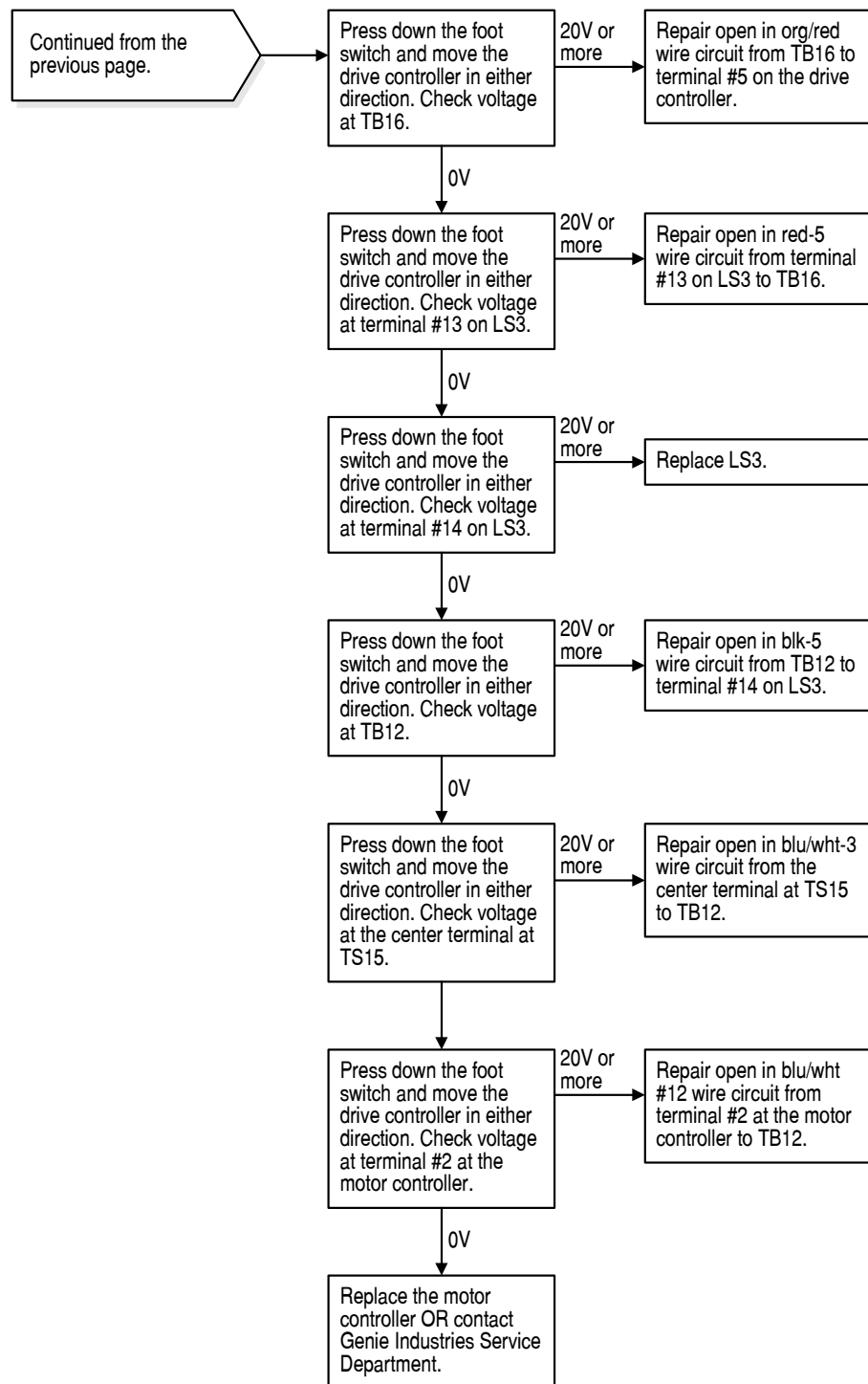


Chart 29A

Motor Controller Fault Code 21: Throttle Fault

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

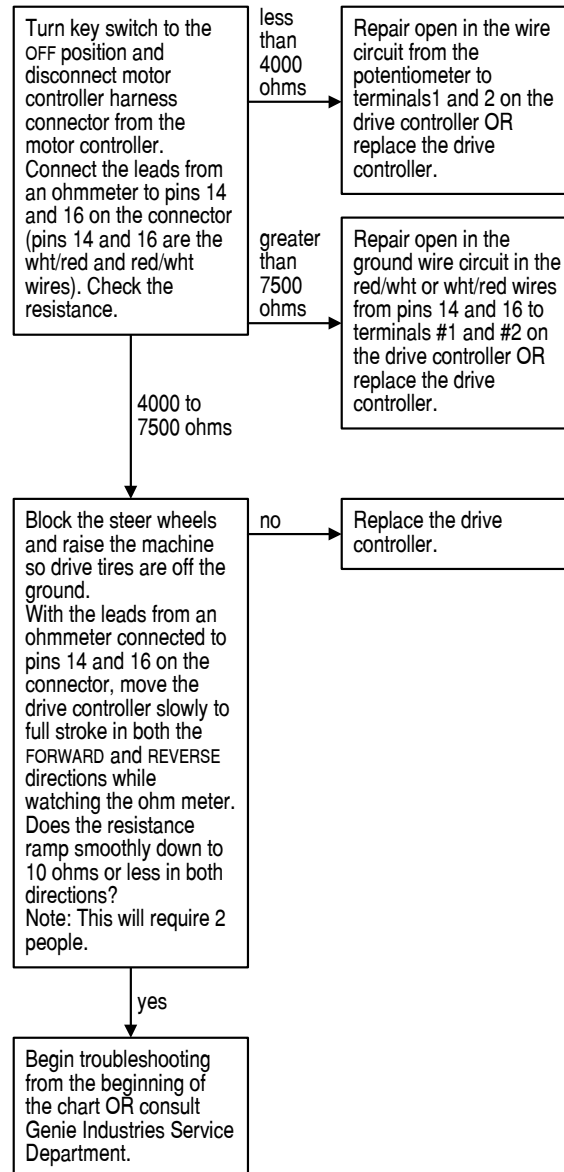


Chart 29B

Motor Controller Fault Code 32: Main Contactor Welded

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

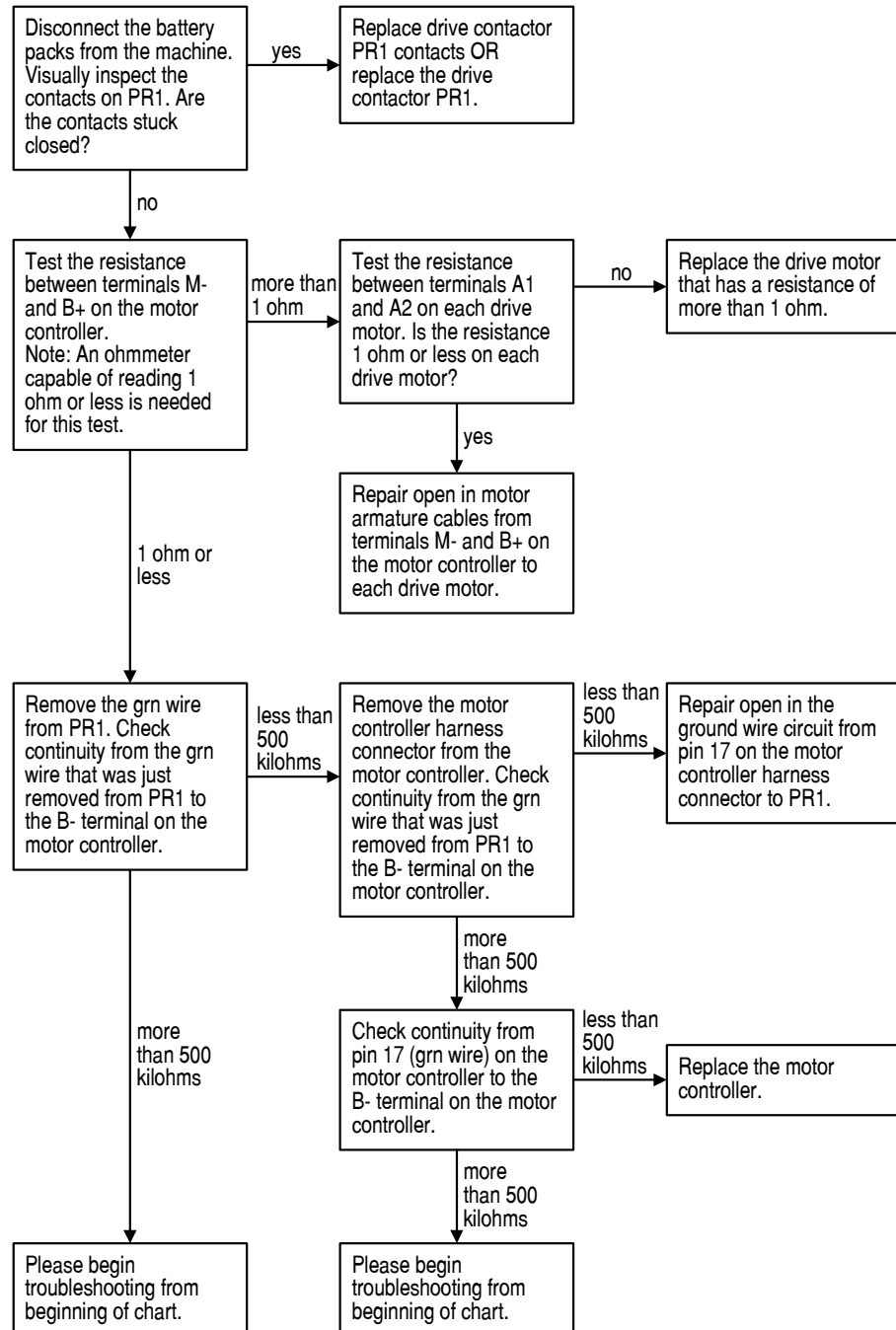


Chart 29C

Motor Controller Fault Code 34: Missing Main Contactor OR Main Contactor Did Not Close

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

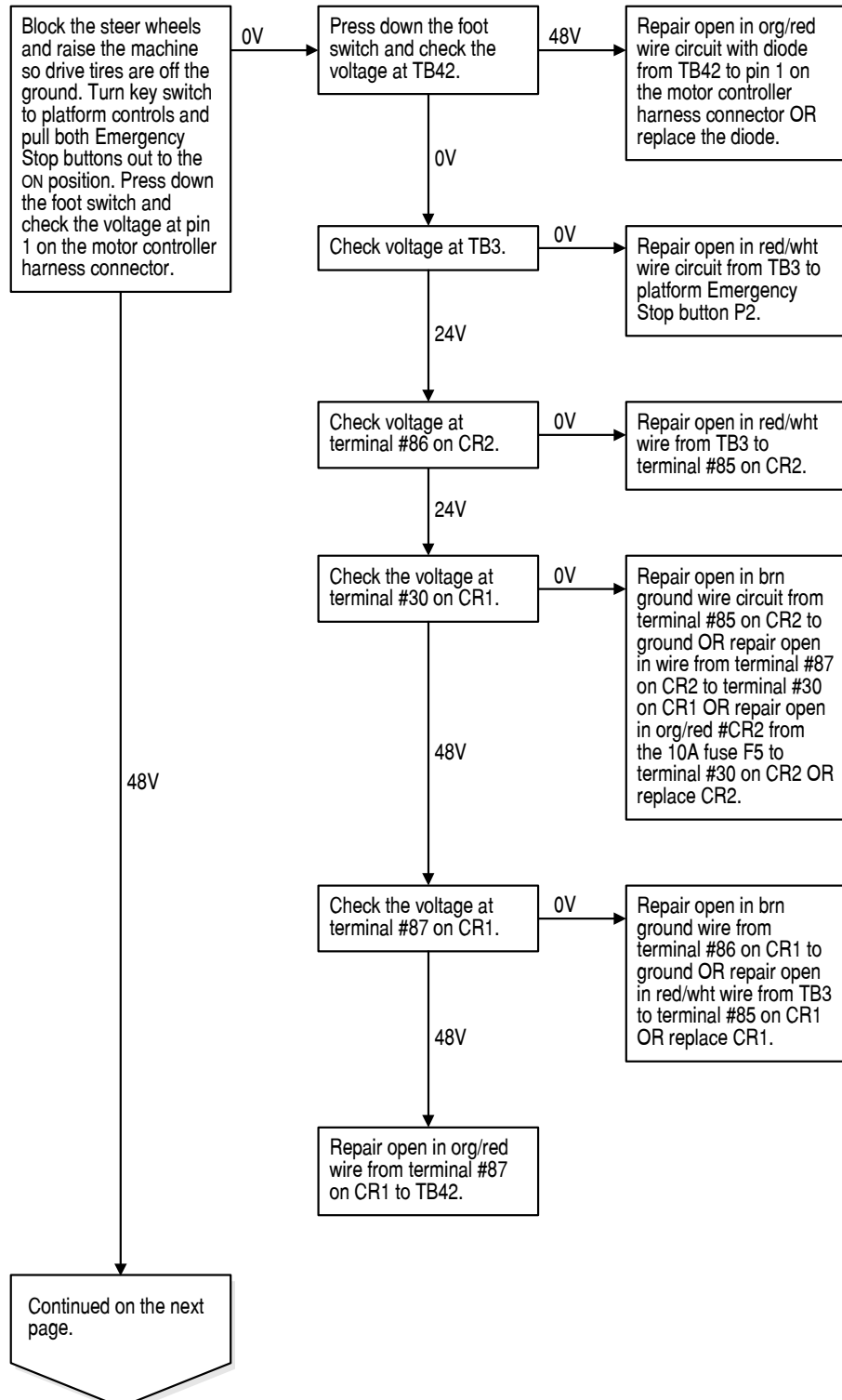


CHART 29C

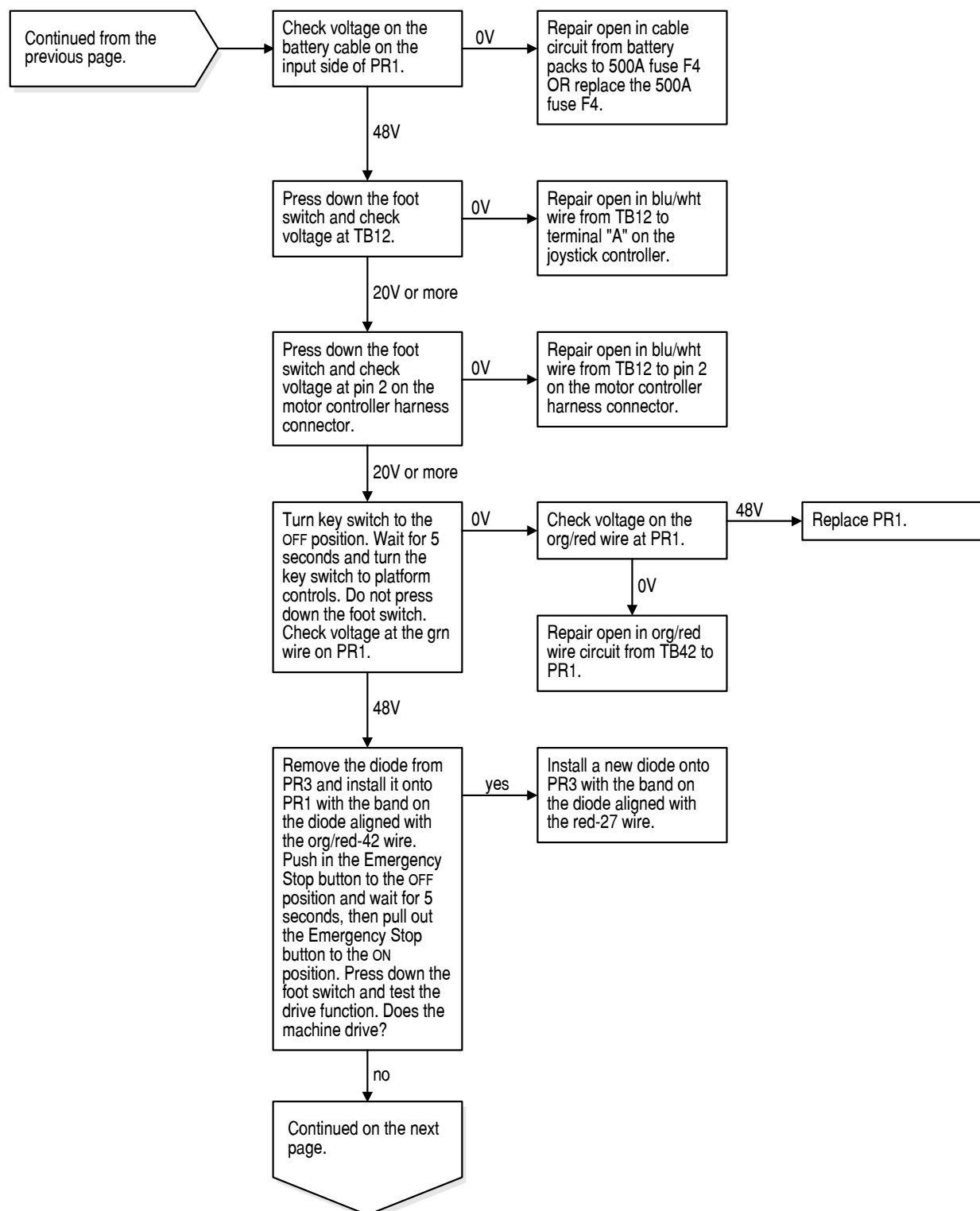


CHART 29C

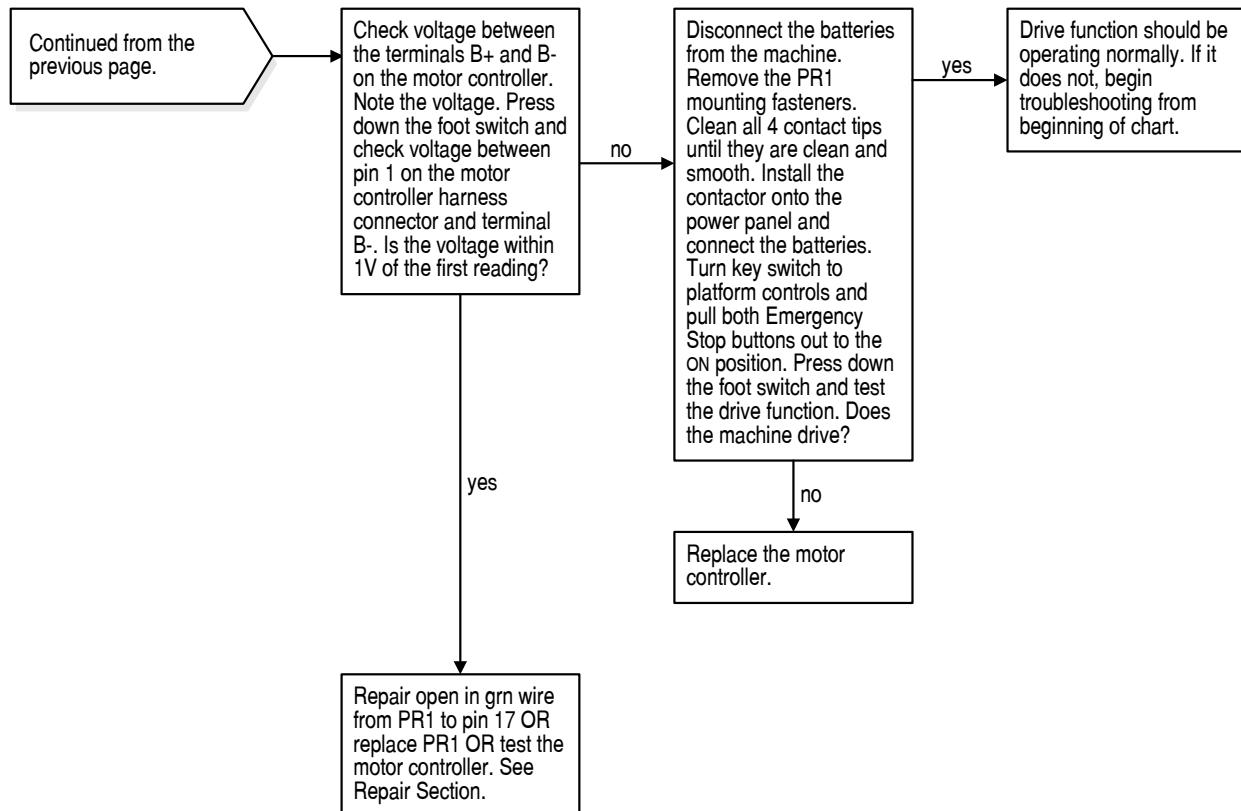


Chart 30

Brake Release Function Inoperative

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure all other functions operate normally.

Troubleshooting brake release faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the battery packs are properly connected and fully charged.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

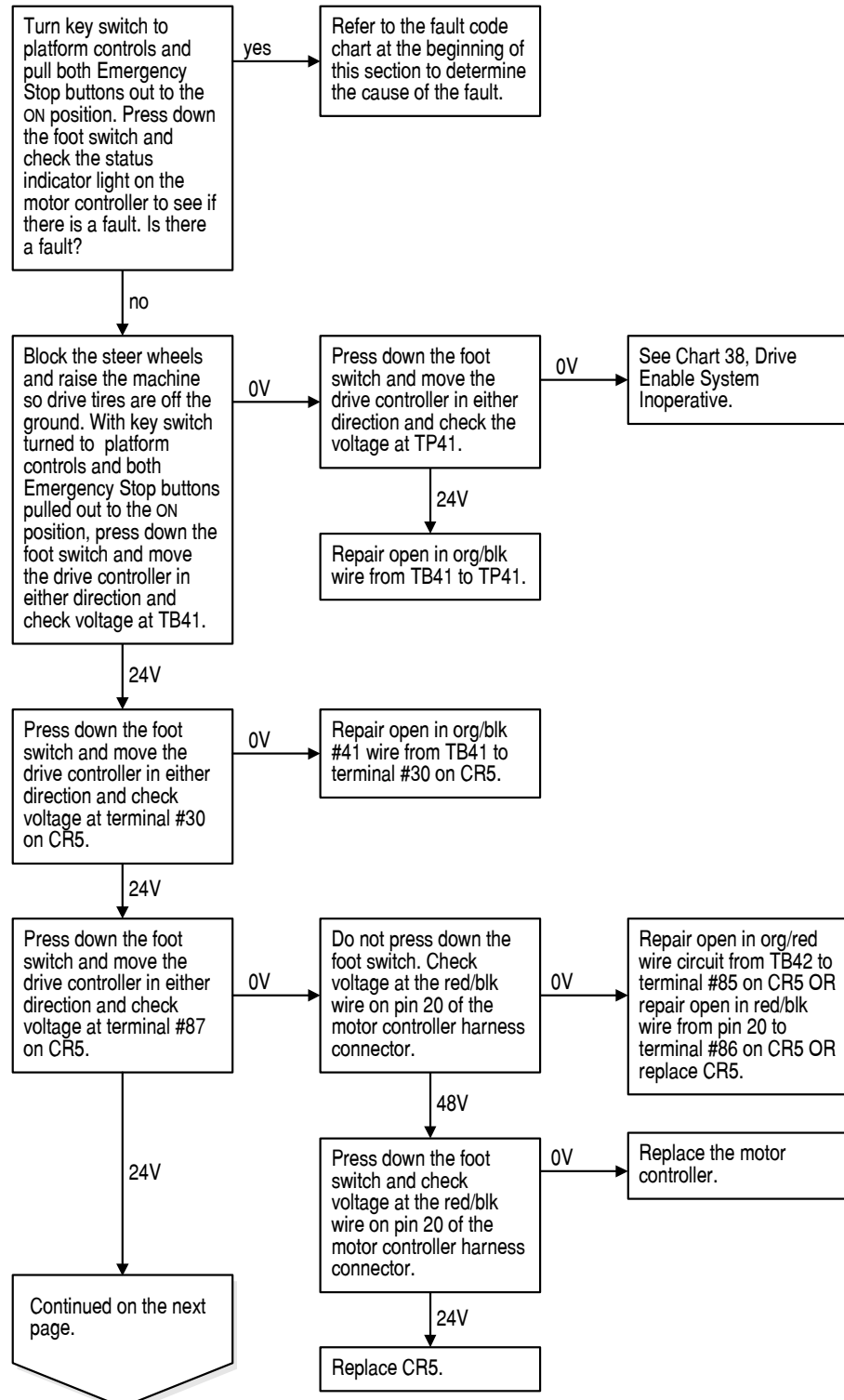


CHART 30

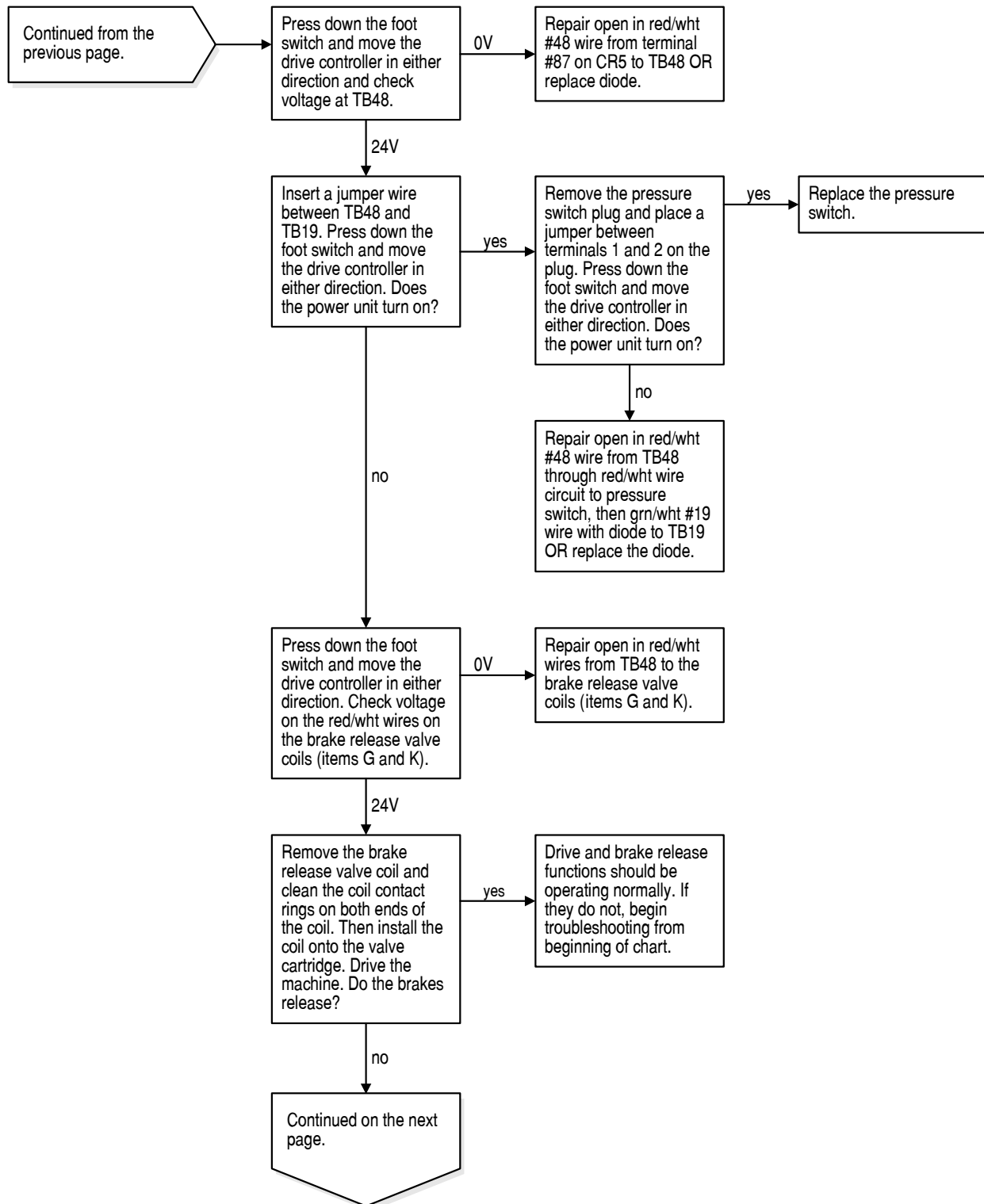


CHART 30

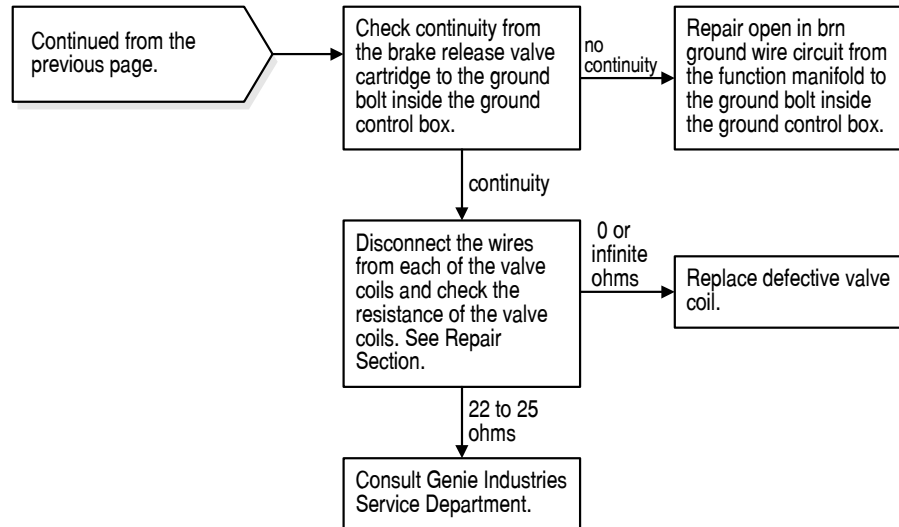


Chart 31

Drive Forward Function Inoperative

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

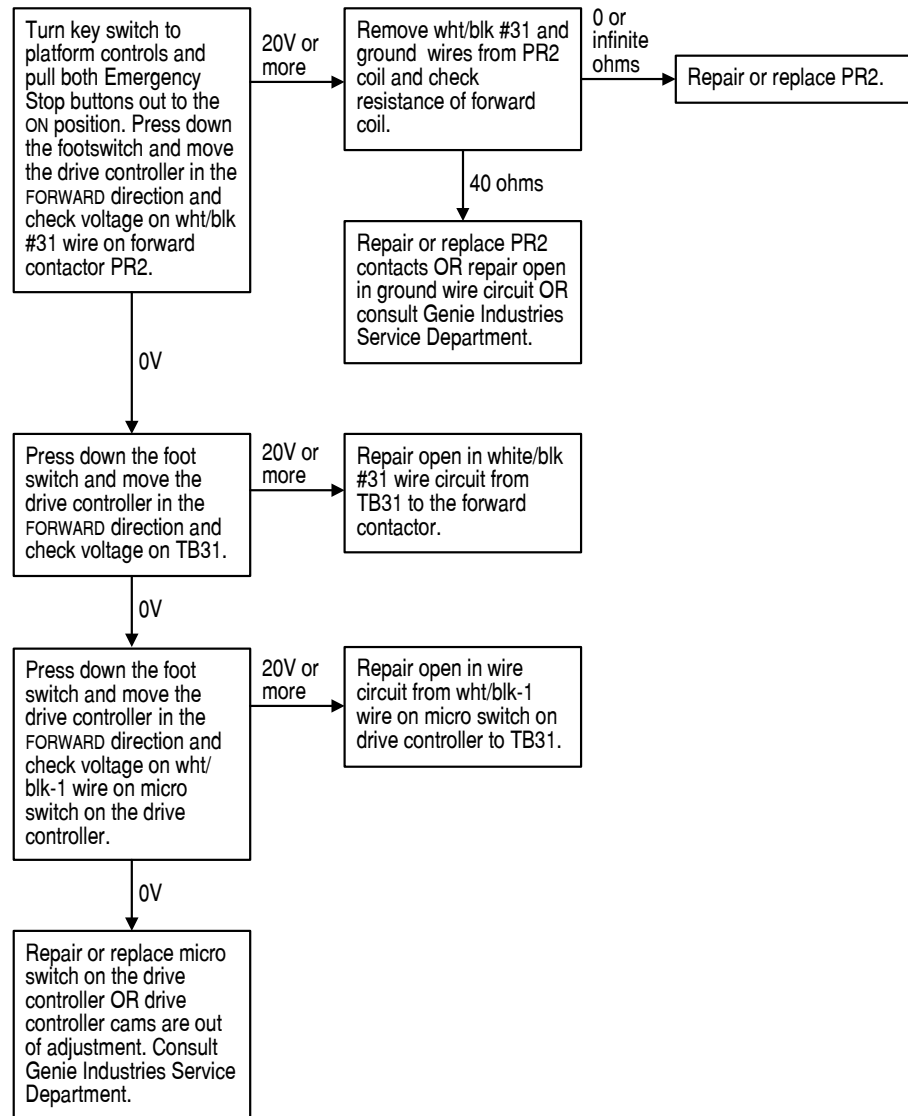


Chart 32

Drive Reverse Function Inoperative

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled out to the ON position.

Be sure the battery packs are properly connected and fully charged.

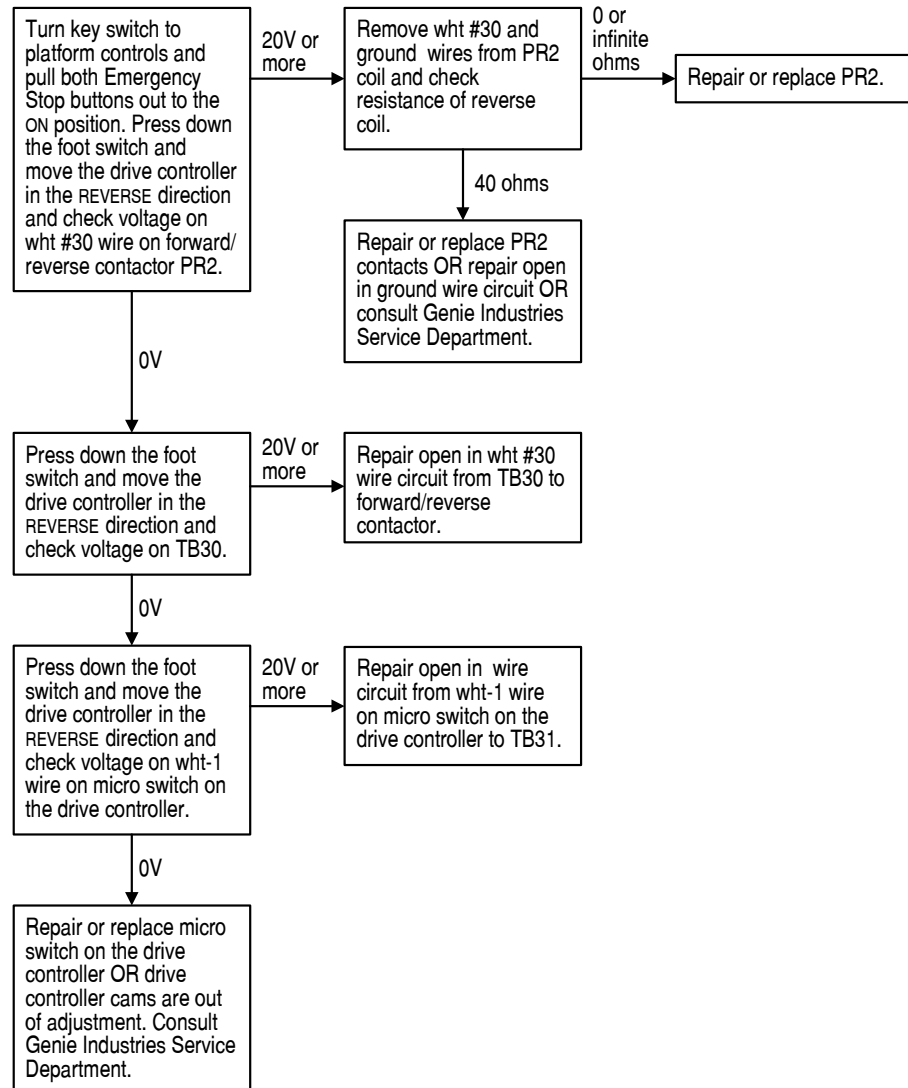


Chart 33

Machine Will Not Drive At Full Speed

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

Be sure the battery packs are properly connected and fully charged.

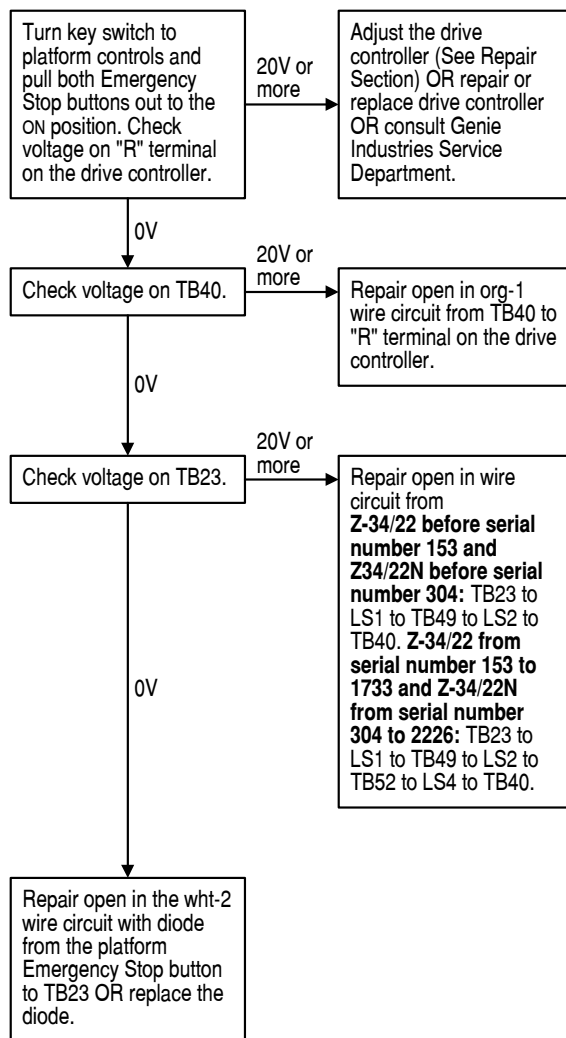


Chart 34

Machine Will Not Drive At Full Speed

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure all other functions operate normally.

Be sure the boom is in the stowed position with the primary boom fully retracted.

Be sure the primary boom extension limit switch (LS1) is being activated when the primary boom is retracted.

Be sure the primary boom and secondary boom limit switches (LS2 and LS3) are not being activated when the primary and secondary booms are in the stowed position.

Be sure the battery packs are properly connected and fully charged.

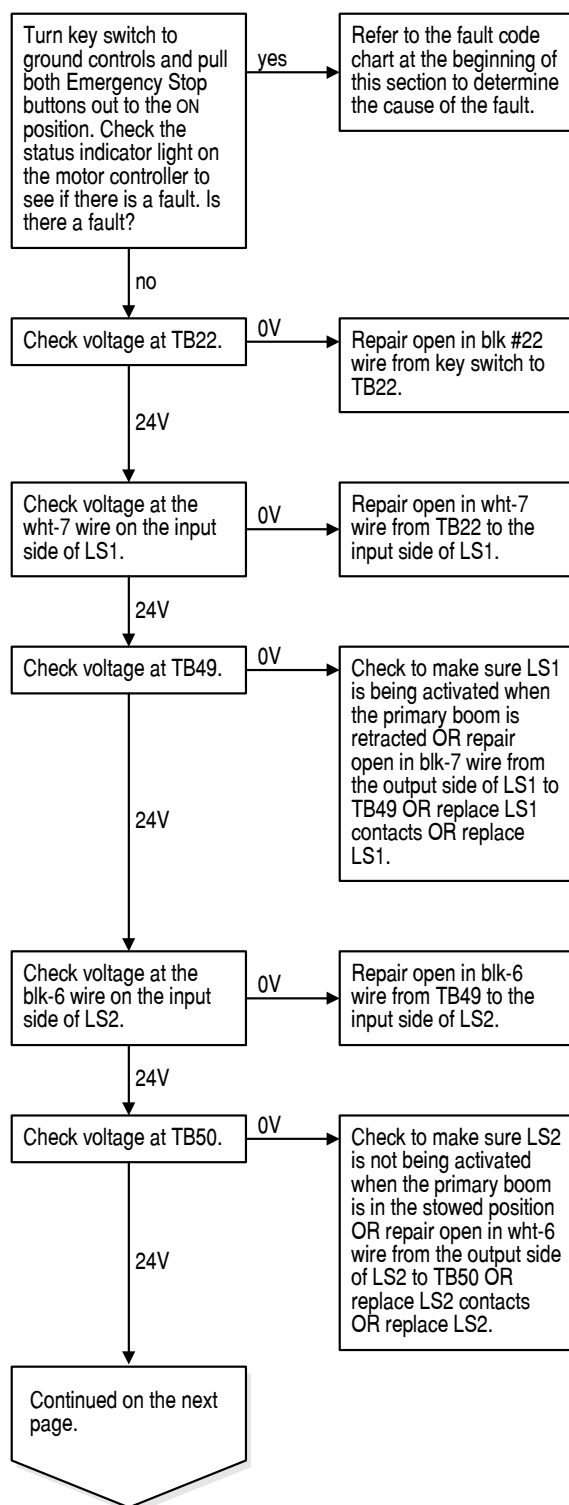


CHART 34

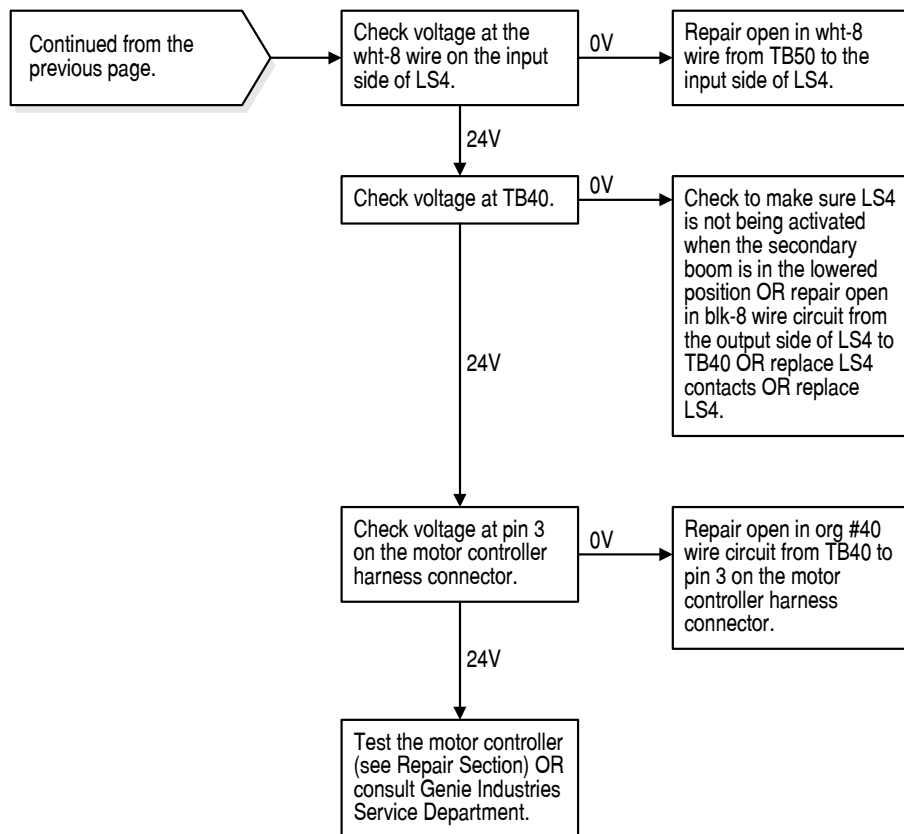


Chart 35

Machine Drives At Full Speed With Platform Raised Or Extended

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Remove the machine from service immediately.

Be sure the wiring to the limit switches is intact and shows no signs of damage or corrosion.

Be sure the primary boom drive limit switch is being activated by the cam on the boom when the primary boom is raised.

Be sure the secondary boom drive limit switch is being activated by the secondary boom compression arm when the secondary boom is raised.

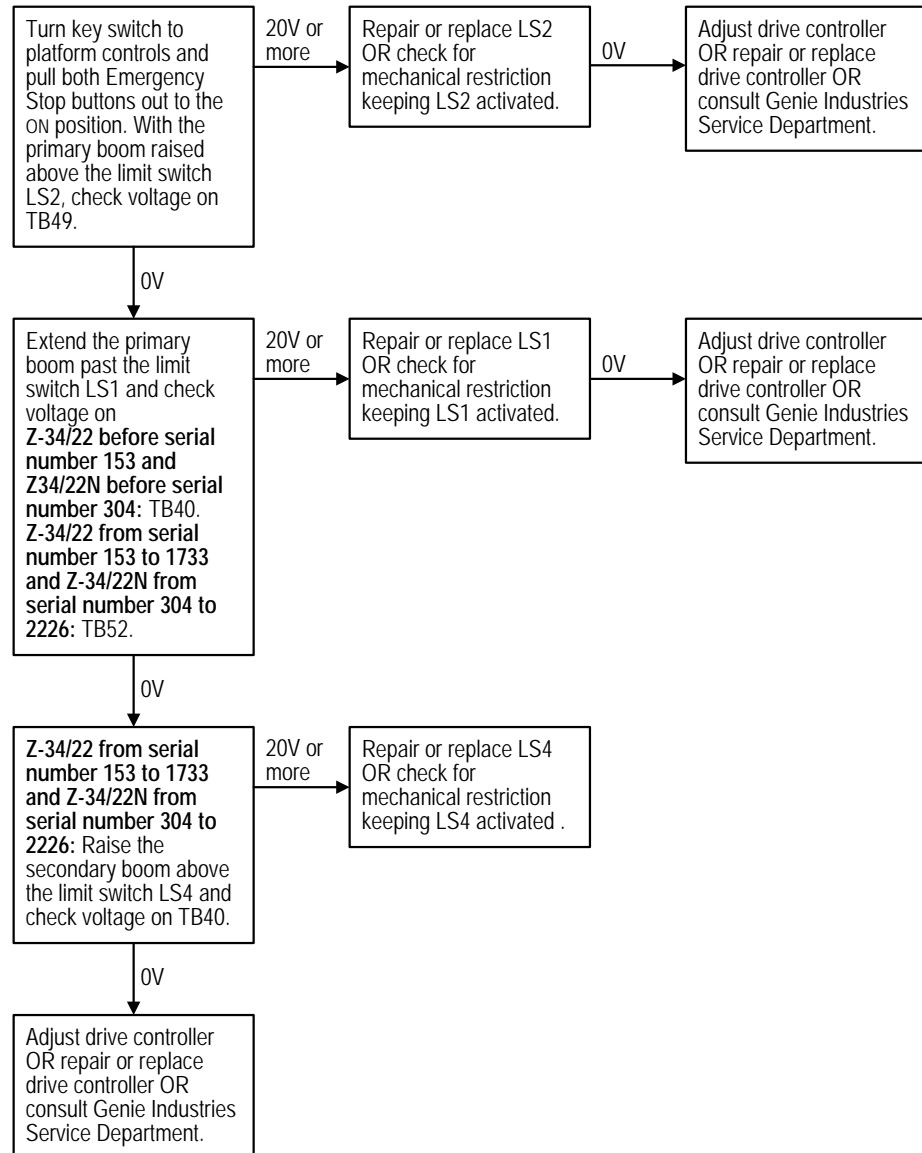


Chart 36

Machine Drives At Full Speed With Platform Raised Or Extended

(Z-34/22 after serial
number 1733 and
Z-34/22N after
serial number 2226)

Remove the machine
from service
immediately.

Be sure the wiring to
the limit switches is
intact and shows no
signs of damage or
corrosion.

Be sure the primary
boom drive limit
switch is being
activated by the cam
on the boom when the
primary boom is
raised.

Be sure the
secondary boom drive
limit switch is being
activated by the
secondary boom
compression arm
when the secondary
boom is raised.

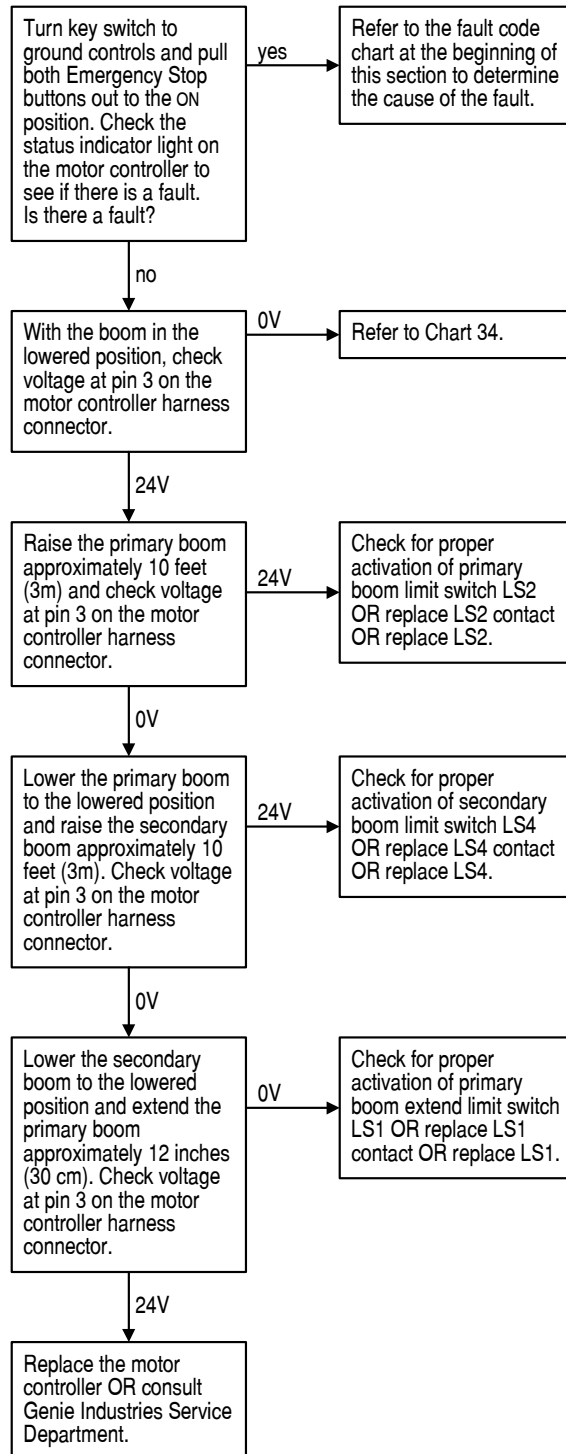


Chart 37

Drive Enable System Is Malfunctioning

(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer wheels.

Be sure all other functions operate normally.

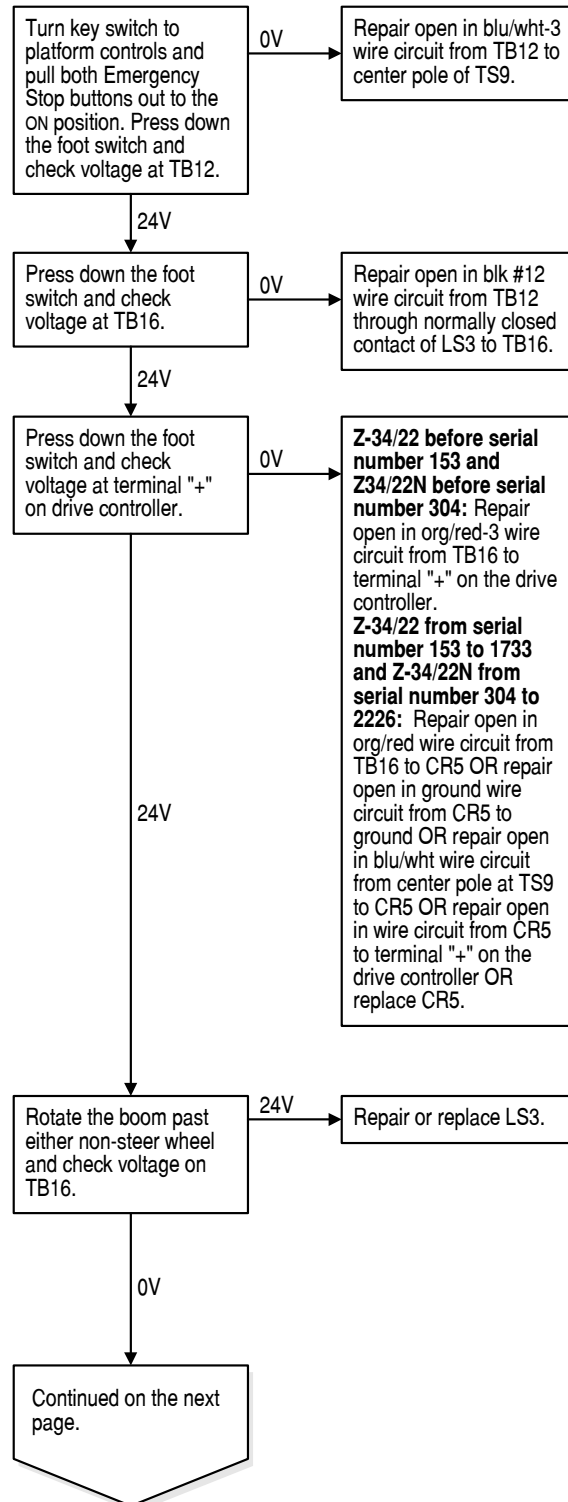


CHART 37

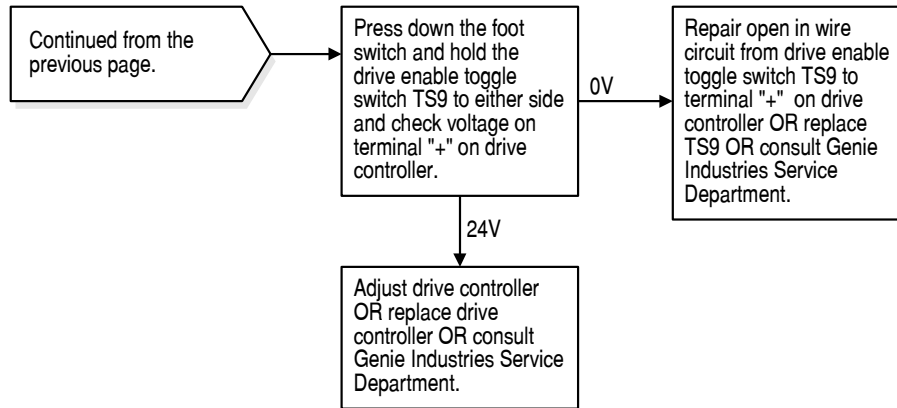


Chart 38

Drive Enable System Is Malfunctioning

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer wheels.

Be sure all other functions operate normally.

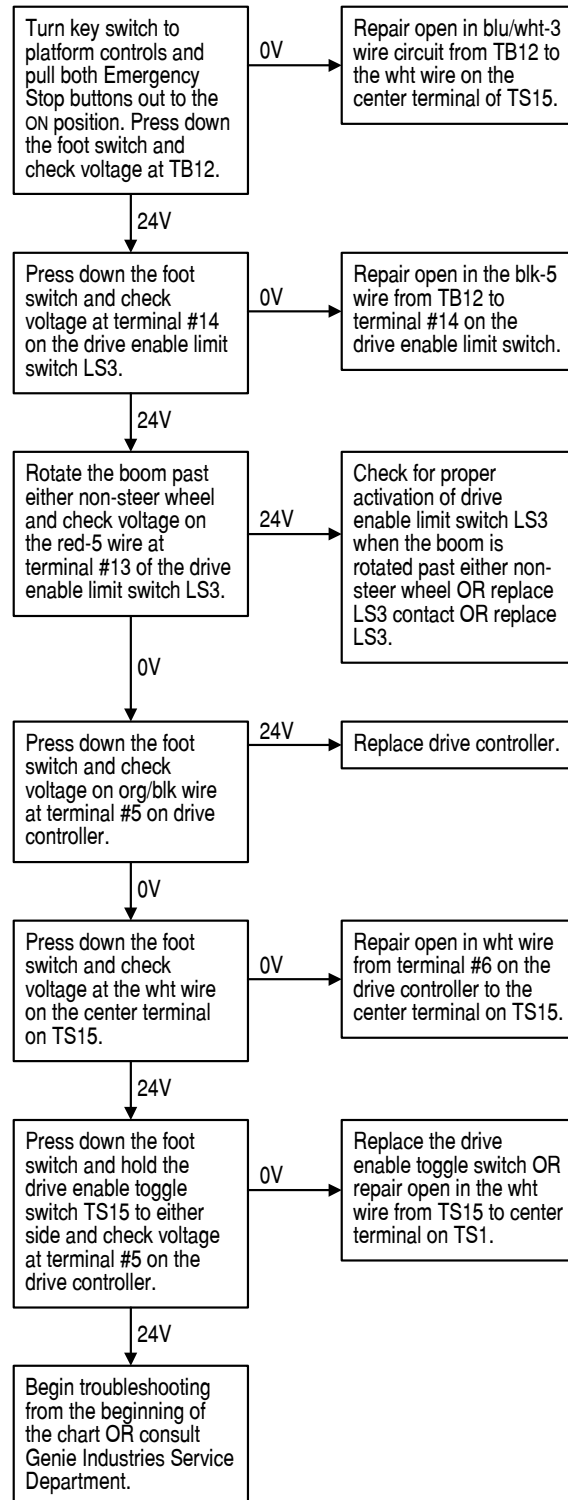


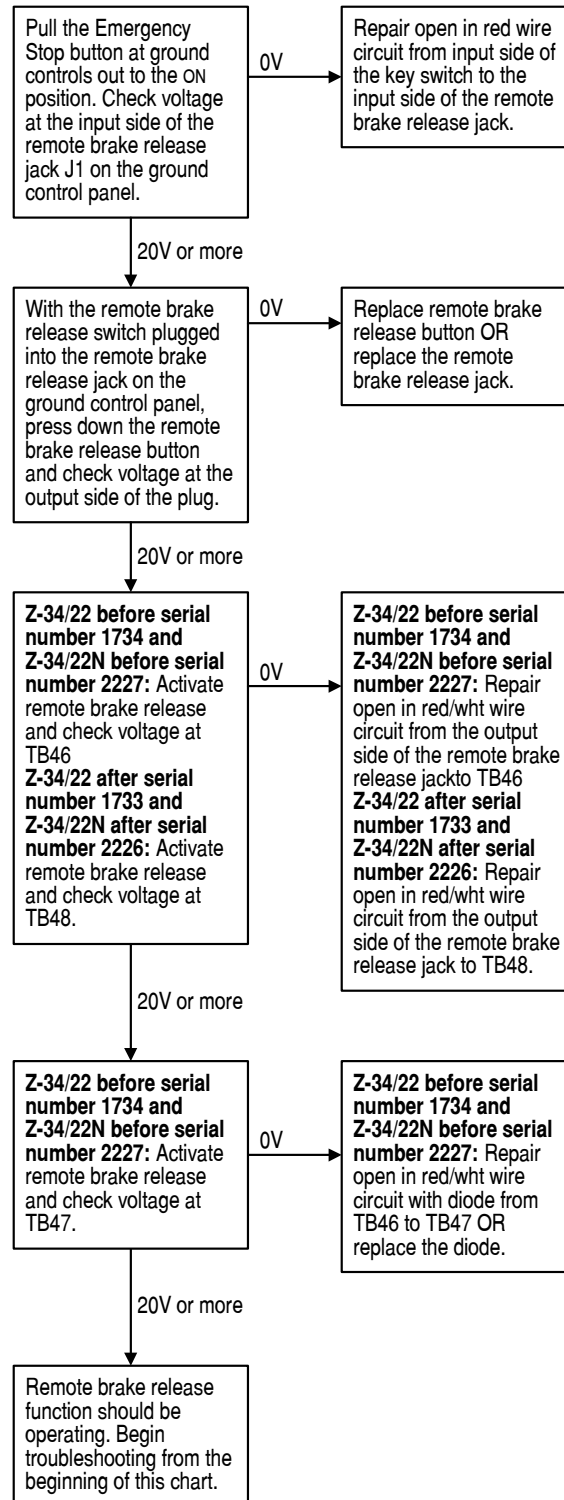
Chart 39

Remote Brake Release Inoperative

(Z34/22 before serial number 3578 and Z34/22N before serial number 4261)

Be sure all other functions operate normally.

Be sure the battery packs are properly connected and fully charged.





Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-34/22 & Genie Z-34/22N Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section.

⚠WARNING

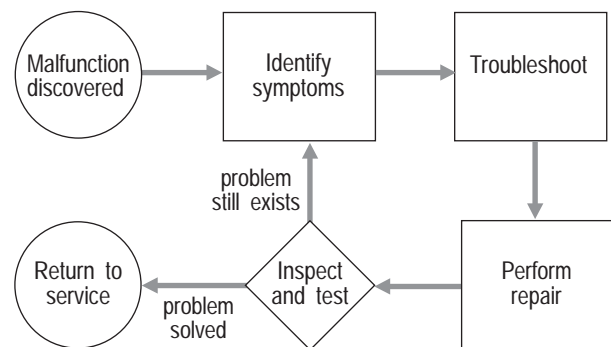
Electrocution/burn hazard. Contact with electrically charged circuits may result in death or serious injury. Remove all rings, watches and other jewelry.

Hydraulic Schematics

⚠WARNING

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

General Repair Process



Electrical Components

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
Part Number					
AP1, AP2	Anderson connector	19436	Anderson	63325-G1	2
BAT1	Battery, 6V DC, 350 AH	44820	Allied Battery Co	L-16GH	8
BCI	Battery charge indicator	23868	Curtis Instruments	13508010	1
BP1	Rotational Controller	36557	OEM Controls	RS10T4331	1
CB1	Circuit breaker	375785	ETA	45-700-IG1-P10	1
CR	Relay, DPDT, 24V DC	42616	Potter and Brumfield	K10P 11D15-24	3
CR	Relay, SPST, 24V DC	56302	Potter and Brumfield	VF4-15H11-CO5	9
CR	Relay, DPDT, 24V DC	36354	Omron	N/A	1
Diode	Diode, 6 amp, 200 PIV	45782	Motorola	MOTMR752	36
DP1	Joystick controller	56274	OEM Controls	MS6M11498	1
FB	Flashing beacon	20189	ECCO Electronic Controls ...	6400X	1
F1	Fuse, 500 amp	43179	Buss	ANN-500	1
F2, F3	Fuse, 100 amp	36355	Buss	ANN-100	2
FS1	Foot switch	13482	Linemaster Switch Corp.	632-S	1
H1	Alarm, Warble tone	45383	Floyd Bell Inc.	MW-09-530-Q	1
H2	Horn, 24V DC, 108 dB	56265	FIAMM	7324021	1
H3	Alarm, intermittent	18963	Floyd Bell Inc.	XB-09-630-Q	1
H4	Alarm, chime tone	45462	Floyd Bell Inc.	CH-09-525-Q	1
HM	Hour meter	56100	Curtis Instruments	17305628	1

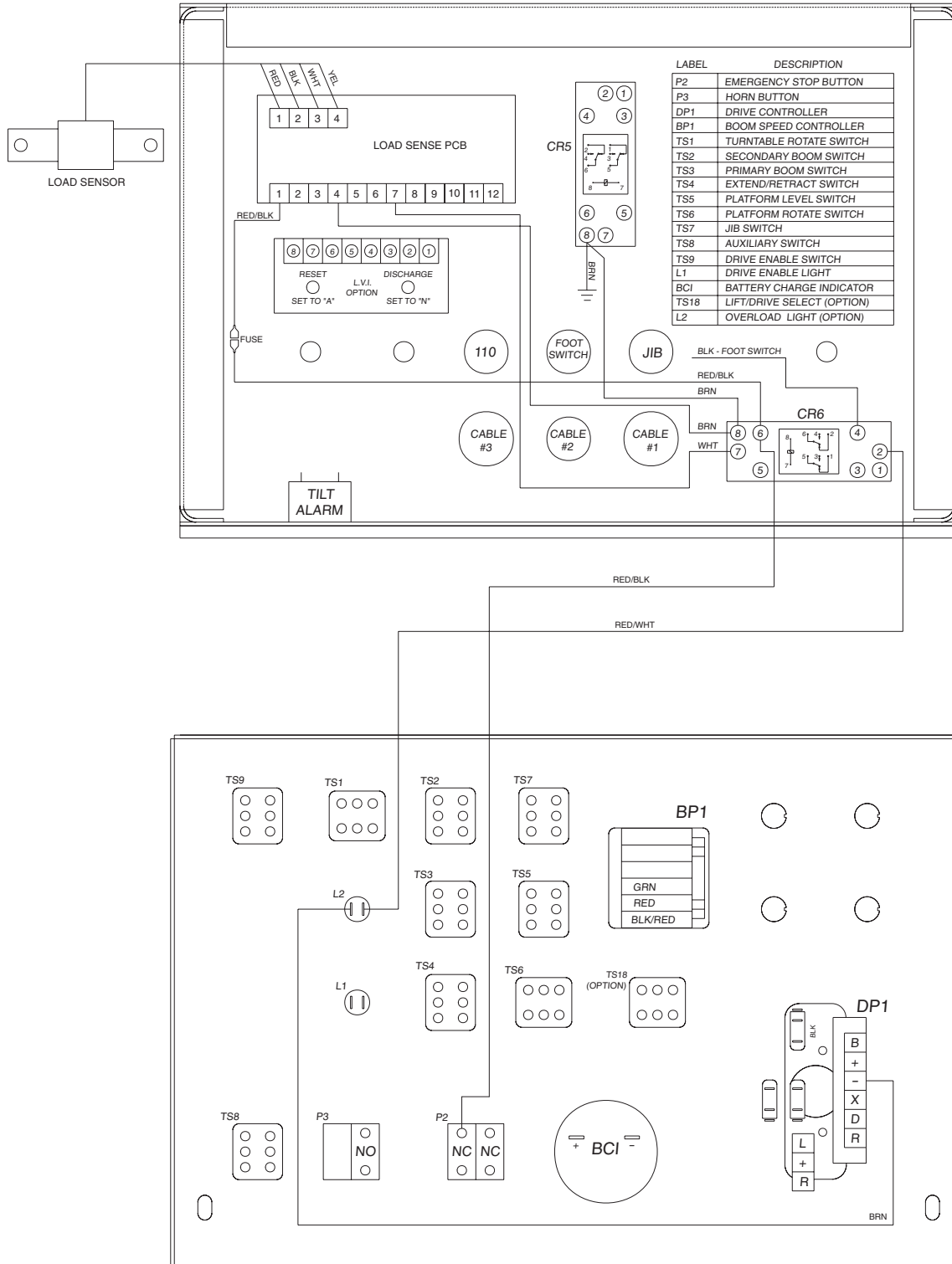
This list continues on the next page.

ELECTRICAL COMPONENTS

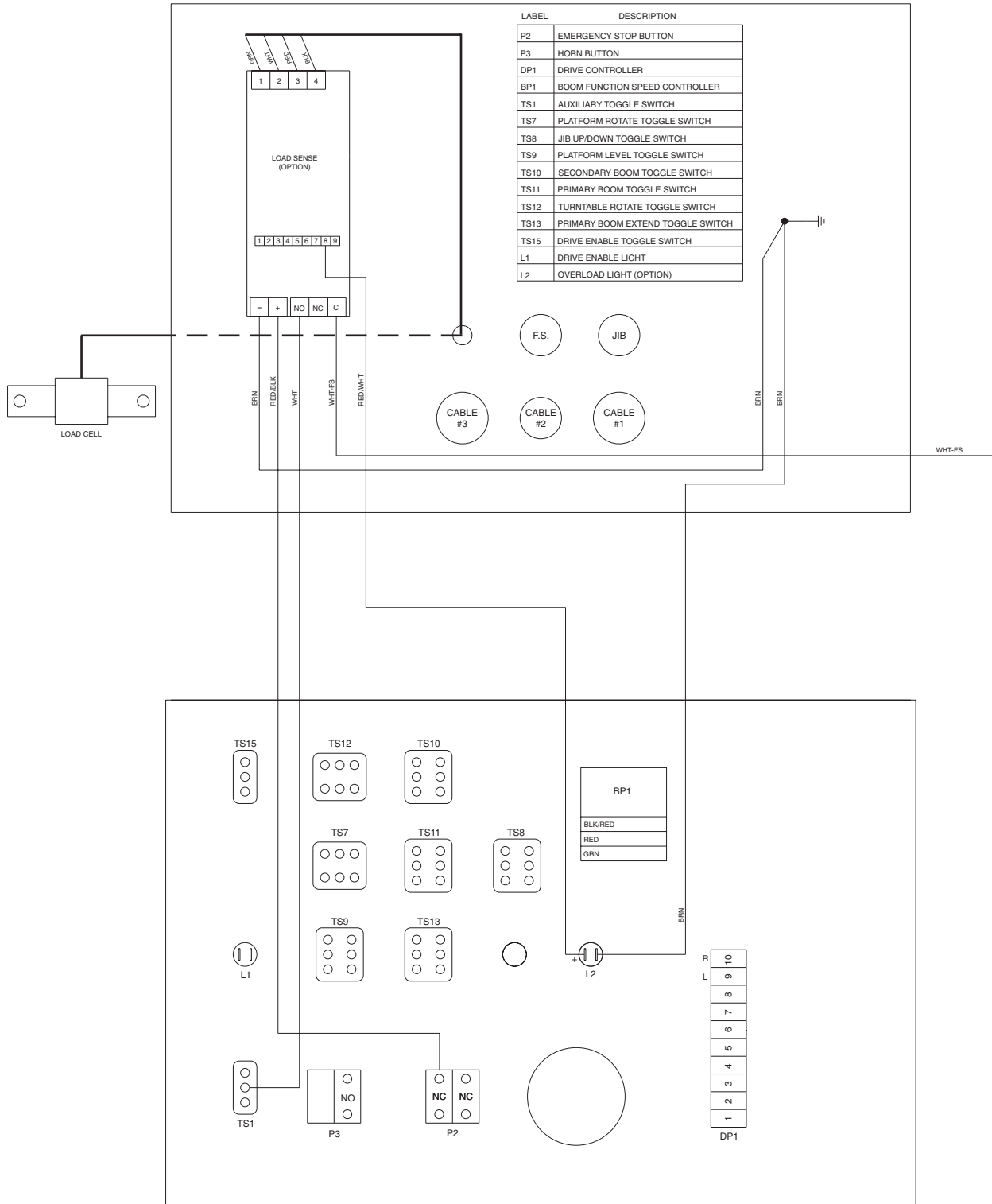
Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
KS1	Contact - Key switch, N.O.	45081	Telemecanique	ZB2-BE101	2
LS1-LS4	Contact - Limit switch	19491	Telemecanique	XESP2051	1
Level sensor ..	Level sensor, 4.5° (ANSI & CSA)	44586	Power Comp. of Midwest	LS36	1
MC1	Motor controller, Curtis	23314	Curtis Instruments	1205-205	1
MC1	Motor controller, Sepex 48V, 500 amp	56012	Curtis Instruments	1244-5502	1
P1, P2	Contact, N.C.	29732	Telemecanique	ZB2-BE102	4
P3	Contact, N.O.	45081	Telemecanique	ZB2-BE101	1
PR1	Relay, 180 amp	19550	Curtis Instruments	SW180 24DCCW/4	1
PR2	Relay, 180 amp	56434	Curtis Instruments	SW180L 24DCCW/26 ...	1
PR3	Relay, 80 amp	19549	Curtis Instruments	SW80 24DCCW/6	1
TS1, TS51	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	2
TS54	Toggle switch, DPST 2 position maintained	27378	Microswitch Control Inc.	2NT1-3	1
TS7-TS13 and TS57-TS63	Toggle switch, DPDT 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	14
TS2, TS6, TS15, TS52, TS55, TS56	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	6
TS4	Toggle switch, DPDT 3 position maintained	13038	Microswitch Control Inc.	2NT1-1	1

Load Sensor Option Diagram

(Z-34/22 before serial number 1734)
(Z-34/22N before serial number 2227)

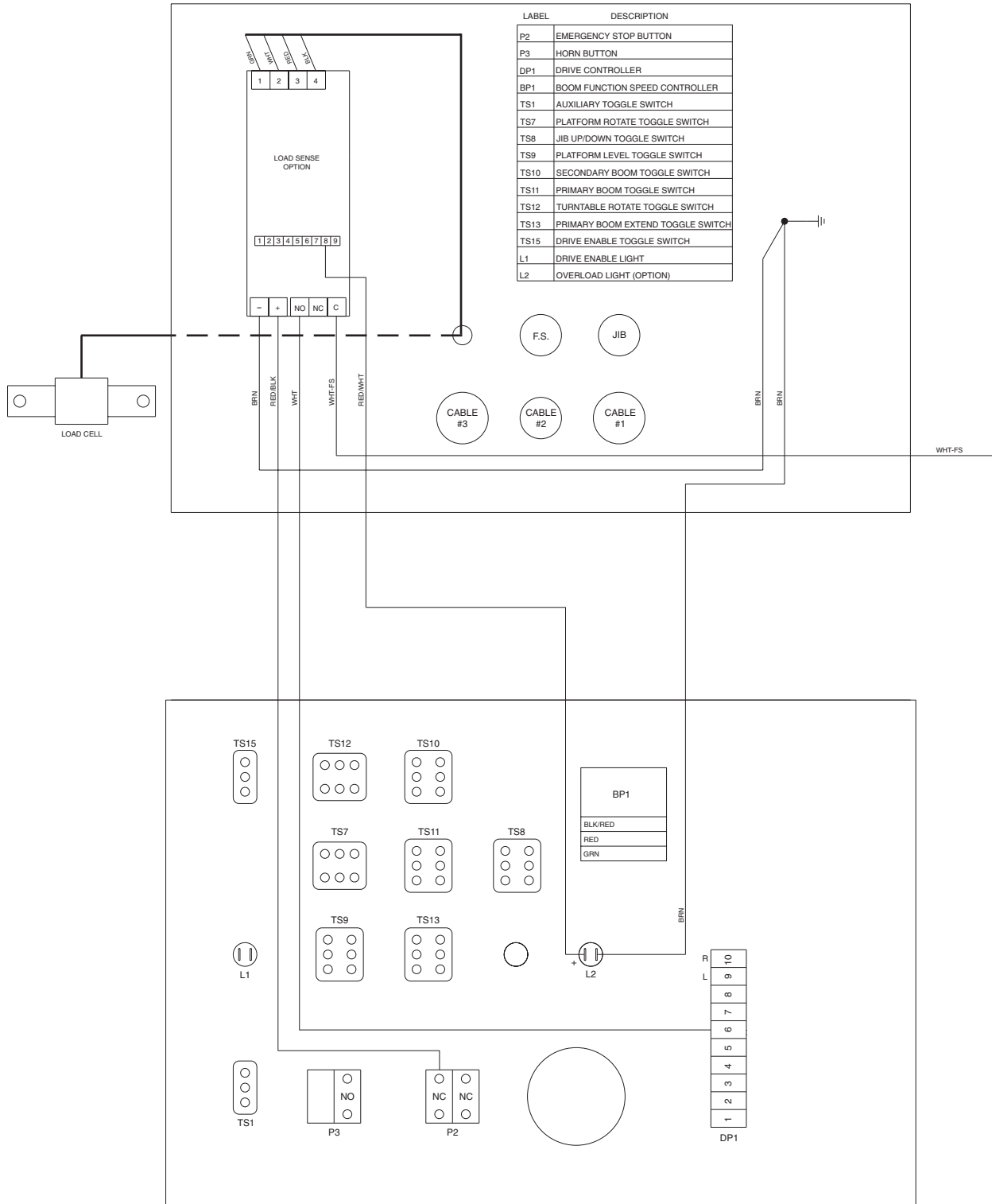


Load Sensor Option Diagram (Z-34/22 from serial number 1734 to 2060) (Z-34/22N from serial number 2227 to 2870)

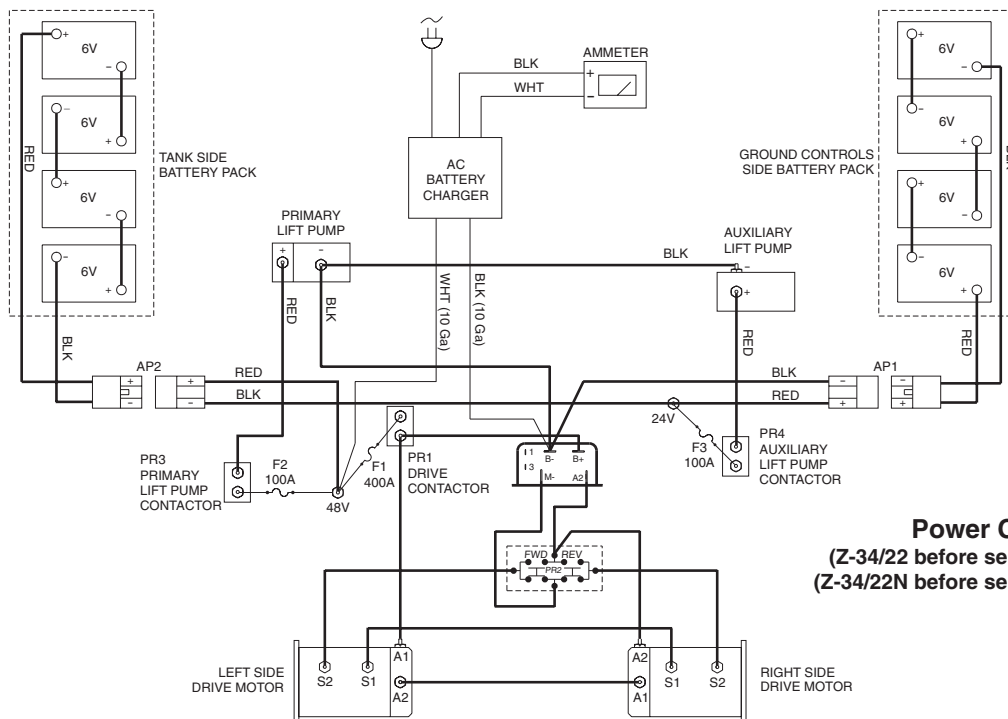


Load Sensor Option Diagram

(Z-34/22 from serial number 2061 to 3577)
 (Z-34/22N from serial number 2871 to 4260)

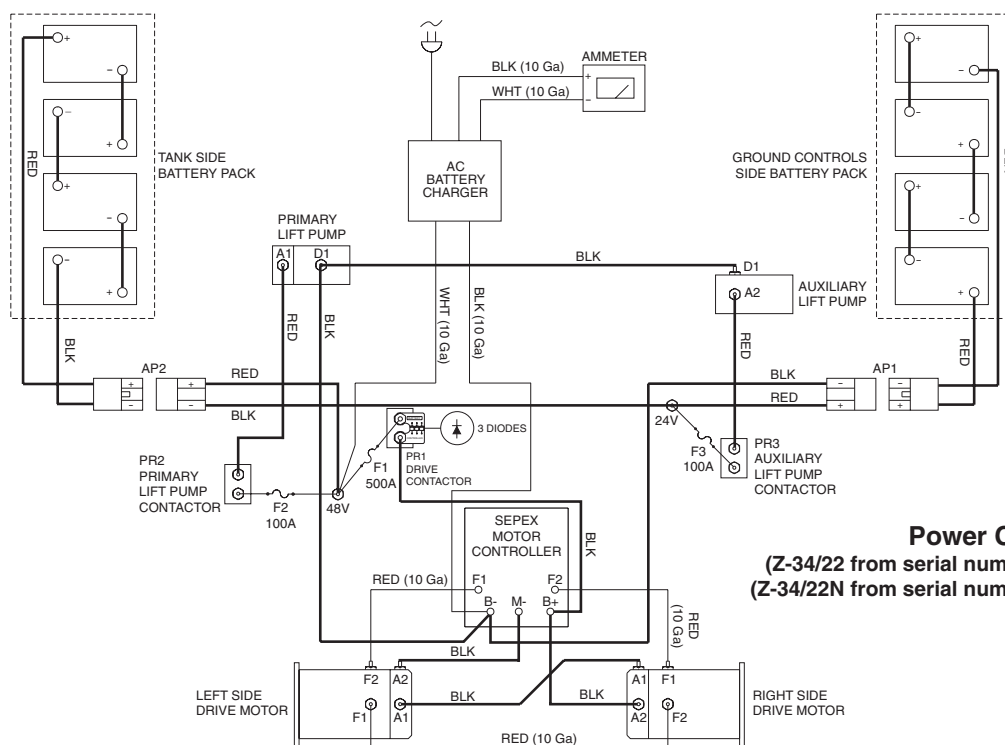


Power Cable Diagram
(Z-34/22 before serial number 3578)
(Z-34/22N before serial number 4261)



Power Cable Diagram

(Z-34/22 before serial number 1734)
(Z-34/22N before serial number 2227)

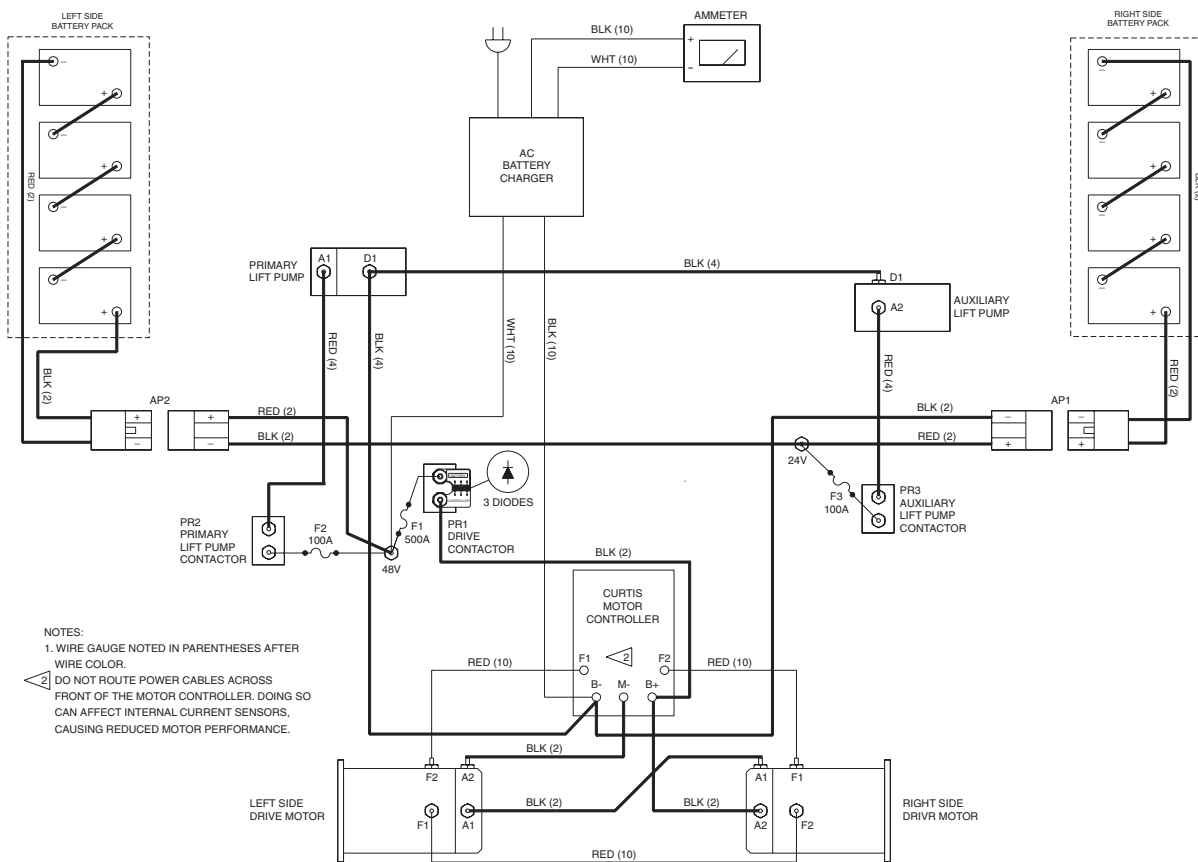


Power Cable Diagram

(Z-34/22 from serial number 1734 to 3577)
(Z-34/22N from serial number 2227 to 4260)

Power Cable Diagram


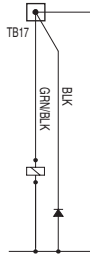

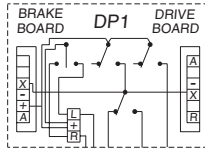




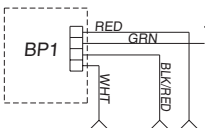


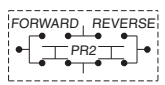

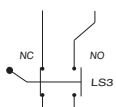


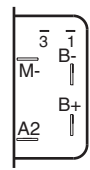




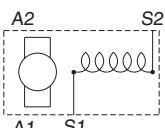
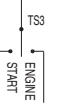



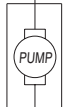
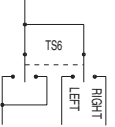

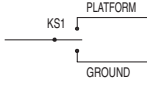

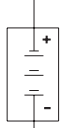
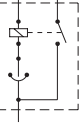

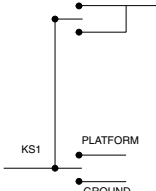



(Z-34/22 after serial number 3577)
(Z-34/22N after serial number 4260)



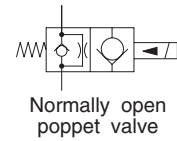
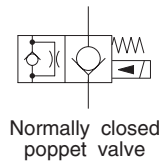
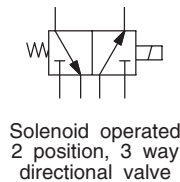
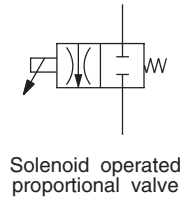
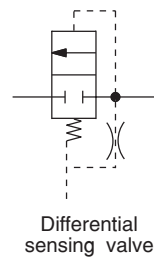
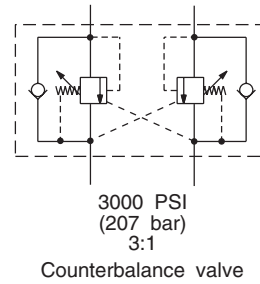
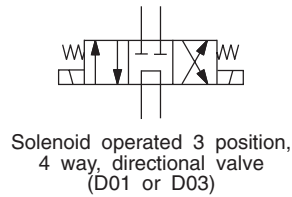
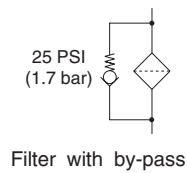
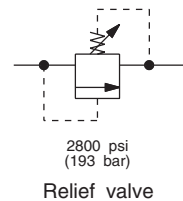
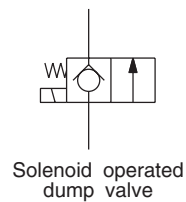
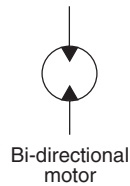
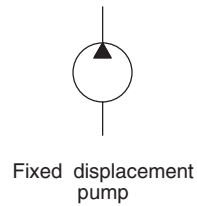
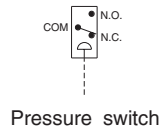
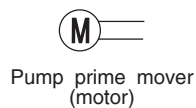
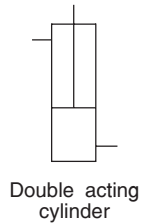
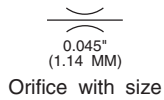
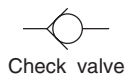
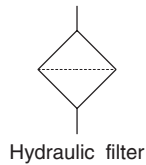
Abbreviations Legend

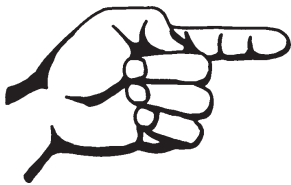
LABEL	DESCRIPTION
A	Alarm
AP	Anderson Plug
BCI	Battery charge indicator (option)
BP	Boom function speed controller
CB	Circuit breaker
CR	Control relay
DE	Drive enable
DP1	Drive proportional controller
F	Fuse
FB	Flashing beacon
FS	Foot switch
HM	Hour meter
J1	Brake release receptacle
KS	Key switch
L	Light or LED
LS	Limit switch
LVI	Low voltage indicator (option)
OL	Overload light (option)
P	Power switch
PR	Power relay
PS	Pressure switch
TB	Terminal base location
TP	Terminal platform location
TS	Toggle switch

Electrical Symbols Legend

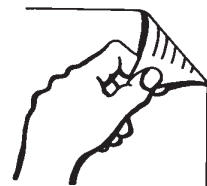
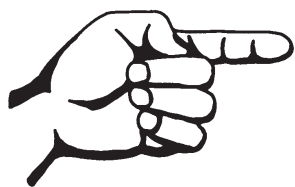
 <p>Wire color with cable number</p>	 <p>Ground suppression circuit</p>	 <p>LED</p>	 <p>Drive controller (Joystick)</p>	 <p>Horn/Alarm</p>
 <p>Terminal</p>	 <p>Circuit breaker</p>	 <p>Flashing beacon</p>	 <p>Boom function speed controller</p>	 <p>Solenoid or relay coil</p>
 <p>Quick disconnect terminal</p>	 <p>Dual pole power relay</p>	 <p>Hour meter</p>	 <p>Limit switch</p>	 <p>Relay contact normally open</p>
 <p>T-circuits connect at terminal</p>	 <p>Motor controller before: Z34-1737, Z34N-2227</p>	 <p>Brake release jack</p>	 <p>Power relay normally open</p>	 <p>Relay contact normally closed</p>
 <p>T-circuits connect</p>	 <p>Drive motor</p>	 <p>Toggle switch SPDT</p>	 <p>Limit switch normally open held closed</p>	 <p>Fuse</p>
 <p>Connection no terminal</p>	 <p>Auxiliary lift pump</p>	 <p>Toggle switch DPDT</p>	 <p>Horn button normally open</p>	 <p>Key switch (before Z34-3578 and Z34N-4261)</p>
 <p>Circuits crossing no connection</p>	 <p>6V Battery</p>	 <p>Tilt sensor</p>	 <p>Foot switch</p>	 <p>Key switch (after Z34-3578 and Z34N-4260)</p>
 <p>Diode</p>		 <p>Pressure switch</p>		
 <p>Emergency Stop button normally closed</p>				

Hydraulic Symbols Legend

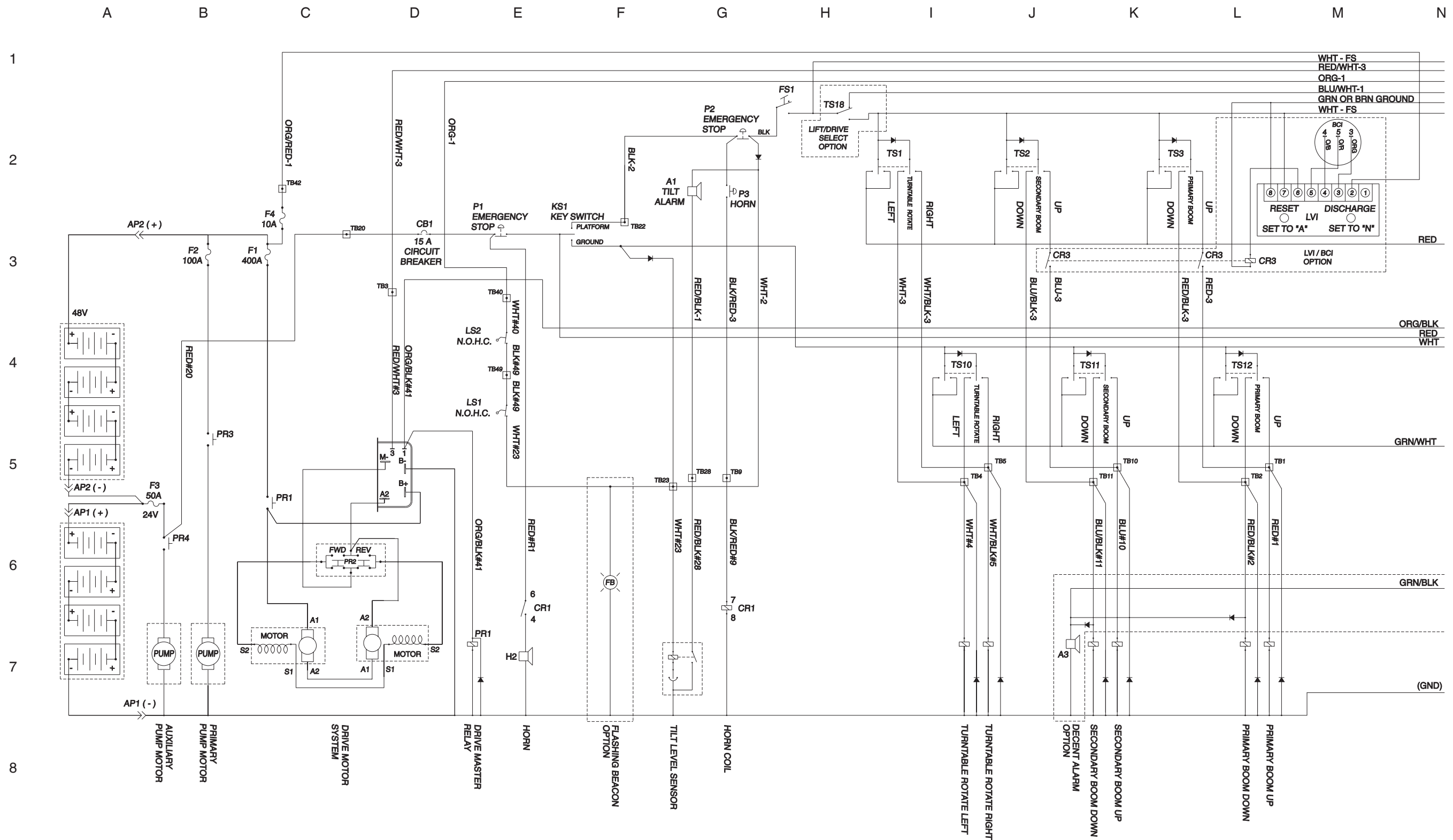




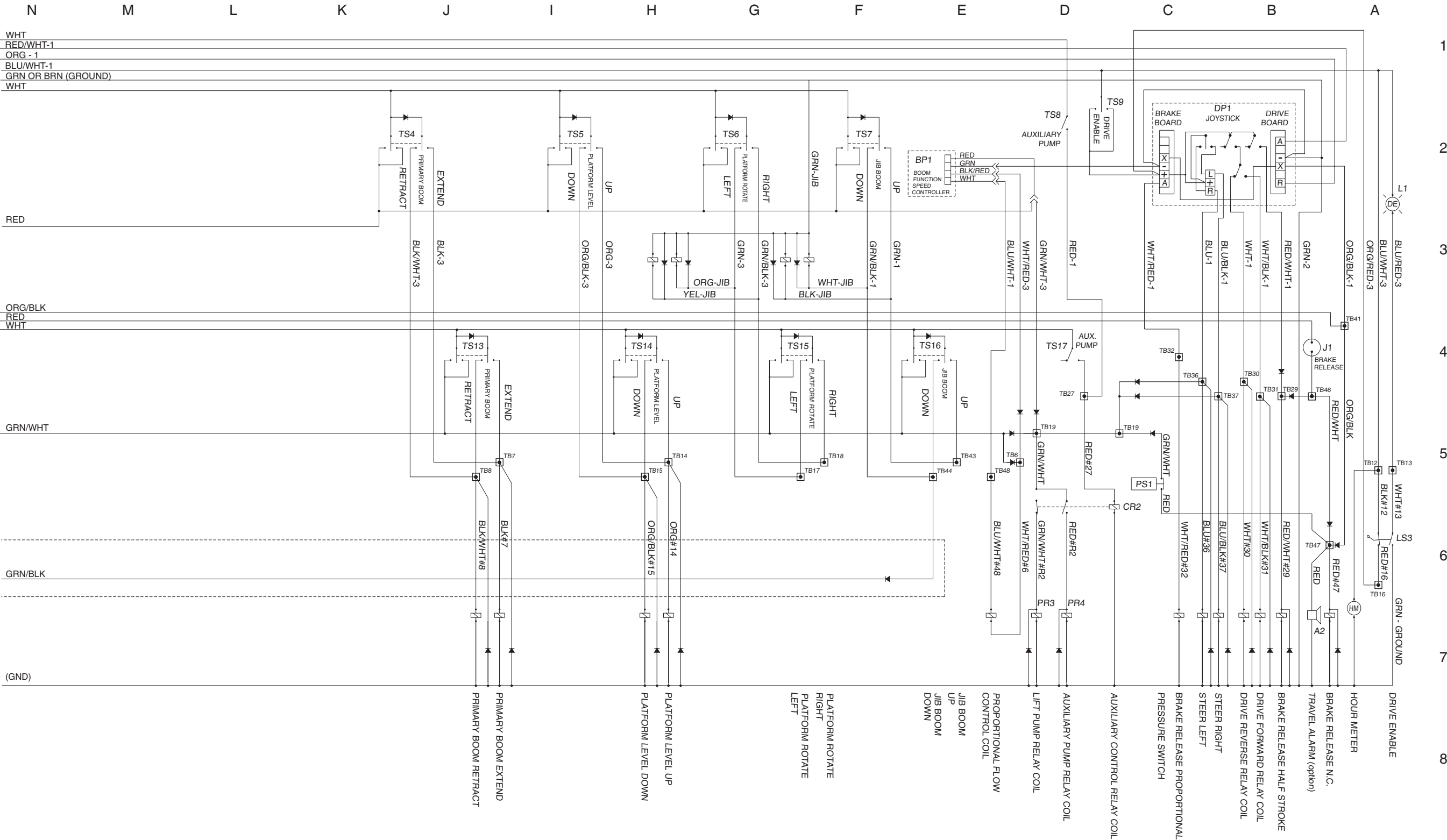
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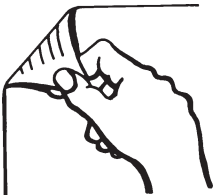
(Z-34/22N before serial number 304)

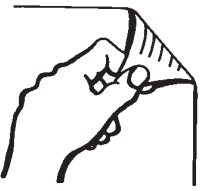
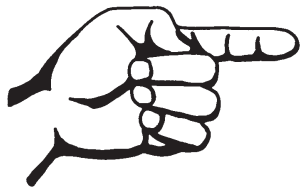


Electrical Schematic
(Z-34/22 before serial number 153)
(Z-34/22N before serial number 304)



Electrical Schematic
(Z-34/22 before serial number 153)
(Z-34/22N before serial number 304)

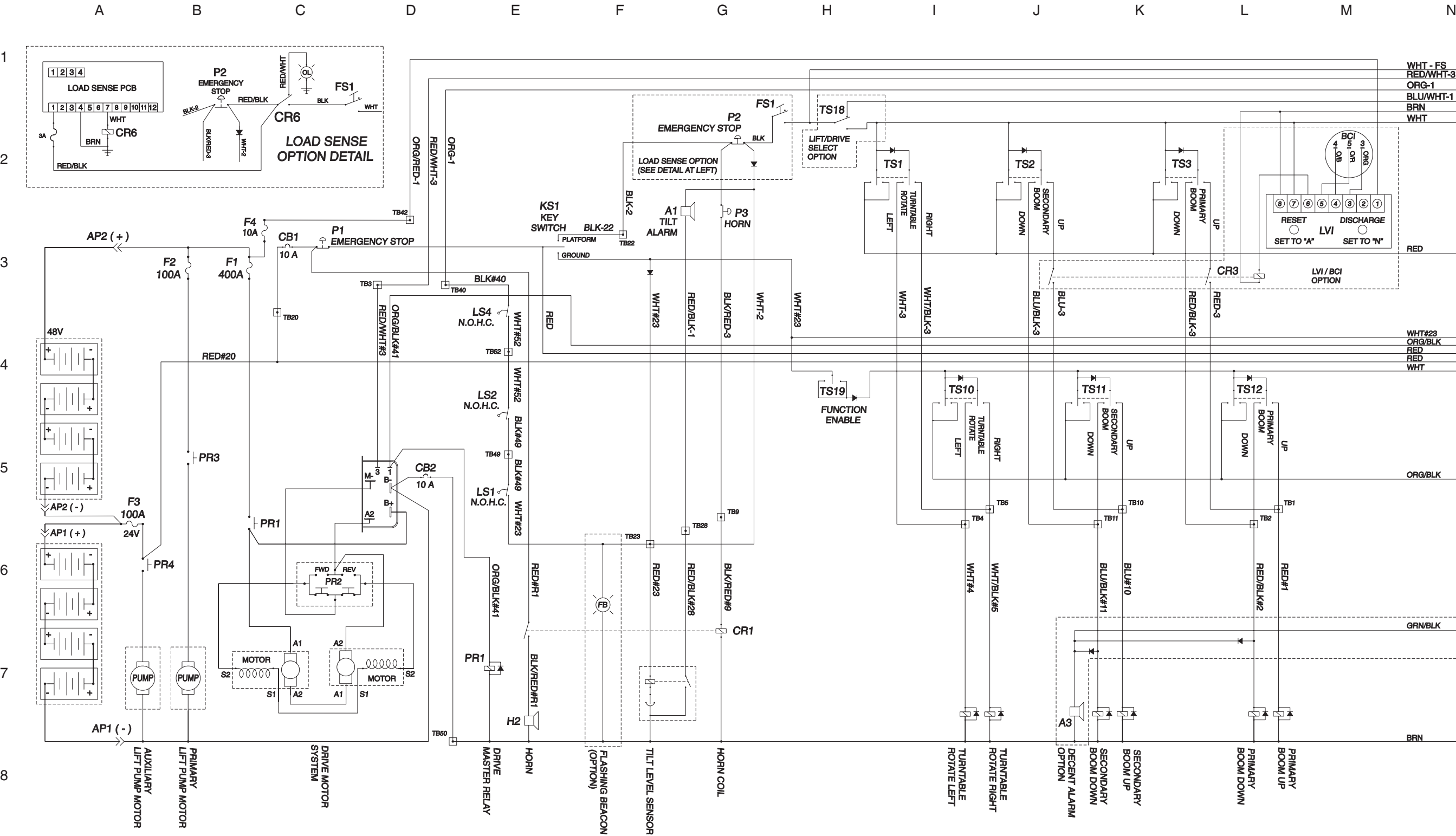




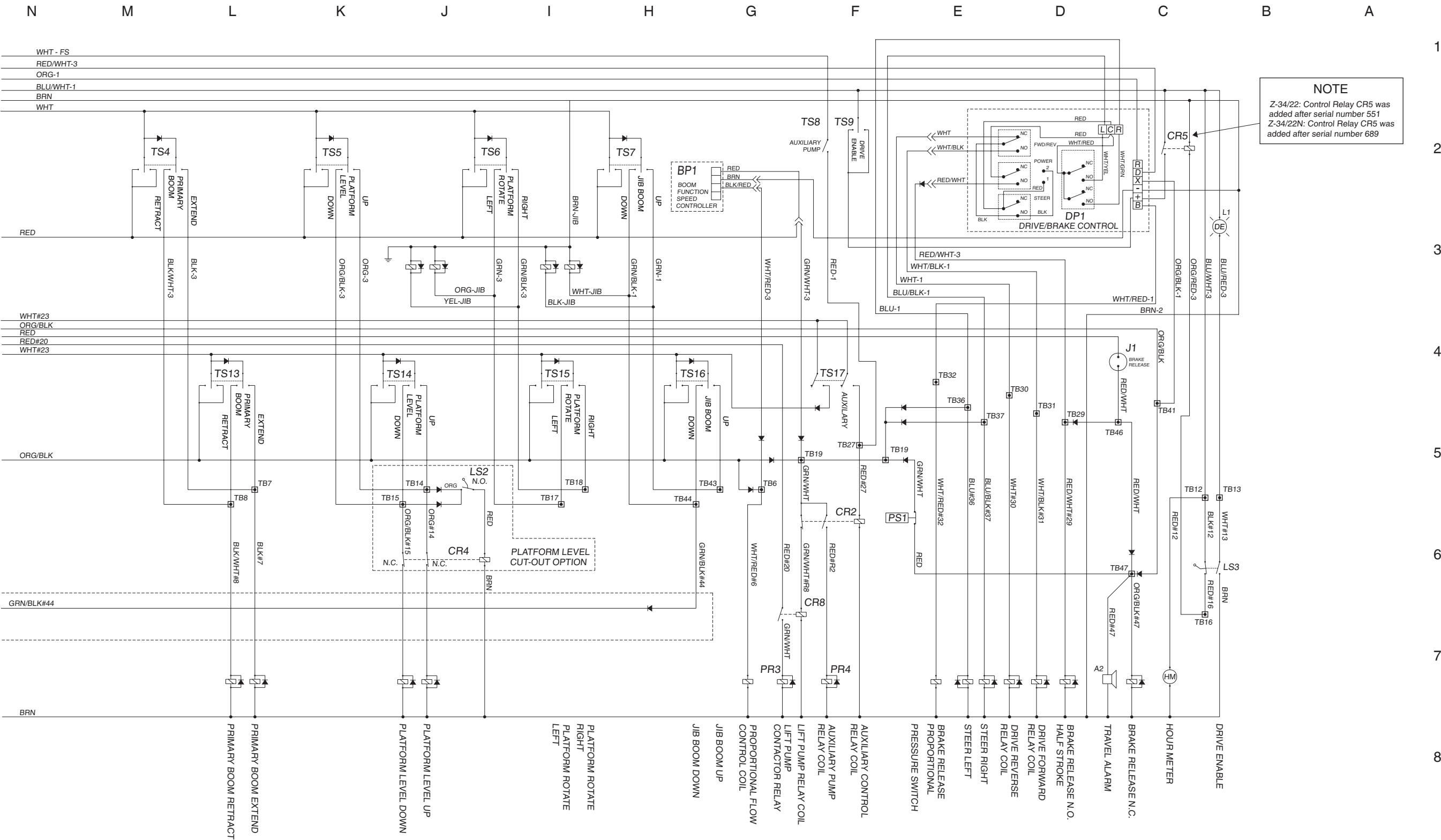
Electrical Schematic

(Z-34/22 from serial number 153 to 1733)

(Z-34/22N from serial number 304 to 2226)

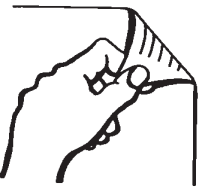
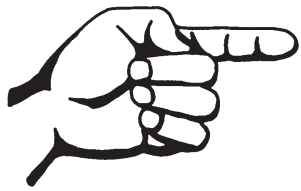


Electrical Schematic
(Z-34/22 from serial number 153 to 1733)
(Z-34/22N from serial number 304 to 2226)



Electrical Schematic
(Z-34/22 from serial number 153 to 1733)
(Z-34/22N from serial number 304 to 2226)





The diagram is a comprehensive electrical wiring schematic for a crane system, organized into 8 horizontal rows and 14 vertical columns labeled A through N.

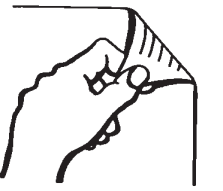
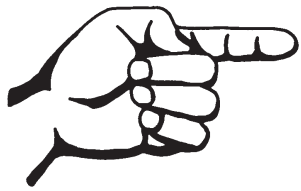
Key Components and Connections:

- Power Source (Row 4):** A 48V battery (AP2) is connected to the system. It includes a 3A fuse (F3) and a 100A fuse (F2). The battery is connected to a 24V line (AP1) and a 48V line (AP2).
- Motor Controller (Row 6):** A CURTIS 1244 SEPEX MOTOR CONTROLLER is the central unit. It has multiple input terminals (1-20) and output terminals (F1, F2, M-, B+, F1, F2). It is connected to two motors (A1, A2) and a drive motor (F1).
- Control and Safety (Rows 2-5):**
 - Emergency Stop (P1):** A 10A emergency stop switch connected to the 48V line.
 - Key Switch (KS1):** A key switch connected to the 48V line.
 - Limit Switches (LS1, LS2, LS4, LS5):** Various limit switches connected to the motor controller and other components.
 - Relays (CR1-CR5):** Several relays are used for control and safety, including CR1, CR2, CR3, CR4, and CR5.
 - Interlocks (TS55):** A limit switch (TS55) connected to the 48V line.
- Load Sense Option (Row 1):** A detail at the top left shows a load sense PCB with a 3A fuse (F3) and a 100A fuse (F2). It includes a load sense switch (P2) and a load sense relay (CR17).
- Function Enable (Row 8):** A section at the bottom right labeled 'FUNCTION ENABLE' with a 'BRN' (Brown) wire connection.

The diagram uses standard electrical symbols for wires, fuses, switches, relays, motors, and sensors. Wires are color-coded and labeled with alphanumeric codes (e.g., RED, BLK, WHT, GRN, BRN, ORG, BLK-2, WHT-2, etc.).

Electrical Schematic
(Z-34/22 from serial number 1734 to 1834)
(Z-34/22N from serial number 2227 to 2447)

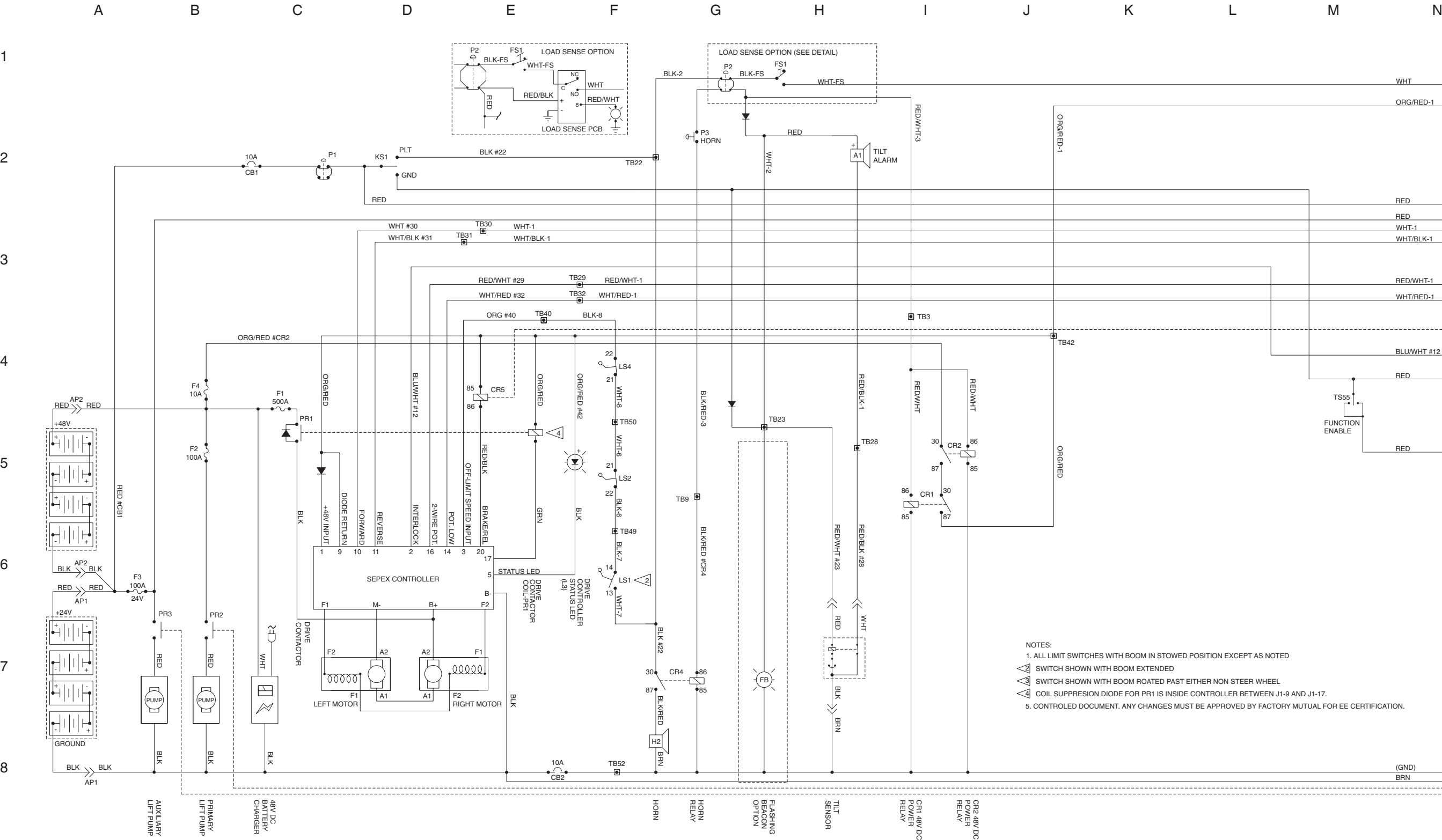




Electrical Schematic

(Z-34/22 from serial number 1835 to 2060)

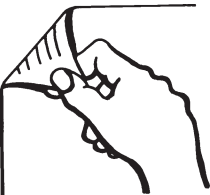
(Z-34/22N from serial number 2448 to 2870)

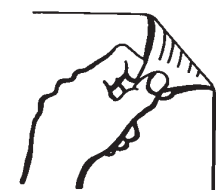
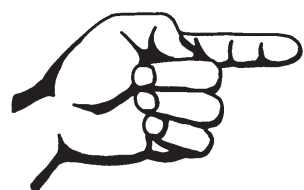


The diagram is a complex hydraulic and electrical schematic for a crane system. It is organized into columns labeled N through A and rows labeled 1 through 8. The schematic shows the following components and connections:

- Hydraulic Components:**
 - Pumps:** CR19 (Primary Pump), CR20 (Auxiliary Pump), CR3 (Lift Pump), CR10 (Lift Pump).
 - Valves:** Various solenoid valves for boom extension/retraction, platform level, and jib rotation.
 - Sensors:** Pressure sensors (e.g., TB1, TB2, TB3, TB4, TB5, TB6, TB7, TB8, TB9, TB10, TB11, TB12, TB13, TB14, TB15, TB16, TB17, TB18, TB19, TB20, TB21, TB22, TB23, TB24, TB25, TB26, TB27, TB28, TB29, TB30, TB31, TB32, TB33, TB34, TB35, TB36, TB37, TB38, TB39, TB40, TB41, TB42, TB43, TB44, TB45, TB46, TB47, TB48, TB49, TB50, TB51, TB52).
- Electrical Components:**
 - Control Panel:** Includes a DP1 (Differential Pressure Switch), a J1 (Brake Release Jack), and a J2 (Brake Release Jack).
 - Relays:** Various relays for controlling the hydraulic system.
 - Wiring:** Multiple lines representing electrical connections between components.
- Legend:**
 - Solenoid:** A circle with a diagonal line and a letter (e.g., A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z).
 - Pump:** A circle with a diagonal line and a letter (e.g., CR19, CR20, CR3, CR10).
 - Pressure Sensor:** A circle with a diagonal line and a letter (e.g., TB1, TB2, TB3, TB4, TB5, TB6, TB7, TB8, TB9, TB10, TB11, TB12, TB13, TB14, TB15, TB16, TB17, TB18, TB19, TB20, TB21, TB22, TB23, TB24, TB25, TB26, TB27, TB28, TB29, TB30, TB31, TB32, TB33, TB34, TB35, TB36, TB37, TB38, TB39, TB40, TB41, TB42, TB43, TB44, TB45, TB46, TB47, TB48, TB49, TB50, TB51, TB52).
 - Relay:** A circle with a diagonal line and a letter (e.g., DP1, J1, J2).
 - Wiring:** Multiple lines representing electrical connections between components.

Electrical Schematic
(Z-34/22 from serial number 1835 to 2060)
(Z-34/22N from serial number 2448 to 2870)

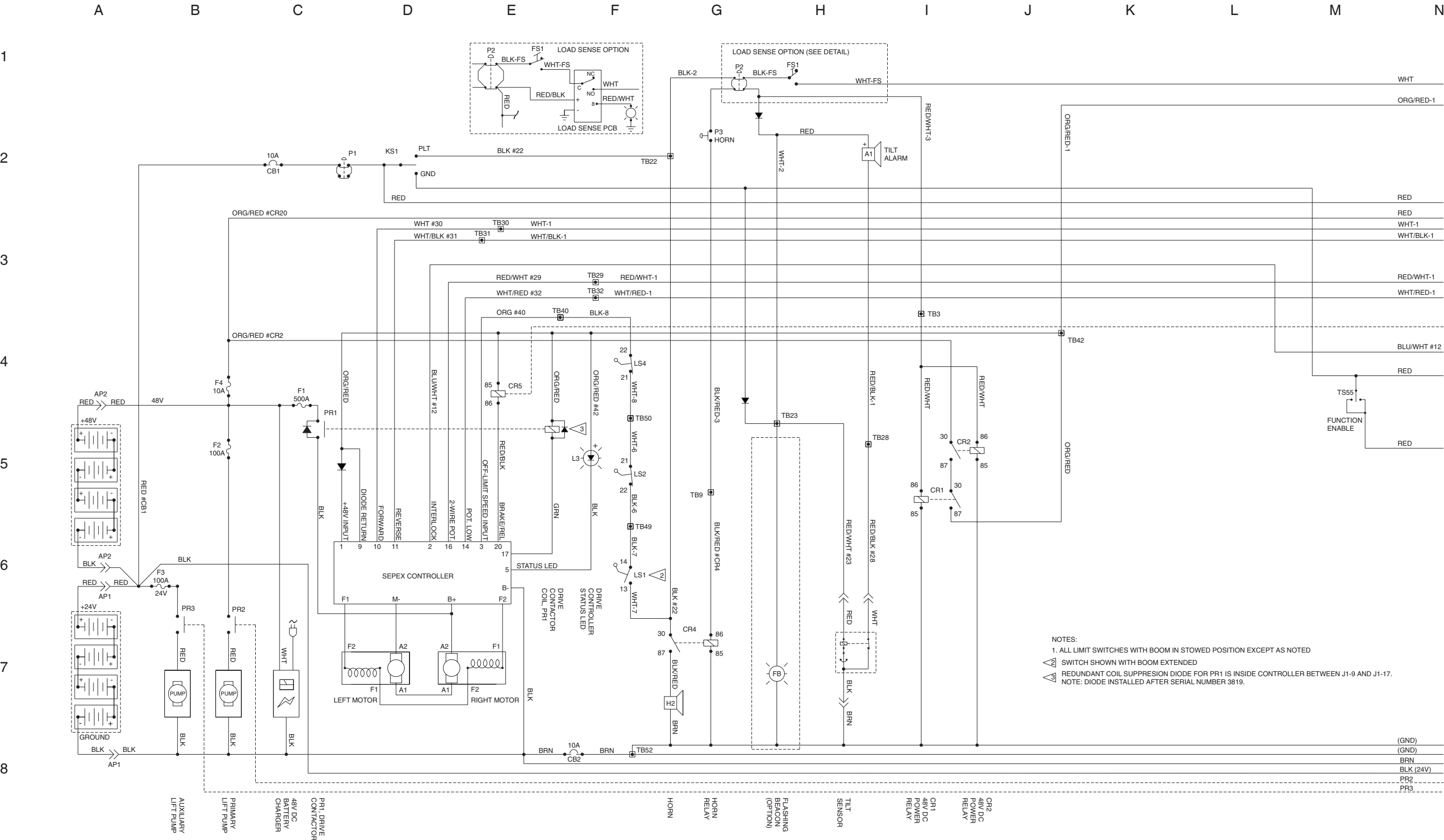




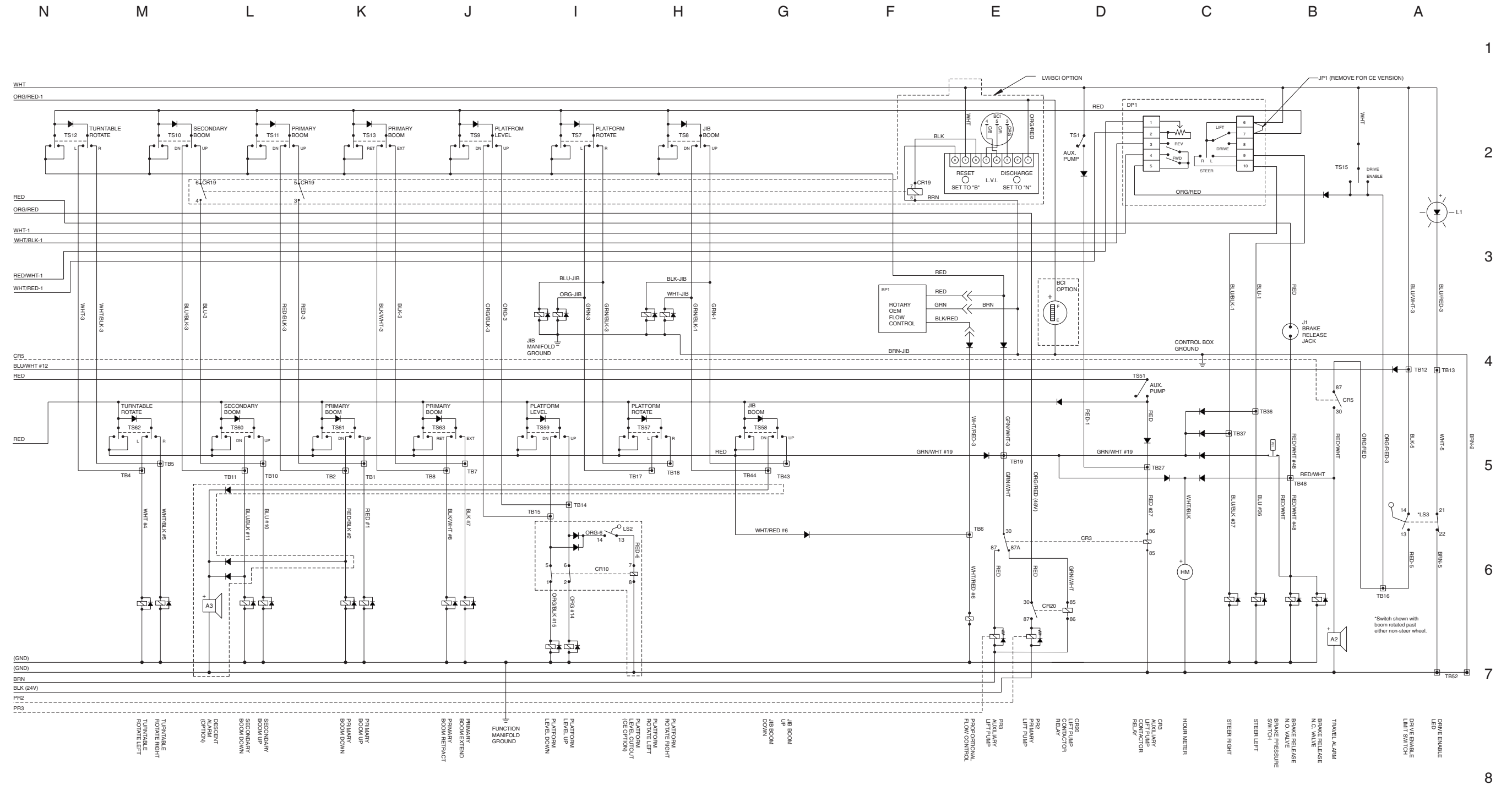
Electrical Schematic

(Z-34/22 from serial number 2061 to 3577)

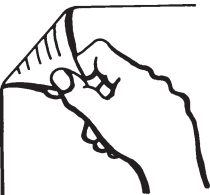
(Z-34/22N from serial number 2871 to 4260)

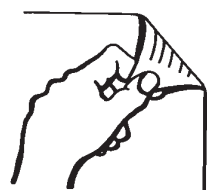
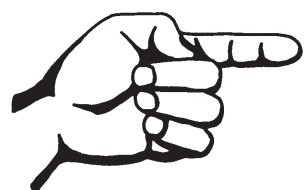


Electrical Schematic
(Z-34/22 from serial number 2061 to 3577)
(Z-34/22N from serial number 2871 to 4260)



Electrical Schematic
(Z-34/22 from serial number 2061 to 3577)
(Z-34/22N from serial number 2871 to 4260)

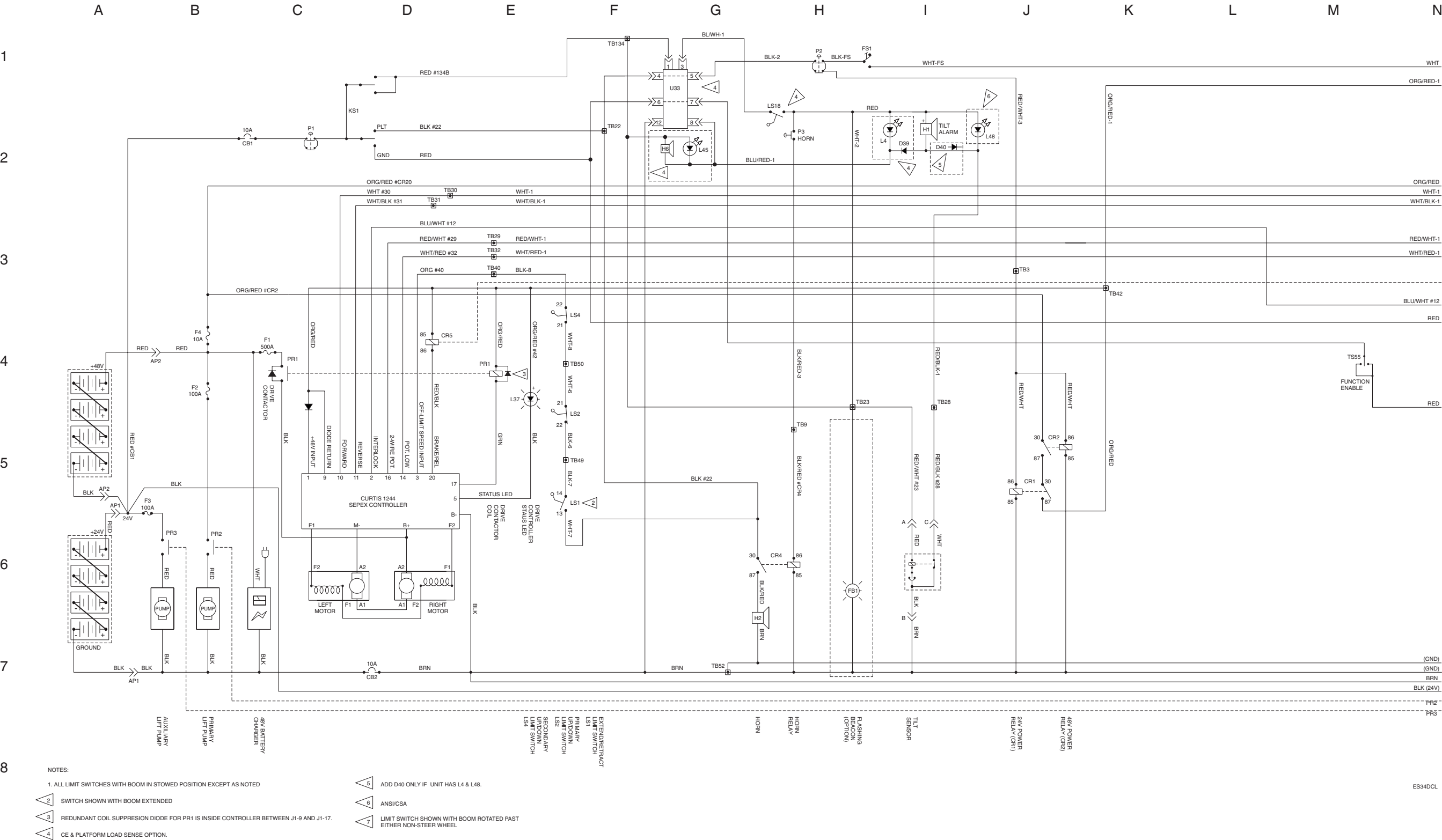




Electrical Schematic

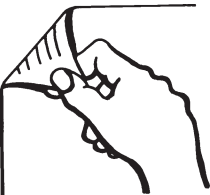
(Z-34/22 from serial number 3578 to 4799)

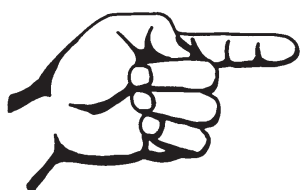
(Z-34/22N from serial number 4261 to 5619)



The diagram is a complex electrical wiring schematic. It features a grid with columns labeled N, M, L, K, J, I, H, G, F, E, D, C, B, A and rows labeled 1, 2, 3, 4, 5, 6, 7, 8. The schematic includes numerous components such as switches (TS1, TS2, TS3, TS4, TS5, TS6, TS7, TS8, TS9, TS10, TS11, TS12, TS13, TS14, TS15, TS16, TS17, TS18, TS19, TS20, TS21, TS22, TS23, TS24, TS25, TS26, TS27, TS28, TS29, TS30, TS31, TS32, TS33, TS34, TS35, TS36, TS37, TS38, TS39, TS40, TS41, TS42, TS43, TS44, TS45, TS46, TS47, TS48, TS49, TS50, TS51, TS52, TS53, TS54, TS55, TS56, TS57, TS58, TS59, TS60, TS61, TS62, TS63, TS64, TS65, TS66, TS67, TS68, TS69, TS70, TS71, TS72, TS73, TS74, TS75, TS76, TS77, TS78, TS79, TS80, TS81, TS82, TS83, TS84, TS85, TS86, TS87, TS88, TS89, TS90, TS91, TS92, TS93, TS94, TS95, TS96, TS97, TS98, TS99, TS100), relays (CR1, CR2, CR3, CR4, CR5, CR6, CR7, CR8, CR9, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR20, CR21, CR22, CR23, CR24, CR25, CR26, CR27, CR28, CR29, CR30, CR31, CR32, CR33, CR34, CR35, CR36, CR37, CR38, CR39, CR40, CR41, CR42, CR43, CR44, CR45, CR46, CR47, CR48, CR49, CR50, CR51, CR52, CR53, CR54, CR55, CR56, CR57, CR58, CR59, CR60, CR61, CR62, CR63, CR64, CR65, CR66, CR67, CR68, CR69, CR70, CR71, CR72, CR73, CR74, CR75, CR76, CR77, CR78, CR79, CR80, CR81, CR82, CR83, CR84, CR85, CR86, CR87, CR88, CR89, CR90, CR91, CR92, CR93, CR94, CR95, CR96, CR97, CR98, CR99, CR100), pumps (AUX. PUMP, LIFT PUMP, STEER PUMP), and LEDs (DRIVE ENABLE LED, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100). The diagram also includes a legend at the bottom identifying components like CR20, CR9, and H3.

Electrical Schematic
(Z-34/22 from serial number 3578 to 4799)
(Z-34/22N from serial number 4261 to 5619)

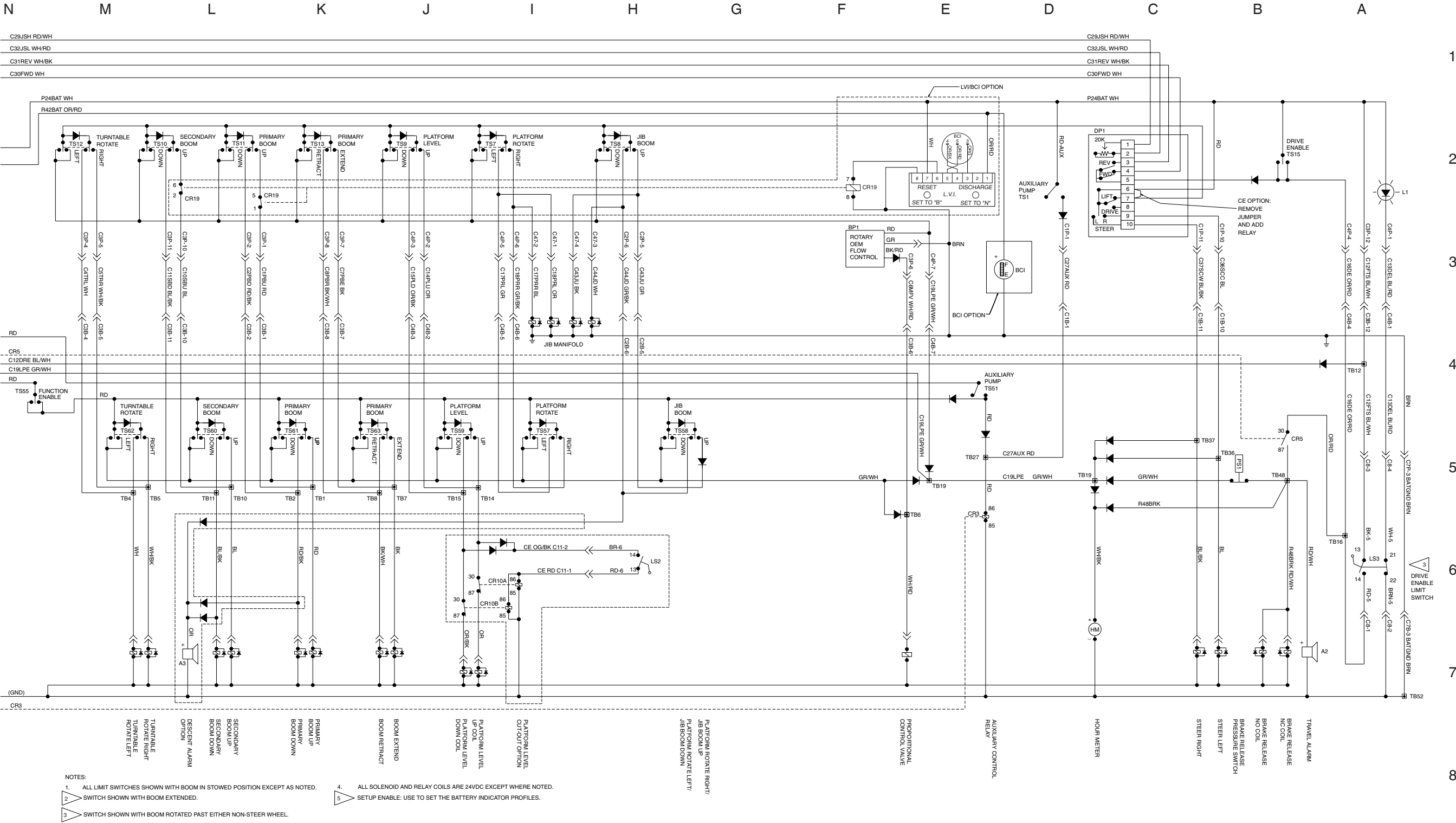




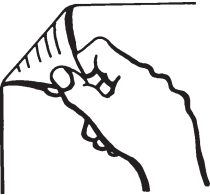
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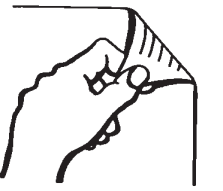
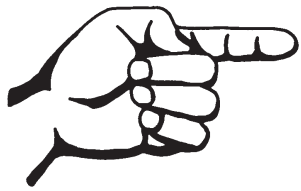
- ALL LIMIT SWITCHES SHOWN WITH BOOM IN STOWED POSITION EXCEPT AS NOTED.
- SWITCH SHOWN WITH BOOM EXTENDED.
- SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL.
- ALL SOLENOID AND RELAY COILS ARE 24VDC EXCEPT WHERE NOTED.

Electrical Schematic
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)



Electrical Schematic
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)

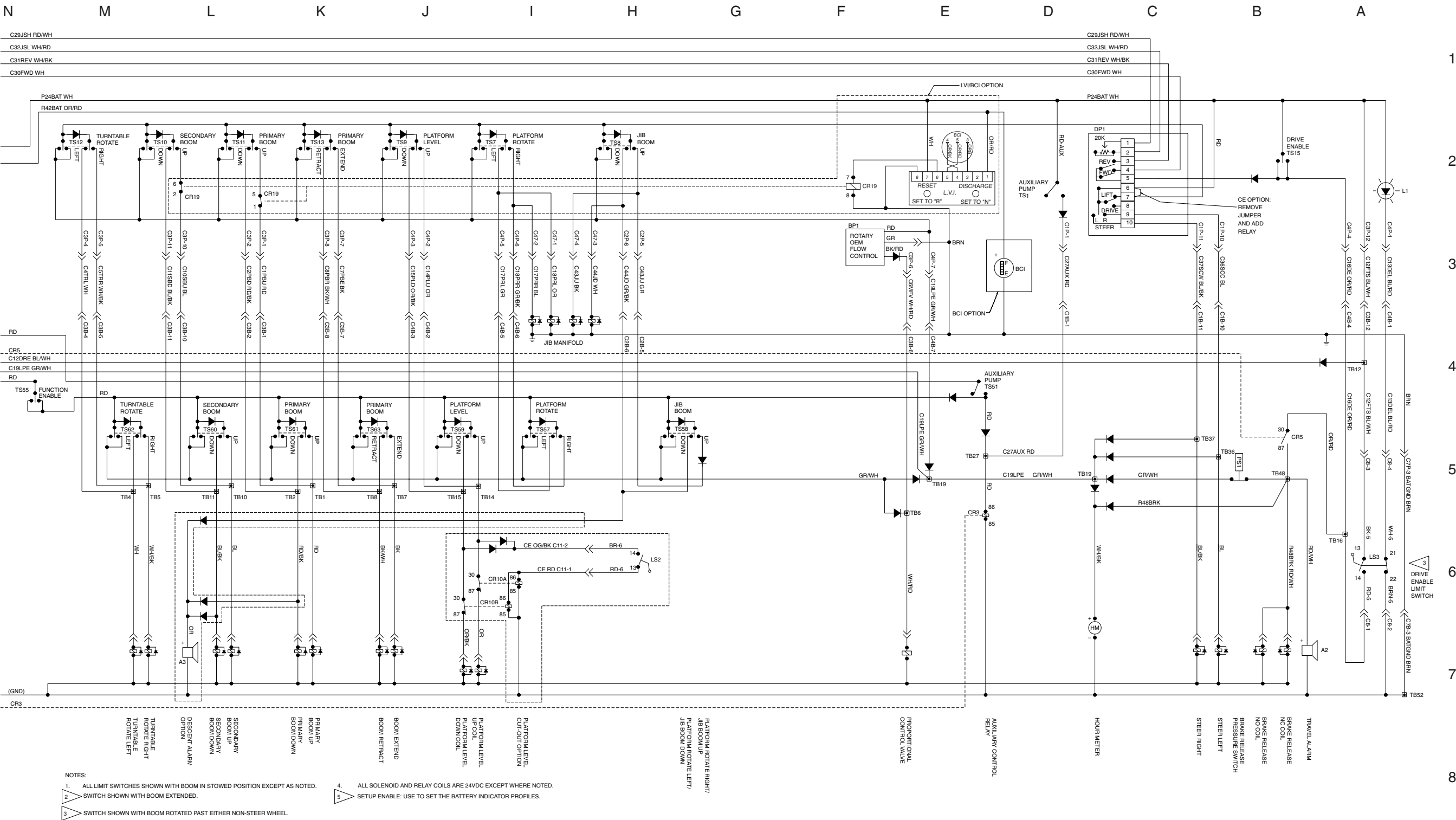




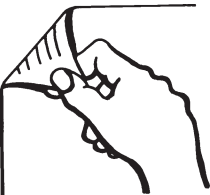
A	B	C	D	E	F	G	H	I	J	K	L	M	N
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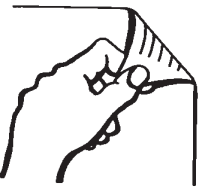
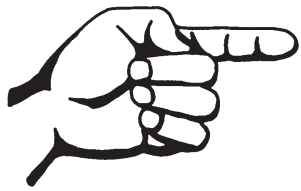


Electrical Schematic - CE Models
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)



Electrical Schematic - CE Models
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)

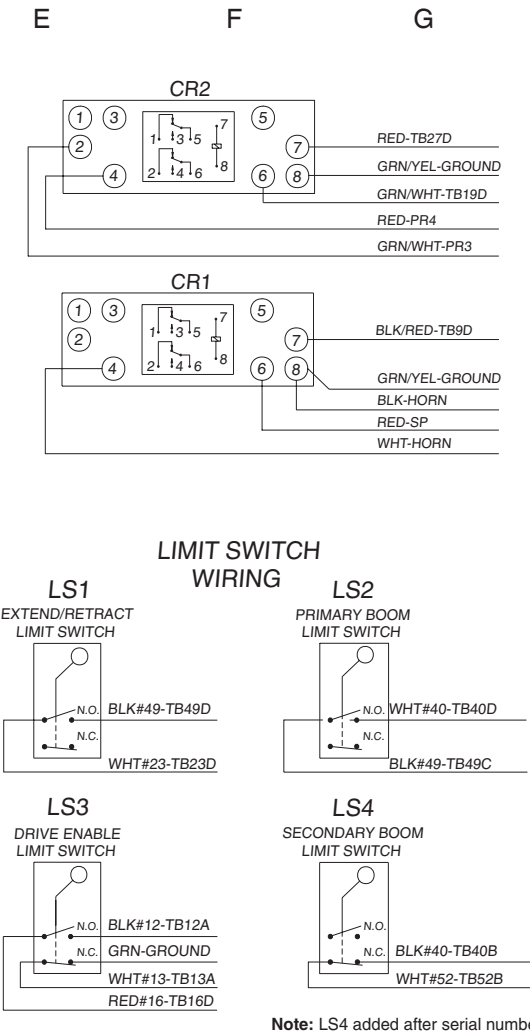
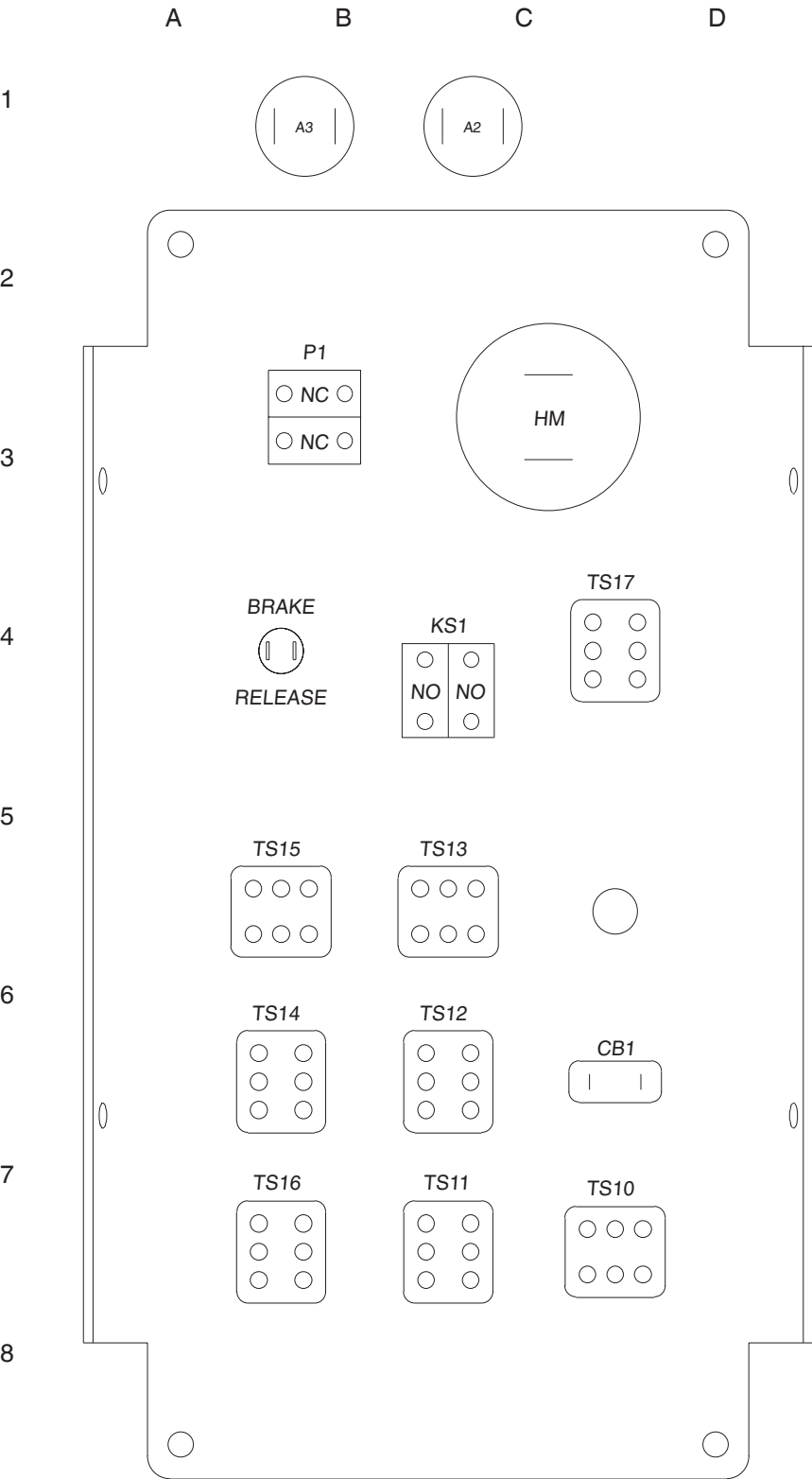




Ground Control Panel Legend

(Z-34/22 before serial number 153)

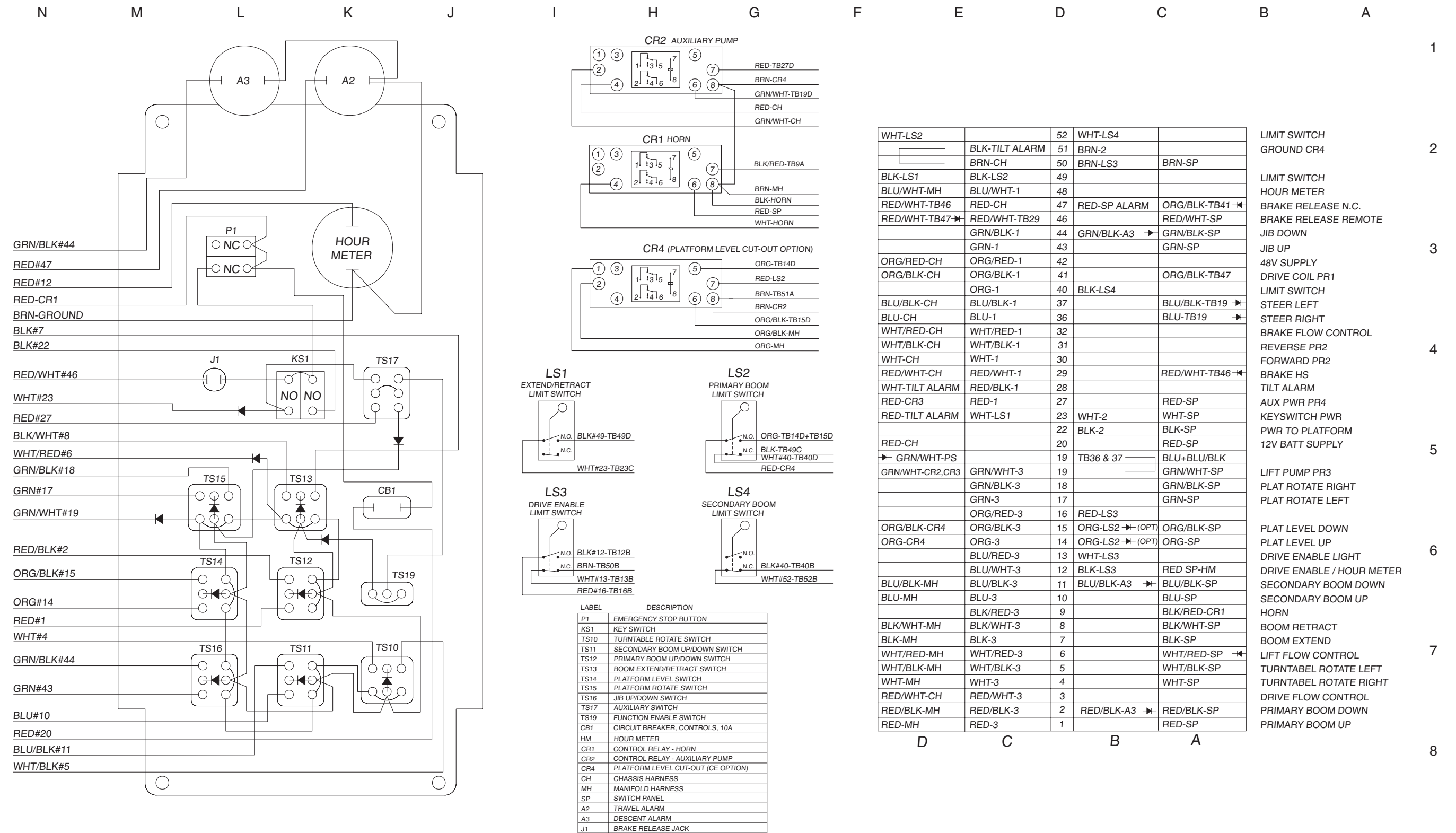
(Z-34/22N before serial number 304)



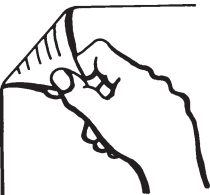
LABEL		DESCRIPTION
P1		EMERGENCY STOP BUTTON
KS1		KEY SWITCH
TS10		TURNTABLE ROTATE SWITCH
TS11		SECONDARY BOOM SWITCH
TS12		PRIMARY BOOM SWITCH
TS13		EXTEND/RETRACT SWITCH
TS14		PLATFORM LEVEL SWITCH
TS15		PLATFORM ROTATE SWITCH
TS16		JIB SWITCH
TS17		AUXILIARY SWITCH
CB1		15amp. CIRCUIT BREAKER
HM		HOUR METER
CR1		CONTROL RELAY, HORN
CR2		CONTROL RELAY, AUXILIARY PUMP
A2		TRAVEL ALARM
A3		DESCENT ALARM

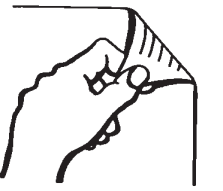
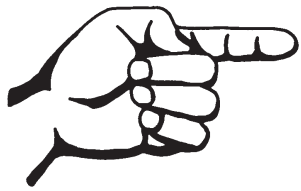
BLK-TILT AL.	GRN/YEL-2	51	GRN/YEL-CR2	GRN/YEL-TB50	GROUND
GRN/YEL-TB51	GR/YL-PUMP	50	GRN/YEL-S.P.	GRN/YEL-LS3	LIMIT SWITCH
BLK-LS1	BLK-LS2	49			
BLU/WHT-MH	BLU/WHT-1	48			
RED-B.R.V.	RED-S.P. AL.	47	RD/WT-TB46	OR/B-TB41	BRAKE RELEASE N.C.
	RD/WT-TB29	46	RD/WT-TB47	RD/WT S.P.	EMERGENCY BRAKE RELEASE N.C.
	GRN/BLK-1	44	GR/BK-S.P.	GR/BK-D.A.	JIB DOWN
	GRN-1	43	GRN S.P.		JIB UP
OG/RD-POW.	ORG/RED-1	42			48V SUPPLY
ORG/BLK-PR1	ORG/BLK-1	41		ORG/BLK-TB47	DRIVE COIL PR1
WHT-LS2	ORG-1	40			LIMIT SWITCH
BLU/BLK-S.V.	BLU/BLK-1	37		BL/BK-TB19	STEER LEFT
BLU-STEER V.	BLU-1	36		BU-TB19	STEER RIGHT
WT/RD-BK.F.C.	WHT/RED-1	32			BRAKE F.C.
WT/BK-PR2	WHT/BLK-1	31			REVERSE PR2
WHT-PR2	WHT-1	30			FORWARD PR2
RD/WT-B.V.	R/W-1	29	R/W-TB46		BRAKE H.S.
WHT-T. AL.	RED/BLK-1	28			TILT ALARM
RED-CR2	RED-1	27	RED-S.P.		AUXILIARY POWER PR4
WHT-LS1	RED-TILT AL.	23	WT-S.P.	WHT-2	KEY SWITCH POWER
		22	BLK S.P.	BLK-2	POWER TO PLATFORM
RED-POWER		20	RED S.P.		12V BATTERY SUPPLY
GN/WT-P.S.		19	GR/WT-TB36&37		LIFT PUMP PR3
GRN/WHT-CR2	GRN/WHT-3	19	GR/WT S.P.		PLATFORM ROTATE RIGHT
	GRN/BLK-3	18	GR/BK S.P.		PLATFORM ROTATE LEFT
	GRN-3	17	GRN S.P.		
	ORG/RED-3	16		RED-LS3	
ORG/BLK-4	ORG/BLK-3	15	OG/BK S.P.		PLATFORM LEVEL DOWN
ORG-4	ORG-3	14	ORG S.P.		PLATFORM LEVEL UP
	BLU/RED-3	13		WHT-LS3	DRIVE ENABLE LIGHT
	BLU/WHT-3	12	RED S.P.-H.M.	BLK-LS3	DRIVE ENABLE / HOUR METER
BLU/BLK-4	BLU/BLK-3	11	BU/BK S.P.	BU/BK-D.A.	SECONDARY BOOM DOWN
BLU-4	BLU-3	10	BLU S.P.		SECONDARY BOOM UP
	BLK/RED-3	9		BK/RD-CR1	HORN
BLK/WHT-4	BLK/WHT-3	8	BK/WT S.P.		BOOM RETRACT
BLK-4	BLK-3	7	BLK S.P.		BOOM EXTEND
W/R-4	WHT/RED-3	6	WT/RD S.P.		LIFT FLOW CONTROL
WHT/BLK-4	WHT/BLK-3	5	WT/BK S.P.		TURNTABLE ROTATE LEFT
WHT-4	WHT-3	4	WHT S.P.		TURNTABLE ROTATE RIGHT
R/W-CURTIS	RED/WHT-3	3			DRIVE FLOW CONTROL
RED/BLK-4	RED/BLK-3	2	RD/BK S.P.	RD/BK-D.A.	PRIMARY BOOM DOWN
RED-4	RED-3	1	RED S.P.		PRIMARY BOOM UP
D	C		B	A	

Ground Control Panel Wiring Diagram (Z-34/22 from serial number 153 to 1733) (Z-34/22N from serial number 304 to 2226)



Ground Control Panel Wiring Diagram
(Z-34/22 from serial number 153 to 1733)
(Z-34/22N from serial number 304 to 2226)





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The diagram illustrates the electrical wiring for a crane control system. It includes a terminal block with 100 terminals (A100) and a switch panel with various switches and relays. The wiring is color-coded and labeled with wire numbers and descriptions. A tilt sensor is also shown, connected to the system.

CONTROL RELAY I.D.

- CR1 - SECONDARY 48V POWER
- CR2 - PRIMARY 48V POWER
- CR3 - AUXILIARY PUMP
- CR4 - HORN
- CR5 - BRAKE RELEASE
- CR10A - PLATFORM LEVEL CUTOFF (CE OPTION)
- CR10B - PLATFORM LEVEL CUTOFF (CE OPTION)

OPTION NUMBERS

- 1 - PLATFORM LEVEL CUTOFF
- 2 - FLASHING BEACON
- 3 - DESCENT ALARM

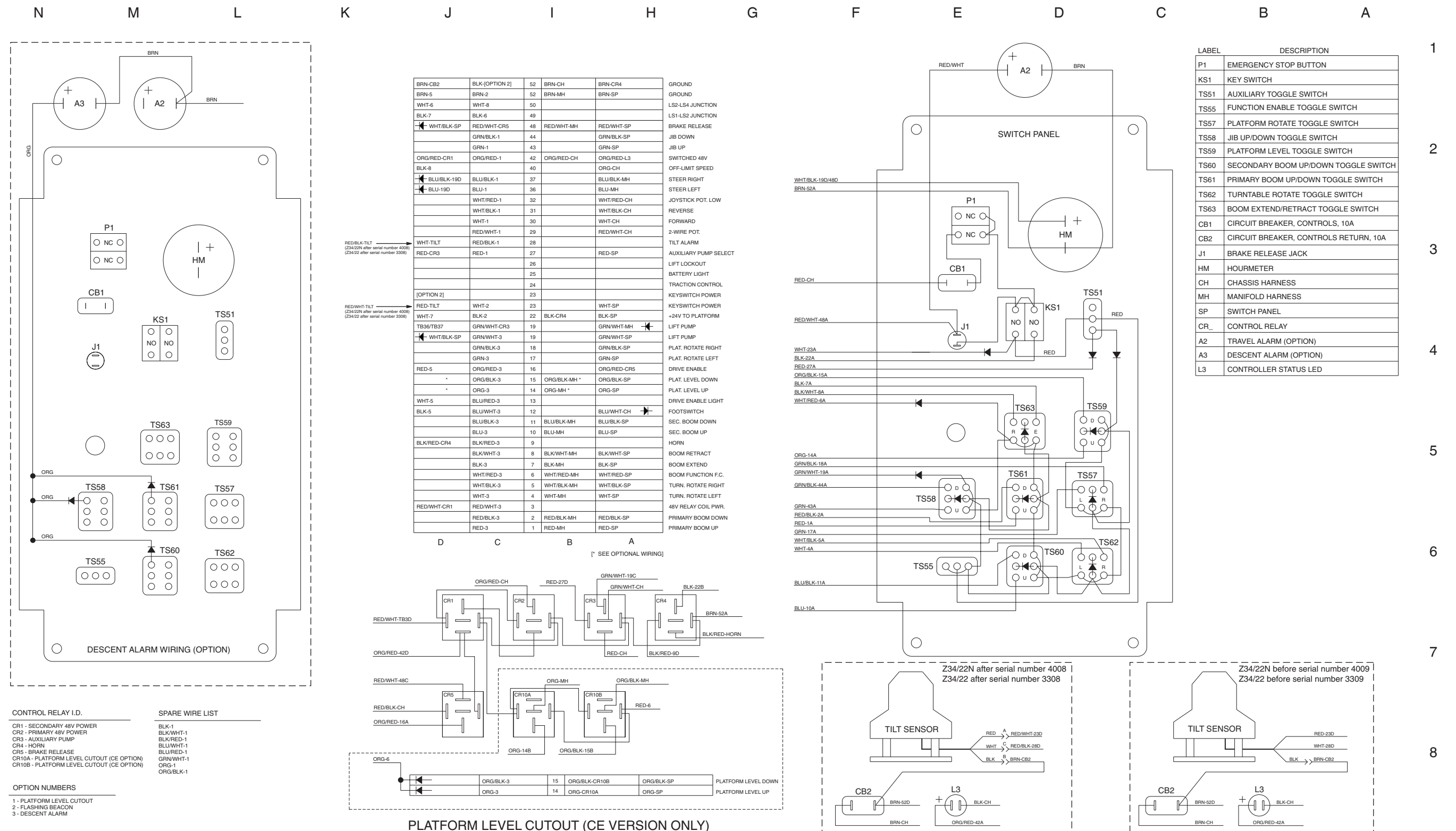
SPARE WIRE LIST

- BLK-1
- BLK/WHT-1
- BLK/RED-1
- BLU/WHT-1
- BLU/RED-1
- ORG-1
- ORG/BLK-1
- GRN/WHT-1

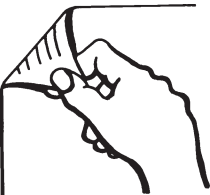
Wiring Details:

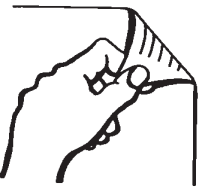
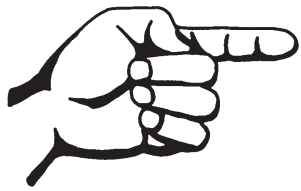
- Terminal Block:** A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A175, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, A186, A187, A188, A189, A190, A191, A192, A193, A194, A195, A196, A197, A198, A199, A200.
- Switch Panel:** Includes switches for TS57, TS63, CB1, TS59, TS61, TS55, TS58, TS60, TS62, and a TILT SENSOR.
- Wiring Labels:** RED/WHT-TB3D, ORG/RED-42D, RED/WHT-48C, RED/BLK-CH, ORG/RED-16A, ORG/RED-CH, RED-27D, GRN/WHT-19C, GRN/WHT-CH, BLK-22B, BRN-52A, BLK/RED-9D, RED-CH, BLK/RED-9D, RED-6, ORG-MH, ORG/BLK-MH, ORG-14B, ORG/BLK-15B, ORG-6, ORG/BLK-3, ORG-3, ORG/BLK-CR10B, ORG-CR10A, ORG/BLK-SP, ORG-SP, PLATFORM LEVEL DOWN, PLATFORM LEVEL UP.

Ground Control Panel Wiring Diagram (Z-34/22 from serial number 2000 to 3577) (Z-34/22N from serial number 2751 to 4260)



Ground Control Panel Wiring Diagram
(Z-34/22 from serial number 2000 to 3577)
(Z-34/22N from serial number 2751 to 4260)





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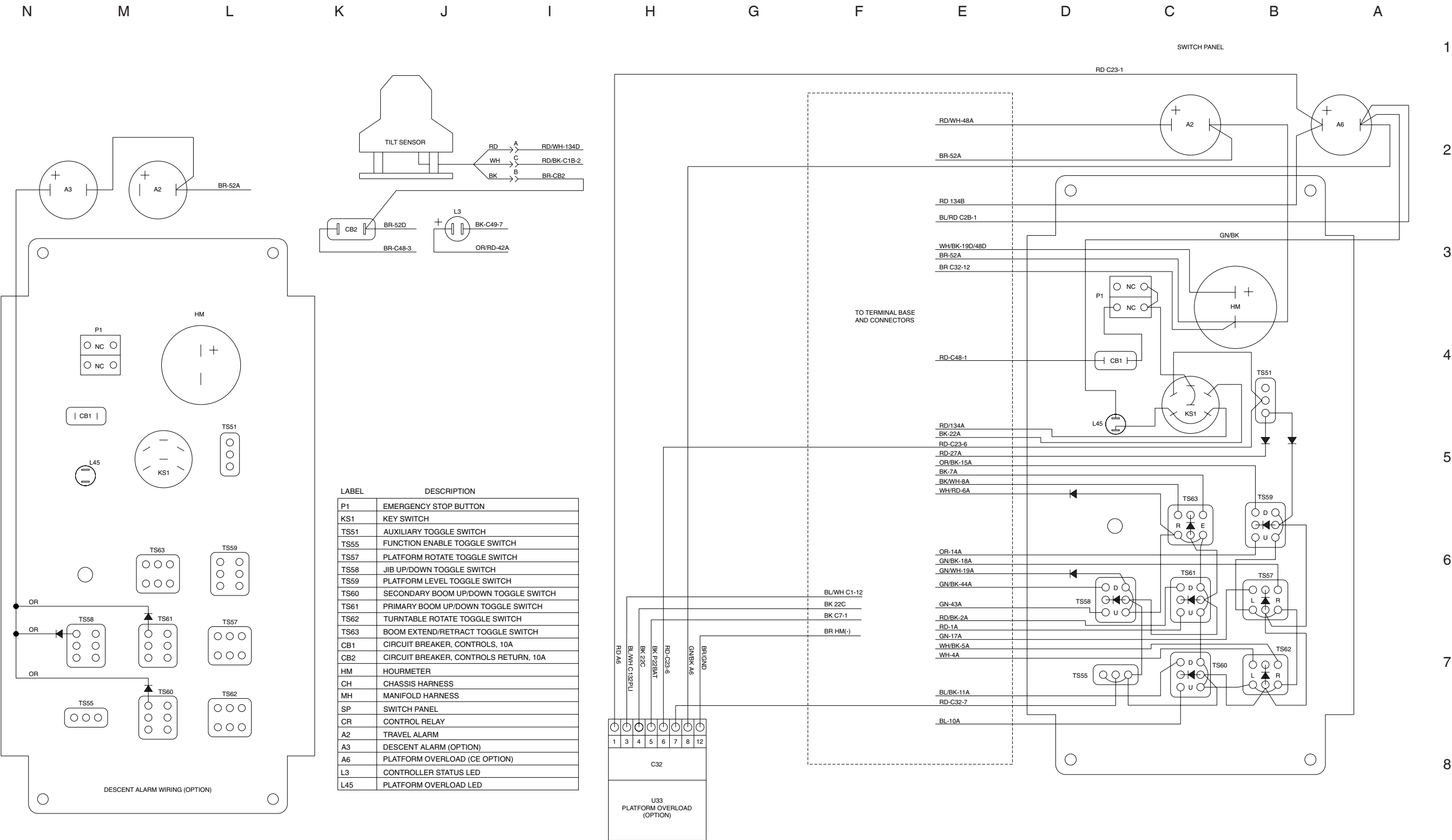
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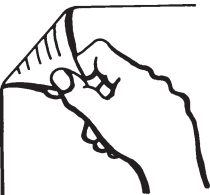
Ground Control Panel Wiring Diagram

(Z-34/22 after serial number 4799)

(Z-34/22N after serial number 5619)



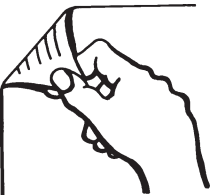
Ground Control Panel Wiring Diagram
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)

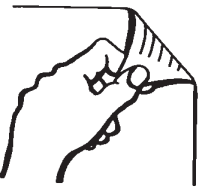
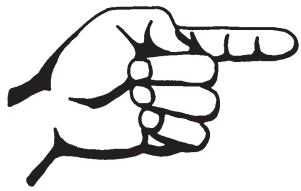


Ground Control Terminal Strip Wiring Diagram
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)



Ground Control Terminal Strip Wiring Diagram
(Z-34/22 after serial number 4799)
(Z-34/22N after serial number 5619)

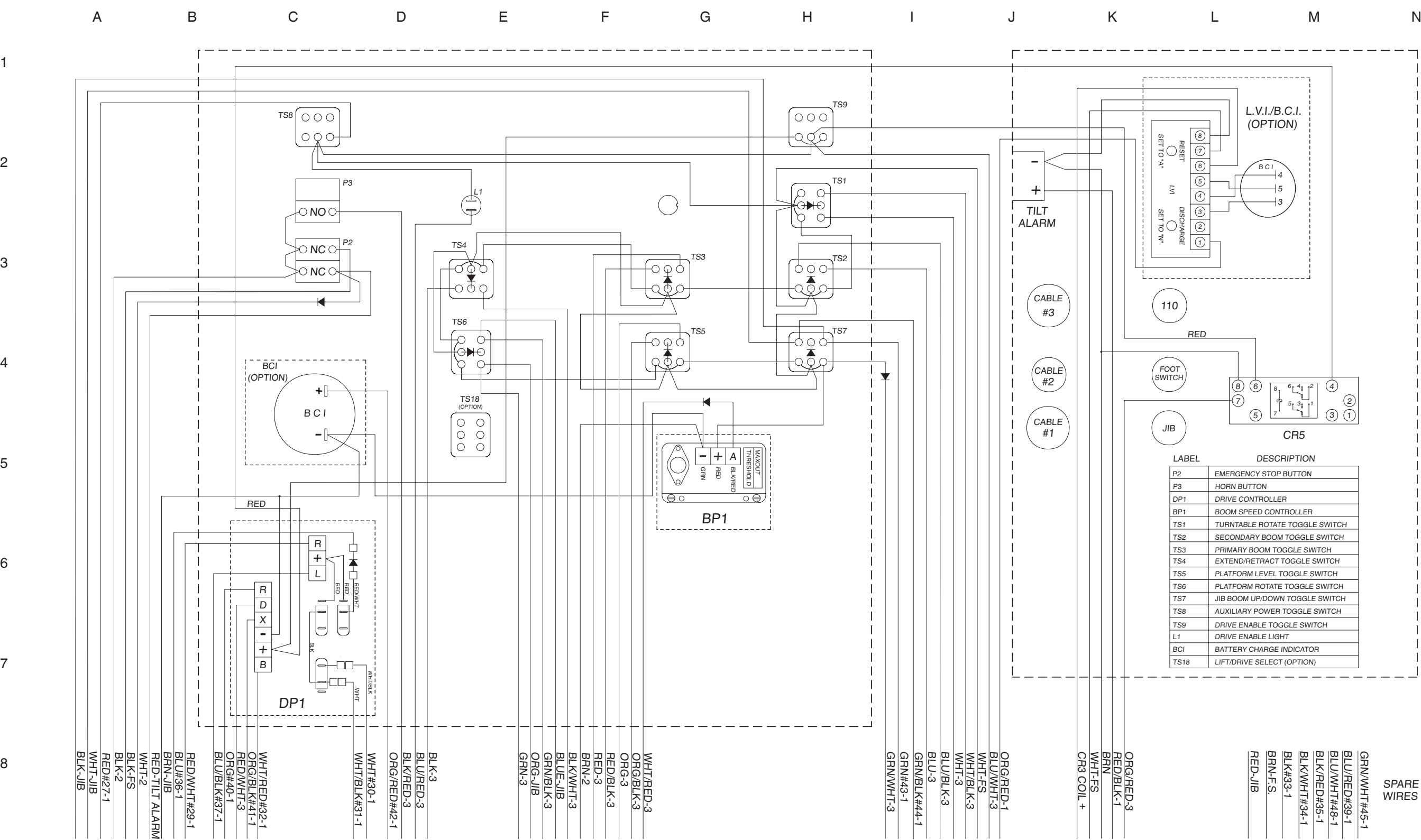




Platform Control Box Wiring Diagram

(Z-34/22 before serial number 1734)

(Z-34/22N before serial number 2227)



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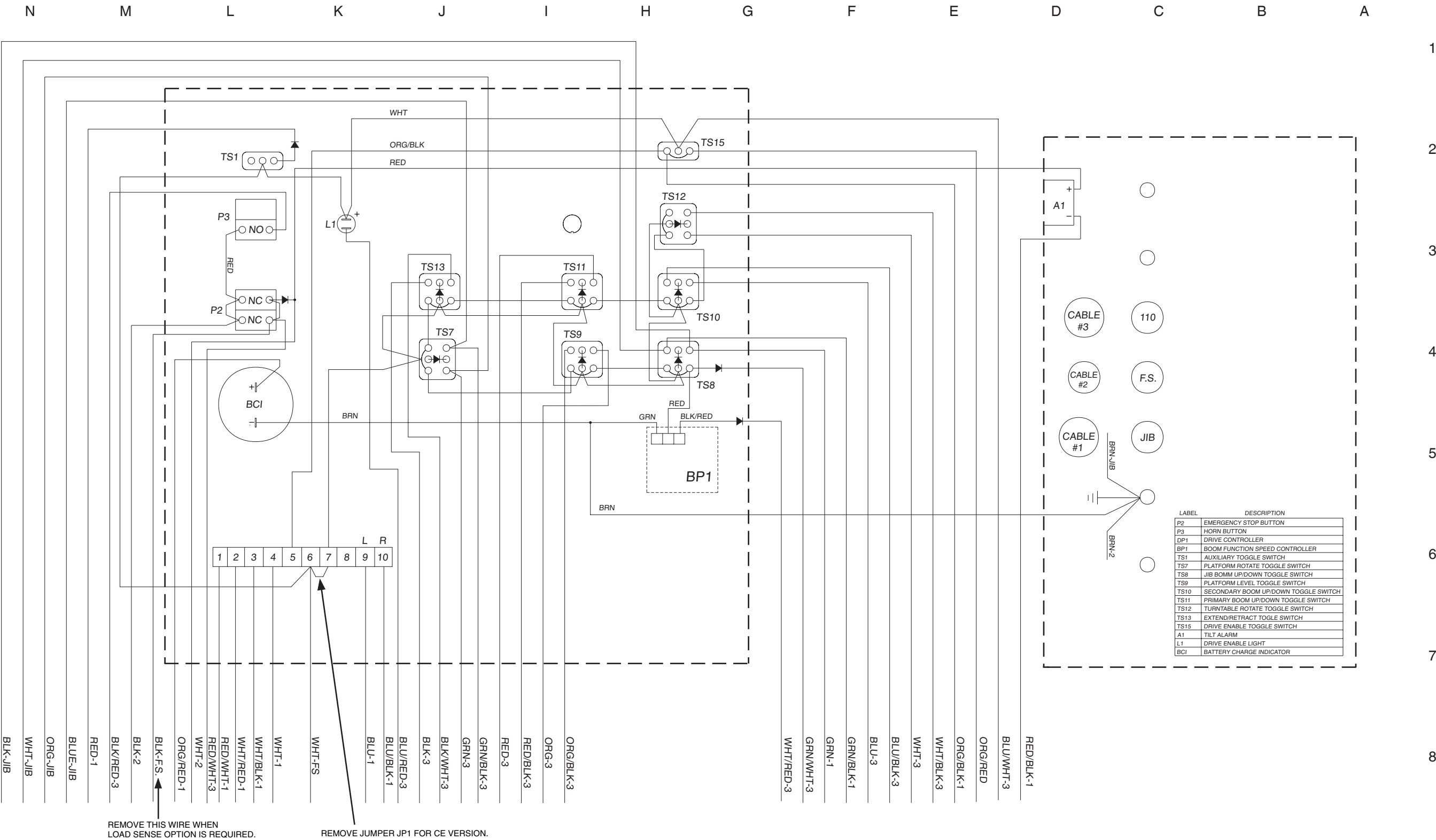
Genie Z-34/22 & Genie Z-34/22N

Part No. 36540

Platform Control Box Wiring Diagram

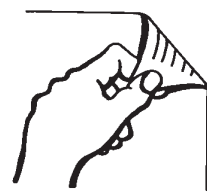
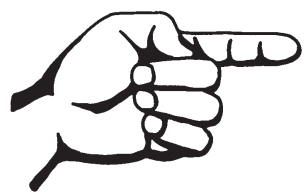
(Z-34/22 from serial number 1734 to 1834)

(Z-34/22N from serial number 2227 to 2448)



Platform Control Box Wiring Diagram
(Z-34/22 from serial number 1734 to 1834)
(Z-34/22N from serial number 2227 to 2448)

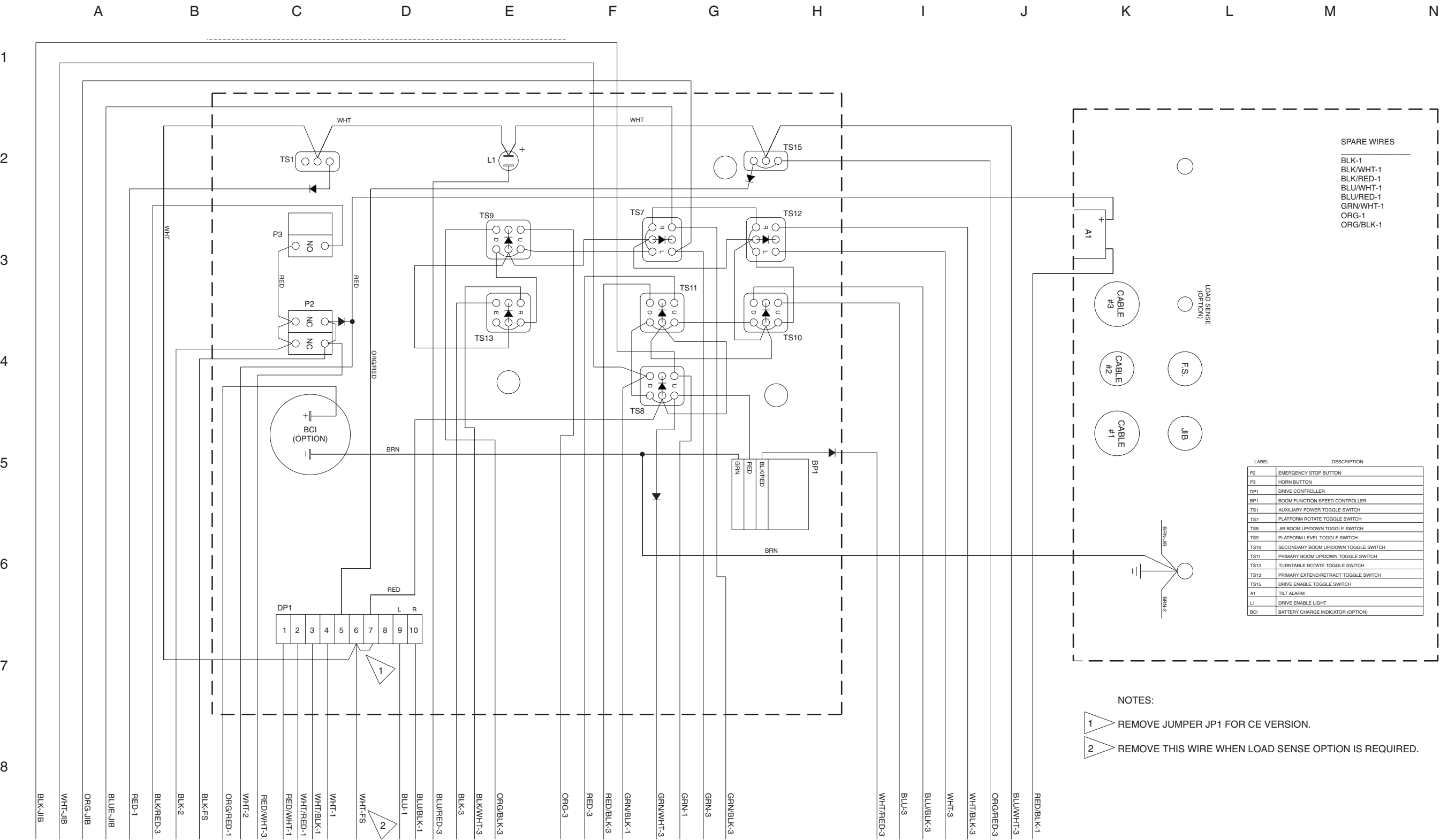




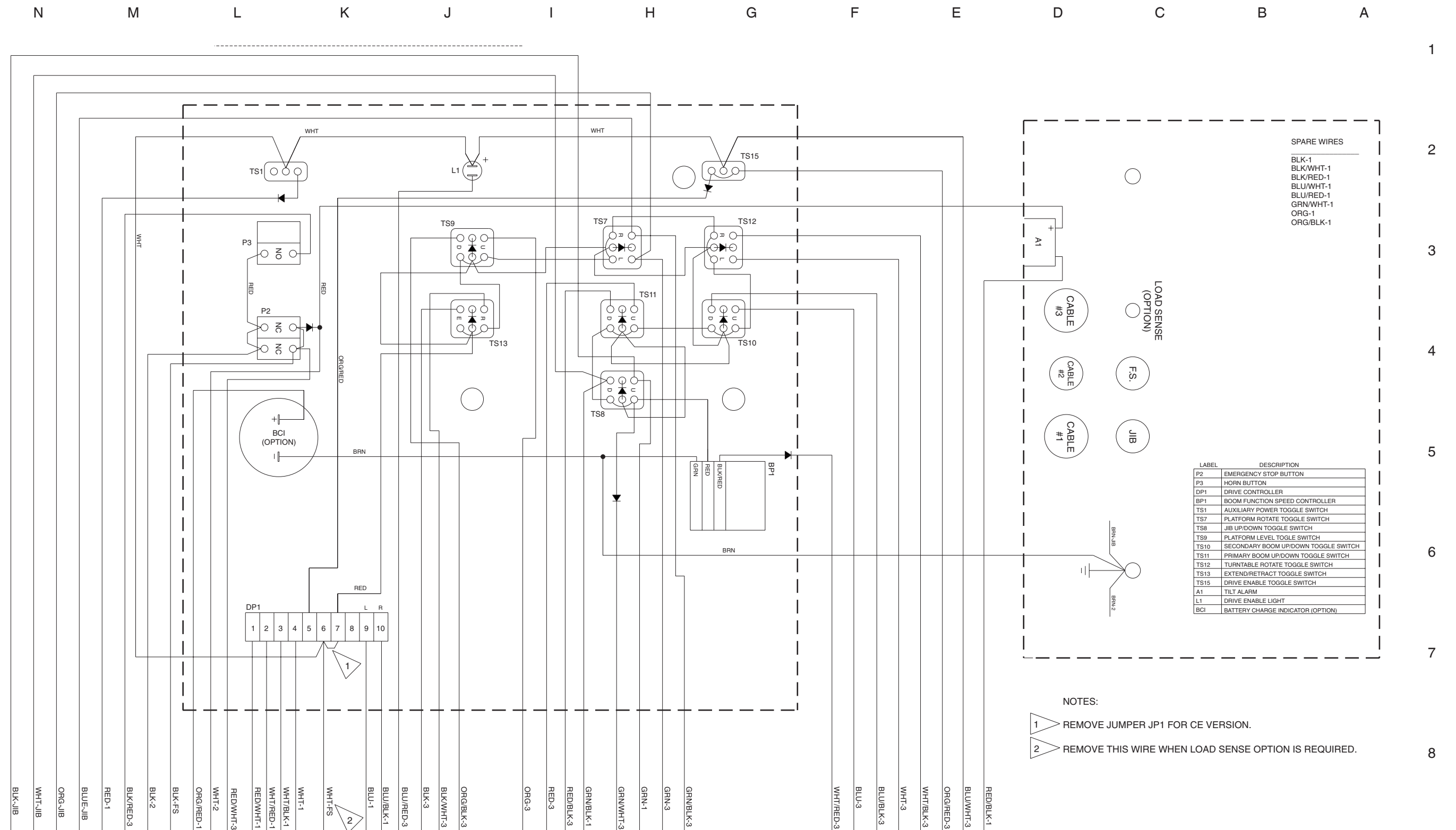
Platform Control Box Wiring Diagram

(Z-34/22 from serial number 1835 to 2060)

(Z-34/22N from serial number 2449 to 2870)



Platform Control Box Wiring Diagram (Z-34/22 from serial number 2061 to 3577) (Z-34/22N from serial number 2871 to 4260)



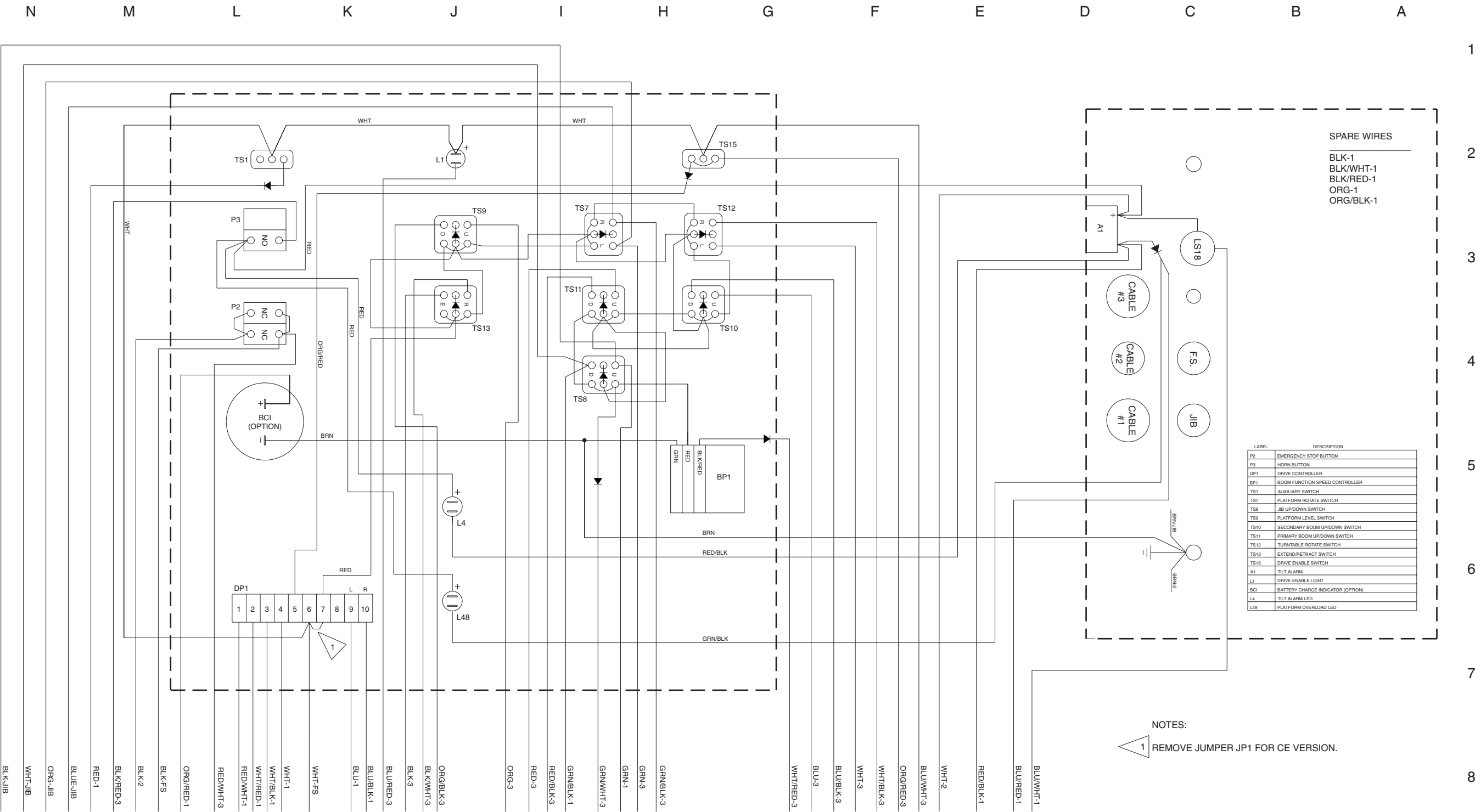
Platform Control Box Wiring Diagram
(Z-34/22 from serial number 2061 to 3577)
(Z-34/22N from serial number 2871 to 4260)



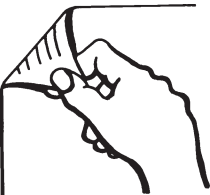
Platform Control Box Wiring Diagram

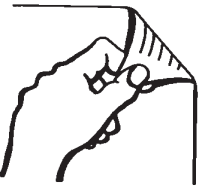
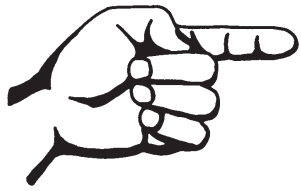
(Z-34/22 after serial number 3577)

(Z-34/22N after serial number 4260)



Platform Control Box Wiring Diagram
(Z-34/22 after serial number 3577)
(Z-34/22N after serial number 4260)

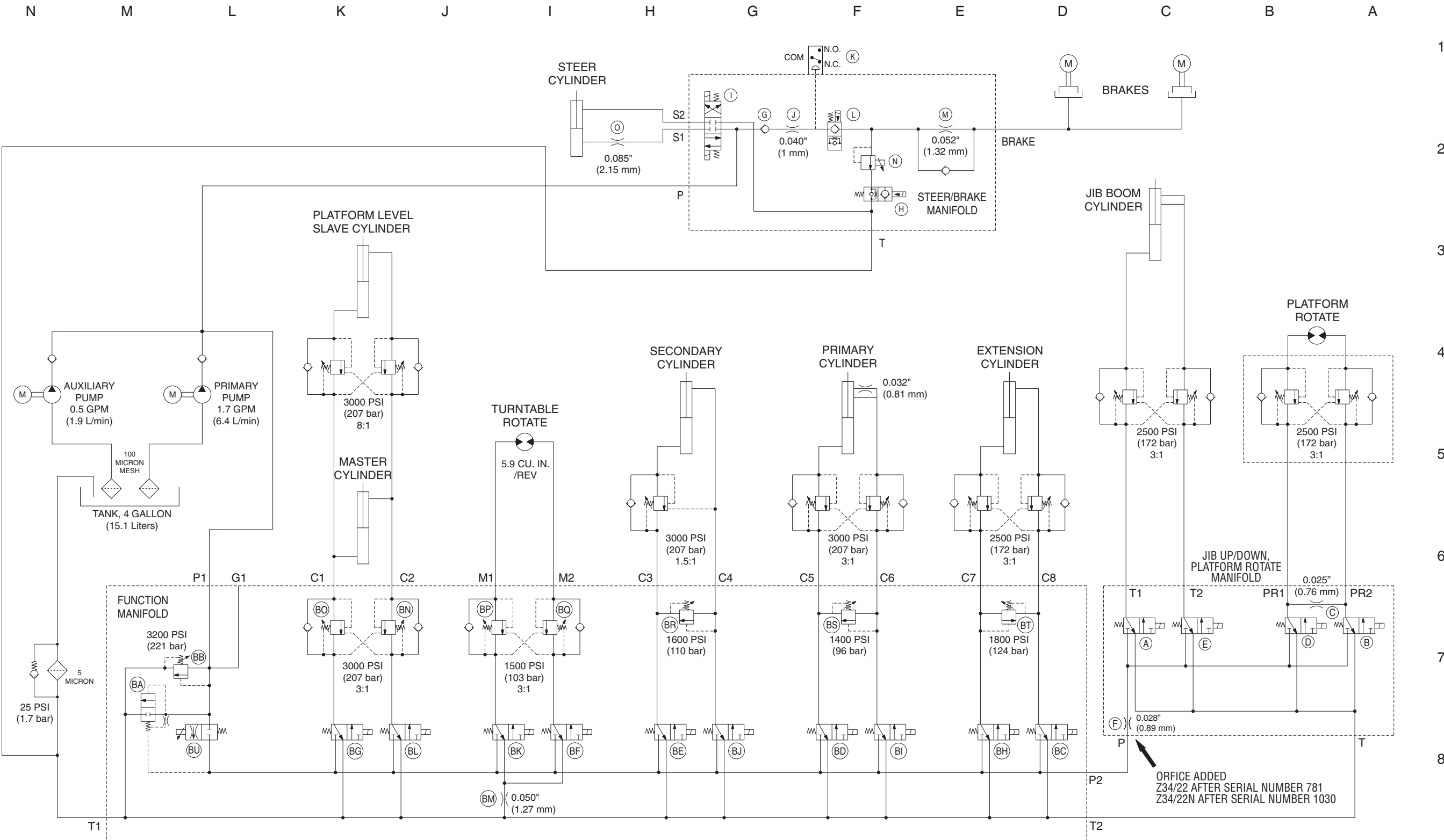




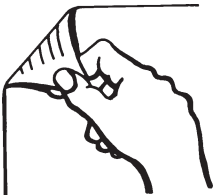
This hydraulic schematic diagram illustrates the system architecture for a crane, organized into 16 vertical columns (A-M) and 8 horizontal rows (1-8). The system includes two pumps (Auxiliary and Primary) feeding into a 4-gallon tank, which then branches into various manifolds and cylinders. Key components and their specifications are as follows:

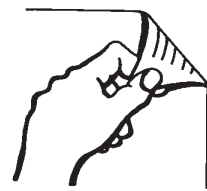
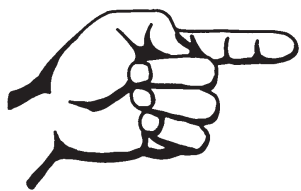
- Pumps and Tank:**
 - AUXILIARY PUMP: 0.5 GPM (1.9 L/min)
 - PRIMARY PUMP: 1.7 GPM (6.4 L/min)
 - TANK: 4 GALLON (15.1 Liters)
- Manifolds and Valves:**
 - BOOM FUNCTION MANIFOLD:** Includes valves AA, AB, AU, and a 3200 PSI (221 bar) relief valve.
 - STEER/BRAKE MANIFOLD:** Includes valves G, H, I, J, L, M, N, and a 0.040" (1 mm) orifice.
 - JIB/PLATFORM ROTATE MANIFOLD:** Includes valves A, B, C, D, E, and a 0.025" (0.76 mm) orifice.
- Cylinders and Actuators:**
 - STEER CYLINDER:** 0.085" (2.15 mm) orifice.
 - PLATFORM LEVEL SLAVE CYLINDER:** 3000 PSI (207 bar), 8:1 ratio.
 - MASTER CYLINDER:** 3000 PSI (207 bar), 3:1 ratio.
 - TURNTABLE ROTATE:** 5.9 CU. IN. /REV.
 - SECONDARY CYLINDER:** 3000 PSI (207 bar), 1.5:1 ratio.
 - PRIMARY CYLINDER:** 3000 PSI (207 bar), 3:1 ratio.
 - EXTENSION CYLINDER:** 2500 PSI (172 bar), 3:1 ratio.
 - JIB BOOM CYLINDER:** 0.025" (0.63 mm) orifice, 2500 PSI (172 bar), 3:1 ratio.
 - PLATFORM ROTATE:** 2500 PSI (172 bar), 3:1 ratio.
- Relief Valves and Orifices:**
 - Relief valves are set at 1750 PSI (121 bar), 1600 PSI (110 bar), 1400 PSI (96 bar), and 1800 PSI (124 bar).
 - Orifices are specified in inches and millimeters (e.g., 0.040" (1 mm), 0.025" (0.63 mm)).

Hydraulic Schematic
(Z-34/22 from serial number 674 to 1733)
(Z-34/22N from serial number 935 to 2226)



Hydraulic Schematic
(Z-34/22 from serial number 674 to 1733)
(Z-34/22N from serial number 935 to 2226)

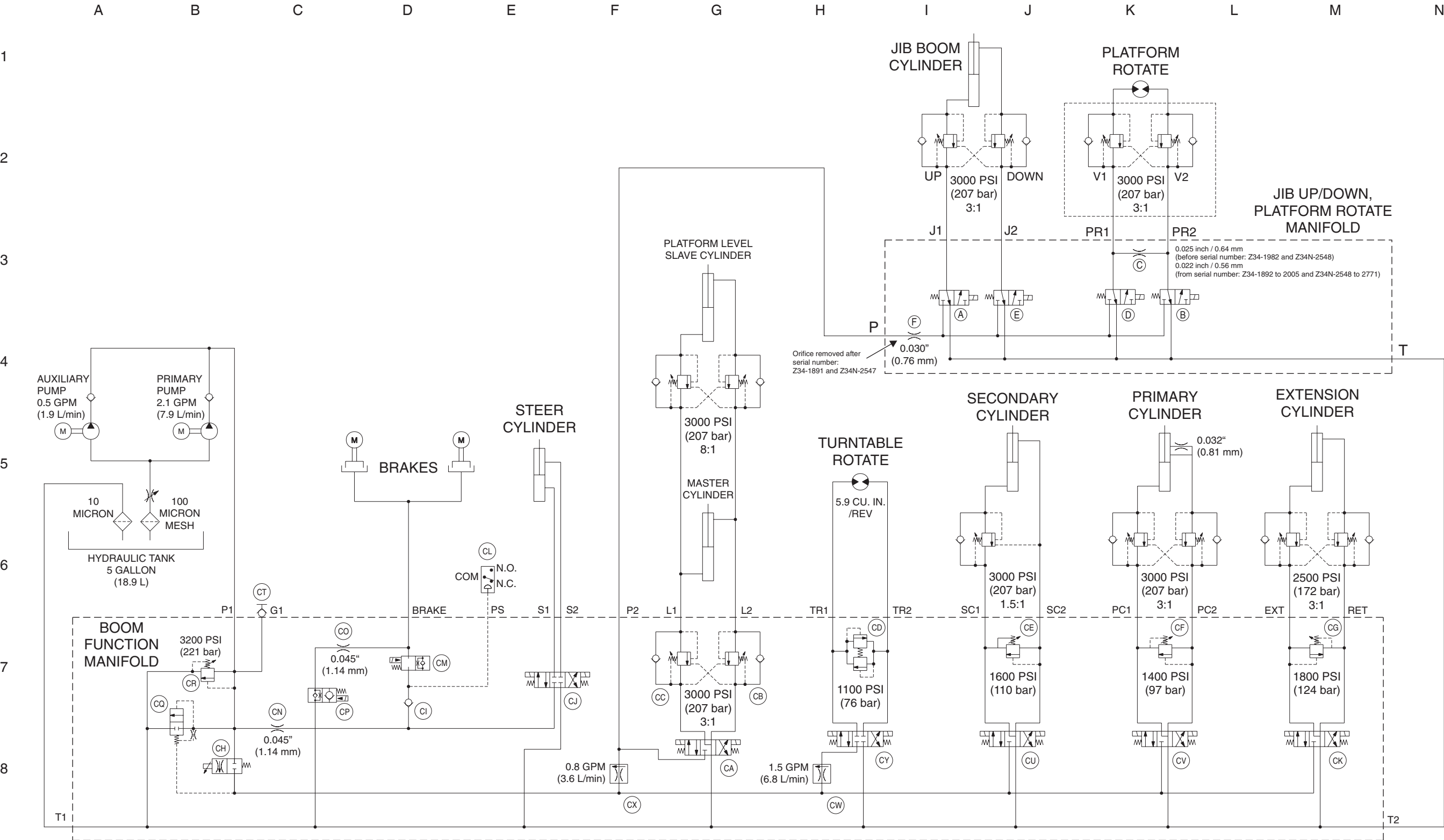




Hydraulic Schematic

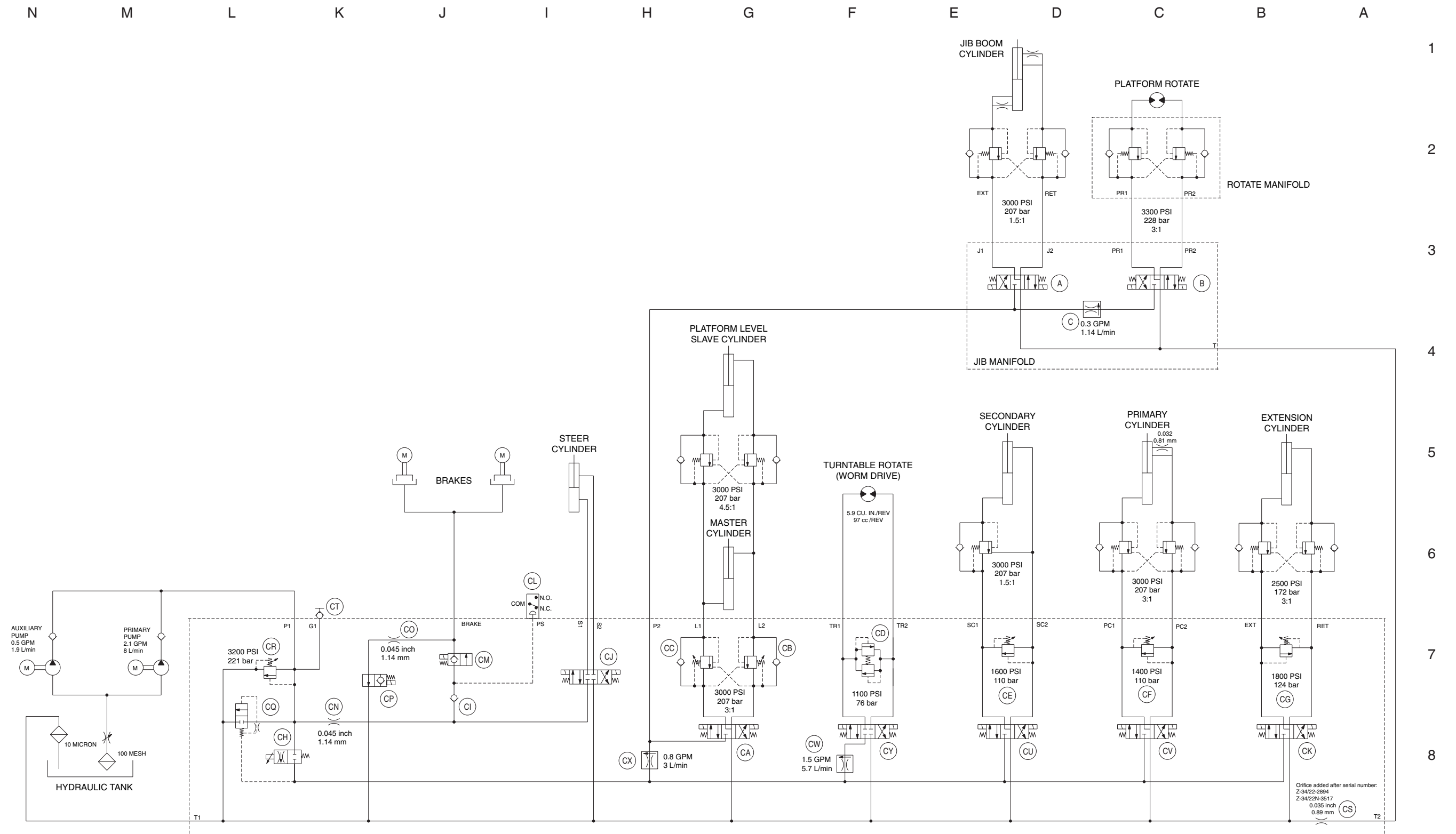
(Z-34/22 from serial number 1734 to 2005)

(Z-34/22N from serial number 2227 to 2771)



Hydraulic Schematic

(Z-34/22 from serial number 2006 to 2900)
(Z-34/22N from serial number 2772 to 3532)

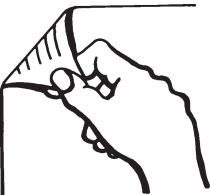


Hydraulic Schematic
(Z-34/22 from serial number 2006 to 2900)
(Z-34/22N from serial number 2772 to 3532)



[illegible]

Hydraulic Schematic
(Z-34/22 after serial number 2900)
(Z-34/22N after serial number 3532)



Repair Procedures



Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie Z-34/22 & Genie Z-34/22N Operator's Manual*.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a flat, level surface
 - Boom in stowed position
 - Turntable rotated with the boom between the non-steering wheels
 - Key switch in the OFF position with the key removed
 - Wheels chocked

About This Section

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

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

Symbols Legend



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

⚠ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

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

CAUTION

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

NOTICE

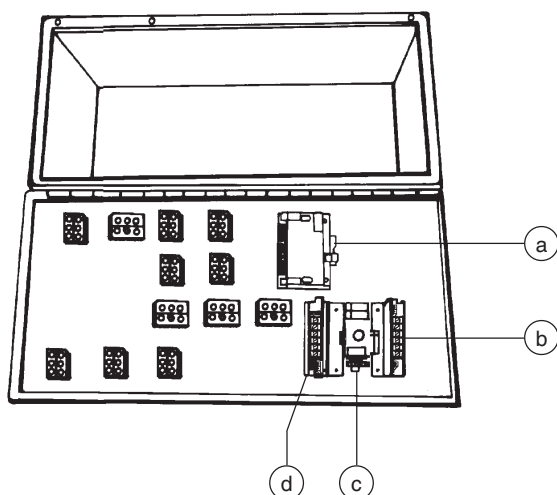
Green—used to indicate operation or maintenance information.

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

Platform Controls

1-1 Controllers

The drive controller (joystick) is connected by a control cable to the drive motor controller located under the non-steer end drive chassis cover. Maintaining the controllers at the proper setting is essential to safe machine operation. Each controller should operate smoothly and provide proportional speed control through its entire range of motion. For further information or assistance, contact the Genie Industries Service Department.



- a boom function speed controller
- b drive printed circuit board
- c drive controller
- d brake printed circuit board

Drive Controller Adjustments

Z-34/22: before serial number 153

Z-34/22N: before serial number 304

NOTICE

Do not adjust the controllers unless the static battery supply voltage is above 24V DC.

NOTICE

This procedure will require the use of two multi-meters. One will be used for measuring amperage and the other for voltage.

WARNING

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

NOTICE

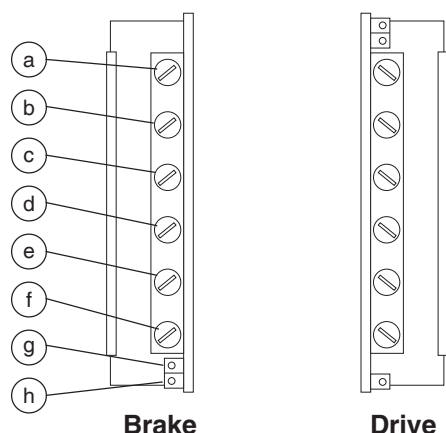
Individual trim potentiometers (trimpots) are used to adjust various output signals from the drive and boom function speed controllers. The trimpots will be identified as the following:

- Max out trim potentiometer (max out trimpot)
- High range trim potentiometer (max out trimpot)
- Lo range trim potentiometer (lo range trimpot)
- Dual range trim potentiometer (lo range trimpot)
- Threshold trim potentiometer (threshold trimpot)
- Ramp rate trim potentiometer (ramp rate trimpot)

- 1 Block the steering wheels.
- 2 Center a lifting jack of ample capacity (15000 lbs/6804 kg) under the drive chassis between the non-steering wheels.

PLATFORM CONTROLS

- 3 Lift the wheels off the ground approximately 1 to 2 inches (2.5 to 5 cm) and place jack stands under the drive chassis for support.
- 4 Open the platform control box lid and locate the brake controller printed circuit board.

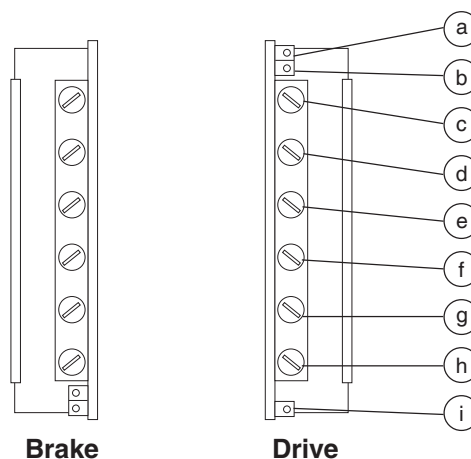


- a not used
- b not used
- c terminal "X",
- d terminal "-", ground
- e terminal "+",
- f terminal "A", proportional output
- g threshold adjustable trimpot
- h max out adjustable trimpot

- 5 Disconnect the white/red wire from the "A" terminal on the brake controller printed circuit board.

- 6 Connect the black (-) lead from an ammeter to the white/red wire that was removed from the brake circuit board. Connect the red (+) lead to the "A" terminal on the brake controller printed circuit board.

- 7 Locate the drive controller printed circuit board.



- a max out adjustable trimpot
- b threshold adjustable trimpot
- c terminal "A", proportional output
- d not used
- e terminal "-", ground
- f terminal (blank)
- g not used
- h terminal "R", activates max out range
- i lo range adjustable trimpot

- 8 Connect the red (+) lead from a volt meter to the "A" terminal on the drive controller printed circuit board. Connect the black (-) lead to ground.

PLATFORM CONTROLS

- 9 Turn the key switch to platform controls and pull both Emergency Stop buttons out to the ON position.
- 10 Set the threshold on the brake circuit board:
Press down the foot switch and slowly move the control handle off center until you hear the pump motor turn ON. Adjust the amperage to 0.16 amps. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.
- 11 Set the max out on the brake circuit board:
Press down the foot switch and slowly move the control handle off center until you hear the pump motor turn OFF. Adjust the amperage to 0.91 amps. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.
- 12 Set the threshold on the drive circuit board:
Press down the foot switch and slowly move the control handle off center until you see 0.28 to 0.3 amps on the ammeter. Adjust the threshold trimpot on the drive circuit board to 0.8 to 0.9V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 13 Set the max out on the drive circuit board:
Press down the foot switch and slowly move the control handle all the way to the FORWARD position. Adjust the max out trimpot on the drive circuit board to 5 to 5.2V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 14 Raise the primary boom approximately 2 feet (0.6 m).
- 15 Set the lo range on the drive circuit board:
Press down the foot switch and move the control handle all the way to the FORWARD position. Adjust the lo range trimpot on the drive circuit board to 2.4 to 2.7V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 16 Lower the boom to the stowed position and remove the jack stands from under the drive chassis.
- 17 Raise the primary boom approximately 2 feet (0.6 m).
- 18 Create start and finish lines by marking two lines on the ground 40 feet (12.2 m) apart. Choose a reference point on the machine as a visual reference for use when crossing the start and finish lines.
- 19 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 20 Continue at full speed and note the time when the reference point crosses the finish line.
- 21 Adjust the lo range trimpot on the drive circuit board to achieve a 40 second drive speed time. Turn the lo range trimpot clockwise to decrease the time or counterclockwise to increase the time.
- 22 Lower the primary boom to the stowed position.
- 23 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 24 Continue at full speed and note the time when the reference point crosses the finish line.

PLATFORM CONTROLS

- 25 Adjust max out trimpot on the drive circuit board to achieve the specified drive speed time (refer to table below). Turn the high range trimpot clockwise to decrease the time or counterclockwise to increase the time.

Drive controller specifications**Brake board**

Threshold 0.16 amps
(when pump motor turns ON)

Max out 0.91 amps
(when pump motor turns OFF)

Drive board

Threshold 0.8 to 0.9V DC
(when amp output is 0.28 to 0.3 amps)

Max out 5 to 5.2V DC
(with boom stowed and joystick in full forward position)

Lo range 2.4 to 2.7V DC
(with boom raised and joystick in full forward position)

Drive speeds (maximum) Z-34/22

stowed position

49:1 drive hubs 3.1 mph 5 km/h
40 ft/9.1 sec 12.2 m/9.1 sec

35:1 drive hubs 4 mph 6.4 km/h
40ft/6.8 sec 12.2 m/6.8 sec

Drive speeds (maximum) Z-34/22N

stowed position

49:1 drive hubs 2.8 mph 4.5 km/h
40 ft/10 sec 12.2 m/10 sec

35:1 drive hubs 3.4 mph 5.5 km/h
40ft/8 sec 12.2 m/8 sec

Drive speed, 0.6 mph 1 km/h
booms raised or extended 40 ft/40 sec 12.2 m/40 sec

Drive Controller Adjustments

Z-34/22 from serial number 153 to 1733

Z-34/22N from serial number 304 to 2226

NOTICE

Do not adjust the controllers unless the static battery supply voltage is above 24V DC.

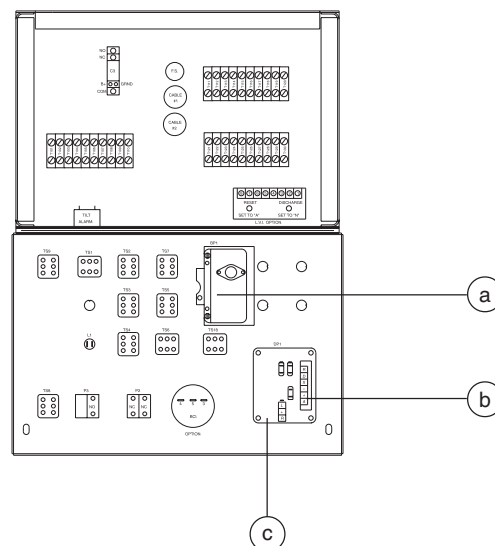
NOTICE

This procedure will require the use of two multi-meters. One will be used for measuring amperage and the other for voltage.

WARNING

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

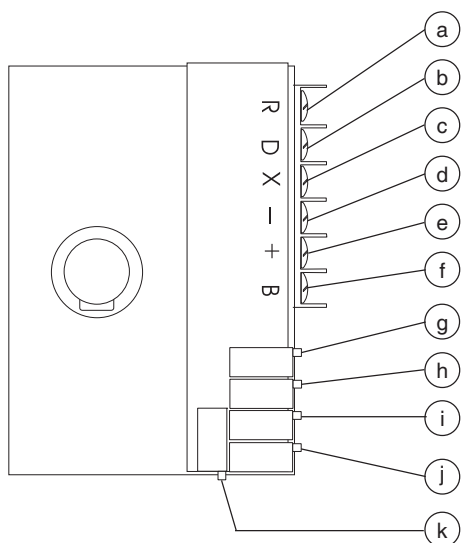
- 1 Block the steering wheels and center a lifting jack under the drive chassis between the non-steer tires.



- a boom function speed controller
- b drive and brake printed circuit board
- c drive controller

PLATFORM CONTROLS

- 2 Raise the drive chassis approximately 1 to 2 inches (2.5 to 5 cm) off the ground and place jack stands under the chassis for support.
- 3 Open the platform control box lid and locate the printed circuit board on the drive controller.



- a terminal "R", activates max out range
- b terminal "D", drive output
- c terminal "X"
- d terminal "-", ground
- e terminal "+", positive
- f terminal "B", brake output
- g drive lo range trimpot
- h drive threshold trimpot
- i drive max out trimpot
- j brake threshold trimpot
- k brake max out trimpot

- 4 Disconnect the white/red wire from the "B" terminal on the printed circuit board.
- 5 Connect the black (-) lead from an ammeter to the white/red wire that was removed from the circuit board. Connect the red (+) lead to the "B" terminal on the printed circuit board.
- 6 Connect the red (+) lead from a volt meter to the "D" terminal on the drive controller printed circuit board. Connect the black (-) lead to ground.
- 7 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 8 Set the brake threshold on the circuit board: Press down the foot switch and slowly move the control handle off center until you hear the pump motor turn ON. Adjust the amperage to 0.16 amps. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.
- 9 Set the brake max out on the circuit board: Press down the foot switch and slowly move the control handle off center until you hear the pump motor turn OFF. Adjust the amperage to 0.91 amps. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.
- 10 Set the drive threshold on the circuit board: Press down the foot switch and slowly move the control handle off center until you see 0.28 to 0.3 amps on the ammeter. Hold the control handle in this position and adjust the drive threshold trimpot on the circuit board to 0.8 to 0.9V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

PLATFORM CONTROLS

- 11 Set the drive max out on the circuit board: Press down the foot switch and slowly move the control handle all the way to the **FORWARD** position. Adjust the max out trimpot on the circuit board to 5 to 5.2V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 12 Raise the primary boom approximately 2 feet (0.6 m) to activate the drive limit switch.
- 13 Set the drive lo range on the circuit board: Press down the foot switch and move the control handle all the way to the **FORWARD** position. Adjust the drive lo range trimpot on the circuit board to 2.4 to 2.7V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 14 Lower the boom to the stowed position and remove the jack stands from under the drive chassis.
- 15 Raise the primary boom approximately 2 feet (0.6 m) to activate the drive limit switch.
- 16 Create start and finish lines by marking two lines on the ground 40 feet (12.2 m) apart. Choose a reference point on the machine as a visual reference for use when crossing the start and finish lines.
- 17 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 18 Continue at full speed and note the time when the reference point crosses the finish line.
- 19 Adjust the drive lo range trimpot on the circuit board to achieve a 40 second drive speed time. Turn the lo range trimpot clockwise to decrease the time or counterclockwise to increase the time.
- 20 Lower the primary boom to the stowed position.
- 21 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 22 Continue at full speed and note the time when the reference point crosses the finish line.
- 23 Adjust max out trimpot on the drive circuit board to achieve the specified drive speed time (refer to table below). Turn the max out trimpot clockwise to decrease the time or counterclockwise to increase the time.

Drive controller specifications**Brake board**

Threshold	0.16 amps
(when pump motor turns ON)	

Max out	0.91 amps
(when pump motor turns OFF)	

Drive board

Threshold	0.8 to 0.9V DC
(when amp output is 0.28 to 0.3 amps)	

Max out	5 to 5.2V DC
(with boom stowed and joystick in full forward position)	

Lo range	2.4 to 2.7V DC
(with boom raised and joystick in full forward position)	

Drive speeds (maximum) Z-34/22

stowed position		
49:1 drive hubs	3.1 mph	5 km/h
	40 ft/9.1 sec	12.2 m/9.1 sec
35:1 drive hubs	4 mph	6.4 km/h
	40ft/6.8 sec	12.2 m/6.8 sec

Drive speeds (maximum) Z-34/22N

stowed position		
49:1 drive hubs	2.8 mph	4.5 km/h
	40 ft/10 sec	12.2 m/10 sec
35:1 drive hubs	3.4 mph	5.5 km/h
	40ft/8 sec	12.2 m/8 sec

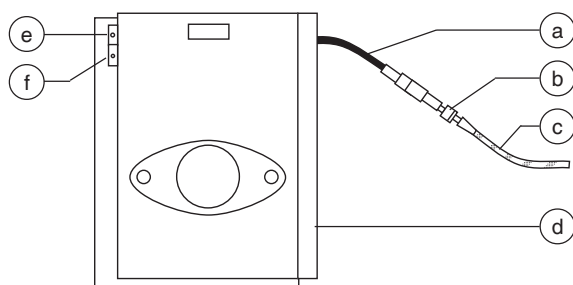
PLATFORM CONTROLS

Boom Function Speed Controller Adjustments

NOTICE Do not adjust the controllers unless the static battery supply voltage is above 24V DC.

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

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 2 Open the platform control box lid and locate the boom function speed controller.



- a black/red wire
- b diode
- c white/red wire
- d boom function speed controller
- e max out trimpot
- f threshold trimpot

- 3 Locate the diode between the black/red wire from the boom function speed controller and the white/red wire.
- 4 Connect the red (+) lead from a volt meter to the wire connector of the white/red wire next to the diode. Connect the black (-) lead to ground.
- 5 Turn the boom function speed controller to the CREEP position.
- 6 Set the threshold: Press down the foot switch, and move the primary boom toggle switch to the DOWN position. Adjust the voltage to 8V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.
- 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 to the DOWN position. Adjust the voltage to 15.5V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

If equipped:

- 9 Set the ramp rate: Turn the ramp rate trimpot to obtain a 2 second delay from 0 to 15.5V DC. Turn the trimpot clockwise to increase the time or counterclockwise to decrease the time.

Boom function speed controller specifications

Threshold (controller turned to "CREEP")	8V DC
Max out (controller turned to "9")	15.5V DC
Ramp (controller turned to "9")	2 seconds
Added after serial numbers: Z34-1924 Z34N-2553	

PLATFORM CONTROLS

1-2 Foot Switch

How to Test the Foot Switch

- 1 Turn the key switch to the OFF position and separate the wiring quick disconnect plug from the platform toe board.
- 2 Do not press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.

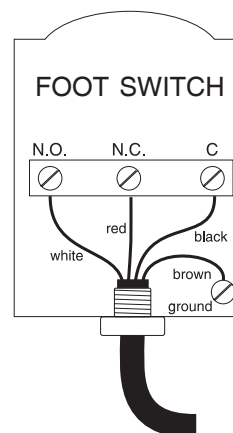
Test	Desired result
red to black	continuity (zero Ω)
red to white	no continuity (infinite Ω)
black to white	no continuity (infinite Ω)

NOTICE

Do not use the color of the connector as a guide for these tests. Use the actual wire color to identify which connector to use for testing.

- 3 Press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.

Test	Desired result
red to black	no continuity (infinite Ω)
red to white	no continuity (infinite Ω)
black to white	continuity (zero Ω)



PLATFORM CONTROLS

1-3 Toggle Switches

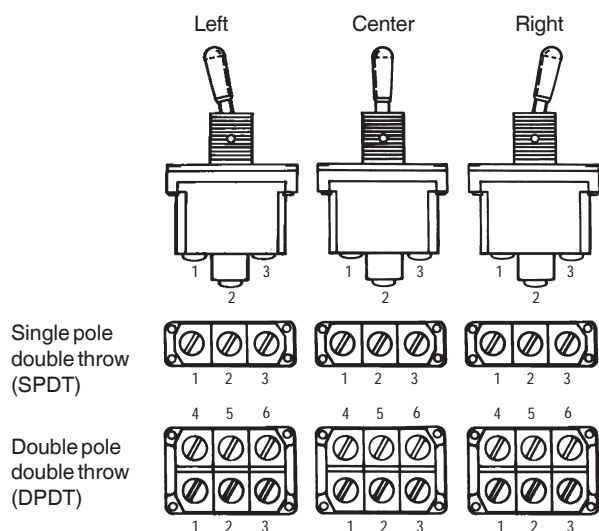
Toggle switches used for single function switching are single pole double throw (SPDT) switches. Dual function switching requires a double pole double throw (DPDT) switch.

How to Test a Toggle Switch

NOTICE Continuity is the equivalent of 0 to 3 ohms. A simple continuity tester may not accurately test the switch.

This procedure covers fundamental switch testing and does not specifically apply to all varieties of toggle switches.

- 1 Turn the key switch to the OFF position. Tag and disconnect all wiring from the toggle switch to be tested.
- 2 Connect the leads of an ohmmeter to the switch terminals in the following combinations listed below to check for continuity.



Test	Desired result
Left position	
terminal 1 to 2, 3, 4, 5 & 6	no continuity (infinite Ω)
terminal 2 to 3	continuity (zero Ω)
terminal 2 to 4, 5 & 6	no continuity (infinite Ω)
terminal 3 to 4, 5 & 6	no continuity (infinite Ω)
terminal 4 to 5 & 6	no continuity (infinite Ω)
terminal 5 to 6	continuity (zero Ω)
Center position	
There are no terminal combinations that will produce continuity (infinite Ω)	
Right position	
terminal 1 to 2	continuity (zero Ω)
terminal 1 to 3, 4, 5 & 6	no continuity (infinite Ω)
terminal 2 to 3, 4, 5 & 6	no continuity (infinite Ω)
terminal 3 to 4, 5 & 6	no continuity (infinite Ω)
terminal 4 to 5	continuity (zero Ω)
terminal 4 to 6	no continuity (infinite Ω)
terminal 5 to 6	no continuity (infinite Ω)

Platform Components

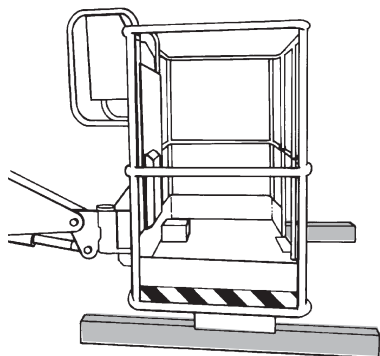
2-1 Platform

How to Remove the Platform

- 1 Separate the foot switch wiring quick disconnect plug from the platform toeboard.
- 2 Remove the platform control box mounting fasteners, then lower the control box.

NOTICE If your machine is equipped with an air line to platform option, the air line must be disconnected from the platform before removal.

- 3 Place blocks under the platform for support and carefully lower the platform on the blocks.



- 4 Remove the platform mounting fasteners and remove the platform.

CAUTION Component damage hazard. Platform can be damaged if the fasteners are overtightened.

2-2 Platform Leveling Slave Cylinder

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

How to Remove the Slave Cylinder

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

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

- 1 Extend the boom until the slave cylinder barrel-end pivot pin is accessible.
- 2 Raise the boom slightly and place blocks under the platform for support. Lower the boom until the platform is resting on the blocks.
- 3 Remove the pin retaining fastener from the rod-end pivot pin. Do not remove the pin.

PLATFORM COMPONENTS

- 4 Remove the external snap ring from the barrel-end pivot pin.
- 5 Place a block of wood under the barrel end of the slave cylinder.
- 6 Use a soft metal drift to remove the rod-end pivot pin.
- 7 Use a soft metal drift to remove the barrel-end pivot pin.
- 8 Carefully pull the cylinder out of the boom.

⚠ WARNING Crushing hazard. The slave cylinder will fall unless it is properly supported.

- 9 Tag and disconnect the hydraulic hoses from the slave cylinder and connect them together with 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.

How to Bleed the Slave Cylinder

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

PLATFORM COMPONENTS

2-3 Platform Rotator

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

How to Remove the Platform Rotator

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Tag, disconnect and plug the hydraulic hoses from the platform rotate manifold. Cap the manifold fittings.

⚠ 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 Support the platform mounting weldment, but do not apply any lifting pressure.

- 4 Remove the six mounting bolts from the platform mounting weldment. Remove the center bolt and slide the platform mounting weldment off of the platform rotator.
- 5 Support the platform rotator with a suitable lifting device. Do not apply any lifting pressure.
- 6 Remove the pin retaining fasteners from the jib boom and leveling links to platform rotator pivot pins. Do not remove the pins.
- 7 Support the jib boom, jib boom cylinder and leveling links with an overhead crane.
- 8 Use a soft metal drift to drive both pivot pins out. Remove the platform rotator from the machine.

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

PLATFORM COMPONENTS

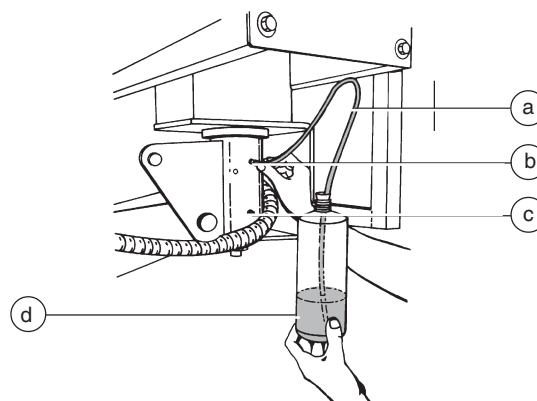
How to Bleed the Platform Rotator

NOTICE

This procedure will require two people.

- 1 Turn the key switch to ground controls and pull out the Emergency Stop button to the ON position.
- 2 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the primary boom toggle switch in the up direction until the platform is approximately 6 feet (1.8 m) off the ground.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the primary boom toggle switch in the UP direction until the platform is approximately 6 feet (1.8 m) off the ground.
- 3 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any discharge. Open the top bleed valve, but do not remove it.
- 4 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the platform rotate toggle switch to the right for approximately 5 seconds, then release it. Repeat three times.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the platform rotate toggle switch to the right for approximately 5 seconds, then release it. Repeat three times.

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



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

PLATFORM COMPONENTS

5 **Z-34/22 before serial number 153 and
Z-34/22N before serial number 304:**

Move the platform rotate toggle switch to the left for approximately 5 seconds, then release it. Repeat three times.

**Z-34/22 after serial number 152 and
Z-34/22N after serial number 303:**

Hold the function enable switch to either side and move the platform rotate toggle switch to the left for approximately 5 seconds, then release it. Repeat three times.

- 6 Fully rotate the platform to the left and continue holding the platform rotate toggle switch until air stops coming out of the bleed valve. Immediately release the platform rotate toggle switch and close the bleed valve.
- 7 Rotate the platform to the right until the platform is centered.
- 8 Connect the clear hose to the bottom bleed valve and open the valve. Do not remove the valve.
- 9 Move the platform rotate toggle switch to the right and continue holding the platform rotate toggle switch until air stops coming out of the bleed valve.

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

- 10 Close the bleed valve and remove the hose.
- 11 Rotate the platform full left and right and inspect the bleed valves for leaks.
- 12 Turn the key switch to the OFF position and clean up any hydraulic oil that may have spilled.

Jib Boom Components

3-1 Jib Boom

How to Remove the Jib Boom

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform mounting weldment and the platform rotator. See 2-3, *How to Remove the Platform Rotator*.
- 3 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the jib 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 cable cover from the side of the jib boom.

- 5 Remove the mounting fasteners from the jib boom/platform rotate manifold. Do not remove the hoses.

CAUTION Component damage hazard. Hoses and cables can be damaged if they are twisted or kinked.

- 6 Attach a lifting strap from an overhead crane to the jib boom.
- 7 Remove the pin retaining fastener from the jib boom pivot pin at the jib boom bellcrank. Use a soft metal drift to remove the pin, then remove the jib boom from the jib boom bellcrank.

⚠WARNING Crushing hazard. The jib boom will fall when the pin is removed if it is not properly supported.

- 8 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.
- 9 Remove both of the jib boom compression arms from the bellcrank.
- 10 Attach a lifting strap from an overhead crane to the rod-end of the jib boom lift cylinder.
- 11 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 jib boom bellcrank.

⚠WARNING Crushing hazard. The jib boom lift cylinder will fall when the pin is removed if it is not properly supported.

JIB BOOM COMPONENTS

- 12 Support and secure the jib boom bellcrank to an appropriate lifting device.
- 13 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin. Do not remove the pin.
- 14 Remove the pin retaining fasteners from the jib boom mounting weldment at the jib boom bellcrank. Use a soft metal drift to remove the pin.
- 15 Use a soft metal drift to remove the slave cylinder rod-end pivot pin.
- 16 Remove the jib boom bellcrank from the boom.

⚠WARNING Crushing hazard. The jib boom bellcrank may become unbalanced and fall when the pins are removed if it is not properly supported and secured to the lifting device.

3-2**Jib Boom Bell Crank****How to Remove the Jib Boom Bell Crank**

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the Jib Boom, See 3-1, *How to Remove the Jib Boom*.
- 3 Support and secure the jib boom bell crank to an appropriate lifting device.
- 4 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin. Do not remove the pin.
- 5 Remove the pin retaining fasteners from the jib boom bell crank at the extension boom. Use a soft metal drift to remove the pin.
- 6 Use a soft metal drift to remove the slave cylinder rod-end pivot pin.
- 7 Remove the jib boom bell crank from the extension boom.

⚠WARNING Crushing hazard. The jib boom bell crank may become unbalanced and fall when the pins are removed if it is not properly supported and secured to the lifting device.

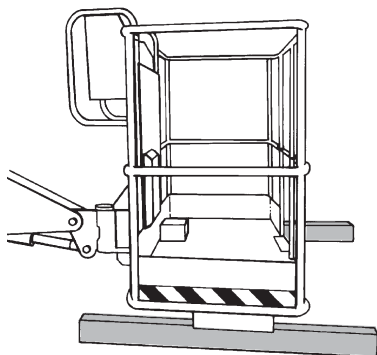
JIB BOOM COMPONENTS

3-3**Jib Boom Lift Cylinder****How to Remove the Jib Boom Lift Cylinder**

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

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

- 1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Lower the jib boom until the platform is resting on the blocks.



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

- 3 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.
- 4 Use a soft metal drift to tap the rod-end pivot pin half way out and lower one of the leveling links to the ground. Tap the pin the other direction and lower the opposite leveling link. Do not remove the pin.
- 5 Attach a lifting strap from an overhead crane to the rod end of the jib boom lift cylinder.
- 6 Remove the pin retaining fasteners from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the barrel-end pivot pin.
- 7 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the machine.

WARNING Crushing hazard. The jib boom lift cylinder may fall when the pins are removed if it is not properly supported by the overhead crane.

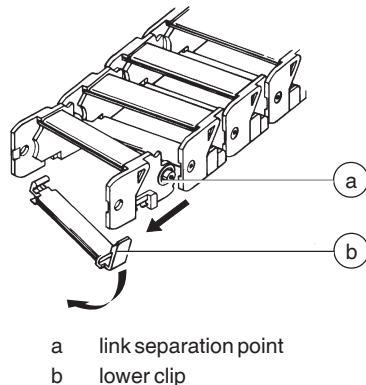
Primary Boom Components

4-1 Plastic 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 Repair the Plastic Cable Track

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



- 1 Use a slotted screwdriver to pry down on the lower clip.
- 2 Repeat step 1 for each link.
- 3 To remove a single link, open the lower clip and then use a screw driver to pry the link to the side.

4-2 Primary Boom

How to Shim the Primary Boom

NOTICE Measure each wear pad. Replace the pad if it is less than 0.41 inch (1 cm) thick. If the pad is more than 0.41 inch (1 cm) thick, perform the following procedure.

- 1 Extend the boom until the wear pads are accessible.
- 2 Loosen the wear pad mounting fasteners.
- 3 Install the new shims under the wear pad to obtain zero clearance and zero drag.
- 4 Tighten the mounting fasteners.
- 5 Extend and retract the boom through an entire cycle. Check for tight spots that could cause scraping or binding.

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

PRIMARY BOOM COMPONENTS

How to Remove the Primary Boom

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

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform rotator. See 2-3, *How to Remove the Platform Rotator*.
- 3 Remove the jib boom. See 3-1, *How to Remove the Jib Boom*.
- 4 Remove the jib boom bellcrank. See 3-2, *How to Remove the Jib Boom Bellcrank*.
- 5 Locate the 4 cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

- 6 Open the platform control box.
- 7 Label and disconnect each wire of the 4 cables in the platform control box.

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

- 8 Pull all of the cables out of the platform control box.
- 9 Tag, disconnect and plug the hydraulic hoses from the slave cylinder.

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

- 10 Tag, disconnect and plug the hydraulic hoses from the jib/rotate manifold.

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

- 11 Remove the upper cable track mounting fasteners from the platform end of the boom.

PRIMARY BOOM COMPONENTS

- 12 Remove the cable track mounting fasteners, then remove the cable track from the boom and lay it flat on the ground.

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

- 13 Remove all of the hose and cable clamps from the underside of the primary boom.
- 14 Remove the turntable end cover.
- 15 Remove the extension boom drive limit switch from the side of the primary boom at the pivot end. Do not disconnect the wiring.
- 16 Pull all of the electrical cables and hydraulic hoses out of the plastic cable track.
- 17 Remove the pin retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Pull the cylinder back and secure it from moving.
- 18 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

AWARNING 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.

- 19 Attach an overhead 5 ton crane to the center point of the boom.

- 20 Attach a similar lifting device to the lift cylinder.

- 21 Place support blocks under the cylinder, across the secondary boom.

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

CAUTION Crushing hazard. The boom lift cylinder will fall unless it is properly supported.

- 23 Lower the rod end of the lift cylinder onto support blocks.

- 24 Remove the pin retaining fastener from the primary boom pivot pin.

- 25 Remove the primary boom pivot pin with a soft metal drift, then carefully remove the boom from the machine.

AWARNING Crushing hazard. The boom may become unbalanced and fall when it is removed from the machine. If the overhead crane is not properly attached.

PRIMARY BOOM COMPONENTS

How to Disassemble the Primary Boom

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

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

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

- 5 Carefully rotate the base end of the extension cylinder until the pin mounting bore is in a vertical position.
- 6 Support the extension tube with an overhead crane at the platform end of the boom.

AWARNING Crushing hazard. The boom tubes will fall when they are removed from the boom if they are not properly supported.

- 7 Support and slide the extension tube out of the primary boom tube. Place the extension tube on blocks for support.

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

- 8 Remove the retaining rings from the extension cylinder rod-end pivot pins at the platform end of the extension tube. Use a soft metal drift to remove the pins.
- 9 Support and slide the extension cylinder out of the pivot end of the boom extension tube. Place the extension cylinder on blocks for support.

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

- 10 Remove and label the wear pads from the extension cylinder.

NOTICE Pay careful attention to the location of each wear pad.

PRIMARY BOOM COMPONENTS

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 counterbalance valves to prevent movement in the event of a hydraulic line failure.

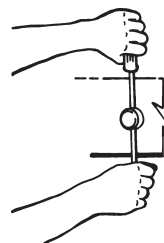
How to Remove the Primary Boom Lift Cylinder

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

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

- 1 Raise the primary boom enough to access the primary boom lift cylinder rod-end pivot pin.
- 2 Attach an overhead crane to the primary boom for support. Do not lift it.
- 3 Remove the pin retaining fastener from the ground controls side upper compression arm pivot pin.

- 4 Place a block of wood across the upper secondary boom to support the cylinder when the rod-end pivot pin is removed.
- 5 Place a rod through the compression arm pivot pin and twist to remove the pin. Lower the compression arm down.

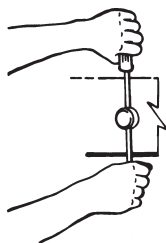


- 6 Support the primary boom lift cylinder with a lifting device.
- 7 Remove the pin retaining fastener from the primary boom lift cylinder rod-end pivot pin. Then use a soft metal drift to remove the pin.
- 8 Lower the rod end of the cylinder onto the blocks that were placed on the upper secondary boom.
- 9 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.

PRIMARY BOOM COMPONENTS

- 10 Support the primary boom lift cylinder with straps or ropes to restrict it from swinging freely.
- 11 Remove the pin retaining fastener from the primary boom lift cylinder barrel-end pivot pin. Do not remove the pivot pin.
- 12 Use the overhead crane to lift the primary boom 1 inch (2.5 cm). This will relieve pressure on the barrel-end pivot pin.
- 13 Place a rod through the barrel-end pivot pin and twist to remove the pin.



CAUTION Crushing hazard. The primary boom lift cylinder will swing down if it is not properly supported when the barrel-end pivot pin is removed.

- 14 Attach and secure the rod-end of the primary boom lift cylinder to an overhead crane or similar lifting device. Carefully lower the straps and allow the primary boom lift cylinder to slowly swing down.
- 15 Carefully remove the cylinder from the machine.

CAUTION Crushing hazard. The primary boom lift cylinder may become unbalanced and fall if it is not properly supported when the rod-end pivot pin is removed.

PRIMARY BOOM COMPONENTS

4-4 Extension Cylinder

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

How to Remove the Extension Cylinder

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

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

- 1 Raise the primary boom to the horizontal position. Extend the boom approximately 3 to 4 feet (0.9 to 1.2 m) until the extension cylinder rod-end pivot pins are accessible.
- 2 Remove the external snap rings from the extension cylinder rod-end pivot pins. Use a soft metal drift to remove the pins.
- 3 Remove the front counterweight cover.
- 4 Raise the secondary boom until the master cylinder rod-end pivot pin is accessible.
- 5 Remove the drive limit switch from the pivot end of the primary boom. Do not disconnect the wiring.
- 6 Remove the retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.
- 7 Manually retract the master cylinder and push it toward the platform end of the boom to obtain enough clearance for the extension cylinder removal.
- 8 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 9 Remove the retaining fastener from the extension cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

PRIMARY BOOM COMPONENTS

- 10 Carefully pull out and properly support the extension cylinder from the primary extension boom tube.

⚠ WARNING Crushing hazard. The cylinder will fall if it is not properly supported when it is pulled out of the extension boom tube.

NOTICE To make installation of the extension cylinder easier, be sure that the cylinder rod is extended approximately 3 to 4 feet (0.9 to 1.2 m).

4-5

Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed circuit hydraulic loop that keeps the platform level through the entire range of primary boom motion. The master cylinder is located inside the upper mid-pivot at the pivot end of the primary boom.

How to Remove the Platform Leveling Master Cylinder

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

NOTICE Before cylinder removal is considered, bleed the cylinder to be sure that there is no air in the closed loop. See 2-2, *How to Bleed the Slave Cylinder*.

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

PRIMARY BOOM COMPONENTS

- 1 Remove the rear turntable cover.
- 2 Raise the secondary boom until the master cylinder barrel-end pivot pin is above the turntable counterweights.
- 3 Raise the primary boom until the master cylinder rod-end pivot pin is accessible.
- 4 Attach an overhead crane to the pivot end of the primary boom. Do not lift it.
- 5 Secure the upper secondary boom to the pivot end of the primary boom with a strap (this will prevent the upper secondary boom from falling when the master cylinder barrel-end pivot pin is removed from the cylinder).
- 6 Tag, disconnect and plug the master cylinder hydraulic hoses. Cap the fittings on the master 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.

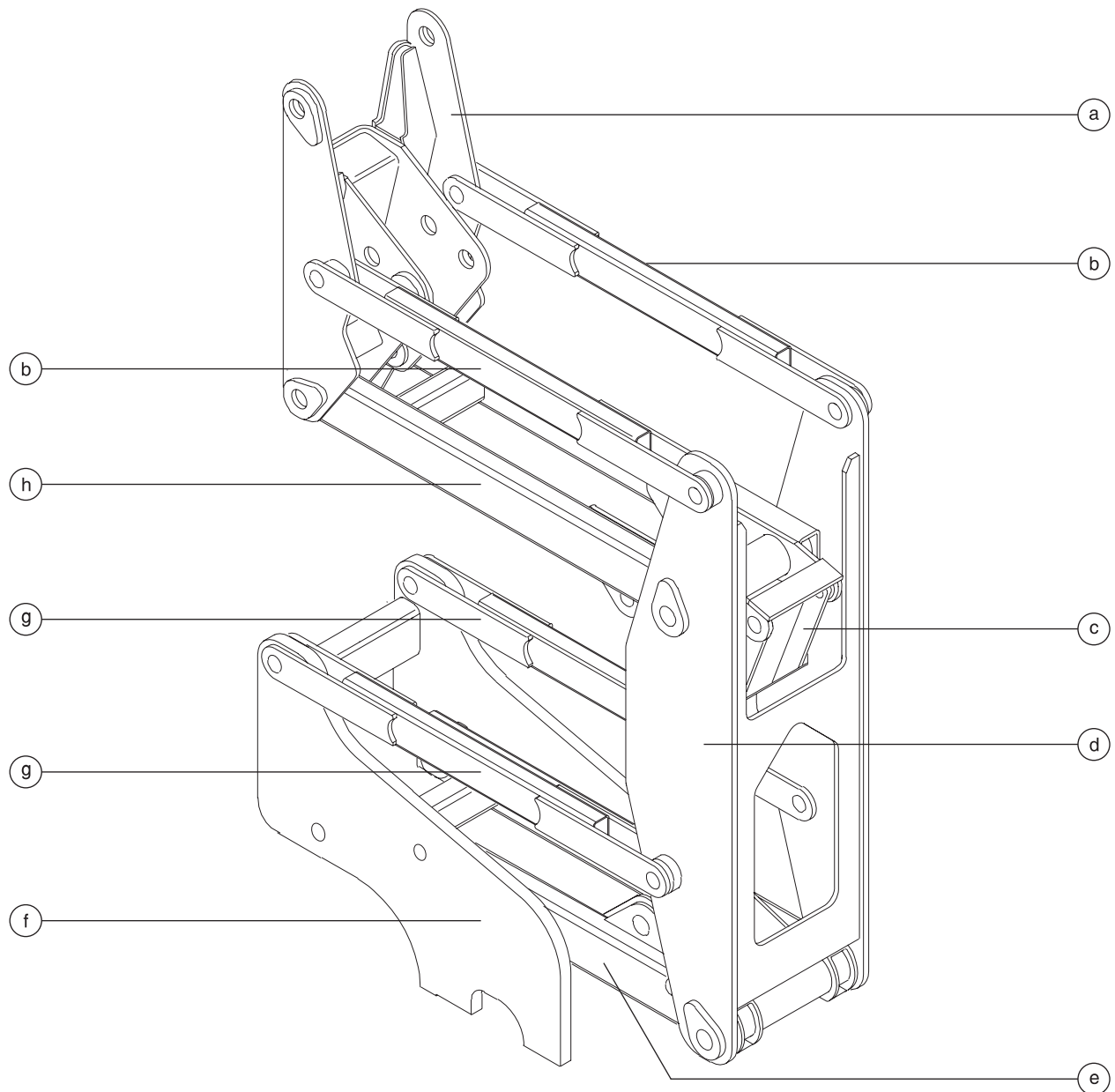
- 7 Attach a lifting strap to the lug on the rod end of the master cylinder. Secure the strap to the primary boom (use this strap to lower the master cylinder out of the upper mid-pivot).
- 8 Remove the pin retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.
- 9 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin. Do not remove the pin from the upper mid-pivot.

- 10 Use a soft metal drift to push the pin to one side only far enough to remove the cylinder. The pin should remain in one side of the upper secondary boom and upper mid-pivot.

⚠ WARNING Crushing Hazard. The upper secondary boom and the upper mid-pivot will fall if the pivot pin is completely removed.

- 11 Use the strap around the rod-end lug to lower the master cylinder out of the machine.

Secondary Boom Components



Secondary Boom

- a upper mid-pivot
- b upper compression arm
- c compression link
- d lower mid-pivot
- e lower secondary boom
- f turntable pivot
- g lower compression arm
- h upper secondary boom

SECONDARY BOOM COMPONENTS

5-1 Secondary Boom

How to Disassemble the Secondary Boom

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

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

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

- 1 Lower the boom to the stowed position.
- 2 Place a lifting device under the front of the platform.
- 3 Remove the rear turntable cover.
- 4 Remove the cable cover from the side of the jib boom.

- 5 Remove the wire loom from the cables at the platform control box.
- 6 Locate the 4 cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.
- 7 Open the platform control box.
- 8 Label and disconnect each wire of the 4 cables in the platform control box.

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

- 9 Pull the cables out of the platform control box.
- 10 Pull all of the electrical cables out of the plastic cable track. Do not pull out the hydraulic hoses.
- 11 Remove the hose clamps from the bottom side of the primary boom.
- 12 Tag, disconnect and plug the platform rotator hydraulic hoses at the union, located on the bottom side of the primary boom.

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

- 13 Remove the hose clamp from the side of the primary boom at the pivot end.

SECONDARY BOOM COMPONENTS

14 Remove the drive speed limit switch mounted on the side of the pivot end of the primary boom. Do not disconnect the wiring.

15 Attach a strap from an overhead crane to the pivot end of the primary boom.

16 Carefully lift the secondary and primary boom assembly until the master and primary lift cylinder hydraulic hoses are accessible.

17 Remove the cable covers from the top of the upper secondary boom.

18 Tag, disconnect and plug the primary boom lift cylinder and master cylinder hydraulic hoses.

⚠ 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.

19 Lower the booms to the stowed position.

20 Pull all the cables and hoses through the upper mid-pivot.

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

21 Position the strap from the overhead crane approximately 2 feet (0.6 m) from the platform end of the primary boom. Measure from the end of the primary boom tube.

22 Remove the pin retaining fasteners from the upper mid-pivot to upper compression arm pivot pins. Use a soft metal drift to remove the pins.

23 Swing the compression arms down and out of the way. Secure them from moving.

24 Remove the pin retainers from the upper mid-pivot to upper secondary boom pivot pin. Use a soft metal drift to remove the pin.

25 Carefully remove the entire primary boom assembly (primary boom assembly, jib boom assembly, platform, master cylinder, primary lift cylinder and upper mid-pivot) from the machine.

⚠ WARNING Crushing hazard. If the overhead crane is not properly attached, the primary boom assembly may become unbalanced and fall when it is removed from the machine. Do not remove the assembly from machine until it is properly balanced.

26 Place the entire assembly onto a structure capable of supporting it.

27 Remove the pin retaining fasteners from the upper compression arm pivot pins. Do not remove the pins.

SECONDARY BOOM COMPONENTS

- 28 Position the lifting strap from an overhead crane at the center of the control box side upper compression arm, then remove it from the machine. Repeat this step for the engine side upper compression arm.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the upper compression arm may become unbalanced and fall when it is removed from the machine.

- 29 Remove the pin retaining fastener from the rod end of the secondary boom lift cylinder. Use a soft metal drift to remove the pin. Secure the cylinder from moving.
- 30 Remove the pin retaining fastener from the lower pivot pin on the compression link. Use a soft metal drift to remove the pin.
- 31 Attach the strap from an overhead crane to the upper secondary boom.
- 32 Remove the pin retaining fastener from the upper secondary boom to lower mid-pivot pivot pin. Use a soft metal drift to remove the pin.
- 33 Remove the upper secondary boom with compression link from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the upper secondary boom with compression link may become unbalanced and fall when it is removed from the machine.

- 34 Remove the cable covers from the top of the lower secondary boom. Pull all the cables and hoses to the back of the turntable.

- 35 Remove the retaining fasteners from the secondary boom lift cylinder barrel-end pivot pins.

- 36 Attach the strap from the crane to the lug on the rod end of the secondary boom lift cylinder.

- 37 Tag, disconnect and plug the hydraulic hoses from the secondary 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.

- 38 Use a slide hammer to remove the barrel-end pins (access the pins from the access holes in the bulkheads, one on each side). Then remove the cylinder from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the secondary boom lift cylinder may become unbalanced and fall when it is removed from the machine.

- 39 Attach the strap from the crane to the lower mid-pivot.

SECONDARY BOOM COMPONENTS

40 Remove the pin retainers from the lower mid-pivot to lower compression arm pivot pins. Use a slide hammer and remove the pin.

41 Remove the pin retainers from the lower mid-pivot to lower secondary boom pivot pins. Use a soft metal drift to remove the pin.

42 Remove the lower mid-pivot from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the lower mid-pivot may become unbalanced and fall when it is removed from the machine.

43 Remove the drive speed limit switch mounted on the inside of the lower mid-pivot. Do not disconnect the wiring.

44 Attach the strap from the crane to the control box side lower compression arm.

45 Remove the pin retainer from the lower compression arm to turntable pivot pin. Use a slide hammer and remove the pin. Remove the arm from the machine. Repeat for the engine side lower compression arm.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the lower compression arms may become unbalanced and fall when it is removed from the machine.

46 Attach the strap from the crane to the lower secondary boom.

47 Remove the pin retainer from the lower secondary boom to turntable pivot pin. Use a soft metal drift to remove the pin.

48 Remove the lower secondary boom from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the lower secondary boom may become unbalanced and fall when it is removed from the machine.

SECONDARY BOOM COMPONENTS

5-2

Secondary Boom Lift Cylinder

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

How to Remove the Secondary Lift Cylinder

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

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

- 1 Rotate the turntable to the side until the boom is centered between the steer and non-steer tires.
- 2 Raise the primary boom to full height. Do not extend it.

- 3 Attach the strap from an overhead crane to the lug on the rod end of the secondary boom lift cylinder.
- 4 From the bottom side of the cylinder, remove the retaining fasteners from the secondary boom lift cylinder barrel-end pivot pins.
- 5 Use a slide hammer to remove the barrel-end pins (access the pins from the access holes in the bulkheads, one on each side).
- 6 Remove the pin retaining fastener from the secondary boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.
- 7 Carefully lower the cylinder down through the secondary boom, enough to access the hydraulic hoses. Do not pinch the hoses.

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

- 8 Tag, disconnect and plug the hydraulic hoses from the secondary boom lift cylinder. Cap the fittings 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.

- 9 Remove the cylinder through the top of the secondary boom.

Ground Controls

6-1 Control Relays

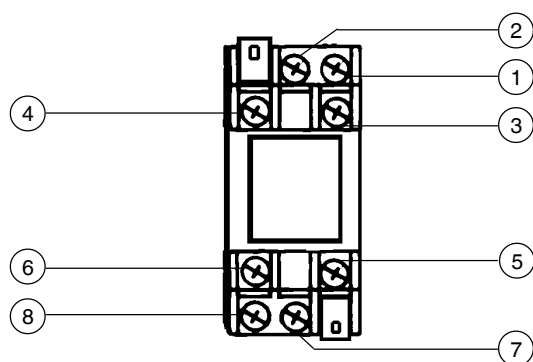
Relays used for dual function switching are double pole double throw (DPDT) relays.

How to Test a Double Pole Double Throw Relay

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

This procedure covers fundamental relay testing and does not specifically apply to all varieties of relays.

- 1 Turn the key switch to the OFF position and remove the key.
- 2 Label and then disconnect all the wiring from the relay to be tested.
- 3 Connect the leads from an ohmmeter to each terminal combination and check for continuity. Terminals 7 and 8 represent the coil and should not be tested in any other combination.

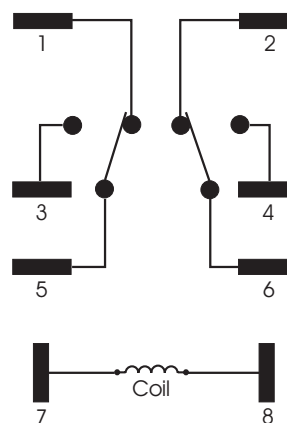


Bubble number represents the terminal number

Test	Desired result
terminal 7 to 8	640 to 650Ω
terminal 1 to 2, 3, 4 & 6	no continuity (infinite Ω)
terminal 2 to 3, 4 & 5	no continuity (infinite Ω)
terminal 3 to 6	no continuity (infinite Ω)
terminal 2 to 6	continuity (zero Ω)
terminal 1 to 5	continuity (infinite Ω)

- 4 Connect 24V DC to terminal 8 and a ground wire to terminal 7, then test the following terminal combinations.

Test	Desired result
terminal 1 to 2, 4, 5 & 6	no continuity (infinite Ω)
terminal 2 to 3, 5 & 6	no continuity (infinite Ω)
terminal 1 to 3	continuity (zero Ω)
terminal 2 to 4	continuity (zero Ω)



GROUND CONTROLS

How to Test a Single Pole Double Throw Relay

Relays used for single function switching are single pole double throw (SPDT) relays.

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

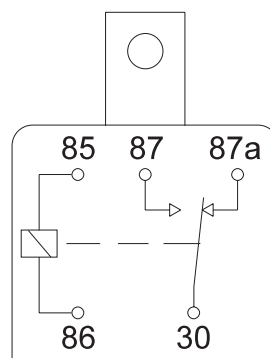
This procedure covers fundamental relay testing and does not specifically apply to all varieties of relays.

- 1 Turn the key switch to the OFF position and remove the key.
- 2 Label and then disconnect all the wiring from the relay to be tested.
- 3 Connect the leads from an ohmmeter to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

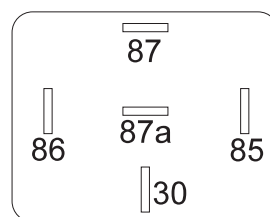
Test	Desired result
terminal 85 to 86	85 to 95Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

- 4 Connect 24V DC to terminal 85 and a ground wire to terminal 86. Test the following terminal combinations.

Test	Desired result
terminal 87a to 87 & 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



Relay Schematic



Terminal Numbers

GROUND CONTROLS

6-2 Toggle Switches

See 1-3, *Toggle Switches*.

6-3 Wago® Components

How to Remove a Wago® Component

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

NOTICE Wago® tools are available from the Genie Service Parts Department (Genie part number 33996).

- 1 Label the wiring from the component to be removed.
- 2 Push the Wago® tool firmly into the slot to release the wire from the component.
- 3 Locate the removal tab on the bottom or top side of the component.
- 4 Use the Wago® tool to gently pry up on the tab of the component and remove it.

Hydraulic Pumps

7-1

Auxiliary Pump

How to Test the Auxiliary Pump

- 1 Disconnect and plug the high pressure hydraulic hose 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.

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

- 2 Connect a 0 to 5000 psi (0 to 350 bar) pressure gauge to the high pressure port on the pump.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position at both ground and platform controls.

- 4 Activate any function using auxiliary power.
- ⊙ Result: If the pressure gauge reads 3200 psi (220 bar), immediately stop. The pump is good.
- ⊙ Result: If pressure fails to reach 3200 psi (220 bar), the pump is bad and will need to be serviced or replaced.
- 5 Remove the pressure gauge and reconnect the hydraulic hose.

How to Remove the Auxiliary Pump

- 1 Tag, disconnect and plug the hydraulic hoses from the pump. Cap the fittings on the pump.

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

- 2 Remove the pump mounting bolts. Carefully remove the pump.

HYDRAULIC PUMPS

7-2 Main Function Pump

How to Test the Main Function Pump

- 1 Disconnect and plug the high pressure hydraulic hose from the main function 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.

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

- 2 Connect a 0 to 5000 psi (0 to 350 bar) pressure gauge to the high pressure port on the pump.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.

- 4 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move any boom function toggle switch at the ground controls.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable switch to either side and move any boom function toggle switch at the ground controls.
 - ⦿ Result: If the pressure gauge reads 3200 psi (220 bar), immediately stop. The pump is good.
 - ⦿ Result: If pressure fails to reach 3200 psi (220 bar),
Z-34/22 before serial number 153 and Z-34/22N before serial number 304:
the external relief valve setting is incorrect or the pump is faulty and will need to be serviced or replaced.
Z-34/22 from serial number 153 to 809 and Z-34/22N from serial number 304 to 1116:
the internal relief valve setting is incorrect or the pump is faulty and will need to be serviced or replaced.
Z-34/22 after serial number 809 and Z-34/22N after serial number 1116:
the relief valve setting on the function manifold (item YY) is incorrect or the pump is faulty and will need to be serviced or replaced.
- 5 Remove the pressure gauge and reconnect the hydraulic hose.

HYDRAULIC PUMPS

How to Remove the Main Function Pump**Z-34/22 before serial number 810 and
Z-34/22N before serial number 1117**

- 1 Remove the support angle from the side of the hydraulic power unit.
- 2 Remove the mounting fasteners from the hydraulic tank and lower the tank.
- 3 Remove the pump mounting bolts. Carefully remove the pump.

How to Remove the Main Function Pump**Z-34/22 after serial number 809 and
Z-34/22N after serial number 1116**

- 1 Tag, disconnect and plug the hoses from the main function pump.
- 2 Remove the pump mounting bolts from the pump. Carefully remove the pump from the electric motor.

Manifolds

8-1

Function Manifold Components

(Z-34/22 before serial number 674 and Z-34/22N before serial number 935)

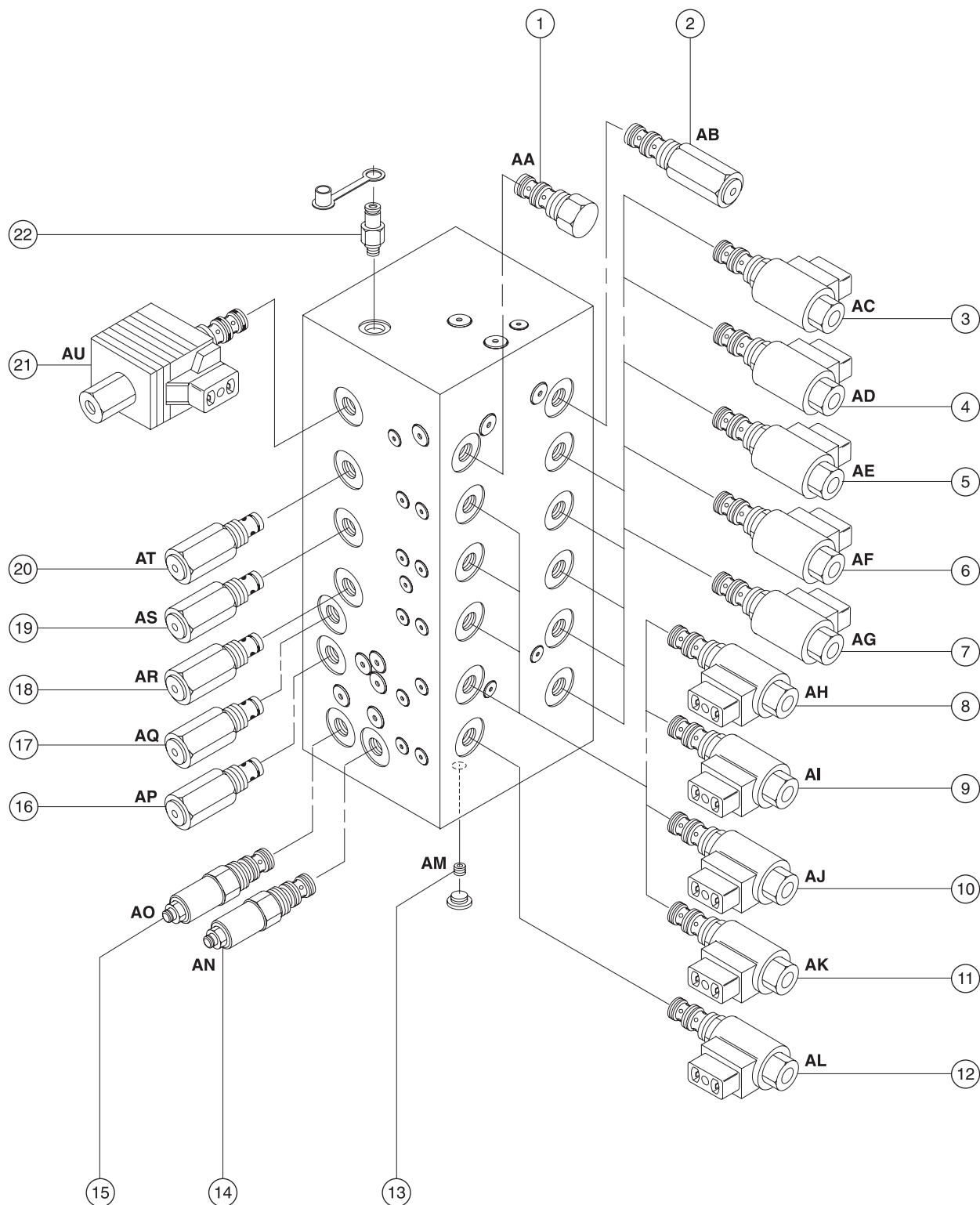
The function manifold is mounted to the turntable under the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	Differential sensing valve	AA	Differential sensing circuit	10-12 ft-lbs (14-16 Nm)
2	Relief valve, 3200 psi (221 bar)	AB	System relief	25-30 ft-lbs (34-41 Nm)
3	2 position 3 way solenoid valve	AC	Boom retract	8-10 ft-lbs (11-14 Nm)
4	2 position 3 way solenoid valve	AD	Primary boom up	8-10 ft-lbs (11-14 Nm)
5	2 position 3 way solenoid valve	AE	Secondary boom up	8-10 ft-lbs (11-14 Nm)
6	2 position 3 way solenoid valve	AF	Turntable rotate left	8-10 ft-lbs (11-14 Nm)
7	2 position 3 way solenoid valve	AG	Platform level up	8-10 ft-lbs (11-14 Nm)
8	2 position 3 way solenoid valve	AH	Boom extend	8-10 ft-lbs (11-14 Nm)
9	2 position 3 way solenoid valve	AI	Primary boom down	8-10 ft-lbs (11-14 Nm)
10	2 position 3 way solenoid valve	AJ	Secondary boom down	8-10 ft-lbs (11-14 Nm)
11	2 position 3 way solenoid valve	AK	Turntable rotate right	8-10 ft-lbs (11-14 Nm)
12	2 position 3 way solenoid valve	AL	Platform level down	8-10 ft-lbs (11-14 Nm)
13	Orifice 0.050 inch (1.27 mm)	AM	Turntable rotate circuit	
14	Counterbalance valve	AN	Platform level down	35-40 ft-lbs (47-54 Nm)
15	Counterbalance valve	AO	Platform level up	35-40 ft-lbs (47-54 Nm)
16	Relief valve, 1750 psi (121 bar)	AP	Turntable rotate left	25-30 ft-lbs (34-41 Nm)
17	Relief valve, 1750 psi (121 bar)	AQ	Turntable rotate right	25-30 ft-lbs (34-41 Nm)
18	Relief valve, 1600 psi (110 bar)	AR	Secondary boom down	25-30 ft-lbs (34-41 Nm)
19	Relief valve, 1400 psi (97 bar)	AS	Primary boom down	25-30 ft-lbs (34-41 Nm)
20	Relief valve, 1800 psi (124 bar)	AT	Boom extend	25-30 ft-lbs (34-41 Nm)
21	Proportional solenoid valve	AU	System flow regulating circuit	10-12 ft-lbs (14-16 Nm)
22	Diagnostic fitting		Testing	

Plug Torque Specifications

Description	Hex Size	Torque	Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm	SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm	SAE No. 8	5/16	50 ft-lbs / 68 Nm

MANIFOLDS



MANIFOLDS

8-2

Function Manifold Components

(Z-34/22 from serial number 674 to 1733 and Z-34/22N from serial number 935 to 2226)

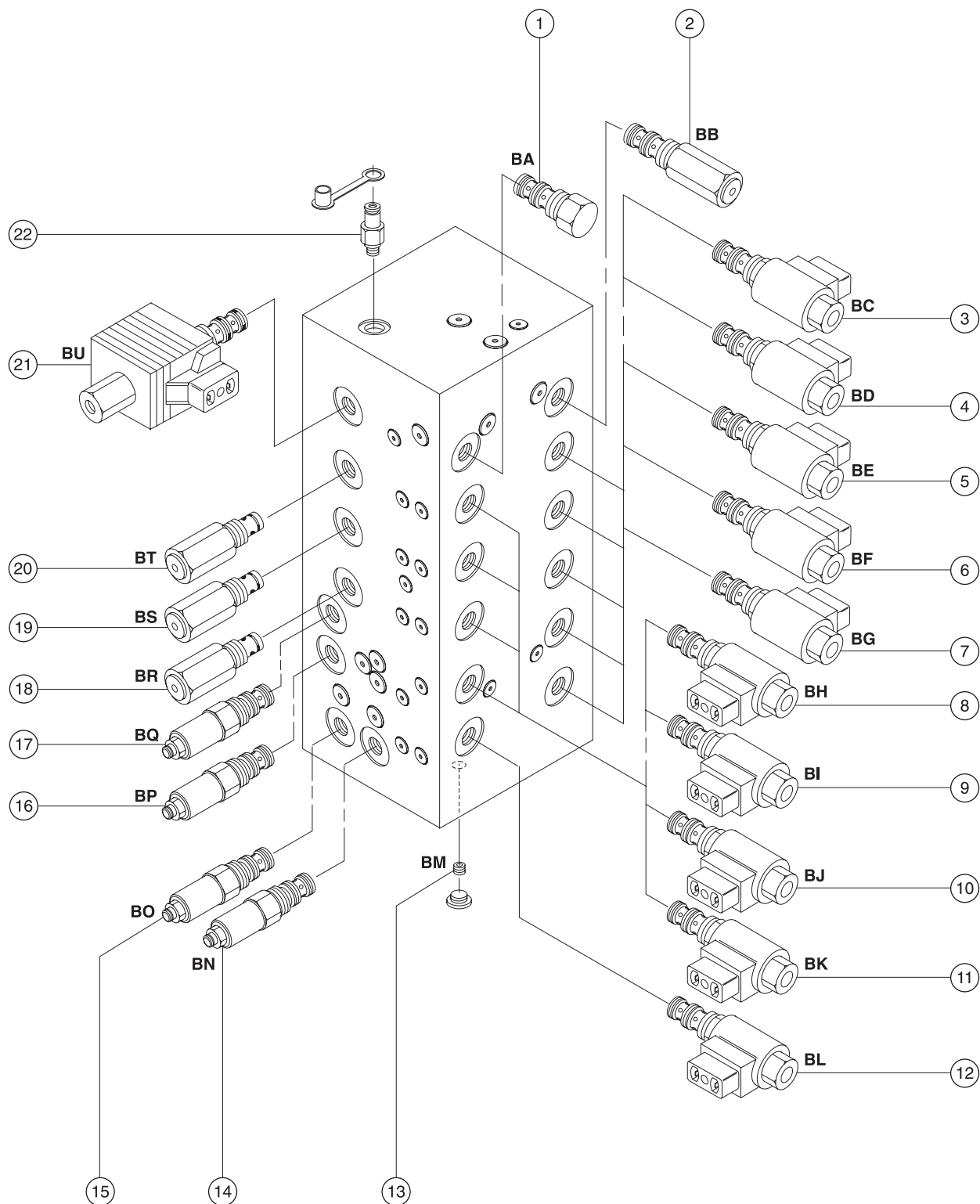
The function manifold is mounted to the turntable under the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	Differential sensing valve	BA	Differential sensing circuit	10-12 ft-lbs (14-16 Nm)
2	Relief valve, 3200 psi (221 bar)	BB	System relief	25-30 ft-lbs (34-41 Nm)
3	2 position 3 way solenoid valve	BC	Boom retract	8-10 ft-lbs (11-14 Nm)
4	2 position 3 way solenoid valve	BD	Primary boom up	8-10 ft-lbs (11-14 Nm)
5	2 position 3 way solenoid valve	BE	Secondary boom up	8-10 ft-lbs (11-14 Nm)
6	2 position 3 way solenoid valve	BF	Turntable rotate left	8-10 ft-lbs (11-14 Nm)
7	2 position 3 way solenoid valve	BG	Platform level up	8-10 ft-lbs (11-14 Nm)
8	2 position 3 way solenoid valve	BH	Boom extend	8-10 ft-lbs (11-14 Nm)
9	2 position 3 way solenoid valve	BI	Primary boom down	8-10 ft-lbs (11-14 Nm)
10	2 position 3 way solenoid valve	BJ	Secondary boom down	8-10 ft-lbs (11-14 Nm)
11	2 position 3 way solenoid valve	BK	Turntable rotate right	8-10 ft-lbs (11-14 Nm)
12	2 position 3 way solenoid valve	BL	Platform level down	8-10 ft-lbs (11-14 Nm)
13	Orifice 0.050 inch (1.27 mm)	BM	Turntable rotate circuit	
14	Counterbalance valve	BN	Platform level down	35-40 ft-lbs (47-54 Nm)
15	Counterbalance valve	BO	Platform level up	35-40 ft-lbs (47-54 Nm)
16	Counterbalance valve	BP	Turntable rotate right	35-40 ft-lbs (47-54 Nm)
17	Counterbalance valve	BQ	Turntable rotate left	35-40 ft-lbs (47-54 Nm)
18	Relief valve, 1600 psi (110 bar)	BR	Secondary boom down	25-30 ft-lbs (34-41 Nm)
19	Relief valve, 1400 psi (97 bar)	BS	Primary boom down	25-30 ft-lbs (34-41 Nm)
20	Relief valve, 1800 psi (124 bar)	BT	Boom extend	25-30 ft-lbs (34-41 Nm)
21	Proportional solenoid valve	BU	System flow regulating circuit	10-12 ft-lbs (14-16 Nm)
22	Diagnostic fitting		Testing	

Plug Torque Specifications

Description	Hex Size	Torque	Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm	SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm	SAE No. 8	5/16	50 ft-lbs / 68 Nm

MANIFOLDS



MANIFOLDS

8-3

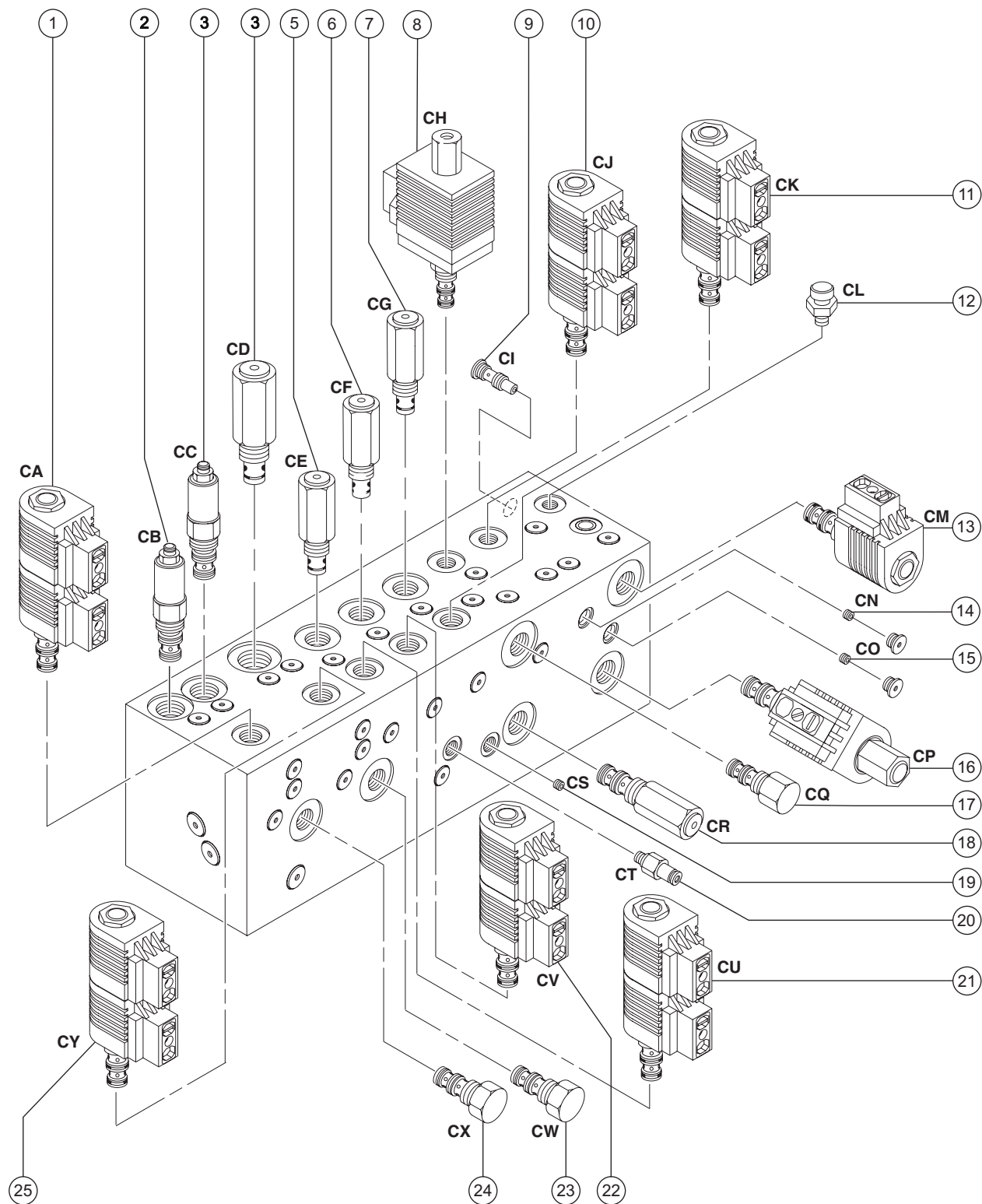
Function Manifold Components

(Z-34/22 after serial number 1733 and Z-34/22N after serial number 2226)

The function manifold is mounted to the turntable under the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	3 position 4 way spool valve	CA	Platform level up/down	10-12 ft-lbs (14-16 Nm)
2	Counterbalance valve	CB	Platform level down	35-40 ft-lbs (47-54 Nm)
3	Counterbalance valve	CC	Platform level up	35-40 ft-lbs (47-54 Nm)
4	Relief valve, 1100 psi (75.8 bar)	CD	Turntable rotate left/right	25-30 ft-lbs (34-41 Nm)
5	Relief valve, 1600 psi (110 bar)	CE	Secondary boom down	25-30 ft-lbs (34-41 Nm)
6	Relief valve, 1400 psi (96.5 bar)	CF	Primary boom down	25-30 ft-lbs (34-41 Nm)
	(Before serial number: Z34/22-2901 and Z34/22N-3533)			
	Relief valve, 1600 psi (110 bar)			
	(After serial number: Z34/22-2900 and Z34/22N-3532)			
7	Relief valve, 1800 psi (124 bar)	CG	Primary boom extend	25-30 ft-lbs (34-41 Nm)
	(Before serial number: Z34/22-2901 and Z34/22N-3533)			
	Relief valve, 2800 psi (193 bar)			
	(From serial number: Z34/22-2901 to 3215 and Z34/22N-3533 to 3766)			
8	Proportional solenoid valve	CH	System flow regulating circuit	10-12 ft-lbs (14-16 Nm)
9	Check valve	CI	Brake circuit	25-30 ft-lbs (34-41 Nm)
10	Solenoid valve, 3 position 4 way	CJ	Steer left/right	10-12 ft-lbs (14-16 Nm)
11	3 position 4 way spool valve	CK	Primary boom extend/retract	10-12 ft-lbs (14-16 Nm)
12	Pressure switch	CL	Brake circuit	
13	Solenoid valve, N.C. poppet	CM	Brake circuit	25-30 ft-lbs (34-41 Nm)
14	Orifice, 0.045 inch (1.02 mm)	CN	Steer/Brake circuit	
15	Orifice, 0.045 inch (1.5 mm)	CO	Brake circuit	
16	Solenoid valve, N.O. poppet	CP	Brake circuit	25-30 ft-lbs (34-41 Nm)
17	Differential sensing valve	CQ	Differential sensing circuit	10-12 ft-lbs (14-16 Nm)
18	Relief valve, 3200 psi (220.6 bar)	CR	System relief	25-30 ft-lbs (34-41 Nm)
19	Orifice, 0.035 inch (0.89 mm)	CS	T2 tank port	
	(Added after serial number: Z34/22-2894 and Z34/22N-3517)			
20	Diagnostic fitting	CT	Pressure test port	
21	3 position 4 way spool valve	CU	Secondary boom up/down	10-12 ft-lbs (14-16 Nm)
22	3 position 4 way spool valve	CV	Primary boom up/down	10-12 ft-lbs (14-16 Nm)
23	Flow regulator valve, 1.5 gpm (5.7 l/min)	CW	Turntable rotate circuit	10-12 ft-lbs (14-16 Nm)
24	Flow regulator valve, 0.8 gpm (3 l/min)	CX	Jib boom/platform rotate circuit	10-12 ft-lbs (14-16 Nm)
25	3 position 4 way spool valve	CY	Turntable rotate left/right	10-12 ft-lbs (14-16 Nm)

MANIFOLDS



MANIFOLDS

8-4 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

NOTICE

Perform this procedure with the boom in the stowed position.

- 1 Connect a 0 to 5000 psi (0 to 345 bar) pressure gauge to the test port on the function manifold.
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted. Observe the pressure reading on the pressure gauge.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted. Observe the pressure reading on the pressure gauge.
- 4 Turn the machine off. Hold the relief valve and remove the cap
Z-34/22
Before serial number 674: (item AB).
From serial number 674 to 1733: (item BB).
After serial number 1733: (item CR).
Z-34/22N
Before serial number 935: (item AB).
From serial number 935 to 2226: (item BB).
After serial number 2226: (item CR).
- 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 and 3 to confirm the relief valve pressure setting.

System relief valve specifications

Pressure	3200 psi	221 bar
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MANIFOLDS

How to Adjust the Primary Boom Down Relief Valve

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

- 1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the on position.
- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the primary boom up/down toggle switch in the down direction with the primary boom fully lowered. Observe the pressure reading on the pressure gauge.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the primary boom up/down toggle switch in the down direction with the primary boom fully lowered. Observe the pressure reading on the pressure gauge.
- 4 Turn the machine off. Hold the relief valve and remove the cap
Z-34/22
Before serial number 674: (item AS).
From serial number 674 to 1733: (item BS).
After serial number 1733: (item CF).
Z-34/22N
Before serial number 935: (item AS).
From serial number 935 to 2226: (item BS).
After serial number 2226: (item CF).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Then install the relief valve cap.

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

- 6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

Primary boom down relief valve specifications

Before serial number:

Z34/22-2901

Z34/22N-3533

Pressure	1400 psi	97 bar
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After serial number:

Z34/22-2900

Z/34/22N-3532

Pressure	1600 psi	110 bar
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MANIFOLDS

How to Adjust the Secondary Boom Down Relief Valve

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

- 1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the on position.
- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the secondary boom up/down toggle switch in the down direction with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the secondary boom up/down toggle switch in the down direction with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge.
- 4 Turn the machine off. Hold the relief valve and remove the cap
Z-34/22
Before serial number 674: (item AR).
From serial number 674 to 1733: (item BR).
After serial number 1733: (item CE).
Z-34/22N
Before serial number 935: (item AR).
From serial number 935 to 2226: (item BR).
After serial number 2226: (item CE).
- 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 and 3 to confirm the relief valve pressure setting.

Secondary boom down relief valve specifications

Pressure	1600 psi	110 bar
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MANIFOLDS

How to Adjust the Primary Boom Extend Relief Valve

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

- 1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the primary boom extend/retract toggle switch in the extend direction with the primary boom fully extended. Observe the pressure reading on the pressure gauge.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the primary boom extend/retract toggle switch in the extend direction with the primary boom fully extended. Observe the pressure reading on the pressure gauge.

Primary boom extend relief valve specifications

Before serial number:

Z34/22-2901

Z34/22N-3533

Pressure	1800 psi	124 bar
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After serial number:

Z34/22-2900

Z34/22N-3532

Pressure	2800 psi	193 bar
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- 4 Turn the machine off. Hold the relief valve and remove the cap

Z-34/22

Before serial number 674: (item AT).

From serial number 674 to 1733: (item BT).

From serial number 1733 to 3215: (item CG).

Removed after serial number 3215.

Z-34/22N

Before serial number 935: (item AT).

From serial number 935 to 2226: (item BT).

From serial number 2226 to 3766: (item CG).

Removed after serial number 3766.

- 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 and 3 to confirm the relief valve pressure setting.

MANIFOLDS

How to Adjust the Turntable Rotate Relief Valves

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

- 1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.
- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 3 **Z-34/22 before serial number 153 and Z-34/22N before serial number 304:**
Move the turntable rotate right/left toggle switch in the RIGHT direction until turntable stops against the rotation stop. Observe the pressure reading on the pressure gauge.
Z-34/22 after serial number 152 and Z-34/22N after serial number 303:
Hold the function enable toggle switch to either side and move the turntable rotate right/left toggle switch in the RIGHT direction (until turntable stops against the rotation stop). Observe the pressure reading on the pressure gauge.
- 4 Turn the machine off. Hold the relief valve and remove the cap
Z-34/22
Before serial number 674: (items AP and AQ).
After serial number 1733: (item CD).
Z-34/22N
Before serial number 935: (items AP and AQ).
After serial number 2226: (item CD).
- 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 valves higher than specified.

- 6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.
- 7 **Z-34/22 before serial number 674 and Z-34/22N before serial number 935:**
Repeat steps 2 through 6 to adjust the turntable rotate left relief valve.

NOTICE If adjusting the turntable rotate left, hold the switch to the left and adjust the left relief valve (item AQ, function manifold).

Turntable rotate relief valve specifications

Z-34/22

before serial number 674	1750 psi	121 bar
from serial number 674 to 1733	Not adjustable	
after serial number 1733	1100 psi	76 bar

Z-34/22N

before serial number 935	1750 psi	121 bar
from serial number 935 to 2226	Not adjustable	
after serial number 2226	1100 psi	76 bar

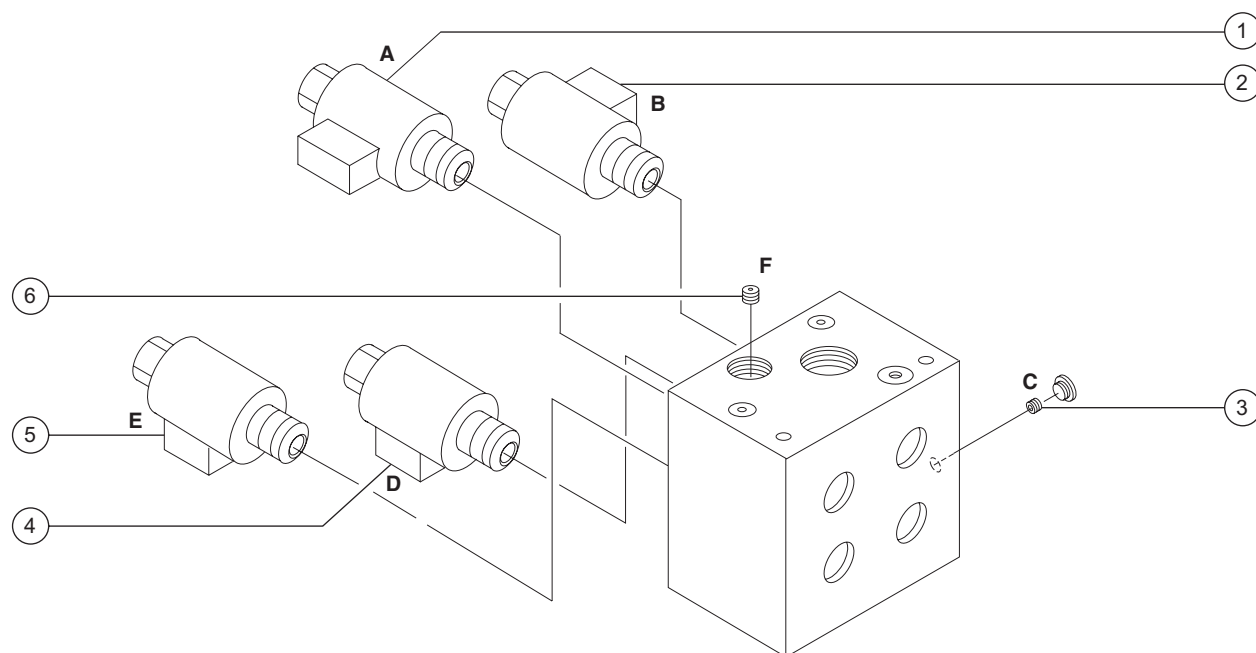
MANIFOLDS

8-5

Jib Boom / Platform Rotate Manifold Components**(Z-34/22 before serial number 1734 and Z-34/22N before serial number 2227)**

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

- | | | | |
|---|---|----------------------------------|------------------------|
| 1 | Solenoid valve, 2 position 3 way A | Jib boom up | 8-10 ft-lbs (11-14 Nm) |
| 2 | Solenoid valve, 2 position 3 way B | Platform rotate right | 8-10 ft-lbs (11-14 Nm) |
| 3 | Orifice plug, 0.025 inch (0.76 mm) C | Platform rotate circuit | |
| 4 | Solenoid valve, 2 position 3 way D | Platform rotate left | 8-10 ft-lbs (11-14 Nm) |
| 5 | Solenoid valve, 2 position 3 way E | Jib boom down | 8-10 ft-lbs (11-14 Nm) |
| 6 | Orifice plug, 0.030 inch (0.89 mm) F | Jib boom/platform rotate circuit | |
- (Added after serial number: Z-34/22-781 and Z-34/22N-1030)

**Plug Torque Specifications**

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs (6 Nm)
SAE No. 4	3/16	13 ft-lbs (18 Nm)

Valve Coil Resistance Specification

Description	Measurement
2 position 3 way valve - 20V (schematic items A, B, D and E)	23.5 to 24.5Ω

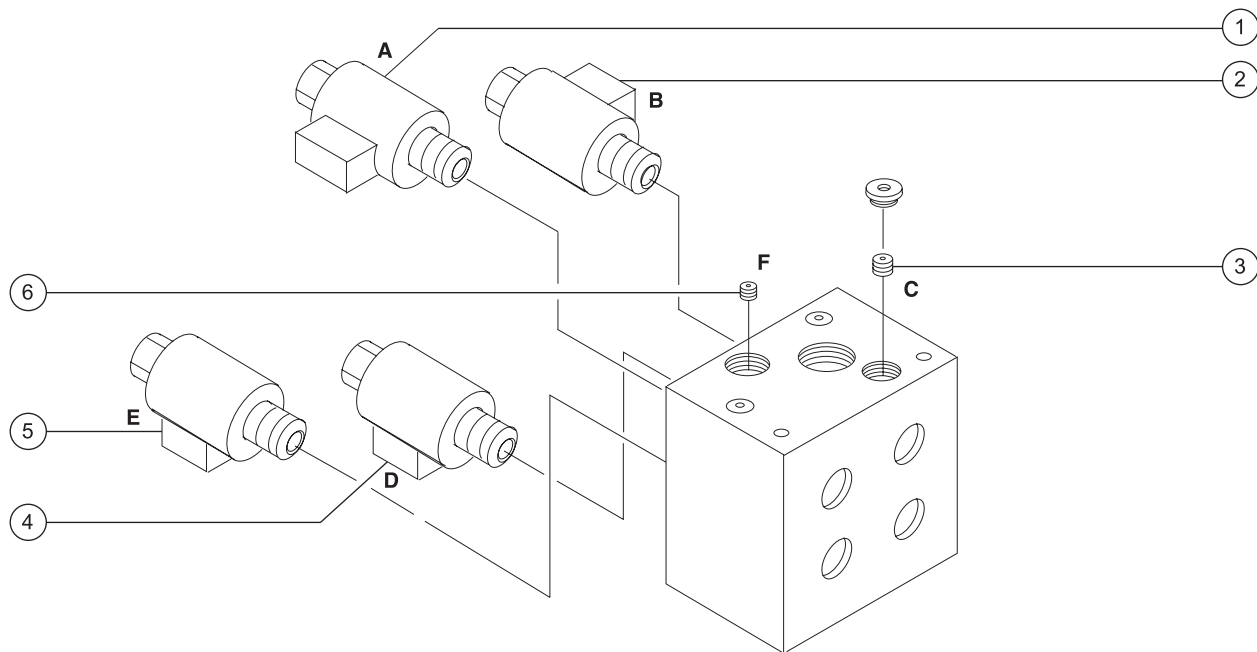
MANIFOLDS

8-6

Jib Boom / Platform Rotate Manifold Components**(Z-34/22 from serial number 1734 to 2005 and Z-34/22N from serial number 2227 to 2771)**

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

- | | | | |
|---|--|----------------------------------|------------------------|
| 1 | Solenoid valve, 2 position 3 way A | Jib boom up | 8-10 ft-lbs (11-14 Nm) |
| 2 | Solenoid valve, 2 position 3 way B | Platform rotate right | 8-10 ft-lbs (11-14 Nm) |
| 3 | Orifice plug, 0.025 inch (0.64 mm) C | Platform rotate circuit | |
| | (Before serial number: Z34/22-1892 and Z34/22N-2548) | | |
| | Orifice plug, 0.022 inch (0.56 mm) | | |
| | (From serial number: Z34/22-1892 to 2005 and Z34/22N-2548 to 2771) | | |
| 4 | Solenoid valve, 2 position 3 way D | Platform rotate left | 8-10 ft-lbs (11-14 Nm) |
| 5 | Solenoid valve, 2 position 3 way E | Jib boom down | 8-10 ft-lbs (11-14 Nm) |
| 6 | Orifice plug, 0.030 inch (0.89 mm) F | Jib boom/platform rotate circuit | |

**Plug Torque Specifications**

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs (6 Nm)
SAE No. 4	3/16	13 ft-lbs (18 Nm)

Valve Coil Resistance Specification

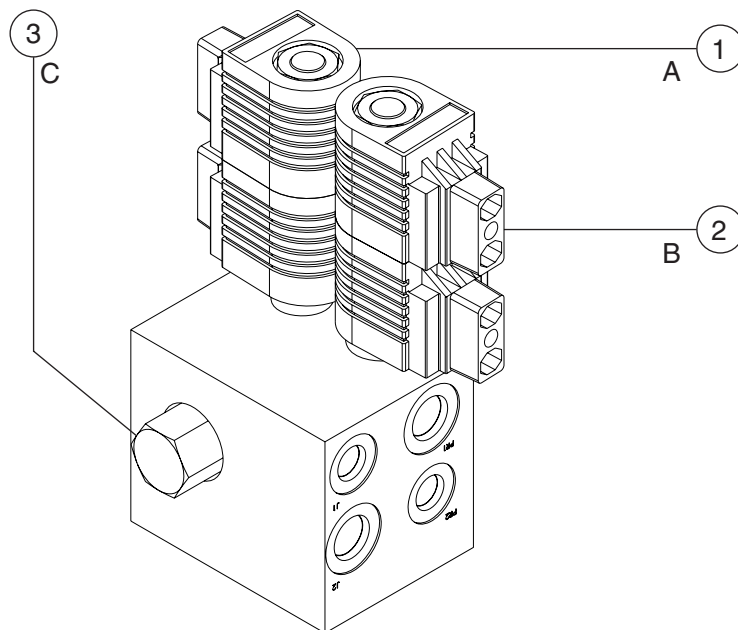
Description	Measurement
2 position 3 way valve - 20V (schematic items A, B, D and E)	23.5 to 24.5Ω

MANIFOLDS

8-7**Jib Boom / Platform Rotate Manifold Components****(Z-34/22 after serial number 2005 and Z-34/22N after serial number 2771)**

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

- | | | | | |
|---|---|----------------------------------|-------------------------------|-------------------------|
| 1 | Solenoid valve, 3 position 4 way A | Jib boom up/down | 20-25 ft-lbs (27-34 Nm) | |
| 2 | Solenoid valve, 3 position 4 way B | Platform rotate right/left | 20-25 ft-lbs (27-34 Nm) | |
| 3 | Flow regulator valve,
0.3 gpm / 1.14 L/min | C | Platform rotate circuit | 20-25 ft-lbs (27-34 Nm) |

**Valve Coil Resistance Specification**

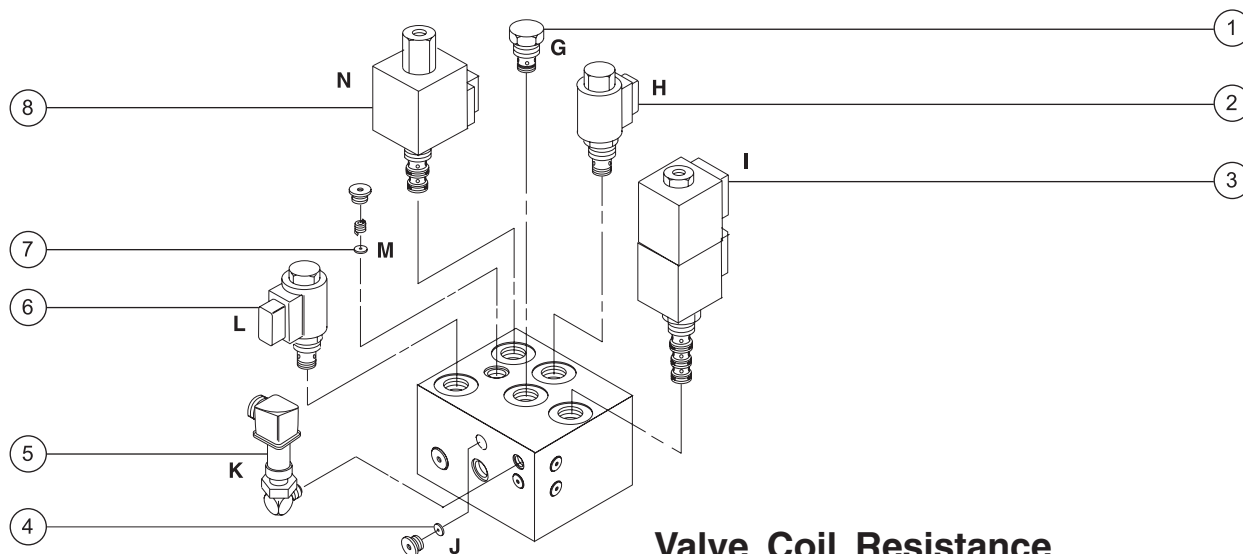
Description	Measurement
3 position 4 way valve , 20V DC (schematic items A and B)	22 Ω

MANIFOLDS

8-8

Steer / Brake Manifold Components**(Z-34/22 before serial number 781 and Z-34/22N before serial number 1030)**

Index No.	Description	Schematic Item	Function	Torque
1	Check valve	G	Brake circuit	25-30 ft-lbs (34-41Nm)
2	Normally open poppet valve	H	Brake circuit	25-30 ft-lbs (34-41Nm)
3	3 position 4 way spool valve	I	Steer left/right	10-12 ft-lbs (14-16Nm)
4	Orifice washer 0.040 inch (1.02 mm) J		Brake circuit	
5	Pressure switch	K	Brake circuit	
6	Normally closed poppet valve	L	Brake circuit	25-30 ft-lbs (34-41Nm)
7	Orifice washer 0.052 inch (1.32 mm) M		Brake circuit	
8	Proportional solenoid valve	N	Brake circuit	10-12 ft-lbs (14-16Nm)

**Valve Coil Resistance Specification**

Normally open poppet valve - 20V (schematic item H)	23 to 25Ω
3 position 4 way valve - 20V (schematic item I)	21 to 23Ω
Normally closed poppet valve - 20V (schematic item L)	22 to 24Ω
Proportional solenoid valve - 20V (schematic item N)	18 to 20Ω

Plug Torque Specifications

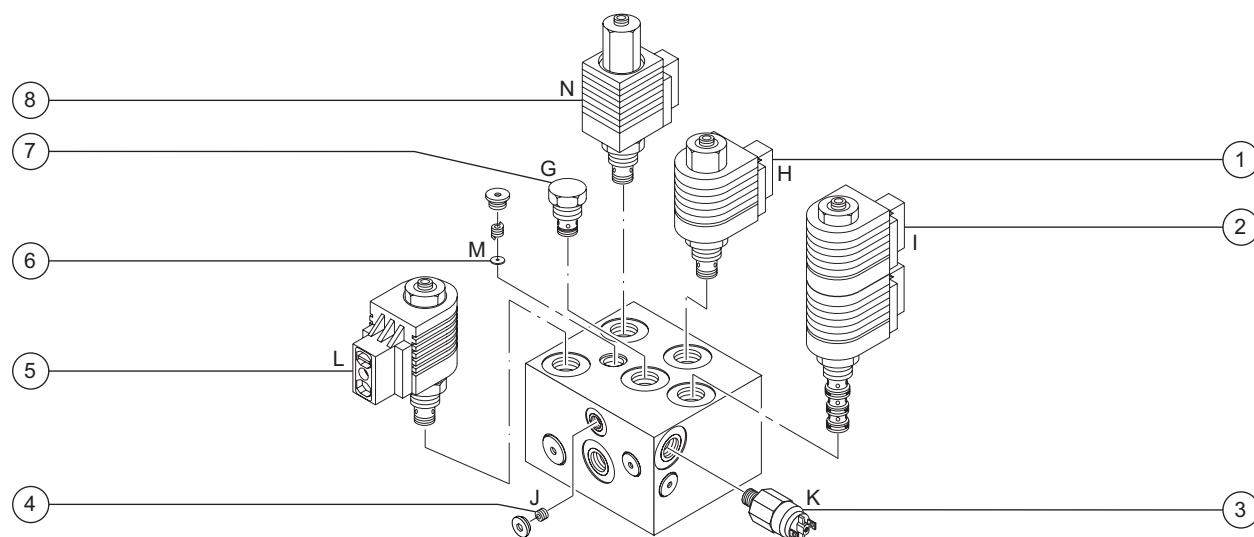
Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs (6 Nm)
SAE No. 4	3/16	13 ft-lbs (18 Nm)

MANIFOLDS

8-9

Steer / Brake Manifold Components**(Z-34/22 from serial number 781 to 1733 and Z-34/22N from serial number 1030 to 2226)**

Index No.	Description	Schematic Item	Function	Torque
1	Normally open poppet valve	H	Brake circuit	25-30 ft-lbs (34-41Nm)
2	3 position 4 way spool valve	I	Steer left/right	10-12 ft-lbs (14-16Nm)
3	Pressure switch	K	Brake circuit	
4	Orifice 0.040 inch (1.02 mm)	J	Brake circuit	
5	Normally closed poppet valve	L	Brake circuit	25-30 ft-lbs (34-41Nm)
6	Orifice washer 0.052 inch (1.32 mm)	M	Brake circuit	
7	Check valve	G	Brake circuit	25-30 ft-lbs (34-41Nm)
8	Proportional solenoid valve	N	Brake circuit	10-12 ft-lbs (14-16Nm)



**Refer to previous page for Plug
Torque and Valve Coil
Specifications**

Hydraulic Tank

9-1 Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply lines and has a return filter mounted inside the reservoir.

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

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

How to Remove the Hydraulic Tank

Z-34/22 before serial number 809 and Z-34/22N before serial number 1116

- 1 Open the tank side turntable cover.
- 2 Remove the tank mounting fasteners. Remove the tank from the power unit.

- 3 Completely drain the tank into a suitable container. See capacity specifications.
- 4 Remove the suction strainer and the magnet. Clean the tank with mild solvent.
- 5 Clean up any oil that may have spilled.

Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
Z-34/22 before serial number 809 and Z-34/22N before serial number 1116:	
Hydraulic tank capacity	5 gallons 18.9 liters
Hydraulic system (including tank)	7 gallons 26.5 liters

HYDRAULIC TANK

How to Remove the Hydraulic Tank

Z-34/22 after serial number 808 and Z-34/22N after serial number 1115

- 1 Open the tank side turntable cover.
- 2 Close the hydraulic shutoff valve located at the hydraulic tank.

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

- 3 Place a suitable container under the hydraulic tank. See capacity specifications.
- 4 Disconnect and plug the hydraulic hose from the hydraulic tank shutoff valve.

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 drain plug from the hydraulic tank and drain the oil into a suitable container.

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

- 6 Tag, disconnect and plug the hydraulic hoses from the hydraulic tank filter. Cap the fittings on the filter.

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

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

- 7 Remove the hydraulic tank mounting fasteners.
- 8 Remove the hydraulic tank from the machine.
- 9 Remove the tank lid retaining fasteners. Remove the lid from the tank.

CAUTION Component damage hazard. Do not overtighten the hydraulic tank mounting fasteners. Torque the hydraulic tank mounting fasteners to 5 ft-lbs (6.8 Nm).

Torque specification

$\frac{1}{4}$ -20 fasteners	5 ft-lbs	6.8 Nm
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Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
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Z-34/22 after serial number 808 and Z-34/22N after serial number 1115:

Hydraulic tank capacity	4 gallons 15.1 liters
Hydraulic system (including tank)	6 gallons 22.7 liters

Turntable Rotation Components

10-1

Turntable Rotation Hydraulic Motor

The turntable rotation hydraulic motor is the only serviceable component of the turntable rotation assembly. The worm gear must not be removed from the housing. In order to remove the housing, the turntable has to be removed.

How to Remove the Turntable Rotation Motor

NOTICE

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

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

- 1 Tag, disconnect and plug the hydraulic hoses from the turntable rotation motor. Cap the fittings on the motor.

⚠WARNING

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

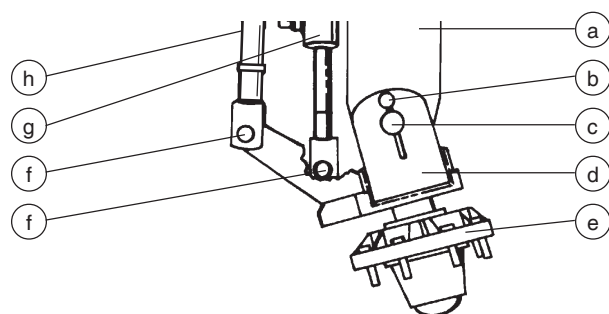
- 2 Remove the turntable rotation motor mounting bolts. Remove the motor.

Steer Axle Components

11-1 Yoke and Hub

How to Remove the Yoke and Hub

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



- a axle
- b retaining fastener
- c king pin
- d yoke
- e hub
- f clevis pin and cotter pin
- g steering cylinder
- h tie rod

- 2 Block the non-steering wheels. Center a lifting jack under the steering axle.
- 3 Raise the machine approximately 6 inches (15 cm) and place blocks under the drive chassis for support.

- 4 Remove the lug nuts. Remove the tire and wheel assembly.
- 5 Remove the cotter pin and the clevis pin from both the steering cylinder and the tie rod.

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

- 6 Remove the retaining fasteners from the upper and lower yoke pivot pins. Do not remove the pins.
- 7 Support and secure the yoke/hub assembly to a lifting jack.
- 8 Place a rod through the yoke pivot pins and twist to remove the pins.

CAUTION Crushing hazard. The yoke/hub assembly may become unbalanced and fall when the yoke pivot pins are removed if it is not properly supported and secured to the lifting jack.

Torque specifications

Lug nuts, dry	125 ft-lbs	169.5 Nm
Lug nut torque, lubricated	94 ft-lbs	127 Nm

STEERING AXLE COMPONENTS

How to Remove the Hub and Bearings

- 1 Loosen the wheel lug nuts. Do not remove them.
- 2 Block the non-steering wheels and place a lifting jack under the steering axle.
- 3 Raise the machine approximately 6 inches (15 cm) and place blocks under the drive chassis for support.
- 4 Remove the lug nuts. Remove the tire and wheel assembly.
- 5 Remove the dust cap, cotter pin and castle nut.

NOTICE Always replace the cotter pin with a new one when removing the 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 bearing seal out of the hub. Remove the inner bearing.

NOTICE When removing a bearing, always use a new inner bearing seal.

How to Install the Hub and Bearings

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

- 1 Be sure that both bearings are packed with grease.
- 2 Place the large inner bearing into the rear of the hub.
- 3 Press the inner bearing seal evenly into the hub until it is flush.
- 4 Apply a small amount of grease onto the yoke spindle.
- 5 Slide the hub onto the yoke spindle.

CAUTION Component damage hazard. Damage to the lip of the seal may occur if excessive force is applied.

- 6 Place the outer bearing into the hub.
- 7 Install the washer and castle nut.
- 8 Tighten the castle nut to 35 ft-lbs (47 Nm).
- 9 Loosen the castle nut and tighten to 8 ft-lbs (11 Nm).
- 10 Install a new cotter pin. Bend the cotter pin to lock it.

NOTICE Always replace the cotter pin with a new one when installing the castle nut.

- 11 Install the dust cap. Install the tire and wheel assembly. Torque the wheel lug nuts to 125 ft-lbs (169.5 Nm).

STEERING AXLE COMPONENTS

11-2 Steer Cylinder

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

- 1 Tag, disconnect and plug the hydraulic hoses from the steer 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.

- 2 Remove the cotter pins. Remove the clevis pin from each end of the steer cylinder.

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

- 3 Remove the steer cylinder from the machine.

11-3 Tie Rod

How to Remove the Tie Rod

- 1 Remove the cotter pins. Remove the clevis pin from each end of the tie rod.

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

- 2 Remove the tie rod from the machine.

Non-steer Axle Components

12-1 Drive Motor

How to Remove a Drive Motor

NOTICE A drive motor can only be removed from the inside of the drive chassis.

- 1 Disconnect the battery packs from the machine.
- 2 Remove the chassis cover from the non-steer end of the machine.
- 3 Tag and disconnect the power cables from the drive motor.

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

- 4 Remove the drive motor mounting fasteners.
- 5 Guide the drive motor shaft out of the brake and remove the drive motor from the machine.

12-2 Drive Hub

How to Remove a Drive Hub

NOTICE The drive motor must be removed in order to access the drive hub mounting bolts.

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

- 1 Remove the drive motor. See 11-1, *How to Remove a Drive Motor*.
- 2 Disconnect the hydraulic hose from the brake and plug it. Cap the fitting on the brake.

⚠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 Chock the steer wheels.
- 4 Loosen the wheel lug nuts on the wheel of the drive hub to be removed. Do not remove the lug nuts.

NON-STEER AXLE COMPONENTS

- 5 Center a lifting jack under the non-steer end of the machine. Raise the machine approximately 6 inches (15 cm) and place blocks under the chassis for support.
- 6 Remove the wheel lug nuts. Remove the tire and wheel assembly.
- 7 Place a second lifting jack under the drive hub for support. Secure the drive hub to the lifting jack.
- 8 Remove the brake mounting bolts. Remove the brake from the machine.
- 9 Remove the drive hub mounting bolts. Remove the drive hub from the machine.

⚠ CAUTION Crushing hazard. The drive hub may become unbalanced and fall when the mounting fasteners are removed if it is not properly supported and secured to the lifting jack.

Torque specifications

Lug nuts, dry	125 ft-lbs	169.5 Nm
Lug nuts, lubricated	94 ft-lbs	127 Nm
Drive hub bolts, dry	210 ft-lbs	285 Nm
Drive hub bolts, lubricated	94 ft-lbs	127 Nm

Motor Controller

13-1

Motor Controller

Z-34/22 after serial number 1733 and

Z-34/22N after serial number 2226

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 Electrocuting/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 V

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Genie North America

Phone: 425 881 1800
Toll Free in USA 800 536 1800
Toll Free in Canada 800 426 8089
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Genie UK Limited

Phone: 44 1636 614700
Fax: 44 1636 614777

Genie China

Phone: 86 21 62483040
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