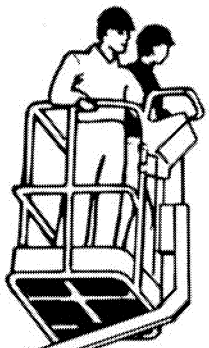
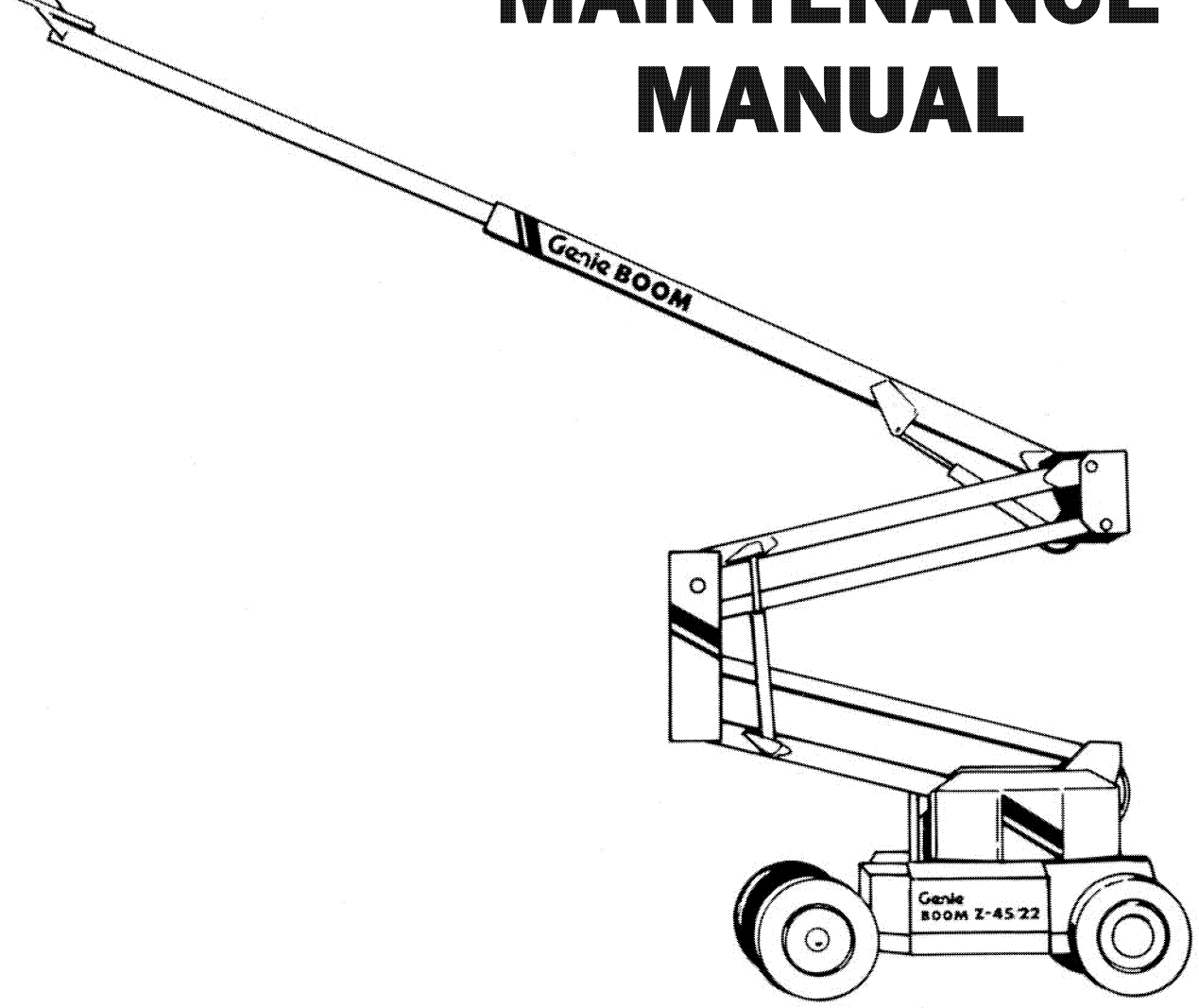
Genie

BOOM Z-45/22



OPERATING AND MAINTENANCE MANUAL



Part No. 139543



Genie Industries

CONGRATULATIONS!

You are now the proud owner of a Genie Boom Z-45/22! Genie takes pride in designing products that stand for quality, value, and service. You can be assured that your new Genie Boom will offer all of these.

This manual has been prepared to guide you through the maintenance you will periodically perform on your unit. In preparation of this manual, we have tried to answer any questions and project any service situations that you may encounter with your Genie Boom. But, as with any publication, we cannot guarantee that it is all inclusive. If you have a question or situation that has not been addressed in this manual, please make us aware! WE RELY ON YOUR FEEDBACK!

Write to: GENIE INDUSTRIES
Attention: Service Manager
P.O. Box 69
Redmond, WA 98073-0069

or call: 800-426-8089
In Washington state (206) 881-1800

Once again, congratulations on your new Genie Boom. We are confident it will provide years of quality, value, and service.

Sincerely,

GENIE INDUSTRIES



Steve Gooding
Customer Service Department Manager

SG/ch

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OPERATION

3.1 UNPACKING, SET-UP, AND INSPECTIONS

Delivery of a Genie product to a customer is one of the most important events that takes place during its productive life. It is of the utmost importance that the machine is correctly and promptly unpacked and inspected prior to being put into service. Contained in this section are the instructions for unpacking and inspecting your machine. When the machine is received, please complete the Machine Condition Report included in the front of this manual and return it to:

GENIE INDUSTRIES
P. O. Box 69
Redmond, WA 98073-0069
Attn: Customer Service Department

UNPACKING

The Genie Boom Z-45/22 is shipped from the factory without batteries. The batteries must be obtained, installed and connected before use. Battery cables, connectors and fasteners are provided with each unit and are stored in the battery boxes located on the left and right sides of the chassis.

The Genie Boom Z-45/22 is designed to operate with twelve (12) six-volt 250 amp hour batteries connected in a series parallel configuration to provide 36 volts. Any reduction in rated voltage or capacity will adversely affect the machine operation. Refer to the wiring diagram for proper battery connection. Unpacking procedure:

1. Remove all restraints used to secure the machine to the truck bed. In many cases, the platform has been removed to prevent damage during shipment. The platform must be reinstalled and the foot switch reconnected prior to operating the machine.

2. Remove the battery box covers and install the batteries as detailed on the battery wiring diagram decal located in the battery box cover.

3. Connect the battery cable connectors from the battery boxes to the chassis mounted connectors located at each side of machine chassis. The machine is intended to operate off both packs simultaneously. This will ensure consistent charging and discharging of the entire 36-volt, 500 amp hour pack. Inspect the cable connection carefully to ensure that a complete circuit has been made for the battery cables and the 12 gauge red wire on both connectors.

4. The unit should now be fully operational. Using the ground control station located at the swing chassis, lower the boom mechanism to the fully lowered position and rotate the swing chassis so that the boom is parallel to the direction of the chassis.

5. Ensure that the ramp upon which the machine will be driven is capable of withstanding the 13,000 pound machine weight.

6. Before driving the machine out of the container, or off the flatbed, ensure that you understand the functions of the controls. Turn the key switch to PLATFORM position. Enter the platform and familiarize yourself with the platform control station. Step on the foot switch and operate the DRIVE joystick slowly in the direction of desired travel.

   NOTE: All decals on the platform controls designate the direction the unit will travel when the platform is behind the drive wheels. If the boom is rotated 180^{o} so that the platform rests in front of the steering wheels, the drive and steering functions will be reversed. The color-coded arrows on the chassis will enable the user to determine what function these controls operate when the swing chassis is rotated.

7. Before driving down a ramp, make sure the boom extension cylinder is completely retracted and all personnel and obstructions are clear. Push the DRIVE joystick in the direction of travel. To slow the travel of the machine, move the DRIVE joystick back towards the neutral position. To stop travel, allow the DRIVE joystick to return to the neutral position.

   NOTE: Before reaching the bottom of the ramp, it will be important to stop the machine and elevate the platform slightly. This will prevent the tip of the machine from interfering with the ground. It will also ensure a smooth transition from the slope to level ground.

SET UP AND INSPECTIONS

Initial Inspection

Before a new Genie Boom Z-45/22 is put into operation, it must be carefully inspected for any evidence of damage resulting from shipment. This section provides the necessary information needed to place the machine in operation. Following these procedures will aid in obtaining maximum service life and safe operation of your Genie Boom.

IT IS ESSENTIAL THAT THE INFORMATION CONTAINED IN THIS SECTION BE READ AND UNDERSTOOD BEFORE ANY ATTEMPT IS MADE TO OPERATE THE MACHINE.

The following checklist used in conjunction with the Machine Condition Report, included in the front of this manual, will detect defective, damaged or improperly installed parts.

1. **Front Tire and Wheel Assemblies** - Check for damaged, loose or worn spindles; defective components and hardware; and worn or damaged tires.

2. **Steering Assembly** - Check for loose or bent tie rods. Ensure cylinders and hydraulic lines are leak-free and hardware has been properly installed.

3. **Batteries** - Check for damaged, loose or missing vent caps. Inspect electrical connections for corrosion and security. Ensure hold-down brackets are tight and electrolyte is at proper level. Add only clean, distilled water to battery after charging.

4. **Ground Control Station** - Check for damaged, loose or missing parts and confirm electrical connections are secure and corrosion free. Inspect wiring for insulation damage. Ensure all switches operate properly.

5. **Boom Manifold** - Check solenoid valves and hydraulic lines for damage, leaks, and security. Inspect electrical connection for corrosion and security.

6. **Boom Motor/Pump** - Check for damaged, loose or missing parts. Ensure electrical connections are corrosion free and secure. Inspect pump and hydraulic lines for leaks.

7. **Swing Chassis** - Check for damaged, loose or missing parts. Check pinion for proper mesh with swing gear. Check the swing bearing for damage, wear, proper lubrication, and loose or missing bearing bolts. Check the swing drive hub, hydraulic motor and brake for damage, loose or missing parts. Inspect hydraulic lines and component housings for evidence of leaks. Also check the oil level in the swing drive hub by removing the pipe plug on the side and feeling for the oil level.

NOTE: The swing drive hub should be approximately one-half full of 90 weight oil.

8. **Drive Motor and Rear Wheel Assembly** - Check for security. Inspect tires for wear. Check drive hubs, hydraulic motors and brake lines for damage and leaks. Check the oil level in the drive hub by removing the pipe plug on the side and feeling for the oil level.

   NOTE: The torque hubs should be approximately one-half full of 90 weight oil.

9. **Drive Manifold** - Check solenoid valves and hydraulic lines for damage, leaks, and security. Inspect electrical connections for corrosion and security.

10. **Drive Motor/Pump** - Check for damaged, loose or missing parts. Ensure electrical connections are corrosion free and secure. Inspect pump and hydraulic lines for leaks.

11. **Hydraulic Reservoir** - Check hydraulic lines for damaged, loose or missing parts.

12. **Boom Linkage** - Thoroughly inspect for damage, wear and security. Make certain all pivot pins, and retaining bolts for securing pivot pins, are in place. Check all cylinders for proper installation, security and leaks. Check the wear pads and cable track, hydraulic/electrical lines for damage and loose or missing parts.

13. **Platform** - Check platform for damaged, loose or missing parts. Check the sliding mid-rail for damage.

14. **Platform Control Station** - Check for damaged, loose or missing parts. Confirm electrical connections are secure and corrosion free. Inspect wiring for insulation damage. Ensure all switches operate properly.

15. **Covers** - Check for damaged, loose or missing parts. Ensure proper operation of latches and wing nuts.

16. **Placards and Decals** - Check all warning, caution, and danger placards and decals for legibility. Make sure the operating instructions are included at the platform.

Preoperational Inspection

Before operating the machine each day, the following inspections should be performed to ensure maximum safety for the machine operator and others using the Genie Boom Z-45/22. ANY DAMAGE NOTED DURING THIS INSPECTION MUST BE CORRECTED BEFORE THE MACHINE IS USED.

It is recommended that each user inspect the machine before operation even if the machine has already been put into service by another user. The most efficient method for inspecting your machine is by conducting a brief, but thorough, walk-around inspection.

1. **Overall cleanliness** - Check machine for hydraulic oil residue and foreign objects. Inspect the surface upon which the machine is resting for any indication of leaks.

2. **Front Tire and Wheel Assemblies** - Check for damaged, loose or missing parts. Confirm tire pressure at 100 psi.

3. **Steering Assembly** - Check for damaged, loose or missing parts. Inspect steering cylinders and hydraulic lines for leaks.

4. **Batteries and charger** - Check for damaged, loose or missing parts. Ensure battery posts and connecting terminals are secure and free of corrosion. Check batteries for state of charge, fluid levels and specific gravity (between 12.60 and 12.75). Confirm charger operates properly when plugged in to appropriate AC outlet.

5. **Ground Control Station** - Check for damaged, loose or missing parts. Ensure all switches operate properly.

6. **Boom Manifold and Motor/Pump** - Check for damaged, loose or missing parts. Inspect manifold, pump and hydraulic lines for leaks. Ensure motor and solenoid electrical connections are secure and free of corrosion.

7. **Swing Chassis** - Check for damaged, loose or missing parts. Ensure bearing and pinion are properly lubricated. Inspect swing hub, motor, brake and hydraulic lines for leaks.

8. **Drive Motor and Rear Wheel Assembly** - Check for damaged, loose or missing parts. Confirm tire pressure at 100 psi. Inspect drive hub, motor, brake and hydraulic lines for leaks.

9. **Drive Manifold and Motor/Pump** - Check for damaged, loose or missing parts. Inspect manifold, pump, and hydraulic lines for leaks. Ensure motor and solenoid electrical connections are secure and corrosion free.

10. **Hydraulic Reservoir** - Check for damaged, loose or missing parts. Ensure the hydraulic oil level is at approximately the 180°F mark on the oil level/temperature indicator. Inspect the reservoir, oil filters and breather cap for leaks.

11. **Boom Assembly** - Check for damaged, loose or missing parts. Inspect boom assembly cylinders and hydraulic lines for leaks.

12. **Platform Assembly** -Check for damaged, loose or missing parts. Ensure that foot switch, manual platform rotator, sliding mid rail and safety belts/lanyards are in good working condition.

13. **Platform Control Station** - Check for damaged, loose or missing parts. Ensure all switches operate properly.

14. **Placards and Decals** - Ensure that all placards and decals are clean, unobstructed, legible, and in the proper location.

15. **Boom Functions Test** - A test of all boom functions must be performed from the ground control station. Function tests should be executed in the following order:

    A. PLATFORM LEVEL Up/Down
    B. BOOM ELEVATE Up/Down
    C. BOOM REACH Up/Down
       observation of automatic self-leveling system
    D. BOOM REACH Extend/Retract
    E. SWING Left/Right

16. **Auxiliary Controls Test** - With platform at maximum elevation operate BOOM ELEVATE Down and BOOM REACH Retract functions from the auxiliary controls. With platform fully lowered operate SWING Left/Right functions from the auxiliary controls. Activate the tilt level sensor located on the swing chassis by depressing it off center. This should cause the tilt alarm in the platform to sound a loud oscillating tone.

17. **Drive System Test** - A test of all drive functions should be performed after testing the auxiliary controls. With the platform lowered, DRIVE Forward/Reverse speed should vary proportionally from zero to approximately 3 mph. With the platform elevated, DRIVE Forward/Reverse speed should vary proportionally from zero to .8 mph. Do not operate the machine if it is capable of driving faster than .8 mph with the platform elevated. STEER Right/Left should operate in either direction.

Check that the drive brakes hold when the machine is driven up a grade and stopped. Do not operate the machine if the brakes do not hold.

18. **Torque requirements** - The table below lists the standard torque values based on bolt diameters, grades and wet or dry conditions. The purpose of this table is to allow the user to take prompt, effective action in the event that an unacceptable condition is noticed during the inspection procedure.

TORQUE REQUIREMENT TABLE

Size		Bolt Diameter D (In.)	Tensile Stress Area (Sq.In.)	SAE Grade 5 Bolts			SAE Grade 8 Bolts			Recommended Torque Wrench Size (Production)		
				Clamp Load P(lb.)	Tightening Dry K = 0.20 Lb.In.	Torque Lub. K = 0.15 LB.In.	Clamp Load P (lb.)	Tightening Dry K = 0.20 Lb. In.	Torque Lub. K = 0.15 Lb. In.	In-Oz.	In-Lbs	Ft-Lbs
4	40	0.1120	0.00604	380	8	6	540	12	9	160	10	
	48	0.1120	0.00661	420	9	7	600	13	10	160	10	
6	32	0.1380	0.00909	580	16	12	820	23	17		25	
	40	0.1380	0.01015	610	18	13	920	25	19		25	
8	32	0.1640	0.01400	900	30	22	1260	41	31		25	
	36	0.1640	0.01474	940	31	23	1320	43	32		25	
10	24	0.1900	0.01750	1120	43	32	1580	60	45		50	
	32	0.1900	0.02000	1285	49	36	1800	68	51		50	
1/4	20	0.2500	0.0318	2020	96	75	2860	144	108		100	
	28	0.2500	0.0364	2320	120	86	3280	168	120		200	
					LB.FT.	LB.FT.		LB.FT.	LB.FT.			
5/16	18	0.3125	0.0524	3340	17	13	4720	25	18		200	
	24	0.3125	0.0580	3700	19	14	5220	25	20		200	
3/8	16	0.3750	0.0775	4940	30	23	7000	45	35		300	25
	24	0.3750	0.0878	5600	35	25	7900	50	35		300	50
7/16	14	0.4375	0.1063	6800	50	35	9550	70	55		600	50
	20	0.4375	0.1187	7550	55	40	10700	80	60		600	50
1/2	13	0.5000	0.1419	9050	75	55	12750	110	80		1200	100
	20	0.5000	0.1599	10700	90	65	14400	120	90		1200	100
9/16	12	0.5625	0.1820	11600	110	80	16400	150	110		1200	100
	18	0.5625	0.2030	12950	120	90	18250	170	130		1200	100
5/8	11	0.6250	0.2260	14400	150	110	20350	220	170		1800	150
	18	0.6250	0.2560	16300	170	130	23000	240	180		1800	150
3/4	10	0.7500	0.3340	21300	260	200	30100	380	280		2400	200
	16	0.7500	0.3730	23800	300	220	33600	420	320		2400	200
7/8	9	0.8750	0.4620	29400	430	320	41600	600	460		3600	300
	14	0.8750	0.5090	32400	470	350	45800	660	500		3600	300
1	8	1.0000	0.6060	38600	640	480	51500	900	680		7200	600
	12	1.0000	0.6630	42200	700	530	59700	1000	740		7200	600
1 1/8	7	1.1250	0.7630	42300	800	600	68700	1280	960		7200	600
	12	1.1250	0.8560	47500	880	660	77000	1440	1080		7200	600
1 1/4	7	1.2500	0.9690	53800	1120	840	87200	1820	1360			Mult*
	12	1.2500	1.0730	59600	1240	920	96600	2000	1500			Mult*
1 3/8	6	1.3750	1.1550	64100	1460	1100	104000	2380	1780			
	12	1.3750	1.3150	73000	1680	1260	118100	2720	2040			
1 1/2	6	1.5000	1.4050	78000	1940	1460	126500	3160	2360			Mult*
	12	1.5000	1.5800	87700	2200	1640	142200	3560	2660			Mult*

NOTE: Tensile strength for bolt size 4 to 1 - 120,000 (min, psi), size 1 1/8 to 1 1/2 (min. psi).



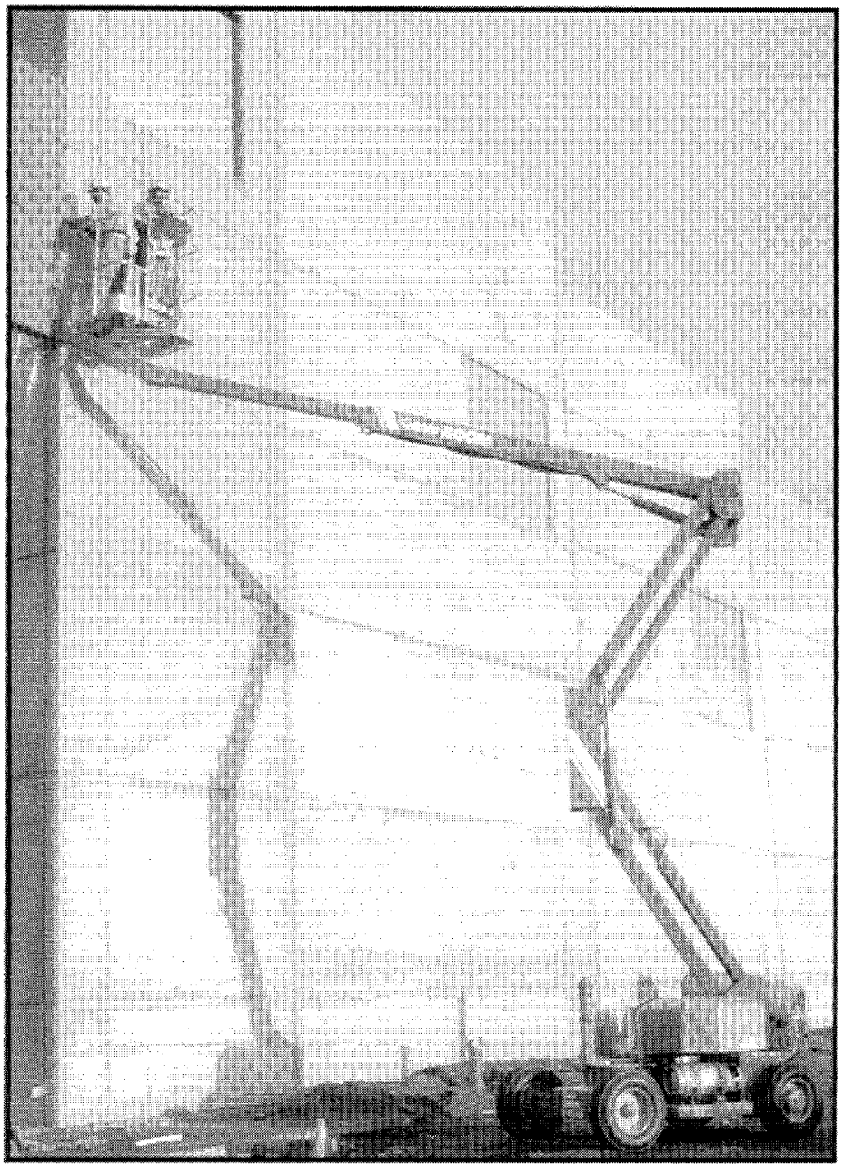
* Torque multiplier.
Torque specifications are usually given in foot-pounds ... lower ranges in inch-pounds or inch-ounces.

3.2 OPERATING INSTRUCTIONS

Refer to insert on following page for Genie Boom Z-45/22 Operating Instructions.

GENIE BOOM Z-45/22

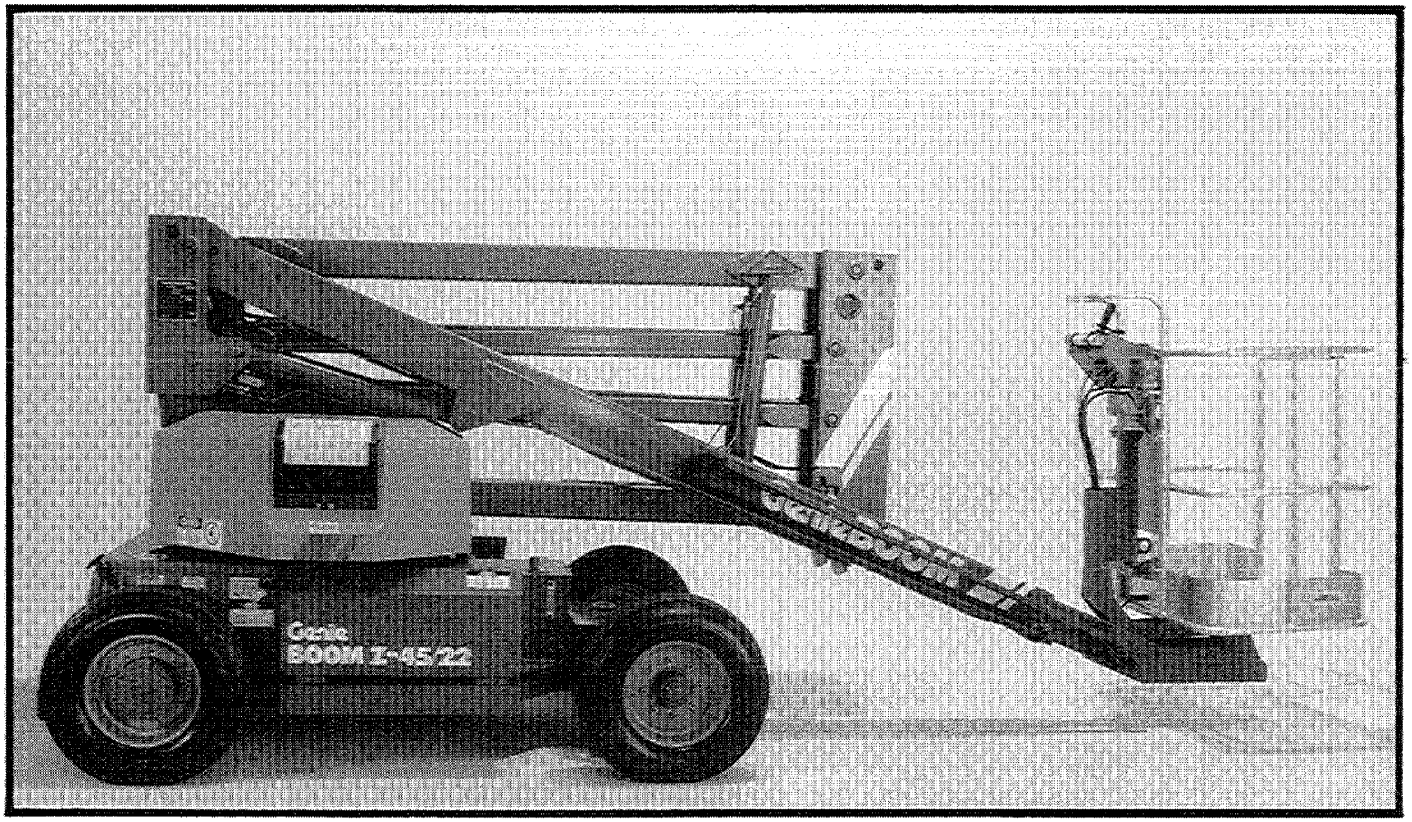
OPERATING INSTRUCTIONS



CAUTION

Understanding these Safety Rules and Operating Instructions is critical to the safe operation of the Genie Boom Z-45/22. Please study this brochure carefully, and make sure that all personnel using the Genie Boom Z-45/22 read and understand it completely before using this equipment.

Genie Industries

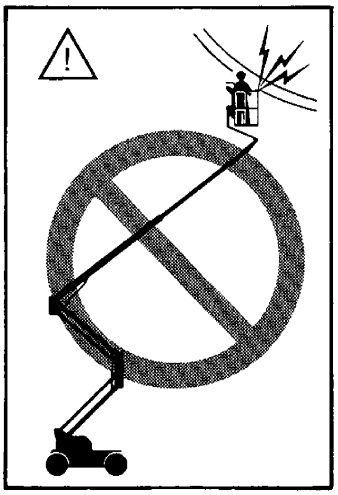


GENIE BOOM Z-45/22

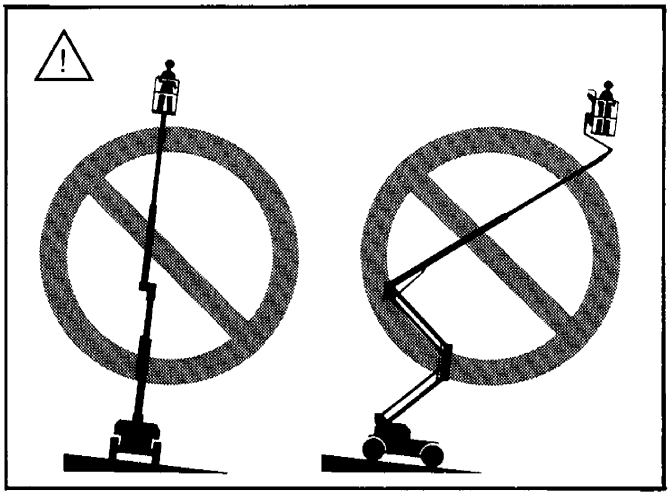
SAFETY RULES & OPERATING INSTRUCTIONS

Read and understand these Safety Rules and Operating Instructions before operating the Genie Boom Z-45/22 aerial platform. Do not permit anyone to use the machine who does not understand the material in this document. A duplicate set of these instructions is contained in a water-tight plastic tube on the Genie Boom Z-45/22 boom support and should be kept there at all times for operator reference.

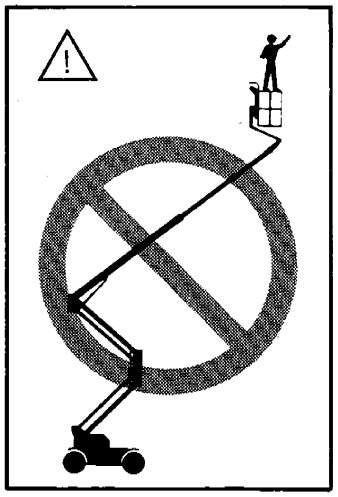
If there is anything you do not understand, or if you have questions regarding the operation of the Genie Boom Z-45/22, call Genie Industries in the U.S.A., 800/426-8089 or 206/881-1800, or telex 152351, or FAX 206/885-4638.



Do not use machine or position platform within 10 feet of power lines. This machine is not electrically insulated.



Do not raise platform unless machine is on firm level surface.



Do not stand on guard rails. Securely place working loads on platform floor.

SAFETY RULES

- On a daily basis before using the Genie Boom Z-45/22, conduct a visual inspection and functional test as detailed on pages 4-7 of these operating instructions and on the operating instructions on the unit.
- Check the area in which the aerial platform is to be used for possible hazards such as drop-off holes, bumps and floor obstructions, debris, overhead obstructions and high voltage conductors.
- The aerial platform must be on a firm level surface before elevating the platform. Do not drive while elevated except on a firm level surface. The machine incorporates a tilt sensor which will sound an alarm if the chassis is resting on a slope in excess of 3.5°.
- Close platform access openings before operating the aerial platform.
- All occupants' safety belts must be worn and properly attached.
- Batteries must be charged in an open, well-ventilated area free of flame, smoke, sparks, and fire.

  ⚠ Batteries emit an explosive gas during charging.
- Maintain a firm footing on the platform floor. Do not sit, stand or climb on guard rails.
- Working loads must be securely placed on platform floor. Do not attach overhanging loads. Do not use ladders or scaffolding on or against the platform.
- Do not operate or position aerial platform within 10 feet of power lines.

  ⚠ This machine is not electrically insulated.
- Do not climb down the boom linkage.

GP Models Only:

⚠ WARNING! NEVER START THE GP MODEL IF YOU CAN SMELL LP GAS. AN EXPLOSION OR FIRE COULD RESULT!

WARNING: FAILURE TO UNDERSTAND AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS MIGHT RESULT IN SERIOUS INJURY OR DEATH.

PRE-OPERATIONAL & SAFETY INSPECTION

PRE-START

- Make walk around check of machine before operating.
- Inspect for frayed control cables, hydraulic oil leaks, gasoline or liquid propane gas leaks (GP models only), missing or loose bolts, proper tire pressure, missing or loose wheel lug nuts, weld or structural cracks and other defects.
- Check battery or battery pack condition and hydraulic oil level. (Photos 1 and 2)
- Repair any defects before operating machine. DO NOT OPERATE A DEFECTIVE MACHINE. Contact your Genie Service Center.

GROUND CONTROL TEST

- Make sure battery pack(s) are properly connected.
- Check overhead for personnel, electrical cables, lights and other obstructions before operating. DO NOT ELEVATE PLATFORM UNLESS MACHINE IS ON A FIRM LEVEL SURFACE.
- Lift cover on ground control station. (Photo 3)
- Insert key in control switch (Photo 6, detail A) and rotate to GROUND.
- Pull out red POWER button. To stop all functions, push in red POWER button. (Photo 6, detail B)
- GP MODELS ONLY:
  - WARNING! NEVER START THE GP MODEL IF YOU CAN SMELL LP GAS. AN EXPLOSION OR FIRE COULD RESULT!
  - Select "LP" or "Gasoline" fuel. If the engine is cold, push choke and then start switches. (Photo 6, detail H)

    NOTE:1. When it is very cold, always start on gasoline and then switch to LP if required. (Photo 6, detail I)

    2. When the engine is hot, it may be easiest to start on LP by selecting the "OFF" position at the fuel switch, cranking the engine until it starts, and then selecting the "LP" fuel positition. (Photo 6, detail I)

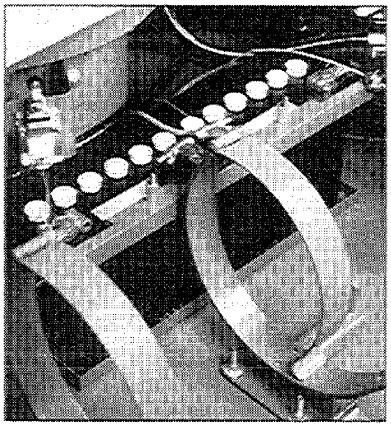
FUEL REQUIREMENTS (GP Models Only)

- Gasoline: Unleaded Regular gasoline is preferred. Leaded Regular gasoline can be used, but its use may result in shorter maintenance intervals due to spark plug fouling, etc.
- LP Gas: Clean, Dry Liquid Petroleum Gas from a bulk storage tank is preferred. Observe correct tank filling instructions (located on tank).
- NOTE: Install the LP Gas tank so that the mounting pin engages the hole in the tank handle (Photo 5) and both tank latches close properly. Improper installation may result in reduced engine performance.

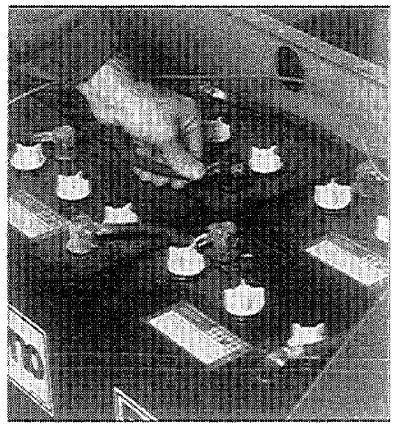
FUEL SELECTION (GP Models Only)

- When starting, select fuel as noted above.
- To switch from Gasoline to LP fuel (engine running): Push fuel selector switch to the "OFF" position. When the engine hesitates, push the fuel selector switch to the "LP" position.
- To switch from LP fuel to Gasoline (engine running): Push fuel selector switch alternately back and forth from the "LP" position to the "Gasoline" position until the engine continues to run on gasoline.
- Operate each boom function in both directions through its entire range of motion to ensure proper operation of each. (Photo 6, details C-G) Repair any defective functions.
- Push orange tilt sensor, located to left of ground control, to test. (Photo 4) Repair if horn at platform does not sound.
- Switch key to PLATFORM. (Photo 6, detail A)
- Close cover on ground control station. (Photo 3)
- Repair any defects before operating machine. DO NOT OPERATE A DEFECTIVE MACHINE. Contact your Genie Service Center.

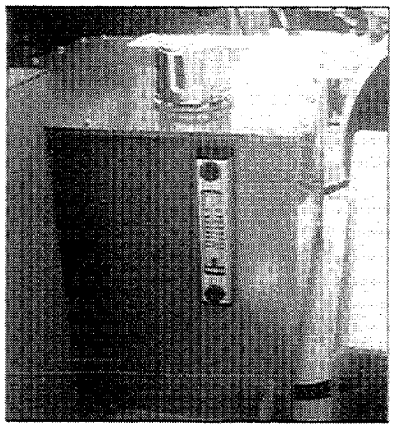
CAREFULLY STUDY INSTRUCTIONS ON THE PREVIOUS PAGE



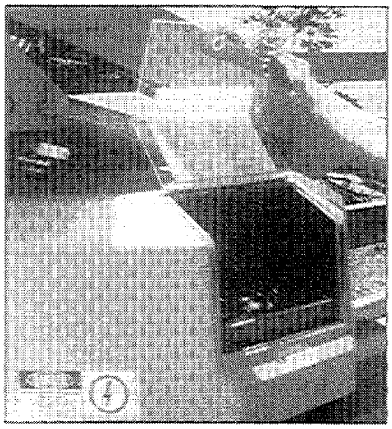
1A — Check battery GP model



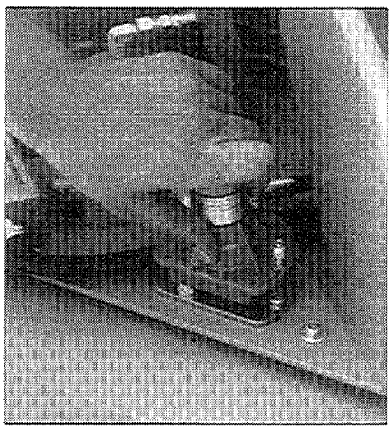
1B—Check battery pack - DC model



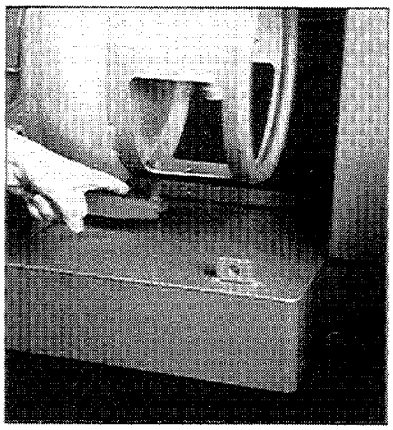
2 — Check hydraulic oil level



3 — Ground control station cover

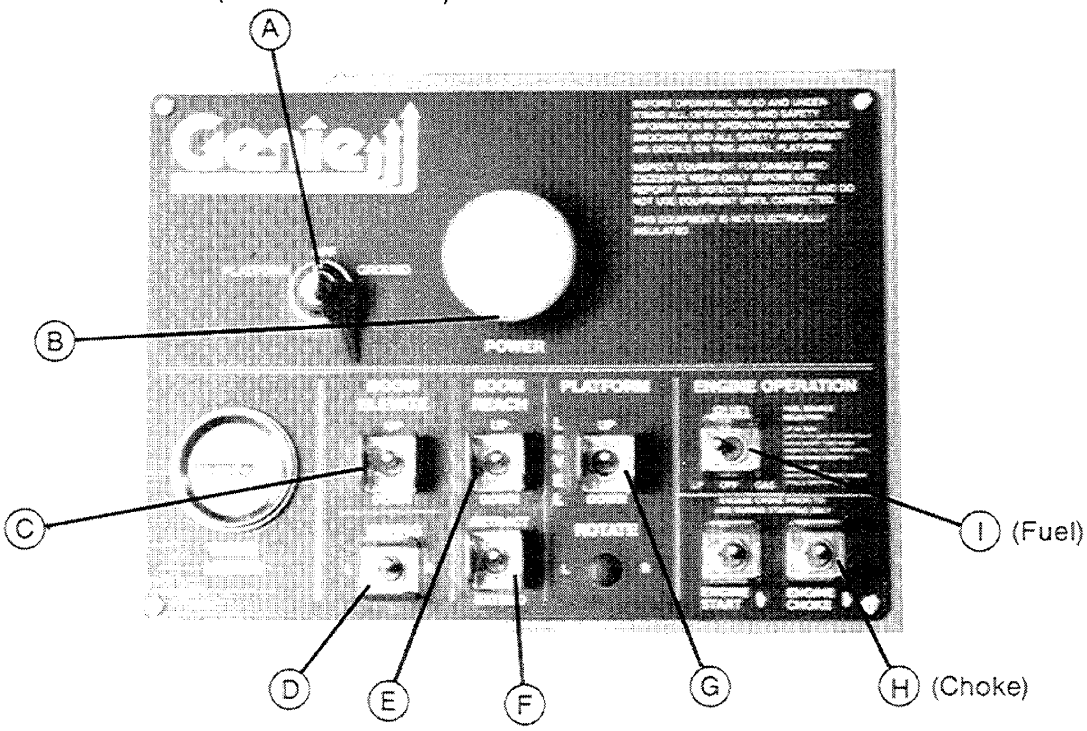


4 — Tilt sensor



5 — Fuel tank installation

6 — Ground Control Panel (GP Model Shown)



PRE-OPERATIONAL & SAFETY INSPECTION (CONTINUED)

PLATFORM CONTROL TEST

- Check surface area for possible drop-off holes, bumps, floor obstructions and personnel before driving or steering. DO NOT ELEVATE PLATFORM UNLESS MACHINE IS ON A FIRM LEVEL SURFACE.
- Make sure platform access midrail bar is down.
- Fasten occupants' safety belt lanyards to anchor ring in platform. (Photo 7)
- Pull out red POWER button. To stop all functions, push red POWER button. (Photo 10, detail A)
- Set BOOM SPEED (Photo 10, detail B) at 3. DO NOT ELEVATE PLATFORM UNLESS MACHINE IS ON A FIRM LEVEL SURFACE.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Press down on foot switch. (Photo 8)
- Operate each boom function in both directions to ensure proper operation of each. (Photo 10, details D-H) Repair any defective functions.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to DRIVE.
- Switch DRIVE SPEED (Photo 10, detail I) to LOW.
- Press down on foot switch. (Photo 8)
- Operate STEER rocker switch on drive lever L (left) and R (right). (Photo 10, detail J) Repair any defective functions.
- Move DRIVE lever just off center in both FORWARD and REVERSE directions to ensure proper operation of each. (Photo 10, detail K) Repair any defective functions.
- Switch DRIVE SPEED (Photo 10, detail I) to HIGH.
- Move DRIVE Lever just off center in both FORWARD and REVERSE directons to ensure proper operation of each (Photo 10, detail K). Repair any defective functions.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Move BOOM REACH switch (Photo 10, detail F) to UP. Elevate platform approximately six feet above ground level to clear "low speed limit switch" on mid-pivot. (Photo 9). Repeat Drive Test as described above.
- Repair any defects before operating machine. DO NOT OPERATE A DEFECTIVE MACHINE. Contact your Genie Service Center.

OPERATING INSTRUCTIONS

BEFORE OPERATING MACHINE UNDERSTAND FUNCTIONS OF ALL CONTROLS

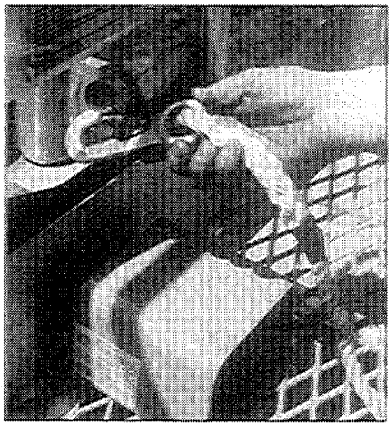
EMERGENCY STOP

- To deactivate engine, (GP models), boom and drive control, push red POWER button. (Photo 10, detail A) Operate all functions to test for proper shut down. Repair if any function operates with POWER button pushed in.

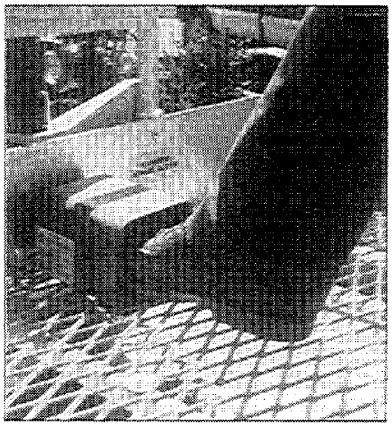
DRIVE FUNCTIONS

TRAVELING WITH PLATFORM DOWN

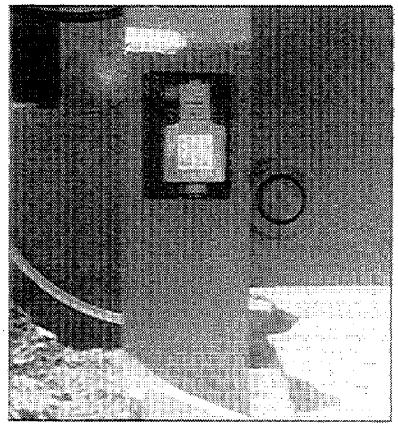
- Maximum travel speed is attainable only when platform is down.
- Always check to be sure route is clear of persons and obstructions.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to DRIVE.
- Select HIGH or LOW drive speed to meet travel and safety conditions. (Photo 10, detail I)
- Press down on foot switch. (Photo 8)
- To increase speed, move DRIVE lever slowly in desired direction of travel. (Photo 10, details J and K)
- To slow down or stop, move DRIVE lever slowly to center position. (Photo 10, details J and K)



7 — Fasten lanyards

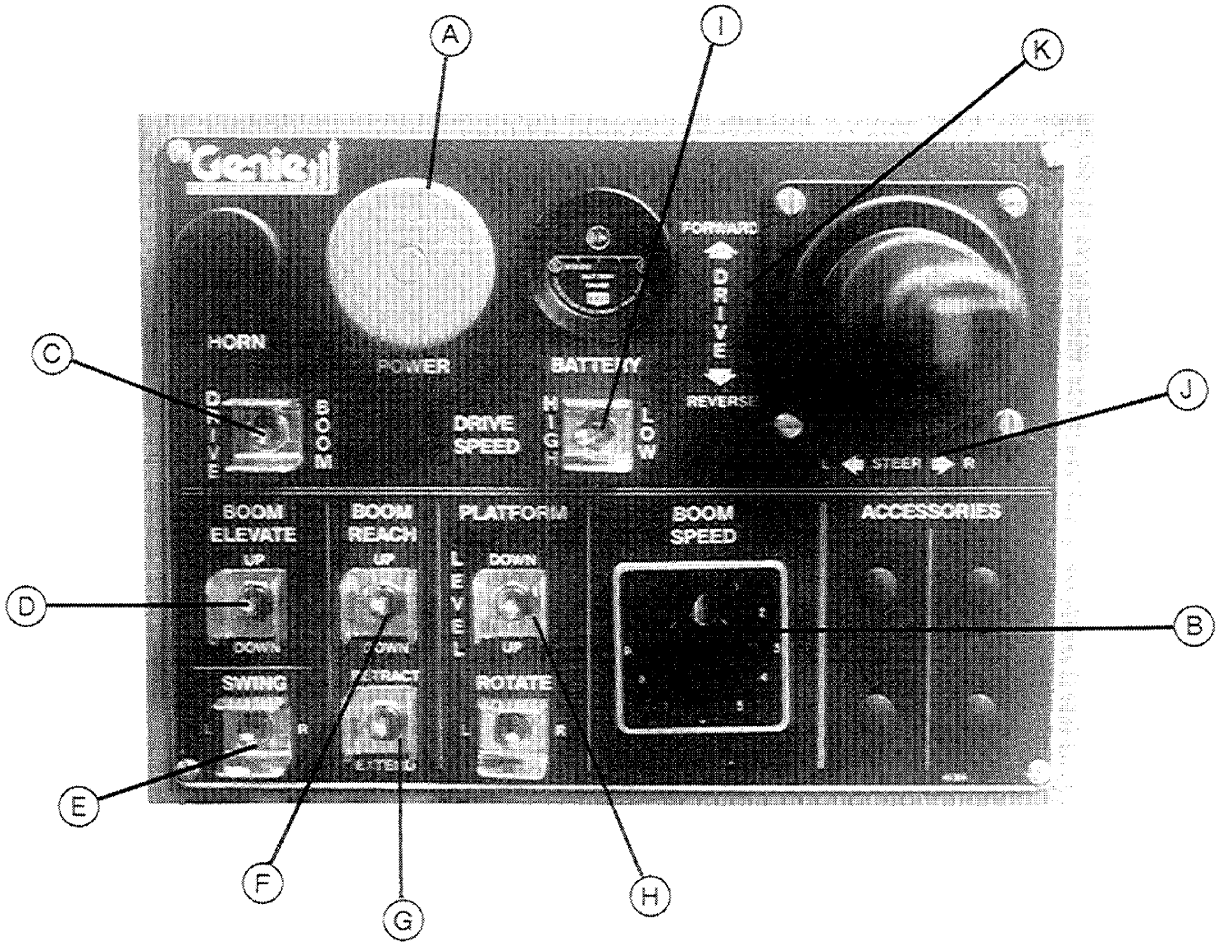


8 — Foot switch



9 — Low speed limit switch

10 — Platform Control Panel (DC Model Shown). GP model includes engine start and choke.



OPERATING INSTRUCTIONS (CONTINUED)

TRAVELING WITH PLATFORM UP

- Operate on *firm* level surface only.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to DRIVE.
- Always check to be sure route is clear of persons and obstructions.
- With platform up, machine travel speed is restricted.
- Press down on foot switch. (Photo 8)
- To increase speed, move DRIVE lever slowly forward or reverse. (Photo 10, details J and K)
- To slow down or stop, move DRIVE lever slowly to center position. (Photo 10, details J and K)

STEERING

- Always check to be sure area around wheels is clear of persons and obstructions.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Operate STEER rocker switch on drive lever left or right as required. (Photo 10, detail J)
- NOTE: Steering is not self-centering — to return wheels to straight ahead position use steer rocker switch.

BOOM FUNCTIONS

PLATFORM ROTATION

- Platform may be rotated to desired working position by turning manual hand crank in either a clockwise or counterclockwise direction. (Photo 11)

BOOM SPEED

- Adjust BOOM SPEED control for desired function rate. (1 indicates slowest speed and 9 indicates fastest speed.) (Photo 10, detail B)

BOOM ELEVATE — UP/DOWN

- Check for obstructions below and overhead.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Operate BOOM ELEVATE toggle switch in desired motion direction. (Photo 10, detail D)

BOOM REACH — UP/DOWN

- Check for obstructions below and overhead.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Operate BOOM REACH toggle switch in desired motion direction. (Photo 10, detail F)

BOOM REACH — EXTEND/RETRACT

- Check for obstructions below and overhead.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM
- Operate BOOM REACH toggle switch in desired motion direction. (Photo 10, detail G)

SWING CHASSIS ROTATION

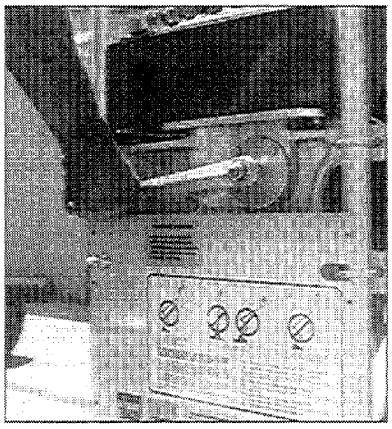
- Check for obstructions around swing chassis and platform.
- If your machine is equipped with the DRIVE/BOOM option, switch DRIVE/BOOM switch (Photo 10, detail C) to BOOM.
- Operate SWING toggle switch on control console for desired motion direction. (Photo 10. detail E)

EMERGENCY DOWN

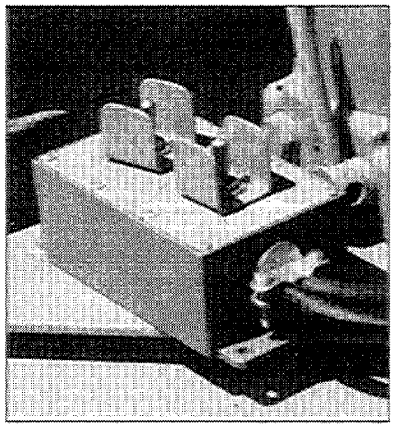
- IF PLATFORM FAILS TO RETRACT OR DESCEND, NEVER CLIMB DOWN BOOM ASSEMBLY. Ask person on ground to actuate proper auxiliary controls to retract, rotate and lower platform. These controls are located at ground control station and under swing chassis cover. (Photo 12)



8 — Foot switch

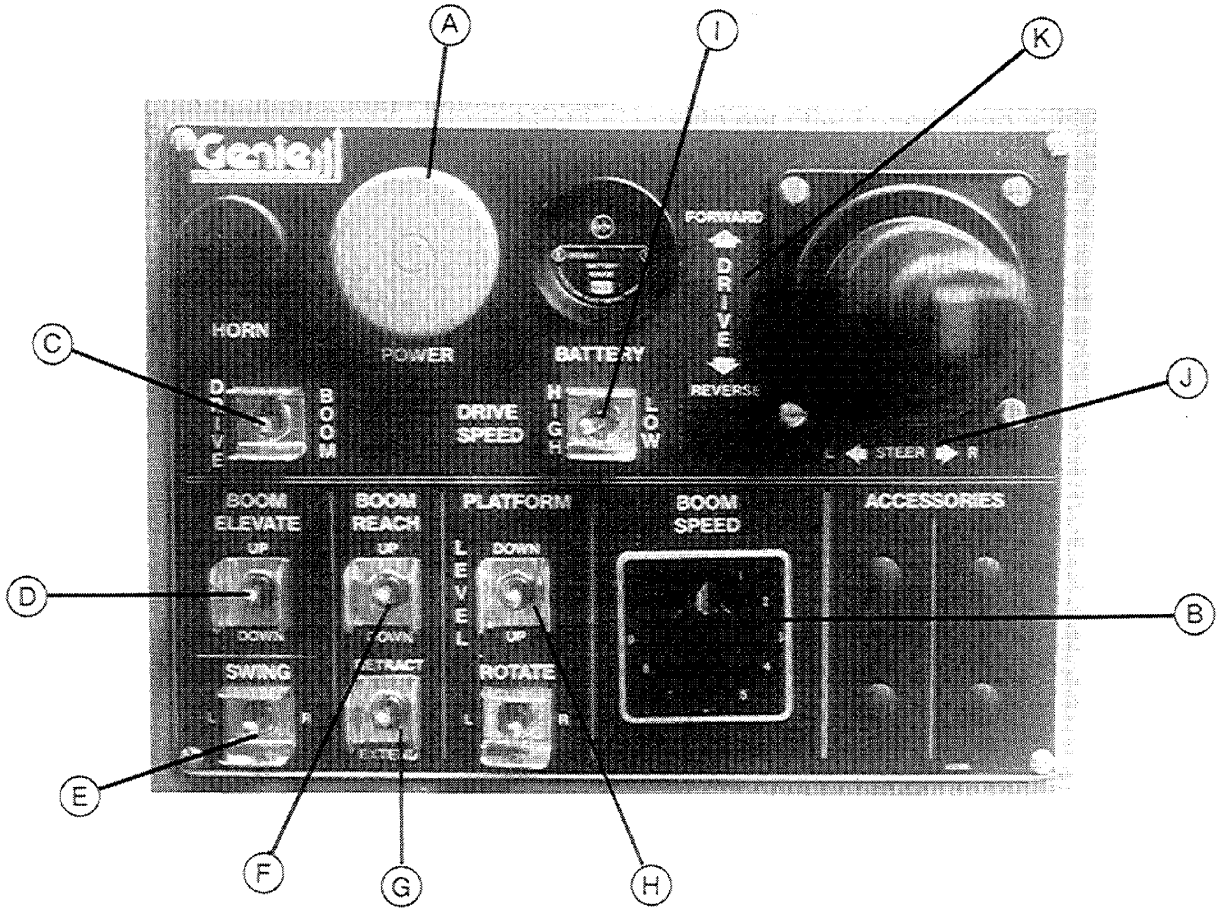


11 — Platform rotation



12 — Auxiliary controls

10 — Platform Control Panel (DC Model Shown) GP model includes engine start and choke.



TRANSPORT

SECURING TO TRUCK OR TRAILER FOR ROAD TRANSIT

- Weight of Genie Boom Z-45/22 is 12,000 lbs. (without batteries)
- Use chains or straps of ample load capacity.
- Always chock wheels on truck or trailer bed. (Photo 13)
- Use tie points on chassis for anchoring down to truck or trailer bed. (Photo 14)
- Disconnect battery pack plugs before transporting (DC Models Only). (Photo 15)
- Turn off master power key and remove key before transporting. (Photo 16)

MAINTENANCE & ROUTINE SERVICE

ENGINE MAINTENANCE (GP Models Only)

- Refer to the engine manufacturer's operating manual for proper maintenance and service.

DAILY SERVICE CHECK

- Thoroughly inspect the entire unit for physical damage and wear. Repair any defects before operating the machine.
- Thoroughly inspect all hoses and hydraulic connections. Repair any defects.
- Check all electrical wires and cables for abrasions and proper connections.
- Charge batteries, check electrolyte level and clean battery tops and posts (DC Models Only).
- Check hydraulic fluid level.
- Check engine oil level (GP Models Only).
- Maintain tire pressure of 100 psi.
- Check lug nut for tightness. Torque to 140-150 ft.-lbs.
- Inspect tilt sensor for proper operation.

FIRST MONTH (OR FIRST 50 HOURS), AND EVERY SIX MONTHS (OR EVERY 250 HOURS) THEREAFTER

- Change oil in drive gear box (EP-90 weight).
- Change hydraulic oil filters.*
- Change oil in swing chassis gear box.
- Check motor-generator belt tension and condition (GP Models Only).

EVERY SIX MONTHS (OR EVERY 250 HOURS)

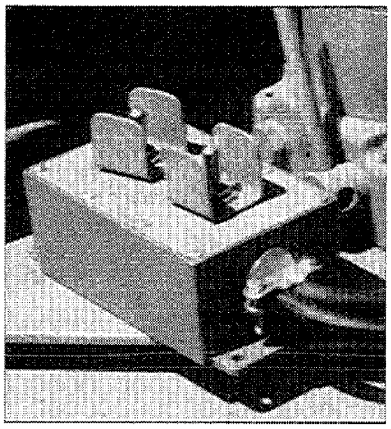
- Lubricate turntable bearing.*
- Inspect all boom linkage pivot points for signs of wear.
- Check oil level in drive and swing chassis gear boxes.
- Inspect platform rotation mechanism to ensure one inch flexnut located within platform rotation mechanism is torqued to 190 ft.-lb.
- Check open point motor start contractor (DC Models Only).
- Inspect wear pads in EXTEND/RETRACT boom.
- Check engine RPM. Set at 3000-3100 RPM (GP Models Only).

EVERY TWO YEARS (OR EVERY 1000 HOURS)

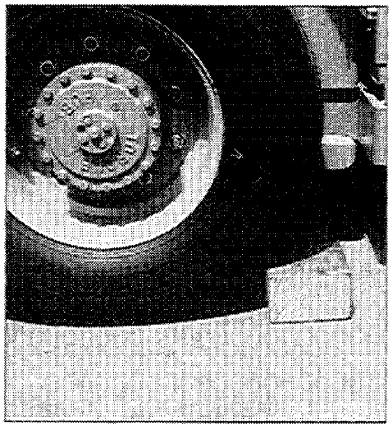
- Check generator brushes (GP Models Only).
- Check motor brushes.
- Change hydraulic oil.* Use Shell Tellus T68 or equivalent when operating the Boom in temperatures above 0°C (32°F). In colder climates substitute with Shell Tellus T32 or equivalent.
- Service reservoir, replace suction screens and filler breather.*

* Extreme dust or temperature conditions will require more frequent servicing.
For complete list of required Maintenance Service consult the "Genie Boom Z-45/22 Operating and Maintenance Manual".

CAREFULLY STUDY INSTRUCTIONS ON THE PREVIOUS PAGE



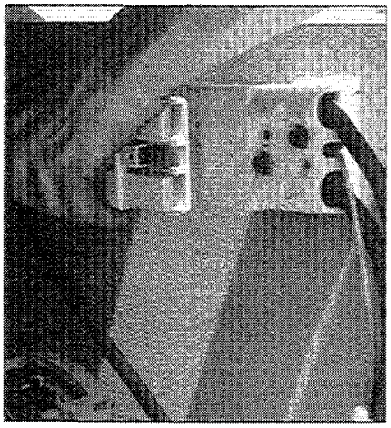
12 — Auxiliary controls



13 — Chock wheels



14 — Tie points



15 — Battery pack plugs
(DC Models Only)



16 — Master power key

3.3 TRANSPORT

The Genie Boom Z-45/22 may be transported by truck, ship or airplane. It is not recommended to ship by train due to possible shock or vibration damage. The machine is capable of climbing a 20% slope. We recommend driving the machine on to the truck bed or shipping vessel. If driving is impractical, the machine has free-wheeling capabilities to allow towing or winching into the shipping position.

The instructions listed below are designed to prevent any undue stress on the mechanical and hydraulic systems. All transport loads should be carried through the tie down points on the chassis weldment and the tire blocking points.

1. Park the machine with the platform fully lowered and retracted. Ensure that the steering wheels are straight, and remove any material from the platform.

2. The machine may now be driven or winched on to the transport vehicle.

   A. Driving: The machine has 20% gradeability and is capable of driving on to the support vehicle. Maximum drive torque is achieved when the accelerator is pushed to the fully forward or reverse position.

      NOTE: Maximum drive torque is available only when the platform is fully lowered, the drive speed control limit is actuated, and the DRIVE SPEED High/Low toggle switch is in the "Low" position. Do not operate the machine on an unlevel surface unless the platform is fully lowered.

   B. Winching: Before winching the machine must be placed in the free-wheel configuration.

      WARNING: When the machine is in the free-wheel configuration it has no braking capabilities. Be sure to secure the machine from rolling before placing the machine in the free-wheel configuration.

      HOW TO PLACE THE MACHINE IN THE FREE-WHEEL CONFIGURATION: Chock the wheels to prevent the machine from rolling. To achieve the free-wheel configuration, the drive torque hubs must be disconnected (released). Remove the two 1/4 - 20 x 3/4 bolts that secure the disconnect cap to the cover.

Remove the disconnect cap and turn it over to ensure that the cap's nipple will contact the disconnect rod. Attach the disconnect cap to the cover and secure it with the two 1/4 - 20 x 3/4 bolts. Be sure to re-engage the torque hubs after the machine is in its shipping location.

Secure the winch cable to the tie down points on the chassis. Ensure that the winch cable is of sufficient strength. The Genie Boom weighs approximately 13,000 pounds.

3. The wheels should be blocked from rolling by wood pieces nailed into the truck bed and binder chains used to prevent sideways and fore/aft movement.

4. Secure the primary boom assembly to its resting pad to prevent bouncing during transport.

5. Disconnect the battery pack from the chassis at the Anderson connector and secure the battery box lid.

6. Inspect unit thoroughly before shipping for loose or unsecured items.

3.4 THEORY OF OPERATION

ENERGY SOURCE

The Genie Boom Z-45/22 is powered by (12) 6 volt batteries connected in series/parallel to provide 36 volt DC power. Each battery is rated at 250 ampere (amp), at a 20 hour rate.

CHARGING SYSTEM

A 36 volt, 40 amp line compensating battery charger is used to recharge the battery pack after each day's use. The charger utilizes an electronic timing system which automatically sets the timer, depending on the battery state of charge when the charger is plugged in. The charger also incorporates a resonant transformer which causes the charger rate to taper off as the batteries approach full charge.

HYDRAULIC SYSTEM

The Z-45/22 hydraulic system can be divided into two categories ... BOOM functions and DRIVE functions.

The BOOM Functions:

The BOOM functions consists of BOOM REACH Up/Down, BOOM REACH Extend/Retract, BOOM ELEVATE Up/Down, PLATFORM LEVEL Up/Down and SWING Right/Left. To power these functions the boom hydraulic system uses a a hydraulic power unit with a 36 volt electric motor and a 2 gallon per minute (gpm) fixed displacement gear pump. When the electric motor is supplied with 36 volts, it will turn the pump to supply hydraulic oil to the directional control valves located on the swing chassis mounted boom manifold. When actuated, the directional control valves direct fluid to the corresponding boom assembly actuators (reach lift cylinder, elevate cylinders, reach extend and retract cylinder, platform level cylinders, and swing drive motor and brake). The boom manifold incorporates a 2,000 pound per square inch (psi) system relief valve which prevents the system from being over pressurized. A variable voltage boom proportional control valve (located on the boom manifold) is used to control the speed of all powered boom functions by regulating oil flow in direct relation to the valves input voltage. An emergency hand pump located on the swing chassis is provided to allow operation of all boom functions in the event of a boom hydraulic power failure. In order to operate any of the powered boom functions, the appropriate directional control valve must be electrically actuated while pumping the emergency hand pump.

The BOOM REACH Up/Down functions use one lifting cylinder. The BOOM REACH Up function is accomplished by actuating the reach up directional control valve (located on the boom manifold), thereby directing flow to the cylinder. Attached to the barrel end port of the cylinder is a manifold. The manifold incorporates a check valve, a down directional valve, flow control orifice, and a manual down valve. The check valve is used to maintain cylinder pressure and prevent free descent in the event of a hydraulic line failure. The BOOM REACH Down function is accomplished by actuating the down directional valve (located on the cylinder) which allows a flow path for the hydraulic oil to exit the cylinder causing it to retract. The flow control orifice controls the rate of cylinder retraction by regulating the rate at which hydraulic oil exits the cylinder. In the event the down directional control valve cannot be actuated, the manual down valve can be opened to provide a path for hydraulic oil to exit the cylinder.

The BOOM REACH Extend/Retract functions use one dual acting cylinder. The functions are accomplished by actuating the appropriate extend or retract directional control valve (located on the boom manifold), thereby directing flow to the cylinder. Attached to the ports at both ends of the cylinder is a manifold containing a counter balance valve. The counter balance valve is used to prevent hydraulic oil from exiting the cylinder unless pilot pressure is applied to the valve causing it to open. When pilot pressure is not applied to the counter balance, the valve remains closed maintaining cylinder pressure and preventing free descent in the event of hydraulic line failure.

The BOOM ELEVATE Up/Down functions use two lifting cylinders connected in parallel. The BOOM ELEVATE Up function is accomplished by actuating the elevate up directional control valve (located on the boom manifold) directing flow to the elevate cylinders. Attached to the barrel end port of each cylinder is a manifold. The manifold incorporates a 1500 psi relief valve, check valve, down directional valve and a flow control orifice. The 1500 psi relief valves ensure that neither of the parallel cylinders experience over pressurization. In the event that one cylinder is unable to maintain operating pressure, the relief valve ensures that the other parallel cylinder is not used to support the platform load and exceed its rated safe operating pressure. The check valve is used to maintain cylinder pressure and prevent free descent in the event of a hydraulic line failure. The BOOM ELEVATE Down function is accomplished by actuating the down directional control valve (located on the cylinder) this allows a flow path for hydraulic oil to exit the cylinder causing it to retract. The flow control orifice controls the rate that the cylinders retract by regulating the hydraulic oil exiting the cylinder.

The PLATFORM LEVEL functions utilize a master cylinder (attached to the boom reach arm) and a slave cylinder (attached to the platform). Both cylinders are dual acting and connected in parallel. The platform self-leveling function incorporates a closed loop hydraulic system. Located on the boom manifold are two counter balance valves which are used to prevent over pressurization of the closed loop hydraulic system. The platform self levels when the boom reach arm lifts, causing the level master cylinder to retract. Hydraulic oil is then forced from the level master cylinder to the platform slave cylinder, causing the slave cylinder to extend. This keeps the platform in a level position. The powered PLATFORM LEVEL Up/Down functions are accomplished by actuating the platform level up or down directional control valves (located on the boom manifold), thereby directing flow to the level slave cylinder. Attached to the ports at each end of the level slave cylinder are counter balance valves. The counter balance valves are used to prevent hydraulic oil from exiting the cylinder unless the valve is supplied with pilot pressure causing it to open. When pilot pressure is not applied the counter balance valve will remain closed, maintaining cylinder pressure and preventing free descent in the event of a hydraulic line failure.

The SWING Right/Left functions use a 16.4 cubic inch rotary drive motor, a 4:1 single planetary gear box, and a spring applied hydraulically released brake. The functions are accomplished by actuating the swing left or right directional control valve (located on the boom manifold) which directs flow to both the swing brake shuttle valve (located in the boom manifold) and to the swing drive motor. The shuttle valve directs hydraulic oil to the swing brake releasing the brake and allowing the swing drive motor to rotate the swing chassis assembly. Incorporated in the swing flow path is an orifice (located in the boom manifold) which limits the rate of swing chassis rotation.

The DRIVE Functions:

The DRIVE functions consist of DRIVE Forward/Reverse and STEER Left/Right. To power these functions the drive hydraulic system uses a hydraulic power unit incorporating a 36 volt electric motor and a two stage gear pump. Each pump delivers a 5 gpm fixed displacement, totaling a maximum pump displacement of 10 gpm. One pump stage is regulated by a pump unloader valve. When pilot pressure to the unloader valve reaches a set pressure it will open, creating a flow path to the tank for the regulated pump stage. When the motor is supplied with 36 volts, it turns the pump to supply hydraulic oil to the drive system directional control valves located on the chassis mounted drive manifold. When actuated, the directional control valves direct hydraulic oil to the drive system actuators (steering cylinders, wheel drive motors and wheel drive brakes). A 3500 psi relief valve (located on the drive manifold) is used to prevent the drive system from being over pressurized. The drive proportional control valve (located on the drive

manifold) is used to control the speed of the DRIVE Forward/Reverse functions by regulating the flow of hydraulic oil in direct relation to the valves input voltage. To ensure that the steering system is always supplied with hydraulic oil, the drive manifold incorporates a three port priority flow divider. The priority flow divider ensures that the steering systems hydraulic oil requirement is met prior to supplying hydraulic oil to the drive system.

The DRIVE Forward/Reverse functions use a 3.6 cubic inch rotary drive motor, a 18:1 double planetary gear box, and a spring applied, hydraulically released brake. The functions are accomplished by actuating the drive forward or reverse directional control valves (located on the drive manifold), which directs hydraulic oil to the drive brake shuttle valve (located in the drive manifold) and to the wheel drive motors. The shuttle valve directs hydraulic oil to the drive brakes releasing the brakes. The DRIVE functions use two counter balance valves (located on the drive manifold) to prevent the machine from exceeding the maximum drive speed and to aid in braking. Located on the drive manifold are two series/parallel directional control valves. These valves give the machine the capability of operating the drive functions in a low speed, high torque mode or in a high speed, low torque mode. When operating in"LOW" range the valves create a parallel path for hydraulic oil flowing to the wheel drive motors. This causes a low speed, high torque drive mode. When operating in "HIGH" range the valves create a series path for hydraulic oil flowing to the wheel drive motors. This causes a high speed, low torque drive mode.

The STEERING Left/Right functions use two, dual acting cylinders connected in parallel. The steering functions are accomplished by actuating the steering left and right, 3-position, 4-way, directional control valve (located on the drive manifold), thereby directing hydraulic oil to the steering cylinders.

Electrical System:

The Genie Boom Z-45/22 uses stored electrical energy to power and control all machine functions. The electrical system can be divided into two categories BOOM functions and DRIVE functions. Each category consists of a control circuit and a power circuit.

The control circuit incorporates the components and circuitry required to turn on and off or control other electrical devices. Components include the key switch, foot switch, toggle switches, limit switches, POWER On/Off buttons, diodes and solenoids. Since the control circuit typically conducts very low current, small diameter (12-18 AWG) wire and multi-wire control cables are used, to connect the control circuit components.

The power circuit incorporates the components which convert stored electrical energy into a mechanical force to provide movement. Components include the batteries, electric motors and contacts. Since the power circuit must be able to conduct full operating current heavy #2 and #4 welding cable is used to connect the power circuit components.

Before any boom or drive functions can be operated, the key switch (located on the ground control station) must be turned to the appropriate platform or ground position. Turning the key switch to either position completes a circuit from a 24 volt tap off the 36 volt battery pack, through the key switch to the printed circuit board located at the ground control stations. At the printed circuit board current is split to energize a 24 volt control circuit master relay (located on the ground printed circuit board) and to a 24 volt power circuit mast relay (located on the rear of the chassis). The 24 volt control circuit master relay energizes a set of 24 volt contacts, which when closed completes a circuit supplying 24 volts from the key switch to the selected platform or ground control station. The 24 volt power circuit master relay energizes a set of 36 volt contacts, which when closed completes a circuit supplying 36 volts from the battery packs to the boom and drive motor start contacts. (On machines with European wiring the platform POWER on/off button must be pulled out to complete the above listed circuit). To complete the circuit that supplies 24 volts to the control devices (toggle switches, drive proportional control joystick and boom proportional control rotary switch) of the platform or ground control stations the POWER on/off buttons must be pulled up. When operating from the platform control station the foot switch must be depressed.

The BOOM Functions:

The BOOM functions (BOOM REACH Up/Down, BOOM REACH Extend/Retract, BOOM ELEVATE Up/Down, PLATFORM LEVEL Up/Down and SWING Right/Left) can be operated from either the platform control station or the ground control station by actuating the proper function control toggle switch. When the toggle switch is actuated a circuit is completed from the toggle switch to the 24 volt boom motor start relay and to the corresponding 24 volt directional control valve solenoid. (BOOM REACH DOWN and BOOM ELEVATE DOWN functions are not powered functions and do not supply 24 volts to the boom motor start relay). When supplied with 24 volts, the boom motor start relay energizes a set of 36 volt contacts. When closed, this completes a circuit supplying 36 volts to the boom hydraulic power unit motor. When energized the 24 volt directional control valve solenoid will actuate its related valve spool. The speed of all powered boom functions is controlled by actuating the boom proportional control rotary switch. When actuated a circuit is completed supplying variable voltage from the rotary switch to the boom proportional control valve solenoid. Whenever the above-mentioned actions are accomplished, the appropriate boom function will operate.

The DRIVE Functions:

The DRIVE functions (DRIVE Forward/Reverse and STEER Left/Right) are operated from the platform control station. The direction and speed of the DRIVE Forward/Reverse functions are accomplished by actuating the drive proportional control joystick in either the Forward or Reverse position. When actuated the joystick completes a circuit to the 24 volt drive motor relay, to the 24 volt forward or reverse directional control valve solenoid and to the drive proportional control valve solenoid. The STEER Left/Right functions are accomplished by actuating the rocker switch (located on the end of the drive proportional control joystick) to the Right or Left position. When actuated the rocker switch completes a circuit to the 24 volt drive motor start relay and to the 24 volt steer right or left directional control valve solenoid. When supplied with 24 volts the drive motor start relay energizes a set of 36 volt contacts which, when closed, complete a circuit supplying 36 volts to the drive hydraulic power unit motor. When energized the 24 volt directional control valve solenoid actuates its related valve spool. The speed of the DRIVE Forward/Reverse functions is controlled by the variable voltage supplied to the drive proportional control valve from the drive proportional control joystick. Whenever the above-mentioned actions are accomplished, the appropriate drive function will operate.

MAINTENANCE

4.1 TROUBLESHOOTING

The following section is designed to aid in the diagnosis of problems which may occur on the Genie Boom Z-45/22. The systematic format is used to diagnose problems ranging from defective solenoids to the need for pump replacement. This guide requires the user to have basic hand tools and test equipment (voltmeter, ohmmeter, pressure gauges, and flow meters).

Included in the Troubleshooting section are (23) sub-sections which cover various machine defective conditions. Incorporated in these sub-sections are several numbered tests which are used to direct the technician to the recommended machine repair.

Before performing any machine tests the following safety precautions should be observed.

- Read and understand section 3.4 Theory of Operation.
- Read and follow all safety instructions as recommended in this manual and indicated by decals on the Genie Boom and/or required to comply with safety regulations.
- When troubleshooting, make certain the machine is resting on a firm, smooth, level surface.
- Perform all tests with the platform completely lowered.
- When testing drive system defective conditions, make certain the machine is secured from rolling by chocking the tires and by jacking the machine drive assembly off the ground before conducting any tests.
- Two persons will be needed to safely conduct some drive system defective condition tests.

This Troubleshooting section deals primarily with malfunctions or defective components. Therefore, make certain all correct operating procedures are performed prior to conducting any of the recommended tests.

It should be noted that various degrees of a particular function loss may occur. For example: "BOOM REACH Extend function inoperative". This should mean "BOOM Extend/Retract cylinder will not extend with the same speed or power of a properly functioning machine."

NOTE: Proper diagnosis of a problem can only be done with batteries which are fully charged. Discharged batteries will result in sluggish operation.

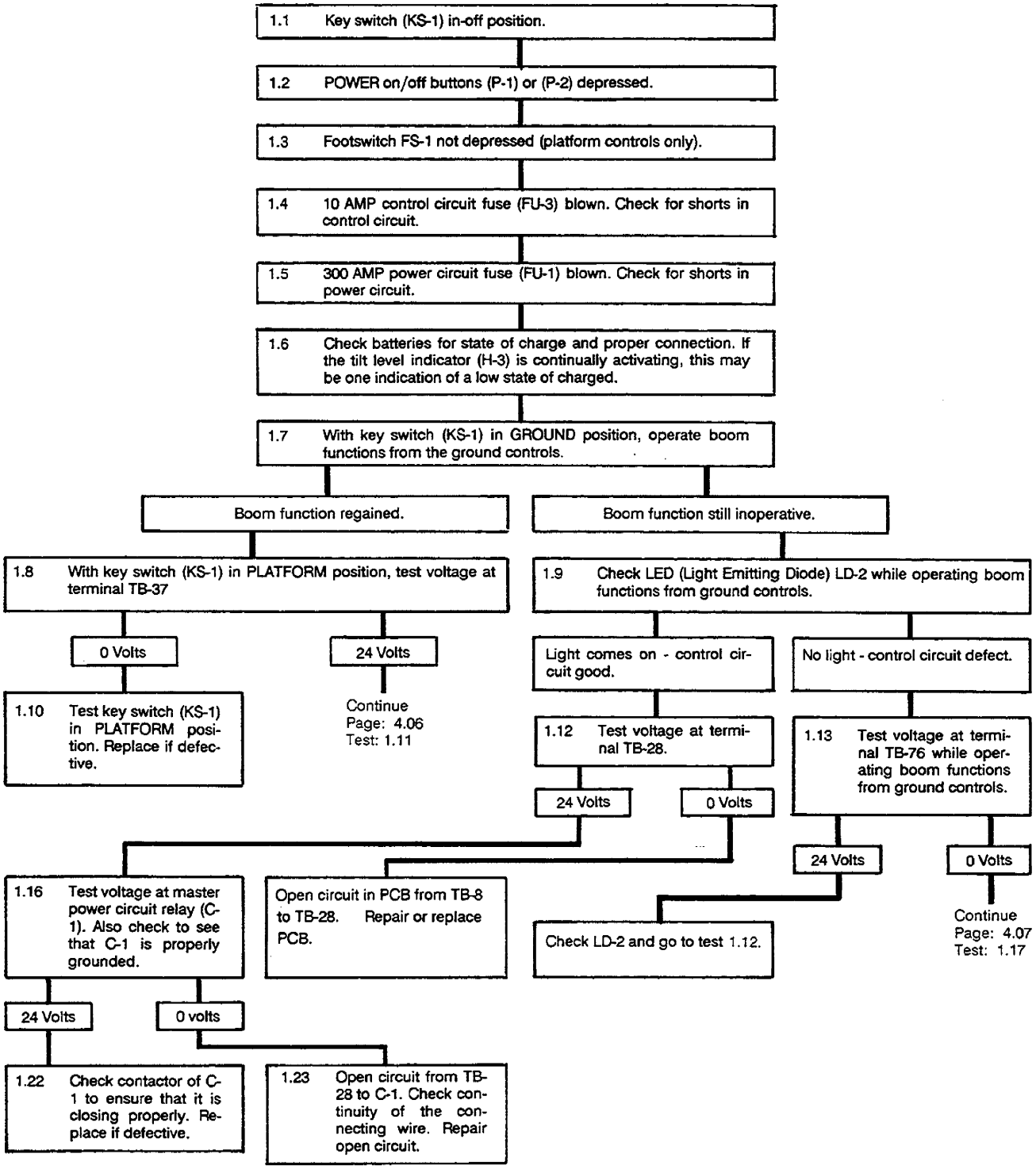
Throughout the Troubleshooting procedures, references are made to terminal numbers. For the exact location of these terminal points, refer to the Genie Boom Z-45/22 Electrical Schematic's pages 5.07 and 5.08.

The following page lists the problems which may occur due to component malfunctions. Refer to the section which most accurately describes your problem. In multiple-problem cases, solve one problem at a time beginning with the lowest number. If you have any questions concerning this Troubleshooting section, you will be best served by referring to the defective condition sub-section number and machine test number when calling the Genie Customer Service department toll-free 1-800-426-8089.

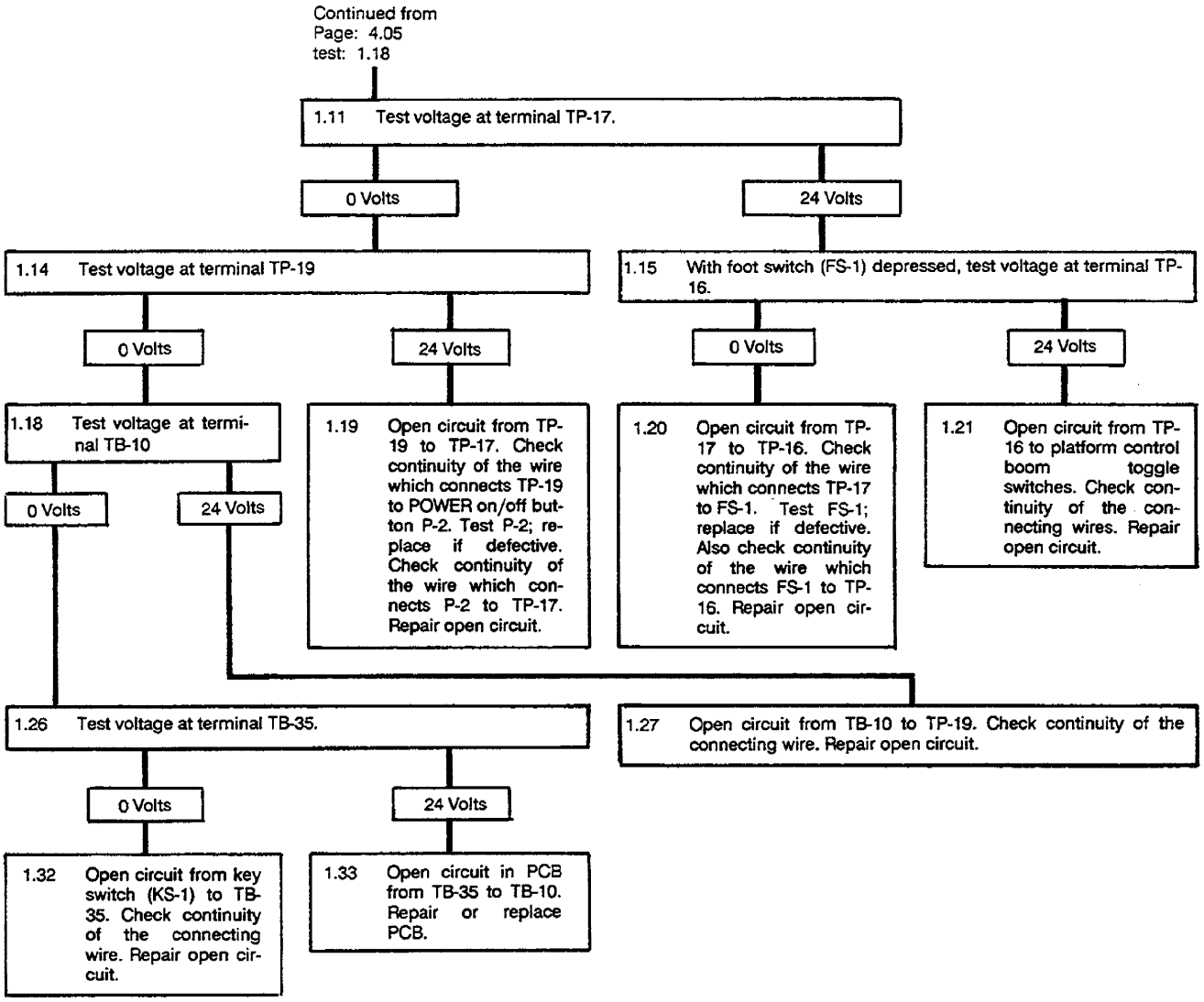
Section	Defective Condition	Page
1.	Machine will not lift, lower, extend, retract, swing, drive or steer. All powered functions lost. Electric motors will not start.	4.05
2.	Machine will not lift, lower, extend, retract, swing, drive or steer. All powered functions lost. Electric motors start and run.	4.08
3.	Machine will not lift, lower, extend, retract or swing. Drive and steer functions operational. Boom motor will not start.	4.09
4.	Machine will not lift, lower, extend, retract or swing. Drive and steer functions operational. Boom motor starts and runs.	4.10
5.	Machine will not drive forward or reverse or steer left or right. Boom functions are operational. Drive motor will not start.	4.11
6.	Machine will not drive forward or reverse or steer left or right. Boom functions are operational. Drive motor starts and runs.	4.12
7.	Machine will not drive forward or reverse. Steer and boom functions are operational.	4.13
8.	Boom Elevate Up function inoperative.	4.14
9.	Boom Elevate Down function inoperative.	4.16
10.	Boom Reach Up function inoperative.	4.17
11.	Boom Reach Down function inoperative.	4.19
12.	Boom Reach Extend function inoperative.	4.20
13.	Boom Reach Retract function inoperative.	4.22
14.	Swing Right function inoperative.	4.24
15.	Swing Left function inoperative.	4.26
16.	Platform Level Up function inoperative.	4.28

Section	Defective Condition	Page
17.	Platform Level Down function inoperative.	4.30
18.	Steer Right function inoperative.	4.32
19.	Steer Left function inoperative.	4.33
20.	Steering function lost (hydraulics section).	4.34
21.	Machine will not drive full speed.	4.35
22.	Drive forward function inoperative.	4.36
23.	Drive reverse function inoperative.	4.37

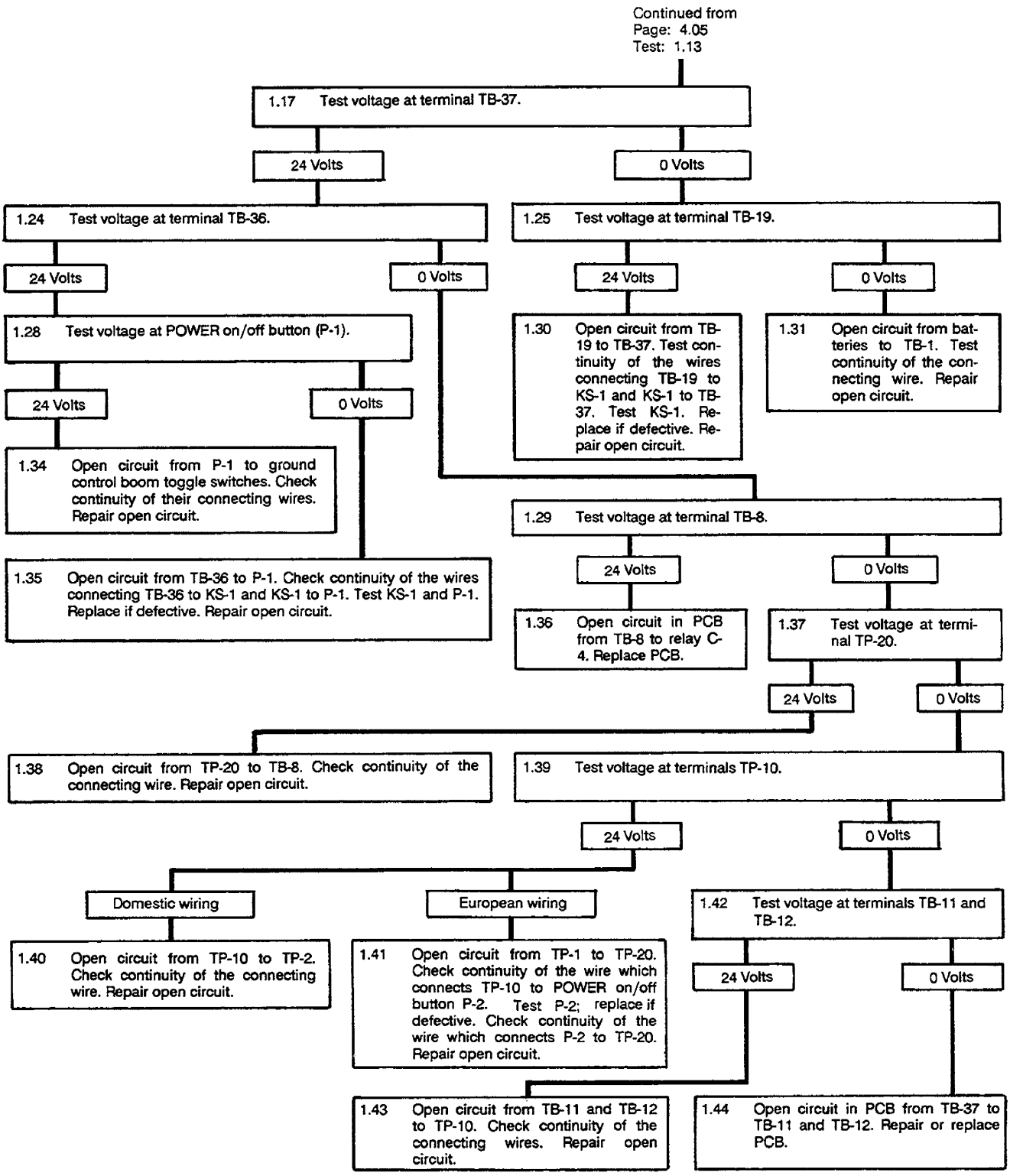
1. Machine will not lift, lower, extend, retract, swing, drive or steer. All powered functions lost. Electric motors will not start.



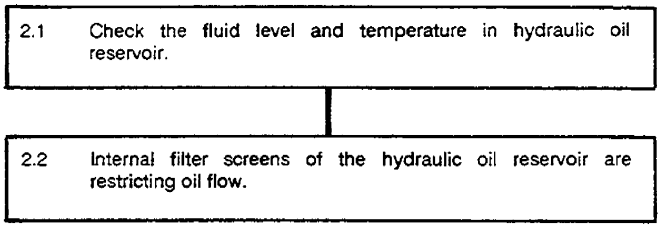
1. Machine will not lift, lower, extend, retract, swing, drive or steer. All powered functions lost. Electric motors will not start.



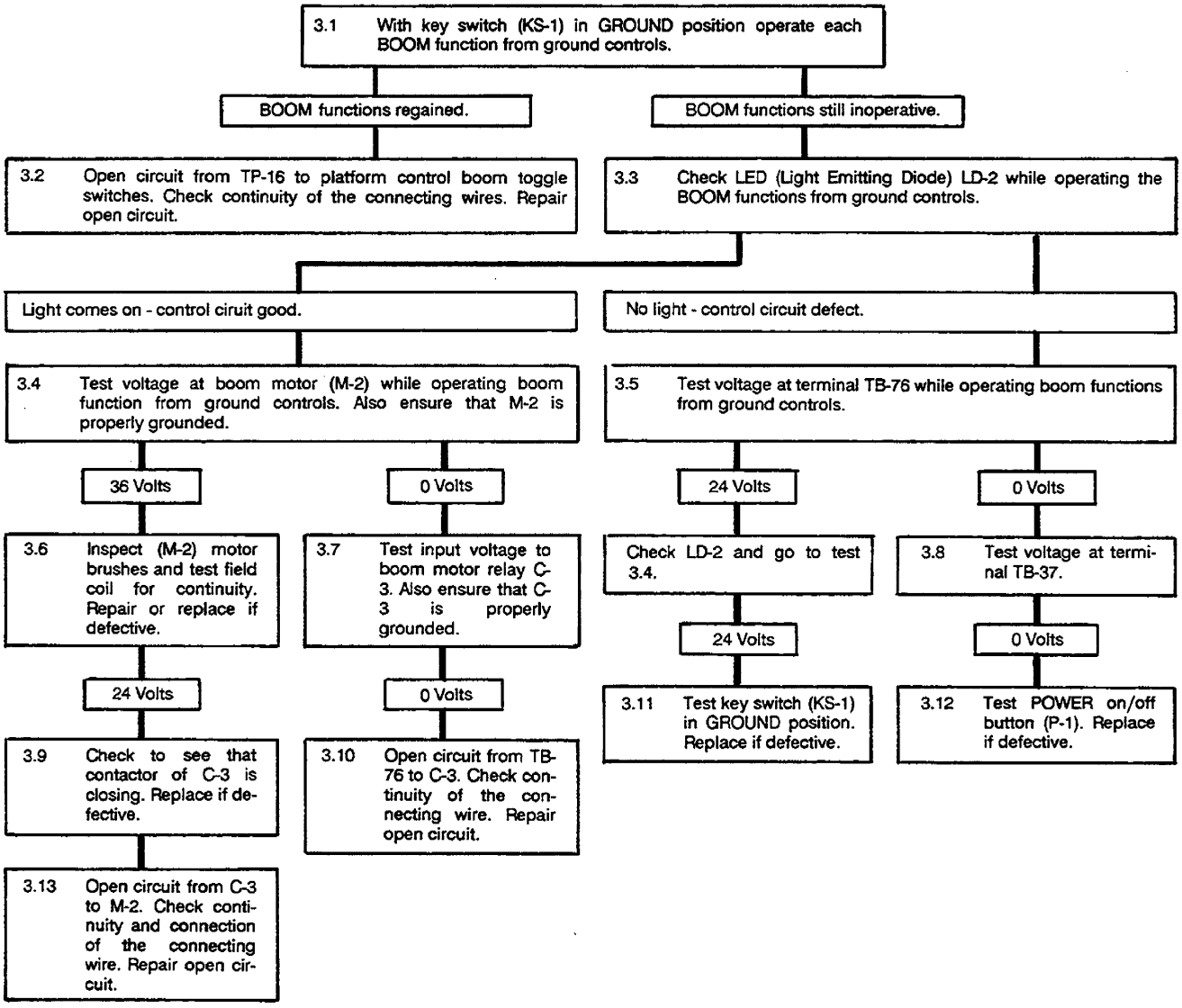
1. Machine will not lift, lower, extend, retract, swing, drive or steer. All powered functions lost. Electric motors will not start.



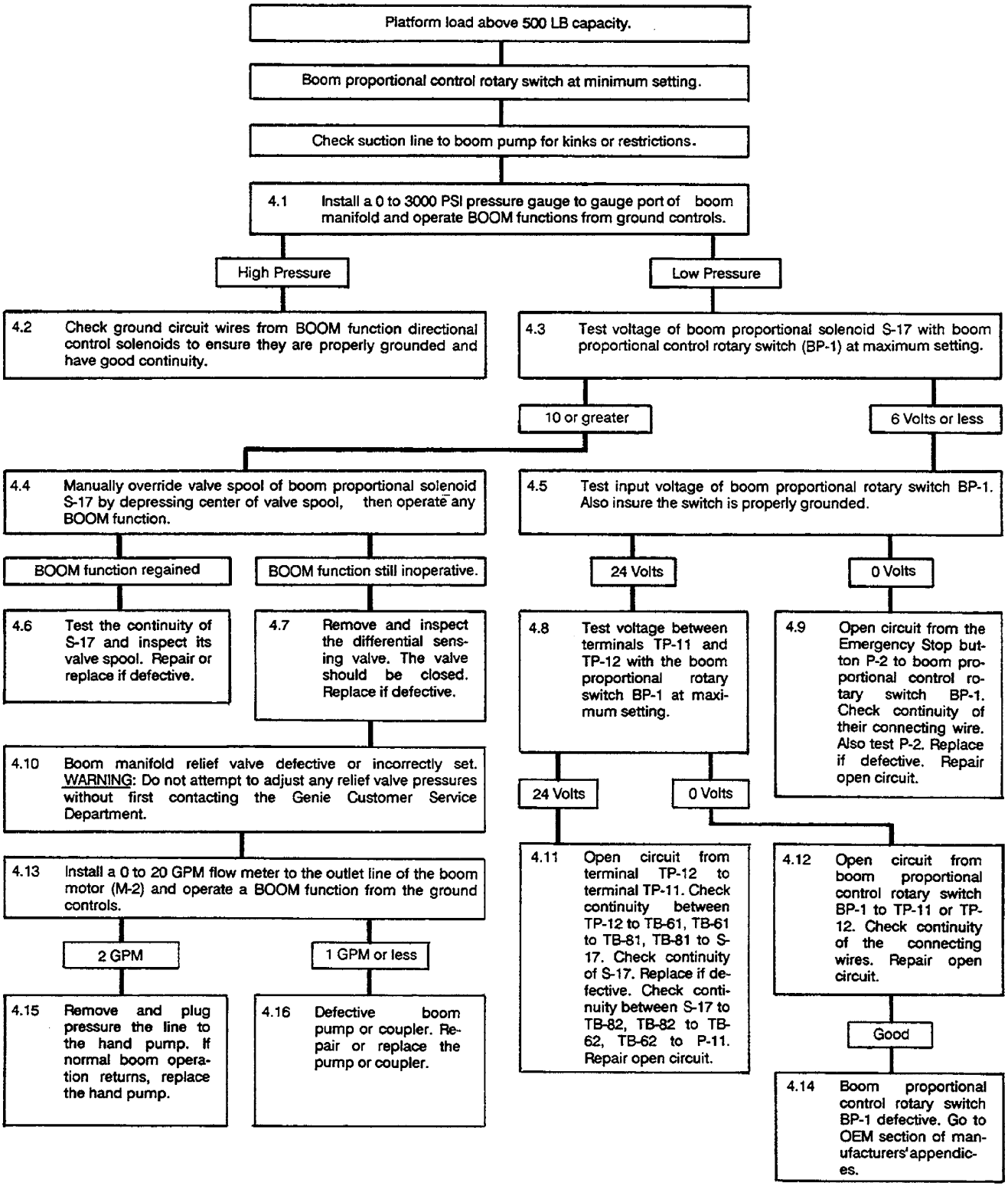
2. Machine will not lift, lower, extend, retract, swing, drive, or steer. All powered functions lost. Electric motors start and run.



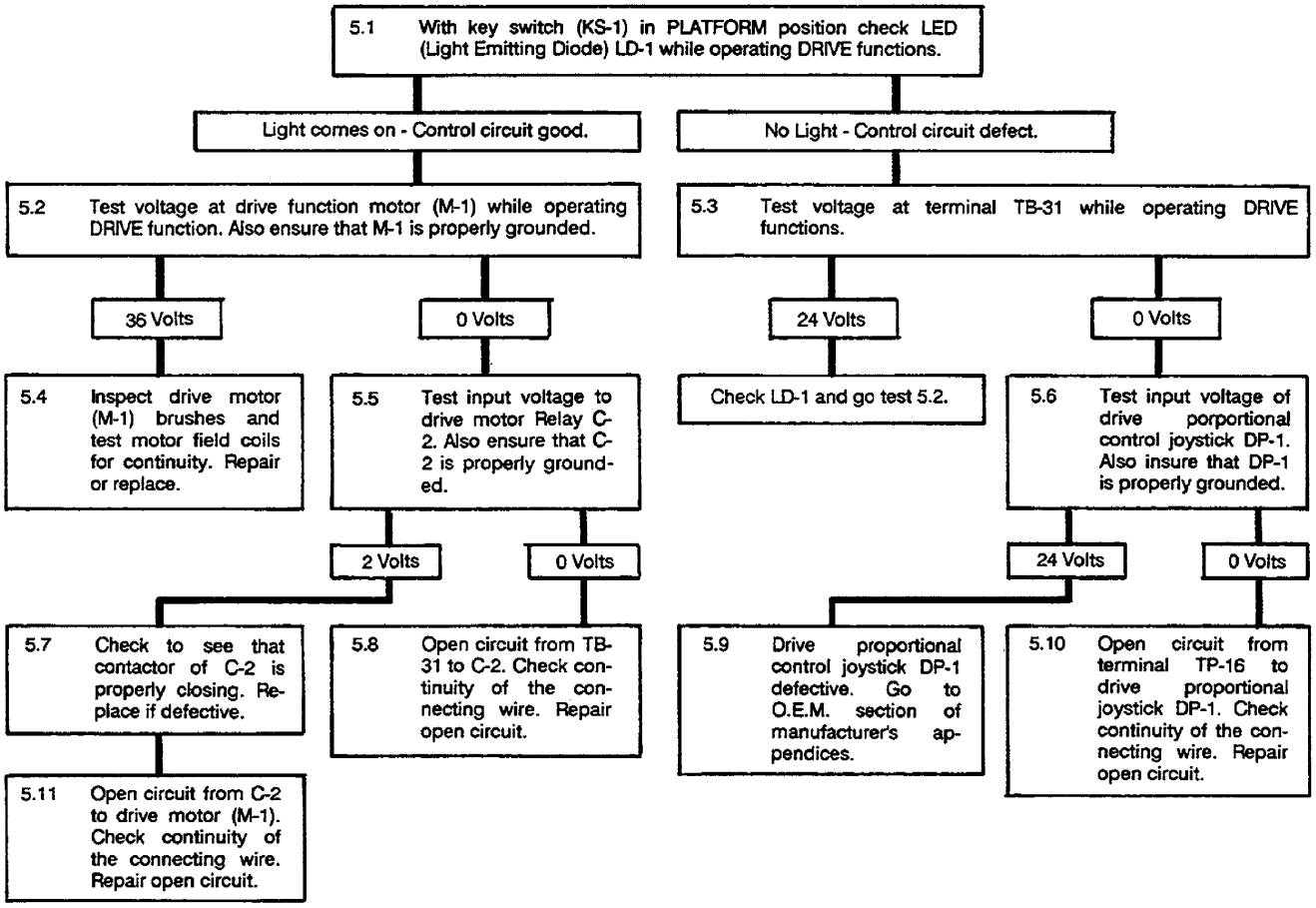
3. Machine will not lift, lower, extend, retract, or swing. Drive and steer functions operational. Boom motor will not start.



4. Machine will not lift, lower, extend, retract or swing. Drive and steer functions operational. Boom motor starts and runs.



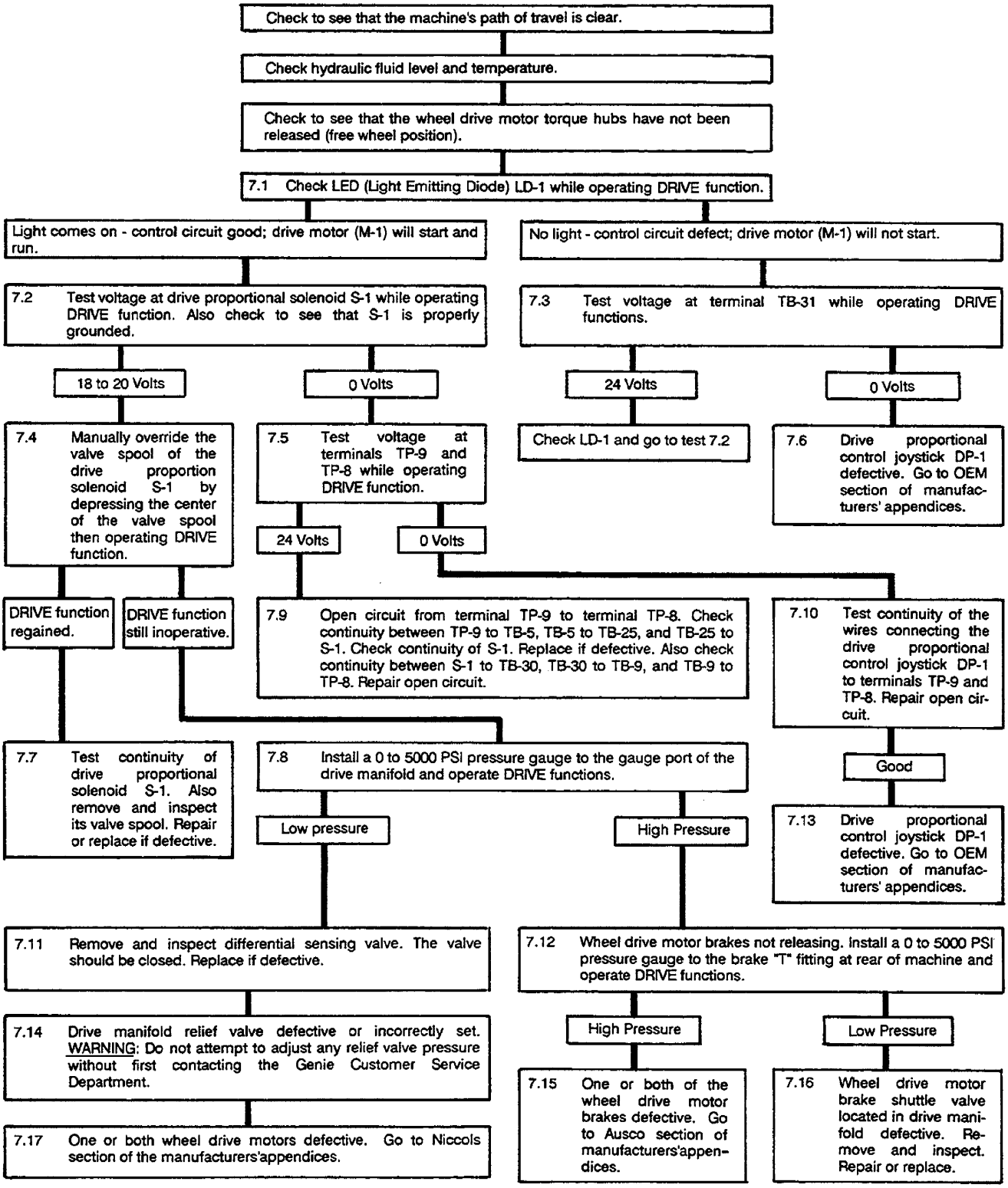
5. Machine will not drive forward or reverse or steer left or right. Boom functions are operational. Drive motor will not start.



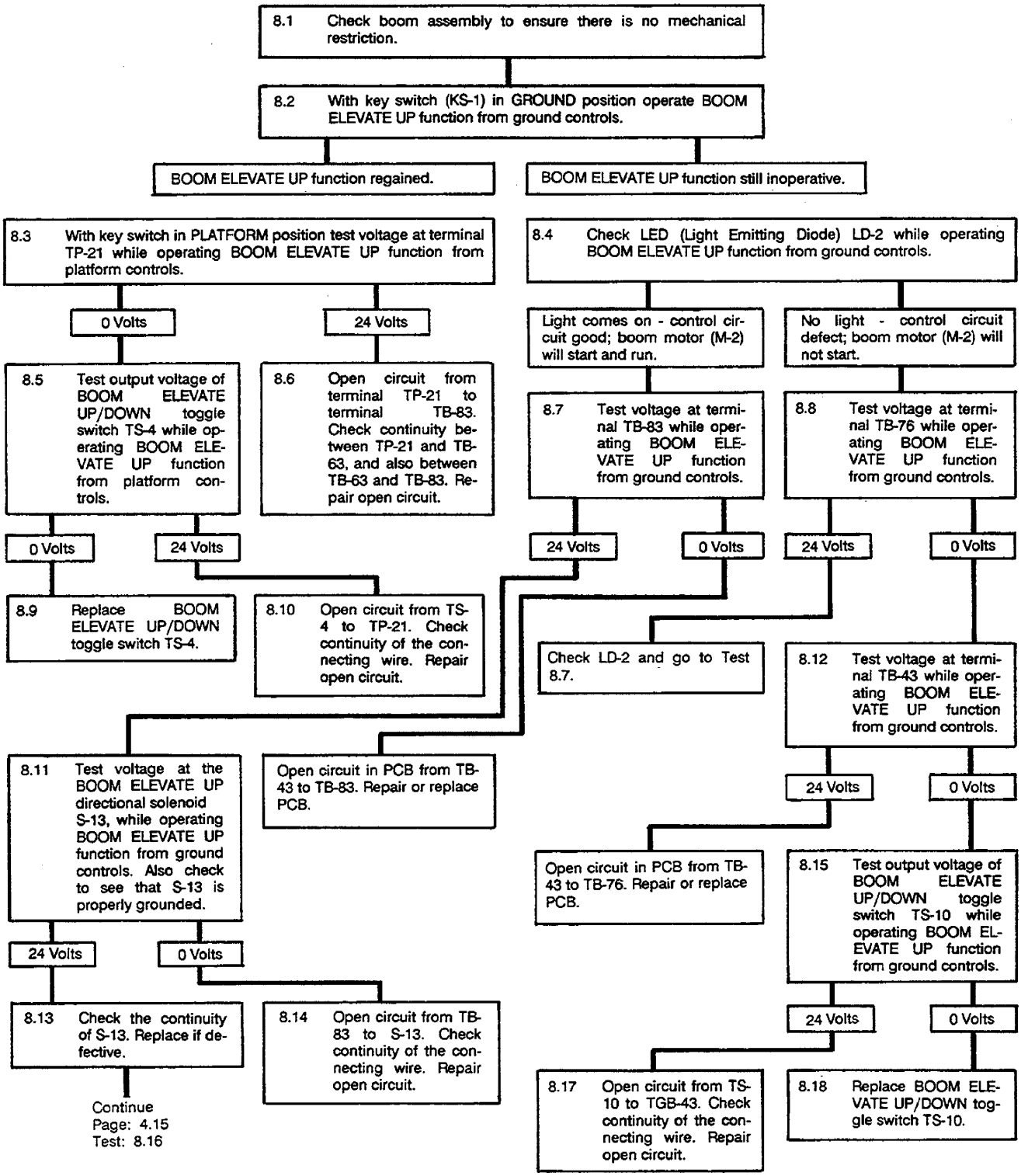
6. Machine will not drive forward or reverse or steer left or right. Boom functions are operational. Drive motor starts and runs.

6.1	Check hydraulic oil level and temperature.
6.2	Check suction line to drive pump for leaks or restriction.
6.3	Check ground circuit for the DRIVE and STEER directional control solenoids to ensure the wires are properly grounded and have good continuity.
6.4	Drive manifold relief valve defective or incorrectly set. WARNING: Do not attempt to adjust any relief pressures without first contacting the Genie Customer Service Department.
6.5	Drive pump or coupler defective. Repair or replace pump or coupler.

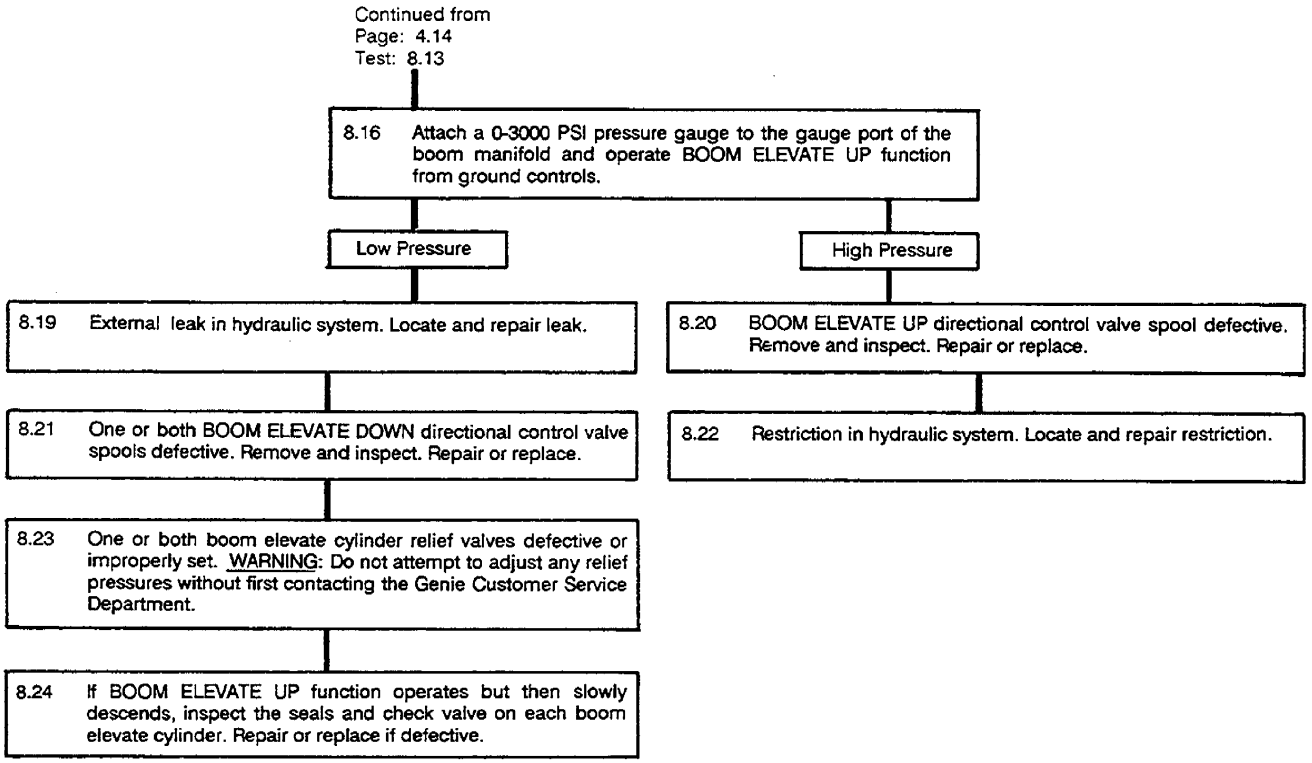
7. Machine will not drive forward or reverse. Steer and boom functions are operational.



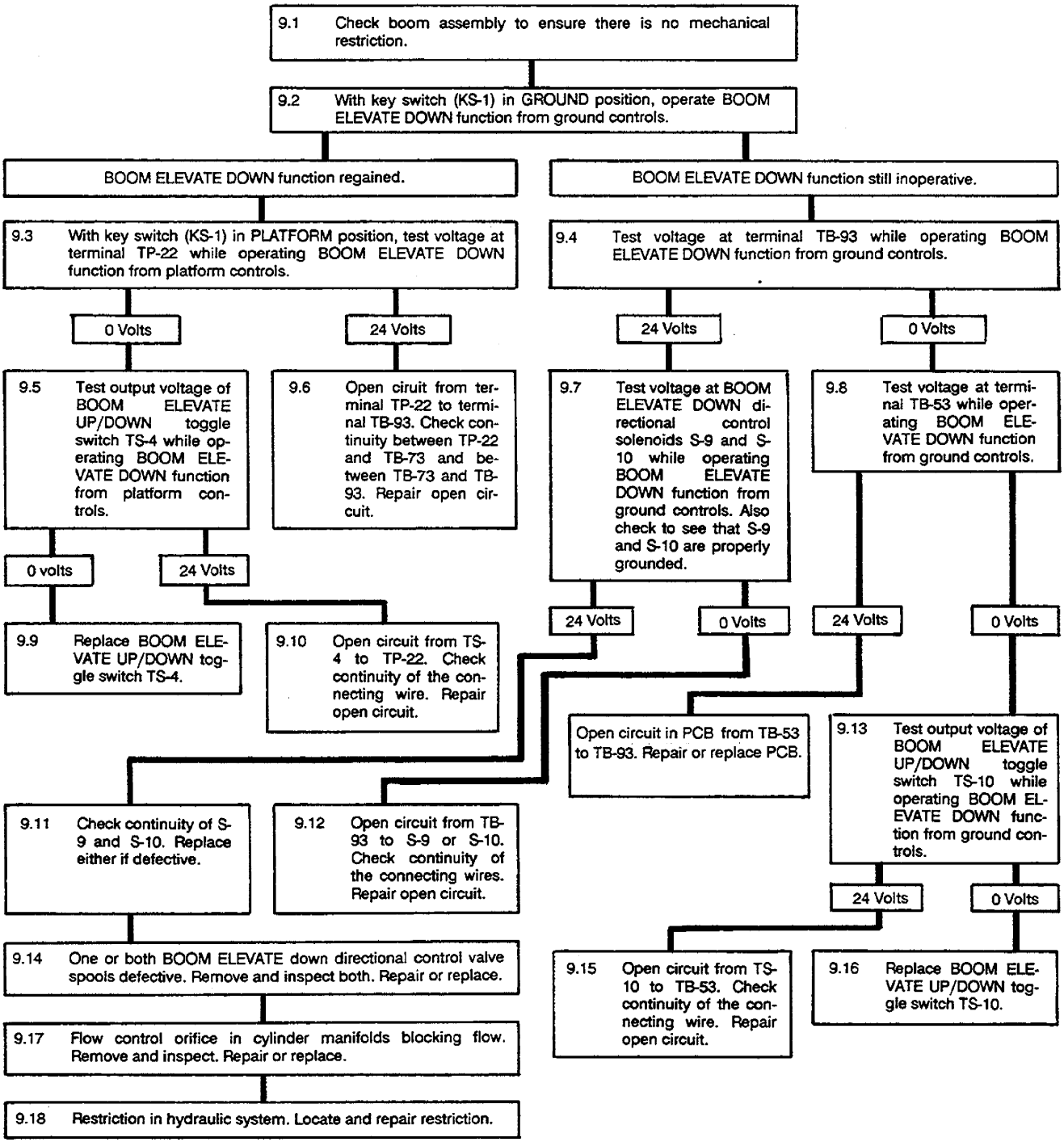
8. Boom Elevate Up function inoperative.



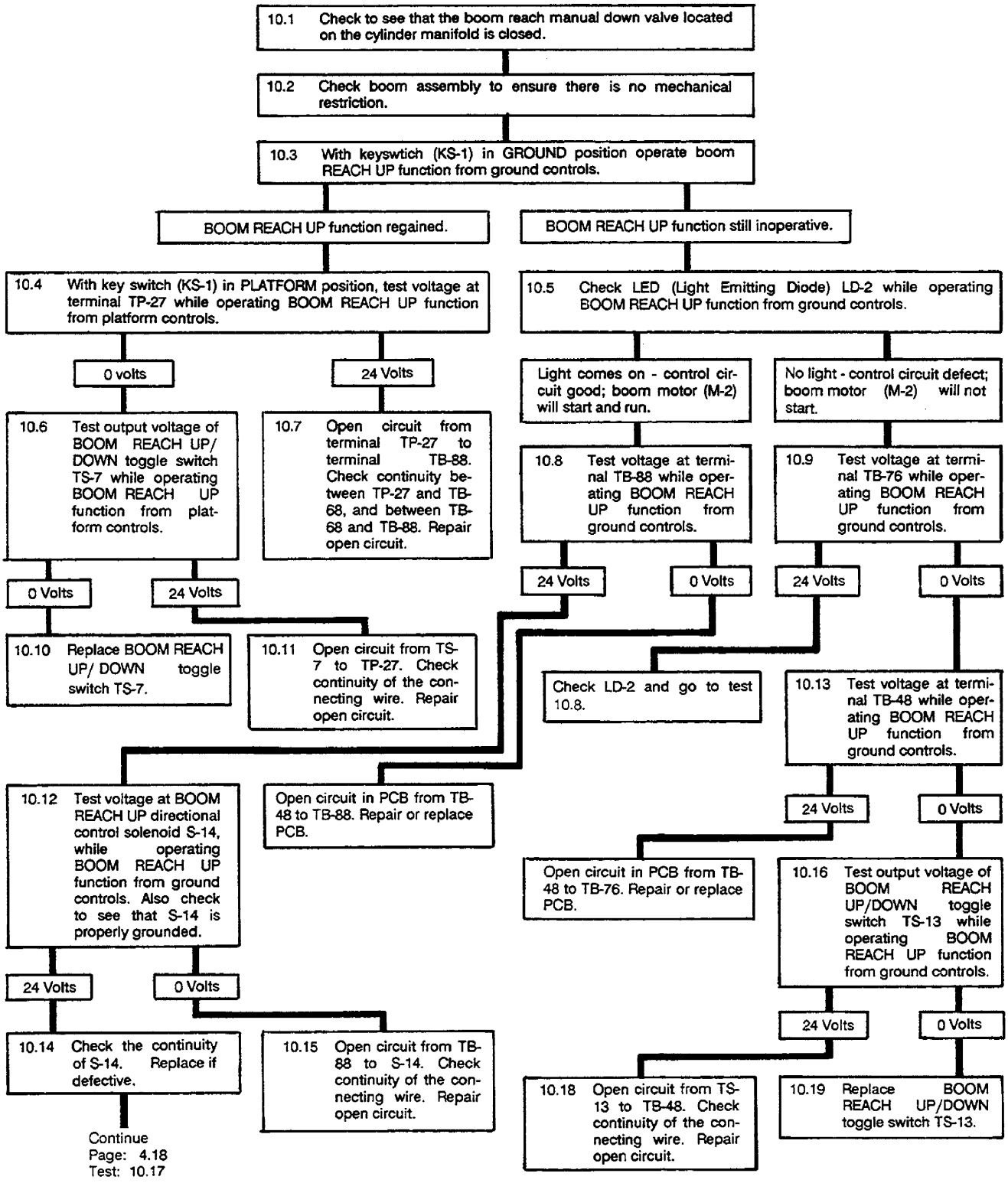
8. Boom Elevate Up function inoperative.



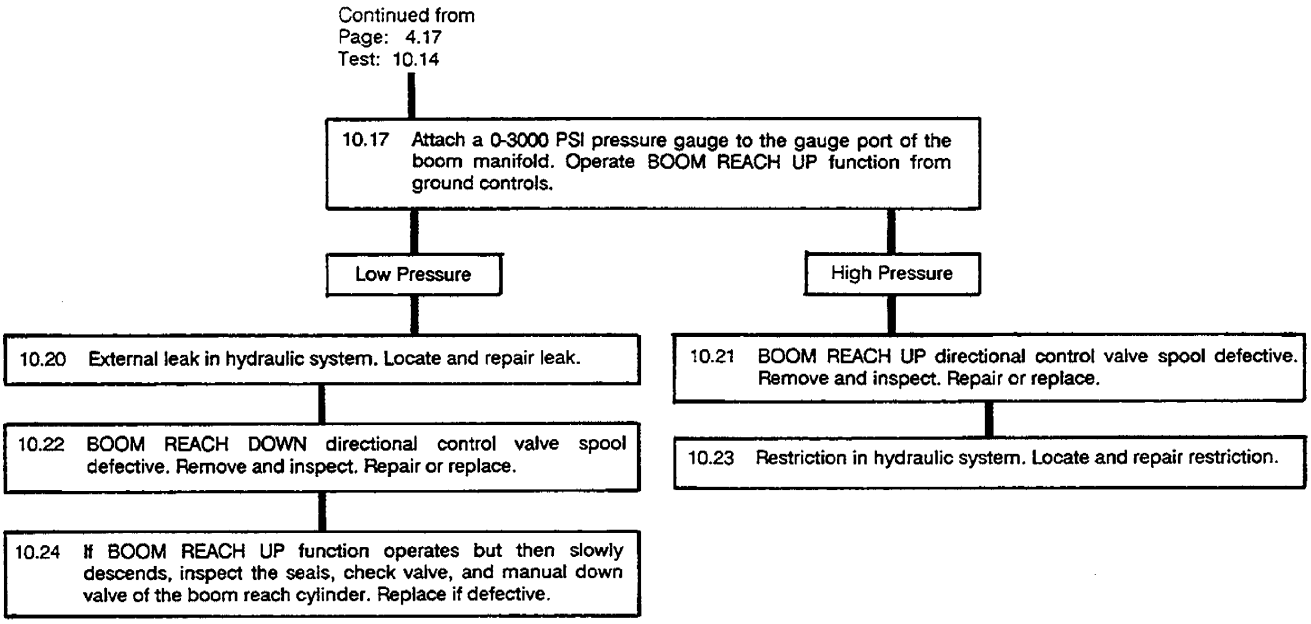
9. Boom Elevate Down function inoperative.



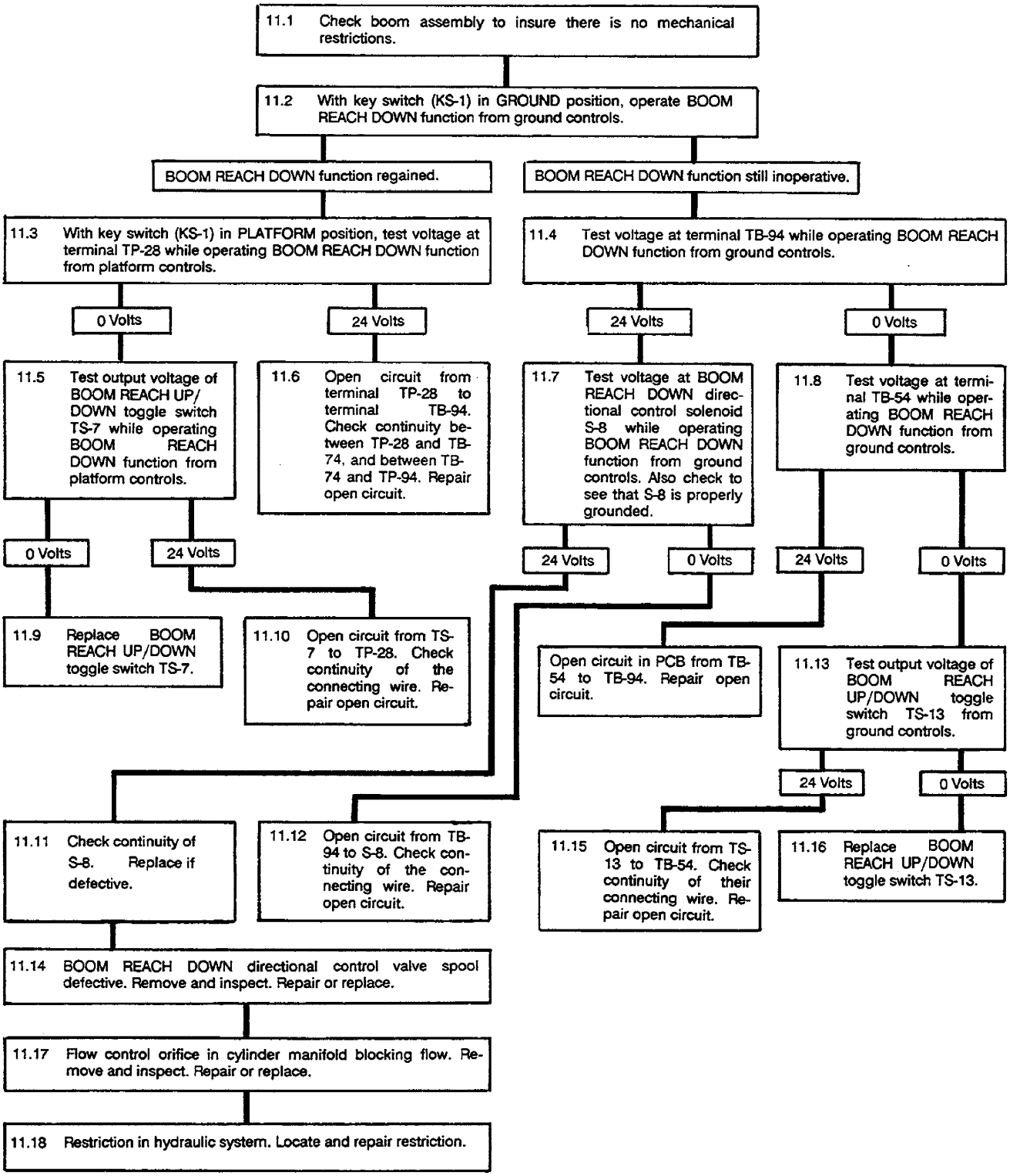
10. Boom Reach Up function inoperative.



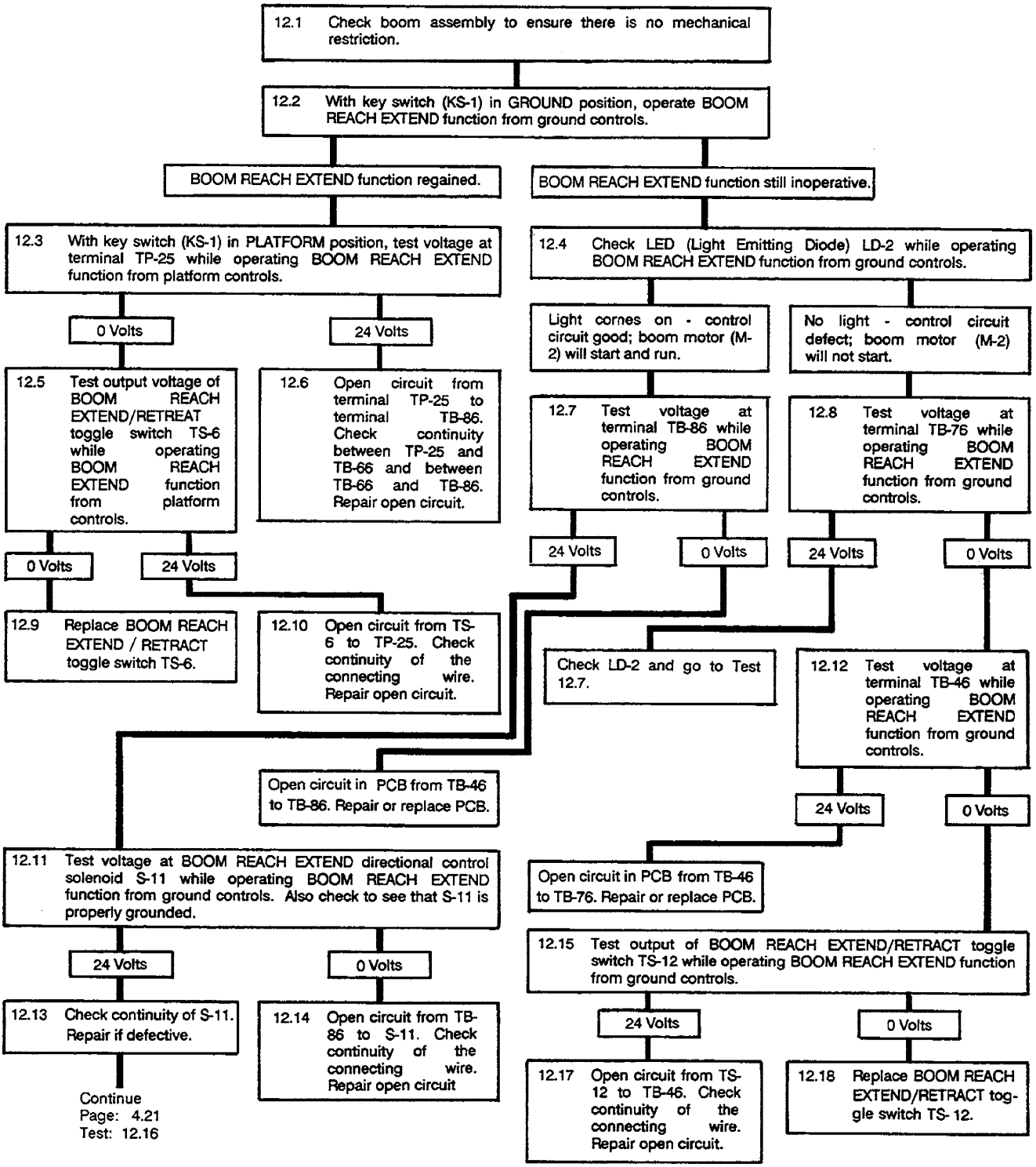
10. Boom Reach Up function inoperative.



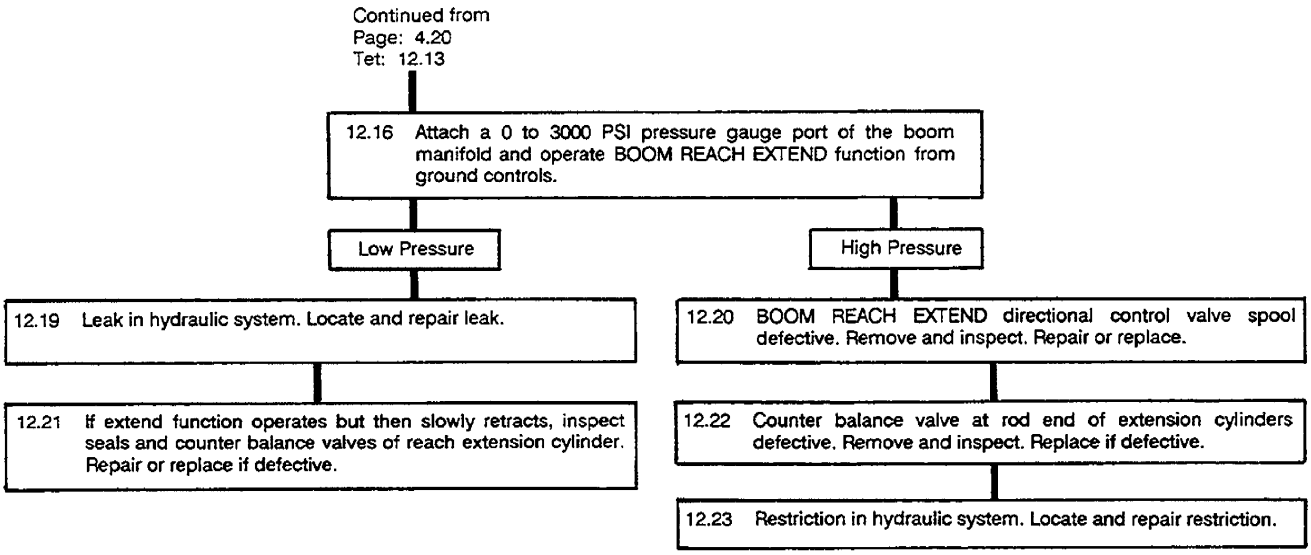
11. Boom Reach Down function inoperative.



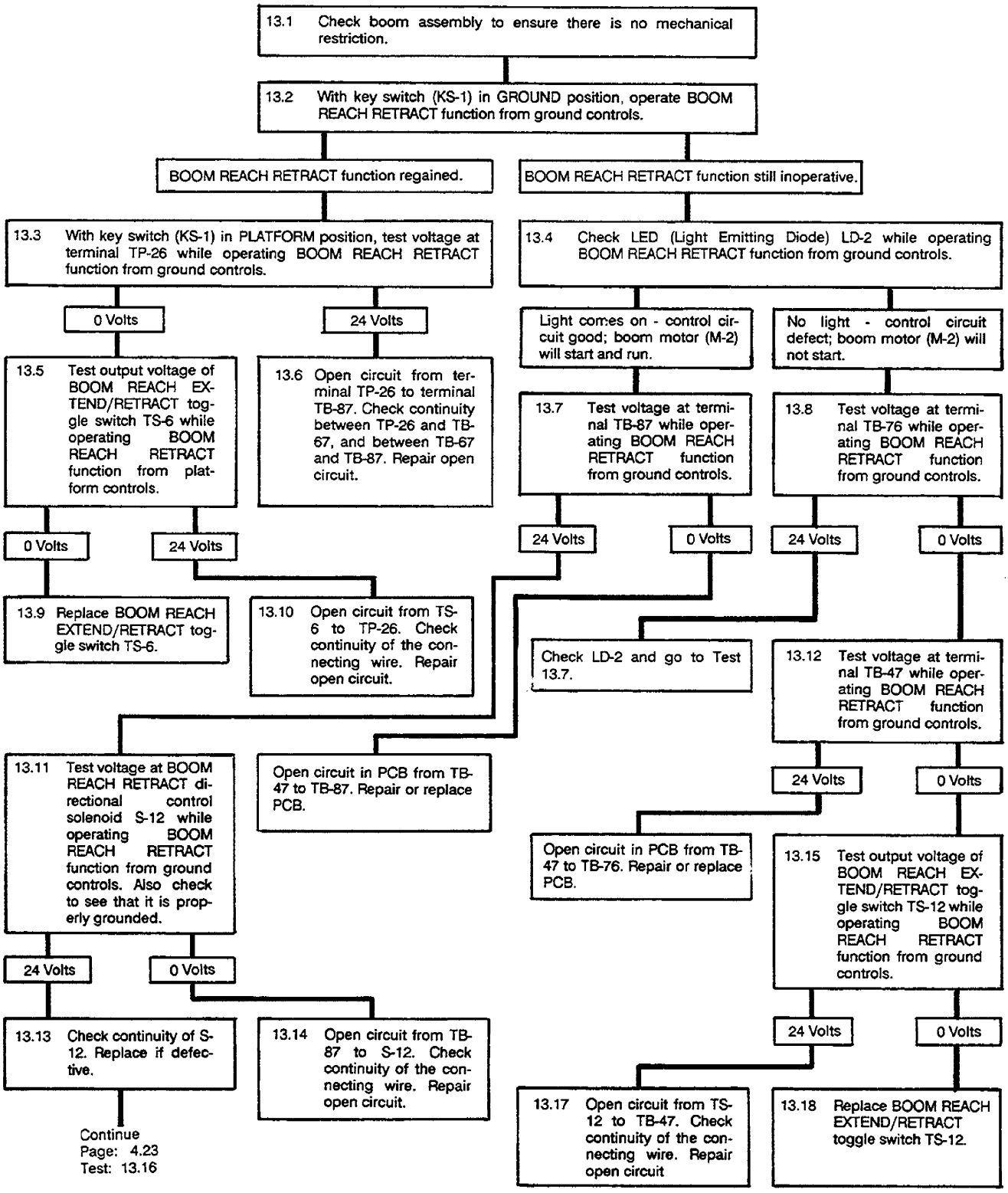
12. Boom Reach Extend function inoperative.



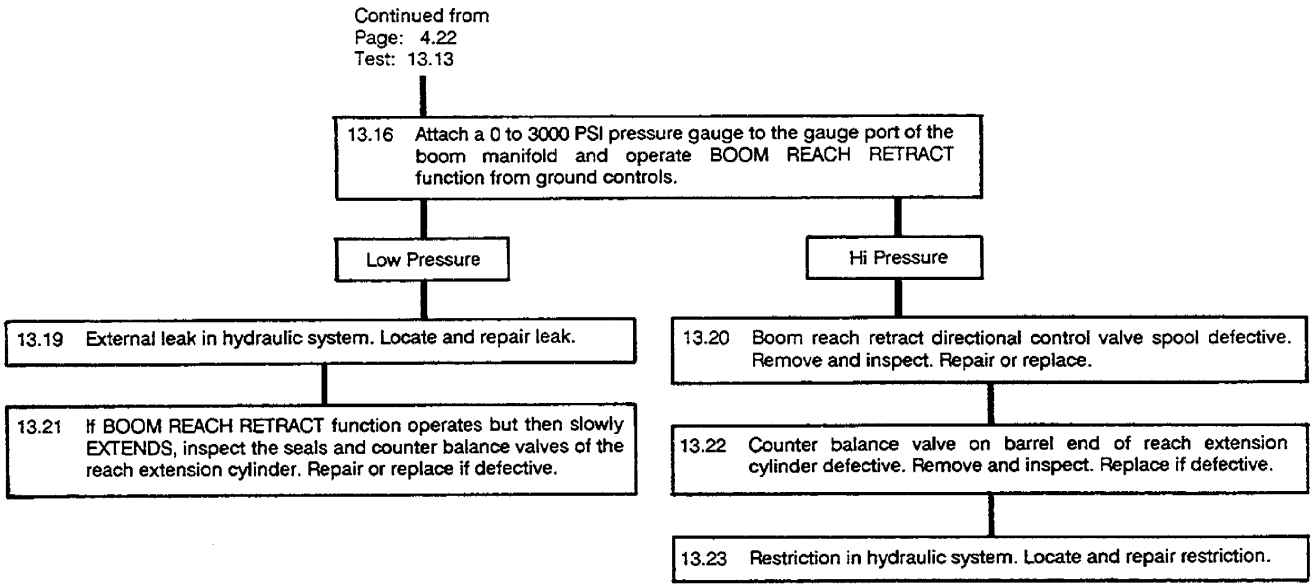
12. Boom Reach Extend function inoperative.



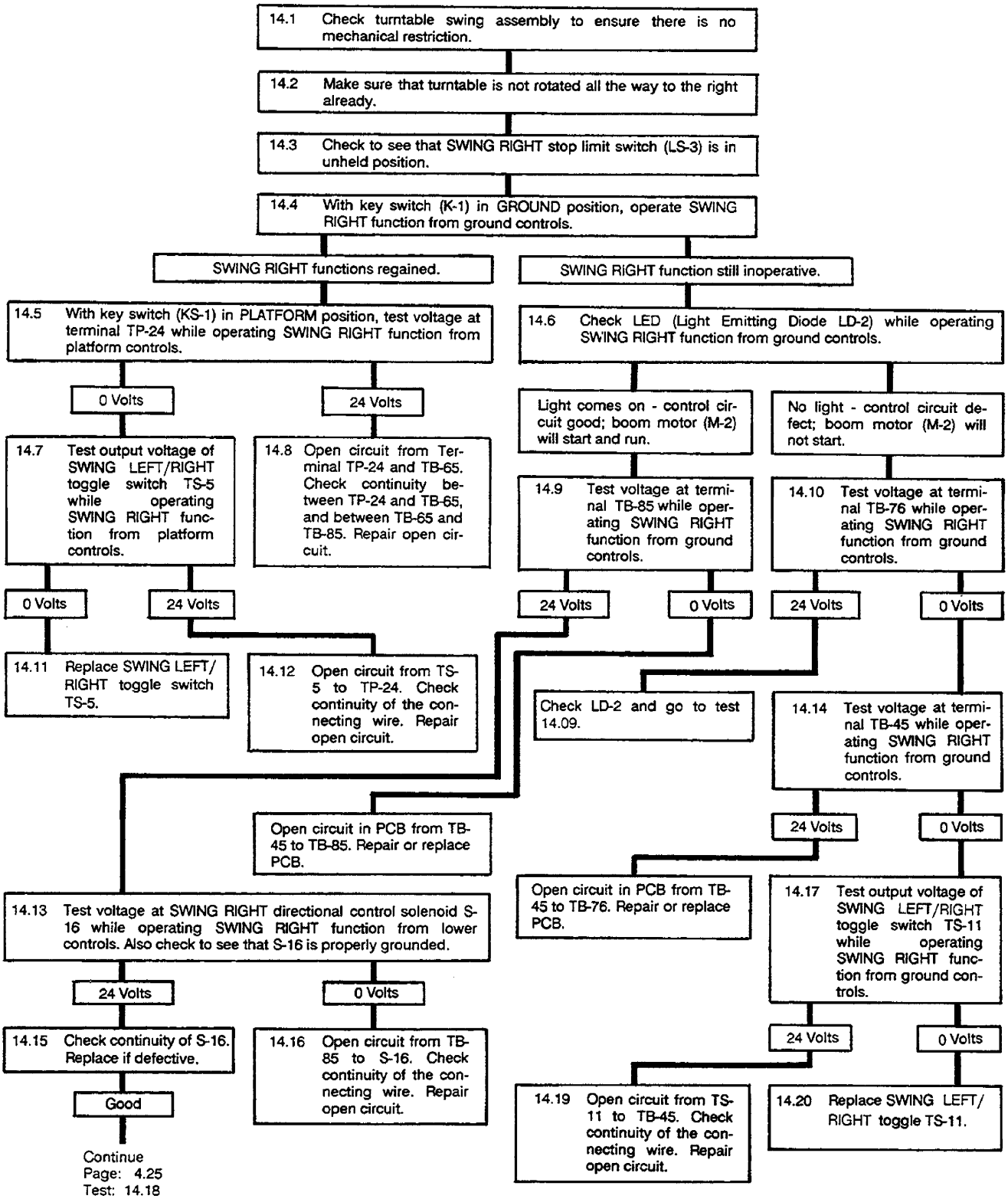
13. Boom Reach Retract function inoperative.



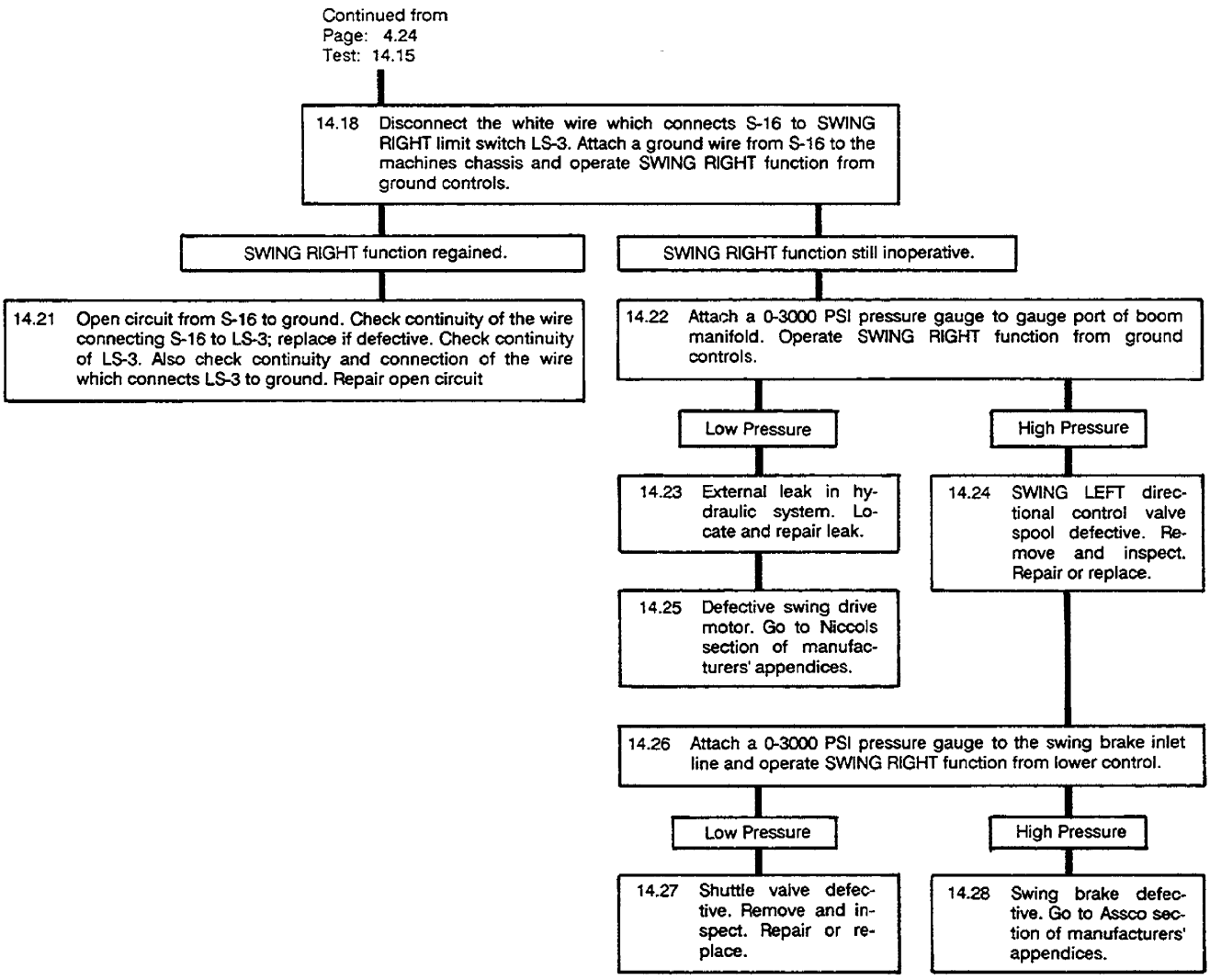
13. Boom Reach Retract function inoperative.



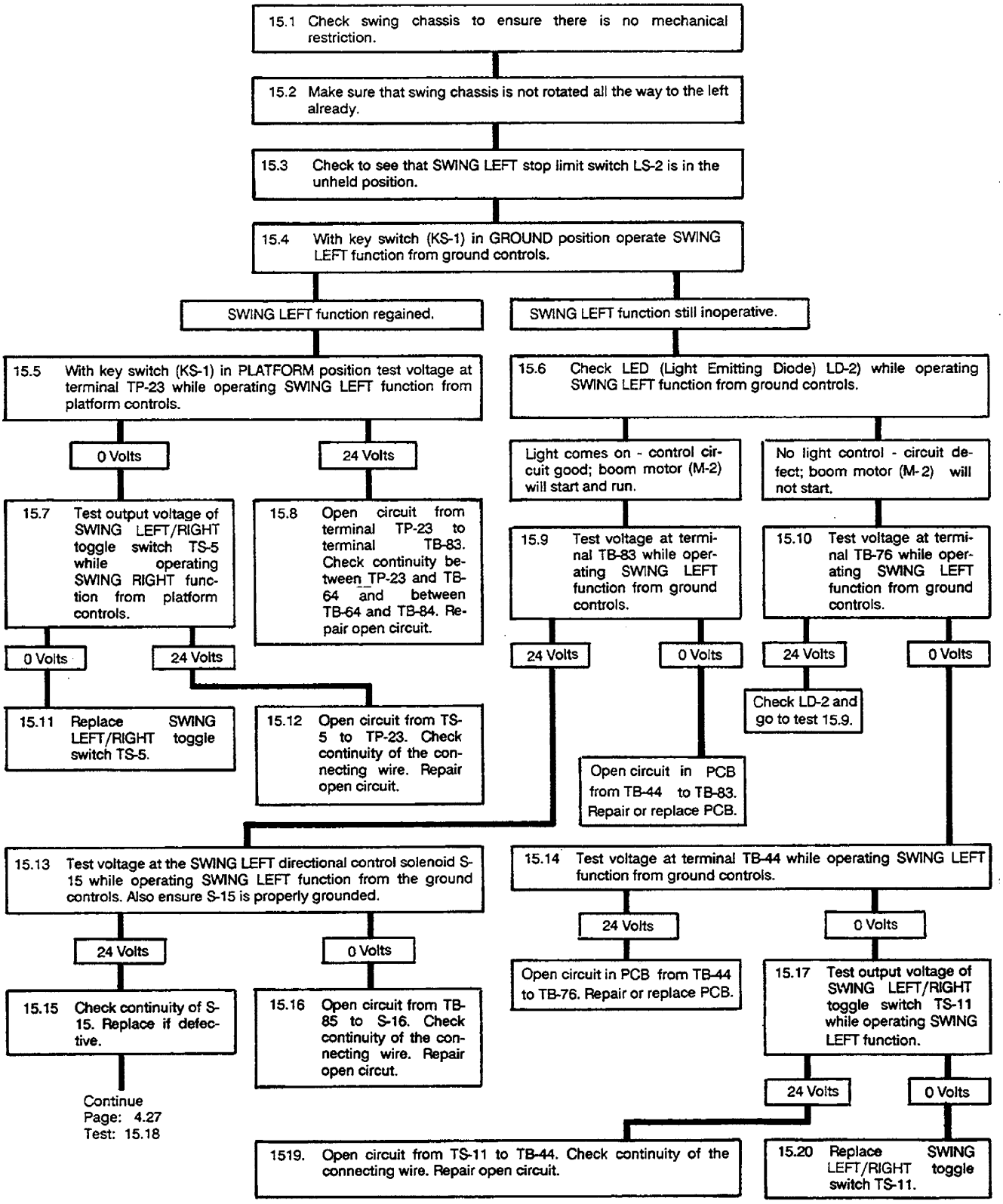
14. Swing Right function inoperative.



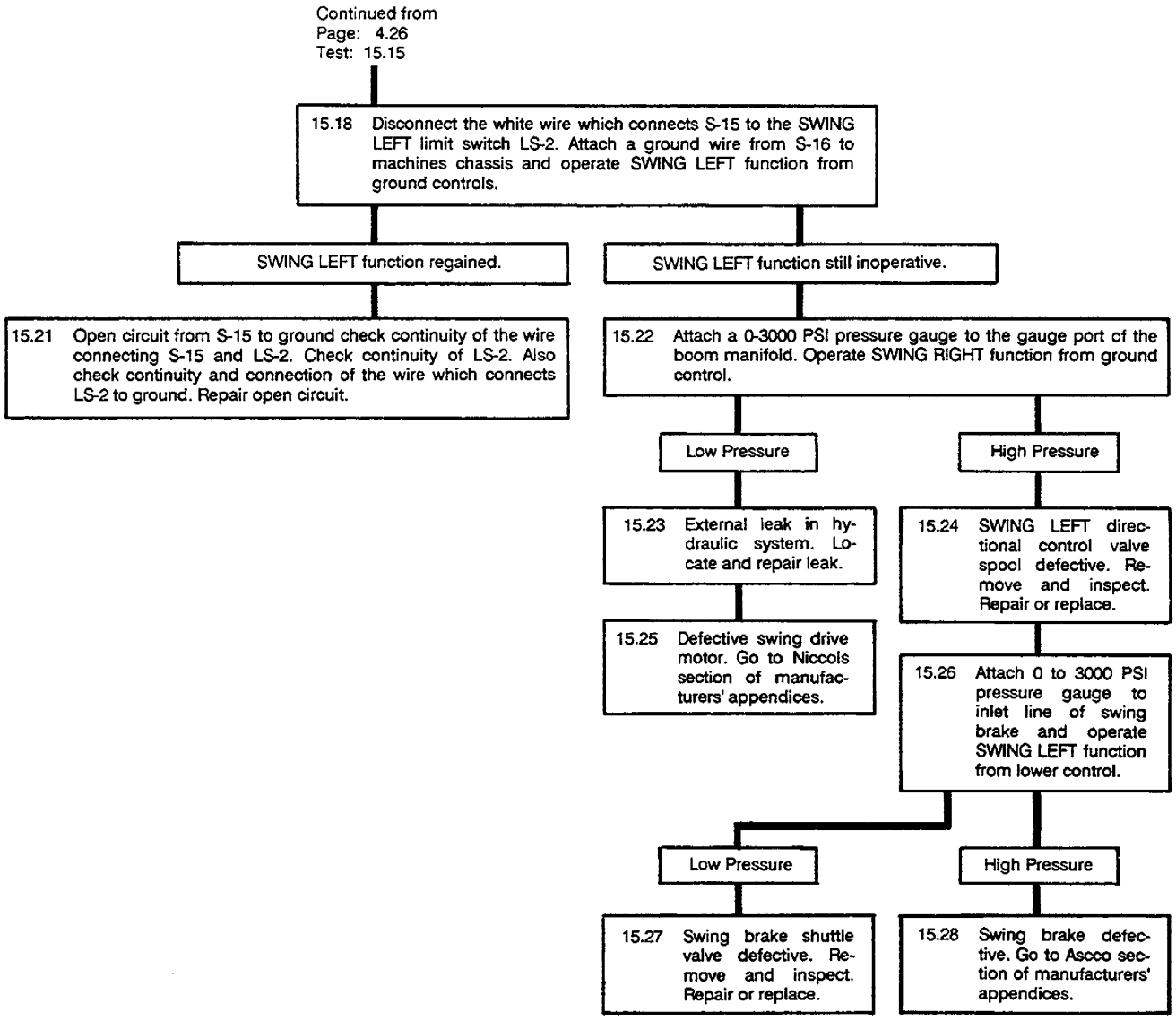
14. Swing Right function inoperative.



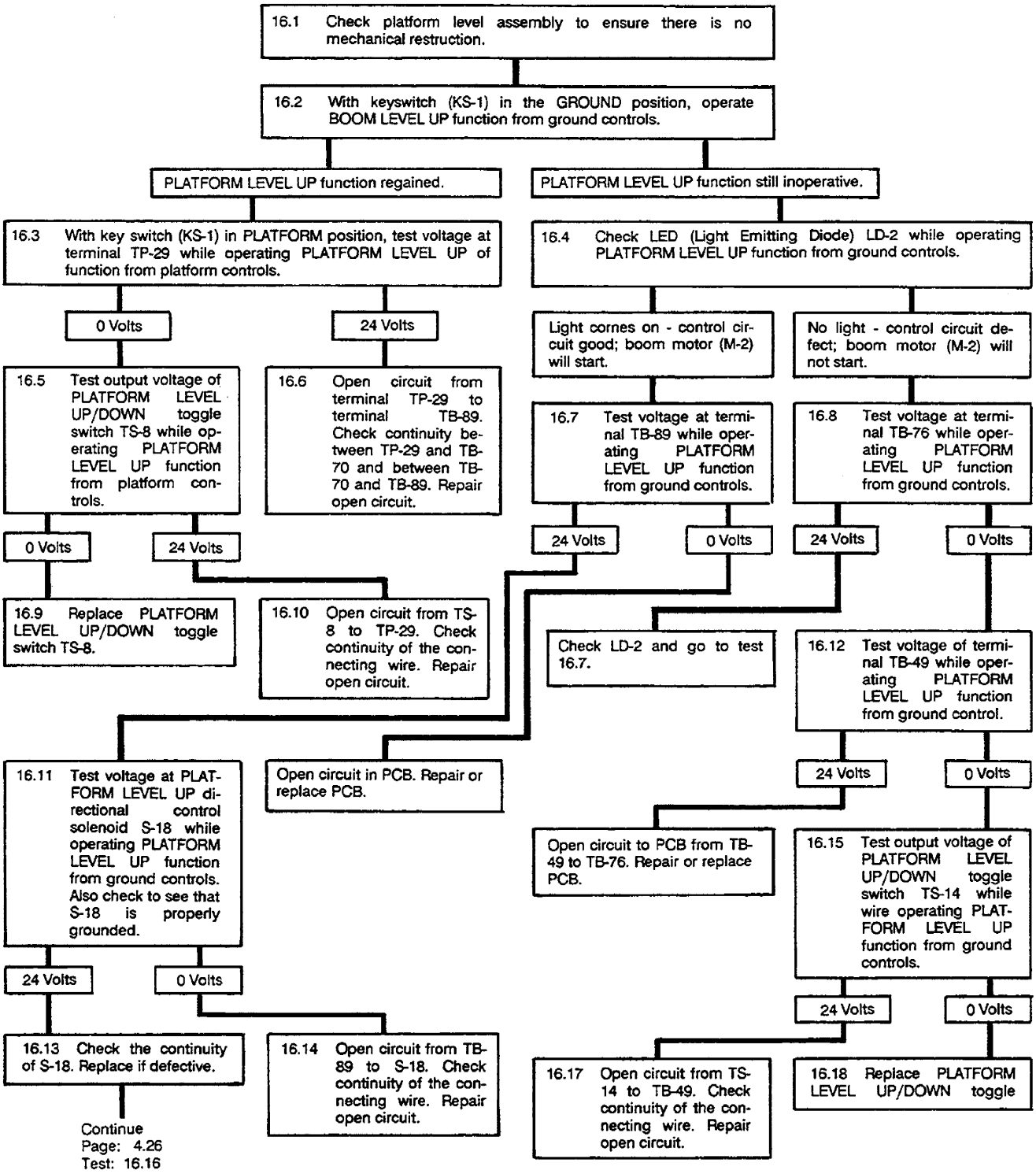
15. Swing Left function inoperative.



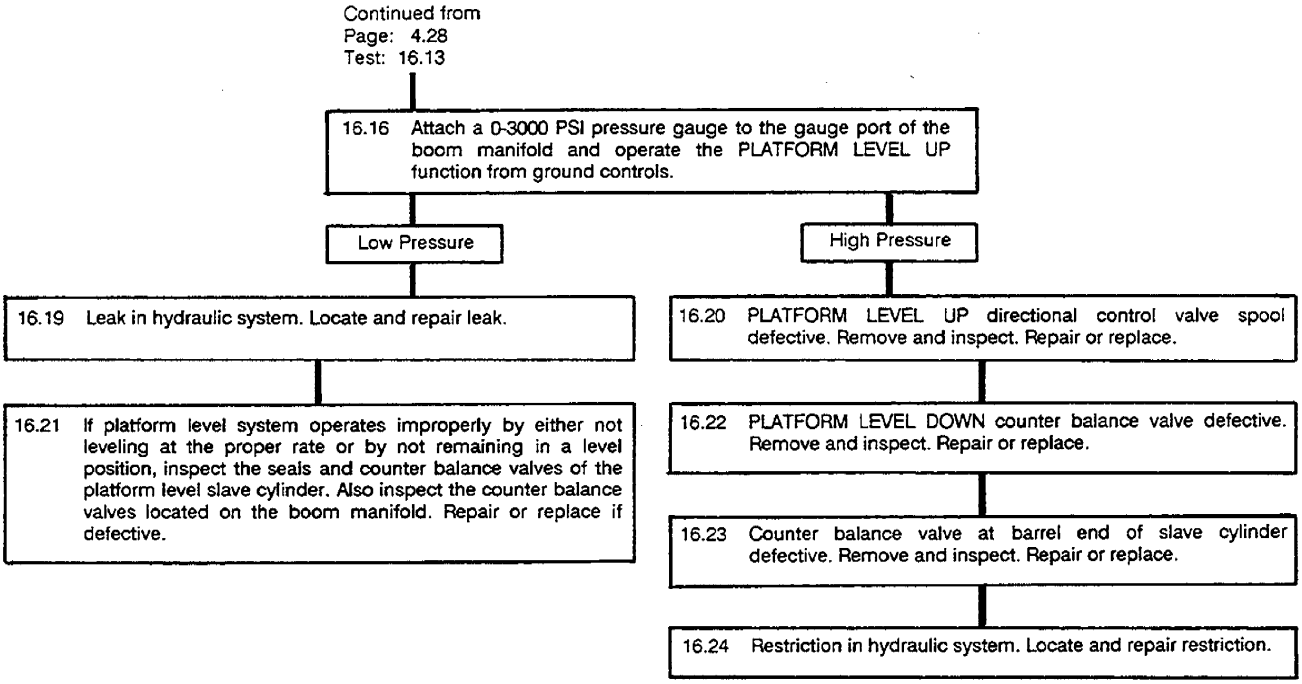
15. Swing Left function inoperative.



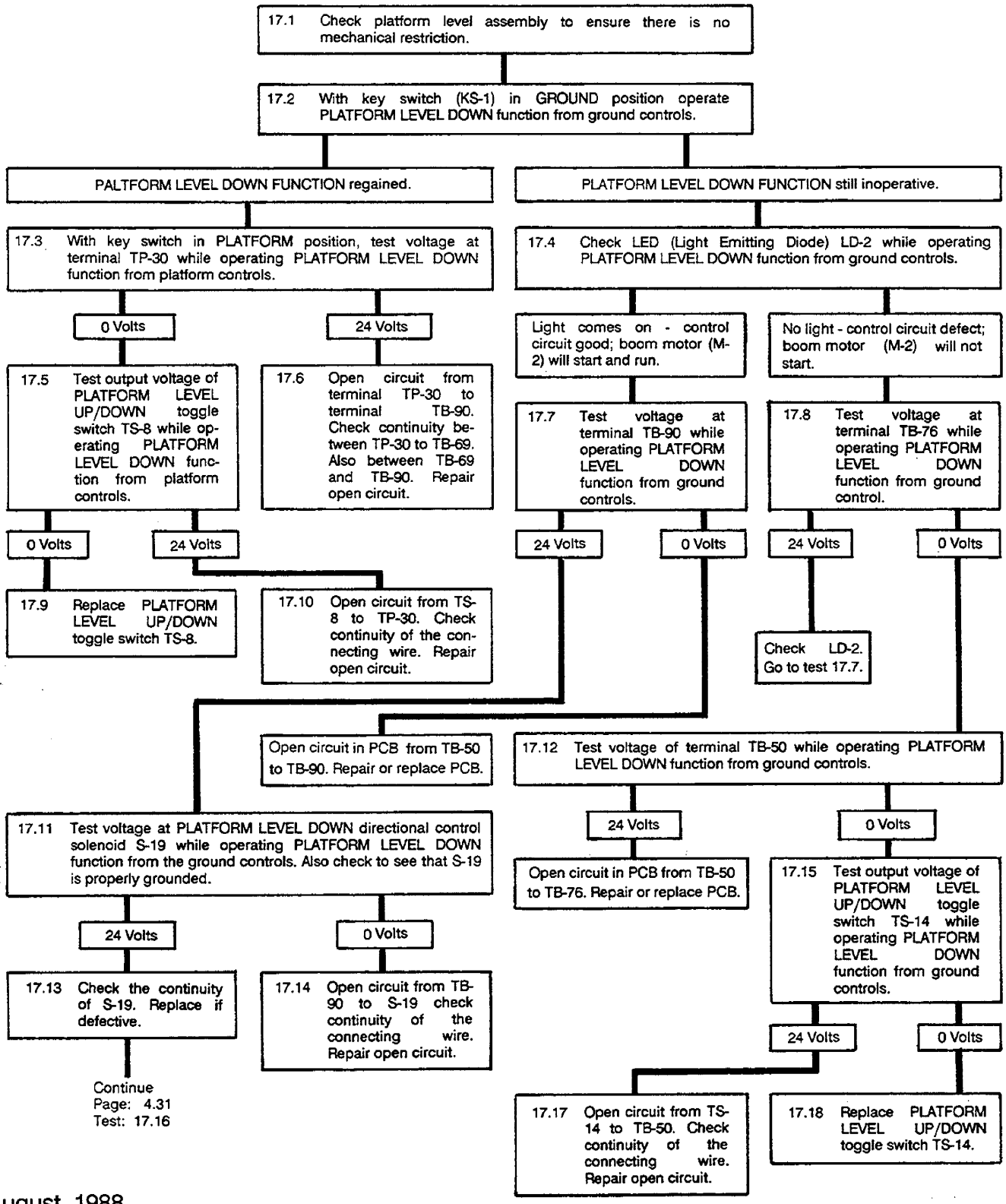
16. Platform Level Up function inoperative.



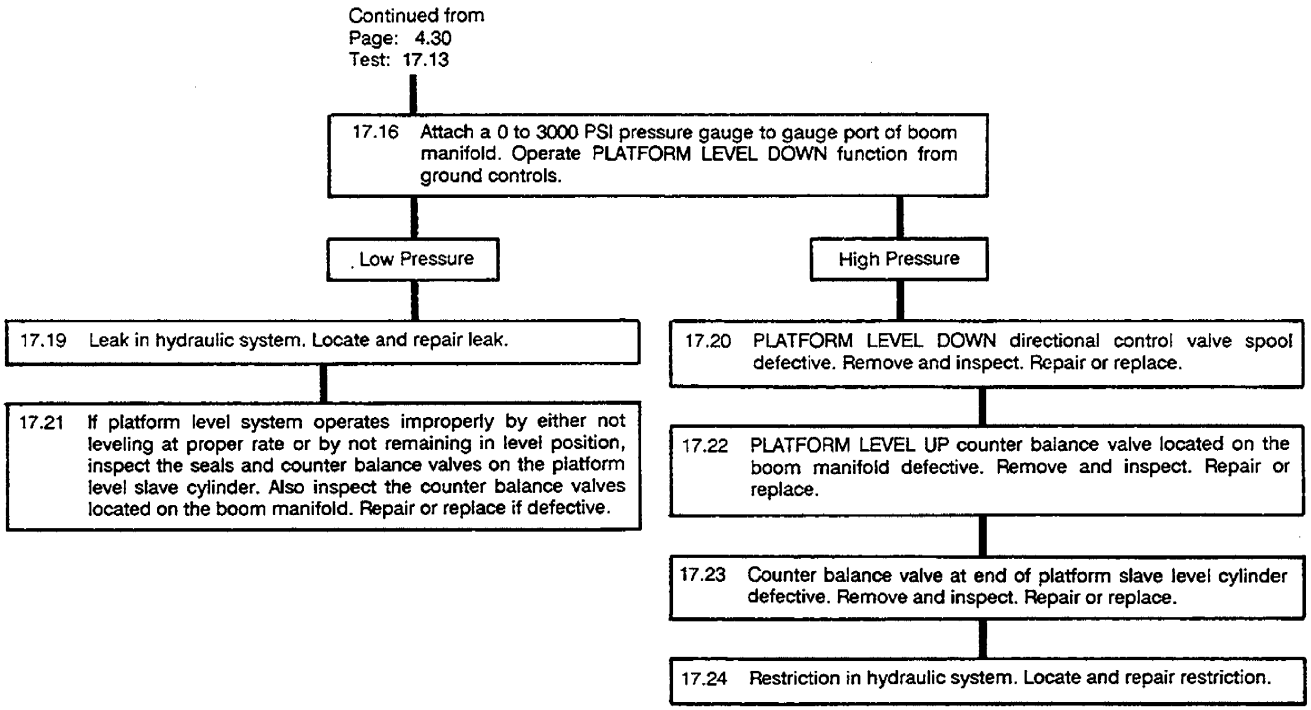
16. Platform Level Up function inoperative.



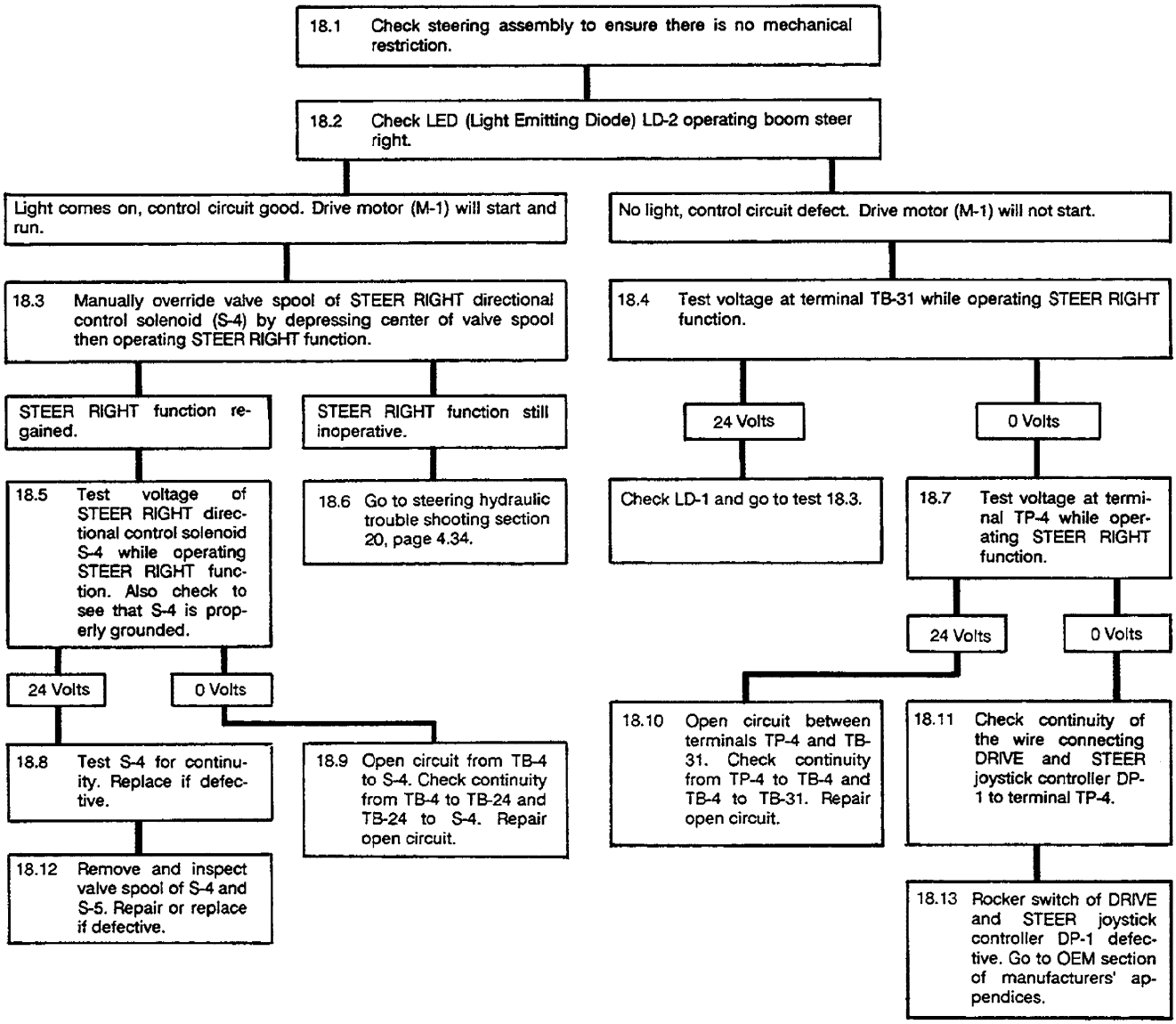
17. Platform Level Down function inoperative.



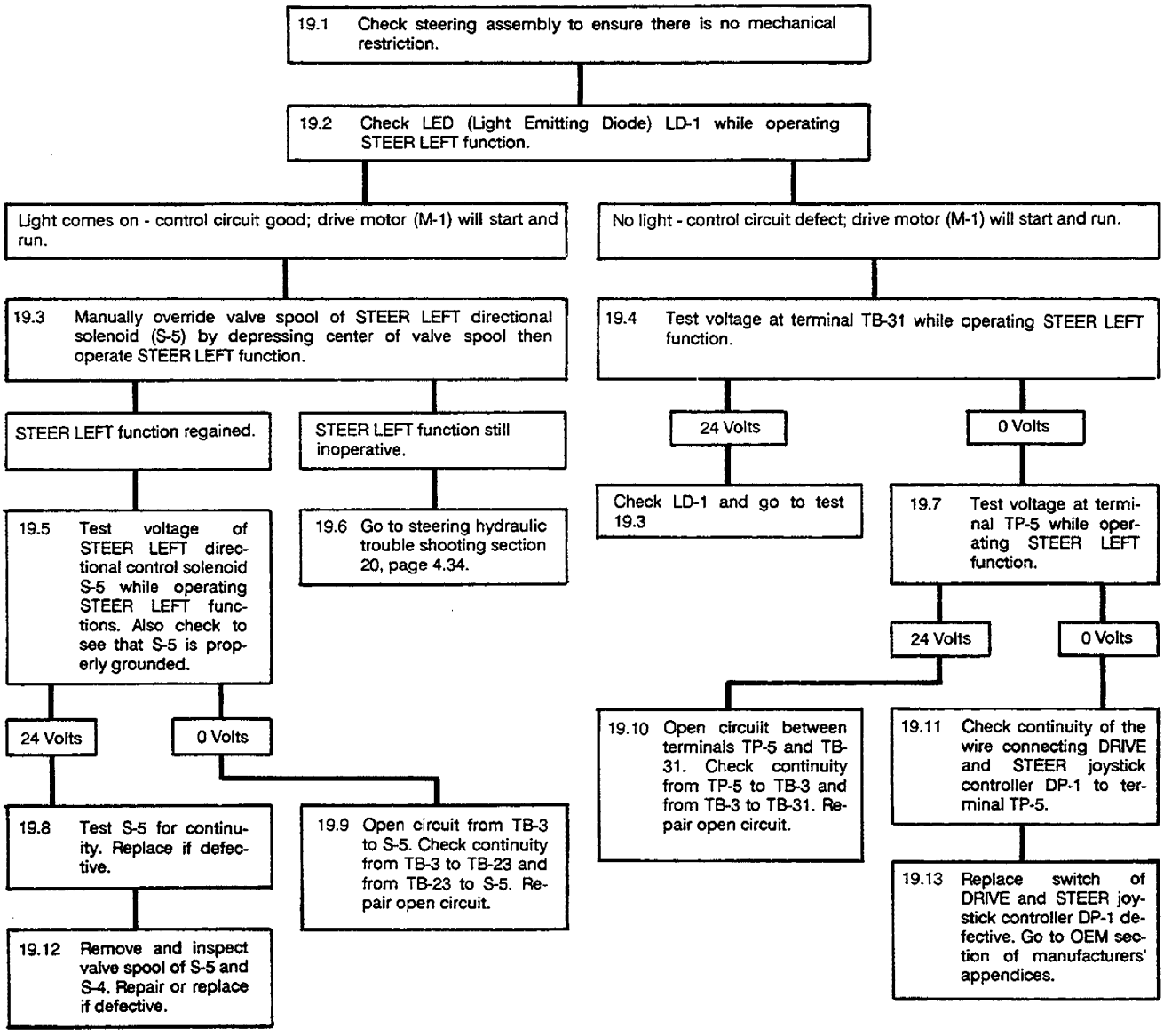
17. Platform Level Down function inoperative.



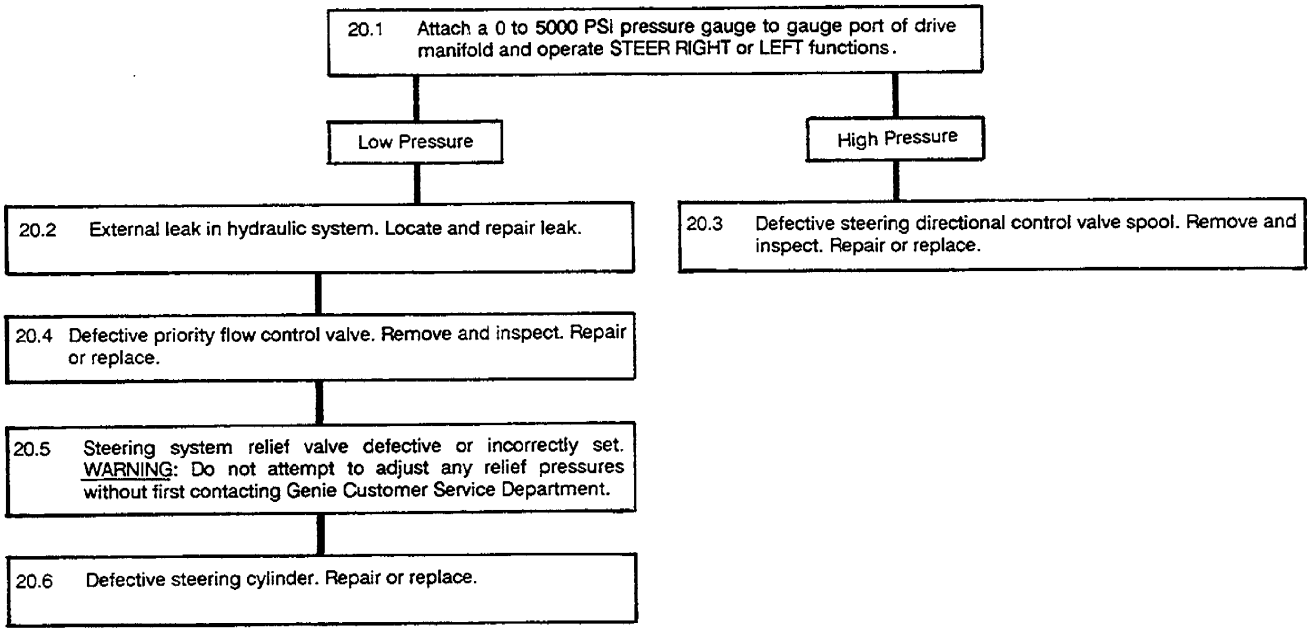
18. Steer Right function inoperative.



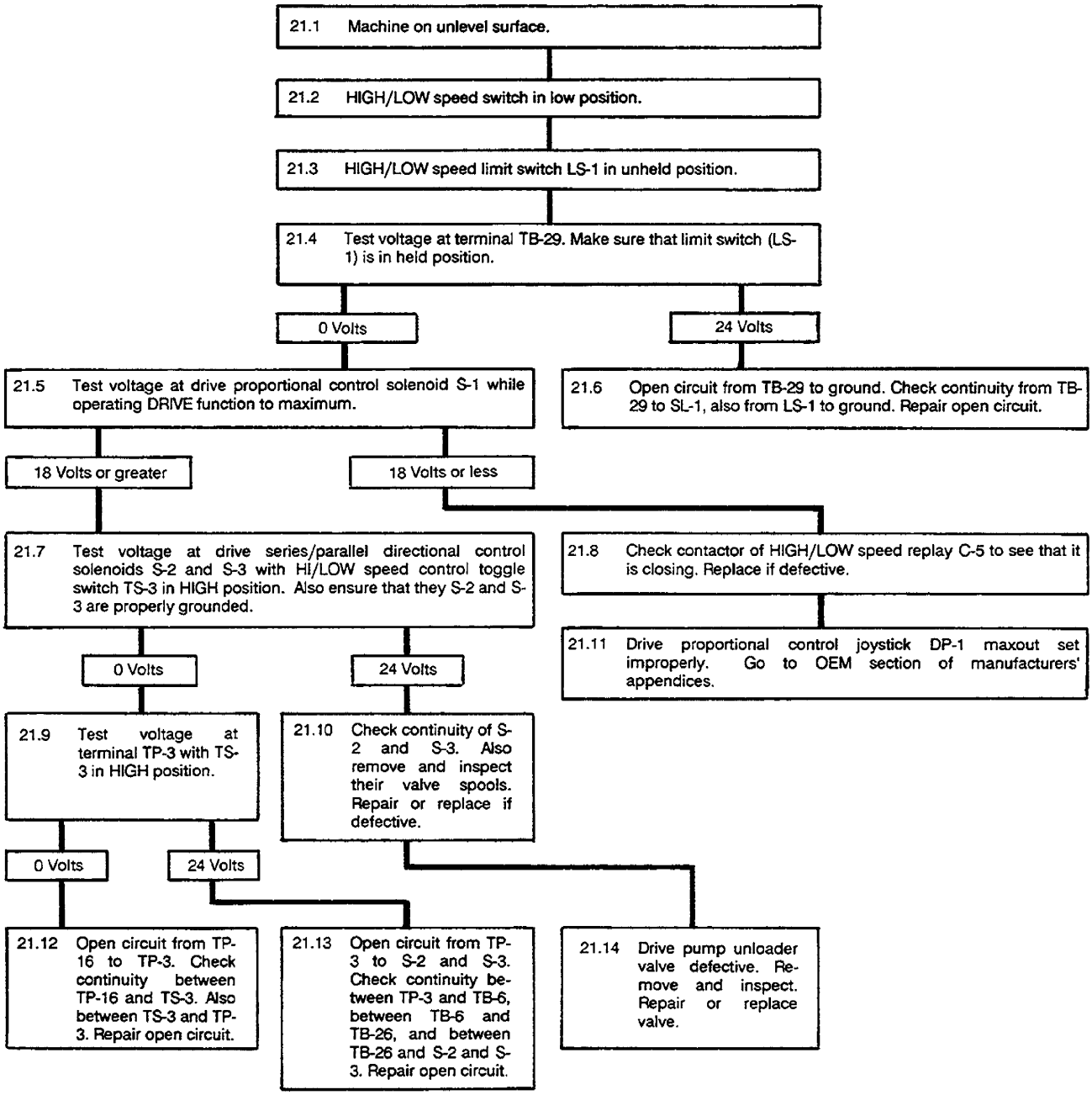
19. Steer Left function inoperative.



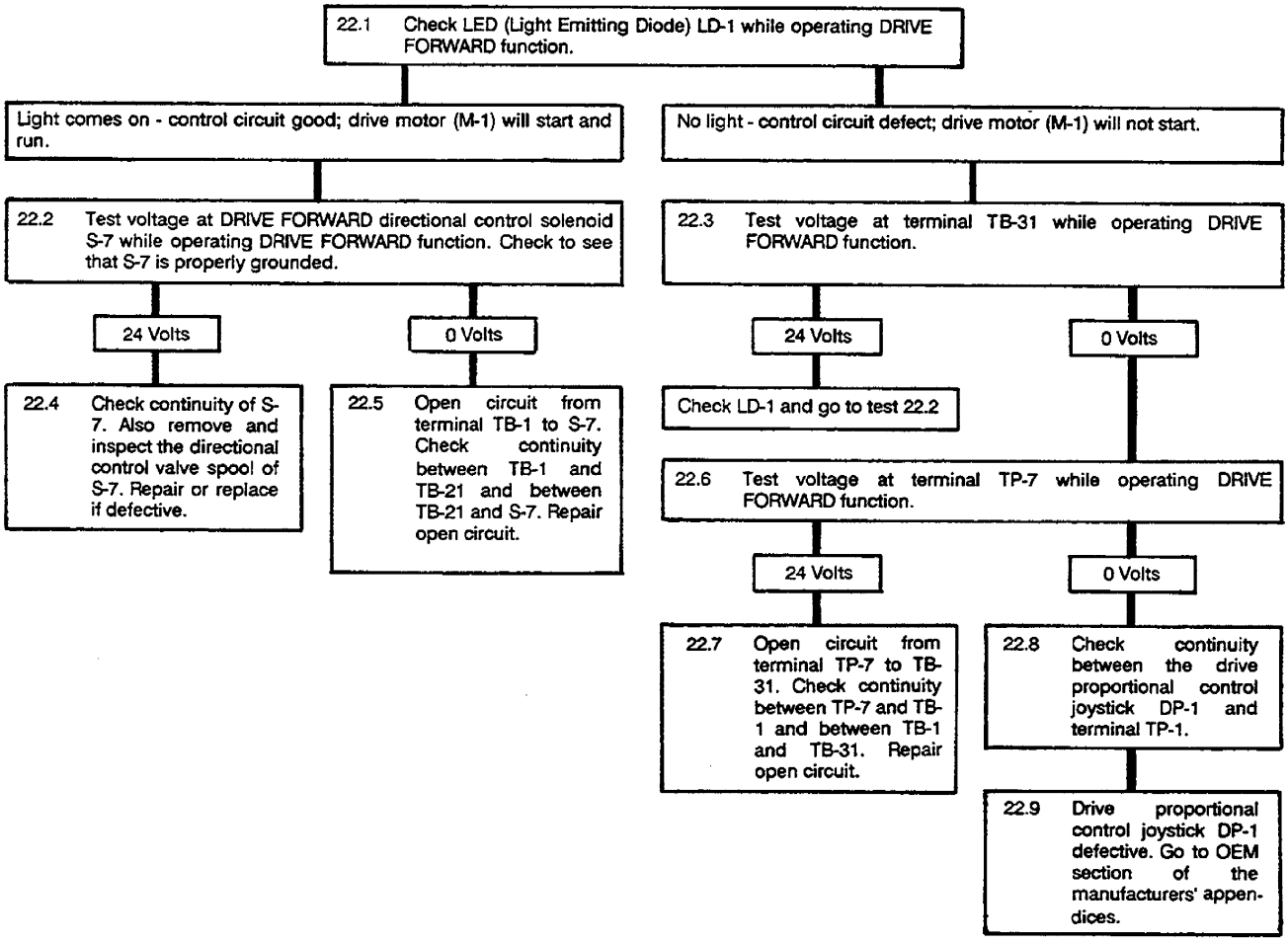
20. Steering function lost (hydraulics section).



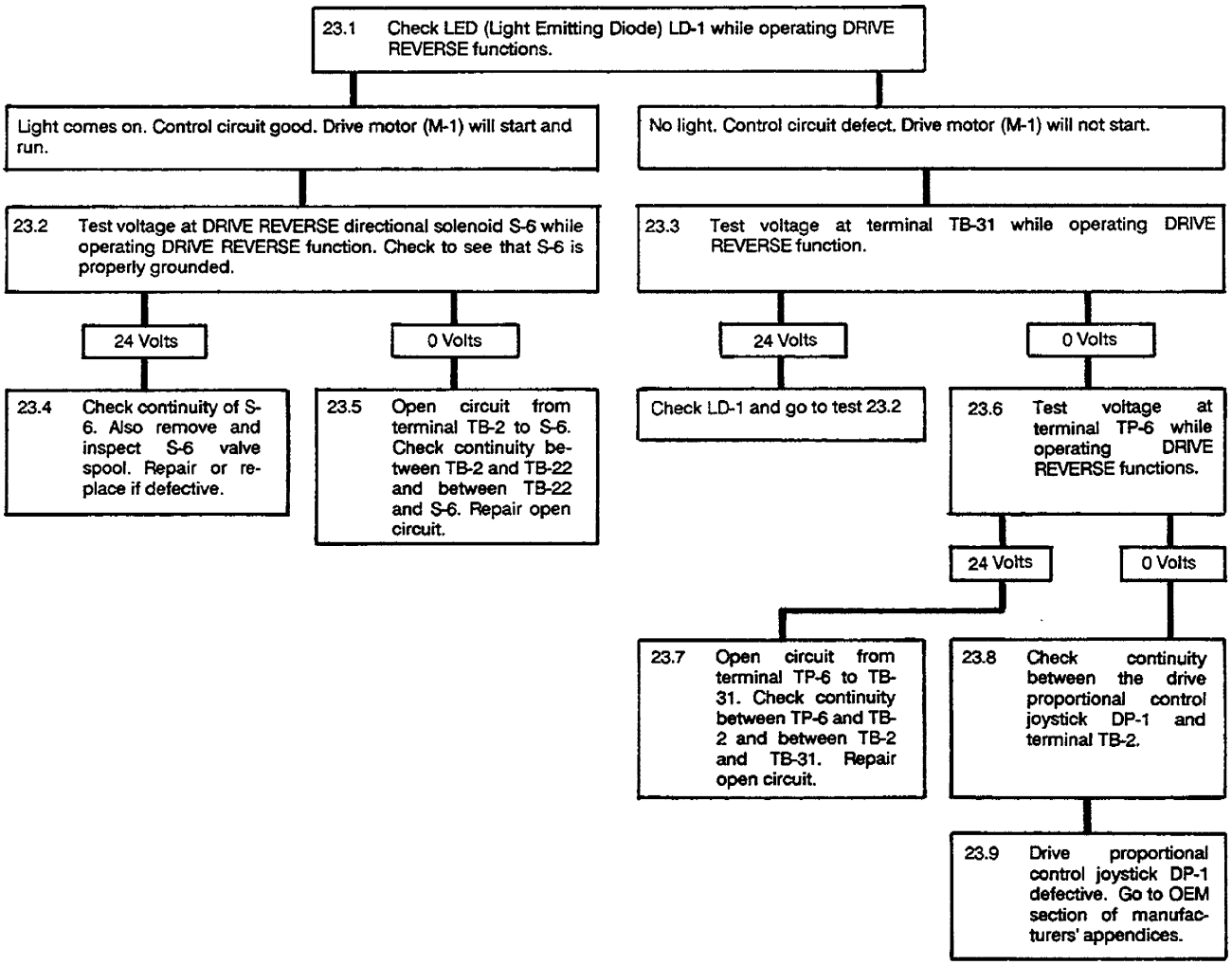
21. Machine will not drive full speed.



22. Drive forward function inoperative.



23. Drive reverse function inoperative.

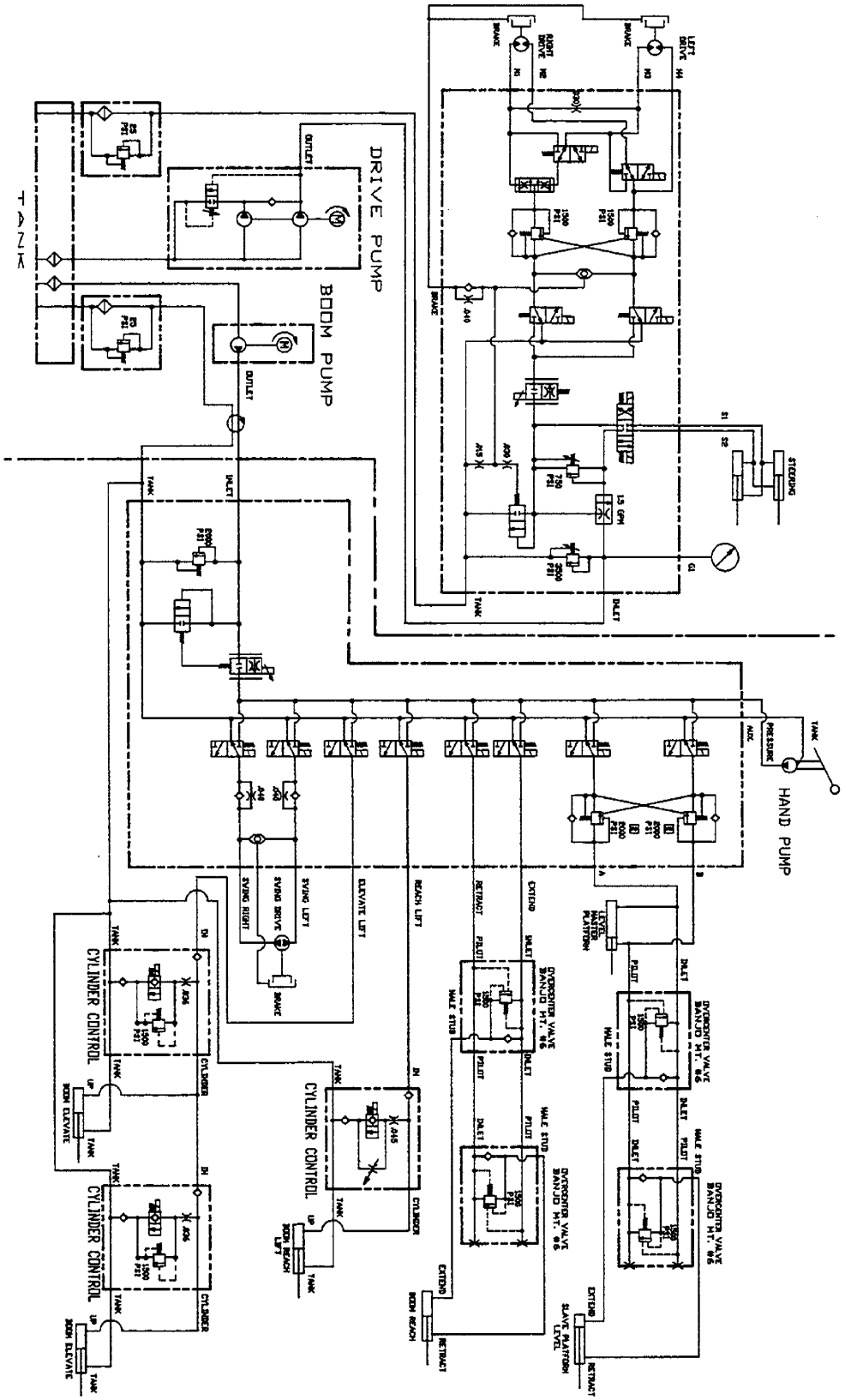


SCHEMATICS

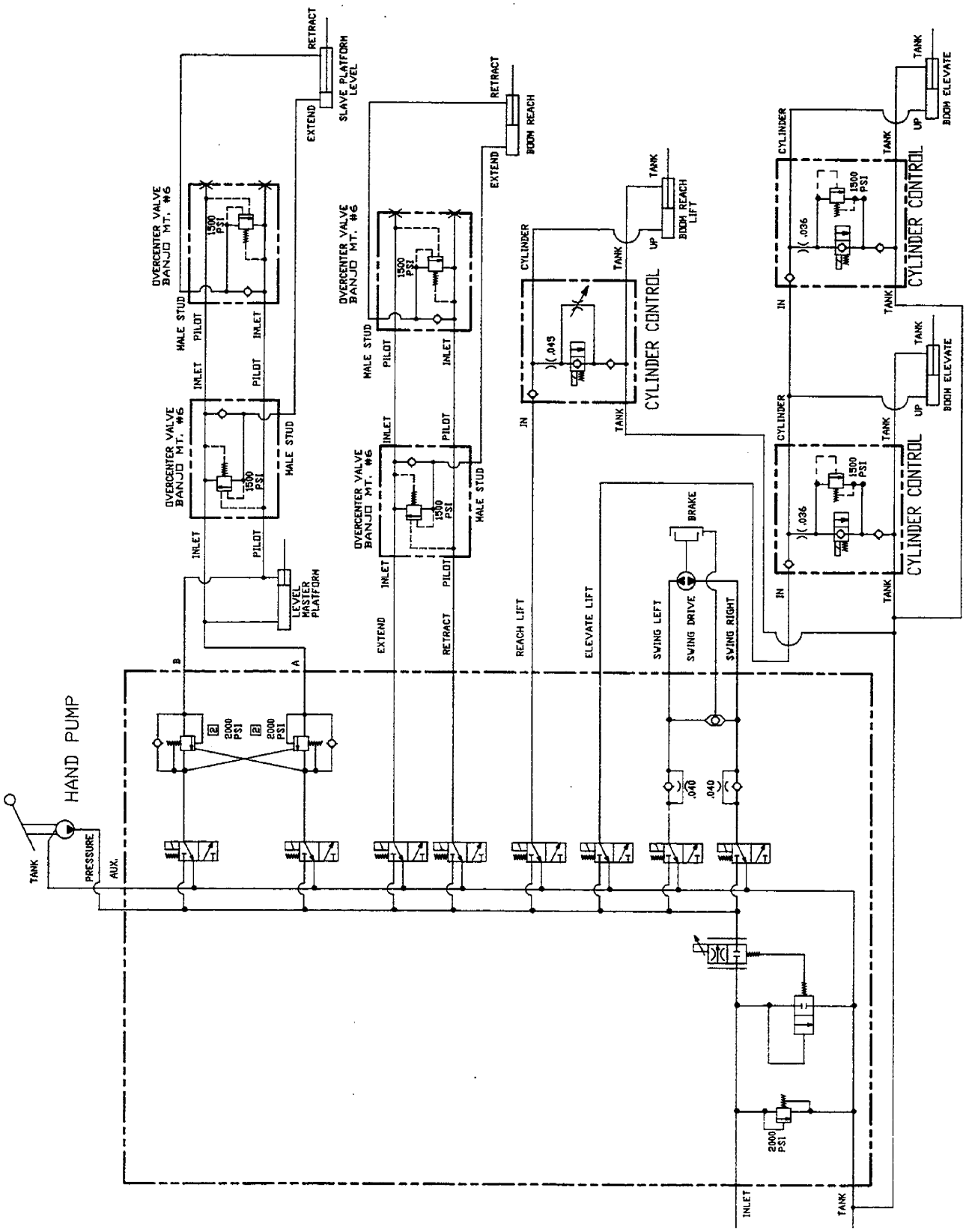
5.1 HYDRAULIC SCHEMATICS

Illustration	Description	Page
1.	Genie Boom Z-45/22 Hydraulic Schematic	5.02
2.	Boom Function Hydraulic Schematic	5.03
3.	Drive Function Hydraulic Schematic	5.04

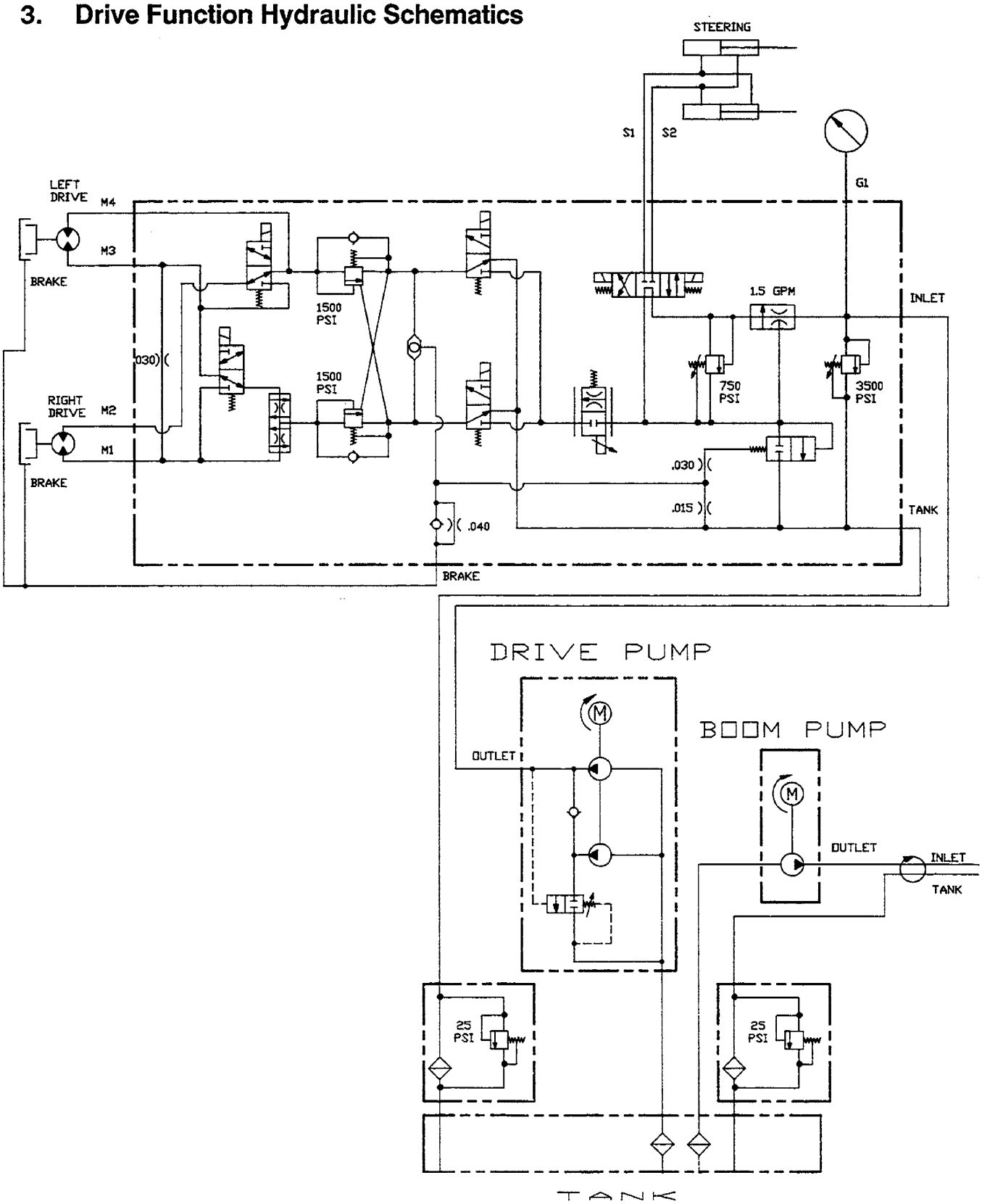
1. Genie Boom Z-45/44 Hydraulic Schematic



2. Boom Function Hydraulic Schematics



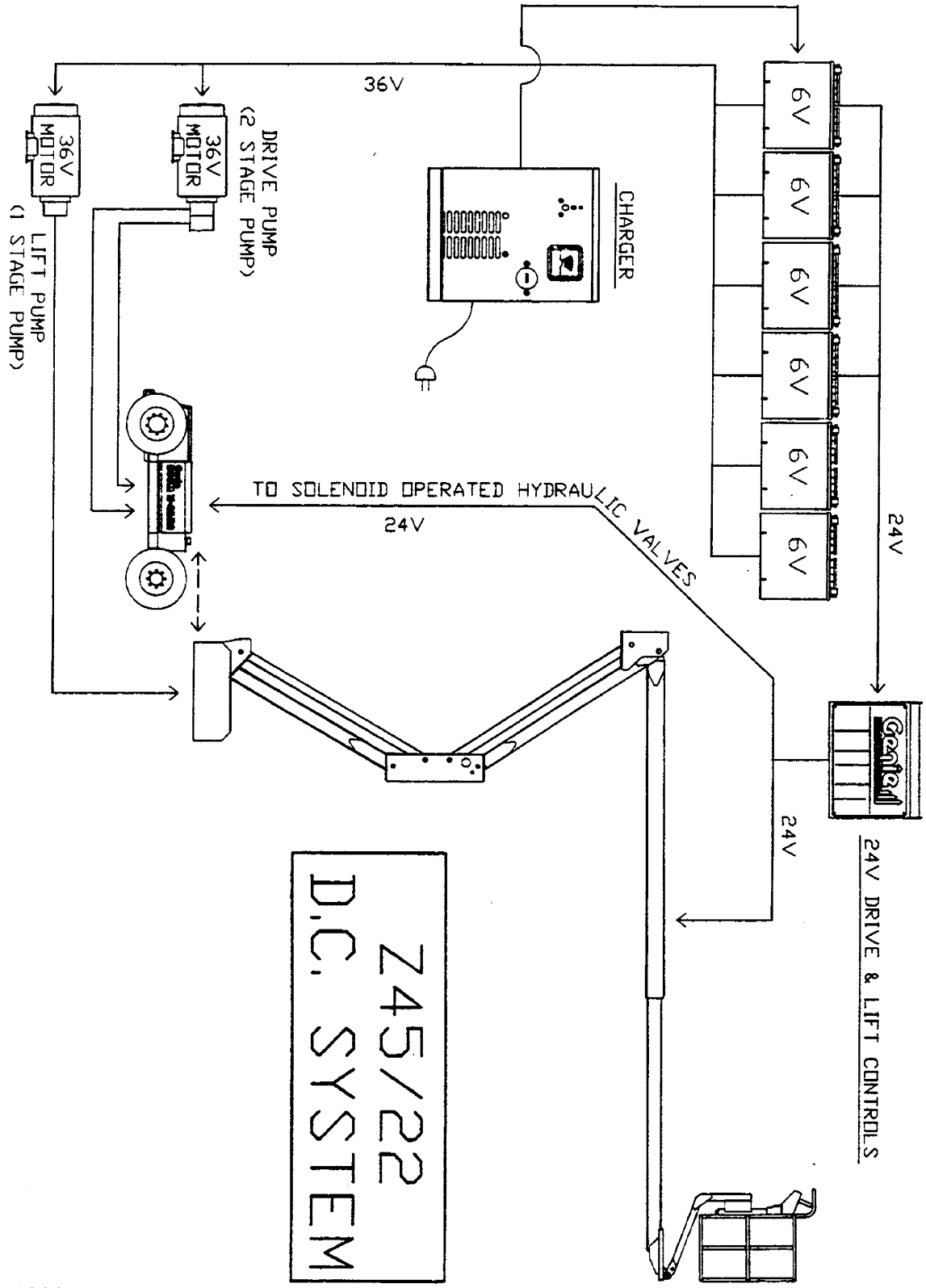
3. Drive Function Hydraulic Schematics



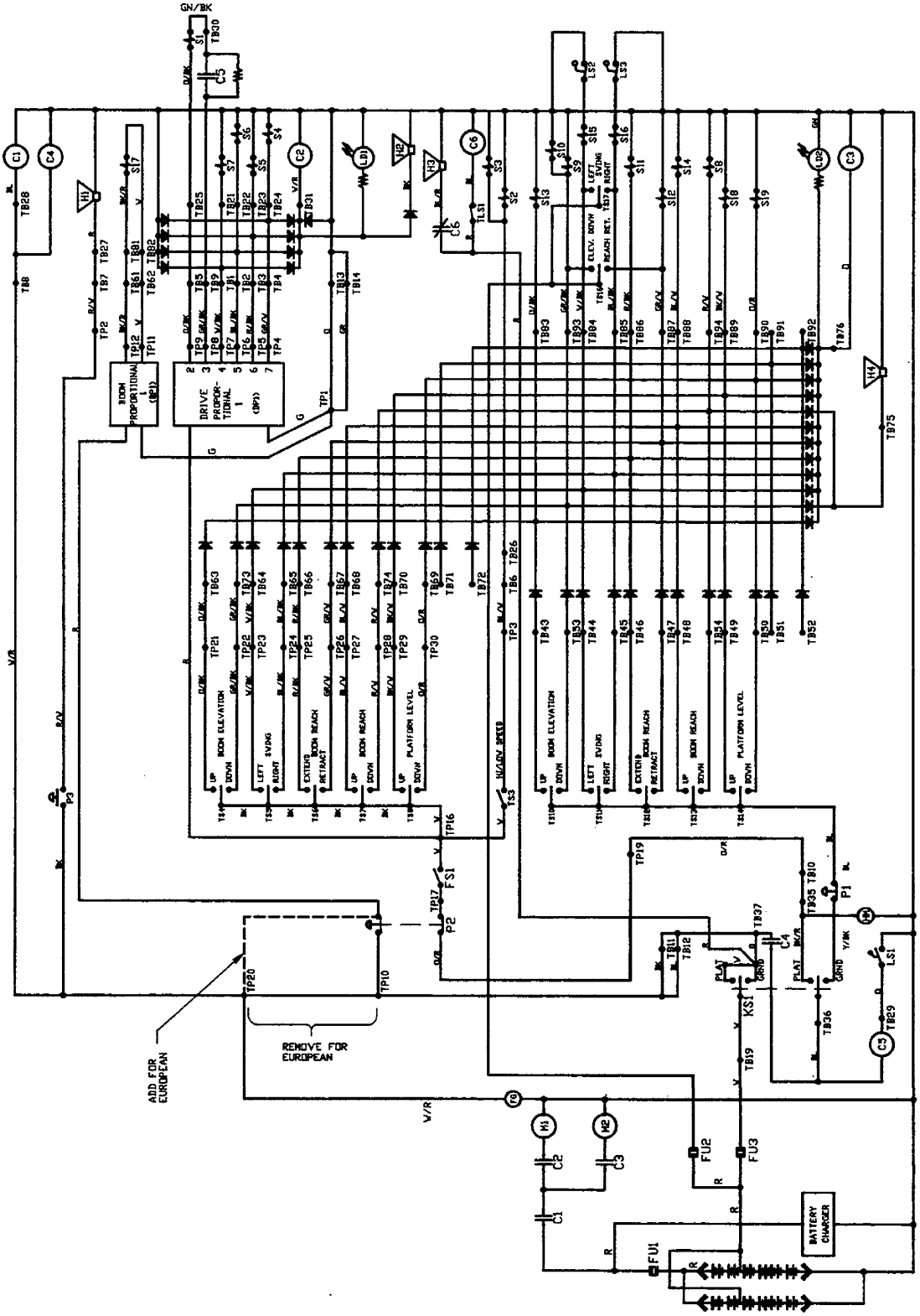
5.2 ELECTRICAL SCHEMATICS AND DIAGRAMS

Illustration	Description	Page
1.	Genie Boom Z-45/22 Electical System Overview	5.06
2.	Genie Boom Z-45/22 Electrical Schematic	5.07
3.	Genie Boom Z-45/22 Electrical Schematics Legend	5.08
4.	Genie Boom Z-45/22 Wiring Diagram	5.09
5.	Boom Functions Circuit Board Diagram	5.10
6.	Boom Functions Circuit Board Illustration	5.11
7.	Drive Functions Circuit Board Diagram	5.12
8.	Drive Functions Circuit Board Illustration	5.13

1. Genie Boom Z-45/22 Electrical System Overview

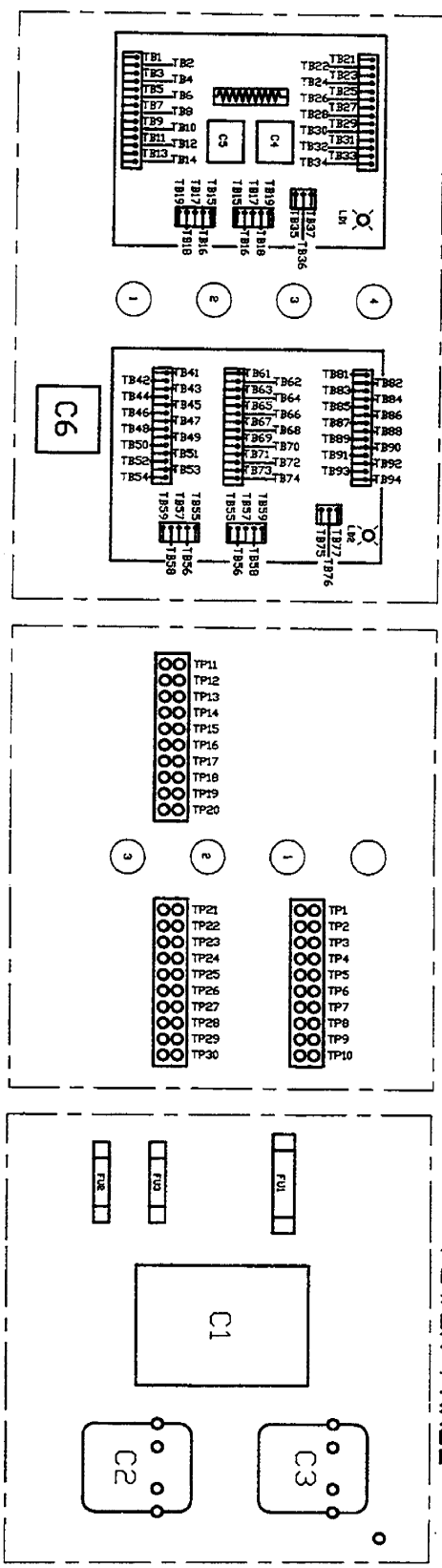


2. Genie Boom Z-45/22 Electrical Schematic

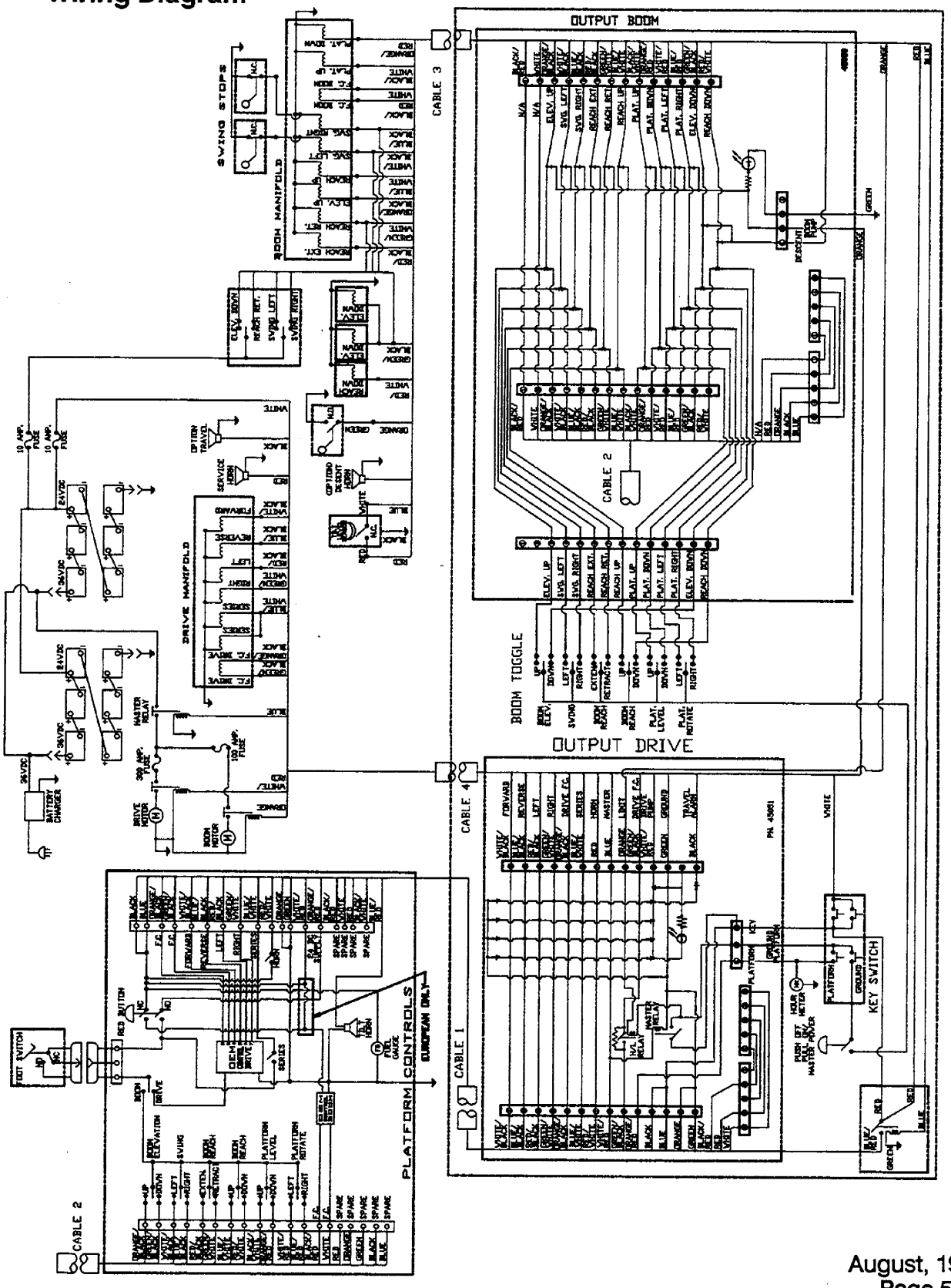


3. Genie Boom Z-45/22 Electrical Schematics Legend

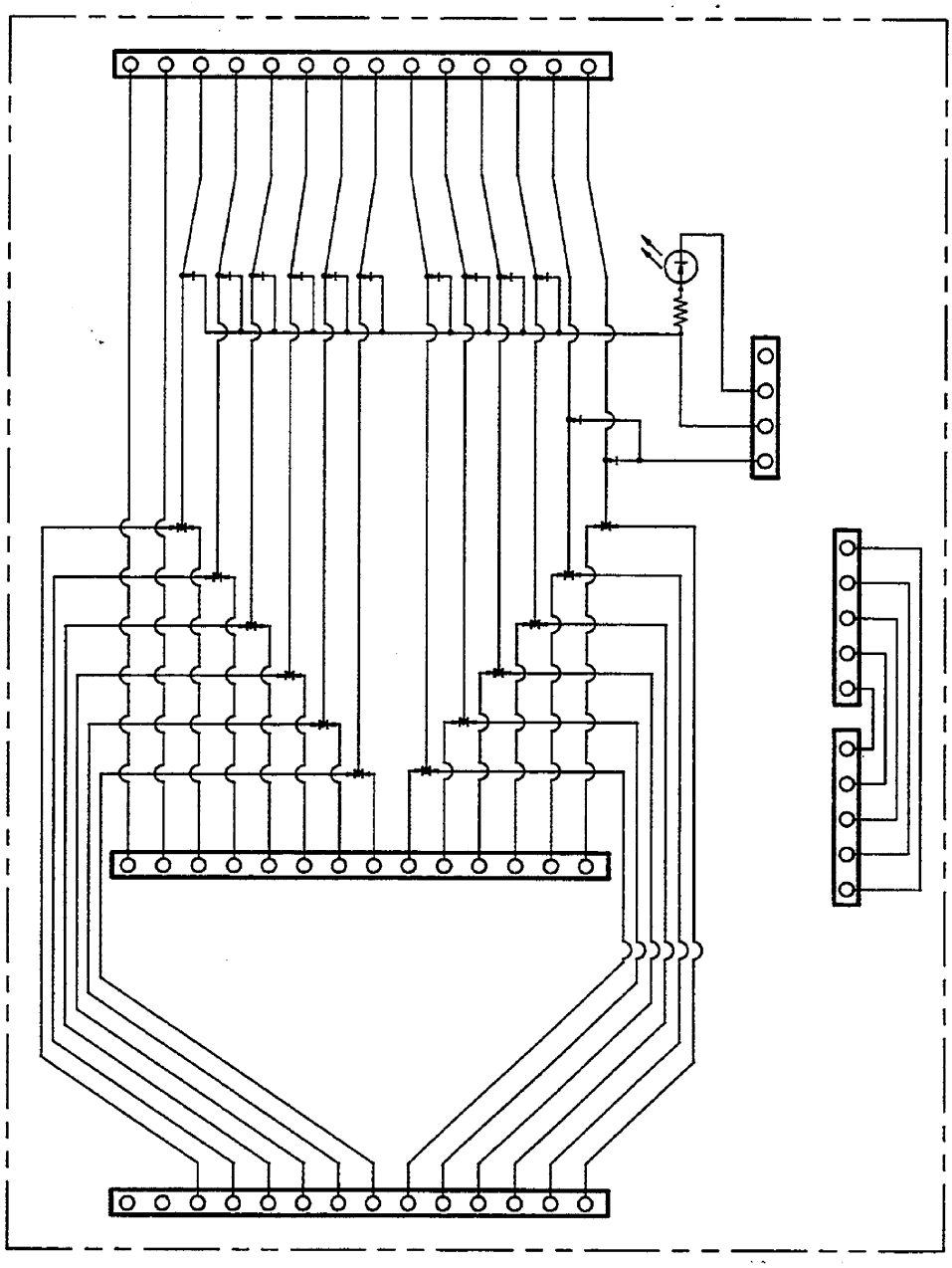
BP1	PROPORTNL CTL	OEM BOOM CONTROL	PLATFORM
C1	36V RELAY	MOTOR/PUMP MASTER	CHASSIS
C2	36V RELAY	DRIVE PUMP MOTOR START	CHASSIS
C3	36V RELAY	BOOM PUMP MOTOR START	CHASSIS
C4	24V RELAY	CONTROL ACTIVATE	CHASSIS
C5	24V RELAY	HIGH/LOW SPEED SELECTION	CHASSIS
C6	24V RELAY	TILT LEVEL RELAY (NC)	CHASSIS
DP1	PROPORTNL CTL	OEM DRIVE & STEERING CONTROL	PLATFORM
FG	GAGE	BATTERY CHARGE INDICATOR	PLATFORM
FS1	FOOT SWITCH	POWER ON/OFF	PLATFORM
FU1	300 AMP FUSE	MASTER FUSE	CHASSIS
FU2	10 AMP FUSE	AUXILIARY BOOM CIRCUIT	CHASSIS
FU3	10 AMP FUSE	CONTROL CIRCUIT	CHASSIS
H1	HORN	SERVICE HORN	CHASSIS
H2	HORN	TRAVEL ALARM (OPTIONAL)	CHASSIS
H3	HORN	TILT LEVEL INDICATOR	CHASSIS
H4	HORN	DESCENT HORN (OPTIONAL)	CHASSIS
HM	HOUR METER	RUNNING HOURS	CHASSIS
KS1	KEY SWITCH	CHOOSE CONTROL LOCATION	CHASSIS
LD1	LED	DRIVE FUNCTIONS	CHASSIS
LD2	LED	BOOM FUCTIONS	CHASSIS
LS1	LIMIT SWITCH	BOOM ELEV.VS.SPEED (SHOWN W/BOOM UP)	CHASSIS
LS2	LIMIT SWITCH	SWING STOP	BOOM
LS3	LIMIT SWITCH	SWING STOP	CHASSIS
M1	MOTOR	DRIVE PUMP	CHASSIS
M2	MOTOR	BOOM PUMP	CHASSIS
P1	PALM SWITCH	POWER ON/OFF	CHASSIS
P2	PALM SWITCH	POWER ON/OFF	CHASSIS
P3	PALM SWITCH	HORN	PLATFORM
S1	SOLENOID	DRIVE PROPORTIONAL SOLENOID	PLATFORM
S2	SOLENOID	DRIVE SERIES MODE	CHASSIS
S3	SOLENOID	DRIVE SERIES MODE	CHASSIS
S4	SOLENOID	STEER RIGHT	CHASSIS
S5	SOLENOID	STEER LEFT	CHASSIS
S6	SOLENOID	TRAVEL REVERSE	CHASSIS
S7	SOLENOID	TRAVEL FORWARD	CHASSIS
S8	SOLENOID	BOOM REACH DOWN	CHASSIS
S9	SOLENOID	BOOM ELEVATE DOWN	CHASSIS
S10	SOLENOID	BOOM ELEVATE DOWN	CHASSIS
S11	SOLENOID	BOOM REACH EXTEND	CHASSIS
S12	SOLENOID	BOOM REACH RETRACT	CHASSIS
S13	SOLENOID	BOOM ELEVATE UP	CHASSIS
S14	SOLENOID	BOOM REACH UP	CHASSIS
S15	SOLENOID	BOOM SWING LEFT	CHASSIS
S16	SOLENOID	BOOM SWING RIGHT	CHASSIS
S17	SOLENOID	BOOM PROPORTIONAL SOLENOID	CHASSIS
S18	SOLENOID	PLATFORM LEVEL UP	CHASSIS
S19	SOLENOID	PLATFORM LEVEL DOWN	CHASSIS
TB1-TB14	TERMINALS	INPUT TERMINALS P/N 45051	CHASSIS
TB35-TB37	TERMINALS	OUTPUT TERMINALS P/N 45051	CHASSIS
TB41-TB54	TERMINALS	INPUT TERMINALS P/N 45050	CHASSIS
TB61-TB74	TERMINALS	INPUT TERMINALS P/N 45050	CHASSIS
TB75-TB77	TERMINALS	OUTPUT TERMINALS P/N 45051	CHASSIS
TB81-TB94	TERMINALS	OUTPUT TERMINALS P/N 45050	CHASSIS
TP21-TP34	TERMINALS	OUTPUT TERMINALS-PLATFORM CONTROL	PLATFORM
TP1-TP14	TERMINALS	INPUT/OUTPUT TERMINALS-PLATFORM	PLATFORM
TLS1	LEVEL SWITCH	3.5 DEG. TILT LEVEL INDICATOR, (NC)	CHASSIS
TS3	TOGGLE SWITCH	HIGH/LOW SPEED SELECTION	PLATFORM
TS4	TOGGLE SWITCH	BOOM ELEV. UP/DOWN	PLATFORM
TS5	TOGGLE SWITCH	BOOM SWING LEFT/RIGHT	PLATFORM
TS6	TOGGLE SWITCH	BOOM REACH EXTEND/RETRACT	PLATFORM
TS7	TOGGLE SWITCH	BOOM REACH UP/DOWN	PLATFORM
TS8	TOGGLE SWITCH	PLATFORM LEVEL UP/DOWN	PLATFORM
TS10	TOGGLE SWITCH	BOOM ELEV. UP/DOWN	CHASSIS
TS11	TOGGLE SWITCH	BOOM SWING LEFT/RIGHT	CHASSIS
TS12	TOGGLE SWITCH	BOOM REACH EXTEND/RETRACT	CHASSIS
TS13	TOGGLE SWITCH	BOOM REACH UP/DOWN	CHASSIS
TS14	TOGGLE SWITCH	PLATFORM LEVEL UP/DOWN	CHASSIS
TS16	TOGGLE SWITCH	AUX. CONTROLS ELEV. DWN/REACH RETR.	CHASSIS
TS17	TOGGLE SWITCH	AUX.CONTROLS SWING LEFT/SWING RT.	CHASSIS



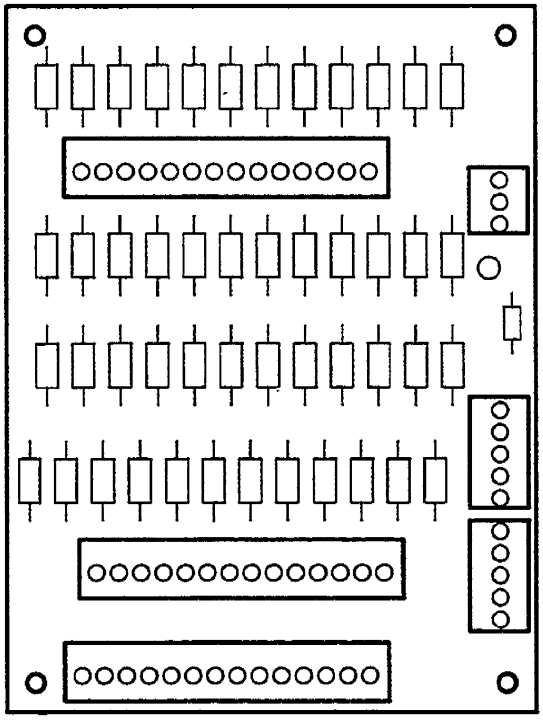
4. Genie Boom Z-45/22 Wiring Diagram



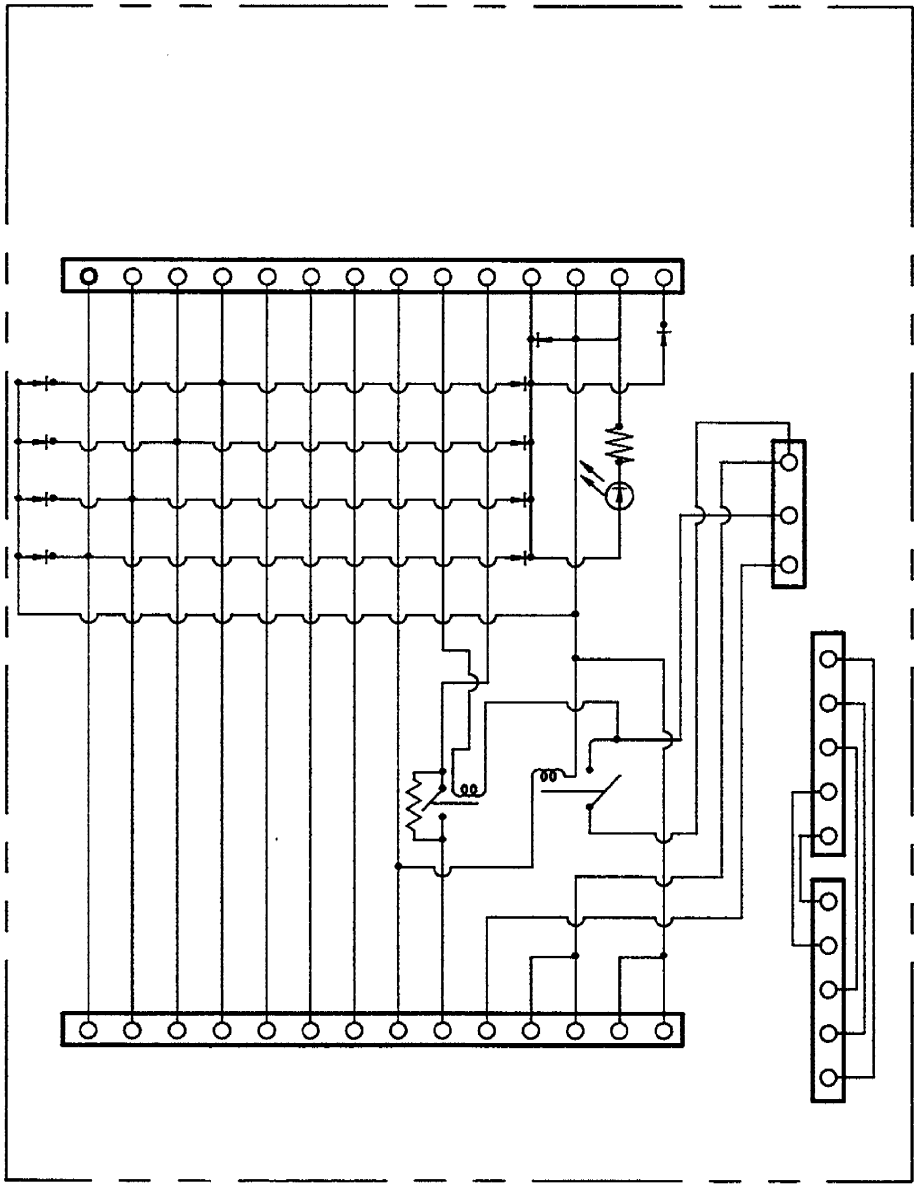
5. Boom Functions Circuit Board Diagram



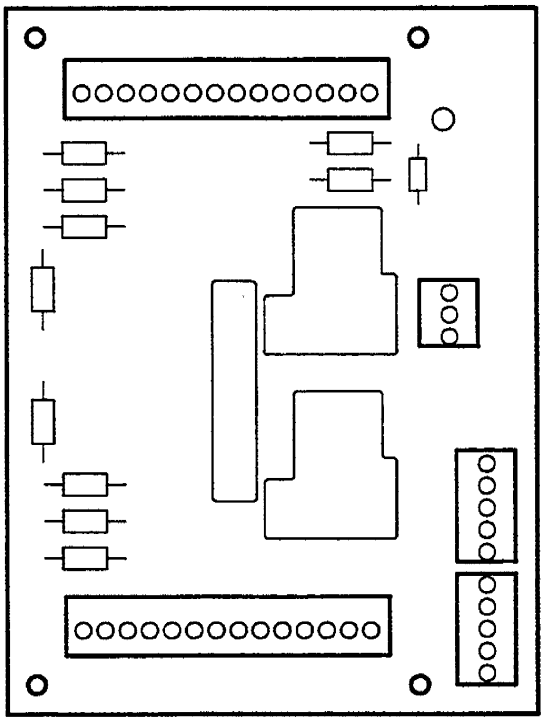
6. Boom Functions Circuit Board Illustration



7. Drive Functions Circuit Board Diagram



8. Drive Functions Circuit Board Illustration



APPENDICES

6.1 COMPONENT LIST FOR GENIE BOOM Z-45/22

Component	Description
DRIVE SYSTEM	
Drive gear box	18.25:1 double planetary gear box, W-1 Series
Drive brake	Spring-applied hydraulically released brake
Drive hydraulic motor	3.6 cu. in. (Internally Generated Rotor), 110 Series
Wheel/tire	9 x 14.5LT 12 ply tubeless pneumatic
Swing drive gear box	4.1:1 single planetary gear box, SO-7 Series
Swing brake	Spring applied hydraulically released brake (same as drive)
Swing hydraulic motor	16.4 cu. in. (Internally Generated Rotor), 110 Series
Steering cylinders	Dual, parallel plumbed, 2" bore x 6" stroke
Swing chassis bearing	External gear, ball thrust bearing, 18" diameter
ELEVATING SYSTEM	
Dual, parallel elevate cylinders	Dual, parallel plumbed, 2-1/2" bore x 28" stroke
Manifold assembly - cylinders	Lift cylinder control valves, cylinder mounted
Pivot bearings	Teflon filled glass composite (no lube)
Pivot pins	Hard chrome plated and ground, high strength steel

Component	Description
HYDRAULIC SYSTEM	
Control valves	24V DC, solenoid operated
Hydraulic hose	SAE-100R7 (thermal plastic)
Manifold assembly - boom	Integrated hydraulic module
Manifold assembly - drive	Integrated hydraulic module
Manifold assembly - cylinders	Lift cylinder control valves, cylinder mounted
Drive power unit	2-stage unloading, 10 GPM, 3,000 psi
Lift power unit	Single gear pump, 1-1/2 GPM, 2,000 psi
Oil filters	Full flow 10 micron return line filter
ELECTRICAL SYSTEM	
Drive controller	Pulse-width modulation, variable current, 130 HZ "joystick with steering rocker switch"
Boom speed controller	Pulse-width modulation, variable current, 130 HZ dither, friction retained knob
Boom function logic board	Printed circuit board with diode logic signal and L.E.D. diagnostics
Drive system logic board	Printed circuit board with diode and relay logic with L.E.D. diagnostics
Boom function switches	Single pole double throw toggle, hermetically sealed
Key and master power switches	Single switch and contact block actuator assemblies, positive opening contact system
Control cables	Dual 19 conductor 18 gauge vinyl jacketed U.V. protected

Component	Description
ELECTRICAL SYSTEM (cont.)	
Battery charger	115V AC 15 amp input, 36V DC 40 amp output, auto "on" and "off"
Batteries	Dual battery packs. (12) 6V deep draw batteries per pack, case size GC2H, 250 amp hr.
Battery pack connectors	3-wire disconnect, 175 amp 600V
Limit switches	Roller arm, sealed housing
Level sensor	Multi-axis tilt sensor, 3-1/2 degree trip angle w/1 second time delay
REACH SYSTEM	
Reach lift cylinder	4" bore x 24" stroke
Manifold assembly - cylinders	Lift cylinder control valve, cylinder mounted
Reach extend cylinder	2-1/2" bore x 105" stroke
Manifold assembly - overcenter	Dual overcenter load holding valves, cylinder mounted
Master slave platform leveling cylinder	2-1/2" bore x 4-3/4" stroke
Manifold assembly - overcenter	Dual overcenter load holding valves, cylinder mounted
Pivot bearings	Teflon filled glass composite (no lube)
Pivot pins	Hard chrome plated and ground, high strength steel



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(from serial number 4587-124 to 4592-3600)



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