

OWNER'S MANUAL

BG E-STEP SEMI ELECTRIC ACCESS VEHICLE



ACTUAL PRODUCT MAY NOT APPEAR EXACTLY AS SHOWN



WARNING

Do not operate or service this product unless you have read and fully understand the entire contents of this manual. Failure to do so may result in property damage, bodily injury or death.

BLUE GIANT[®]

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WARNING

Do not operate this vehicle unless you have been authorized and trained to do so, and have read all warnings and instructions in Operator's Manual and on this vehicle. Read, understand and comply with the information on the vehicle's nameplate at all times.

Do not operate this vehicle until you have performed the daily operation's check list. Verify and inspect tires, horn, battery, controller, lift and hydraulic systems, brakes, steering mechanism and guards. Verify that all emergency controls, personal protection and safety devices are in place and functioning correctly and ensure the vehicle is free of fluid leaks and has no loose or missing parts. Report any problems to the designated authority and do not use the vehicle until they are corrected by a qualified mechanic.

This vehicle must not be modified without the manufacturer's consent. Components critical to the vehicles stability such as batteries shall not be replaced with lighter weight components.

Operate vehicle only from designated platform operating position. Use this vehicle indoors on level surfaces only. Never operate on ramps and slopes or uneven floors. This vehicle is not for use on mezzanines or balcony areas. Before operating, inspect the floor area it will be used on and be certain it will support the vehicle at full capacity and lift height. Identify and avoid holes, drop-offs, bumps and obstructions.

Before and during all vehicle operations ensure that adequate clearance is maintained from overhead obstructions and energized electrical conductors and parts.

Before elevating platform be sure access gates are in position. Keep feet on platform floor at all times while using vehicle, never climb onto access gates or platform shelf. Do not use ladders, planks or other devices to achieve additional height on platform.

When transferring loads to platform or platform shelf, do not exceed capacity ratings on vehicle nameplate. Ensure loads are centered and do not contact any obstructions in the vehicle's vicinity. Do not stabilize the platform by contact with adjacent objects such as racks or shelving. Do not use the platform as a crane.

Take care to prevent electrical cords, hoses or other equipment from entangling in platform. Ensure area surrounding the vehicle is free of personnel and equipment before lowering platform.

Maintain a clear view of the ground while travelling and a safe distance from obstacles in the vehicle or platform's path. Ensure personnel in the vicinity are aware of the vehicle's movement. Travel at a safe speed for the conditions the vehicle is operating in.

Observe applicable traffic regulations. Yield right of way to pedestrians. Slow down and sound horn at cross aisles and wherever vision is obstructed. Avoid hazardous locations.

Enter and exit platform only through open access gates and with the platform fully lowered and vehicle stopped. When leaving vehicle unattended, remove key to prevent unauthorized use.

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SECTION 1 DESCRIPTION

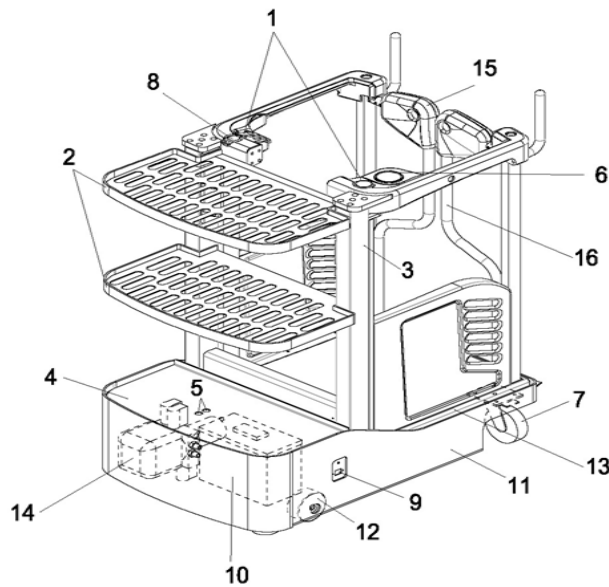
1-1. INTRODUCTION.

This publication describes the 24 volt BG E-Step Semi-Electric Access Vehicle by Blue Giant. Included are planned maintenance instructions, lubrication procedures, cor-rective maintenance procedures and a complete parts list with part location illustrations.

Users shall comply with all requirements indicated in applicable OSHA standards and the current edition of A.N.S.I. A92.6. By following these requirements and the recommendations contained in this manual, you will receive many years of dependable service from your BG E-Step Semi-Electric Access Vehicle.

1-2. GENERAL DESCRIPTION.

The self-propelled BG E-Step Semi-Electric Access Vehicle Electric Access Vehicle lifts and transports up to 750 pounds capacity including load and operator. The vehicle enables general maintenance work and effi-cient selection and moving of materials in any area or at any level of the warehouse or storeroom. This vehi-cle is not for use on mezzanines or balcony areas. The design permits one man to perform all operations of selecting stock, driving vehicle, and replacing the stock at the designated place. The battery-powered vehicle is quiet and allows operation in closed areas without special provisions for ventilation.

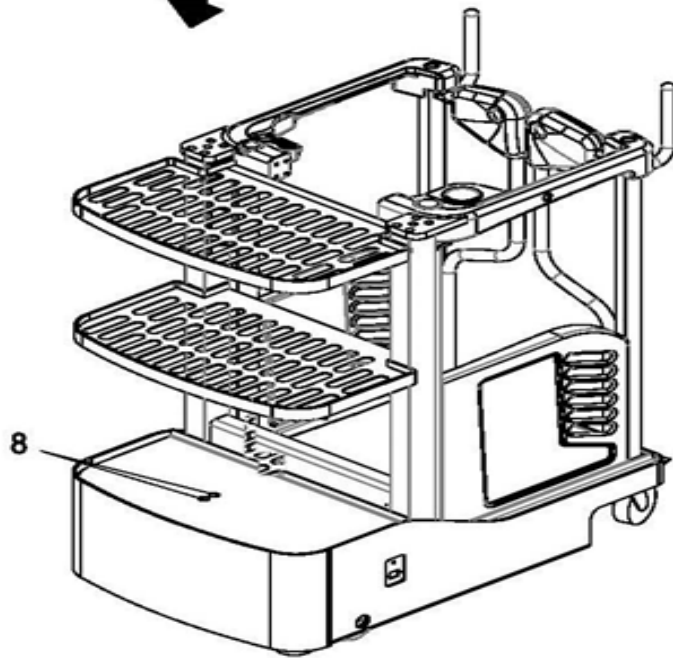
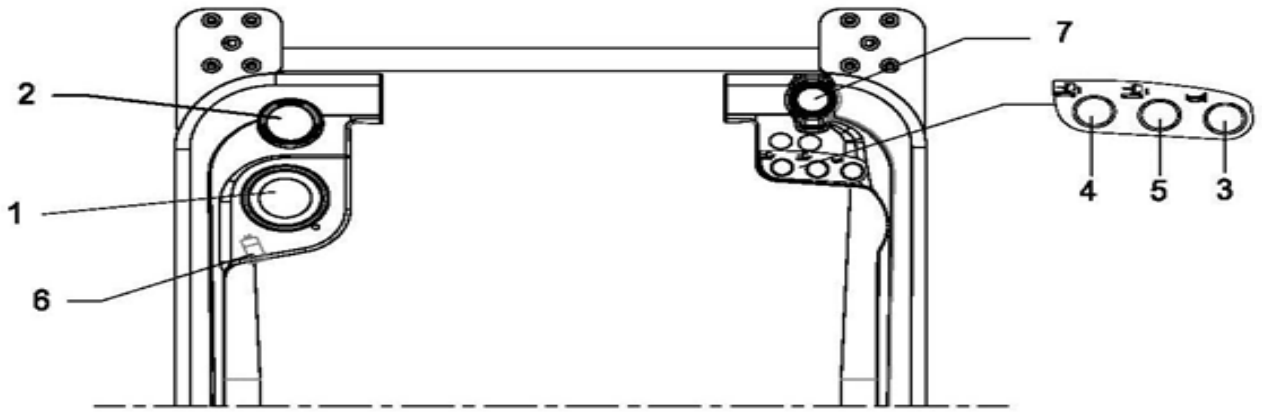


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Figure 1-1 BG E-Step Elevating Work Platform

ITEM	COMPONENT
1	Control panels
2	Storage tray
3	Lift mast
4	Cover plate
5	Emergency "Lowering" button
6	Cup holder
7	Casters
8	Emergency stop switch
9	Charger socket

ITEM	COMPONENT
10	Battery
11	Frame
12	Load wheels
13	Operator platform
14	Hydraulic pump assembly
15	Gate Pads
16	Access gates



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Figure 1-2

ITEM	CONTROL / DISPLAY	FUNCTION
1	Cup holder	Storage
2	Battery discharge indicator	Display battery power level.
3	Horn Button	Activates the horn.
4	Lift Button	Lift the operator platform.
5	Lowering Button	Lower the operator platform.
6	Key switch	Switches control current on and off. Removing the key prevents the access vehicle from being switched on by unauthorized personnel.
7	Emergency stop switch	Disconnects the supply current, deactivates all electrical functions, causing the access vehicle to brake automatically.
8	Emergency lowering button	Lower the operator position manually.

The motor propels the vehicle in forward or reverse direction. The vehicle can be driven with the platform raised or lowered; however the speed is restricted above 20”.

On demand power steering makes the vehicle highly maneuverable.

The control arms are used to operate the work vehicle and provide operator safety.

The pick tray is used to place and transport merchandise, equipment and tools.

The operator platform contains the “Deadman” footswitch which must be depressed for the vehicle to operate.

1-3. DATA PLATE AND WARNING DECAL.

Warning decals are located on the mast cover. The name plate is mounted on the center of the mast cover.

If the data plate or warning decals are lost or damaged they MUST be replaced immediately. Have your supervisor or the designated authority contact Blue Giant Authorized Dealer for replacement.

The data plate shows the model, serial number, capacity, lift height, vehicle weight and minimum battery weight. See [Figure 1-3](#).

1-4. INSTALLATION / WARRANTY CHECK LIST.

The Blue Giant Installation and Warranty Registration Reports are used to initiate the start of the warranty period to the original end user.

This report also serves as documentation that all items on the Installation and Warranty Registration Report were reviewed and discussed with the end user prior to taking receipt of the equipment.

This report must be completed and returned to Blue Giant within fifteen (15) days of receipt of equipment. (See “” for a copy of the form, also available at www.bigjoesupport.com)

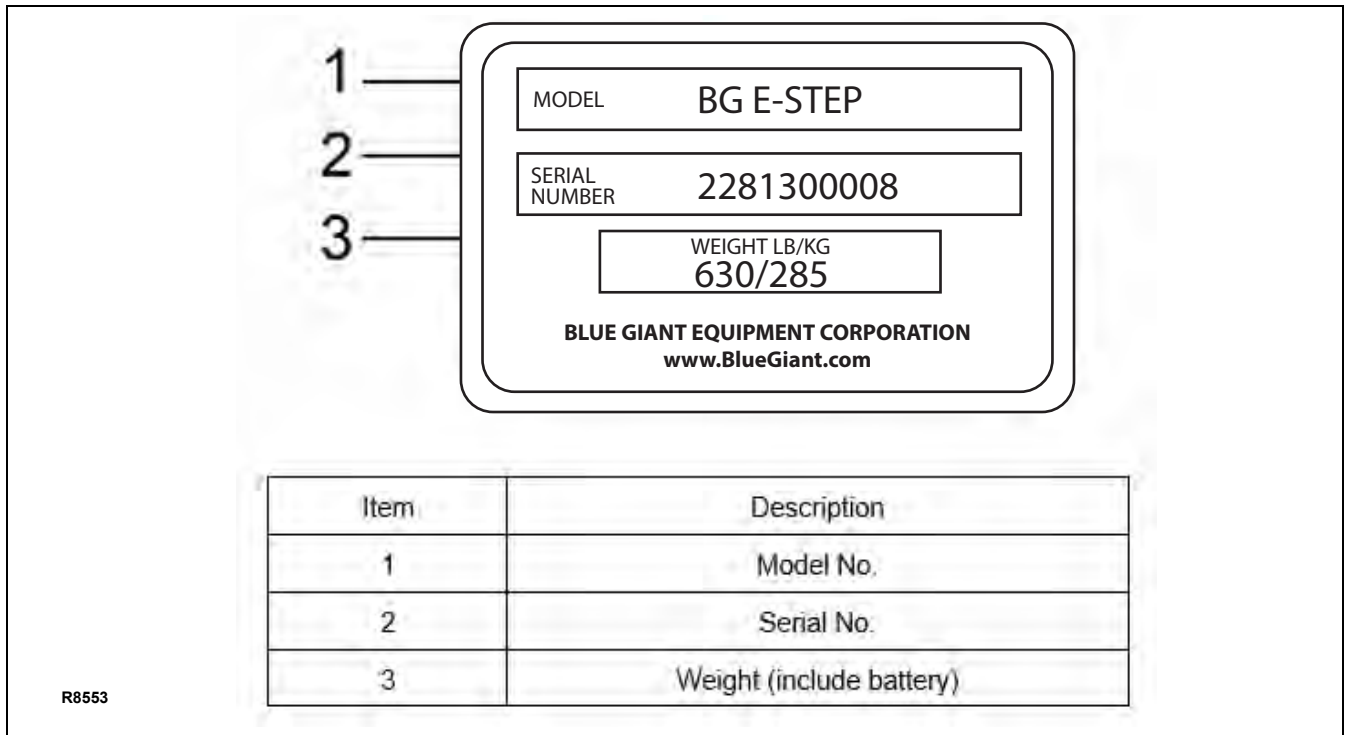


Figure 1-3 Data Plate



Warranty Claim Form

ATTN: WARRANTY MANAGER Email: customersupport@bluegiant.com

Dealer ID #	Dealer Name	Claim Form Date (MM/DD/YYYY)	
Has Unit Been Maintained / Lubricated as Specified in Accordance with Owner's Manual?			
Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Equipment Model #	Serial #	Customer	
Date of Equipment Sale (MM/DD/YY)	Hour Meter Reading	Customer Address	
Equipment Purchase Invoice #	Dealer Repair Order #	City / State / Province	
Submitted By (Print Full Name)	Title	Zip / Postal Code	
Phone:	Fax:	Email:	
Labor Total Hours:	Rate:	Labor Total: \$	Start Date (MM/DD/YY)
Travel Total Hours:	Rate:	Labor Total: \$	Start Date (MM/DD/YY)
Description of Fault:			
Nature of Fault:			
Corrective Procedure (Full Details Required, Incomplete Information will Delay Process)			

Blue Giant Part #	Part Description	QTY.	Blue Giant Replacement Part(s) Invoice Number(s)	Price	Total
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
Freight <input type="checkbox"/> P <input type="checkbox"/> E <input type="checkbox"/>	The totals calculated on this form are estimates only. Warranty guidelines may apply. Final totals will appear on your warranty invoice. Please go to www.BlueGiant.com for Warranty Coverage and Warranty Guidelines for your product.			\$	\$

GL #

WC #

RG#

A confirmation receipt will be faxed back with a warranty claim number attached. If Blue Giant deems that part(s) need to be returned, an RGA numbered form will be faxed as well. Please include a copy of the RGA form with returning part(s) to Blue Giant Brampton location only.

SECTION 2 PLANNED MAINTENANCE

2-1. GENERAL.

Planned maintenance consists of periodic visual and operational checks, inspection, lubrication, and scheduled maintenance designed to catch an issue in the early hours or discover malfunctions and defective parts. The operator performs the checks in the Operator's Manual, and refers any required servicing to a qualified maintenance technician who performs the planned maintenance and any required servicing.

2-2. MONTHLY AND QUARTERLY CHECKS.

Table 2-1 is a monthly and quarterly inspection and service chart based on normal usage of equipment eight hours per day, five days per week. If the vehicle is used in excess of forty hours per week, the frequency of inspection and service should be increased accordingly. These procedures must be performed by a qualified service technician or your Blue Giant Service Representative.

2-3. FREQUENT INSPECTIONS.

The owner and user are required by ANSI A92.6 to ensure frequent inspections of the BG E-Step Semi-Electric Access Vehicle occur and are performed in accordance with the following points: 1. If purchased used unless it's determined that the frequent and annual inspections are current. 2. The BG E-Step Semi-Electric Access Vehicle has been in service for three (3 months or 150 hours, whichever comes first). 3. The BG E-Step Semi-Electric Access Vehicle has been out of service for a period longer than three (3 months. inspection is to be performed by a mechanic that is qualified and authorized to perform service on the BG E-Step Semi-Electric Access Vehicle. All service records must be maintained.

2-4. ANNUAL INSPECTIONS.

The owner and user are required by ANSI A92.6 to ensure annual inspections of the BG E-Step Semi-Electric Access Vehicle occur and are performed no later than 13 months from the date of prior annual inspection or every 700 hundred hours of use, whichever occurs first. This annual inspection is to be performed by a mechanic that is qualified and authorized to perform

service on the BG E-Step Semi-Electric Access Vehicle. All service records must be maintained..

2-5. BATTERY CARE.

2-5.1. General

The vehicle may be equipped with maintenance free Lithium ion battery.

The care and maintenance of the battery is very important to obtain efficient vehicle operation and maximum battery life.

CAUTION: Gases produced by a battery can be explosive. Do not smoke, use an open flame, create an arc or sparks in the vicinity of the battery. Ventilate an enclosed area well when charging.

CAUTION: Batteries contain sulfuric acid which may cause severe burns. Avoid contact with eyes, skin or clothing. In case of contact, flush immediately and thoroughly with clean water. Obtain medical attention when eyes are affected. A baking soda solution (one pound to one gallon of water) applied to spilled acid until bubbling stops, neutralizes the acid for safe handling and disposal.

Table 2-1 Monthly and Quarterly Inspection and Service Chart

VISUAL CHECKS	
INTERVAL	INSPECTION OR SERVICE
Monthly	Check brake for proper operation.
Monthly	Inspect wiring for loose connections and damaged insulation.
Monthly	Check wheels for wear and damage.
Quarterly	Check lift cylinder for leakage.

2-5.2. Safety Rules

- Wear protective clothing, such as rubber apron, gloves, boots and goggles when performing any maintenance on batteries. Do not allow electrolyte to come in contact with eyes, skin, clothing or floor. If electrolyte comes in contact with eyes, flush immediately and thoroughly with clean water. Obtain medical attention immediately. Should electrolyte be spilled on skin, rinse promptly with clean water and wash with soap. A baking soda solution (one pound to one gallon of water) will neutralize acid spilled on clothing, floor or any other surface. Apply solution until bubbling stops and rinse with clean water.
- Do not bring any type of flame, spark, etc., near the battery. Gas formed while the battery is charging, is highly explosive. This gas remains in cell long after charging has stopped.
- Do not lay metallic or conductive objects on battery. Arcing will result.
- Do not touch non-insulated parts of DC output connector or battery terminals to avoid possible electrical shock.
- Disconnect all AC and DC power connections before servicing battery.
- Do not charge a frozen battery.
- Do not use charger if it has been dropped or otherwise damaged.

2-5.3. Maintenance Personnel

Batteries may only be charged, serviced or replaced by trained personnel. This manual and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

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2-5.5. Maintenance Personnel

Batteries may only be charged, serviced or replaced by trained personnel. This manual and the manufacturer's instructions concerning batteries and charging stations must be observed when carrying out the work.

2-5.6. Battery Care and Charging

CAUTION: Never smoke or bring open flame near the battery. Gas formed during charging is highly explosive and can cause serious injury.

1. Charge the battery only in areas designated for that use.
2. Battery terminals should be checked and cleaned of corrosion regularly. Good battery terminal contact is essential not only for operation, but also for proper charging of the battery.
3. Make certain battery used meets weight and size requirements of vehicle. NEVER operate vehicle with an undersized battery.

2-5.7. Battery Cleaning

Wipe batteries with a clean rag.

2-5.8. Maintenance Free Battery

This vehicle is equipped with a maintenance free battery. The battery is completely sealed, will not require any watering and have a full 80% discharge available.

Sealed Maintenance Free batteries contain a pressure release valve and under normal operating conditions do not require any special ventilation.

CAUTION: Do not try to open this battery or remove the pressure release valve.

Only under severe overcharging, such as connected to an improperly sized charger, will any significant amount of gases be released from the battery. Also, being a valve regulated battery, it never requires watering.

2-6. CHARGING BATTERIES

Charging requirements will vary depending on depth of discharge and temperature. Follow safety rules when placing a battery on charge.

Proceed as follows:

1. Park vehicle at charging station with platform lowered and turn the key switch OFF.
2. Apply the emergency disconnect switch.
3. Check the condition of the cord. If there are any cuts in the cord, any exposed wires, loose plugs or connectors, DO NOT attempt to charge the batteries.
4. Connect plug from the vehicle to a power outlet and charge the battery according to Supplement 374 *.

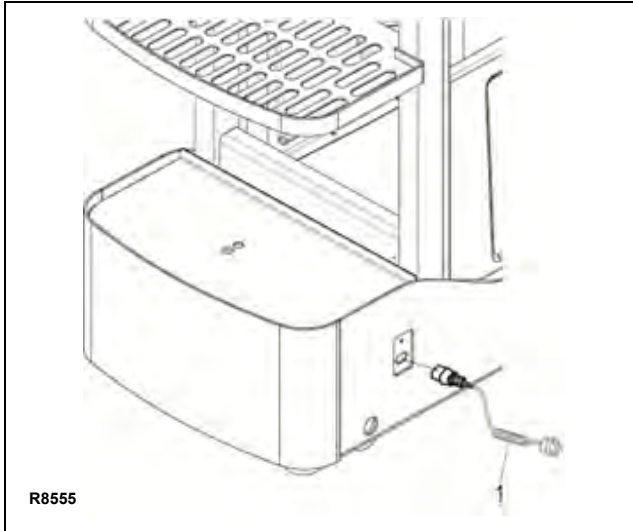


Figure 2-1 Battery Charging

WARNING: The weight and dimensions of the battery have considerable affect on the operational safety of the vehicle. Battery equipment may only be replaced with the agreement of the manufacturer.

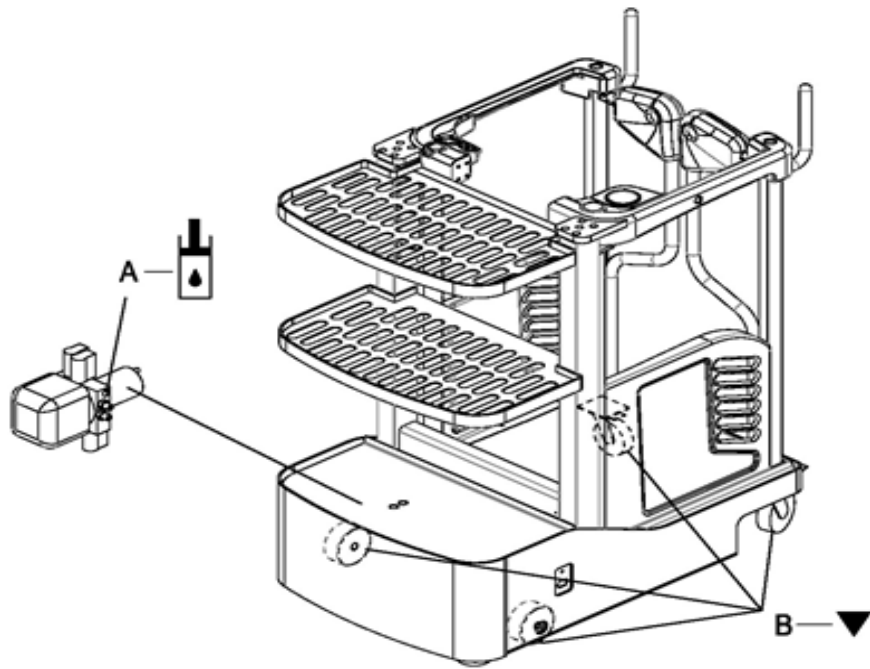
2-7.1. Battery disposal:

Dispose in accordance with national environmental protection regulations or disposal laws. The manufacturer's disposal instructions must be followed

2-7. REPLACING BATTERIES

1. Engage the emergency power disconnect switch and turn off key switch.
2. Remove the compartment cover as described in paragraph [4-1.1](#).
3. Remove the four screws, lock washers and flat washers that holds the battery brackets in place.
4. Disconnect the battery cables from the batteries.
5. Carefully lift the batteries out of the vehicle.
6. for installation please reverse step 1-5.

Replace only with original OEM batteries or batteries approved by an authorized Blue Giant dealer. Contact your authorized Blue Giant dealer for information on optional batteries and battery chargers.



▼ Contact surfaces

 Filler plug for hydraulic oil

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Figure 2-2 Lubrication Diagram

2-8. LUBRICATION.

Refer to [Table 2-2](#) for the recommended types of grease and oil in conjunction with [Figure 2-2](#) identifies the items requiring lubrication.

Table 2-2 Recommended Lubricants

Code	Description	Used for
A	L-HM46	Hydraulic oil
B	Polylub GA352P	Multi-purpose grease

SECTION 3 TROUBLESHOOTING

3-1. GENERAL

Use [Table 3-1](#) as a guide to determine possible causes of trouble. The table is divided into five main categories: Vehicle and Hydraulic System Will Not Operate: Vehicle

Does Not Operate Forward or Reverse: Trouble With Braking: Trouble With Lifting Or Lowering, and Miscellaneous malfunctions.

Table 3-1 Troubleshooting Chart

Table 3-1 Troubleshooting Chart - Continued

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
<p>TROUBLE WITH LIFTING OR LOWERING</p> <ul style="list-style-type: none"> • Oil sprays or flows from the top of the lift cylinder. • Squealing sounds when lifting Operator's platform. • Platform does not lift to full lift height. • Weak, slow or uneven action of hydraulic system. • Platform does not lift, pump motor does not run. 	<p>Defective packing in lift cylinder</p> <p>a. Oil level too low. b. Dry channels in mast. c. Defective mast or Platform rollers</p> <p>a. Oil level too low. b. Load larger than capacity.</p> <p>a. Defective pump or relief valve. b. Worn lift cylinder. c. Load larger than capacity. d. Defective lift motor relay. e. Battery charge low.</p> <p>a. Battery is dead or disconnected. b. Defective wiring. c. Defect in electrical system for operating pump motor.</p>	<p>Repair lift cylinder.</p> <p>Identify oil leak and fill reservoir. Apply grease. Replace rollers.</p> <p>Add oil to reservoir. Refer to I.D.plate for capacity.</p> <p>Check pressure. Adjust as necessary. Replace cylinder. Refer to I.D.platefor capacity. Replace relay on pump motor. Charge battery.</p> <p>Check and recharge if required.</p> <p>Check and repair as required. Check lift switch on platform, as well as the relay.</p>
<ul style="list-style-type: none"> • Platform does not lift, motor runs. • Platform lifts, but will not go down. • Load will not hold • Platform does not lift to top. Pump motor runs. • Platform drifts down under load when in a raised position. 	<p>Defect in hydraulic system.</p> <p>Defect in hydraulic system</p> <p>a. Oil bypassing internally in control valve b. Worn lift cylinder or packing.</p> <p>a. Oil level too low. b. Load larger than capacity.</p> <p>c. Batteries need charging.</p> <p>Leak in hydraulic system, lift cylinder or lowering valve.</p>	<p>Check the oil level in the reservoir and the oil lines to the lift cylinder, and repair as required. If normal, check the hydraulic pump, and relief valve. Repair, or adjust.</p> <p>Check lowering control switch and lowering solenoid. Replace as required. Replace valve assembly.</p> <p>Repack cylinder. Add oil to reservoir. Refer to nameplate on side of mast for maximum load capacity. Charge batteries.</p> <p>Check for leaking fitting in hydraulic line and repair as required. Repack lift cylinder or replace valve assembly.</p>

NOTES

SECTION 4 COMPARTMENT COVER REMOVAL

4-1. FRONT COMPARTMENT COVER

4-1.1. Cover Removal.

1. Engage the emergency power disconnect switch and turn off key switch.
2. Remove four screws that holds the cover down .
3. Carefully lift cover up and off the vehicle.

4-1.2. Cover Installation.

1. Carefully position cover on the vehicle.
2. Install four screws.
3. Disengage the emergency power disconnect switch and turn on key switch.

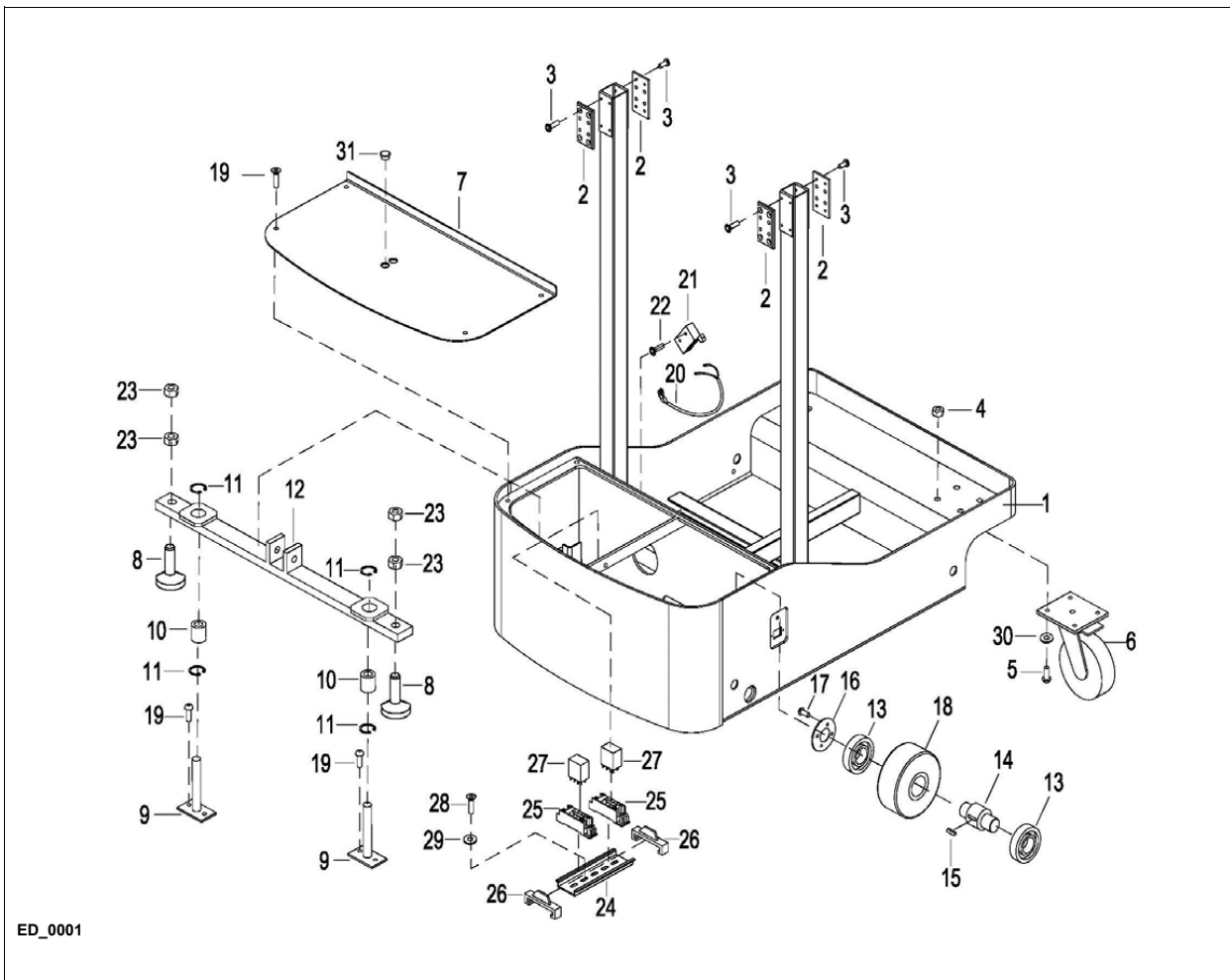


Figure 4-1 Rear Compartment Cover

NOTES

SECTION 5 FLOOR LOCK SYSTEM

5-1. FLOOR LOCK.

The floor lock system consists of a motor mounted horizontally that moves 2 stability pads to touch the floor when the platform is raised up. The lock is electrically applied & released. [Figure 5-1](#)

5-1.1. Floor Lock Motor Replacement

1. Engage the emergency power disconnect switch and turn off key switch.
2. Block load wheels.
3. Remove the compartment cover as described in paragraph [4-1.1](#).
4. Disconnect electric motor from harness.
5. Remove the mounting screws and motor assembly.
6. Place the new motor assembly into position and secure with the mounting screws.
7. Reconnect electric motor to harness.
8. Install the cover as described in paragraph [4-1.2](#).
9. Remove load wheel blocks and check operation.
10. Disengage the emergency power disconnect switch and turn on key switch.



Figure 5-1

NOTES

SECTION 6

LOAD WHEEL, CASTERS

6-1. LOAD WHEEL.

6-1.1. Removal

1. Engage the emergency power disconnect switch and turn off key switch.
2. Block the drive wheel to prevent the vehicle from rolling.
3. Jack up the vehicle to raise the load wheels off the floor. Securely block the vehicle in the raised position by positioning supports under both fork tips.
4. Remove the compartment cover as described in paragraph [4-1.1](#).
5. Remove the screws and cover inside the unit.
6. Remove the axle.
7. Remove the load wheel.
8. Remove bearings from load wheel.
9. Inspect bearings and replace if necessary.

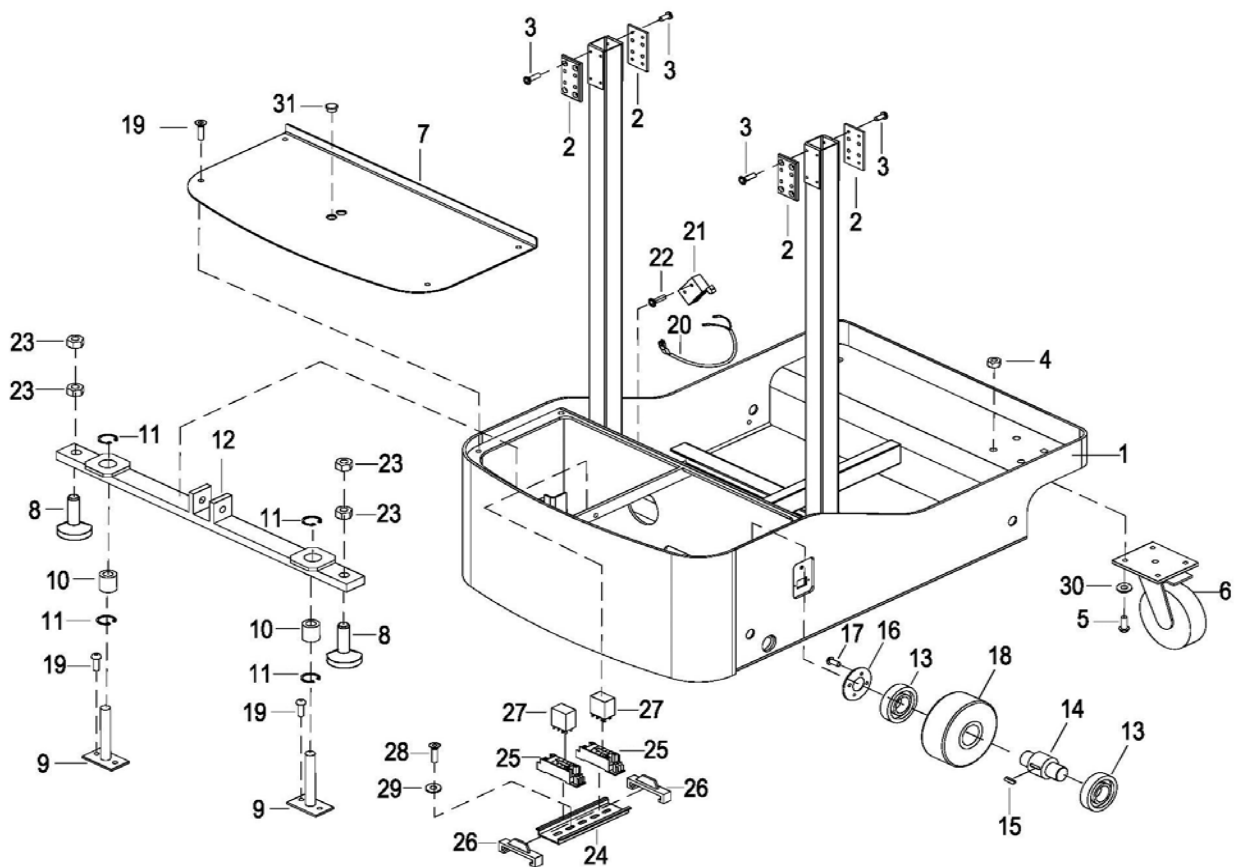
6-1.2. Installation

1. Pack bearings with grease.

1. Reassemble bearings in load wheel.
2. Position load wheel on the axle and install two bolts, two lock washers and two flat washers.
3. Install cover and secure with the screws.
4. Remove the blocking from under the vehicle and lower it to the ground.
5. Disengage the emergency power disconnect switch and turn on key switch.

6-2. CASTER.

1. Engage the emergency power disconnect switch and turn off key switch.
2. Jack up the vehicle to gain access to the caster; then securely block the vehicle to prevent movement.
3. Remove four screws, four lock washers and four flat washers.
4. Remove caster.
5. Install new caster in reverse order of removal.



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Figure 6-1 Frame

SECTION 7 HYDRAULIC SYSTEM SERVICING

7-1. LINES AND FITTINGS

WARNING: When the platform is raised, pressure exists in the hydraulic system lines and fittings. To ensure release of pressure, platform must be fully lowered and the batteries disconnected before performing any maintenance on the hydraulic system.

NOTE: Leaking hydraulic fittings may be remedied by simply tightening fittings. If this does not remedy the leak, the fittings or line must be replaced.

1. Fully lower the platform.
2. Engage the emergency power disconnect switch and turn off key switch.
3. Remove the compartment cover as described in paragraph 4-1.1.

WARNING: Relieve pressure off the system prior to opening any lines.

CAUTION: Hydraulic oil can damage parts. Wipe off any oil immediately. Provide a container under the line or fitting before disconnecting.

4. Refer to [Figure 7-1](#) and remove leaking line or fitting and replace it with a new line or fitting.
5. Check level of hydraulic oil. If required, add hydraulic oil to bring to proper level. Use hydraulic oil listed in [Table 2-2](#).
6. Disengage the emergency power disconnect switch and turn on key switch.
7. Operate the lift and lower buttons to refill the cylinder and lines with hydraulic oil.
8. Check level of hydraulic oil. If required, add hydraulic oil to bring to proper level. Use hydraulic oil listed in [Table 2-2](#).
9. Install the compartment cover as described in paragraph 4-1.2.

7-2. HYDRAULIC PUMP, MOTOR, AND RESERVOIR ASSY

The hydraulic pump/motor assembly can be disassembled and repaired. However, a defective pump, valve or motor requires replacement of that component.

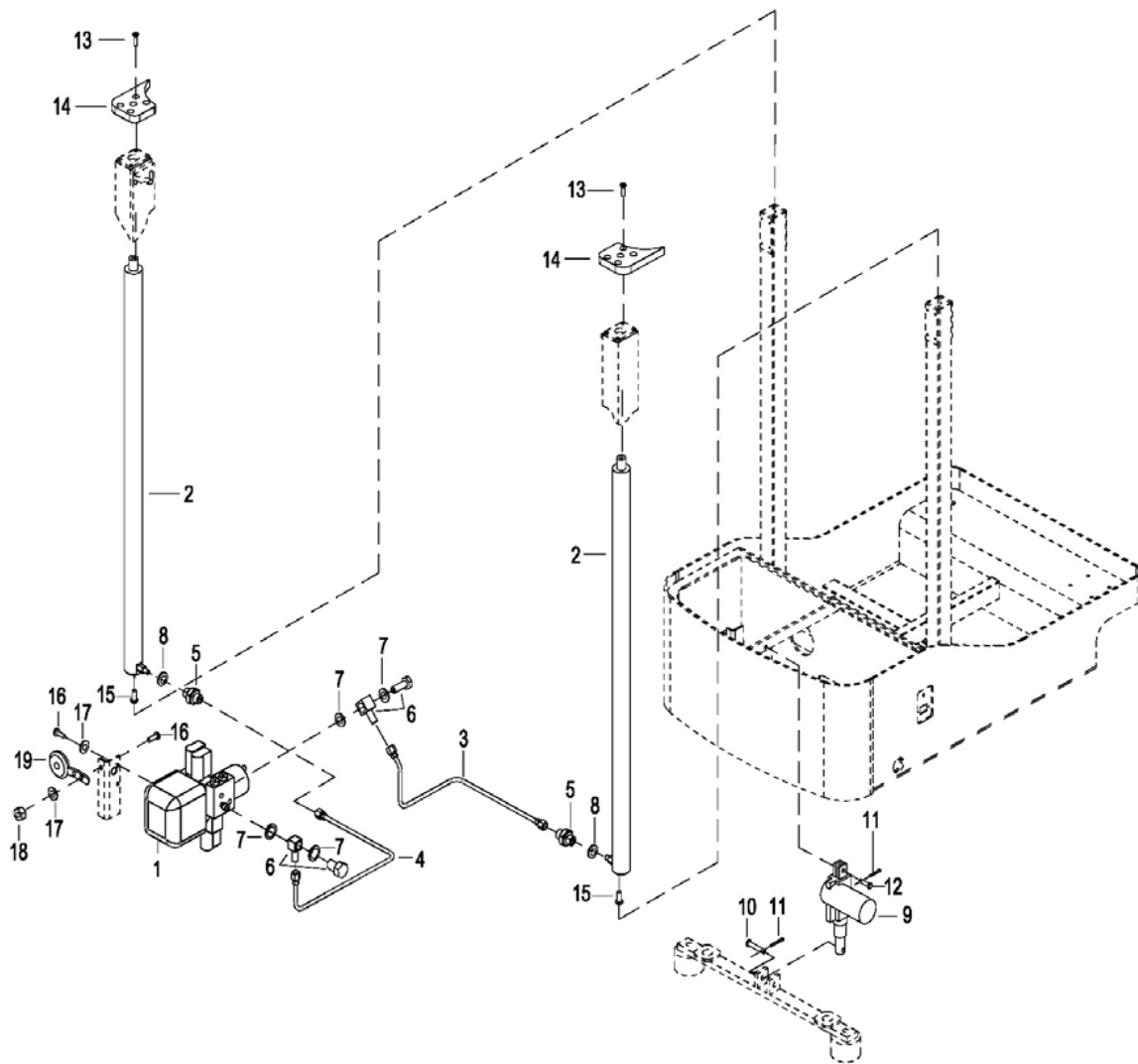
WARNING: When the platform is raised, pressure exists in the hydraulic system lines and fittings. To ensure release of pressure, platform must be fully lowered and the batteries disconnected before performing any maintenance on the hydraulic system.

7-2.1. Removal

1. Fully lower the platform.
2. Engage the emergency power disconnect switch and turn off key switch.
3. Remove the compartment cover as described in paragraph 4-1.1.
4. Tag and disconnect electrical leads from motor and solenoid of pump/motor assembly.

NOTE: The reservoir and tube will be filled with hydraulic oil. Place a container under the pump assembly to catch any hydraulic oil.

5. Disconnect hose from pump/motor assembly.
6. While supporting pump/motor assembly, remove two screws and two lock washers.
7. Remove the pump/motor assembly.
8. Remove the bracket from the pump/motor assembly.
9. Install pump/motor assembly in reverse order of removal.



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Figure 7-1 Hydraulic System

7-2.2. Installation

1. Install pump/motor assembly as described in paragraph 7-2.1.
2. Reconnect hose to pump/motor assembly.
3. Connect electrical leads to motor and solenoid of pump/motor assembly.
4. Fill the hydraulic reservoir. Use hydraulic oil listed in Table 2-2.
5. Disengage the emergency power disconnect switch and turn on key switch.
6. Operate the lift and lower buttons to refill the cylinder and lines with hydraulic oil.
7. Check level of hydraulic oil. If required, add hydraulic oil to bring to proper level. Use hydraulic oil listed in Table 2-2.
8. Install the compartment cover as described in paragraph 4-1.2.

7-2.3. Disassembly and Reassembly

1. Remove the hydraulic pump/motor assembly as described in paragraph 7-2.1.
2. Refer to Figure 10-6 for disassembly and reassembly.

7-3. LIFT CYLINDER

7-3.1. Removal

1. Engage the emergency power disconnect switch and turn off key switch.

WARNING: Relieve pressure off the system prior to opening any lines.

Before attempting any replacement, make certain power is disconnected.

CAUTION: Hydraulic oil can damage parts. Wipe off any oil immediately. Provide a container under the line or fitting before disconnecting.

2. Raise the platform high enough (24") and block the platform to get access to the hydraulic fitting at the base of the cylinder. Make sure to securely block the vehicle or use strong supports so that the vehicle won't lower down.
3. Remove five screws and remove the top mast cover.
4. Raise the vehicle high enough from the floor so that you can access the screw that secures the cylinder to the mast. Make sure to securely block the vehicle or use strong supports so that the vehicle won't fall down.
5. Pull the lift cylinder out from the top to repair as needed.

WARNING: Support lift cylinder before performing the following steps to prevent cylinder from falling.

6. Remove the five screws and lock washers that holds down the cylinder mount plate at the top of the mast.
7. Carefully raise lift cylinder assembly up and out of vehicle.

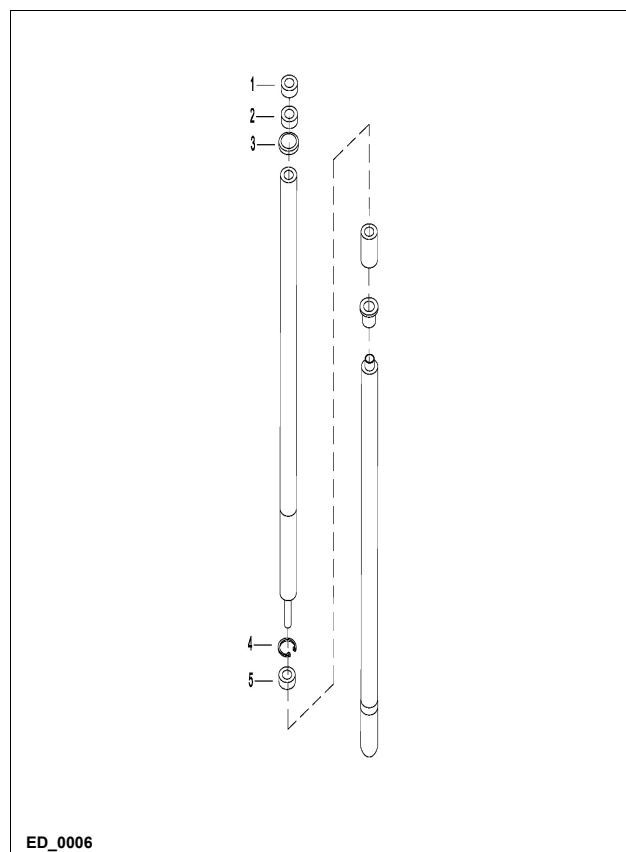


Figure 7-2 Lift Cylinder - Main

7-3.2. Repair

CAUTION: To prevent damage, use proper pipe clamp vise. The cylinder will be distorted if the vise is tightened too much.

1. Secure the lift cylinder in a vise, clamping lightly at the base of the cylinder.
2. Remove gland nut (Figure 7-2).
3. Remove dust seal from gland nut.
4. Pull out piston rod.
5. Remove snap ring and piston from rod.
6. Remove snap rings, seals and backup ring from piston.
7. Coat all parts with hydraulic oil (Table 2-2).
8. For assembly Install in reverse order of removal.

7-3.3. Installation

1. Install lift cylinder assembly in reverse order of removal.

NOTES

SECTION 8 ELECTRICAL COMPONENTS

8-1. ELECTRICAL CONTROL PANEL

8-1.1. Maintenance

NOTE: Erratic operation of the vehicle may be caused by a defective electrical component. Before removing the electrical panel, perform troubleshooting procedures per [SECTION 3](#), to determine corrective action to be taken.

It is recommended that the exterior be cleaned periodically, this periodic cleaning provides a good opportunity to inspect the vehicle when it is serviced.

8-1.2. Cleaning

1. Engage the emergency power disconnect switch and turn off key switch.
2. Remove the compartment cover as described in paragraph 4-1.1.
3. Remove any dirt or corrosion from the bus bar area. The controller should be wiped clean with a moist rag. Allow it to dry before reconnecting the battery.

8-2. HORN REPLACEMENT.

1. Engage the emergency power disconnect switch and turn off key switch.
2. Remove the compartment cover as described in paragraph 4-1.1.
3. Tag and disconnect harness from horn.
4. Remove screw, lock washer, flat washer and horn.
5. Install horn and secure with screw, lock washer, flat washer.
6. Reconnect harness to horn.
7. Install compartment covers as described in paragraph 4-1.2.
8. Disengage the emergency power disconnect switch and turn on key switch.

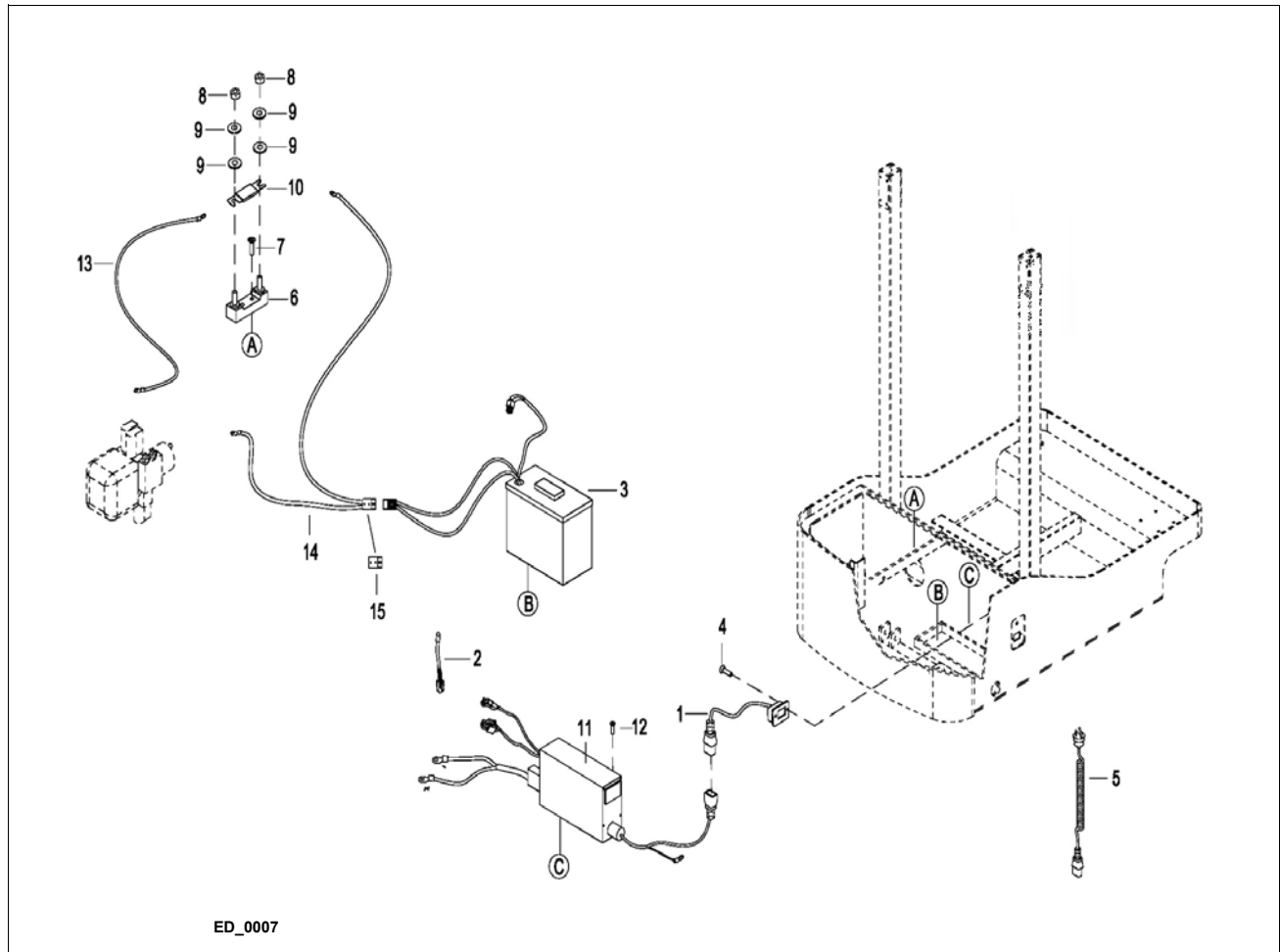


Figure 8-1 Electrical System

8-5. PLATFORM CABLE REPLACEMENT.

8-5.1. Platform

1. With the lift vehicle wheels securely blocked, raise the Platform approximately two feet and position blocks or strong supports under Platform and mast channels.
2. Lower Platform onto the support. Check that arrangement is secure before proceeding.
3. Engage the emergency power disconnect switch and turn off key switch.
4. Disconnect the electrical connectors at each end of the mast cable.
5. Disconnect the mounting clamps and remove wire ties.
6. Lift harness with protective chain from sheave.
7. Remove the ties securing the harness to bracket.
8. Remove two screws, two lock washers, two flat washers and clamp
9. Install new harness by reversing the steps above.

NOTES

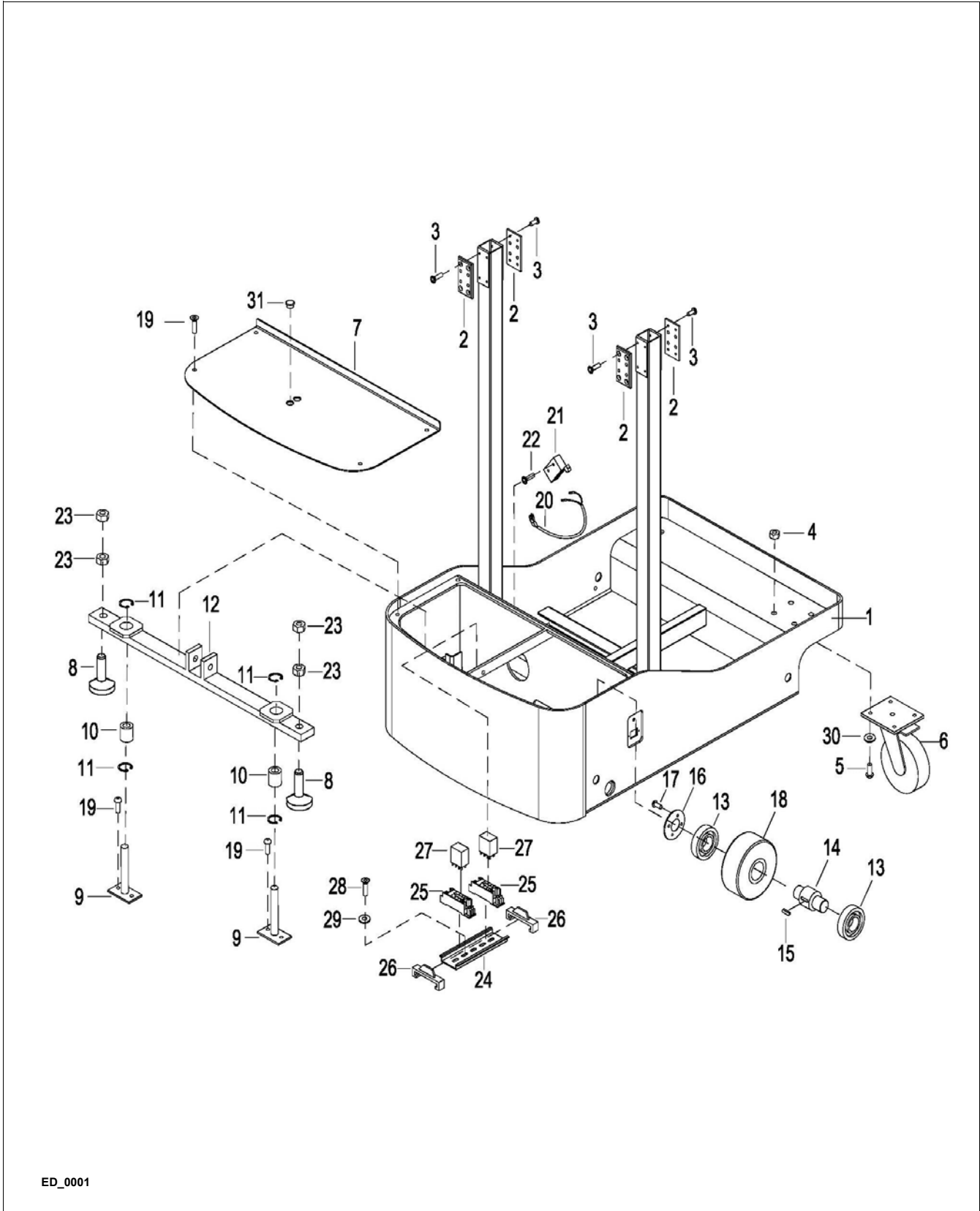
**SECTION 9
OPTIONAL EQUIPMENT**

9-1. N/A

NOTES

SECTION 10
ILLUSTRATED PARTS BREAKDOWN

Following is an illustrated parts breakdown of assemblies and parts associated with the BG E-Step Semi-Electric Access Vehicle.

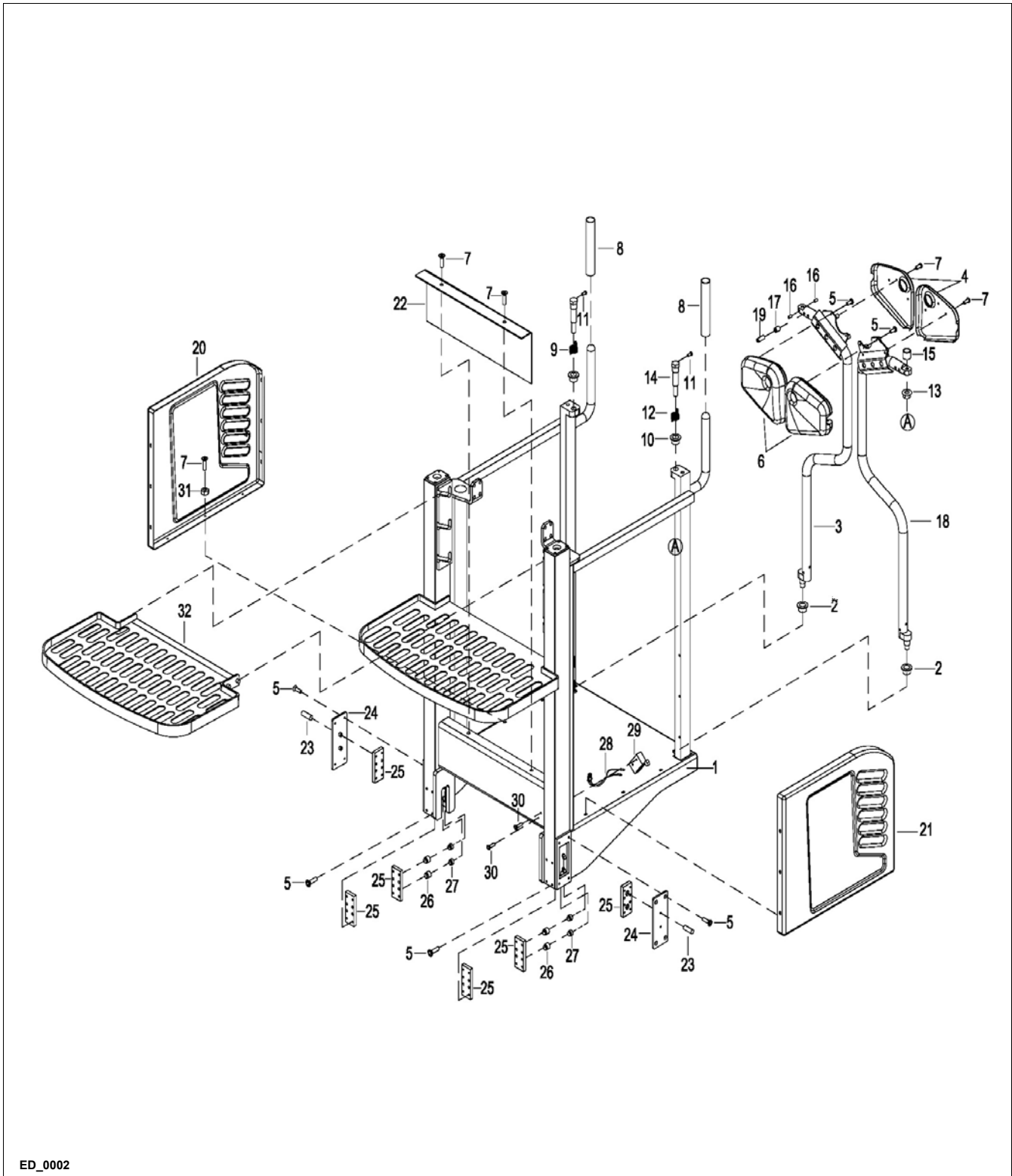


ED_0001

Figure 10-1 Frame

Frame

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1650-101000-00	FRAME	1	
2	1650-100001-00	SLIDER	4	
3	0000-000119-00	SCREW M5×12	16	
4	0000-000550-00	NUT M8	8	
5	0000-000712-00	SCREW M8×20	8	
6	1650-100100-00	CASTER ASSEMBLY	2	
7	1650-100003-00	PLATE	1	
8	1650-100200-00	MACHINE LEG	2	
9	1650-102100-00	BRAKE GUIDE POST	2	
10	1650-100300-00	BEARING	2	
11	0000-001368-00	CIRCLIP Ø28	4	
12	1650-102200-00	BRAKE BRACKET	1	
13	3090-000000-04	DEEP GROOVE BALL BEARING 6204	4	
14	1650-100007-00	WHEEL SHAFT	2	
15	0000-001623-00	KEY 8×40	2	
16	1650-100006-00	BEARING RETAINER	2	
17	0000-000479-00	SCREW M5×16	8	
18	1113-210100-0A	LOADING WHEEL	2	
19	2028-007000-03	SCREW M6×12	8	
20	1650-520006-10	LOWER LIMIT SWITCH WIRING	1	
21	1120-500006-00	LOWER LIMIT SWITCH	1	
22	0000-000208-00	SCREW M4×20	2	
23	0000-000187-00	NUT M16	4	
24	2110-500002-00	RELAY BRACKET	1	
25	2110-500003-00	RELAY SET CLIP	2	
26	2110-500004-00	RELAY SET	2	
27	2110-500005-00	RELAY	2	
28	3020-000001-12	SCREW M4×8	2	
29	3040-000000-38	FLAT PAD Ø4	2	
30	0000-000210-00	BIG PLAIN WASHERØ8	8	
31	1650-000001-00	RUBBER	2	

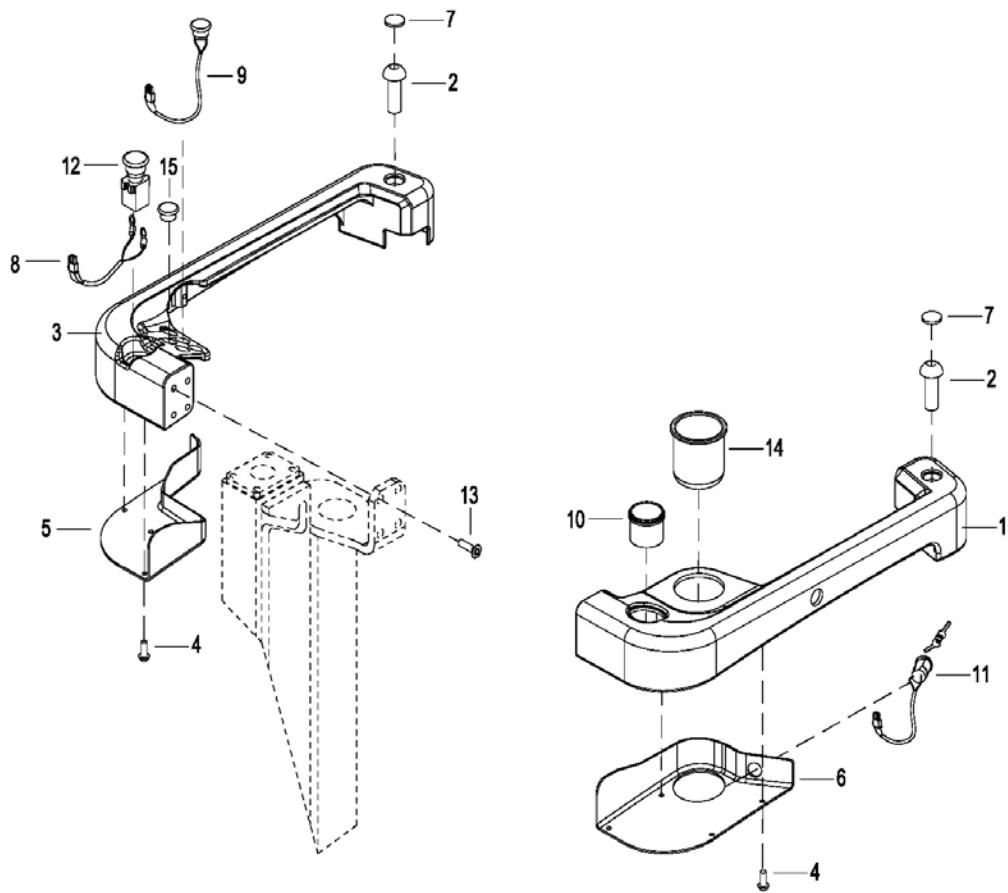


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Figure 10-2 Operator Platform

Operator Platform

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1650-701000-00	LOADING FRAME	1	
2	2028-019000-04	SLEEVE 1612	2	
3	1600-704000-0B	LEFT DOOR	1	
4	1600-704002-0B	BACK COVER	2	
5	0000-000119-00	SCREW M5×12	24	
6	1600-704001-0B	DOOR HANDLE	2	
7	2028-007000-03	SCREW M6X12	26	
8	1650-700009-00	HANDLEBAR GRIP	2	
9	1600-700003-00	SPRING LEFT	1	
10	2028-019000-44	SLEEVE 1618F	2	
11	0000-000028-00	SCREW M4×12	2	
12	1600-700010-00	SPRING RIGHT	1	
13	3030-300000-01	NUT M10	2	
14	1600-700002-00	AXIS	2	
15	1600-700005-00	BUSHING	2	
16	0000-001521-00	SCREW M5×10	4	
17	1600-700012-00	BUMPER	2	
18	1600-702000-0B	RIGHT DOOR	1	
19	3020-060000-07	SCREW M8×20	2	
20	1650-700001-00-01	RIGHT COVER	1	Red
20	1650-700001-00-02	RIGHT COVER	1	Yellow
21	1650-700010-00-01	LEFT COVER	1	Red
21	1650-700010-00-02	LEFT COVER	1	Yellow
22	1650-700008-00	WIRE COVER	1	
23	3020-000000-61	SCREW M8×12	4	
24	1650-702200-00	SLIDER MOUNTING PLATE	2	
25	1650-100002-00	LOAD FRAME SLIDER	6	
26	3020-000000-60	SCREW M16×20	4	
27	3020-000000-59	SCREW M16×10	4	
28	1650-520005-10	RISE LIMIT SWITCH WIRING	1	
29	1120-500006-00	RISE LIMIT SWITCH	1	
30	0000-000208-00	SCREW M4×20	2	
31	3030-060000-02	NUT M6	6	
32	1650-702100-00		1	

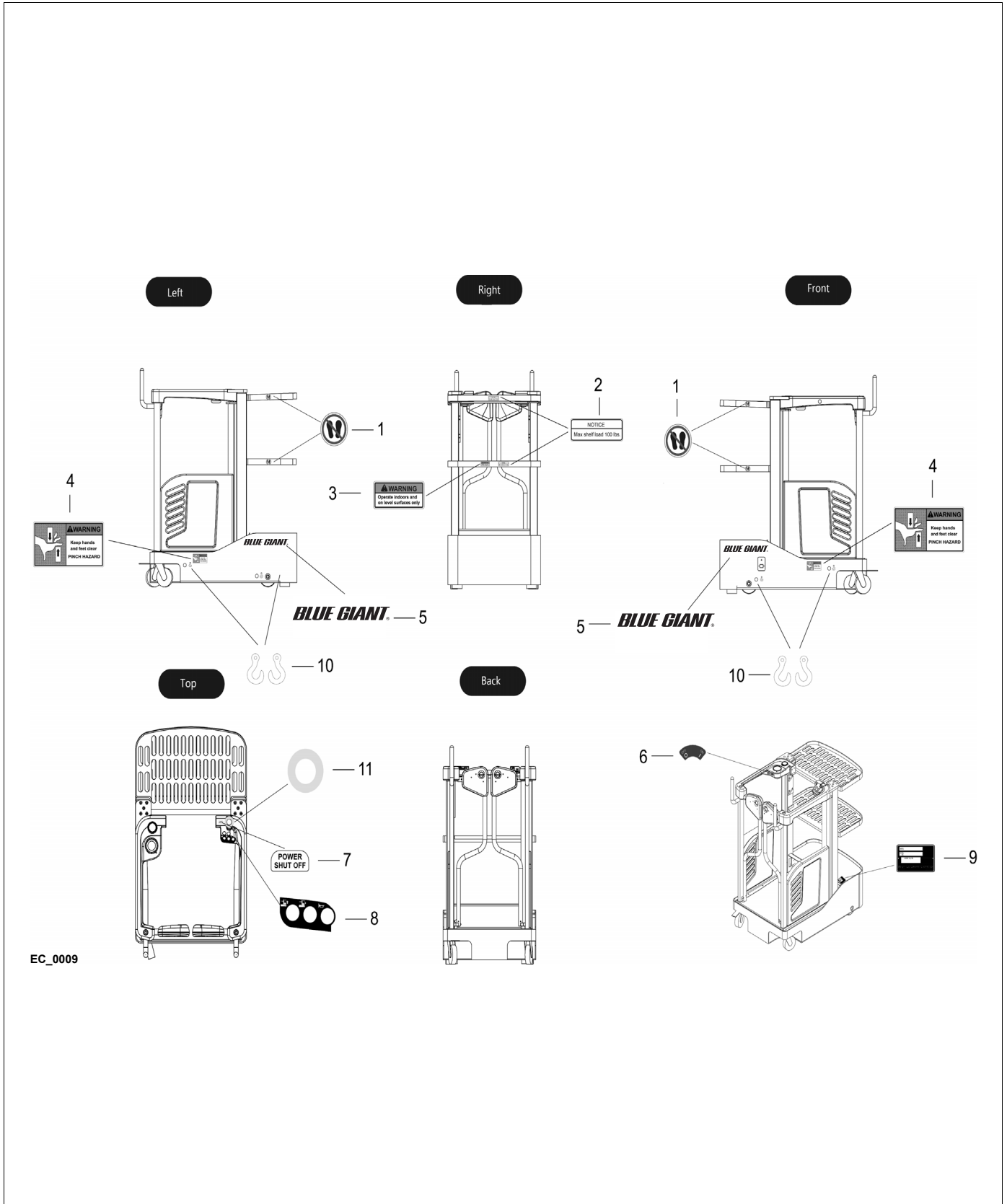


ED_0003

Figure 10-3 Operating Control Assembly

Operating Control Assembly

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1650-700005-00	LEFT ARMREST	1	
2	0000-001410-00	SCREW M12×30	2	
3	1600-300100-00	RIGHT ARMREST	1	
4	3020-020000-23	SCREW M5×16	8	
5	1650-700004-00	RIGHT BOTTOM COVER	1	
6	1650-700003-00	LEFT BOTTOM COVER	1	
7	1600-300004-00	RUBBER	2	
8	1650-520007-10	WIRE HARNESS	1	
9	CK11-520012-00	BUTTON SWITCH	3	Used up to Serial Number 2291200219
9A	CK11-520012-0A	BUTTON SWITCH	3	Used from Serial Number 2291200220
10	1115-510006-60	METER	1	
11	1115-520003-0A	KEY SWITCH	1	
12	3218-604000-00	EMERGENCY STOP SWITCH	1	
13	3020-000001-94	SCREW M8×30	8	
14	1600-700005-A0	CUP HOLDER	1	
15	1650-000001-00	RUBBER	2	

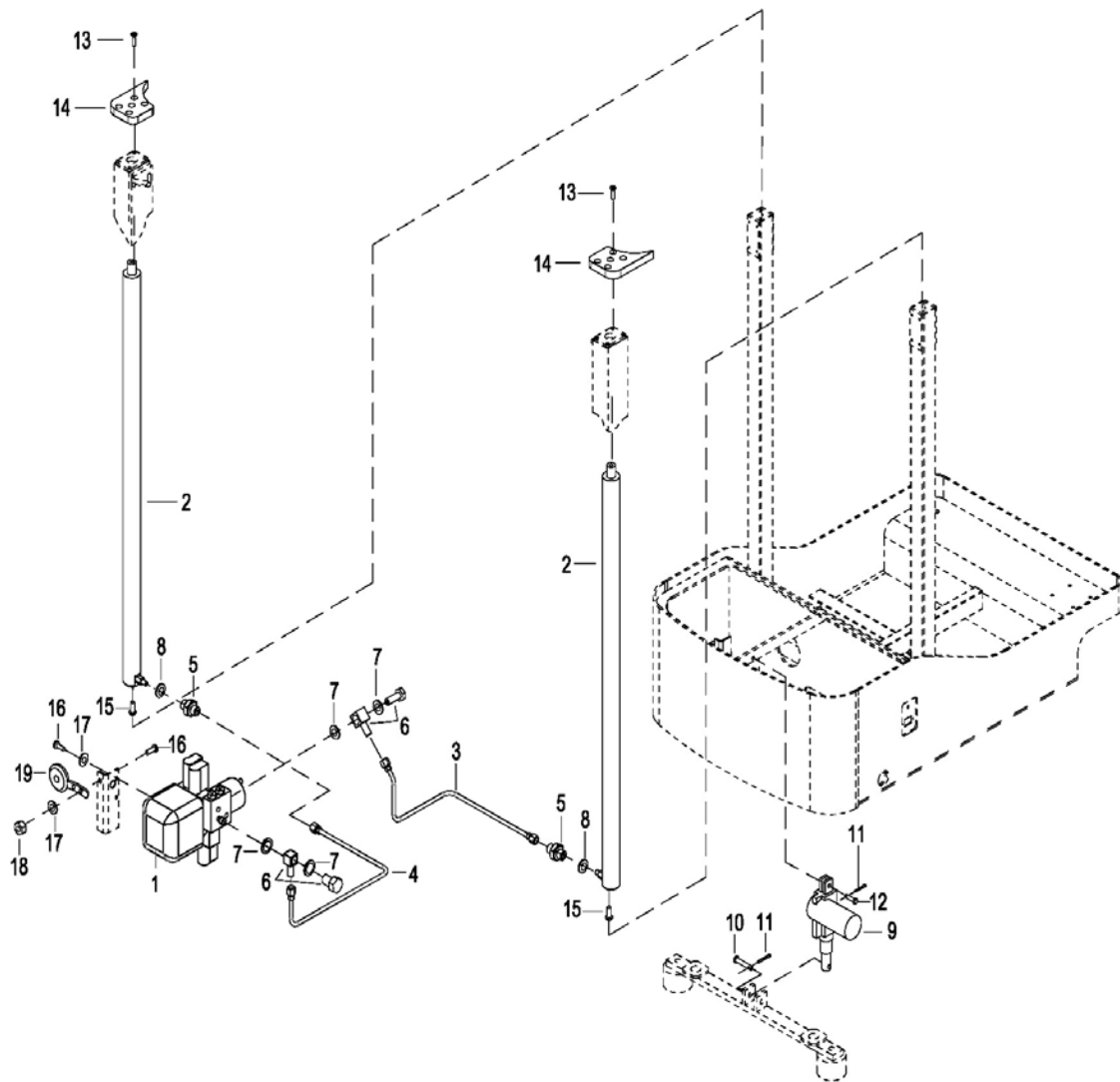


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Figure 10-4 Decals

Decals

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	2069-000000-52	"NO STEP" WARNING LABEL	4	
2	5080-000016-77	LOAD TRAYS LABEL	2	
3	5080-000016-78	INDOOR/LEVEL SURFACE ONLY LABEL DECAL	1	
4	5080-000016-79	PINCH POINT WARNING LABEL	2	
5	5080-000016-15	Blue Giant DECAL	1	
6	2069-000000-22	KEY SWITCH DECAL LABEL	1	
7	2069-013000-06	POWER SHUT OFF LABEL	1	
8	2069-000001-00	CONTROL BUTTON DECAL LABEL	1	
9	5080-000016-81	DATA PLATE	1	
10	2069-000000-03	LIFTING POINT LABEL	2	
11	2069-010000-04	EMERGENCY STOP LABEL	1	

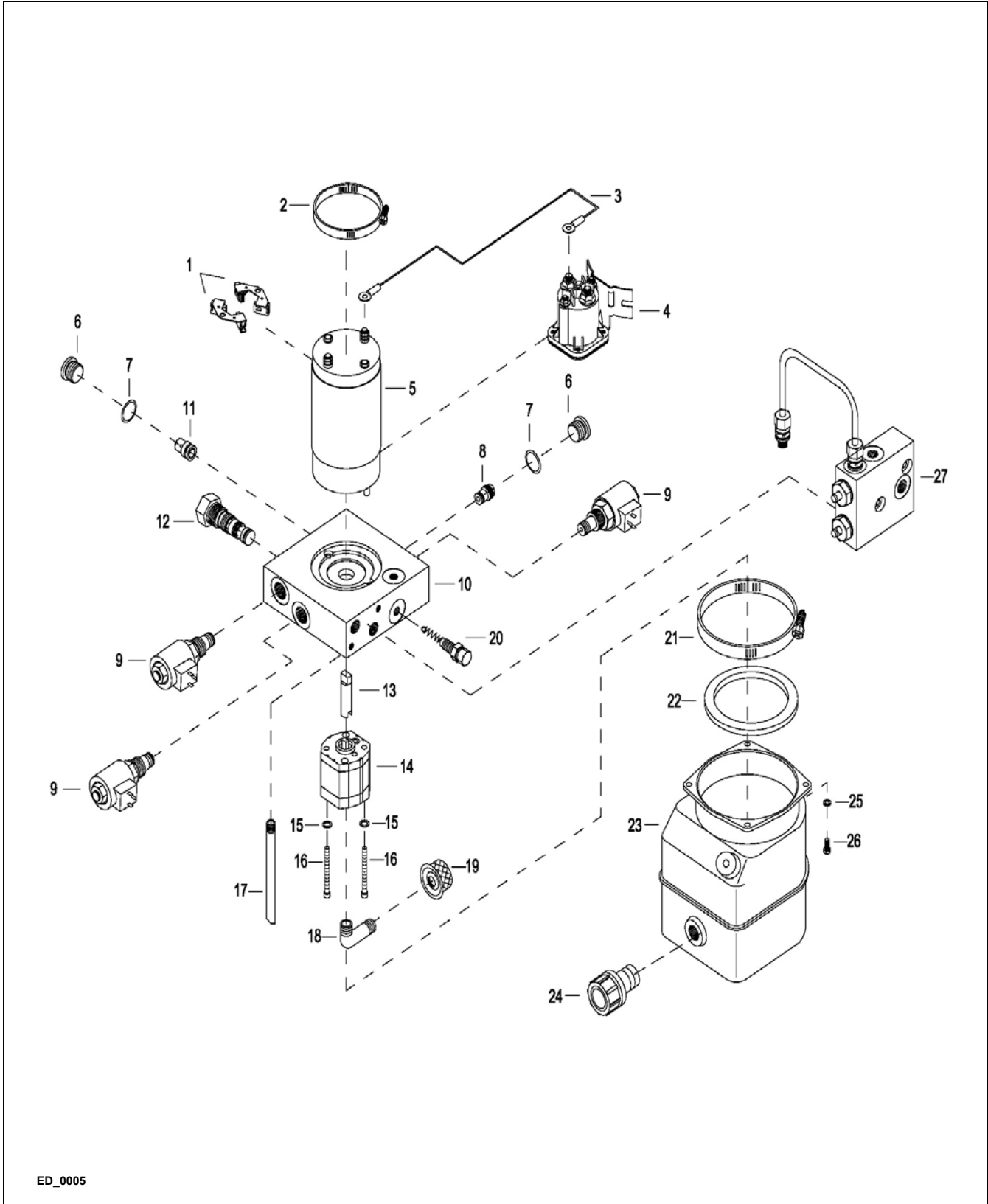


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Figure 10-5 Hydraulic System

Hydraulic System

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1650-421000-00	HYDRAULIC	1	
2	1650-411000-00	LIFT CYLINDER	2	
3	1650-431000-00	LEFT OIL PIPE TUBE ASSEMBLY	1	
4	1650-432000-00	RIGHT OIL PIPE TUBE ASSEMBLY	1	
5	2701-121400-10	THROUGH JOINT	2	
6	2707-141400-30	ARTICULATED JOINT	2	
7	0000-000044-00	SEALING GASKET Ø14	4	
8	0000-001674-00	SEALING GASKET Ø12	2	
9	1650-100400-00	LINEAR ACTUATOR	1	
10	3070-000000-16	SHAFT 10×65	1	
11	0000-000376-00	COTTER 2.5×20	2	
12	3070-060000-22	SHAFT 10×32	1	
13	0000-000151-00	SCREW M8×25	10	
14	1650-700002-00	COVER	2	
15	0000-000371-00	SCREW M6×16	2	
16	3010-000000-17	SCREW M8×20	3	
17	0000-000176-00	FLAT PAD Ø8	3	
18	3030-000000-12	NUT 8	1	
19	1120-500003-00	HORN	1	

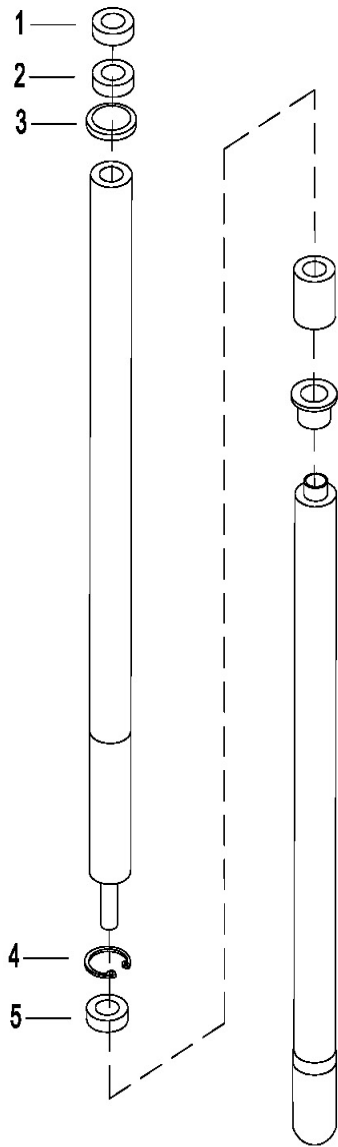


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Figure 10-6 Hydraulic Pump Assembly

Hydraulic Pump Assembly

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1115-561001-0A	BRUSH	4	
2	1115-560001-00	HOSE CLAMPS D80	1	
3	1118-420002-00	WIRE HARNESS	1	
4	1115-560002-00	RELAY 24V/150A	1	
5	1115-560003-00	DC MOTOR 0.8KW/24V	1	
6	1115-560026-00	SCREW	2	
7	1115-560025-00	O-RING 16.36x2.21	2	
8	1115-560016-00	CHECK VALVE	1	
9	1115-560017-00	SOLENOID VALVE 24V	3	
10	1650-42010X-00	VALVE PLATE	1	
11	1115-560005-00	THROTTLE	1	
12	1650-42012X-00	FLOW DIVIDER/COMBINER VALVE	1	
13	1115-560010-00	CONNECTING SHAFT	1	
14	1115-560011-00	GEAR PUMPS 0.75CC/R	1	
15	1115-560012-00	FLAT PAD Ø5	2	
16	1115-560013-00	SCREW M5X70	2	
17	1650-42017X-00	NYLON TUBE	1	
18	1115-560014-00	SUCTION PIPE	1	
19	1115-560015-00	OIL FILTER	1	
20	1115-560006-00	SAFETY VALVE	1	
21	1650-42021X-00	HOSE CLAMPS D110	1	
21a	1220-45003X-00	HOSE CLAMPS D115	1	
22	2320-470020-0A	O-RING 100x3.55	1	
23	1126-430004-00	TANK 2L	1	
24	1115-560024-00	AIR FILTER	1	
25	1115-560012-00	FLAT PAD Ø5	4	
26	2320-470017-00	SCREW M5x10	4	
27	1650-42027X-00	VALVE PLATE	1	

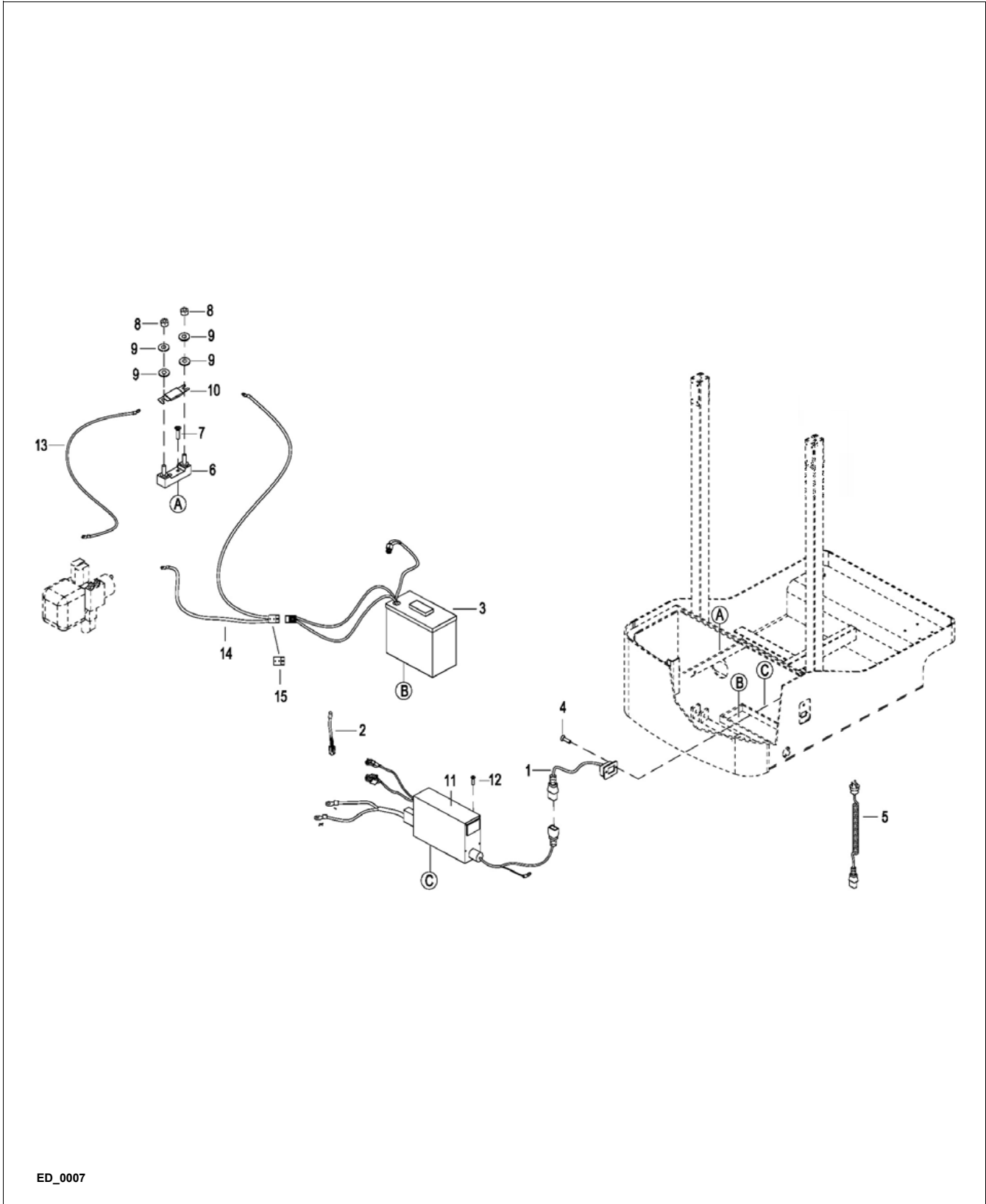


ED_0006

Figure 10-7 Lift Cylinder

Lift Cylinder

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
--	1650-411000-00	LIFT CYLINDER ASSEMBLY	2	
KIT	1650-QJYG-0A	SEAL KIT	1	Includes pos. 1 - 5
1	1650-41001X-00	DUST SEAL	1	
2	1650-41002X-00	SEALING RING 20×28×5	1	
3	1650-41003X-00	O-RINGS 32×2.4	1	
4	2130-414000-00	RETAINER RING	1	
5	1650-41004X-00	SUPPORT RING 10×4	1	

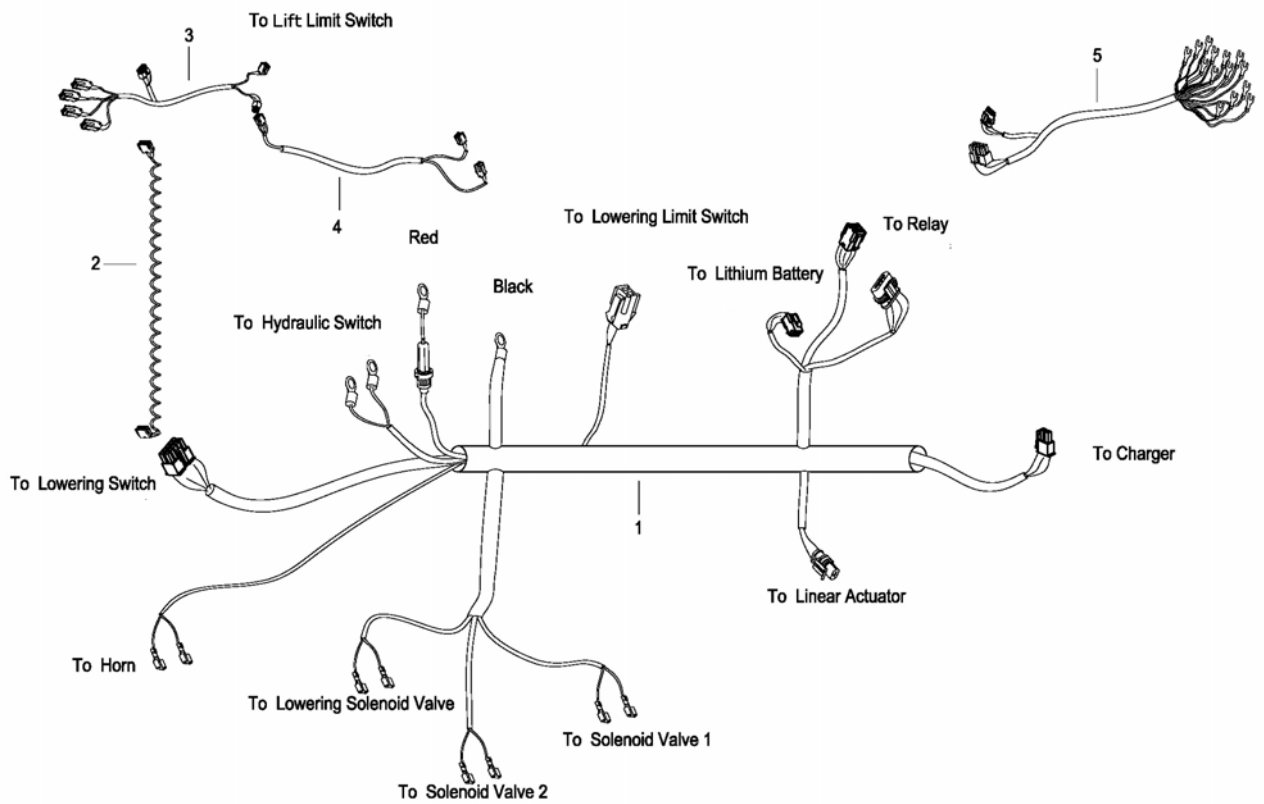


ED_0007

Figure 10-8 Electrical System

Electrical System

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1600-520014-00	CHARGER SWITCHING LINE	1	
2	1115-520013-00	LED	1	
3	1650-500100-00	LITHIUM BATTERY (24V26AH)	1	
4	0000-000723-00	SCREW M3×10	2	
5	1115-500006-00	CHARGER CABLE USA	1	
6	1120-540001-00	STAND	1	
7	0000-000126-00	SCREW M6×16	2	
8	0000-000550-00	NUT M8	2	
9	0000-000210-00	FLAT PAD Ø8	4	
10	1115-510003-00	FUSE 100A	1	
11	1650-520008-10	CHARGER (24V/20A)	1	
12	0000-000021-00	SCREW M6×12	4	
13	1650-530001-10	FUSE	1	
14	1650-531000-10	PLUG CABLE SUBASSEMBLY	1	Includes pos. # 15
15	1650-53001X-00	PLUG	1	



ED_0008

Figure 10-9 Wiring Harness

Wire Harness

POS.	PART NUMBER	DESCRIPTION	QTY. REQD.	NOTES
1	1650-520001-10	MAIN WIRING HARNESS	1	
2	1650-520009-10	WIRE HARNESS	1	
3	1650-520002-10	WIRE HARNESS	1	
4	1650-520003-10	WIRE HARNESS	1	
5	1650-520004-10	RELAY WIRING HARNESS	1	

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