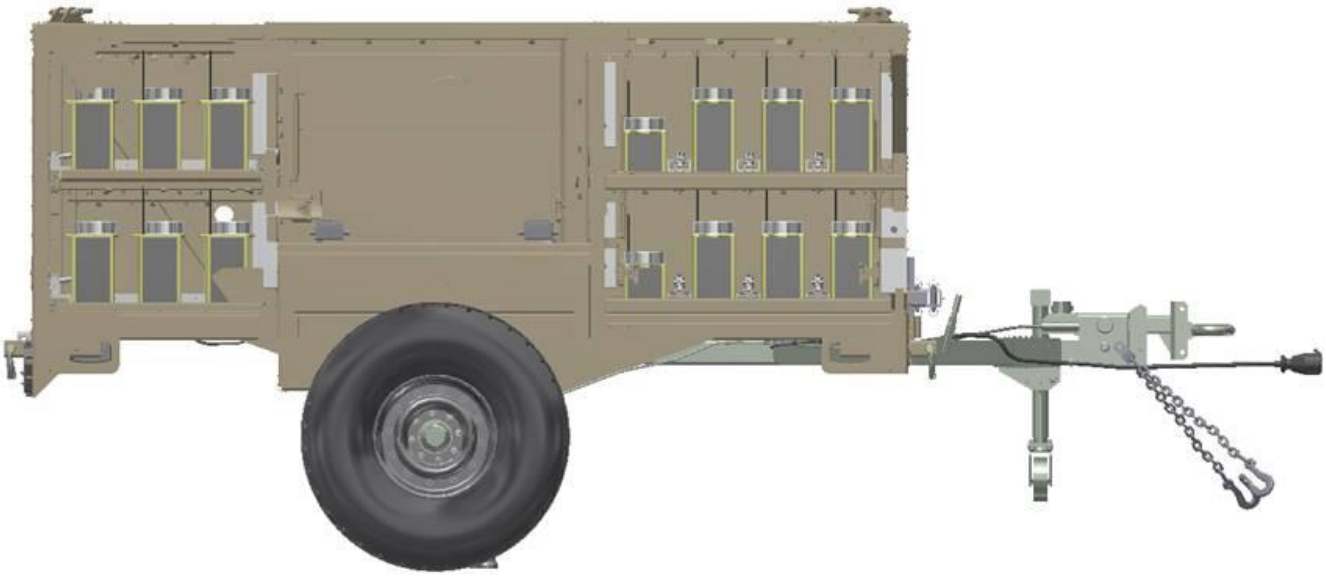
FLASH TECHNOLOGY

PORTABLE AIRFIELD LIGHTING TRAILER

USER MANUAL



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Abstract

This manual contains information and instructions for operating and maintaining the Portable Airfield Lighting Trailer.

Disclaimer

While every effort has been made to ensure that the information in this manual is complete, accurate and up-to-date, Flash Technology assumes no liability for damages resulting from any errors or omissions in this manual, or from the use of the information contained herein. Flash Technology reserves the right to revise this manual without obligation to notify any person or organization of the revision.

In no event will Flash Technology be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of or the inability to use this manual.

1.0 Safety & Usage

The following symbols indicate important safety warnings and precautions throughout this manual:

WARNING indicates that serious bodily harm or death may result from failure to adhere to the precautions.

CAUTION indicates that damage to equipment may result if the instructions are not followed.

NOTE suggests optimal conditions and provides additional information.

WIRELESS feature or function.

INTERACTION with the controlled product is required for this feature or function.

1.1 Battery Precautions

The battery contains lead and other compounds known to the State of California to cause cancer and reproductive harm. Please handle with care and wash your hands thoroughly after handling the battery.

Use extreme caution when handling the battery. This product is capable of generating enormous short-circuit currents. Remove all jewelry (bracelets, metal-strap watches, rings) before attempting to handle or remove the battery.

Charge your battery periodically. Permanent damage and reduced capacity will result if the battery is not correctly maintained.

The rate of battery self-discharge is very dependent upon temperature. The warmer the temperature, the faster the batteries will discharge.

1.2 Recycling

This product required the extraction and use of natural resources. It may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle the product in an appropriate way that will ensure most of the materials are reused or recycled appropriately. Check your local municipality for electronics recyclers.

The symbol indicates that this product complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

The battery is a rechargeable lithium ion battery. Consult your local laws for information on recycling.

1.3 Wireless Precautions

Keep the Handheld Controller at a distance of at least 3 ft. (1 m) from the antennas of controlled products or other Handheld Controllers. It sends out a powerful radio signal that could damage sensitive receiver circuitry if operated at close range.

1.4 Warranty Disclaimer

This manual will familiarize you with the features and operating standards of the product. Failure to comply with the use, storage, maintenance or installation instructions detailed in this manual could void the user warranty.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Installation work must be done by a qualified person(s) in accordance with all application local codes and standards.

2.0 Specifications

Physical	
Dimensions	169.5 in (4305.3 mm) total length 87.5 in (2222.5 mm) width 78.44 in (1992.4 mm) height 22.15 in (562.6 mm) ground clearance
Gross Weight Maximum	4,620 lb (2096 KG)
Battery Charger	2x 20A ProSport chargers
Solar Battery Charger	Go Power! 75A industrial-grade solar charging system
On-board Battery	4x 100Ah 12V AGM battery bank
Solar Panel	2x 170W solar panel array
Solar Charge Controller	Nominal System Voltage 12/24V (Auto Detection) PV Maximum Input Voltage 30/50V Maximum Solar Array Current 20A

2.1 Trailer Towing Speeds

Maximum Towing Speeds with Maximum Payload Evenly Distributed	
Highway	55 mph (66.5 km/h)
Secondary Roads	35 mph (56.3 km/h)
Cross-Country	20 mph (32.2 km/h)

2.2 Trailer Weight Ratings

Item	Weight (lbs.)
Vehicle Curb Weight*	2,960
Payload Maximum	1,660
Gross Weight Maximum	4620
A704 – Large	23 each
Sling (shackles)	22,000 each

*Vehicle Curb Weight does not include the on-board batteries. Each battery weighs 69 lbs.

2.3 PALT Charging Times (112 lights)

The following charge times are for the A704 lights – large with 50Ah batteries *(Assumes on-board batteries are fully charged, with temperature 25°C and 90% charge efficiency)*

Battery State	Bank K-O: 32 lights + 2 HHC* (Hours)	Bank F-J: 40 lights (Hours)	Bank A-E: 40 lights (Hours)	Total Hours
50% Depleted	10	10	10	30
Fully Depleted	20	20	20	60

*HHC = Handheld Controller

3.0 PALT Overview

The Portable Airfield Lighting Trailer (PALT) is a portable airfield lighting system designed for quick and easy deployment of solar portable airfield lights. The trailer can store up to 112 A704 lights. The PALT comes with an integrated solar charging system, keeping your lights charged and ready for use. It is configurable up to a 10,000 ft. runway, air transportable, and towable to expedite runway lighting installation.

The PALT system is configured to transport and charge runway edge lights, runway threshold lights, and 2 Handheld Controllers (HHC).

Front/Side View

Rear/Side View

4.0 PALT Operation & Safety

4.1 Coupling and Uncoupling the Trailer

Personnel must stand clear of the towing vehicle and trailer during coupling and uncoupling operations. If the trailer is not coupled to the towing vehicle, ensure that the handbrakes are applied and the stabilizing arms are in the correct position. Failure to follow this warning may cause the trailer to roll, resulting in injury or death to personnel or damage to the equipment. The use of chock blocks is also recommended.

4.2 Rear Stabilizers

Rear stabilizers must be used during loading and unloading when the trailer is not coupled to a towing vehicle. Ensure that the weight of the trailer is on the front jack or coupled to the towing vehicle before raising the rear stabilizers. Failure to follow this warning may cause the trailer to tip, resulting in injury or death to personnel or damage to the equipment.

4.3 Tires

Do not exceed 25psi (172 kPa) cold inflation pressure.

The trailers are equipped with run-flat tires, allowing the trailer to be towed with one or both tires flat. Do not exceed 30 mph (48.3 km/h) during any run-flat operation. Do not exceed 20 mph (32.2 km/h) for more than 30 miles (48.3 km/h) with both flat tires.

4.4 General Precautions

Always observe the included warning signs and stickers when working in or around the enclosure.

When the side and rear doors are open it is important to pay attention to the door height to avoid injury. Always watch your head when the doors are open or if you are working inside the enclosure.

Never step on any of the electrical distribution boxes as it may expose the technician to live voltages and possible bodily harm.

The light fixtures (A704 – Large) are 23lbs. Do not lift the fixtures from an extended position. Always lift with your back to avoid injury.

4.5 Storage

The trailer, when fully loaded with lights, will experience best results if parked under a canopy and/or have the doors opened while not in transit to keep peak temperatures down. This will prevent excessive draining of the batteries while not in use due to high temperatures. Batteries inside the PALT and A704 light fixtures should be charged at least every 6 months to prevent permanent damage.

4.6 Door Latch Operation

Each door is equipped with a left and right latch. When the T-Handle on the latch is vertical, the door latch is in it's locked state. To turn the latch, swing the T-handle out towards the user and turn ¼ of a turn. The T-handle should now be horizontal and the door is now unlocked. You can use the T-handle to pull open the door. Each latch is equipped with a lock. Keys are provided in separate packaging inside the trailer.

4.7 Adjustable Pintle Eye

The PALT is equipped with an adjustable Pintle Eye to accommodate for various sized towing vehicles. To adjust the Pintle Eye, simply remove the two bolts detailed below, and move the Pintle Eye to the designated height and install the bolts back into the correct holes.

5.0 A704 Light Fixture and Handheld Controller (HHC)

Refer to the user manual for full A704 and HHC functionality.

IMPORTANT! Always connect the HHC to charging cable (external wall plug or PALT charging circuit) when not in use.

6.0 Loading and Unloading

Do not connect or disconnect lights while the Light Charging Disconnect breaker is ON, as this could allow shorting the charge cable and blowing a system fuse if a pin is damaged or misaligned. Always place the trailer in a well-ventilated location when charging.

6.1 Loading Safety Precautions

When loading the A704 light fixtures into the trailer, start with side entry decks (do not load just the back as it will affect the backload stabilization). When the trailer is not hitched to a towing vehicle, use the stabilizing bars on the back to secure the trailer and engage the hand brakes on the front of the trailer to keep it secure.

6.2 A704 Loading Procedure

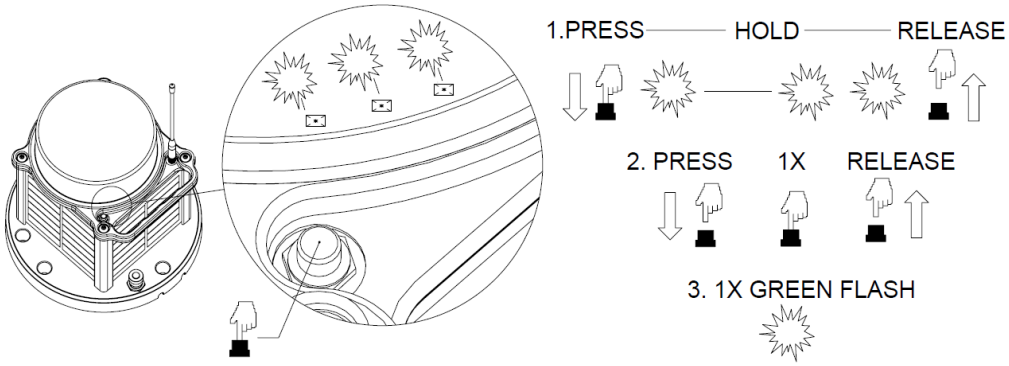
Follow this procedure when loading the A704 fixtures into the trailer. Ensure the A704 is put into storage mode before loading in the trailer.

NOTE! If the lights are placed in “Continuous High” mode they will not automatically go into “Storage Mode” after 24 hours of not receiving ambient light.

1. At the breakers on the Main Power Box, select a charging source:

2. Set all three “Light Charging Disconnect Banks” breakers to OFF.

3. Release the lock arms that secure the rails.
    a. Pull back on the “Latch Lock”
    b. Lift UP on the “Grip Handle”
    c. Move the “Draw Arm” UP
        i. **NOTE!** Do not hang the rail/lock arms on the charge cables affixed to the top interior of the trailer.
4. Prior to placing lights into trailer holding bays, set all lights to “Storage Mode” using the following procedure:
    a. Hold down button on light until there are 2 amber flashes
    b. Release button
    c. Press and release button once quickly
    d. Light will produce one green flash to indicate storage mode is operational



5. Once lights are in storage mode, place them into the racks with the handles facing outwards and the military charge connector on the left hand side.

6. Push the light as far back into the channel as possible

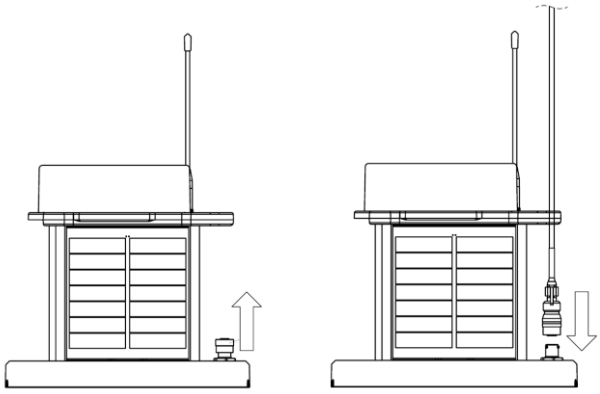
7. Set the appropriate “Light Charging Disconnect Banks” breakers to ON. 12-volt power will now be present at the end of each A704 charging cable for the bank that is turned on. ***It is recommended to charge only one bank of lights at a time, see Section 7.0 for Charging Operation details.***

8. Detach the charging cable from directly overhead (twist the plug counterclockwise to release)

9. Unscrew the protective cap from the military charge connector on the base of the light.

10. Attach the charging cable to the light. Rotate the main body of the connector until the pins line up and the connector easily drops down into place. Rotate knurled outer ring to lock the connector into place (twist clockwise).

    a. **NOTE!** Use care when connecting the cables. Excessive force can bend the pins inside the connector, causing loss of electrical continuity or short circuits.



11. Verify the light is receiving charging power from the trailer.
    a. The small yellow LED indicator on the circuit board inside the A704 head should be flashing.
    b. Refer to Section 9.0 “Troubleshooting” if a light is not charging.

12. Repeat until all lights are loaded into the trailer.

13. Bring down the locking arms and secure them in place.

14. Ensure all lights are secured in storage racks and connected to charging cables.

6.3 A704 Unloading Procedure

The following procedure should be followed when unloading the A704 fixtures from the trailer

WARNING! Be sure to unload the trailer with rear stabilizer legs in place, if not attached to a towing vehicle.

1. Set all 3 “Light Charging Disconnect Banks” breakers to OFF.

2. Release the lockdown bars.
    a. **NOTE!** Do not hang the rail/lock arms on the charge cables affixed to the top interior of the trailer.

3. Disconnect the charging cable from the closest light and stow the charging cable in the ceiling by connecting it to a matching bulkhead connector.

4. Secure the protective cap on the light's charge connector

5. Slide the light towards the user and remove from trailer

6. Repeat process until all lights are removed

7. Re-secure the lockdown bars

7.0 Charging Operation

The trailer is designed for the transportation, storage, and charging of up to 112 Flash Technology A704 solar aviation lights and two HHCs. The electrical system is designed around 12-volts DC supplied by an on-board battery bank that can be charged by a pair of AC chargers. The charge of the on-board battery bank can also be supplemented by the 340W solar array.

Within the Main Power Box, all charging sources and the charging circuits for the A704s and HHCs terminate on shared positive and negative bus bars. While performing the charging procedure, it is important to periodically check the status indicator lights on the ProSport20 Battery Chargers to determine the status of the charging process (see section 7.1.4).

7.1.1 Charging Preparation

When possible, always charge the PALT with the doors open to allow for maximum ventilation.

7.1.2 On-Board Battery Bank Charging Procedure

IMPORTANT! Always start the light charging process with a fully charged on-board battery bank. It is recommended to leave the trailer connected to AC power to maintain a charge on the internal battery bank while the A704 lights are deployed.

Prior to loading the lights, or turning on the breakers for their respective bank locations, allow the AC chargers to fully charge the on-board battery bank as detailed in the following procedure. Failure to fully charge the on-board battery bank may result in incomplete light charging.

Procedure:

1. Check the position of the Disconnect switches on the side of the Main Power Distribution box. Ensure that all are set to OFF (horizontal position).
2. Apply AC power to the Trailer.
3. Verify that the blue AC Power LED is illuminated on both chargers.
4. Close the Battery Charger Disconnect on the side of the Main Power Distribution box. Charging of the on-board battery bank will now begin.
5. Observe the Charge Mode LED's on the chargers. As charging progresses, the status will change from Charging to Conditioning, and finally to Auto Maintain. Charging is complete when both chargers indicate Auto Maintain.

7.1.3 Charging by AC Power

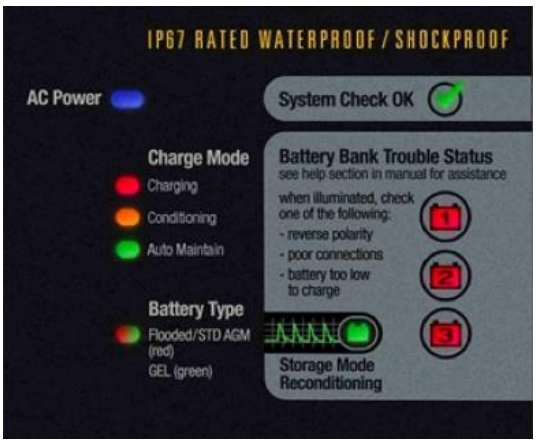
The trailer is equipped with a 50A AC connector at the left rear of the trailer. Once inside the trailer, the AC power is split into two separate feeds with each feed powering a ProSport 20 battery charger. The outputs of the battery chargers are connected to the positive and negative main bus bars. A breaker on the outside of the Main Power Box allows disconnection of the battery charger outputs from the main bus bars.

1. Connect the trailer to at least a 15A rated AC power source (100-260VAC 50/60Hz) using the provided power cord.
2. Turn ON the battery charger breaker.

NOTE! As long as AC power is connected, the two battery chargers will be powered up.

7.1.4 AC ProSport20 Chargers

LED Indicator	Description
AC Power	Illuminates blue when AC power is applied.
Battery Type	Will illuminate red for standard Flooded (lead-acid)/AGM and green for GEL. **Should be red.**
System Check OK	After applying AC power the ProSport20 will self test and analyze all battery connections and batteries. If all checks are OK the green LED will illuminate. This can take up to 2 minutes.
Charge Mode	Indicates the progress of the charging cycle: • The red Charging LED will flash during the self test and battery test mode (approximately 1-2 minutes) and will be solid red during charging. • The amber Conditioning LED illuminates during the conditioning mode. • The green Auto Maintain LED illuminates when batteries are fully charged and being automatically maintained.
Battery Bank Trouble Status	Red LEDs will illuminate indicating a wiring problem or fault at one of the batteries connected to the ProSport charger.
Storage Recondition	Green LED fades in and out when performing a once a month storage recondition mode.



7.1.5 Solar Array

The roof of the trailer is equipped with two 170-watt solar panels connected in series to provide 340W. The solar panels outputs feed into a 20-amp charge controller inside the Main Power Box. The output of the charge controller is connected to the positive and negative main bus bars. A breaker on the outside of the Main Power Box allows disconnection of the charge controller output from the main bus bars.

1. Place the trailer in an outside location that will receive an optimal amount of sunlight.

2. Turn ON the charge controller breaker.

7.1.6 Main Battery Array

The trailer's Main Battery Array consists of four 100 amp-hour 12-volt deep cycle AGM batteries connected in parallel. The positive and negative connections from the Main Battery Array are terminated on the positive and negative bus bar inside the Main Power Box.

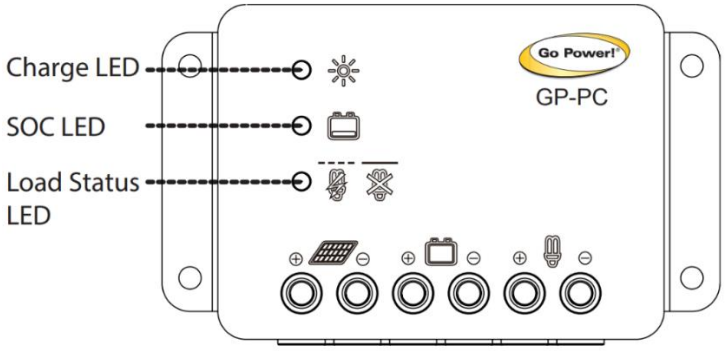
If charging a fully depleted load of lights, it is best to charge one bank at a time by using the Light Charging Disconnect switches on the side of the Main Power Distribution box to control which bank is being charged. Failure to do so could result in the on-board battery bank being drained too fast and causing the on-board LVD (low voltage disconnect) to engage. This will initiate a sequence where the load is removed from the on-board batteries until they are charged back up to begin the charging sequence again. This condition may be observed when the ProSport Battery Bank Trouble Indicator LED's periodically come on.

Procedure:

1. Perform the On-Board Battery Bank Charging Procedure provided above to ensure that the battery bank is fully charged.
2. Ensure that the Status LED's on both ProSport battery chargers indicate Auto Maintain.
3. Close the Light Charging Disconnect K-O. This will charge up to 32 lights plus two handheld controllers.
    a. Observe the ProSport Battery Bank Trouble Indicator LED's and verify that both are off.
    b. Observe the ProSport Status LED illuminated (Charging, Conditioning, or Auto Maintain).
    c. Do not proceed to next step until charging is complete, indicated when both chargers indicate Auto Maintain.
4. Close the Light Charging Disconnect F-J. This will charge up to 40 additional lights.
    a. Observe the ProSport Battery Bank Trouble Indicator LED's and verify that both are off.
    b. Observe the ProSport Status LED illuminated (Charging, Conditioning, or Auto Maintain).
    c. Do not proceed to next step until charging is complete, indicated when both chargers indicate Auto Maintain.
5. Close the Light Charging Disconnect A-E. This will charge up to 40 additional lights.
    a. Observe the ProSport Battery Bank Trouble Indicator LED's and verify that both are off.
    b. Observe the ProSport Status LED illuminated (Charging, Conditioning, or Auto Maintain).
    c. Charging is complete when both chargers indicate Auto Maintain.

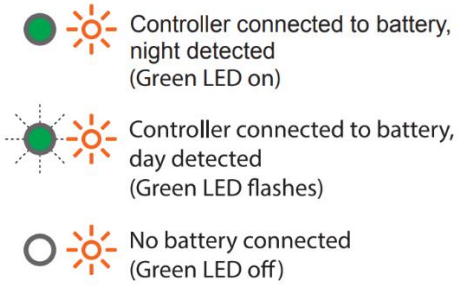
7.1.7 Solar Charge Controller Operation

The charge controller is used only to provide charging current to the main batteries. It does not have a connection at its load terminals.



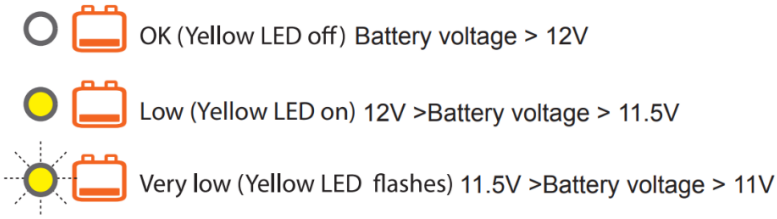
7.1.8 Charge LED Status Indicator

Solar charging of the battery will take place when the charge controller detects daytime based on the output current from the solar panels mounted to the top of the trailer.



7.1.9 Battery SOC (State-of-Charge) LED Status Indicator

The charge controller's battery SOC indicator can be used as an approximate indication of battery charge based on voltage.



7.1.10 Charging of the A704s and HHCs

The trailer supports up to 112 A704s and two handheld controllers for charging. Charging circuits for the A704s and HHCs are grouped into three main branches with each branch being controlled by an 80-Amp breaker on the outside of the Main Power Box. Each branch circuit divides into 5 secondary feeds which terminate on a distribution box. A704 distribution boxes provides eight individual charge circuits. The single HHC distribution box provides two individual charge circuits.

The A704s and HHCs are charged by attaching a 12-volt charge cable with military connector to their corresponding military connector. The connector is located on the top of the baseplate of the A704 and on the left

side of the HHC. When 12-volts is present on the power connector of the A704s and HHCs, internal charging circuit electronics automatically charges up the internal batteries

1. When successfully charging, each light will have one amber flash per second.
2. To disconnect lights, perform above steps in reverse.

NOTE! It is recommended that the Handheld Controller (HHC) be connected and charging when not in use.

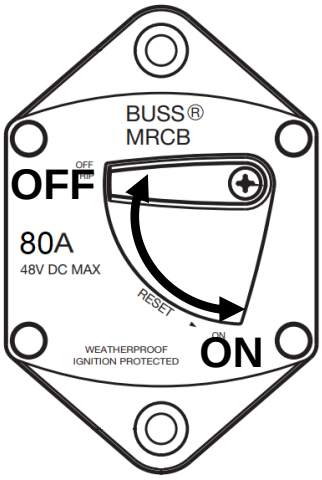
7.1.11 Circuit Protection

AC Power In	Series 187, Marine-Rated Circuit Breaker, 50A Cooper Bussman
Solar Power In	Series 187, Marine-Rated Circuit Breaker, 30A Cooper Bussman
Lights Primary Feeder Circuits	Series 187, Marine-Rated Circuit Breaker, 80A Cooper Bussman
Lights Secondary Feeder Circuits	20A Automotive blade fuses
Individual Light Circuits	5A Automotive blade fuses

7.1.12 Use of Main Power Box Breakers

The breakers in the side of the Main Power Box function as both ON/OFF control and protection against overcurrents. To turn a breaker and its associated circuit on, push the yellow lever into the down position as shown in the diagram below. To turn a breaker off, simply switch the yellow lever back into the horizontal position. If at any time a breaker that is set to ON “trips” and turns itself off, that is an indication that excessive current was detected and the breaker turned itself OFF for safety and fire prevention.

WARNING Before resetting a breaker to the ON position, conduct an investigation into the cause of the first tripping of the breaker. Excessive currents are usually caused by short circuits to ground such as frayed or damaged wiring or pinched cables making contact with the chassis. Locate and repair the short circuit before attempting to energize the circuit again.



8.0 Maintenance

8.1 How to Change a Battery in the Main Battery Array

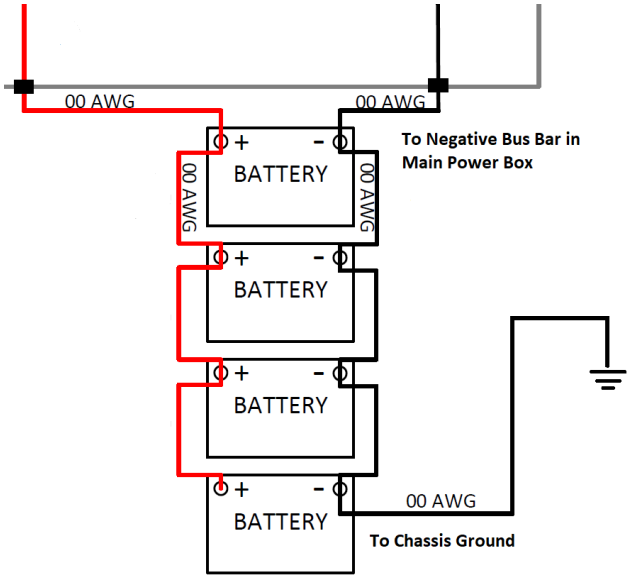
CAUTION Removal and/or installation of the PALT batteries should be performed by two people, due to space restrictions, battery weight (69 Lbs.) and the need for extended reach.

SAFETY The Main Battery Array is grounded to the metal trailer chassis. Any work on the positive terminals of the battery, particularly with metallic tools, can potentially create accidental short circuits between the battery positive and the chassis ground. Metal tabs also extend into the battery compartment that could make contact with the positive battery terminal when it is removed. This risk can be reduced by observing the following:

- Use socket extensions to put the wrench handle at a safe distance from the chassis
- As soon as possible, disconnect the negative battery connections that are connected to the Main Power Box and the chassis ground
- Use gloves and tools with electrically-insulated handles if available
- Re-attach and cover exposed terminals after cables have been removed
- Use adequate lighting to illuminate the work area
- Work slowly and carefully, keeping the work area clean and free of loose objects

1. Remove the lid and place it away from the trailer interior to free up room and prevent it from creating accidental short circuits. Stow the fasteners to one side.
2. Remove the metal battery hold-down bracket by loosening and removing the fasteners on each end.
3. Remove the negative battery terminal cable that goes under the chassis and is system ground.
4. Remove the negative battery terminal cable that is routed into the Main Power Box.
5. Identify the red positive power cable that connects the Main Battery Array to the Main Power Box. Detach this cable at the positive battery terminal. While the terminal fasteners are loosened, take care to ensure the next battery interconnection cable that is also connected to the terminal continues to be held in place at the terminal until it is ready to be disconnected. Stow the main red power cable off to the side where it will not interfere with battery removal.
6. Returning to the positive terminal of the first battery, detach the second red positive battery cable that connected the first battery to the second battery.

CAUTION Although the chassis ground has been removed, it is safest to consider the cable end that is still connected to the remaining batteries' positive terminals as live and a shock or short circuit hazard. Insulate it and secure it from accidental contact with the chassis, negative connections on the battery, or other wiring.

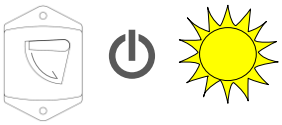


7. Both terminals of the first battery should now be free of connected cables, and cables that were attached to them are safely secured and set back to allow removal of the battery
8. One individual will position themselves inside the trailer so they are directly over the battery handle. Pull the battery straight up and swing it over to the flat area adjacent to the battery compartment.
9. The second individual will then be able to lift the battery up and over the ledge of the door opening and place the battery safely on the ground.
10. To install a new battery, follow the above steps in reverse. Ensure that connection of the negative ground and Main Power Box ground are the last steps.

8.2 Maintaining Main Battery Array Charge

Readiness of the trailer for charging operation requires the Main Battery Array to always be fully charged. To charge the Main Battery Array only (no A704s or HHCs):

1. Turn the AC Power, Solar Panel, and three Lights breakers OFF
2. Ideally, allow the Main Battery Array to rest for 30 minutes to allow the voltage to decrease to a stable value
3. Measure the Main Battery Array voltage at the positive and negative terminals inside the Main Power Box.
    a. If voltage is below 12.6 volts, recharging is recommended.
4. Select a charging source:

Charging Source	Breaker Settings
AC	"Battery Charger Disconnect" = ON "Charge Controller Disconnect" = OFF 
Solar Power	"Battery Charger Disconnect" = OFF "Charge Controller Disconnect" = ON 

5. The time required to arrive at a full charge will vary. Monitor the battery charger or charge controller indicators for charging status.

8.3 Trailer Maintenance

Regular maintenance will be important to ensure reliable operation of all parts of the trailer. Ensure the latches are in good working condition and that the door seals are not damaged.

It is recommended to frequently check for the following:

1. Cleanliness
   1.1. Dirt, grease, oil and debris may cover up a serious problem. Clean surface areas regularly.
2. Rust and Corrosion
   2.1. Check the trailer body and frame for rust and/or corrosion.
3. Hardware (bolts, nuts and screws)
   3.1. Ensure that hardware is not loose, missing, bent or broken.
4. Welds
   4.1. Look for loose or chipped paint, rust or cracks where parts are welded together.
5. Wiring Harnesses
   5.1. Inspect for cracked/broken insulation, bare wires, and loose/broken connectors.
6. Leakage
   6.1. Inspect for wetness around seals, gaskets, fittings and other connections.

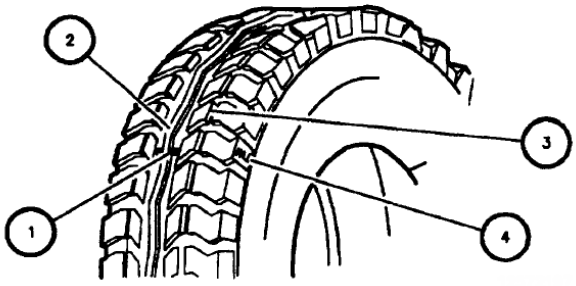
NOTE! Ensure you complete Preventative Maintenance Checks and Services (PMCS) each time the trailer has been operated, or at the frequency listed in the following tables.

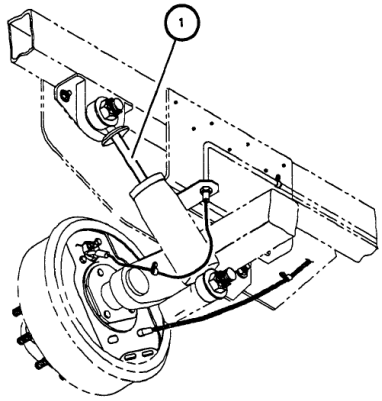
Before PMCS		
Item to Service	**Procedure**	**Not Mission Capable if:**
Brake Actuator Assembly	A. Inspect area where front pin goes through brake actuator housing for damage and abnormal wear. B. Inspect master pin that goes through middle rear area of brake actuator. C. Ensure mounting nuts and bolts securely fasten brake actuator assembly to drawbar. D. Visually check brake breakaway cable and breakaway lever for damage	Damage is evident
Front Support Leg	Check for damage, missing parts and proper operation. Check that the caster moves freely and the handle can be cranked up and down to raise and lower the trailer.	Damage is evident
Handbrake Levers	Check for damage or missing parts. Ensure the handle can be easily engaged and released.	Damage is evident or handbrake does not operate properly
Tires	Visually check for underinflated and/or unserviceable tires. Check for leaks, cuts, gouges, cracks and bulges.	If tire is missing, underinflated and/or unserviceable
Intervehicular Cable	Connect cable to towing vehicle. Operate towing vehicle lights and switch through all settings and check trailer lights.	Lights do not operate properly

After PMCS		
Item to Service	**Procedure**	**Not Mission Capable if:**
Rear Stabilizers	Inspect stabilizers for damage. Ensure the hinge on flex plate can be rotated and sections slide up and down when pin is removed.	Damage is evident or parts are missing
Shock Absorbers	Inspect shocks for leaks, missing nuts and damage.	Leakage is present, hardware missing and/or damage is evident
Safety Chains	Inspect safety chains for damage or missing parts.	Damage is evident or parts are missing

Weekly PMCS		
Item to Service	**Procedure**	**Not Mission Capable if:**
Wheel Assemblies	Check lugnuts and stud nuts to make sure they are not loose or missing.	Three or more lugnuts or stud nuts are missing
Brake Actuator Assembly	Inspect brake lines and hoses for missing clamps, cracks, leaks, loose connections or broken lines.	Any leaks are found
Lights, Reflectors and Wiring	A. Visually inspect lights and reflectors for missing/broken parts or loose connectors. B. Inspect wiring harnesses and intravehicular cable for exposed, frayed or damaged wiring.	Damage is evident or parts are missing
Cargo Body	A. Inspect for missing rivets, cargo tie-downs and damage. B. Visually check that the ID plate is firmly attached and readable. C. Inspect bows for damage	Damage is evident or parts are missing
Frame and Cross-Member	Inspect frame and side rails for cracks, breaks, bends, wear, deterioration, and missing/loose fasteners.	Cracks, bends or breaks in frame present

Monthly PMCS		
Item to Service	**Procedure**	**Not Mission Capable if:**
Brake Actuator Assembly	Inspect the master cylinder assy. for damaged/missing caps, leaks and proper fluid level. **Proper fluid level:** 1/8 in. (3mm) below top edge of reservoir.	Any leaks are found

Semi-Annual PMCS		
Item to Service	**Procedure**	**Not Mission Capable if:**
Brake Actuator Assembly	A. Inspect master pin hole for wear. If hole diameter exceeds 1.06 inches replace outer case assembly. B. Inspect front roller pin hole for wear. If hole diameter exceeds .75 inches replace outer case assembly.	Wear limits are exceeded
Tires (see DETAIL A. TIRE)	A. Visually check for underinflated and unserviceable tires. Check for leaks, cuts, gouges, cracks or bulges. B. Check tire tread depth. Tread should not be worn beyond level of wear bar (1). Wear bars (1) are molded across the tread pattern and are only noticeable in the valley between the center rib (2) and the lugs (3). The letters TWI (Thread Wear Indicator) are molded on the tire sidewall (4) to aid in locating the wear bar. **DETAIL A.** TIRE 	If tire is missing, unserviceable or worn beyond the wear indicator
Wheel Assemblies	A. Check stud nuts to make sure they are not loose or missing. B. Inspect wheel bearings and races for damage. If any bearings needs replacing, replace all bearings on both sides. C. Inspect wheel cylinders for leaks and damage D. Inspect inside drum for scoring. E. Inspect brake shoes for glazing or wear. If any shoe needs replacing, replace all shoes on both sides. F. Adjust service breaks	If any stud nuts are missing, any damage or leaks, any scoring is evident or the brakeshoe is glazed.
Shock Absorbers	Inspect for leaks, missing nuts and dents.	Leaks ae evident, hardware is missing and/or damage is evident

Axle	A. Measure shock absorber extension rod (1). If the exposed extension rod on either absorber measures less than 2 ¼ inches or if the difference between the two extension rods is ¾ inches or greater, the axle requires replacement. B. Check axle hardware for secure mounting (tightness). 	Leaks/damage are evident, missing hardware or measurements not within tolerance
Handbrake	Lubricate handbrakes in accordance with lubrication details found in Sections 7.1 and 7.2.	Unable to apply lubricant
Hydraulic Brake System	A. Inspect brake lines and hoses for defects such as missing clamps, cracks, leaks, loose connections or broken lines. B. Inspect master cylinder assembly for damage or missing cap, leaks and proper fluid level. **Proper fluid level:** 1/8 in. (3mm) below top edge of reservoir. C. Visually check breakaway cable and breakaway lever for damage and/or missing parts.	Any leaks are found, cable or lever is damaged
Lights, Reflectors and Wiring	Visually inspect lights and reflectors for missing/broken pats and/or loose connections. Inspect wiring harness and intravehicular cable for exposed, frayed/damaged wiring or missing hardware Connect intravehicular cable to towing vehicle. Operate towing vehicle lights and switch through all settings and check trailer lights.	Missing or broken lights, wiring damage or inoperative/unserviceable lights
Front Leg Support	A. Check for damage, missing parts and proper operation. Check that the caster moves freely and handles can be cranked up and down to lower and raise the trailer. B. Fully extend support leg and clean as necessary.	Missing parts, damage is evident or improper operation on handle and caster

	C. Remove support leg cover and lubricate in accordance with lubrication details found in Sections 7.1 and 7.2.	
Rear stabilizers	Inspect for damage. Ensure that the hinge on the flex plate can be rotated and sections slide up and down when pin is removed.	Damage is evident or missing parts
Cargo Body	D. Inspect for missing rivets and damage. E. Visually check that the ID plate is firmly attached and readable.	Damage is evident or parts are missing
Door Cylinder	Completely open the door & verify dirt or large debris is not present on the rod. Wipe with dry rag if needed.	Cylinder seal is broken or door will not remain open

8.4 Lubrication

The trailer must receive lubrication with approved lubricants at recommended intervals in order to be mission-ready at all times. Recommended intervals are based on normal conditions of operation, temperature and humidity. When operating under extreme conditions, lubricants should always be used more frequently.

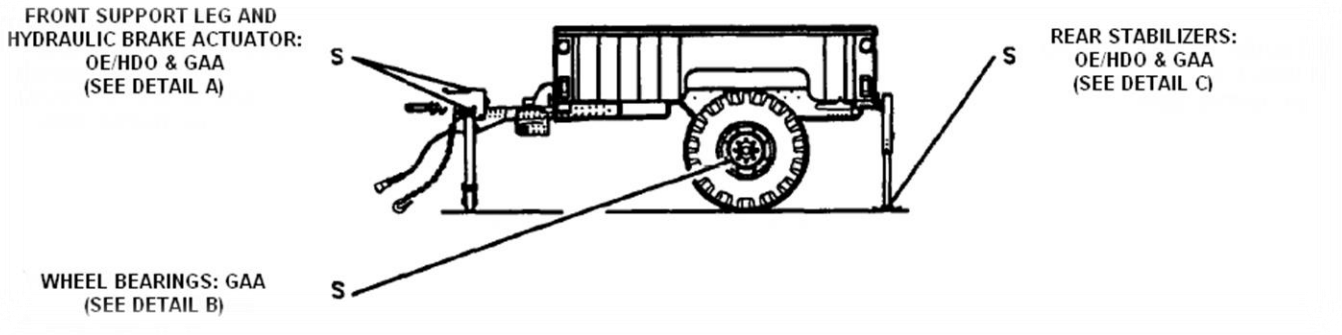
Use the following Lubrication Key for temperature ranges, frequency intervals and lubricant type.

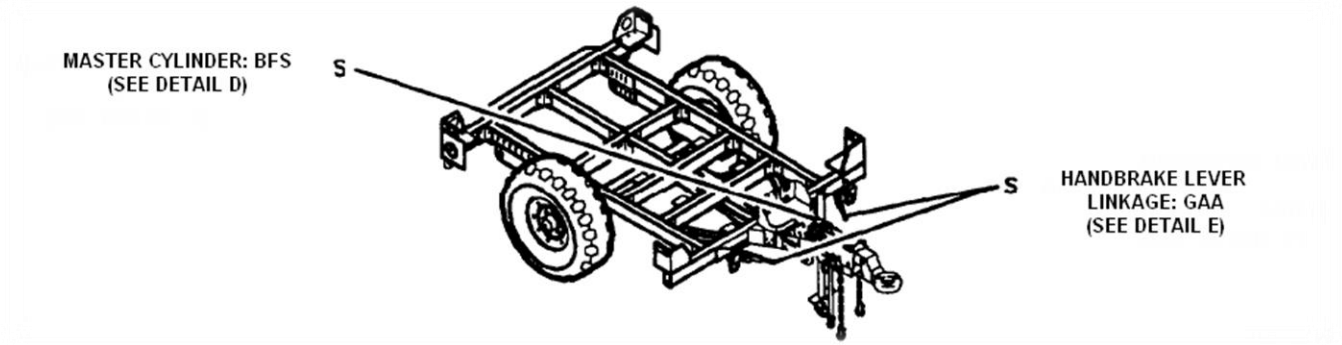
Lubrication Key

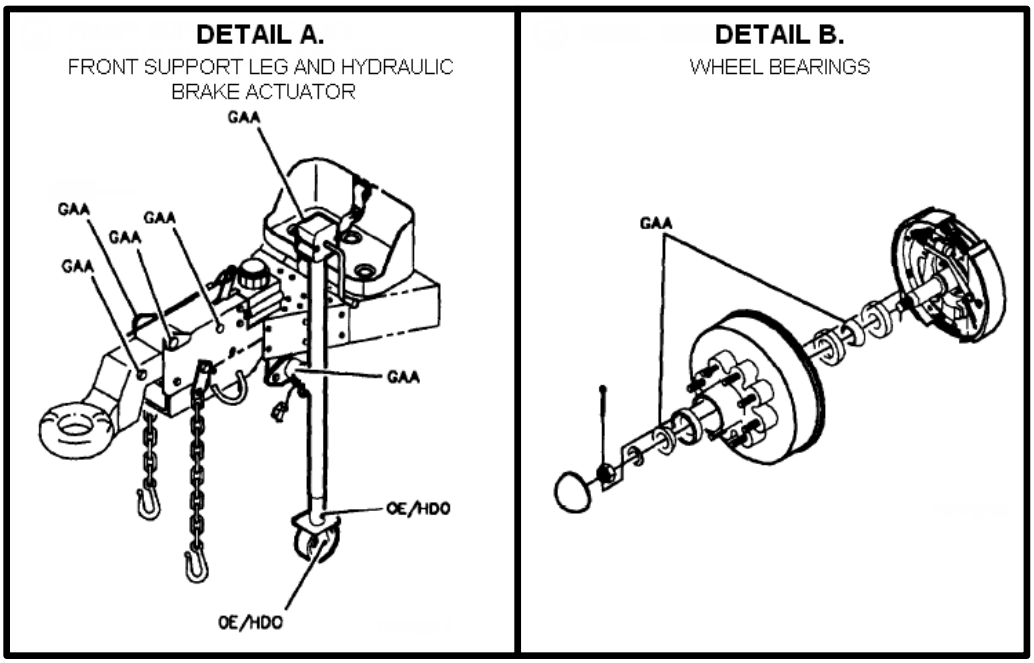
	Expected Temperatures			
Lubricants	32°F and above (+0°C)	+40°F to -10°F (+4°C to -23°C)	0°F to -65°F (-18°C to -54°C)	Intervals
OE/HDO (MIL-L-2104) Lubricating oil, tactical service	OE/HDO-30	OE/HDO-10	-	“S” = Semiannually
OEA (MIL-L-46167) Lubricating oil, arctic	-	-	OEA	
BFS (MIL-B-46176) Brake fluid silicone	All Temperatures			
GA (MIL-G-10924) Grease	All Temperatures			

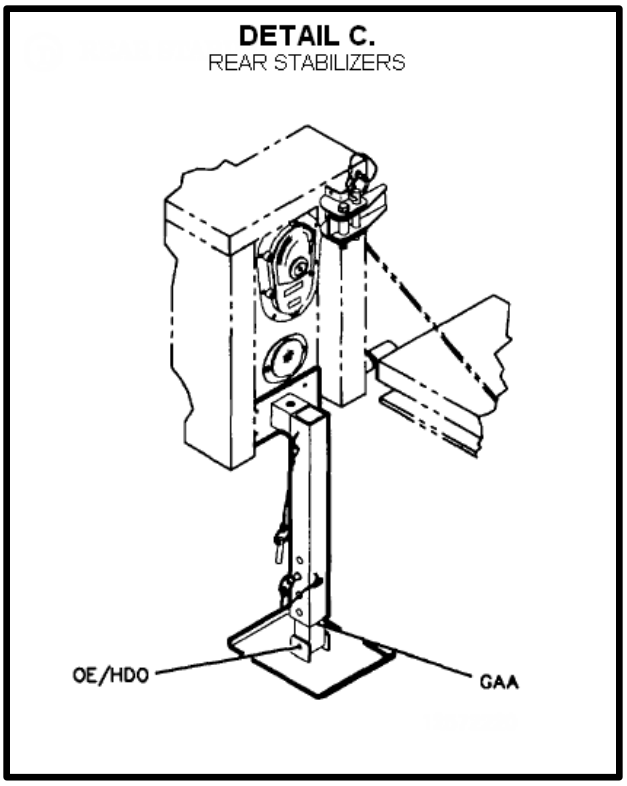
8.5 Lubrication Points

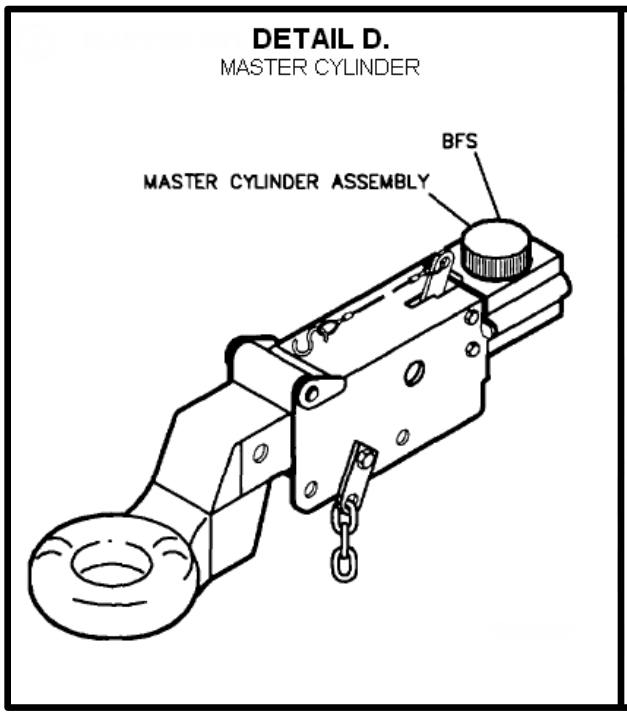
Clean, inspect and lubricate more often when used in sandy or dusty conditions. Clean all fittings and area around lubrication points with a dry cleaning solvent (PD-680 Type II) before lubricating equipment. After lubrication, wipe off excess oil or grease to prevent accumulation of foreign matter.

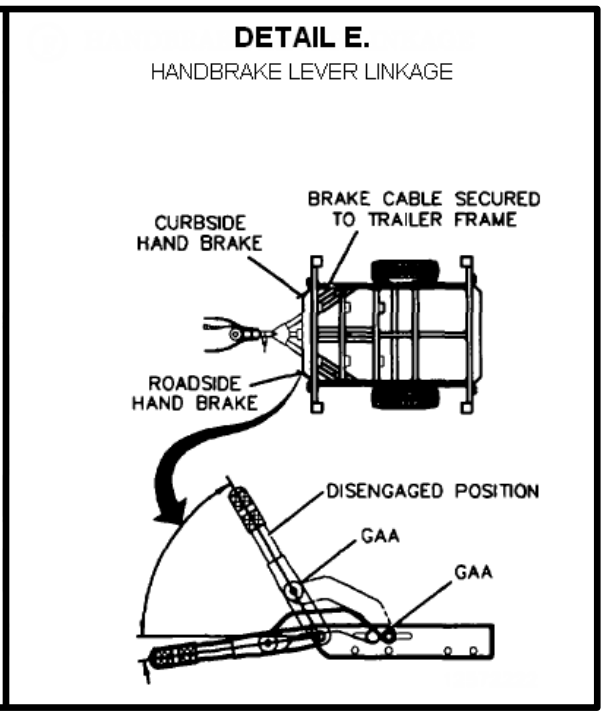




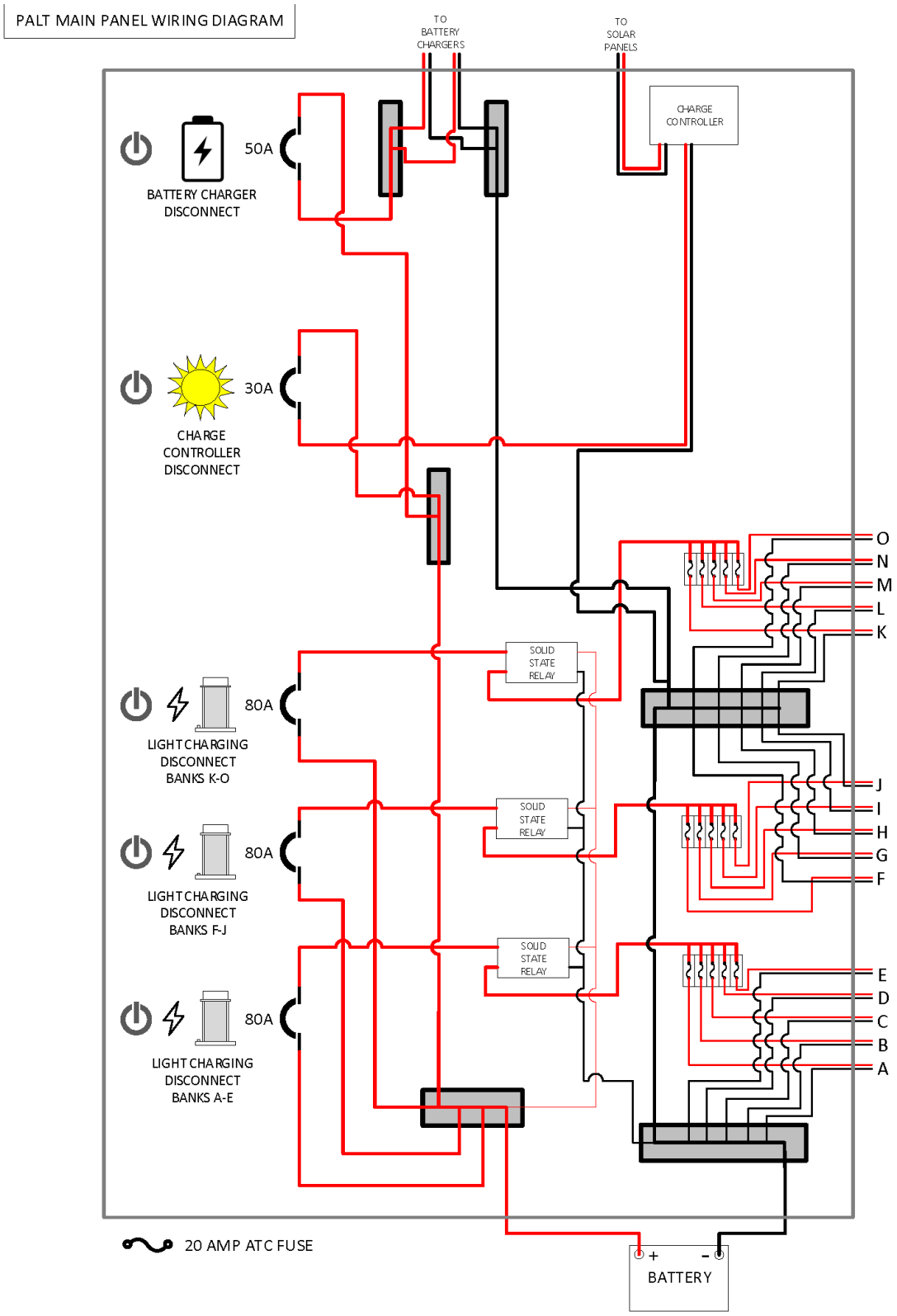



DETAIL C.
REAR STABILIZERS
OE/HDO
GAA

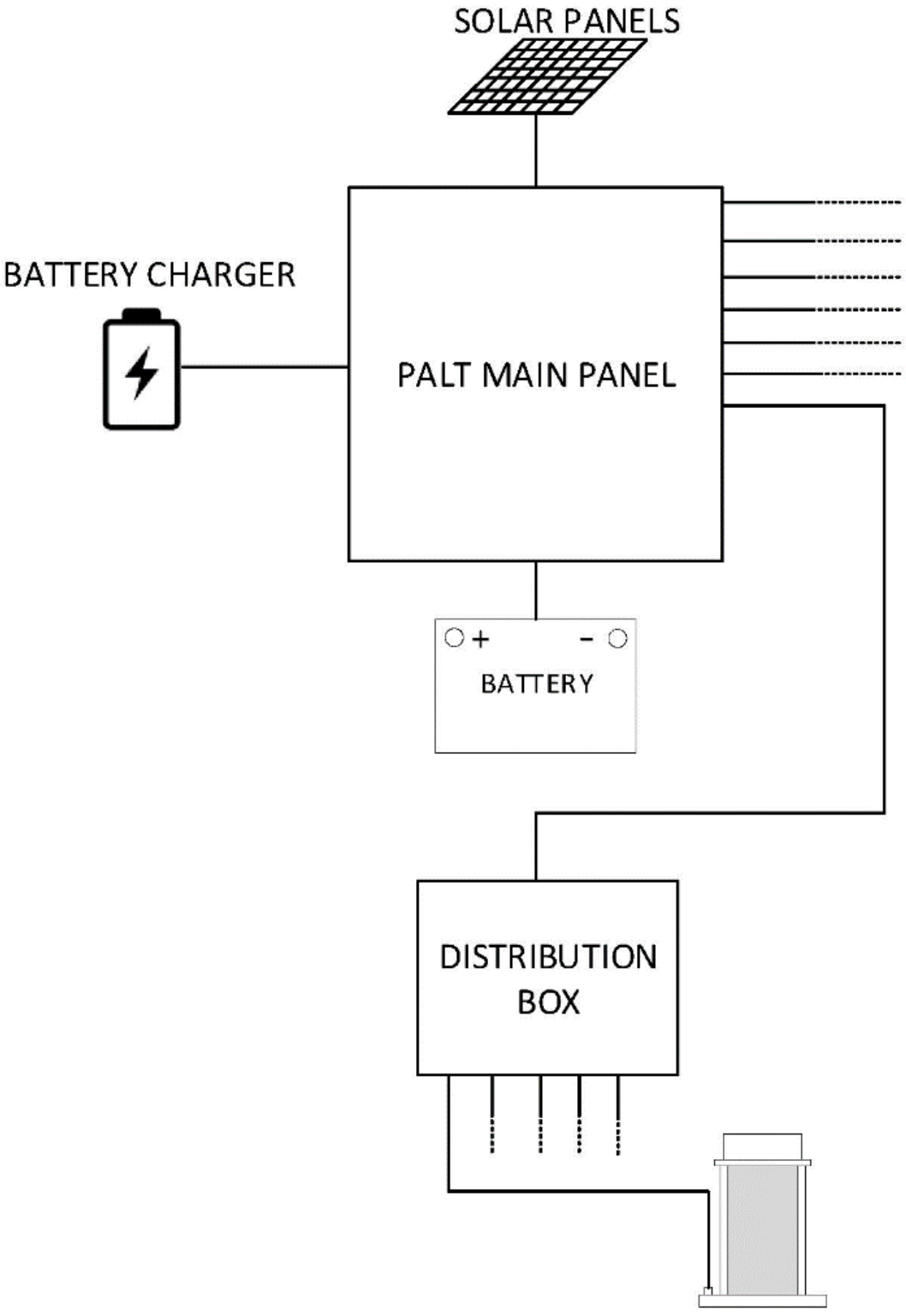

DETAIL D.
MASTER CYLINDER
BFS
MASTER CYLINDER ASSEMBLY


DETAIL E.
HANDBRAKE LEVER LINKAGE
BRAKE CABLE SECURED TO TRAILER FRAME
CURBSIDE HAND BRAKE
ROADSIDE HAND BRAKE
DISENGAGED POSITION
GAA
GAA

9.0 PALT Main Panel Wiring Diagram (83894 REV A)



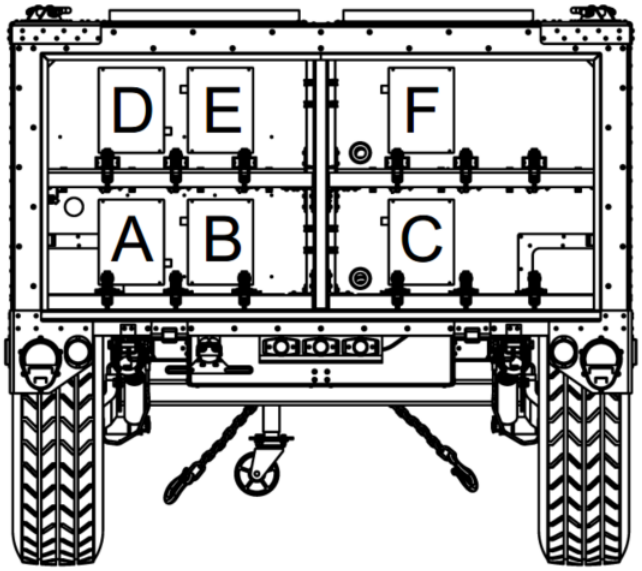
9.1 PALT System Overview



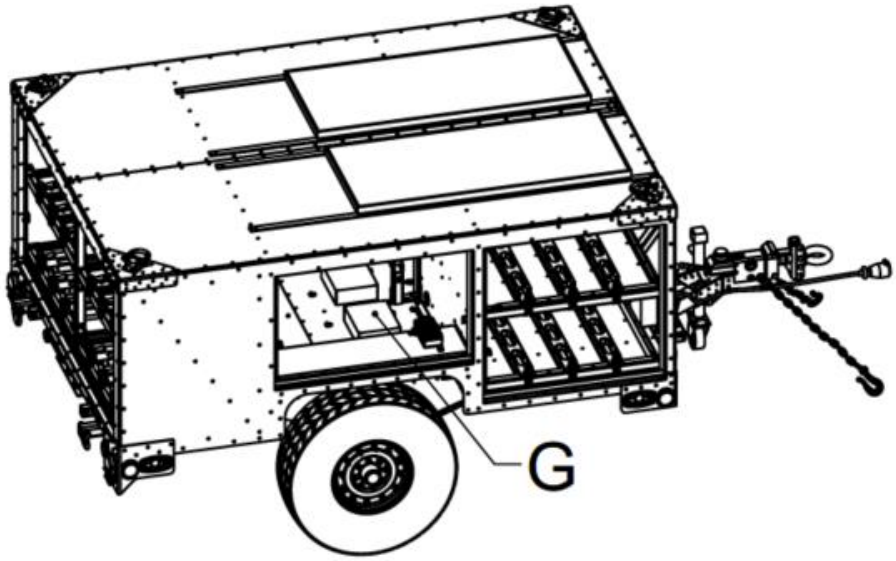
9.2 Distribution Boxes

There are fifteen distribution boxes in the trailer assigned alphabetical lettering “A” through “O”. Fourteen of the distribution boxes provide individual charging cables to the lights. Eight lights are charged by one distribution box. The fifteenth distribution box “G” provides two charging cables for the two handheld controllers. Each distribution box can be identified by labels on its incoming power cable. At the Main Power Box, each distribution box can be similarly identified by a matching label on its power cable. In addition, there are small identifying labels attached to the surface of the Main Power Box where the distribution box power cables enter. It is useful to identify which distribution box is associated with a charging cable when troubleshooting failed fuses.

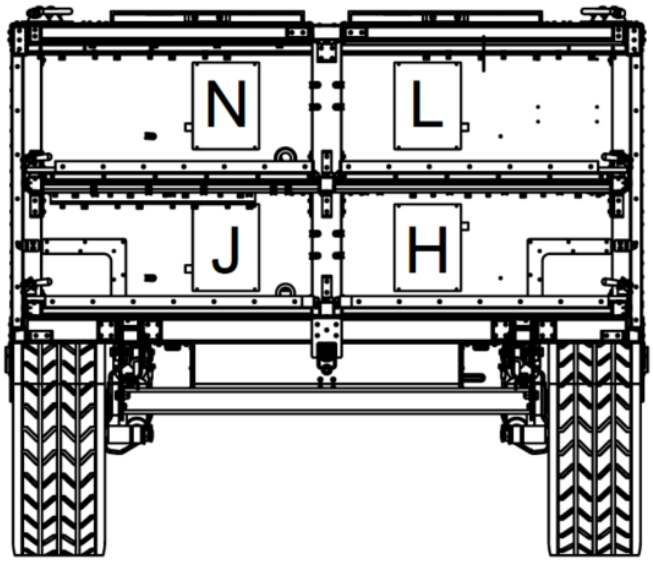
Rear View:



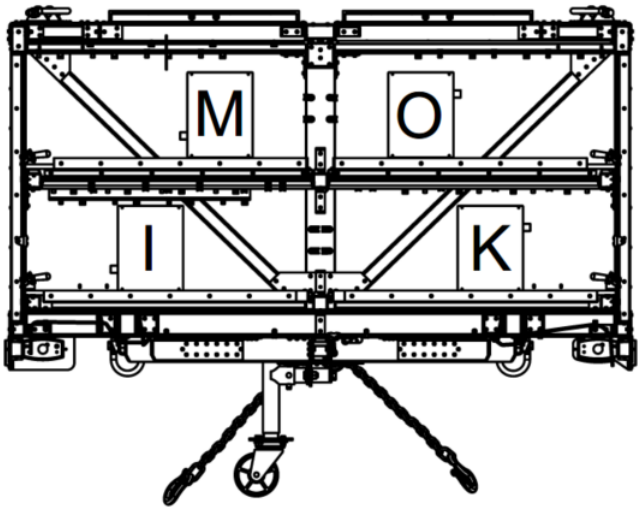
Side View Location for Handheld Controller charge cables:



Distribution Boxes for Front (Side-Accessed) Storage Looking Backwards:

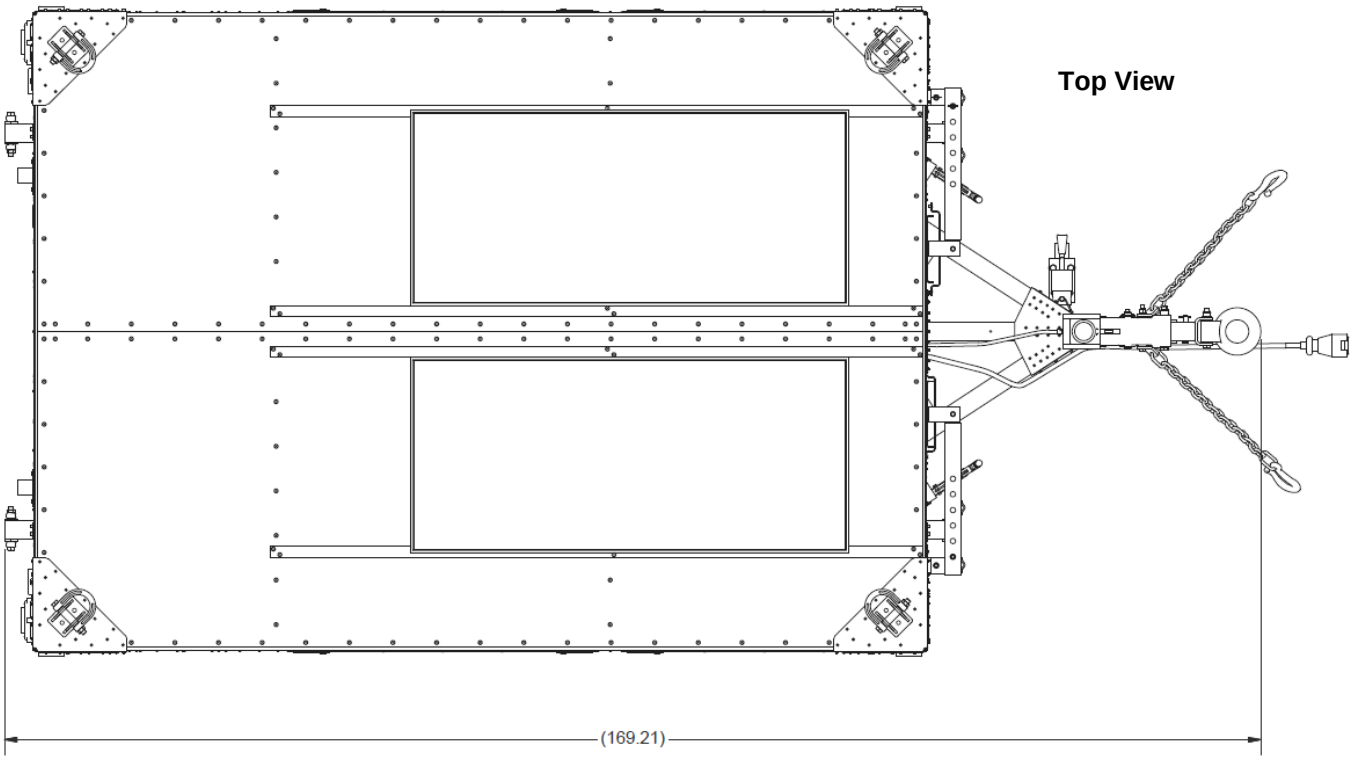


Distribution Boxes for Front (Side-Accessed) Storage Looking Forward:

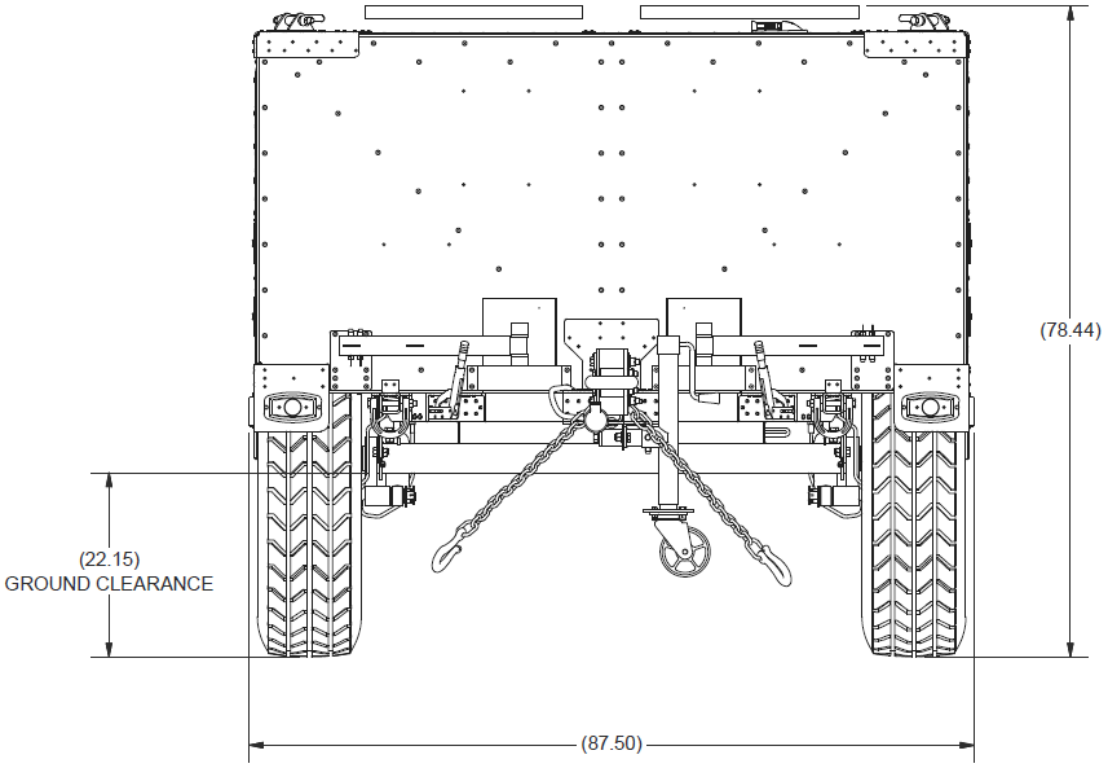


9.3 Trailer Dimensions

The following dimensions are show in inches. Also listed in section 10.1.



Top View



Front View

10.0 Troubleshooting

CAUTION! Any maintenance or troubleshooting should be performed by a qualified electrician. When analyzing the trailer charging system, disconnect all power sources and turn off all switches.

10.1 Single Light is not Charging within a Set of Lights

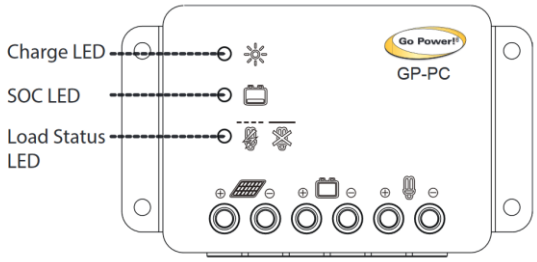
1. Check to see if the 5A fuse for that light is blown by opening the distribution box that is connected to the charging cable for the light in question.
2. If the fuse is blown, check the cable connected to the light for cuts or abrasions that would cause a short to the chassis ground and repair accordingly.
3. Once the short has been repaired, replace the fuse and energize the system to ensure that the system is operational.
4. Also check for bent pins inside the military connector, use the pushbutton to verify the light is working correctly, and try connecting the light to another charge cable that is known to be working correctly.

10.2 Entire Set of Eight Lights is not Charging

1. Trace the light charging cables back to the distribution box within the storage compartment and note the letter on the distribution box.
2. Check to see if the 20A fuse with the same letter as the distribution box is blown by opening the main power box.
3. If the fuse in blown, check the cable connected to the distribution box for cuts or abrasions that would cause a short to the chassis ground and repair accordingly.
4. Once the short has been repaired, replace the fuse and energize the system to ensure that the system is operational.

10.3 None of the Lights Are Charging

1. If using AC power, make sure the battery chargers are operational and have a green check mark.
2. If using solar power, make sure the charge controller is operational, with the Charge LED flashing or steady green.



3. Check the charge controller to see if the system has entered Low Voltage Disconnect (LVD) mode in order to protect the system batteries from excessive discharge. The SOC LED will flash yellow.
4. If the system has entered LVD, connect it to a power source (AC and/or solar) and let the batteries charge sufficiently to power the system again.

11.0 Warranty

This product is covered by the Flash Technology warranty. Visit flashtechnology.com for additional information.

Before contacting Flash Technology's customer service department, please have the serial number of your product available, a brief description of the problem, as well as all details of the installation and recharging efforts.

To contact Customer Service or Technical Support:

Mail: Flash Technology
332 Nichol Mill Lane
Franklin, TN 37067 USA

Toll Free: 1.800.821.5825

Fax: 1.615.261.2600

Email: customerservice@flashtechnology.com

Website: flashtechnology.com

12.0 Common Spare Parts List

Flash Part Number	Description	Manufacturer – Mfg. PN
84003	Evergen 170W Solar Panel	Sol
67843	Battery VRS-100HIT – 100Ah @12V	C&D Technologies
87861	20A Fuse	Littelfuse Inc.
87862	5A Fuse	Littelfuse Inc.
82189	A704 Charging Cable	Flash Technology
78061	Solar Controller 20A	Valterra Power – GP-PC-20
87875	Pro Sport 20 PFC, 20A Battery Charger	ProMariner
-	Left Door Latch	Silver Eagle – 35103
-	Spare Tire (Wrangler MT)	Goodyear - 743123154
-	Right Door Latch	Silver Eagle – 35102
-	Door Lift Cylinders	Silver Eagle - 36424
-	Door Lift Cylinder (Middle Door Only)	Silver Eagle - 36418
-	Intervehicular Cable	Silver Eagle - 7947