

OPERATION AND PARTS MANUAL



GloBug

MODEL GB113BC

LIGHTING SYSTEM

(FOR USE WITH MQ SERIES GENERATORS)

Revision #4 (01/06/09)

**THIS MANUAL MUST ACCOMPANY
THE EQUIPMENT AT ALL TIMES.**



WARNING



CALIFORNIA — Proposition 65 Warning

Engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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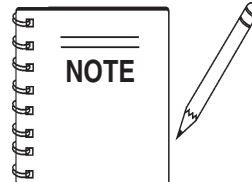
MQ GLOBUG LIGHTING SYSTEM

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Specification and part number are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on
Order Parts to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:
1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| ☐ Dealer Account Number | ☐ Specify Preferred Method of Shipment: |
| ☐ Dealer Name and Address | ✓ UPS/Fed Ex ✓ DHL |
| ☐ Shipping Address (if different than billing address) | ■ Priority One ✓ Truck |
| ☐ Return Fax Number | ■ Ground |
| ☐ Applicable Model Number | ■ Next Day |
| ☐ Quantity, Part Number and Description of Each Part | ■ Second/Third Day |



All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



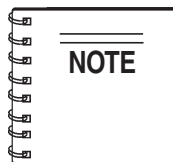
www.multiquip.com



SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the Safety Messages and Operating Instructions could result in injury to yourself and others.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the **MQ GloBug Lighting System**.

Before using this Lighting System, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

The three (3) Safety Messages shown below will inform you about potential hazards that could injure you or others. The Safety Messages specifically address the level of exposure to the operator, and are preceded by one of three words: **DANGER**, **WARNING**, or **CAUTION**.

DANGER

You **WILL** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

WARNING

You **CAN** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

CAUTION

You **CAN** be **INJURED** if you **DO NOT** follow directions.

Potential hazards associated with the **GloBug Lighting System** operation will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with Safety Message Alert Symbols.

HAZARD SYMBOLS

WARNING - Lethal Exhaust Gasses

Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.



WARNING - Explosive Fuel

Gasoline fuel is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids.



DO NOT fill the fuel tank while the engine is running or hot. **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system. Store fuel in approved containers, in well-ventilated areas and away from sparks and flames.

WARNING - Burn Hazards

Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operations. Never operate the engine with heat shields or heat guards removed.



CAUTION - Respiratory Hazard

ALWAYS wear approved **respiratory** protection when required.



SAFETY MESSAGE ALERT SYMBOLS

CAUTION - Rotating Parts

NEVER operate equipment with covers, or guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent injury.



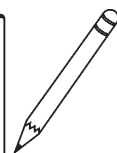
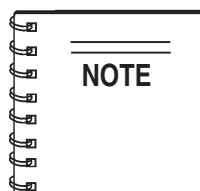
CAUTION - Accidental Starting

ALWAYS place the power source, circuit breakers or **ON/OFF** switch in the **OFF** position, when the generator is not in use, unless connected to transfer switch.



CAUTION - Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your lighting system, other property, or the surrounding environment.



This lighting system, other property, or the surrounding environment could be damaged if you **do not** follow instructions.

CAUTION - Sight and Hearing Hazards



ALWAYS wear approved eye and hearing protection.

CAUTION - Over-Speed Conditions



NEVER tamper with the factory settings of the engine governor settings. Personal injury and damage to the engine or equipment can result if operating speed ranges above maximum allowable.

RULES FOR SAFE OPERATION

WARNING - READ THIS MANUAL

Failure to follow instructions in this manual may lead to **Serious Injury** or even **Death**. This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the GloBug Lighting System.

The following safety guidelines should always be used when operating the GloBug Lighting System:

GENERAL SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual.
- This equipment should not be operated by persons under 18 years of age.
- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.

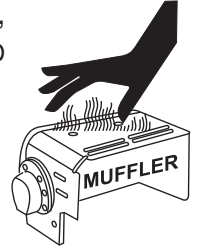


- **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.
- **NEVER** operate this equipment under the influence of **drugs** or **alcohol**.



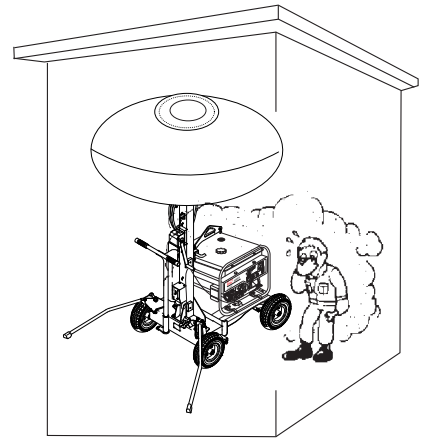
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult to read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications.
- **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or mixer.



- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with **hot!** components can cause serious burns.

- The engine of this lighting system/generator requires an adequate free flow of cooling air. **NEVER** operate the generator in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the generator engine and may cause injury to people. Remember the engine of the lighting system/generator gives off **DEADLY** carbon monoxide gas.



- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop** the engine and allow it to cool. **DO NOT smoke** around or near the machine. Fire or explosion could result from fuel vapors, or if fuel is spilled on a hot engine.



- **NEVER** operate the GloBug in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



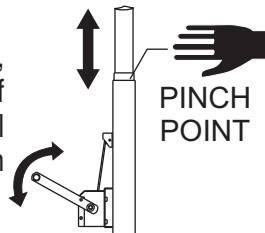
- Topping-off to filler port is dangerous, as it tends to spill fuel. Wipe up any spilled fuel immediately.

RULES FOR SAFE OPERATION

- **ALWAYS** make sure that the GloBug is secure on firm level ground so that it cannot slide or shift around, endangering workers. Also keep the immediate area free of bystanders.
- **ALWAYS** keep area behind GloBug clear of people while raising and lowering mast.
- To prevent the GloBug from overturning, **NEVER** use in winds that exceed 22 mph (10m/s).
- To prevent the GloBug from rolling, **ALWAYS** place the GloBug on a firm flat surface. Surface slant should not exceed 5 degrees.
- To prevent the GloBug from rolling, **ALWAYS** apply the parking brake. For additional safety place chock blocks behind the wheels.
- The GloBug must use a generator that is at least 220 lbs. (100 kg) minimum. This will prevent the GloBug from tipping over.
- The GloBug should only be used in temperatures between 23-104 degrees Fahrenheit (-5 to 40 degrees Celsius). Failure to comply with these operating parameters could cause the lamp to malfunction and shorten the ballast life.
- **NEVER** use the GloBug in *rain, snow* or areas of high humidity that could generate electrical storms.
- Set the GloBug's tire air pressure to 35.5 psi (245kPa). Check daily. Low tire pressure could adversely affect the parking brake.

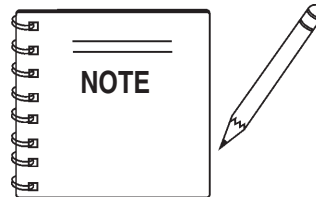
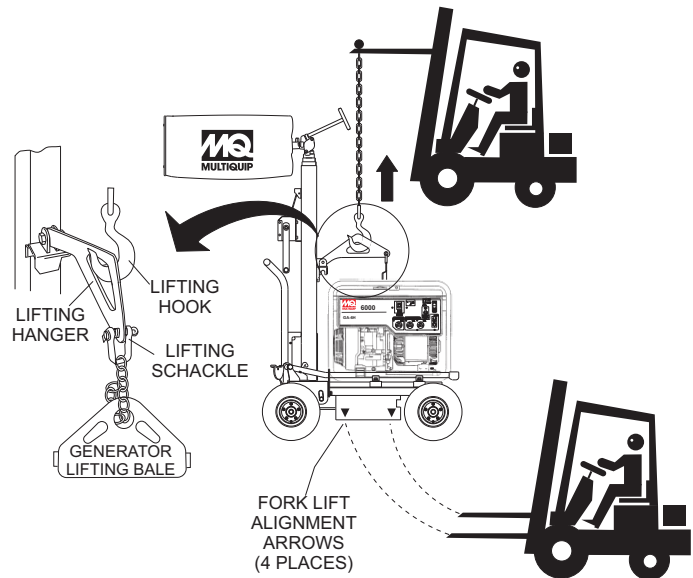
MAST SAFETY

- When raising or lowering the mast, keep hands and fingers clear of the various mast sections, this will prevent hands and fingers from getting pinched.
- When raising the mast and to prevent tipping, **ALWAYS** *deploy outriggers*.
- **CHECK** the mast and winch cables for wear. If any problem occurs when lower or raising the mast **STOP** immediately! Contact a trained MQ technician for assistance.
- **NEVER** pivot or retract mast while unit is operating.
- **NEVER** use the lighting system mast as a crane. **DO NOT** lift anything with the mast.
- **NEVER** attach anything to the lighting system mast.
- **ALWAYS** lower the tower when not in use, or if high winds or electrical storms are expected in the area.



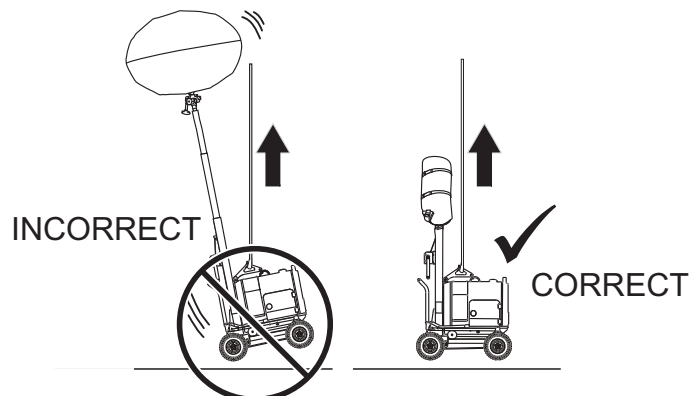
LIFTING/TRANSPORTING THE GLOBUG

- If using the lifting hanger to lift the GloBug, always use a rope or chain of adequate lifting capability.



If using the forks of a forklift to lift the GloBug make sure to align forks with arrows marked on the cart. These arrow markings appear on all four sides of the cart.

- Use a crane, forklift or suitable lifting device of adequate lifting capability when the lifting of the GloBug is required.
- Make sure the mast is completely lowered before lifting the GloBug.
- When the GloBug is lifted from its correct lifting point, it should lift straight up (not tilted). **DO NOT** attempt to lift the GloBug if its position is tilted while lifting.



RULES FOR SAFE OPERATION

- When transporting the GloBug over **smooth roads**, place mast in **stow position**. Tighten the lamp adjustment lever and mast adapter set screw firmly to secure the balloon to the mast before transporting. This will prevent the balloon/light assembly from falling down or being damaged during transport.
- When transporting the GloBug over **rough terrain**, remove the balloon/lamp assembly from the mast. To prevent damage to the bulb, place balloon/lamp assembly in a protective foam-lined container. Tie down the protective container to prevent movement. Place GloBug in back of pick-up truck, apply parking brake and tie down securely to prevent movement.
- **NEVER** leave the balloon/lamp exposed during transport. Exposure to excess wind or rain could damage the balloon's nylon cover.
- **ALWAYS** place the balloon inside its protective cover during transport. Be sure the cover is secured tightly around the balloon/lamp assembly.

LAMP SAFETY AND CARE

- **NEVER** leave any grease or oil residue on lamp surface when replacing or removing lamp. This can create hot spots, reducing the service life of the lamp.
- **ALWAYS** make sure the lamp surface is clean and dry.
- **ALWAYS** replace with MQ recommended type lamp. See parts section of this manual.
- **NEVER** use force when installing a lamp. Excessive force could cause the lamp to break causing bodily harm.
- **ALWAYS** make sure the lamp holder (spring loaded) is securely affixed to the top of the lamp. This will prevent the lamp from touching (breakage) the lamp guard or pipe frame.
- **ALWAYS** make sure the lamp guard is installed correctly. **NEVER** deform the lamp guard.
- **NEVER** attempt to replace lamp with the power on. Always un-plug the power cord from the generator when changing the lamp.
- **NEVER** unplug the lamp's AC power cable during operation.
- **ALWAYS** allow a sufficient amount of time for the lamp to **cool** before changing. The possibility exists of severe burns.
- **ALWAYS** have a **trained technician** to install and remove lamp, or replace any damaged fixture wiring.

BALLOON SAFETY AND CARE

- To prevent serious burns, **NEVER** touch or unzip the balloon envelope when the lamp is on.
- To prevent the balloon from deformation, **NEVER** use GloBug in strong winds.
- **DO NOT** place the balloon inside its protective cover until the lamp has had a sufficient amount of time to cool down. This will prevent the balloon's nylon cover from being burned (touching the lamp surface).
- **ALWAYS** place the balloon inside its protective cover after each use. This will prolong the life of the balloon material, keeping it protected from harsh environmental elements.
- **DO NOT** use a damaged balloon. Replace balloon immediately if damaged. In addition, a damaged balloon will not inflate properly, and may become more damaged by touching the hot lamp surface.
- **ALWAYS** keep the balloon away from sharp objects and excessive amounts of heat (**fire!**).
- **DO NOT** use excessive force when zipping and unzipping the balloon. Be gentle with the zipper mechanism. If the zipper is broken the balloon will become unusable.



DANGER - GloBug High Danger Areas

The **DANGER** items listed below and on the next page are considered **High DANGER** areas and should be adhered to. Failing to understand these areas could result in **Bodily Harm, Electrical Shock, Electrocution**, and even **Death!** *Please pay close attention when operating the lighting system.*



DANGER - Grounding the GloBug for Operation

The GloBug lighting system is equipped with a **ground terminal** for your protection. **ALWAYS** complete the **grounding path** from the lighting system to an external grounding source.



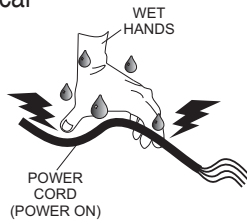
ALWAYS make certain the GloBug is well grounded and securely fastened to a good earth ground (ground rod). The possibility exists of **Electrical Shock, Electrocution, and even Death** if the GloBug is not grounded.

RULES FOR SAFE OPERATION

! DANGER - GloBug Electric Shock Hazards

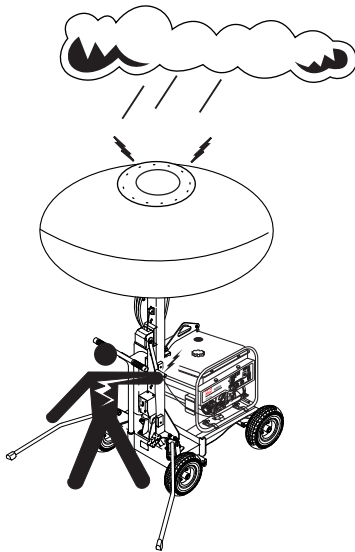
ALWAYS keep electrical cords in good condition. Worn, bare or frayed wiring can cause electrical shock, thus causing **Bodily Harm or even Death**.

NEVER grab or touch a live power cord with wet hands, the possibility exists of **Electrical Shock, Electrocutation, and even Death!**



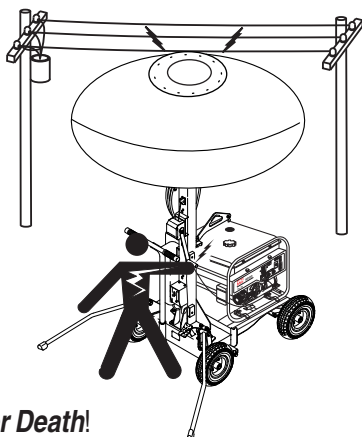
! DANGER - GloBug Electric Shock Hazards

NEVER operate the GloBug or handle any electrical equipment while standing in water, while bare foot, while hands are wet, or in the rain. A dangerous **electrical shock** could occur causing **Severe Bodily Harm or even Death**.



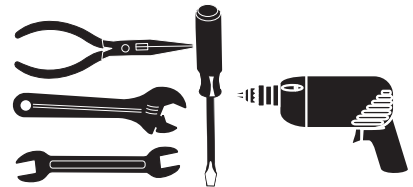
! DANGER - GloBug Overhead Obstructions

ALWAYS make sure the area above GloBug is open and clear of overhead power lines and other obstructions. The tower extends in excess of 16.5 ft. (5 meters). Contact with overhead powerlines or other obstructions could result in equipment damage, **Serious Injury or Death!**



Maintenance Safety

- **NEVER** lubricate components or attempt service on a running GloBug.
- **ALWAYS** allow the GloBug a proper amount of time to cool before servicing.
- Keep the GloBug in proper running condition.
- Fix damage to the GloBug immediately and always replace broken parts.
- **ALWAYS** use the required tool for the job application. Using damaged or worn tools or using tools inappropriate for the required application is very dangerous, and may cause damage to the machine and service personnel. Make sure to use the appropriate tool for the specific job.



Emergencies

- **ALWAYS** know the location of the nearest **fire extinguisher**.
- **ALWAYS** know the location of the nearest **first aid kit**.



- In emergencies **always** know the location of the nearest phone or **keep a phone on the job site**. Also know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.

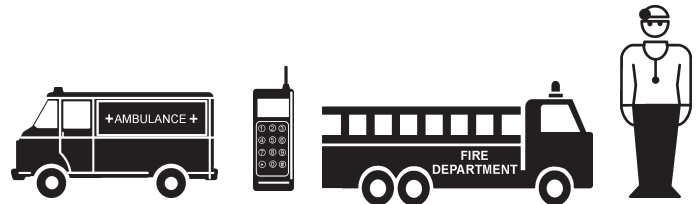


Table 1. Specifications	
GloBug	
Model	GB113BC
Input Voltage	120 VAC
Frequency	60 Hz Single-Phase
Max. Current	9.6 Amps
Wind Stability with Generator	65 mph (80.46 kph)
Weight (less generator)	276 lbs. (125 kg)
Lamp	
Lamp Type	(1)1000 Watt Metal Halide
Lumens	112,000
Light Coverage (360°)	150 ft. (45.72 meters)
Surface Temperature (Longitudinal)	476.6°F (247°C) Max.
Surface Temperature (Transversal)	417.2°F (214°C) Max.
Fan Motor	
Balloon Fan Motor	115 VAC, 60 Hz
Max. Current	.360 Amps
Pressure	31.26 PSI (215.6 kPA)
Balloon	
Diameter	3.9 FT. (1.2 meters)
Material	Heat Resistant Nylon
Heat Resisting Temperature	320 ~ 356°F (160 ~ 180°C)
Melting Temperature	500°F (260°C)
Internal Temperature of Balloon	126°F (52°C) Average
Water Resistance	1,500 mm H ₂ O
Mast	
Number of Stages	GB113BC (3))
Maximum Height	14.58 FT. (4.44 meters)
Dimensions	See Figure 1, Table 2
Generator	See Specified Generator Manual

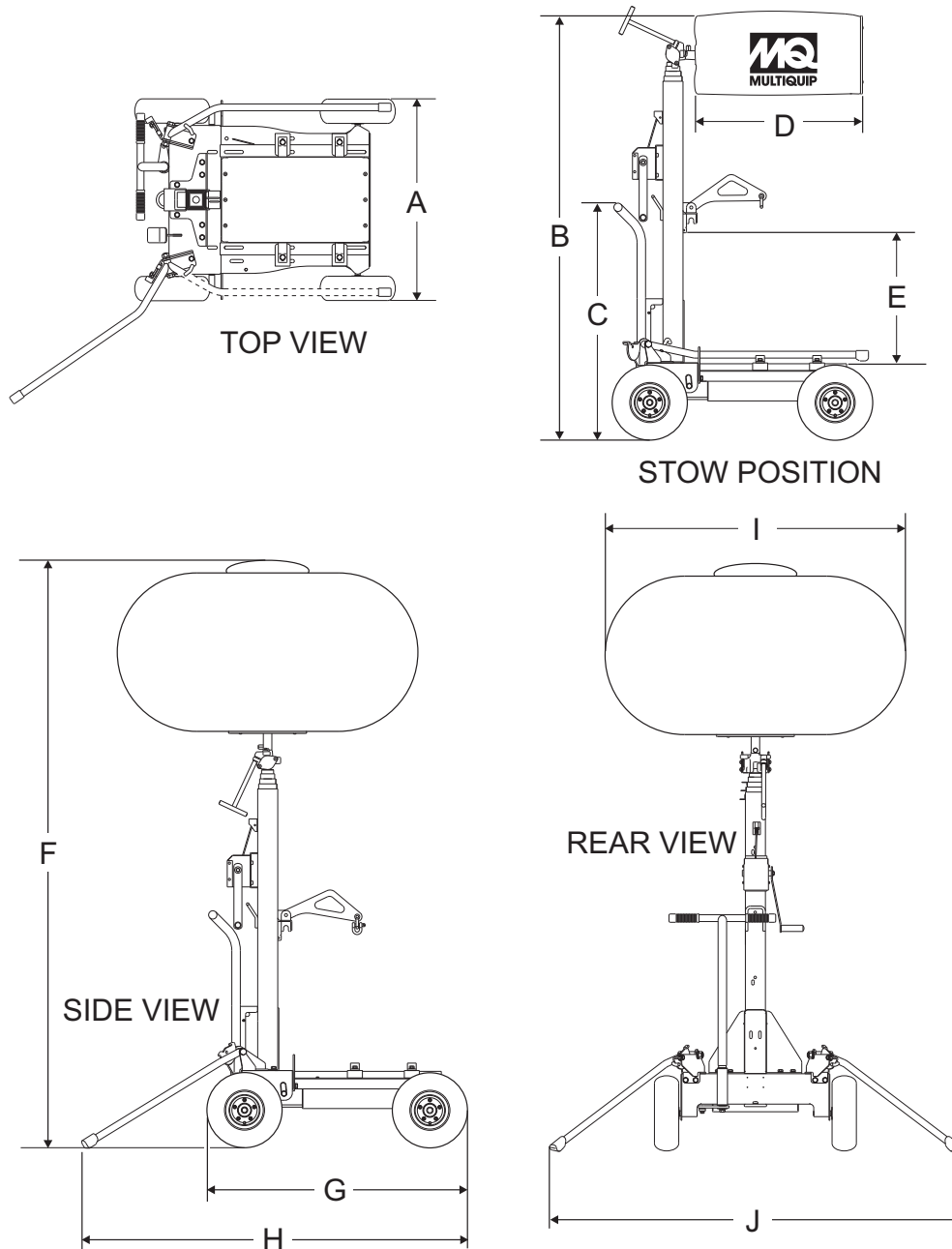
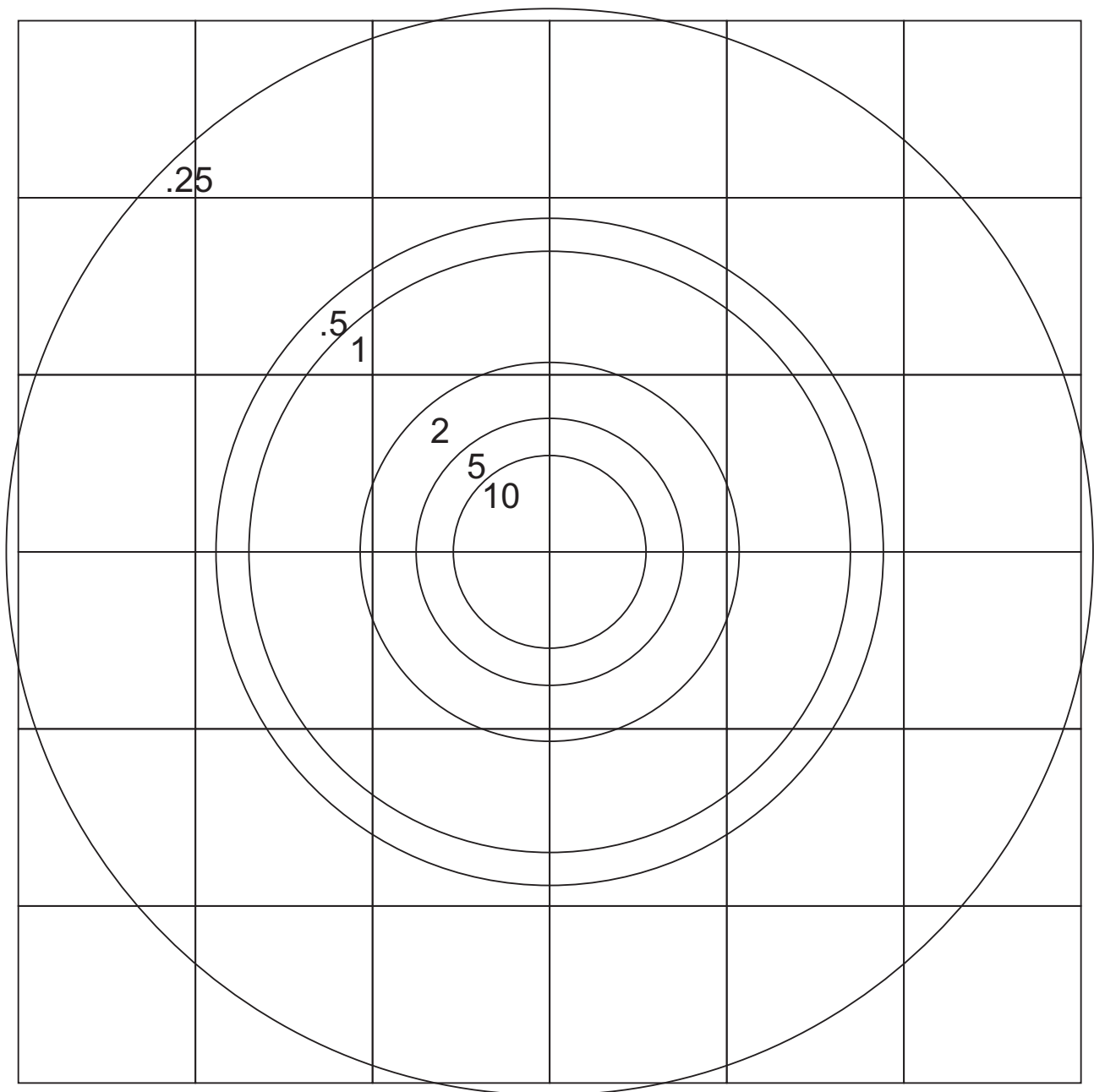


Figure 1. Dimensions

TABLE 2. DIMENSIONS					
Reference Letter	Description	Dimension ft. (mm.)	Reference Letter	Description	Dimension ft. (mm.)
A	Wheel Base	2.62 ft. (800 mm.)	F	Max. Height (Mast Deployed Position)	14.58 ft. (4,445 mm.)
B	Height (Mast Stowed Position)	5.7 ft. (1,740 mm.)	G	Length (Front to Rear Wheel)	3.41 ft. (1,040 mm.)
C	Handle Height	2.88 ft. (878 mm.)	H	Length (Front Wheel to Outrigger)	5.08 ft. (1,550 mm.)
D	Balloon Bag Length	2.25 ft. (686 mm.)	I	Balloon Diameter	3.75 ft. (1,143 mm.)
E	Lift Hook to Platform	1.83 ft. (559 mm.)	J	Width (Outriggers Deployed)	5.24 ft. (1,600 mm.)

FLOODLIGHT FOOTCANDLE PLOT

Based on 360° glare-free coverage.



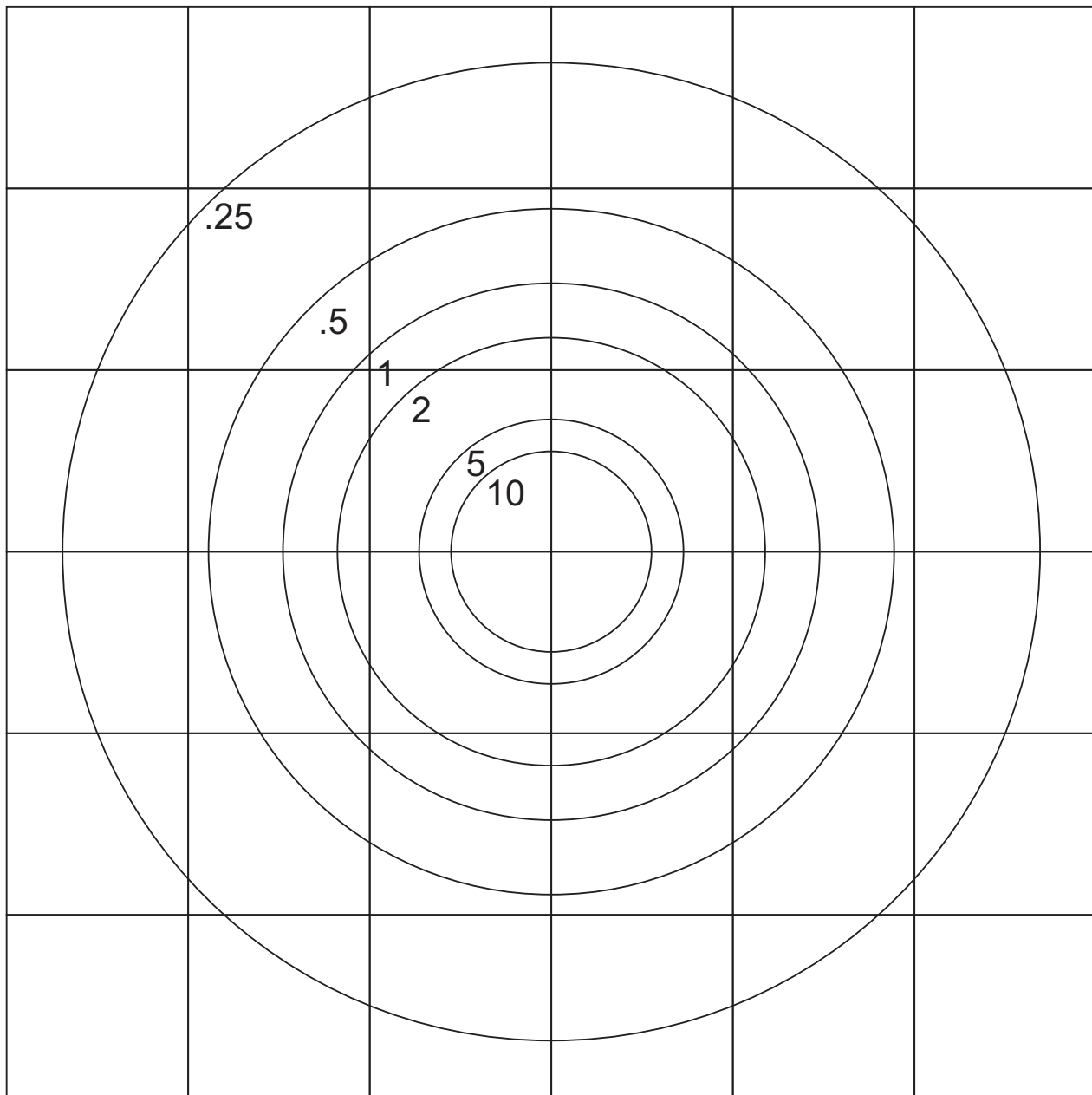
VALUES LISTED AS FOOTCANDLES

SCALE: 1 GRID = 50 FT. (15.24 METERS)

Figure 2. Floodlight Footcandle Plot (Bal120- Oval Shaped)

FLOODLIGHT FOOTCANDLE PLOT

Based on 360° glare-free coverage.



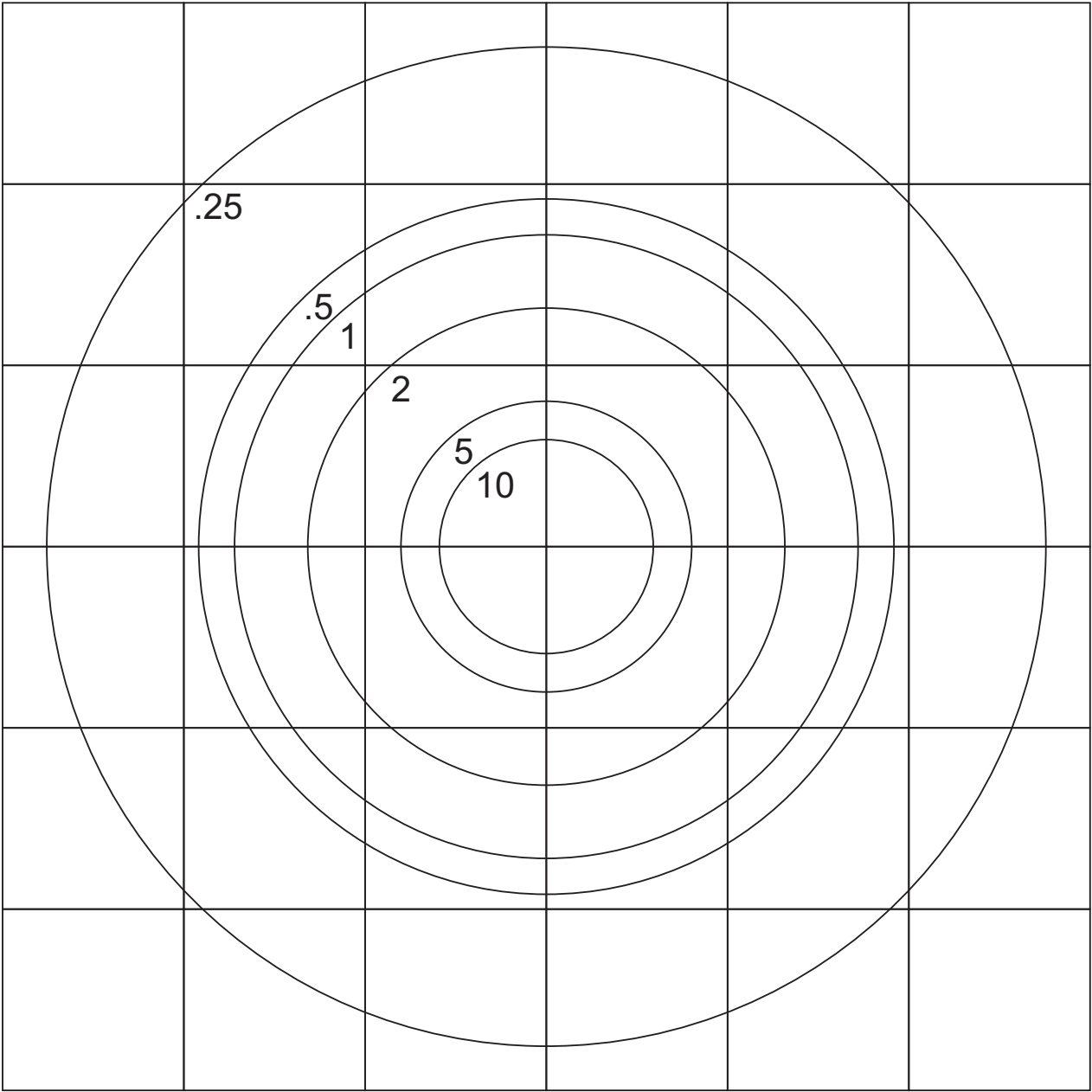
VALUES LISTED AS FOOTCANDLES

SCALE: 1 GRID = 50 FT. (15.24 METERS)

Figure 3. Floodlight Footcandle Plot (BAL120R-Reflector-Shaped Balloon)

FLOODLIGHT FOOTCANDLE PLOT

Based on 360° glare-free coverage.



VALUES LISTED AS FOOTCANDLES

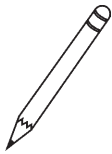
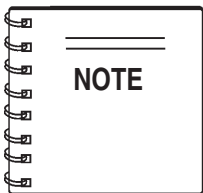
SCALE: 1 GRID = 50 FT. (15.24 METERS)

Figure 4. Floodlight Footcandle Plot (BAL-115D-Drum Shaped Balloon)

GENERAL INFORMATION

The Multiquip GloBug Lighting System is a general purpose floodlight tower intended for emergency and remote lighting conditions. The GloBug can be powered by a variety of Multiquip's series generators. Power requirements for running the GloBug are 120 VAC, 60 Hz @ 9.6 amps. The GloBug can be powered by any MQ portable generator with an output of 2.9 kW or greater.

Please read carefully the specified generator manual that will accompany your GloBug lighting system. This manual will explain how to operate and maintain the generator.



All information related to the generator will be referenced in a separate (supplied) "Operation and Parts Manual". Operation and maintenance of the generator **will not** be referenced in this manual.

The lighting system of Multiquip's GloBug Lighting System is comprised of one "Metal Halide" 1000 watt lamp. This lamp has an output of 112,000 lumens. Typical lighting coverage is in excess 150 ft. (45.72 meters) in a 360 degree pattern.

Located underneath the generator support platform is a weather resistant ballast box that contains the ballast for starting the floodlight. The floodlight is activated by an ON/OFF switch located at the base of the mast.

For ease of service or transport, the floodlight is equipped with a quick-disconnect connector that allows the lamp fixture to be removed quickly. This feature is extremely useful during transport of the lighting system over rough terrain. It is always best to remove the floodlight and pack it safely so it will not be damaged.

Balloon Envelopes

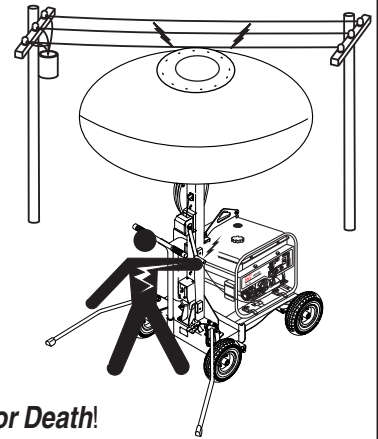
The GloBug can be configured with a variety of balloon envelopes (canopy). Please contact the MQ sales department for the balloon of your choice. The GloBug, Model GB113BC is shipped from the factory with the drum type balloon.

The lighting system can be raised vertically in excess of 14.58 feet (4.44 meters) by means of a manual winch. The tower tensioning system is designed to provide the necessary tension to safely control the pivot of the tower. Outriggers must always be deployed prior to raising the mast.



DANGER - GloBug Overhead Obstructions

ALWAYS make sure the area above GloBug is open and clear of overhead power lines and other obstructions. The tower extends in excess of 14.58 ft. (4.44 meters). Contact with overhead powerlines or other obstructions could result in equipment damage, ***Serious Injury or Death!***



Alarm Buzzer

The GloBug is equipped with a "Balloon Alarm" feature. This alarm will sound if the lamp is on and the balloon attempts to make contact with the **hot!** surface of the lamp. This alarm is intended to inform the operator that a potential burn hazard exists between the lamp surface and the balloon material.

Always allow the lamp to cool down before removing the AC power from the GloBug. In the event the balloon begins to deflate during normal operation, immediately place the GloBug's ON/OFF switch in the OFF position.

Machine Safety Decals

The GloBug is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. The decal illustrations shown in the parts section of this manual show the decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.

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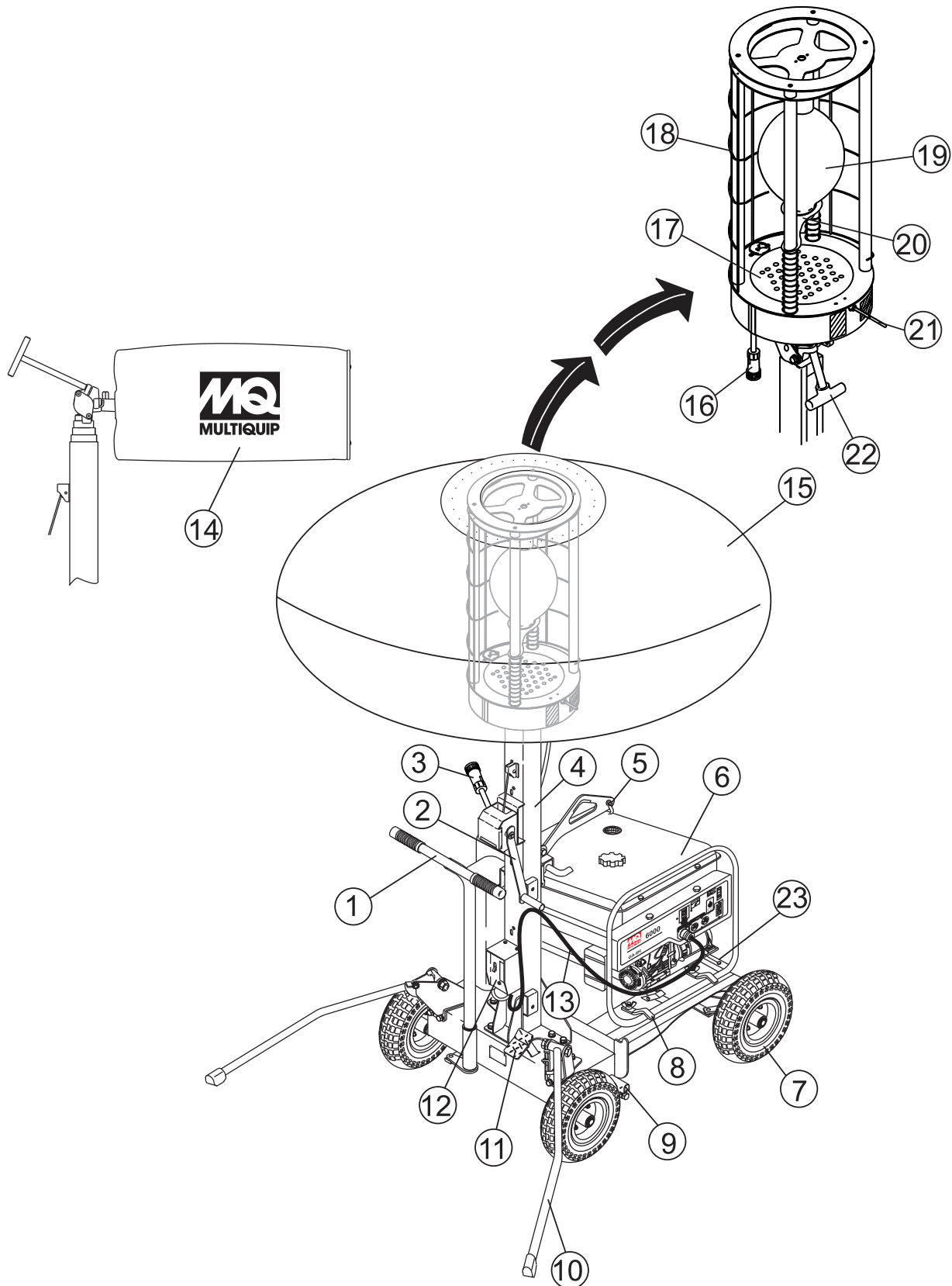


Figure 5. Major Components

Figure 5 shows the location of the controls and components for the GloBug Lighting System. The functions of each control is described below:

1. **Steering Handle** – The GloBug can be moved in either a forward or reverse direction by pulling back or pushing forward on the T-handle. In addition the front wheels are designed to turn in the opposite direction of the T-handle placement thus allowing the GloBug to turn either left or right.
2. **Mast Winch** – Use this mechanical winch to raise and lower the mast. Always be on the lookout for overhead obstructions. Keep immediate area free of bystanders and debris when raising the mast.
3. **Lamp Power Cable (Generator)** – Connect this quick-disconnect cable plug (generator-side) to the lamp power cable plug.
4. **Mast** – This mast is comprised of three separate stages. The mast can be raised in excess of 14.58 ft. (4.44 meters). Again when raising the mast, always be on the lookout for overhead obstructions.
5. **Lift Hanger** – When lifting of the GloBug is required always use a suitable lifting device of adequate lifting capability. **NEVER** stand underneath the GloBug while it is being lifted.
6. **Generator** – MQ GA-Series type generator. This generator will supply the necessary power to run the GloBug. For operation of generator read generator Operation Manual supplied with GloBug.
7. **Tires** – The GloBug uses 4 pneumatic type tires. Replace with only recommended type tire. **NEVER** allow the rear tires to go flat. This could adversely affect the braking system. Inflate tires to 35.5 psi (245kPa).
8. **Locking Clamps** – To secure the generator to the GloBug cart platform, place clamps (4) around the pipe frame of the generator. Tighten securely to prevent movement.
9. **Brake Pad** – When the brake pedal is pressed, this pad will strike and hold the rear tires in place. Make sure rear tires are inflated to the correct air pressure.
10. **Outriggers** – **ALWAYS** deploy the outriggers when raising the mast.
11. **Brake Pedal** – Step on this pedal to apply the brakes. To release the brakes, press down on brake pedal again.
12. **ON/OFF Switch** – Place this switch in the **ON** position to turn on the lamp. To turn off the lamp place in the down position (**OFF**). Please wait for approximately 10 minutes before attempting to turn the lamp back on.
13. **Power Cable** – Connect this cable to a 120 VAC, 60 Hz power source.
14. **Balloon Storage Bag** – Store the balloon in this storage bag when the GloBug is not in use. Allow a sufficient amount of time for the lamp to cool down before placing balloon inside storage bag. Possibility exists of balloon getting burned.
15. **Balloon** – This balloon is made of heat resistant nylon, with a diameter of 3.9 ft. (1,150 mm). The balloon shall be inflated to a pressure of 31.26 psi (215.6 kPa).
16. **Lamp Power Cable (Balloon)** – Connect this quick-disconnect cable plug (balloon-side) to the generator power cable plug.
17. **Fan Motor (Blower)** – This electric motor is responsible for inflating the balloon. It will supply a pressure of 31.26 psi (215.6 kPa). Please note that the balloon will begin to inflate as soon as power is applied to the GloBug. The OFF/ON switch **does not** control the electric fan motor.
18. **Lamp Guard** – This guard (cage) protects the lamp from being hit by objects.
19. **Lamp** – 1000 watt metal-halide type lamp. Replace with only MQ recommended type lamp. Always allow a sufficient amount of time for the lamp to **cool down** before changing.
20. **Lamp Holder** – Screw lamp into this holder. If lamp becomes difficult to screw into holder or holder is damaged, replace holder.
21. **Balloon Alarm Buzzer** – Will sound during normal operation if the balloon attempts to make contact with the lamp's **hot!** surface. If this condition occurs, immediately place the GloBug's ON/OFF switch in the OFF position.
22. **Adjust Lever** – This lever allows the lamp to be positioned up or down. Turn counterclockwise to release lamp and position. Turn clockwise to tighten.
23. **Ballast Compartment** – Provides the necessary electronics to light the lamp. To gain access to the ballast compartment the generator must be removed from the cart platform.

CAUTION - Read Manual

Please read this entire manual carefully before attempting to operate the GloBug. Failure to read this manual could cause damage to the GloBug and serious injury to the operator.



GloBug Setup

1. Using the T-handle (Figure 6) place the GloBug on a ***firm level surface*** so that it will not slide or turn over.

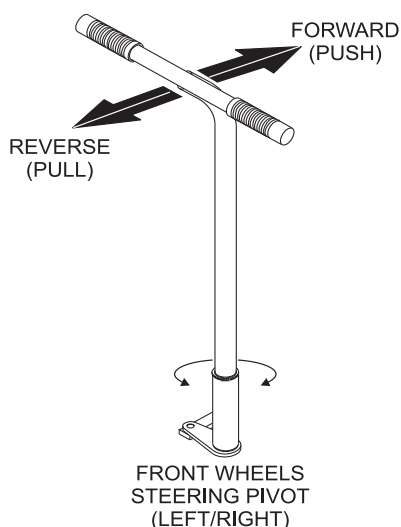


Figure 6. T-Handle (Directional Control)

2. To apply the parking brake (Figure 7), step on the brake pedal and pull back on the T-handle. This will lock the rear wheels. For additional safety use chock blocks to prevent rolling.

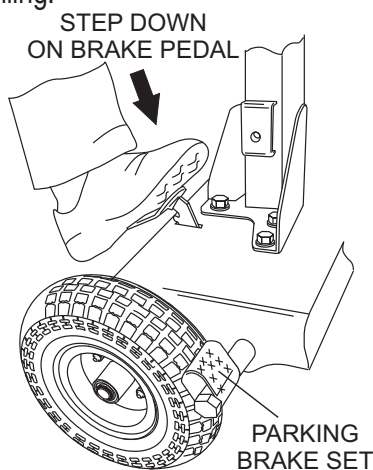


Figure 7. Parking Brake (Set Position)

3. Lift up on each outrigger (2) from its stow position, rotate backwards and place it in the deployed position, as shown in Figure 8. The outriggers will automatically lock in place once they touch the ground,

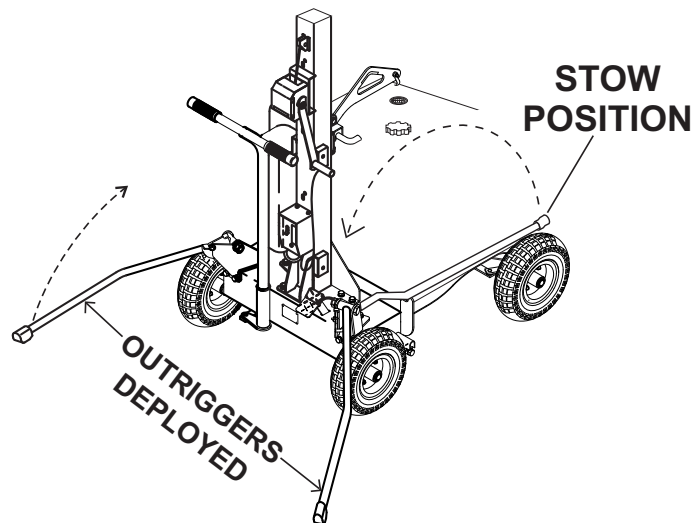


Figure 8. Outriggers (Deployed Position)

4. Expose the balloon by pulling down on the velcro tabs and unzip the protective cover as shown in Figure 10. Next, fold the protective cover into itself and zip.

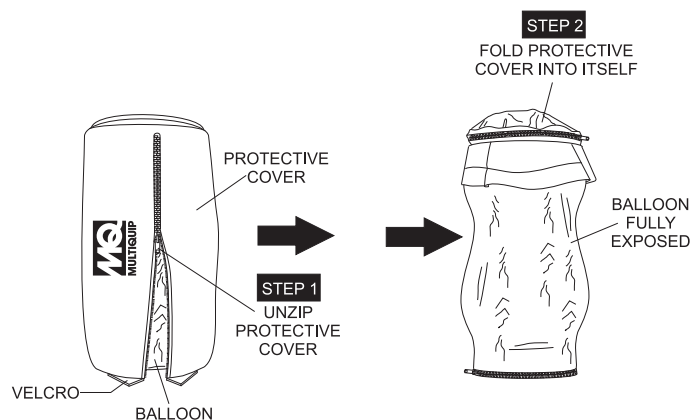


Figure 9. Exposing the Balloon.

- To position the balloon, simply loosen the adjustment lever by turning it counter-clockwise and either push down or up on the lever. Pushing **down** on the lever will cause the balloon to rise. Pushing **up** on the lever will allow the balloon to be lowered. See insert A in Figure 10.
For circular positioning, swing the lever to the desired position. See insert B in Figure 11.

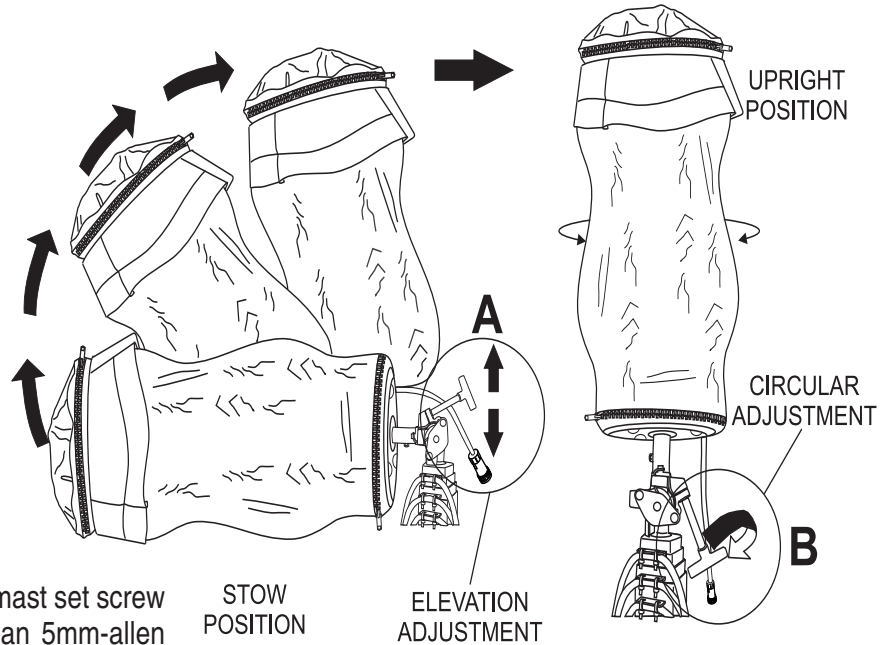


Figure 10. Positioning the Balloon

- Before raising the mast, make sure the mast set screw (Figure 11) is securely tightened (use an 5mm-allen wrench to tighten). This will prevent the balloon/lamp assembly from falling off. In addition make sure the power cable from the generator is connected to the lamp power cable.

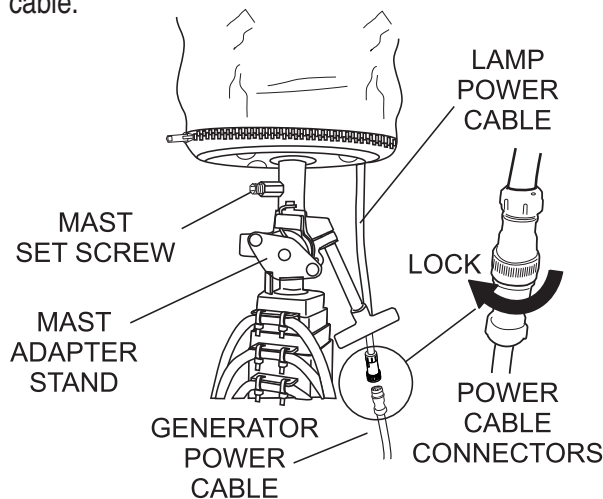


Figure 11. Mast Set Screw/Power Connections

⚠ CAUTION - MAST PINCH POINT

When raising or lowering the mast, keep hands and fingers clear of the various mast sections, this will prevent hands and fingers from getting pinched.

- Using the mechanical winch (Figure 12), **raise** the mast to the desired height. Turn winch handle clockwise to raise mast.

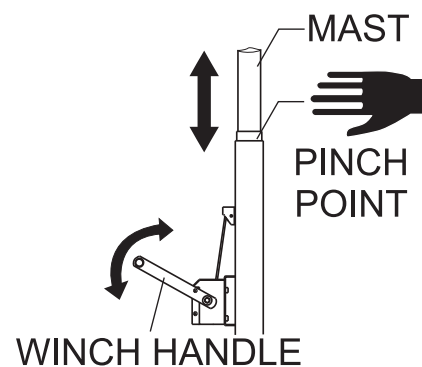


Figure 12. Mechanical Winch Handle

! DANGER - HIGH VOLTAGE POWER LINES

When raising mast, **ALWAYS** be on the lookout for overhead obstructions such as high voltage power lines. The possibility exists of electrocution, even death! if the GloBug comes in contact with **high voltage power lines**.



Applying Power

1. Make sure the power ON/OFF switch (Figure 13) located near the bottom of the mast is in the **OFF** position.

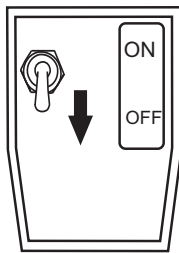


Figure 13. Power OFF/ON Switch (OFF Position)

! CAUTION - READ GENERATOR MANUAL

Before attempting to operate the generator, **READ** the entire operation section of the manual. Failure to read manual could cause severe damage to the equipment and bodily harm to the operator.



2. The GloBug has a power requirement of 120 VAC, 60 Hz @ 9.6 amps. Connect the GloBug's AC power cord to the 120 VAC twist-lock receptacle (Figure 14) on the the supplied generator.

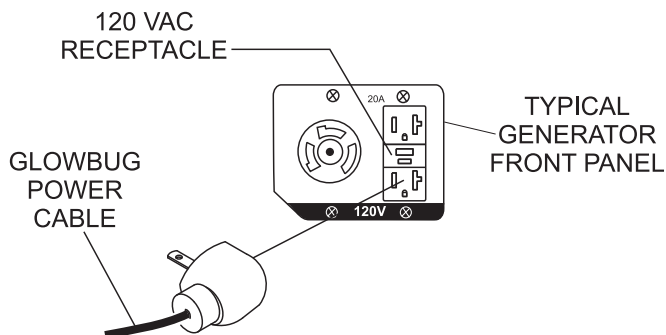


Figure 14. 120 VAC Receptacle

3. Start the generator as referenced in the "Start-up Section" of the supplied generator manual.

4. Notice that the balloon envelope will begin to deploy as soon as power is applied by an active generator. This function **is not** controlled by the power ON/OFF switch.
5. Wait until the balloon is fully deployed before attempting to turn on the lamp. The possibility exists of the balloon getting burned (touching the lamp).
6. If the balloon is fully deployed, place the GloBug's ON/OFF switch (15) in the **ON** position.

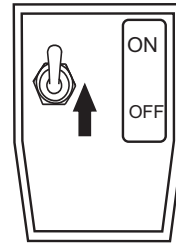


Figure 15. Power OFF/ON Switch (ON Position)

7. The lamp should now be on. If the lamp is not on, check all connections and repeat steps 1 through 6. If the lamp still does not come on contact the MQ service department.

Shutdown

1. Place the power ON/OFF switch (Figure 16) in the **OFF** position.

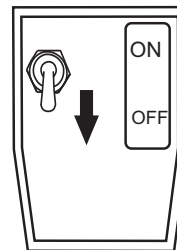


Figure 16. Power OFF/ON Switch (OFF Position)

! CAUTION - LAMP COOL DOWN

Allow a sufficient amount of time (15-20 minutes) for the lamp (Figure 17) to **cool down** before turning off generator. The possibility exists of the balloon getting burned (touching the lamp).

2. Disconnect the GloBug's AC power cable from the generator. The balloon should begin to deflate.
3. Shutdown generator as referenced in the "Shutdown Section" of the supplied generator manual.

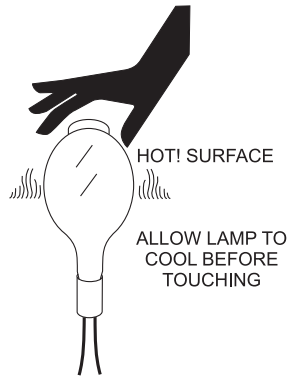


Figure 17. Hot Lamp Surface

4. Using the mechanical winch (Figure 5, item 2), **fully lower** the mast. Turn winch handle counter-clockwise to lower mast.
5. Using the adjustment lever (Figure 5, item 22) place the balloon/lamp assembly in the stow position.
6. Unzip the protective cover as shown in Figure 18, and place cover over balloon/lamp assembly.

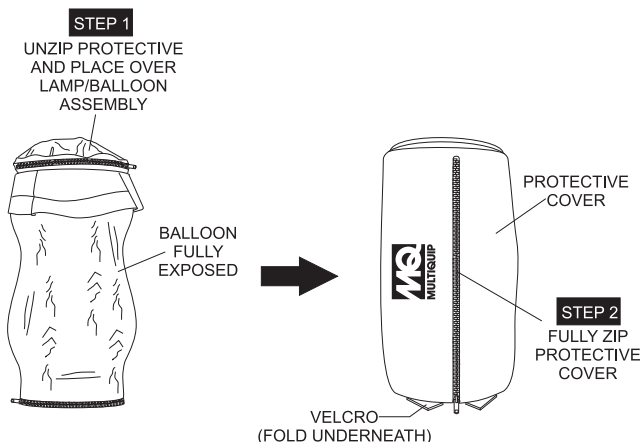


Figure 18. Covering the Lamp/Balloon Assembly

7. To unlock outriggers, push downward on the counterweight lever indicated by arrow (Figure 19). Grab hold of outrigger, pull upward, push down and place in stow position (Figure 20).

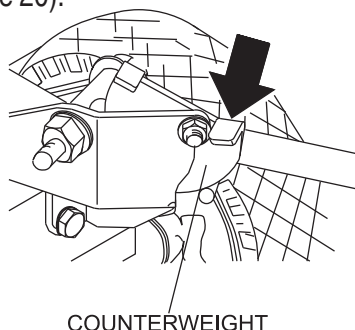


Figure 19. Outriggers (Released)

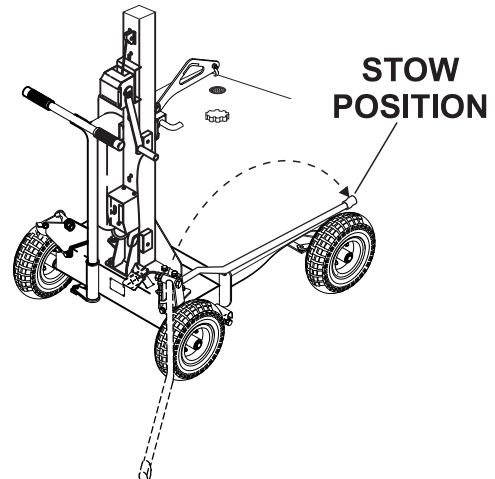


Figure 20. Outriggers (Stow Position)

8. Press down on the top of the brake pedal (Figure 21) and hold, then release. This action will dis-engage the brake mechanism and allow the GloBug to be moved.

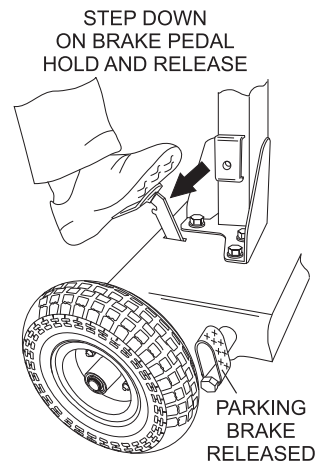


Figure 21. Parking Brake (Release Position)

Storage

1. Wipe and dirt or foreign matter that may have accumulated on the GloBug during operation. Use a mild detergent to clean the unit. **DO NOT** spray the engine with water.
2. Avoid storing the GloBug in areas that can be exposed to rain, harsh elements, and high humidity.
3. Place the GloBug in a clean dry location away from dirt and debris.

CAUTION - READ SAFETY GUIDELINES

Before performing any maintenance procedures, be sure to **READ** the lamp, balloon, and general safety guidelines in this manual. Failure to **read** and **understand** these safety guidelines could cause severe equipment damage and bodily harm.



CAUTION - BALLOON ZIPPER SAFETY

DO NOT use excessive force when zipping or unzipping the balloon. The possibility exists of the zipper tearing, which would make the balloon unusable.



Removing the Lamp/Balloon Assembly

1. Place the lamp/balloon assembly in the **STOW** position.
2. With a 5 mm allen wrench, loosen the set screw (Figure 22) that secures the lamp to the mast adapter stand.

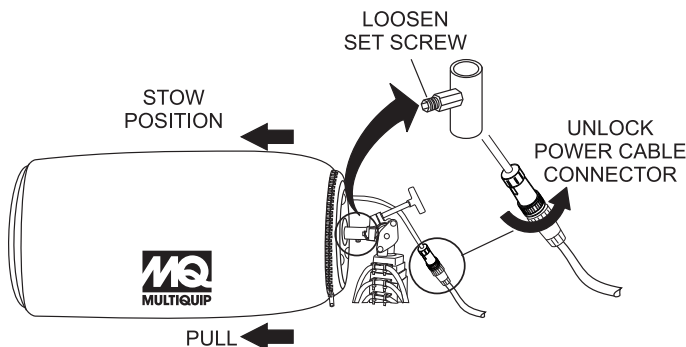


Figure 22. Removing the Balloon/Lamp

3. Disconnect the lamp power cable as shown in Figure 22, and slide the balloon/lamp forward from the mast adapter stand. Place lamp/balloon assembly on a suitable work bench that is free of dirt, and sharp objects that could damage the balloon.

Removing the Lamp

1. Expose the balloon (Figure 23) by pulling down on the velcro tabs and unzip the protective cover as shown in Figure 18. Next, fold the protective cover into itself and zip.

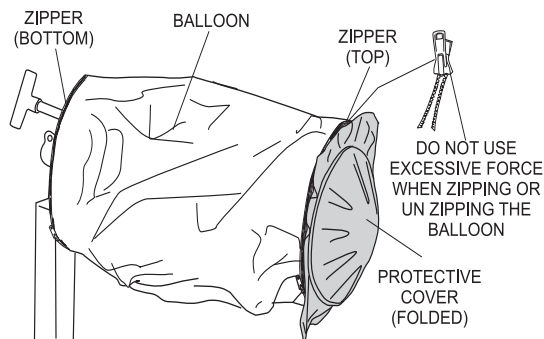


Figure 24. Exposing the Balloon

2. Unzip the zipper (Figure 23) at the bottom of the balloon and roll the balloon envelope upwards to expose the lamp (Figure 24). Remove the lamp guard to gain access to the lamp. **DO NOT** use excessive force when un-zipping the balloon.

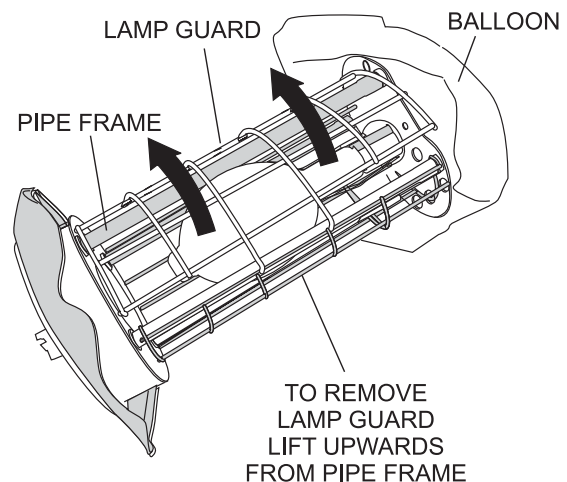


Figure 24. Removing the Lamp Guard

3. Push down and hold the lamp holder (spring loaded) away from the lamp (Figure 25). Unscrew the lamp (turn counter-clockwise) from the lamp socket.

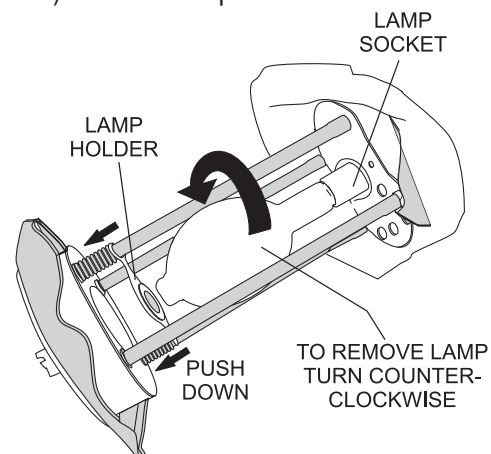


Figure 25. Removing the Lamp

Installing a New Lamp

1. When installing a new lamp (Figure 26) use only MQ recommended type lamp. See parts section of this manual. Failure to use correct type lamp could adversely affect lighting capability and may cause damage to the equipment.
2. Push down and hold the lamp holder (spring loaded) away from the lamp. Screw the lamp (turn clockwise) into the lamp socket. Gently place the lamp holder firmly over the top of the lamp. This will prevent the lamp from touching the lamp guard or pipe frame.

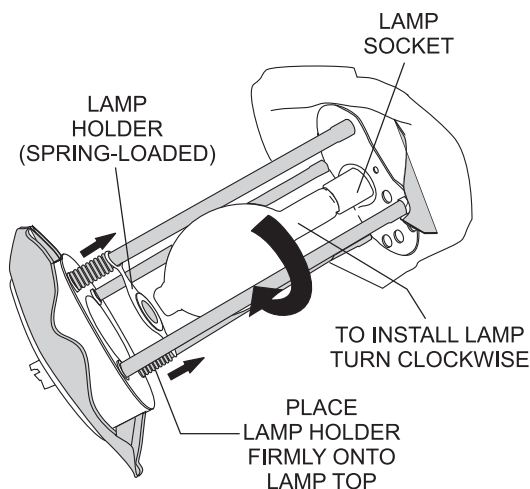


Figure 26. Installing the Lamp

Re-Installing the Lamp/Balloon Assembly

1. Reinstall the lamp guard (Figure 27). Be careful not to install the lamp guard in the wrong direction.

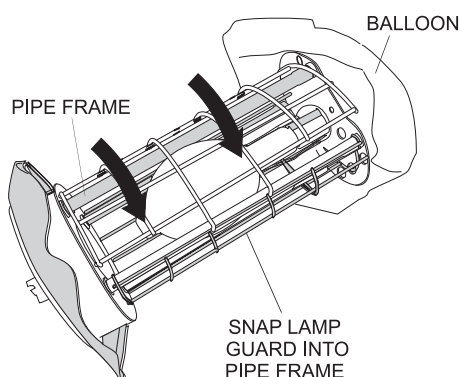


Figure 27. Installing the Lamp Guard

2. Zip up the zipper at the bottom (Figure 23) of the balloon and pull down the balloon envelope to cover the lamp
3. Place the lamp/balloon assembly back onto the mast adapter stand (Figure 22).
4. With a 5 mm allen wrench, tighten the set screw to 28 ~ 38 ft. lbs (38 ~ 51 N-m) to secure the lamp to the mast adapter stand
5. Reinstall the protective cover over the balloon/lamp assembly. Be sure to fold the velcro tabs.
6. Reconnect the power cables.

Replacing the Balloon

1. Follow the procedures as outlined in the "Removing the Balloon Lamp" assembly section.
2. Unzip the zipper at the bottom and top of the balloon. Slide the balloon over the top of the lamp guard as shown in Figure 28.

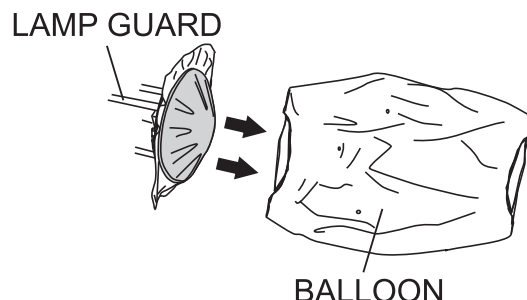


Figure 28. Removing the Balloon

3. Slide the new balloon over the top of the lamp guard as shown in Figure 29. Zip up the zipper at the bottom and top of the balloon.

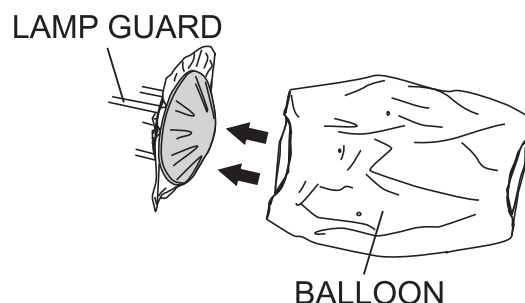


Figure 29. Removing the Balloon

Check Cable Wear

The wire rope (cable) that raises and extends the mast is a very important part of the GloBug lighting system. Following the procedure below when replacing wire rope (cable).

! DANGER - Lighting System Cable System

Wire rope (cable) will fail if it is worn, frayed, misused, crushed, kinked or damaged in any way. **ALWAYS** check the cable and pulley for any abnormalities before use.

DO NOT use it if there is even the slightest cause for concern and replace any damaged cable or pulley **immediately**.

Removing the Lamp/Balloon Assembly

1. Place the lamp/balloon assembly in the **STOW** position.
2. With a 5 mm allen wrench, loosen the set screw (Figure 22) that secures the lamp to the mast adapter stand.
3. Remove the lamp/balloon assembly from the mast adapter stand and set aside in a safe place where it will not get damaged.

Removal of Winch

1. Fully lower the mast to its vertical resting position.
2. Remove the four retaining screws and washers (Figure 30) that secure the winch cover. Remove the winch cover.
3. Loosen the winch cable retaining screw. Pull and remove the winch cable from the locking pin.
4. Remove the three retaining screws and washers that secure the winch to the mast. Remove the winch.

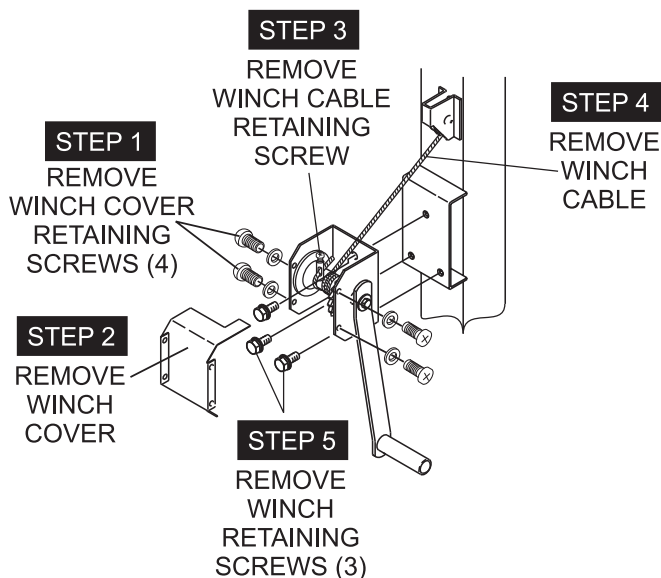


Figure 30. Winch/Cable Removal

Removing the Hanger

1. Remove the M12 x 40 bolt (Figure 31) from the hanger support assembly, then remove the hanger. Set hanger aside in a safe place where it will not get damaged.

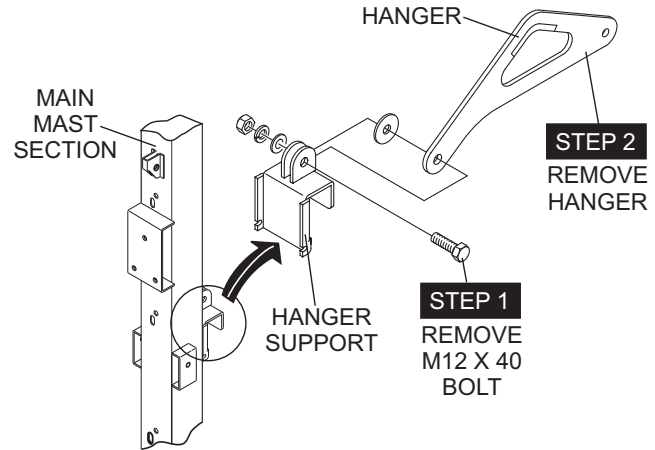


Figure 31. Removing the Hanger

Removing the Lamp Cable

1. Cut all the cable zip ties (Figure 32) that secure the lamp cable to the various mast sections.
2. Remove the lamp cable from the various mast sections and set cable aside in a safe place where it will not get damaged. Mark the order of the cable sections so that they can be placed back in the same order. Make sure cable is laid flat and out of the way so that personnel will not trip over it.

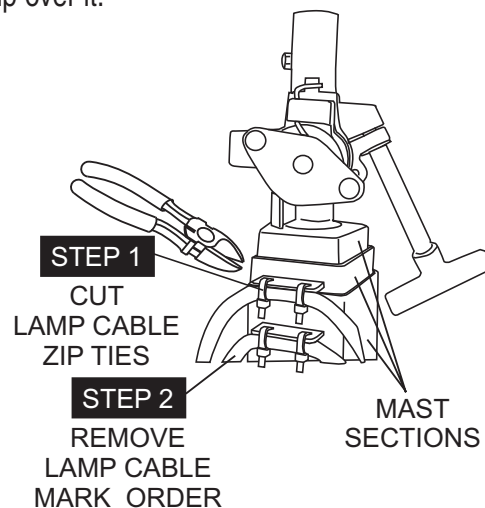


Figure 32. Cutting the Lamp Cable Zip Ties

Pulling-Out the Mast Sections

1. Grab hold of the main mast (Figure 33) and begin pulling the mast sections upwards. Start with second mast, and then the third mast.
2. From the main mast, pull the winch cable wire to release the safety stopper pulley at the second mast.

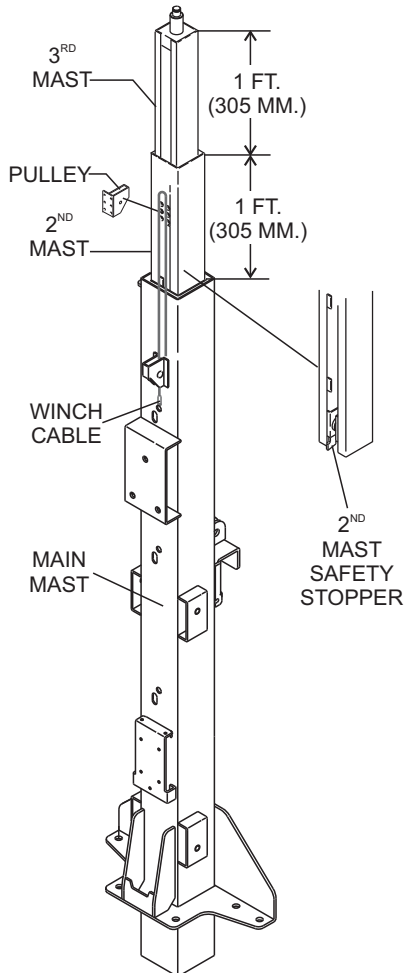
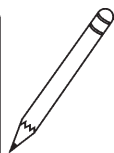
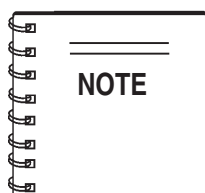


Figure 33. Mast Sections

3. Each mast section should be equally spaced about 12-inches from the preceding mast section. See Figure 33.



If the winch cable wire cannot be pulled because of breakage of the wire itself, the **safety stoppers** installed in the second mast will lock automatically at the places indicated by the arrows in Figure 34.

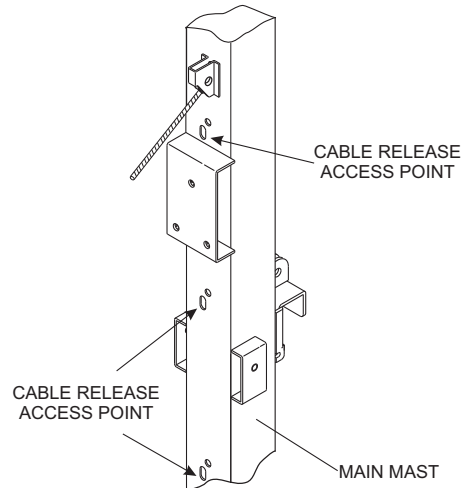


Figure 34. Cable Release Access Point

5. To release the safety stopper without pulling the cable wire when removing the second mast from the first (main mast), insert a screwdriver (Figure 35) nearest the hole where the latch is caught. Press down on the screwdriver to lift the pulley inside the second mast upward. Remove the screwdriver lifting the second mast upwards as the latch is being pulled back. The second mast should now be able to be pulled out from the first mast.

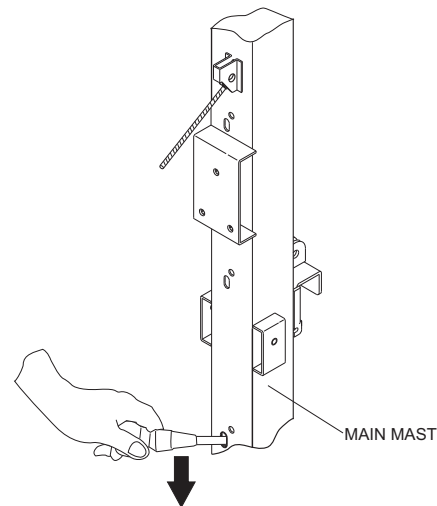


Figure 35. Releasing the Safety Stop Latches



WARNING - Mast Service Safety

The mast sections are heavy and awkward to handle. Use proper lifting devices and procedures when servicing the mast and its components.

Installation of Winch Cable

1. Route (pass) a new winch cable through the main mast pulley **A** (Figure 36).
2. Route the winch cable around the **upper pulley D** of the third mast section from back to front.
3. Route the winch cable around the **upper pulley C** of the second mast section from back to front.

5. Route the winch cable around the **lower pulley B** of the second mast from front to back.
6. Continue pulling the cable and slide down the mast, being careful not to activate the cable stop latches.
8. Route the cable around the pulley of the first mast **A**.
9. Place the second mast into the main (first) mast. Next, place the third mast into the second mast.

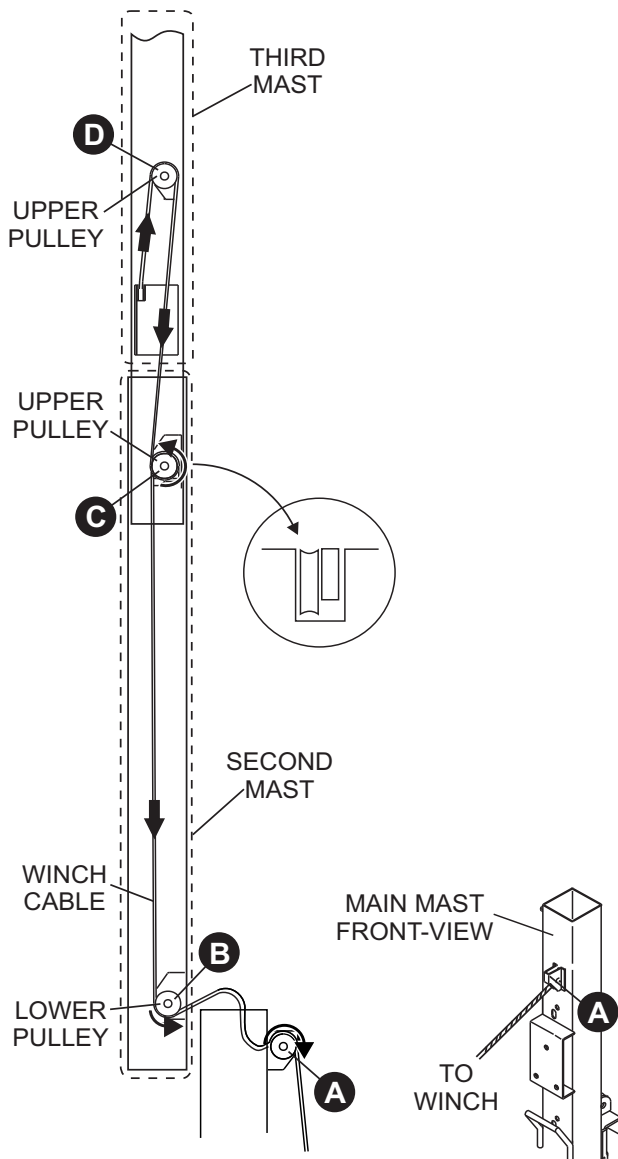


Figure 36. Attaching the Winch Cable



CAUTION - Winch Cable Safety Stopper

When placing the second mast into the main mast (first), pinch (squeeze) the pulley and pin with pliers (Figure 37) to hold the stopper (cable latch). This will keep the cable stop latch from being activated.

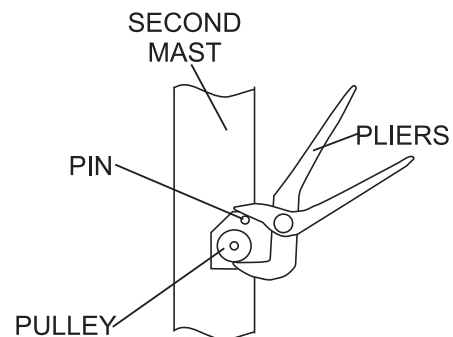


Figure 37. Bypassing Cable Stop Latch

10. Route the tip of the winch cable (Figure 38) through the eyelet retaining stud. Insert cable retaining screw at top of stud and tighten.

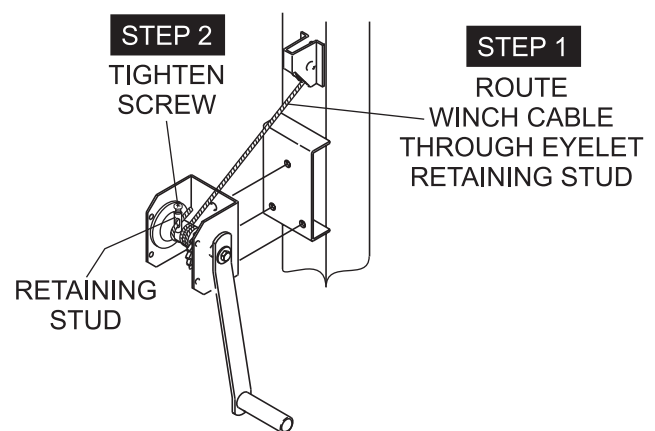


Figure 38. Connecting the Winch Cable to the Winch

Installation of Winch

1. Reinstall the three retaining screws (Figure 30) and washers that secure the winch to the mast. Tighten screws between 24~ 33 ft-lbs. (33 ~ 45 N-m).
2. Install the four retaining screws and washers (Figure 30) that secure the winch cover. Tighten securely.
3. Turning the winch handle clockwise, wind the cable tightly around the winch shaft.
4. Raise, extend, retract and lower the mast several times to verify correct operation.
5. If the winch malfunctions, such as defective brake mechanism, replace entire winch assembly immediately.

Installing the Hanger

1. Reinstall the M12 x 40 bolt (Figure 31) that supports the hanger onto the main mast. Tighten bolt between 28~ 38 ft-lbs. (38 ~ 51 N-m).

Installing the Lamp Power Cable

1. Check the entire lamp cable for any signs of wear, such as cuts or frays. If the cable is damaged in any way, replace entire cable. **DO NOT** use a worn or damaged cable to operate the GloBug. The possibility exists of shock or electrocution.
2. Using zip ties connect the lamp power cable to the various mast sections as shown in Figure 33. Remember to connect the lamp cables to the mast in the same order that they were removed.
3. Cutoff any excess zip tie material.

Ballast Box Removal



WARNING - HOT SURFACE (BALLAST)

Dangerous conditions exists inside the ballast compartment. Please use extreme caution when performing maintenance on the ballast box.

NEVER touch the ballast or ballast cover while the lamp is on. These components generate an extreme amount of heat, which makes their surfaces very **hot!** **ALWAYS** allow the ballast box and cover surface to cool down before servicing.



DANGER - HIGH VOLTAGE (BALLAST)

The electronic components of the ballast generate high voltage conditions. These conditions can be **lethal and cause bodily harm, even death.** When performing maintenance or troubleshooting, have only experienced personnel work on the ballast.



The ballast electronics are located within the cart frame of the GloBug. To gain access to the ballast (Figure 39), remove the 4 retaining bolts and washers (M10 X 25) that secure the ballast cover to the cart.

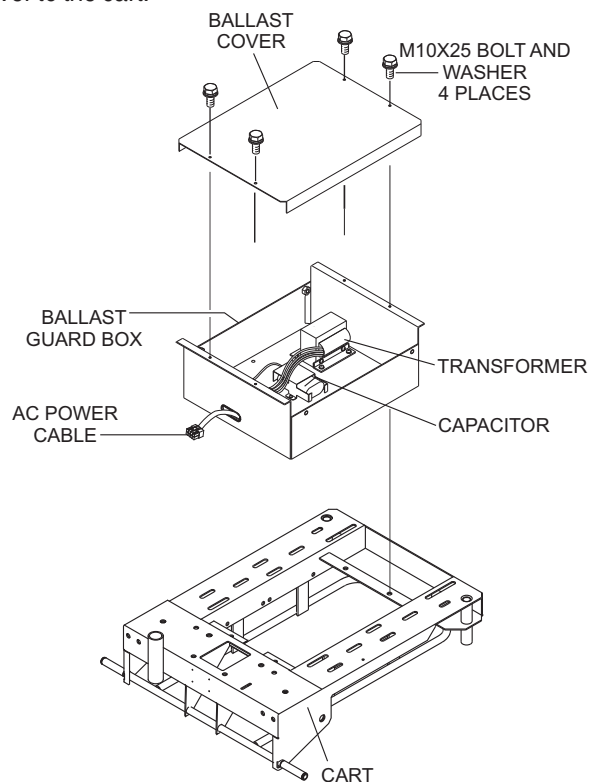


Figure 39. Removing the Ballast

Filter Replacement

WARNING - HOT SURFACE (LAMP FRAME)

DO NOT replace filter immediately, allow a sufficient amount of time for the lamp assembly to cool down before changing filter.



1. Remove the balloon as described in the "Removing the Lamp/Balloon" section.
2. Disconnect the lamp power cable as shown in Figure 22.
3. Rotate the balloon/lamp base assembly so that the filter is facing upwards. See Figure 40.

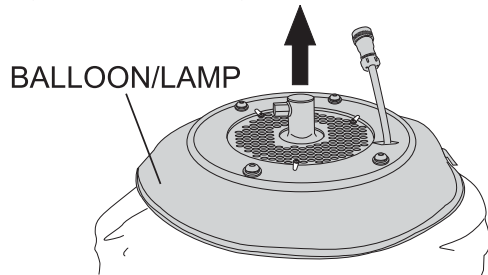


Figure 40. Balloon/Lamp Placement

4. Turn the three locking tabs (Figure 41) inward to release the plate. Remove plate and filter.

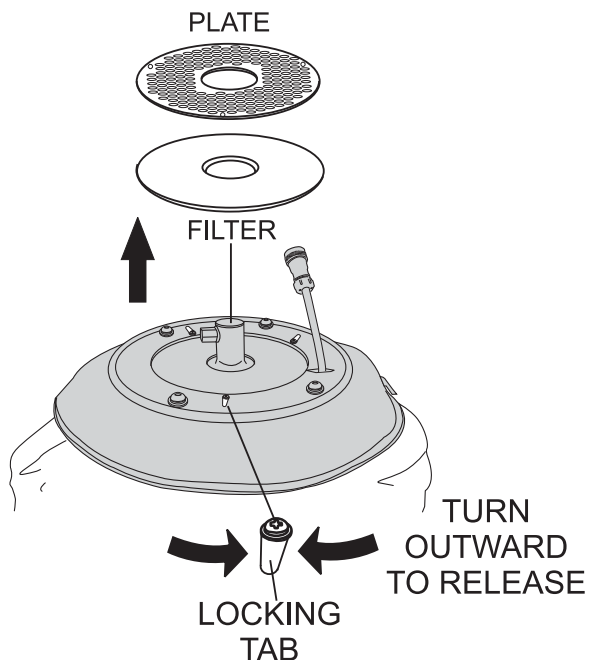


Figure 41. Filter Removal

5. Install a new filter over the brace as shown in Figure 42. Be sure to align the **cut of the filter** over the brace.

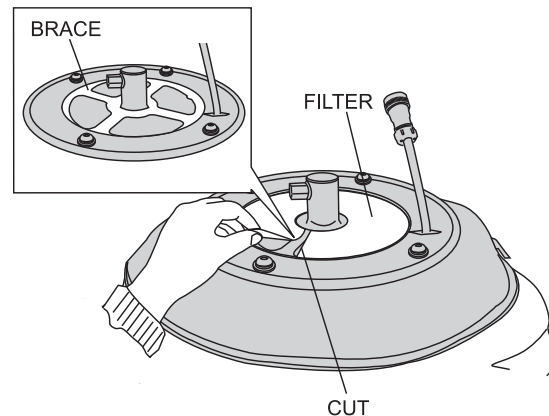


Figure 42. Filter Placement

CAUTION - FILTER ALIGNMENT

When placing the filter element, always align the cut of the filter on top of the brace. This will keep the filter from being dislodged and getting damaged.

6. Turn the three retaining tabs (Figure 43) outward so that they touch the lamp base.

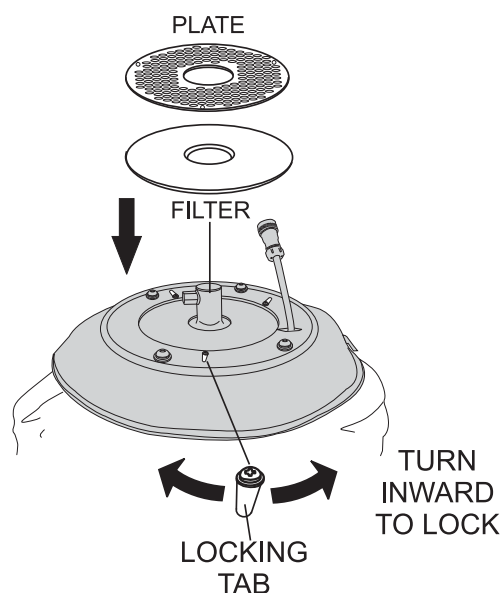


Figure 43. Filter/Plate Install

MAINTENANCE (WIRING DIAGRAM)

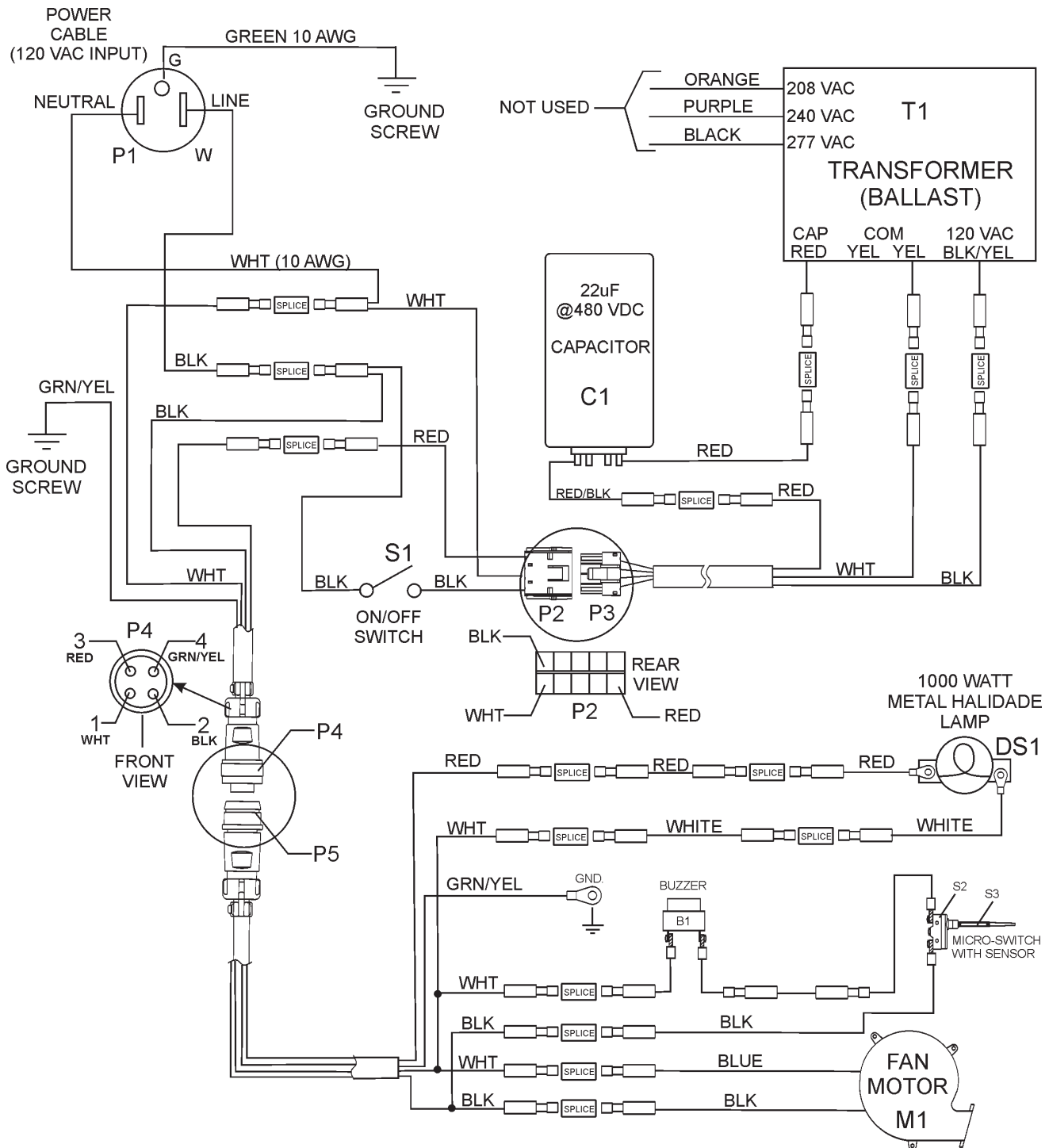


TABLE 3 REFERENCE DESIGNATIONS					
REF. DESC.	DESCRIPTION	PART NUMBER	REF. DESC.	DESCRIPTION	PART NUMBER
P1	AC Power Cable Assy.	A300116300	M1	Fan Motor Assy.	A300033500
P2/P4	Ballast Cable Assy. (From S1)	A300105800	B1	Buzzer Alarm Balloon	E000030100
P3	Ballast Cable Assy. (To Transformer)	A300105600	S2	Micro-Switch	1400150210
P5	Lamp-Fan-Sensor Cable Assy.(Power)	A300105500	S3	Sensor Balloon	1400150410
S1	Single-Pole ON/OFF Switch	A400140600			
DS1	1000 Watt Metal Halide Lamp	E000009800			
C1	22 uf Capacitor @ 480 VDC	A300033800			
T1	Ballast (Transformer)	A300033800			

Figure 44. Wiring Diagram

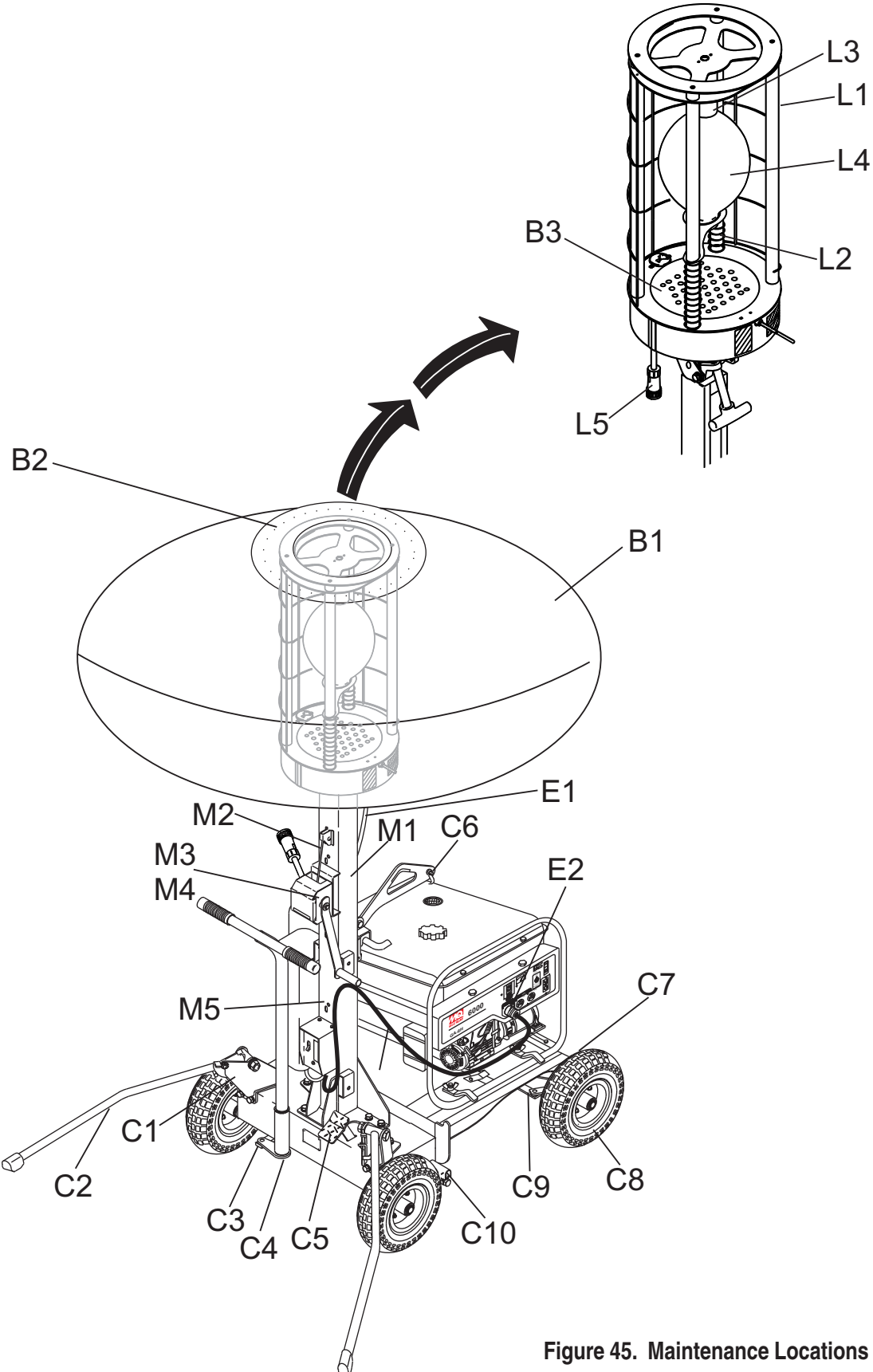


Figure 45. Maintenance Locations

For a prolonged life cycle an extended quality follow the recommended GloBug service guidelines as referenced in Table 4.

TABLE 4. PERIODIC CHECK AND MAINTENANCE

FIGURE		PART	CHECK ITEM	SOLUTION	
Lamp	L1	Frame Pipe	Frame pipe skewed?	Replace.	❖
	L2	Lamp Holder	Lamp holder loose?	Tighten or replace.	❖
	L3	Lamp (Base)	Lamp base loose?	Screw in securely.	❖
	L4	Lamp	Defective lamp?	Replace.	❖
	L5	Cable/Connector	Cable disconnected or loose?	Connect securely.	■
Balloon	B1	Balloon (Envelope)	Defective or dirty?	Replace.	❖
	B2	Zipper	Broken?	Replace.	❖
	B3	Fan Motor (Blower)	Working properly?	Repair or replace.	❖
Mast	M1	Mast Sliding Surface	Slides smoothly?	Apply grease.	●
	M2	Wire Rope	Damaged?	Apply grease or replace.	❖
	M3	Wire Rope End	Is wire end damaged (caulking)?	Replace.	❖
	M4	Winch	Defective winch brake ?	Repair or replace.	❖
	M5	Safety Stop	Safety latch defective?	Repair or replace.	▲
Cart	C1	Counter-Weight	Travels smoothly?	Spray grease.	●
	C2	Outriggers	Travels smoothly?	Spray grease.	●
	C3	T-handle and Wheels	Proper movement.	Tighten securely.	■
	C4	Bolt for Handle	Check if bolt is not loose.	Tighten securely.	■
	C5	Brake Pedal	Linkage working correctly.	Check, spray grease	❖
	C5	Brake Pedal	Notch worn-out?	Replace.	❖
	C6	Hanger	Check if the installation is not loose.	Fasten securely.	■
	C7	Front Wheel Pivot	Turns smoothly?	Check, apply grease.	●
	C8	Tires	Tire pressure 35.5 psi (294 kPa)?	Adjust.	❖
	C9	Link for Front Shaft	Linkage moves smoothly?	Spray grease.	●
	C10	Brake	Working properly?	Adjust.	❖
Electric	E1	Power Cable	Defective or worn cable?	Replace.	❖
	E2	Non-load Voltage	Is generator output 125 VAC?	Adjust or replace generator.	●
❖ - Daily Check ■ - Every 20 Hours ● - Every 100 hours ▲ - Every 500 hours					

TROUBLESHOOTING (LAMPS)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the diagnosis based on the Lamp Troubleshooting (Table 5) information shown below.

If the problem cannot be remedied, please leave the unit just as it is and consult or company's service department.

TABLE 5. LAMP TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Lamp does not light.	Is plug securely connected?	Plug in correctly.
	Are generator and light tower switched on?	Turn on switch.
	Is lamp loose?	Screw lamp securely into socket.
	Is contactor properly connected?	Connect disconnected contactor.
	Are any other electric appliances (other than light tower) plugged into power source?	Unplug all other appliances.
	Is generator voltage normal (non-load voltage - 120 VAC)?	Repair or replace generator.
	Is model of lamp compatible?	Use genuine MQ lamp.
	Is lamp cool enough to light again? (Interval of 20 to 30 minutes is required before turning on lamp again)	Wait for lamp to cool down.
Lamp only lights for a short time.	Is generator voltage normal (non-load voltage - 120 V)?	Repair or replace generator.
	Is ambient temperature too high (more than 104 °F (40 °C))?	Move lamp where there is proper ventilation.
Balloon does not inflate.	Is fan motor (blower) working properly?	Check or repair fan motor (blower).
	Is balloon envelope defective?	Repair or replace balloon envelope.

TROUBLESHOOTING (MAST)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the diagnosis based on the Mast Troubleshooting (Table 6) information shown below.

If the problem cannot be remedied, please leave the unit just as it is and consult our company's service department.

TABLE 6. MAST TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Mast cannot be raised.	Is cable caught in mast?	Set cable free.
	Is end of wire rope disconnected from winch?	Connect wire rope to winch.
	Does surface of mast slide smoothly?	Apply grease to sliding surface of mast.
Mast keeps coming down.	Is winch latch functioning properly?	Replace part if not functioning properly.
	Is drum shaft loose?	Tighten drum shaft and check its operation.
The mast cannot be lowered.	Does surface of mast slide smoothly?	Apply grease to sliding surface of mast.
	Is brake disk of winch held tight?	Holding winch handle securely, remove the latch and lower mast slowly (Repair).
	Does safety stopper work correctly?	Winch up mast a little and lower mast by putting a load on it (Repair).

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

Sample Parts List:

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/*
2*		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2*	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols - All items with same unique symbol (*, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the "Remarks" column.

Duplicate Item Numbers - Duplicate numbers indicate multiple part numbers are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.



When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used - Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the "Remarks" Column.

QTY. Column

Numbers Used - Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the "Remarks" Column.

REMARKS Column

Some of the most common notes found in the "Remarks" Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit - All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

"INCLUDES ITEMS W/(unique symbol)"

Serial Number Break - Used to list an effective serial number range where a particular part is used.

Indicated by:

"S/N XXXXX AND BELOW"

"S/N XXXX AND ABOVE"

"S/N XXXX TO S/N XXX"

Specific Model Number Use - Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

"XXXXX ONLY"

"NOT USED ON XXXX"

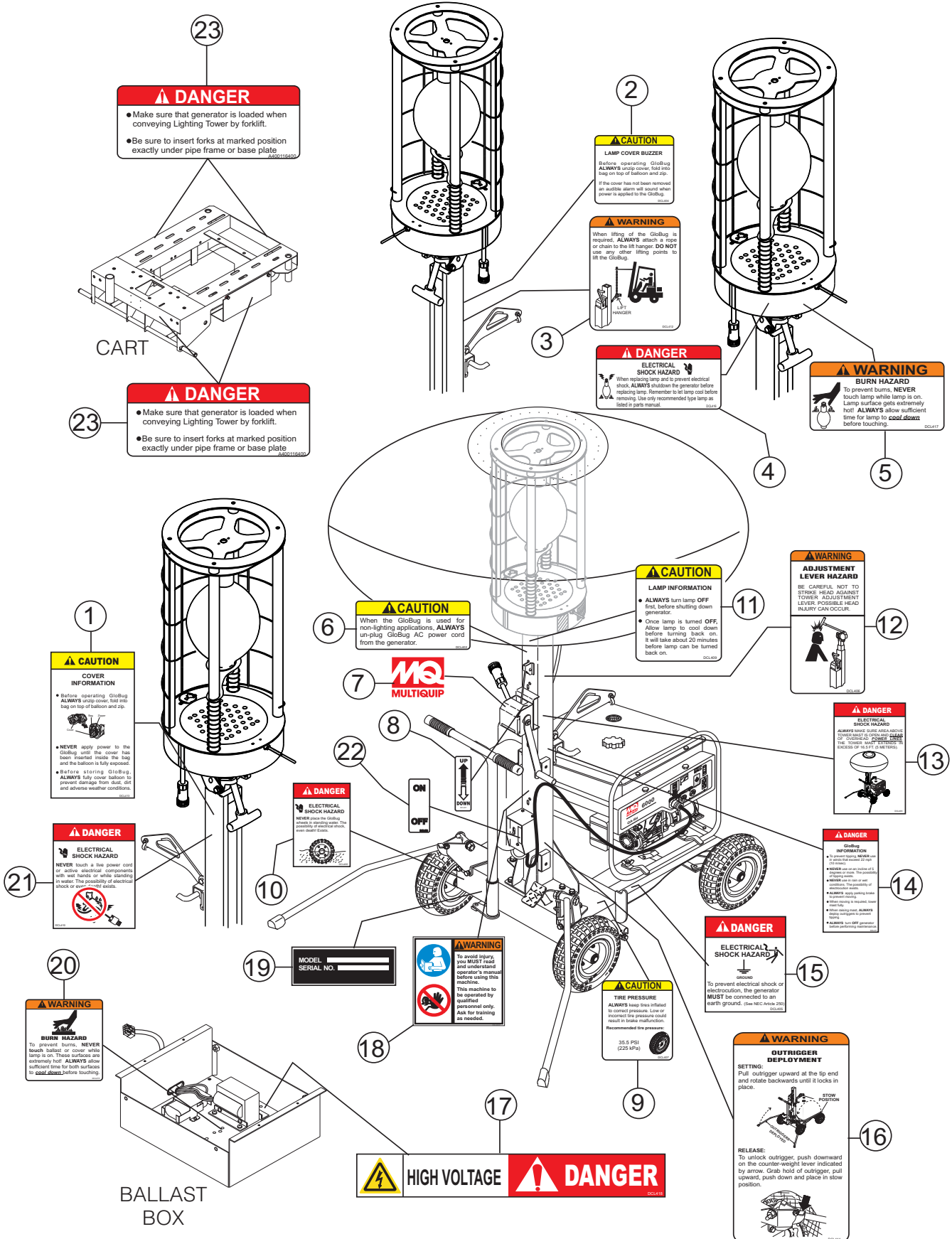
"Make/Obtain Locally" - Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

"Not Sold Separately" - Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

GloBug LIGHTING SYSTEM
1 TO 3 UNITS

<u>Qty.</u>	<u>P/N</u>	<u>Description</u>
2	E000009800	BULB
2	A300033800	BALLAST/TRANSFORMER
2	A300038400	CAPACITOR, 24 μ F @480 VDC
2	A100031301	BALLOON CLOTH
3	A400038300	FILTER 200 (AIR)

NAMEPLATE AND DECALS

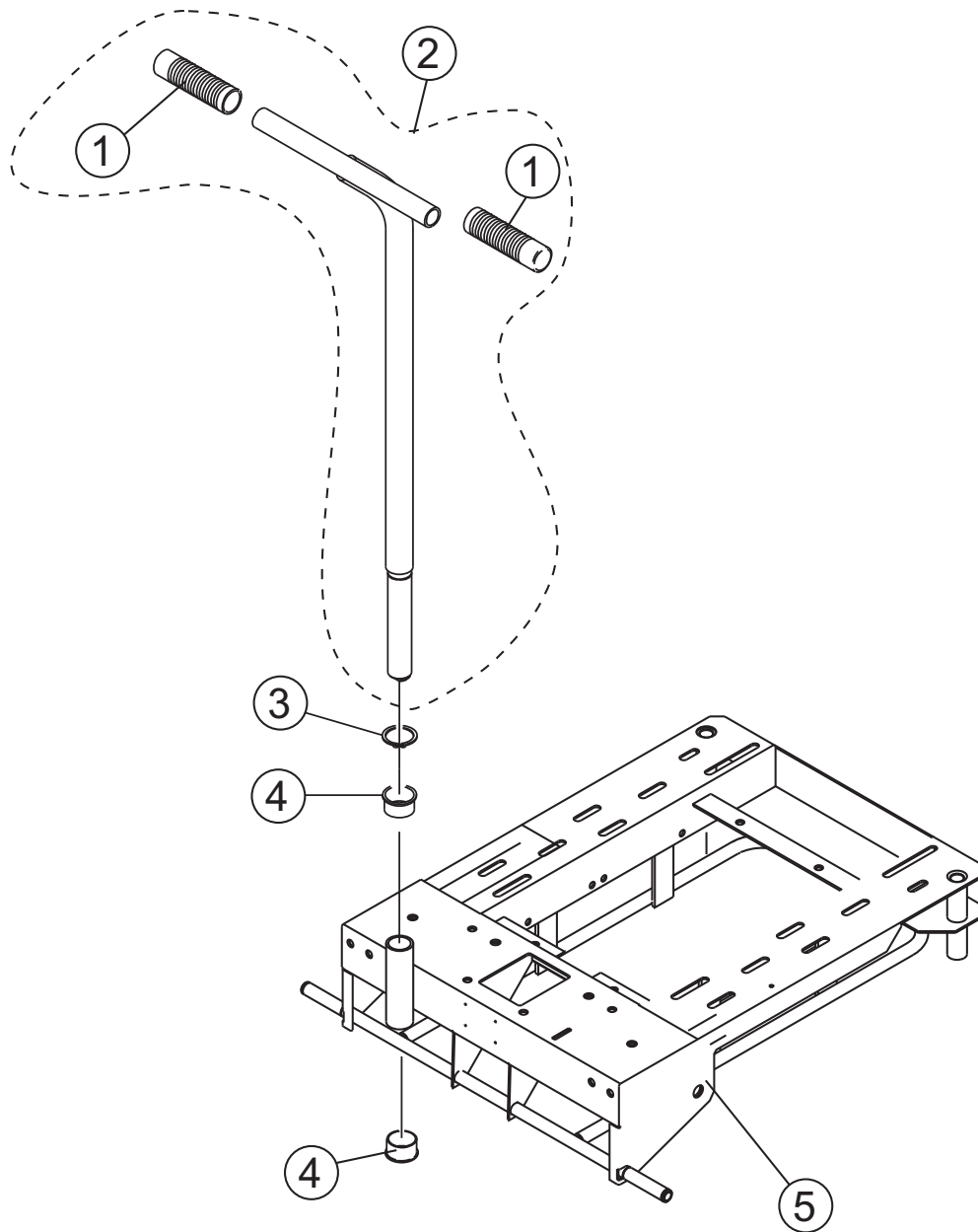


NAMEPLATE AND DECALS

NAMEPLATE AND DECALS.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	DCL413	DECAL; CAUTION COVER INFORMATION	1	
2	DCL404	DECAL; CAUTION LAMP COVER BUZZER	1	
3	DCL412	DECAL; WARNING, LIFT HANGER	1	
4	DCL416	DECAL; DANGER, ELECTRICAL SHOCK HAZ.	1	
5	DCL417	DECAL; WARNING, BURN HAZARD (LAMP)	1	
6	DCL402	DECAL; CAUTION, REMOVE POWER CORD	1	
7	DCL428	DECAL; MQ LOGO	1	
8	DCL401	DECAL; WINCH UP/DOWN	1	
9	DCL407	DECAL; CAUTION, TIRE PRESSURE	1	
10	DCL400	DECAL; DANGER, ELECTRICAL SHOCK (TIRES)	1	
11	DCL409	DECAL; CAUTION, LAMP INFORMATION	1	
12	DCL406	DECAL; WARNING, ADJ. LEVER HAZARD	1	
13	DCL403	DECAL; DANGER ELECTRIC SHOCK (GLOBUG)	1	
14	DCL411	DECAL; DANGER, GLOBUG INFORMATION	1	
15	DCL405	DECAL; DANGER, ELECTRICAL SHOCK (GND.)	1	
16	DCL414	DECAL; WARNING, OUTRIGGER DEPLOYMENT	1	
17	DCL418	DECAL; DANGER, HIGH VOLTAGE	1	
18	35137	DECAL; WARNING, READ MANUAL	1	
19		NAMEPLATE	1	 CONTACT MQ PARTS DEPT.
20	DCL415	DECAL; BURN HAZARD (BALLAST)	1	
21	DCL410	DECAL; DANGER, ELECTRICAL SHOCK (CORDS)	1	
22	DCL408	DECAL; ON/OFF	1	
23	A400116400	DECAL; FORKLIFT ALIGNMENT	4	

T-HANDLE ASSY.

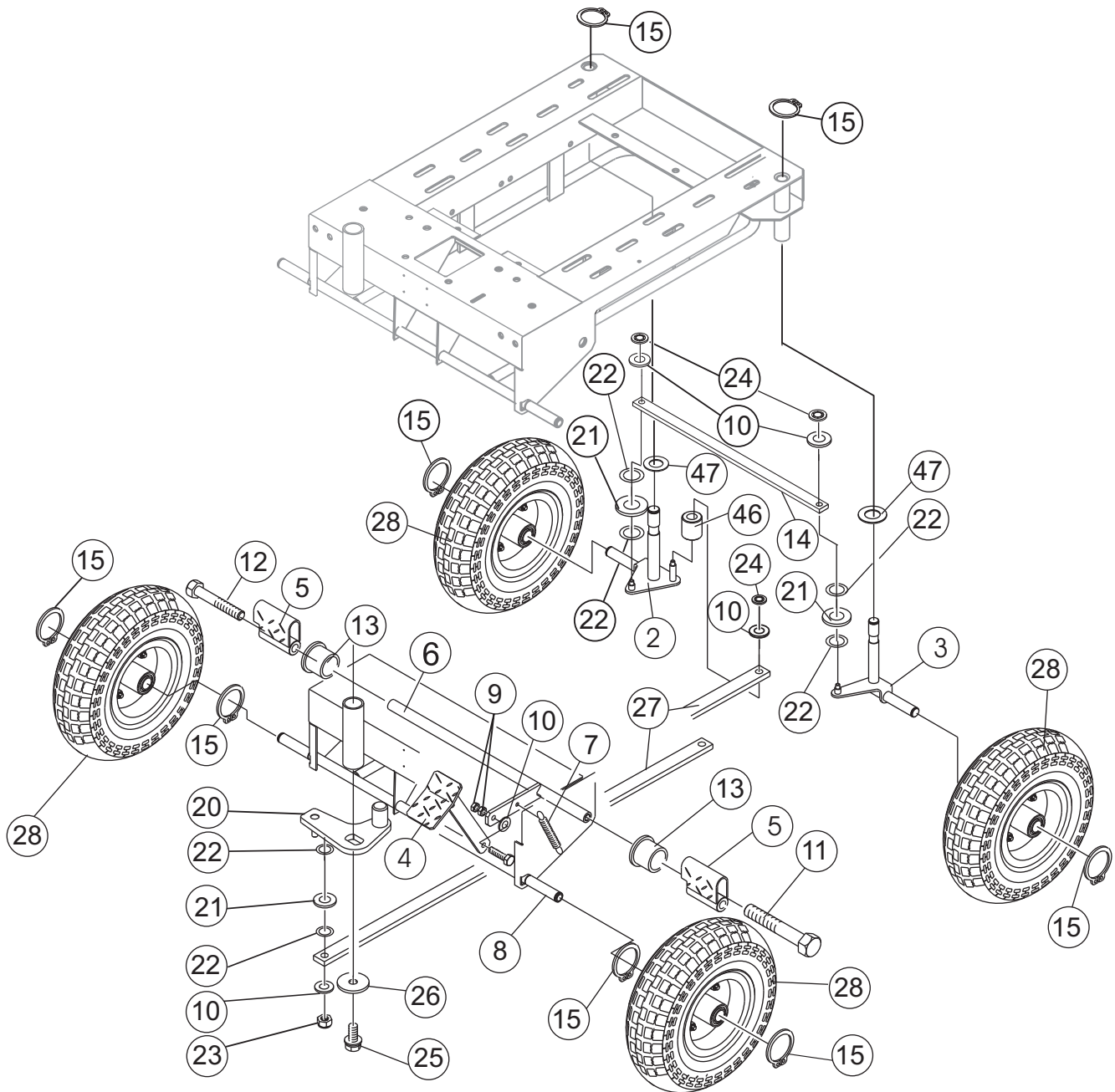


T-HANDLE ASSY.

T-HANDLE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1*	1102700130	HANDLE GRIP	2	
2	A200023001	HANDLE	2	INCLUDES ITEM W/*
3	0040730000	SNAP RING (30)	1	
4	1503300130	SLEEVE BEARING (30DX34DX20)	2	
5	A100018905	BASE PLATE	1	

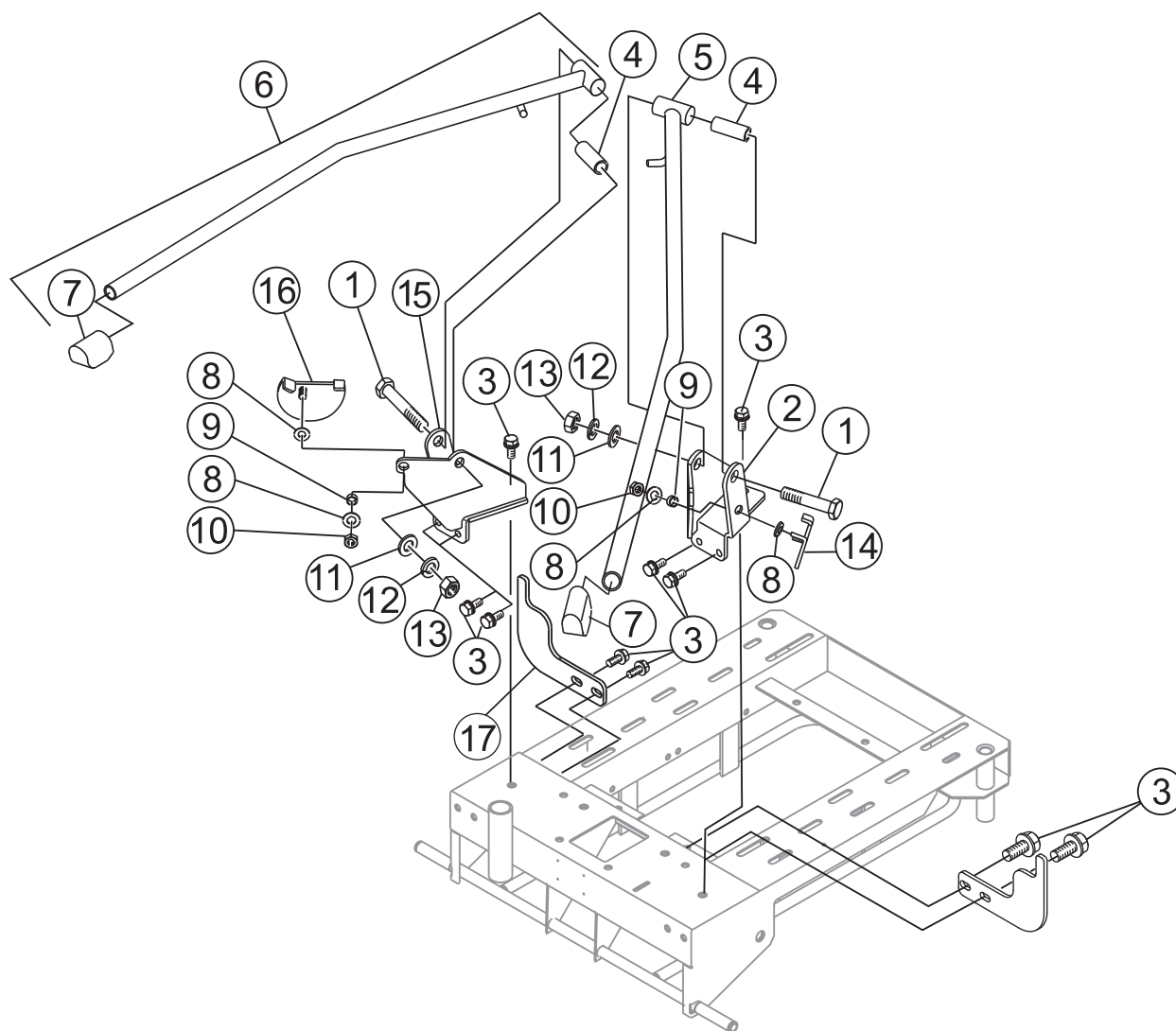
STEERING ASSY.



STEERING ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	A200022903	FRONT SHAFT (L)	1	
3	A200022803	FRONT SHAFT (R)	1	
4	2001200313	BRAKE PEDAL	1	
5	2071214010	BRAKE	2	
6	2071213211	BRAKE SHAFT	1	
7	1041000131	SPRING (BRAKE)	1	
8	0010308030	BOLT (M8x30) SUS	1	
9	0033108000	NUT (M8)	2	
10	0043108000	WASHER (M8)	5	
11	0013212075	BOLT (M12x75)	1	
12	1521120131	BOLT (M12x75) LEFT SCREW	1	
13	1503180130	SLEEVE BEARING (18Dx20Dx20)	2	
14	A400055501	LINK (FRONT SHAFT)	1	
15	0040720000	SNAP RING (20)	8	
20	A300090600	LINK, HANDLE	1	
21	0043112000	WASHER (M12)	1	
22	1504120130	WASHER (12.2Dx18Dx0.5T)	6	
23	0033208000	SELF LOCK NUT (M8)	1	
24	0030808000	PUSH NUT (8)	3	
25	0013512025	BOLT & WASHER (M12x25)	1	
26	0043112041	WASHER (12Dx40Dx3.2T)	1	
27	A400055401	LINK (STEERING)	1	
28	E000014500	TIRE ASSY (4.10/3.50-5)	4	
46	A400055101	SPACER	1	
47	E000031200	WASHER, (20Dx36Dx1.5)	2	

OUTRIGGER ASSY.



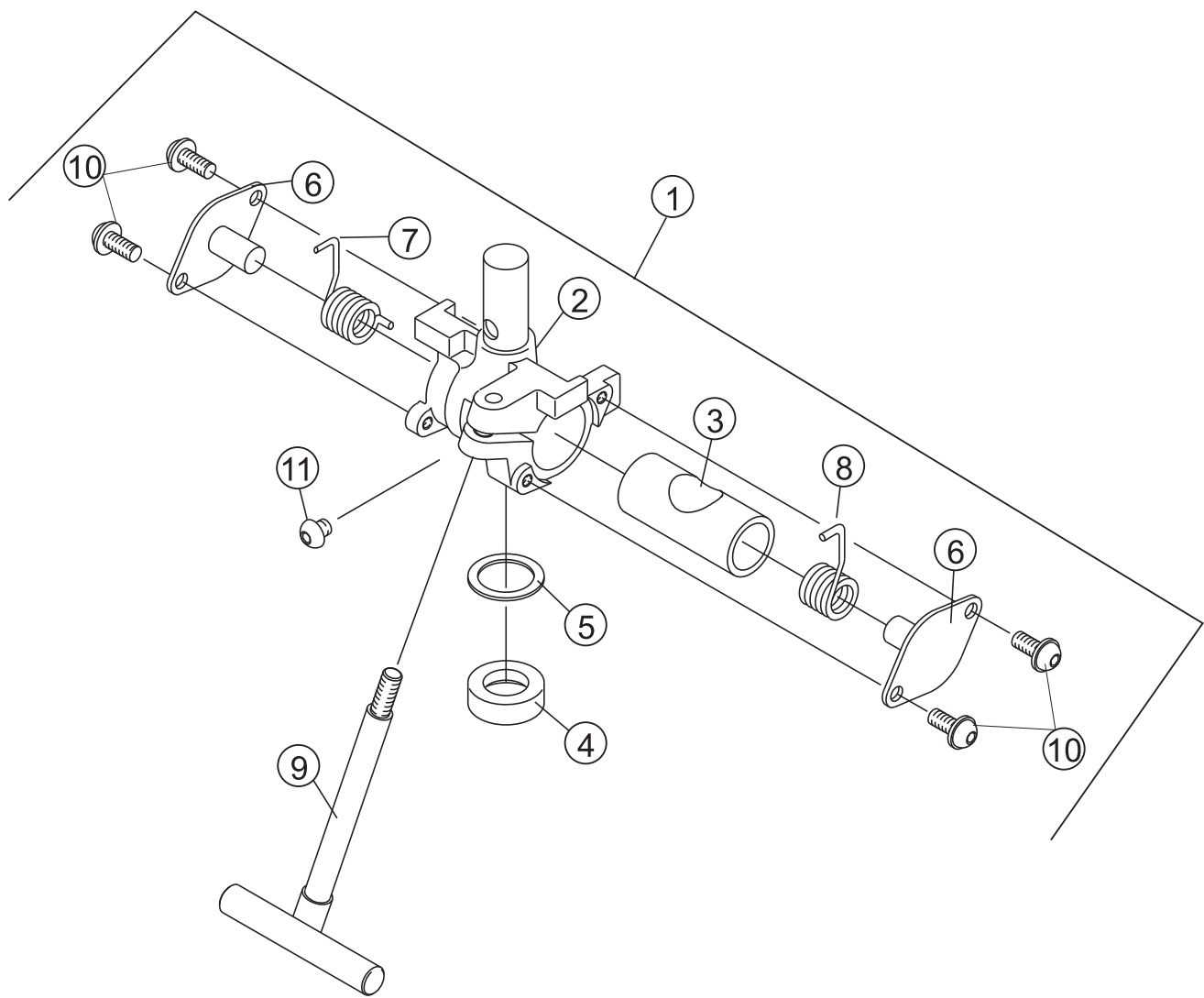
OUTRIGGER ASSY.

OUTRIGGER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0013116090	BOLT (M16x90)	2	
2	A100011601	BRACKET (OUT,R) R	1	
3	0013510025	BOLT & WASHER (M10x25)	10	
4	1501160111	SPACER (OUT,R)	2	
5	A200015303	OUTRIGGER R	1	INCLUDES ITEM W/*
6	A200015203	OUTRIGGER L	1	INCLUDES ITEM W/*
7*	1641000330	RUBBER FOOT	2	
8	0043110000	WASHER (M10)	4	
9	1501100430	SPACER (10.2dx13.8Dx6.5L)	2	
10	0033210000	SELF LOCK NUT (M10)	2	
11	0043116000	WASHER (M16)	2	
12	0043216000	WASHER, SPRING (M16)	2	
13	0033116000	NUT (M16)	2	
14	2031321113	WEIGHT (OUT,R) R	1	
15	A100011501	BRACKET (OUT,R) L	1	
16	2031320213	WEIGHT (OUT,R) L	1	
17	A400033402	CATCHER (OUTRIGGER)	2	

MAST ADAPTER ASSY.

MAST ADAPTER ASSY.



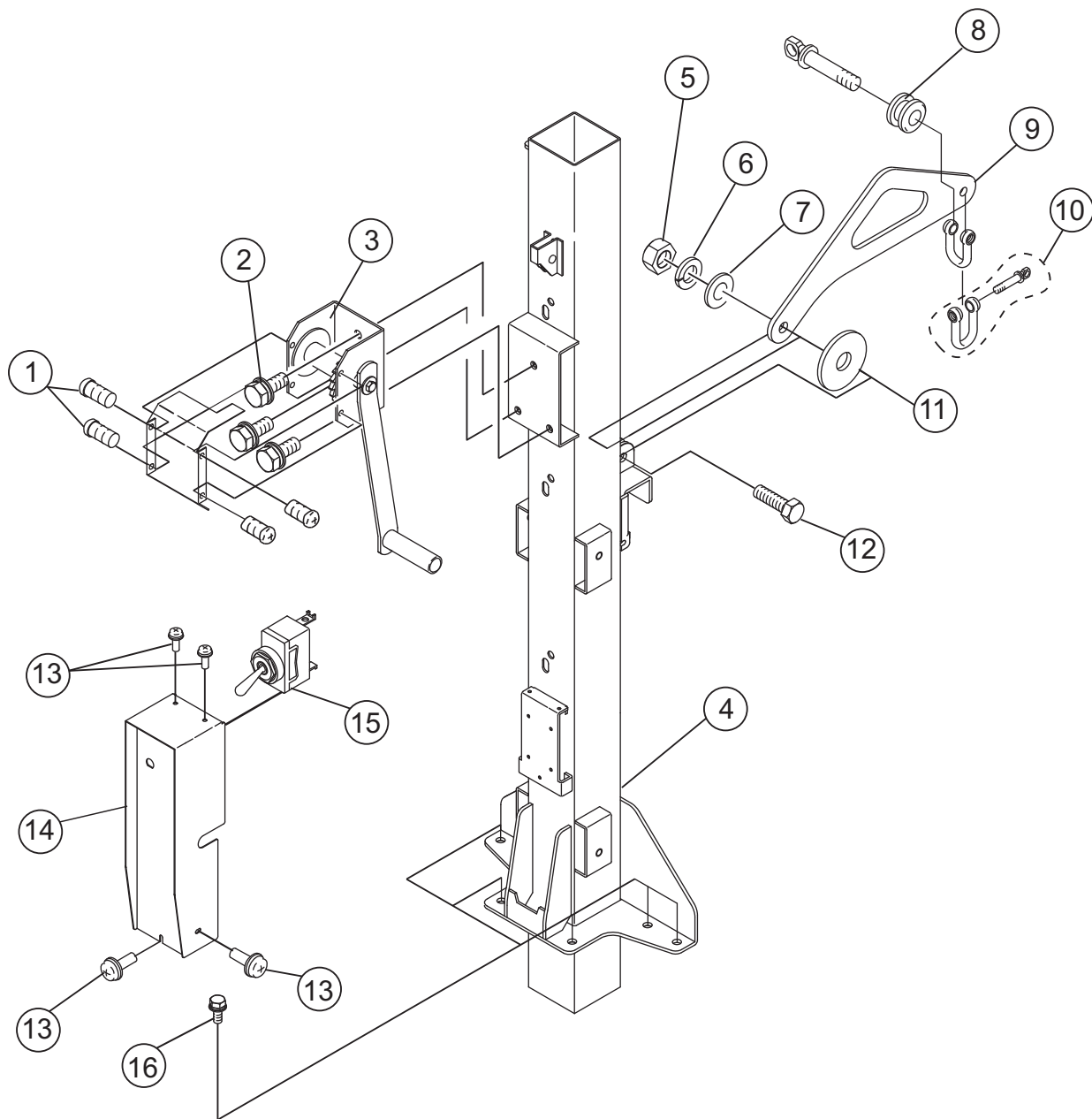
MAST ADAPTER ASSY.

MAST ADAPTER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	2202390100	STAND ASSY.	1	INCLUDES ITEMS W/*
2*	2202390112	STAND	1	
3*	2202500130	SHAFT (STAND)	1	
4	2202500230	SPACER (STAND)	1	
5	1502280130	WASHER	1	
6*	2202520110	COVER (SPRING)	2	
7*	1043002030	SPRING (STAND) L	1	
8*	1043002130	SPRING (STAND) R	1	
9	A400038801	GRIP SHAFT	1	
10*	0014808025	BUTTON BOLT & WASHER (M8 X 15)	4	
11	0014708010	BUTTON BOLT (M8 X10)	1	

MAIN MAST ASSY.

MAIN MAST ASSY.

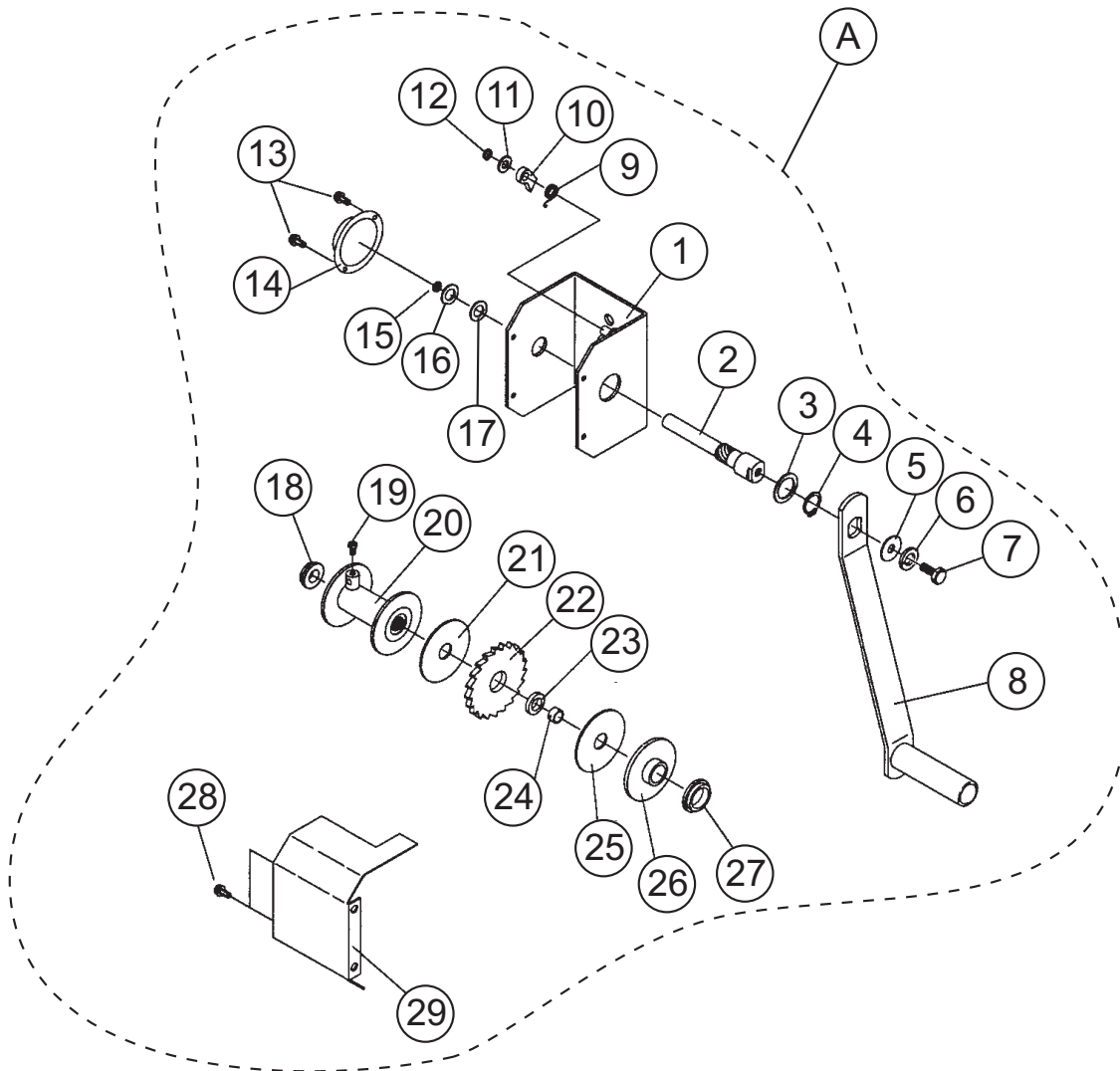


MAIN MAST ASSY.

MAIN MAST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	0020105008	SCREW & WASHER, M5X8	4	
2	0013510025	BOLT & WASHER (M10x25)	3	
3	1011000701	WINCH HM-G103	1	
4	A100028105	FIRST MAST	1	
5	0033112000	NUT (M12)	1	
6	0043212000	WASHER, LOCK (M12)	1	
7	0043112000	WASHER (M12)	1	
8	1642001430	GROMMET	1	
9	1052001710	HANGER	1	
10	1711080130	SHACKLE, W/BOLT	2	
11	0043112041	WASHER (12dx40Dx3.2t)	1	
12	0013112040	BOLT (M12x40)	1	
13	0023305015	SCREW & WASHER (M5x15)	5	
14	A200039400	SWITCH COVER	1	FOR FIRST MAST
15	A300117800	SWITCH ASSY.	1	
16	0013512025	BOLT & WASHER (M12x25)	6	

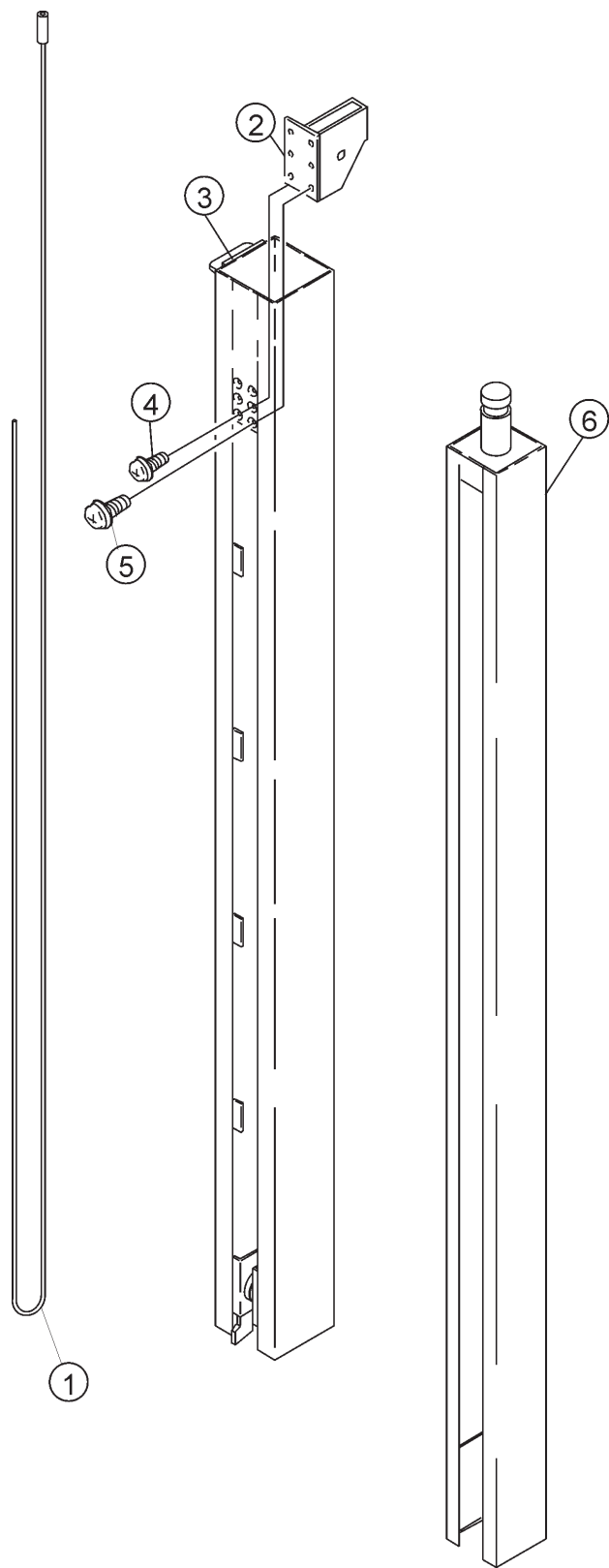
WINCH ASSY.



WINCH ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	1011000701	WINCH HM-G103	1	INCLUDES ITEMS W/*
1*	E000049800	FRAME	1	
2*	E000049900	DRUM SHAFT	1	
3*	E000050000	WASHER	1	
4*	E000050100	SNAP RING	1	
5*	1011001460	WASHER	1	
6*	030208200	WASHER, LOCK M8	1	
7*	0010108015	BOLT, M8X15	1	
8*	1011001361	HANDLE	1	
9*	1011000460	SPRING	1	
10*	1011000360	RACHET	1	
11*	0043108000	WASHER, M8	1	
12*	0040707000	SNAP RING, 7	1	
13*	0020403006	SCREW, M3X6 TRUSS HEAD	2	
14*	E000050200	COVER	1	
15*	E000050300	SNAP RING	1	
16*	E000050400	WASHER	1	
17*	E000051100	WAVE WASHER	1	
18*	E000050500	PLASTIC WASHER 1	1	
19*	0001050410	BOLT, M4X10	1	
20*	1011000760	DRUM PIPE	1	
21*	E000050600	LINING 2	1	
22*	1011000960	RATCHET GEAR	1	
23*	E000050700	COLLAR 1	1	
24*	E000050800	COLLAR 2	1	
25*	1011000860	LINING 1	1	
26*	E000050900	BACK PLATE	1	
27*	E000051000	PLASTIC WASHER 2	1	
28*	1011000260	COVER	1	
29*	0020105008	SCREW & WASHER, M5X8	4	

MAST SECTION ASSY.



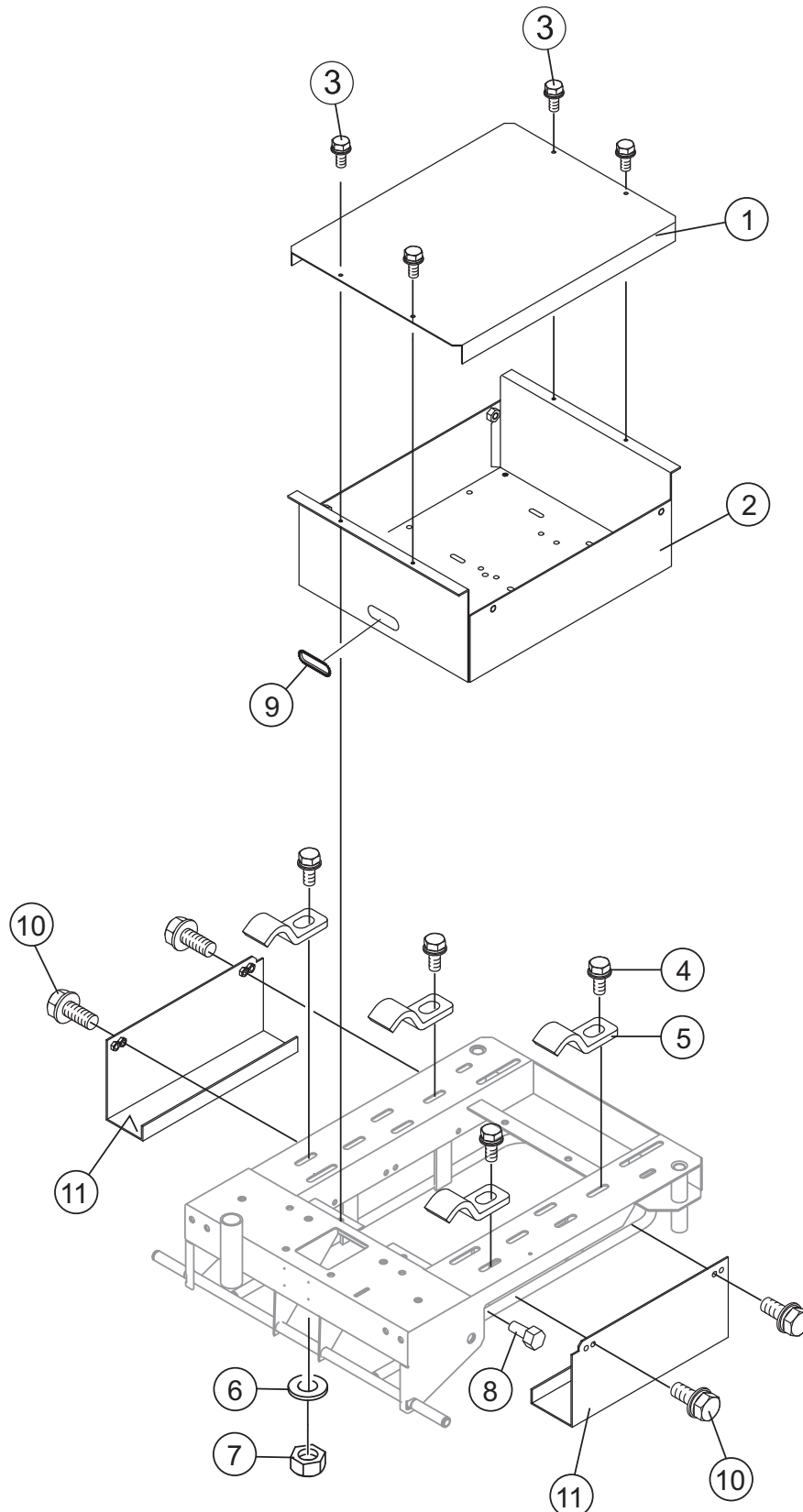
MAST SECTION ASSY.

MAST SECTION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1031040113	WIRE (4Dx4800L)	1	
2	2002262010	BRACKET (PULLEY)	1	MAST SECTION 2
3	A200027200	SECOND MAST	1	
4	0023204010	SCREW (M4x10)	3	
5	0023204006	SCREW (M4x6)	3	
6	A200027301	THIRD MAST	1	

BASEPLATE COVER ASSY.

BASEPLATE COVER ASSY.

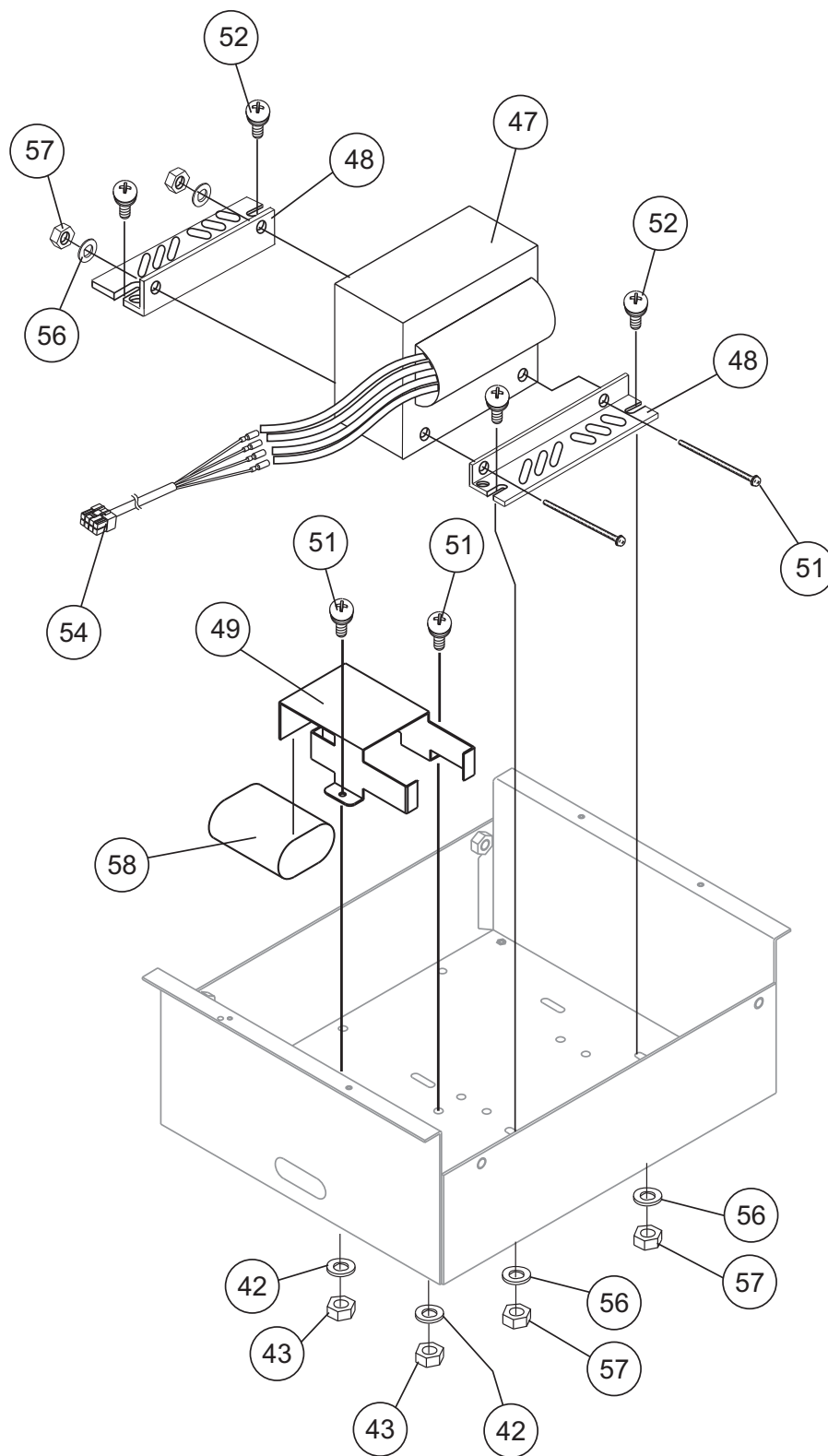


BASEPLATE COVER ASSY.

BASEPLATE COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	A100030101	COVER (BALLAST)	1	
2	A100030203	BOX (BALLAST) CP	1	
3	0013510025	BOLT & WASHER (M10x25)	4	
4	0013512025	BOLT & WASHER (M12x25)	4	
5	A400041101	STOPPER	4	
6	0043112000	WASHER (M12)	4	
7	0033112000	NUT (M12)	4	
8	0013106010	BOLT (M6x10)	1	
9	E000032100	FREE BUSH	1	
10	0013508015	BOLT & WASHER (M8x25)	4	
11	A300087403	SIDE GUARD	2	

BALLAST ASSY.

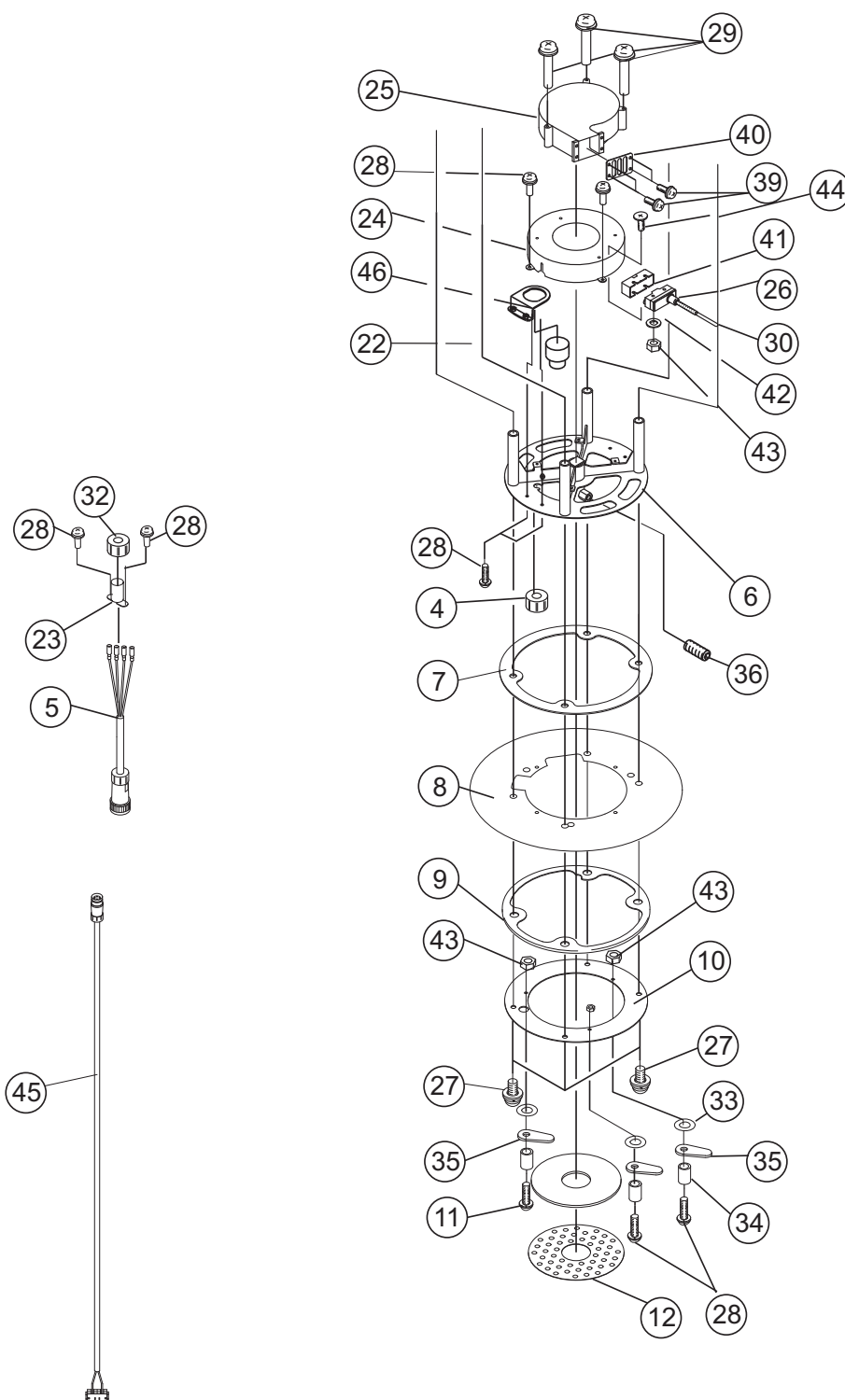


BALLAST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
42	GB0043104000	WASHER, (M4)	4	
43	0033104000	NUT, (M4)	7	
47	A300033800	BALLAST, CP	1	
48	E000056800	BALLAST HOLDER	2	
49	A200018200	HOLDER	1	
50	0023305015	SCREW & WASHER, (M5x15)	2	
51	0023305090	SCREW & WASHER, (M5x90)	2	
52	0013505015	BOLT & WASHER, (5x15)	2	
54	A300105600	CABLE, BALLAST CP	1	
56	0043105000	WASHER, (M5)	6	
57	0033105000	NUT, (M5)	6	
58	A300038400	CAPACITOR, 24 F @480 VDC	1	

FAN BLOWER/LAMP BASE ASSY.

FAN BLOWER/LAMP BASE ASSY.



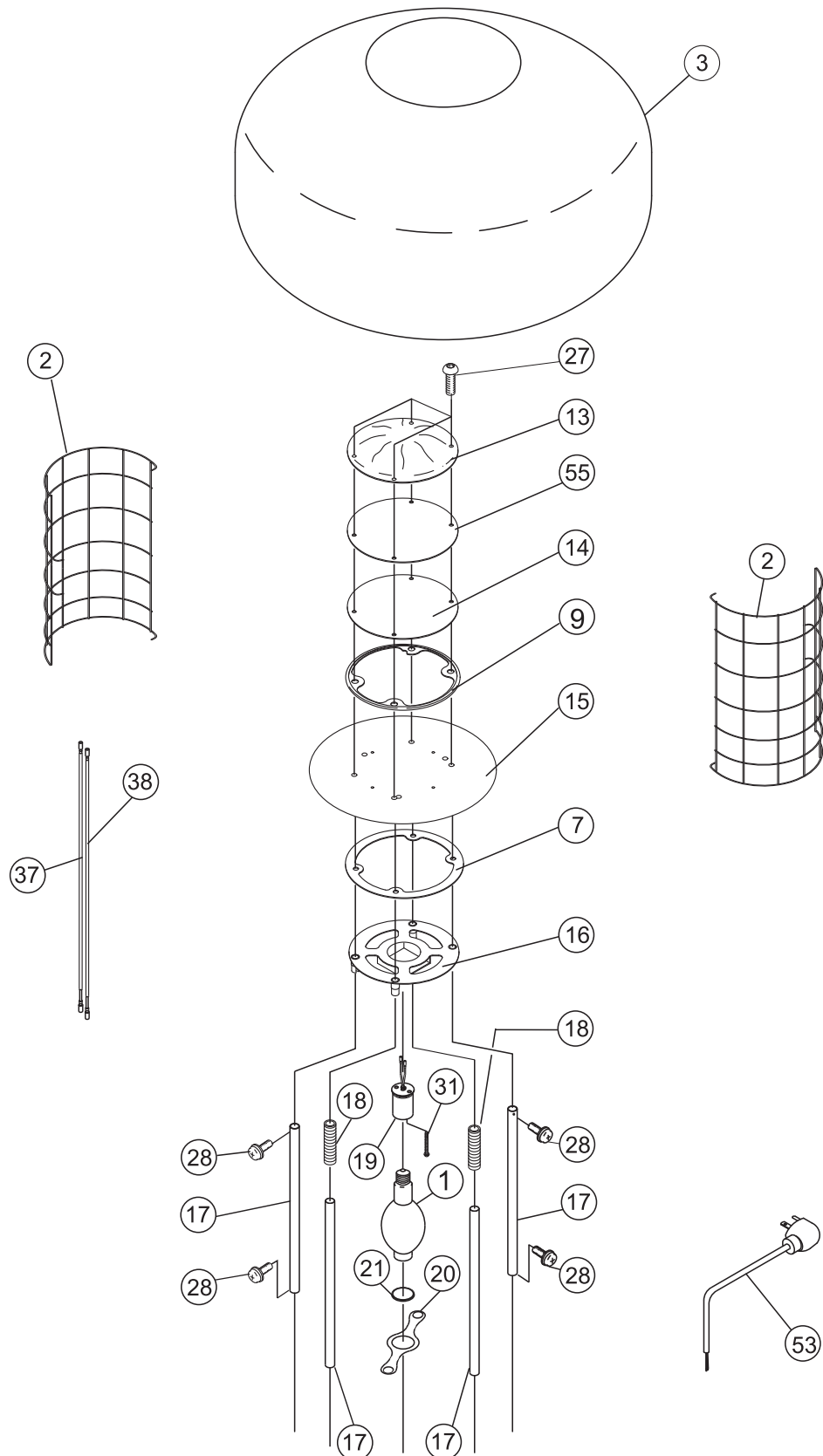
FAN BLOWER/LAMP BASE ASSY.

FAN BLOWER/LAMP BASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
4	E000045000	CABLE CLAMP	1	
5	A300105500	CABLE 1 (BALLOON) CP	1	
6	A100013302	FLANGE	1	
7	2204500130	SEAL (NORMAL)	1	
8	1800001100	SHEET (BOTTOM)	1	
9	2204500230	PACKING	1	
10	A300034400	PLATE (BOTTOM)	1	
11	A400038300	FILTER 200 (AIR)30	1	
12	A200018000	PLATE (AIR)	1	
22	E000030100	BUZZER	1	
23	A400038901	COVER, WIRE	1	
24	A200017702	VESSEL	1	
25	A300033500	FAN MOTOR CP	1	
26	1400150210	MICRO SWITCH	1	
27	0014808025	BUTTON SCREW & WASHER (M8x25)	8	
28	0024304008	SCREW (M4x8)	9	
29	0023305060	SCREW & WASHER (M5x60)	3	
30	1400150410	MICRO SWITCH CAP (SENSOR)	1	
32	E000011900	COVER	1	
33	E000009701	WAVE WASHER (M5)	3	
34	E000010301	SPACER	3	
35	A400030700	STOPPER (FILTER) CP	3	
36	0021710025	SET SCREW (M10x25)	1	
39	0023105008	SCREW (M5x8)	4	
40	A400037400	GUARD (FAN)	1	
41	1400150300	MICRO SWITCH COVER	1	
42	0043104000	WASHER (M4)	4	
43	0033104000	NUT (M4)	5	
44	0023204030	SCREW (M4x30)	2	
45	A300105800	CABLE 2 (BALLOON) CP	1	
46	A400038601	BRACKET, BUZZER	1	

BALLOON/LAMP GUARD ASSY.

BALLOON/LAMP GUARD ASSY.



BALLOON/LAMP GUARD ASSY.

BALLOON/LAMP GUARD ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	E000009800	LAMP	1	
2	A100010800	LAMP GUARD	2	
3	A100031301	BALLOON CLOTH CP	1	
7	2204500130	SEAL, NORMAL	1	
9	2204500230	PACKING	1	
13	A100028502	BALLOON COVER	1	
14	2204220130	PLATE (CAP)	1	
15	1800001000	SHEET (TOP)	1	
16	A300026901	PLATE (LAMP)	1	
17	2204400130	FRAME PIPE	4	
18	2204231530	SPRING (LAMP)	2	
19	E000009601	SOCKET ASSY	1	
20	A300032700	PLATE (LAMP HOLDER)	1	
21	2204231730	RUBBER (LAMP) L=210	1	
27	0014808025	BUTTON SCREW & WASHER (M8x25)	8	
28	0024304008	SCREW (M4x8)	8	
31	0025304025	SCREW & WASHER (M4x25)	2	
37	A400038400	CABLE (LAMP) 1 R CP	1	
38	A400038501	CABLE (LAMP) 1 W CP	1	
53	A300118000	CABLE, MAIN CP	1	
55	A300060202	SEAL, (TOP)	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

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OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER *ON-HAND* WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave. Tel: (800) 421-1244
Carson, CA 90746 Fax (800) 537-3927
Contact: mq@multiquip.com

Mayco Parts

800-306-2926 Fax: 800-672-7877
310-537-3700 Fax: 310-637-3284

Service Department

800-421-1244 Fax: 310-537-4259
310-537-3700

MQ Parts Department

800-427-1244 Fax: 800-672-7877
310-537-3700 Fax: 310-637-3284

Warranty Department

800-421-1244, Ext. 279 Fax: 310-537-1173
310-537-3700, Ext. 279

Technical Assistance

800-478-1244 Fax: 310-631-5032

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5 Tel: (52) 222-225-9900
Momoxpan, Cholula, Puebla 72760 Mexico Fax: (52) 222-285-0420
Contact: pmastretta@cipsa.com.mx

CANADA

Multiquip

4110 Industriel Boul. Tel: (450) 625-2244
Laval, Quebec, Canada H7L 6V3 Fax: (450) 625-8664
Contact: jmartin@multiquip.com

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Multiquip (UK) Limited Head Office

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Ashton-under-Lyne, Fax: 0161 339 3226
Lancashire OL7 0TL
Contact: sales@multiquip.co.uk

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Multiquip

Av. Evandro Lins e Silva, 840 - grupo 505 Tel: 011-55-21-3433-9055
Barra de Tijuca - Rio de Janeiro Fax: 011-55-21-3433-9055
Contact: cnavarro@multiquip.com.br, srentes@multiquip.com.br

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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