

# sky cannon – searchlight

Instruction Manual



Figure 1. Sky Cannon Searchlight

## Introduction

- It is imperative that all Sky Cannon operators read and understand this manual prior to operating the Sky Cannon. Failure to adhere to procedures and safety conditions will damage the Sky Cannon and may result in personal injuries.
- The Sky Cannon is referred to as “the unit” in many of the following procedures and safety precautions.

## controls & functions

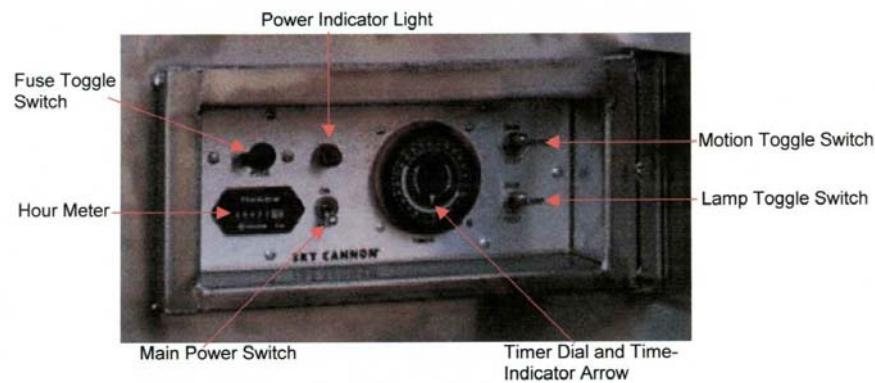


Figure 2. Control Panel

### MOTION TOGGLE SWITCH

- **RUN** is used when the Main Power Switch is **ON** and the unit will be run manually or by the Timer Dial.
- **TEST** is used when the Main Power Switch is **OFF**. Use this feature to verify that the unit’s motion is in good working condition.

### LAMP TOGGLE SWITCH

- **RUN** is used when the Main Power Switch is **ON** and the unit will be run manually or by the Time Dial.
- **TEST** is used when the Main Power Switch is **OFF**. Use this feature to verify that the unit’s lamp is in good working condition.

# sky cannon – searchlight safety

- *The sky cannon hazards are listed below. It is the Sky Cannon operator's responsibility to know all of the associated hazards listed below in order to prevent personal and product injury.*

## mechanical

### hazard:

- The Sky Cannon has moving parts that create potential pinch and crush hazard around the Top Can and where the Top Can connects to the Bottom Box.

### injury prevention:

- Keep fingers, hair, loose clothing and jewelry away from moving parts while starting the tool and when the unit is running.
- Know how to stop this unit quickly and understand the operation of all controls prior to running the unit.
- Ensure that the Sky Cannon is level and stable at all times (adjust the bottom feet as necessary to level the Sky Cannon).
- The Sky Cannon's light and motion may start automatically when the unit is equipped with either a photo sensor and/or timer.
- Maintain at least a four-foot circle around the Sky Cannon that is free and clear from any obstructions.
- Keep the area between the Top Can and the Bottom Box free and clear of all objects.
- Center the Sky Cannon in a secured area with at least a 10-foot diameter.

## ergonomic

### hazard:

- The Sky Cannon weighs nearly 150 pounds. Lifting the light without assistance may result in physical injuries

### injury prevention:

- If lifting the Sky Cannon is necessary, use four people to lift the unit.

## electrical

### hazard:

- The Sky Cannon is powered by standard 110VAC outlets. Touching exposed wiring may result in shock injury.

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## injury prevention:

- Inspect the Sky Cannon cord and plug for damage. Internal wiring is projected within the Sky Cannon framework. Use GFI outlets for outdoor use.
- Do not attempt to operate the unit if your hands are wet or you are standing in water.
- Unplug the power cord before opening the control box or Top Can – dangerous voltage is present when the Sky Cannon is plugged into an outlet.

## visual

### hazard:

- Looking into the Sky Cannon’s powerful light beam may cause serious eye injury or blindness

### injury prevention:

- Do not look directly into the Sky Cannon’s light. Keep people a safe distance away from the Sky Cannon by securing an area with at least a 10-foot diameter.
- Do not locate or position the Sky Cannon where persons not informed of the light hazard can look down into the Sky Cannon light.

## heat

### hazard:

- The glass lens and stainless steel can get very hot during operation. Touching these surfaces may result in a minor burn.

### injury prevention:

- Do not touch the Sky Cannon’s Bottom Box and Top Can while it is running. Do not handle the Sky Cannon for five minutes after shutdown.

## other precautions:

- Only qualified persons may operate, repair and maintain the Sky Cannon
- Never alter or modify any part of the Sky Cannon. Altering the Sky Cannon may result in personal injury to yourself or others.
- Keep all labels, decals, warning or caution signs and instructional information with the machine at all times
- Ensure that the Sky Cannon bulb runs for at least 1 minute before turning off the bulb – running the bulb for less than 1 minute will damage or destroy to bulb.

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## operating procedures:

### installation

1. Ensure that the Sky Cannon is level and stable – adjust bottom feet as necessary
2. Provide an area around the unit that will not interfere with the machine's movement.
  - a. Center the Sky Cannon in a secured area with at least a 10-foot diameter.
3. Unlock the control panel and ensure that all switches are in their **OFF** position.
  - a. If you have a Sky Cannon model with a timer
    - i. Ensure that the Main Power Switch is in its **OFF** position.
    - ii. Ensure that the Motion and Lamp switches are in their **RUN** position.
4. Plug the Sky Cannon cord into a grounded 110-volt/60Hz/15 or 20 amp power source.
  - a. This is typically a standard 110v outlet, but check your breaker panel to ensure that the power source is adequate
  - b. If an extension cord is required, used a heavy-duty cord that is approved for commercial outdoor use.

### operating

- *Ensure that you follow the instructions written for the Sky Cannon style that you are renting.*
- *Sky Cannon operating temperature must be between 20 and 110 degrees Fahrenheit*

### Sky Cannon **WITHOUT** a timer or photo sensor

1. Switch **ON** the circuit breaker located in the control panel's top left hand corner.
  - a. The red power indicator should light to verify that there is power to the machine.
  - b. Once the Sky Cannon light is powered **ON**, it must remain on for at least one minute or the bulb will be damaged or destroyed. If the bulb runs for less than one minute, the mercury in the bulb is unable to vaporize and will cling to the sides of the bulb. This will cause the bulb to turn black.
2. Turn on the bulb:
  - a. Lift up on the Lamp Toggle Switch located on the control panel's bottom right-hand side so that it is in the **RUN** position.
  - b. ALLOW BULB TO HEAT FOR A FEW MINUTES
3. Ensure that everything is clear from the Sky Cannon's range of motion

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- a. Center the Sky Cannon in a secured area with at least a 10-foot diameter.
  - b. Maintain at least a 4-foot circle around the Sky Cannon that is free and clear from any obstructions.
  - c. Keep the area between the cannon and the main frame free and clear of all objects.
  - d. Do not locate or position the Sky Cannon where persons not informed of the light hazard can look down into the Sky Cannon light
4. Activate the Top Can's motion:
    - a. Lift up on the Motion Toggle Switch located on the control panel's top right-hand side so that it is in its **RUN** position.

## Sky Cannon WITH a photo sensor and timer

### timer set-up

1. Turn on the Timer Dial so that the center-dial arrow points to the correct time of day.
  - a. The timer is not battery powered so the Sky Cannon must be plugged in for the timer setting to remain accurate.
  - b. The white numbers represent day hours and the black numbers represent night hours.
2. Choose the time you want the Sky Cannon to start and carefully push the timer pins in towards timer dial's center.
  - a. Push in all the pins within the desired run time. The Sky Cannon shuts off when it reaches the time indicated by the pins no longer being pushed in.
  - b. We suggest setting the machine to start at 4:00pm and turn off at 12:00am-Midnight. The unit will actually turn on when the photocell registers that it is dark enough. The timer will regulate the shut off time. These settings eliminate the need to adjust the timer as daylight time changes throughout the year.

### startup

1. Complete the Sky Cannon timer setup procedure prior to Sky Cannon startup (as necessary)
2. Switch **ON** the circuit breaker located in the control panel's top left-hand corner.
  - a. The red power indicator should light to verify that there is power to the machine
3. Assuming the timer is setup
  - a. Switch the Lamp Toggle to its **RUN** position.

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- b. Switch the Motion Toggle Switch to its **RUN** position.
4. Turn **ON** the Main Power Switch located to the hour meter's right-hand side.
  - a. The Sky Cannon will automatically startup at the predetermined time.

## testing the lamp and motion

1. Turn **ON** the Main Power Switch located to the hour meter's right-hand side.
2. Switch the Lamp Toggle Switch to its **TEST** position.
  - a. Remember that the bulb must remain on for at least one minute to prevent bulb damage or destruction.
  - b. The light's brightness appears progressively, and it's optimum after 4-minutes
3. Switch the Motion Toggle Switch to its **TEST** position.

## Sky Cannon Shutdown

1. Put all switches to their **OFF** position.
  - a. If you have a Sky Cannon with a timer, leave the Lamp and Motion switches in their **RUN** position.
2. Grip the plug and pull it from the power outlet.

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## maintenance & troubleshooting

### maintenance

- The Sky Cannon is designed to provide years of trouble-free usage. For optimum lifelong performance, follow the preventive maintenance and replacement procedures as listed below

### filter replacement

- Inspect filters per every 250 hours of equipment runtime. Replace filters every 750 hours or sooner if necessary.
- There are two filters in the searchlight:
  - There is a filter inside the Top Can, under the blower assembly
  - There is a filter in the bottom box behind the ballast.
- Dust can damage the reflector **but should never be wiped** off the mirror surface. Use clean, dry compressed air to remove any dusty accumulated on the mirror

### filter inside of the Top Can

1. Remove the two screws that secure the stainless steel can and remove the can
2. Locate the fan assembly and remove the two bolts that secure the fan assembly



Figure 3. Removing the Blower

3. Remove the filter from the fan assembly and replace it with a new filter



Figure 4. Filter Under Blower

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4. Replace the two bolts that secure the fan assembly.
5. Replace the outer can and replace the two screws that secure the stainless steel can.

## bottom box filter

1. Remove the six screws that secure the front panel and remove the front panel
2. Locate the filter towards the back of the box and remove the two screws that secure the filter bracket

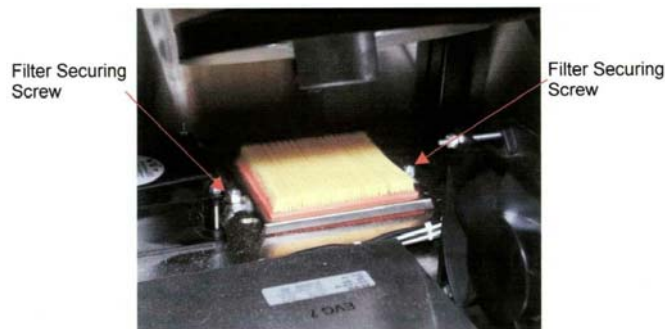


Figure 5. Bottom Box Filter

3. Replace the old filter with a new filter and tighten the two screws that secure the filter bracket.
4. Install the front panel and replace the six screws that secure the front panel

## belt replacement

- o **Never** touch the bulb with your fingers. The bulb is extremely fragile. Always wear latex gloves when handling the bulb.
- o *Inspect the fan belt for any excessive wear, cracks, misalignment problems, or looseness per every 250 hours of equipment runtime. Replace every 750 hours or sooner as necessary. For convenience the belt should also be changed anytime the bulb is replaced.*

1. Remove the six front panel screws and remove the front panel.
2. Locate and loosen the four bolts that secure the motor.
3. Slide the motor to the left to create slack in the belt.
4. Remove and replace the old belt with a new belt.
5. Adjust the new-belt tension by sliding the motor to the right and tighten the rough mounting bolts.
6. Replace the front panel and secure the front panel with the six screws.

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## bulb removal

1. Remove the 2 latex screws that secure the stainless steel outer can to the Top Can's frame.
2. Lift off the outer stainless steel can.
3. Loosen the hose clamp from the flexible cooler hose's top end, which connects to the lamp socket.

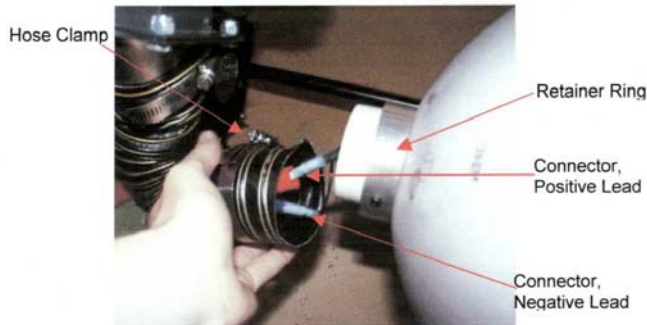


Figure 6. Hose Connection and Leads

4. Remove the hose from the lamp base.
5. Locate the 2 connectors inside the cooler hose and **very carefully** disconnect the lamp assembly's two connector leads.
6. On the reflector mirror's bottom side, loosen the two set screws that secure the retainer ring.
7. Remove the ring.
  - a. DO NOT TOUCH THE REFLECTOR MIRROR. Touching the reflector mirror may result in damage to the Sky Cannon.
8. Remove the lamp socket from the top of the mirror as follows: **DO NOT HANDLE THE BULB**
  - a. Remove the wing nut from the bottom of the lamp base.
  - b. Remove/disconnect the negative lead
  - c. Carefully pull the bulb's positive lead and lamp socket through the lamp base top side.

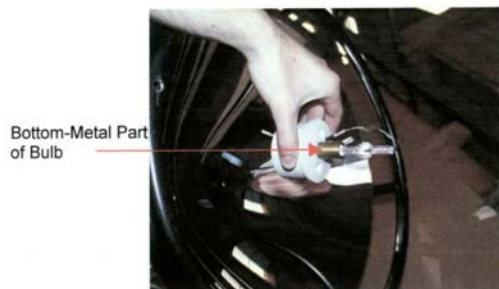


Figure 7. Lamp Base/Socket

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- Using gloves, and handling only to bottom-metal part of the bulb, unscrew the bulb from the lamp base.

### bulb replacement

- Carefully screw the new bulb into the lamp base unit it is snug.
- Tighten the bulb just a bit more or back the bulb out slightly (as necessary) so that the top strip of metal on the top of the bulb (the flag) aligns with the lamp base's smallest hole.
  - The positive lead must go straight down to the hole in the lamp page. If the flag does not align with the smaller hole in the lamp base, the lead may arc across to the bulb base and arc from the wire to the lamp base. It is possible for the lead to arc as much as 3/8" when the bulb is igniting.

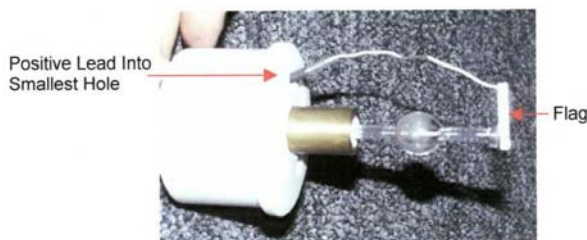


Figure 8. Bulb in Lamp Base

- Carefully replace the bulb's positive lead into the smallest hole located in the lamp base topside.
- Reconnect the negative lead.
- Replace the wing nut to the lamp base bottom
  - Reconnect the positive and negative leads and slide the red boot over the positive-lead connection.
- Replace the top-mirror lamp socket back into the reflector.
- Replace the retainer ring and tighten its two securing setscrews.
- Replace and tighten the hose to the lamp base.
- Replace the outer stainless steel and replace and tighten its 2 securing screws.

### stabilizing arm inspection

- Periodically oil the stabilizing arm with light oil such as WD-40
- Inspect the stabilizing arm per every 100 hours of equipment runtime.
- Replace the stabilizing arm as needed by unscrewing the 2 nuts that hold the arm in place
- Replace the old-arm assembly with a new-arm assembly and replace and tighten the 2 nuts

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## glass lens cleaning

- Keep the Sky Cannon’s glass lens clean. Never allow debris such as leaves or bird droppings to accumulate on the glass lens.
- Clean the glass with a suitable glass cleaner as often as needed.
- **Never** allow the glass cleaner to contact the reflective mirror.

## troubleshooting

### Problem & Probable Causes

1. There is no power at the unit
  - a. The main panel circuit breaker (for the outlet) is tripped or turned off.
    - i. Reset or turn on the circuit breaker at the main panel.
  - b. The plug is not plugged in correctly
    - i. Check the plug and the outlet source
  - c. The circuit breaker on the unit is tripped or turned off
    - i. Push the Sky Cannon control-panel circuit breaker all the way off, and then push it back into its **ON** position.
2. The unit does not start at the desired time
  - a. The timer is not set-up correctly.
    - i. Ensure that the current time is on the timer and adjust as necessary
  - b. The photo-eye is obstructed and cannot monitor the daylight
    - i. Clear any obstruction from the photo-eye
  - c. The photo-eye has a 15-minute delay and auto reset function
    - i. Wait 10-15 minutes for the photo eye to reset
3. The beam is not collimated
  - a. The bulb is either too deep in the lamp base or not deep enough
    - i. Wear gloves while handling the bulb

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- ii. Follow applicable steps noted above to carefully screen the bulb down deeper or unscrew the bulb slightly
  - iii. Follow the procedures above to test the lamp. If the lamp is not collimated, then try a different focal point until a tight collimated beam appears.
- 4. The Top Can is not rotating
  - a. The belt is not tight enough
    - i. Tighten the drive belt as described above.
- 5. The bulb is black
  - a. The bulb was turned off before running a minimum of one minute. The bulb did not get hot enough to heat the mercury
    - i. The bulb has been damaged or destroyed. Contact ptg | event services 888.401.2010
- 6. A shorting or arcing sound is heard when the bulb is first turned of
  - a. The positive lead coming from the top of the bulb is shorting onto the bottom base of the lamp
    - i. Carefully rotate the bulb so that the positive-lead wire aligns with the smaller holes in the lamp base. The wire must go straight down to the hole and not arc on the bottom lamp base.
  - b. The bulb's positive-lead wire is grounding to the lamp base or the wing nut as the wire comes out from the lamp-base bottom, underneath the reflector
    - i. Ensure that the rubber boot on the positive wire (marked with the red tracer) is covering the connection. If not, slide the boot over the connectors to prevent possible arcing from the connector to the bulb.