The CFL Premium Bulb Eater®

Fluorescent Lamp Crushing System

AIRCYCLE
CORPORATION

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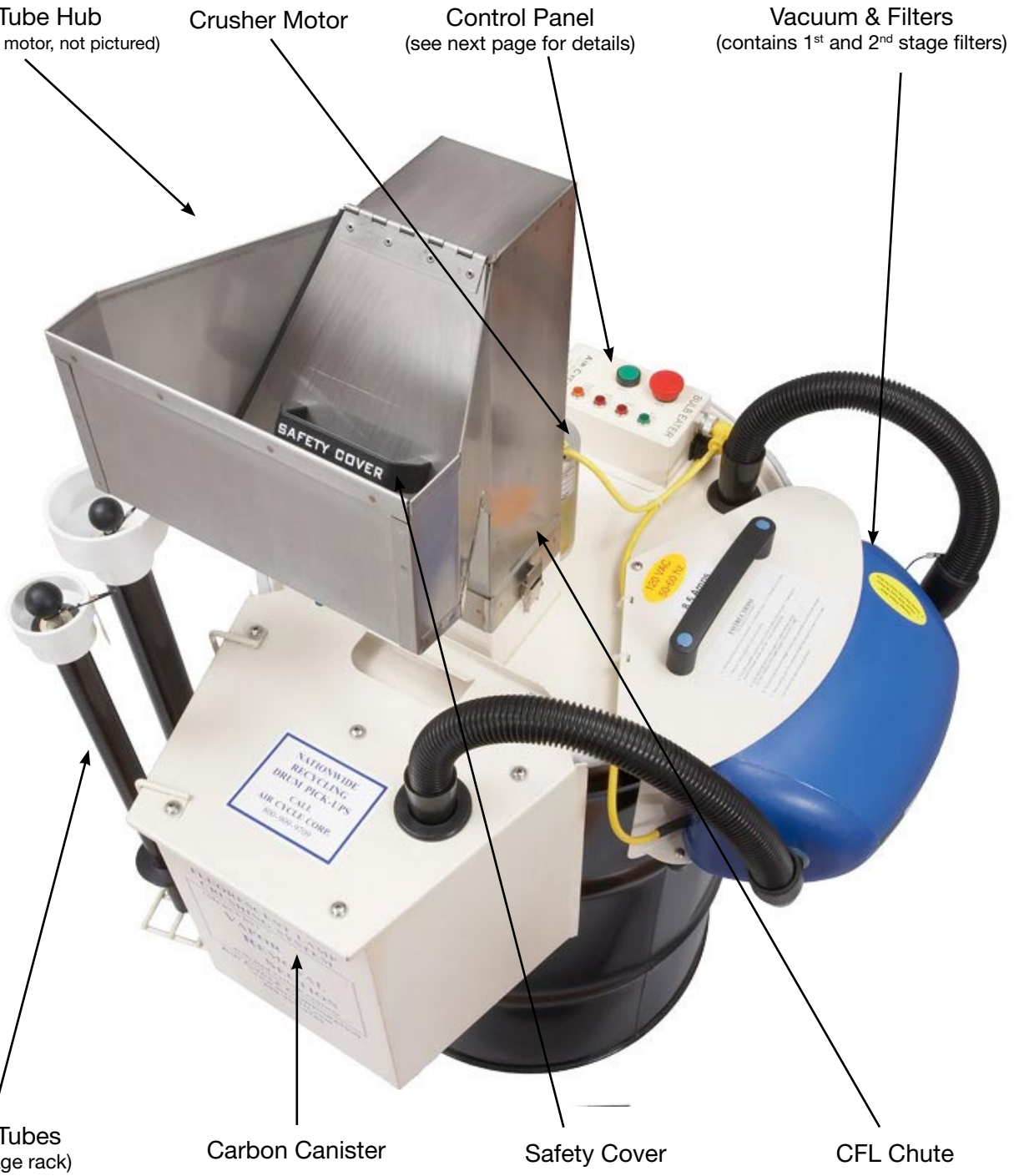
The Premium Bulb Eater®



Not Pictured

Spinner Assembly
(located on underside of lid)

1st Stage Filter

2nd Stage Filter

CFL Premium Bulb Eater® Control Panel

Stop Switch
Push to stop.
Twist to release.

Power Outlets
Vacuum & Motor.

Power On
Power is present when lit.

Lid Open
Stops system when the lid is lifted off the drum.

Start Switch
Only operates if the stop switch is released.

Full Drum
Stops system when the fragments reach the sensor.

Drum Open Delay
The crusher motor stops with the stop button, but the filtration system will continue to purge the vapors from the drum for approximately 30 seconds.

CFL Premium Bulb Eater®
Assembly Instructions

What You'll Need:

55-Gallon Drum

15/16th Wrench or Socket

Safety Glasses

Safety Gloves

Instructions:

1. Mount the Bulb Eater® onto the drum, tightening the bolt ring with a 15/16 wrench or socket.

2. Unscrew the cap on the entry tube hub and screw the entry tube into the lid.

3. Connect the vacuum hose to the drum lid by inserting the nozzle end into the black rubber grommet on the drum lid and screwing the other end into the hole on the right side of the blue filter case.

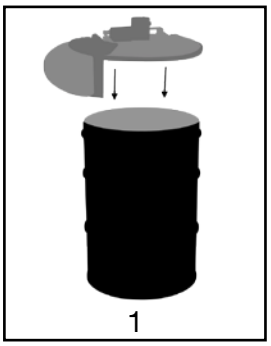
4. Remove the carbon bag from the beige carbon canister and slowly pour the activated carbon granules into the carbon canister.

5. Attach the lid and entry tube rack to the carbon canister – Use rubber grommets between the entry tube rack and lid and align all screws before tightening.

6. Hang the canister on the drum edge on the small standoffs provided as hooks.

7. Plug in the hose from the blue vacuum into the black rubber grommet on top of the carbon canister to complete the filtration system. Make sure the nozzle is pushed in deep for a good seal.

8. Finally, connect the power cord to the control panel on your Bulb Eater® and plug it into an outlet.



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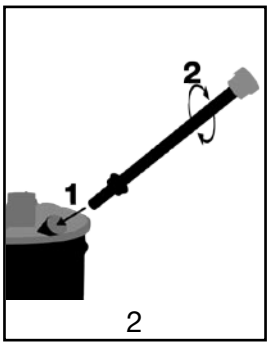

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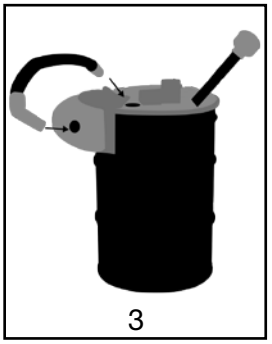

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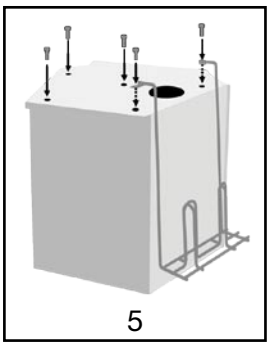

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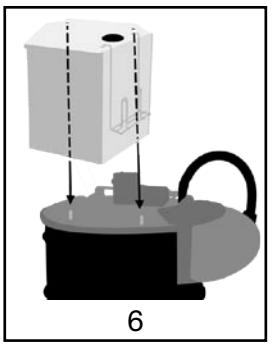

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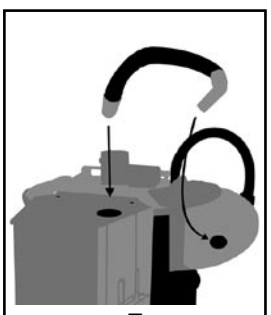

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Watch the CFL Premium Bulb Eater® Demo Video at:
www.aircycle.com/CFL-Premium

CFL Premium Bulb Eater® Operating Procedures

Before Operating the CFL Premium Bulb Eater®

- Crush lamps in a well-ventilated area
- Wear safety glasses, protective gloves, and ear protection
- Attach and secure the CFL chute (CFL chute should be attached whenever machine is operated)
- If crushing straight lamps: screw in appropriate entry tube for lamp diameter & remove rubber stopper
- If crushing CFLs: open CFL chute safety cover and seal entry tube or entry tube hub

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1. Release the stop switch and press green START button. Confirm air flow out of carbon canister and suction at top of entry tube (if crushing straight lamps) before crushing lamps.
2. Crush Lamps.
   Straight Lamps:
   a. Make sure that the CFL chute safety cover is closed.
   b. Insert a lamp into entry tube roughly 3 inches and then let go. Do not force the lamp down the entry tube.

   CFLs:
   a. Open safety cover
   b. Place bulbs in the CFL chute individually (larger bulbs) or in small batches.
3. After crushing, press STOP button to stop the crusher motor and begin purge cycle (approximately 30 seconds).
4. Once the purge cycle is complete, seal the top of the entry tube with the rubber plug and close the CFL chute safety cover. When the machine is not in use, make sure that all openings are sealed (sealed entry tubes and CFL chute may remain on the machine when not in operation)
5. Before removing lid: Let the machine sit OFF for at least 15 minutes after the purge cycle is done to allow dust to settle before opening the lid.

ATTENTION:
Drum MUST be kept closed at all times
Do NOT crush more than one full drum of lamps per 8-hour period

Filter Changing Procedures

1st Stage Filter must be changed at least twice every full drum of crushed lamps

2nd Stage HEPA Filter must be changed at least once every 10 drums of crushed lamps

Spent filters must NEVER be left exposed. Spent filters must either remain in the blue vacuum case attached to the unit, be sealed in a full drum of crushed lamps, or bagged in a zip-top bag to avoid mercury release. DO NOT DISPOSE OF FILTERS IN THE TRASH.

- Confirm that the Bulb Eater® is clearly "off" and not operating.
- The operator must wear safety glasses and gloves when changing either of the two Bulb Eater® filters

Replacing the 1st Stage filter:

1. Locate the right-hand door on the blue filter case of the Bulb Eater®.
2. Remove black nozzle from blue door and immediately cap the end of the black nozzle to prevent dust from falling to the floor.
3. Press the yellow label marked PUSH on the far most right edge of the curved blue vacuum case to open the filter case door.
4. Carefully remove the door from the blue filter case.
5. Immediately place a circular white label from your Bulb Eater® filter kit over the center hole on the front of the 1st Stage filter. This prevents mercury-laden dust from escaping during the change-out process.
6. With the 1st Stage filter safely covered with the white label, grab each side of the brown cardboard front of the filter with both hands.
7. Carefully pull the 1st Stage filter slowly out of the blue vacuum case and place it on top of the full drum of crushed lamps (within the drum) or store in a zip-top bag if drum is not yet full. Avoid compression of the filter to minimize the release of mercury-laden dust.
8. Insert a new filter into the filter case, making sure the cardboard "front" is securely in place and the bag portion of the filter is unfolded and beside the cartridge, not rolled up in front of the cartridge.
9. Replace the blue door and verify that it is latched.

Replacing the 2nd Stage HEPA filter:

1. Follow steps 1 through 7 above to remove the 1st Stage filter.
2. Locate the 2nd Stage filter in the middle of the blue case.
3. Rotate the filter a quarter turn counter-clockwise.
4. Once the HEPA cartridge is free, carefully remove it from the blue filter case and place it in the full drum along with the crushed lamps and 1st Stage filters for disposal.
5. Replace both filters and replace the blue door, verifying that the door is secure.

ATTENTION:

Only lamps and filters, placed on top of the crushed lamps, can be inside the drum
Do not place any extraneous materials or liquids in the drum

Spinner Replacement Procedures

The Bulb Eater® spinner assembly should be changed every 10 drums or as needed.

Gloves and eye protection should be worn while changing the spinner.

With the Bulb Eater® on a clean, empty drum:

1. If attached, remove the CFL chute.
2. Carefully stand the Bulb Eater® on edge.
3. With an allen wrench, loosen the set screw holding the spinner on the motor shaft.
4. Slide off the old spinner and replace with new spinner in the same position.
5. Tighten the set screw firmly to secure the spinner to the motor shaft.

Troubleshooting The Bulb Eater®

Carefully following the instructions and guidelines in this manual is the best way to keep your Bulb Eater® working properly. However, should you encounter problems, this guide will help you resolve issues that occasionally arise during normal use of the Bulb Eater®. If you are experiencing a problem that is not addressed here or if your problem persists after following these suggested procedures, do not hesitate to contact us at +1.800.909.9709 or info@aircycle.com for further assistance.

General Use

Bulb Eater® runs with low suction or is overheating
Low suction and overheating can be an indication that your 1st or 2nd Stage filters need to be changed. In ideal conditions, crushing clean bulbs, 1st Stage filters should be changed twice a drum and the 2nd stage filters, every 10 drums. However, dirty bulbs and various environmental conditions can cause filters to fill more quickly.

1. Replace the 1st Stage filter (instructions can be found in the Maintenance & Troubleshooting section)
2. If the problem persists, replace the 2nd Stage filter.

Lamps break regularly in the entry tube
1. Do not force lamps down the entry tube. The Bulb Eater®'s vacuum suction should be sufficient to pull the lamps into the machine.
2. Ensure that you always crush lamps using appropriately sized entry tubes to minimize external breakage. Entry tubes are available at www.aircycle.com for a wide variety of lamp sizes.
3. If you are crushing lamps with significantly blackened ends, feed the lamps blackened end first. These portions of glass are slightly weaker and more prone to breakage outside the machine.
4. Crushing lamps that have previously been taped together can result in a buildup of adhesive in the Bulb Eater® entry tubes and cause breakage. Remove the entry tube from the machine and clean the inside of the tube with a rag soaked in an appropriate solvent like paint thinner.

Still having problems? Contact Air Cycle at +1.800.909.9709

Control Panel Lights

"Power" light does not illuminate when machine is plugged in and is operating
If your Bulb Eater® functions normally when plugged in but the power light does not illuminate, you likely have a faulty light. The Bulb Eater® will function properly with a faulty power light; you can continue using The Bulb Eater® with no changes.

"Lid Open" light is on when the Bulb Eater® properly secured to drum
The lid open sensor is a safety shut off to prevent the operation of the machine if it is not installed on a drum.

If the light is lit when the lid is installed properly:

- If your machine has a white sensor block (found on the underside of the Bulb Eater® lid) – Follow the instructions found on page 8.
- If your machine has a black sensor block – Remove the set screw retaining the sensor and with a small screwdriver set, slide the sensor out so it is flush with the end of the block. Then reinstall the set screw to lightly hold the sensor in place.

Still having problems? Contact Air Cycle at +1.800.909.9709

Frequently Asked Questions

Bulb Eater® users typically find the machine very easy to set up and use. However, we recognize that sometimes our customers have questions about their machines. Below is a list of frequently asked questions that address many common inquiries that we receive. If you require additional assistance please feel free to contact us at anytime by phone at +1.800.909.9709, through email at info@aircycle.com, or by visiting www.aircycle.com/resources/FAQ.

What dangerous materials are in fluorescent lamps?
Lamps contain many different components and materials, but the only one that is toxic is mercury. Each lamp typically contains 10-20 mg of mercury, some of which is evaporated. However, other components and materials of the lamp, such as the glass or powdered phosphors, can be contaminated by the mercury during the life of the lamp.

More information on mercury and disposal regulations can be found in the reference section of this manual.

How does the Bulb Eater® remove mercury while crushing lamps?
Your Bulb Eater® will remove airborne powder and mercury vapor while crushing a lamp. The Bulb Eater® filters the powder in two stages, with a bag filter and a High Efficiency Particulate Arrestor (HEPA) filter. The first stage bag filter removes dust and larger particles from the air. The second stage HEPA filters out the remaining small particles. The HEPA has been shown to capture at least 99.97% of powder with particle sizes of 0.3 microns or greater. The Bulb Eater® filters mercury-containing vapors through a filter of activated carbon specially formulated with sulfur. This carbon filter converts mercury vapors into a mineral, allowing the vapor to be bound into the carbon bed.

How often should filters be changed?
1st Stage Bag filter: should be changed twice with every full drum of crushed lamps. Change when the drum is half full and again when it is entirely full. The Bulb Eater® must be operated with the bag filter in place or the HEPA filter will be ruined.

2nd Stage HEPA filter: should be changed every 10 full drums.

Carbon filter: will last the entire life of the machine.

Using the filter log included in this manual will help you keep track of when filters should be changed out. Keep in mind crushing bulbs with heavy dust or other materials on them may require filters to be changed more often than the guidelines above.

Refer to page 8 of the owner's manual for filter-changing instructions.

Does the spinner assembly need to be changed?
The breaking chain spinner should be changed every 10 full drums of lamps or as needed. Uneven wear causes heavy vibration.

Refer to the Maintenance & Troubleshooting section of the owner's manual for spinner-changing instructions.

What do I do when my drum is full?
First, let the machine sit "off" for at least 15 minutes before opening the lid. This allows for dust to settle inside the drum. Once the Bulb Eater® is removed from the top of the drum it is strongly recommended that the drum be resealed as quickly as possible to minimize potential release of remaining mercury vapors present inside the drum (well under 2 minutes).

How can I order more filters or other replacement parts?
Visit www.aircycle.com/CFL-Premium or call +1.800.909.9709 to order more filters and replacement parts.

What safety precautions should I take when operating the Bulb Eater®?
Because of possible lamp breakage outside of the drum, suitable eye protection and protective gloves must be worn at all times while the machine is in operation. Also, wearing steel-toed safety shoes and disposal overalls is recommended when changing out drums or moving full drums around for storage or pickup. Take care when lifting and moving drums of crushed lamps, as a full drum can weigh over 500 lbs.

Before using the machine it is extremely important for the operator to review and understand all instructions and safety precautions. Refer to the Operation Instructions in this manual for detailed information and procedures.

How should I clean up broken bulbs?

1. Carefully scoop up glass fragments and powder using stiff paper or cardboard — DO NOT use a traditional vacuum or broom as these may spread the mercury-bearing phosphor powder.
2. Place fragments and powder in the drum with crushed lamps.
3. Use tape or a wet paper towel to clean up remaining fragments and powder.
4. Place tape or paper towel in a securely sealed zip-top bag and place bag on top of full drum of crushed lamps with spent filters.

What regulatory restrictions apply to operating the Bulb Eater®?
As a part of staying compliant with EPA and OSHA regulations, Air Cycle recommends that the operator of the Bulb Eater® should be trained on how to properly operate and maintain the equipment and crush no more than one full drum of lamps per 8-hour work shift in a well-ventilated work area.

Crushing lamps is a regulated activity by the United States Environmental Protection agency. Air Cycle Corporation strongly urges all Bulb Eater® customers to thoroughly research all regulations that may apply to crushing, storage, shipping, labeling, employee training, and other crushing-related activities at their facility.

Detailed environmental and regulatory information can be found in the Mercury Information appendix beginning on page 14.

For More Information on The CFL Premium Bulb Eater® and
Air Cycle Corporation visit www.aircycle.com/CFL-Premium

Replacement Parts & Accessories

Pricing is available online at www.aircycle.com/products/parts/ or by contacting Air Cycle at

Filter Bags - 1st Stage

20 Industrial Filter Bags

HEPA Filter Cartridge – 2nd Stage

Highest Grade HEPA Filter Available

Filter Combo Kit

Contains 20 1st Stage Filter Bags & 1 HEPA Cartridge

Spinner Assembly

8-Link Loop Chain Used To Crush Lamps

Filter Combo Kit & Spinner Assembly

Contains 20 1st Stage Filter Bags, 1 HEPA Cartridge & Spinner

24” Entry Tube

Available for T5, T8, T10, T12, & T17 lamps

48” Entry Tube

Available for T5, T8, T10, T12, & T17 lamps

CFL Chute

Removable Stainless Steel Chute

Safety Glasses

Should be worn at all times when using the Bulb Eater®

Safety Gloves for Bulb Eater

Should be worn at all times when using the Bulb Eater®

Ear Plugs

Should be worn at all times when using the Bulb Eater®

Particulate Filtration System

Blue Vacuum Containing 1st and 2nd Stage Filters 40 c.f.m – 5.5 amps – 120 volts

Outlet Filter Hose

From Outlet of Blue Vacuum Housing to Beige Carbon Canister

Crusher Motor w/ Cable

Motor For Premium Model Bulb Eater 1/6 Horsepower – 1 amp – 120 volts

Control Panel

Safety Control Panel with Start Button, Stop Button, and Safety Sensors

55 Gallon Drum Dolly

Custom Built 55 Gallon Drum Dolly. (800lb rating, skid-optimized)

55 Gallon Drum

Steel 55 Gallon Drum with Epoxy Lining

55 Gallon Drum Lid

Flat Steel Shipping Lid with Gasket, Locking Ring, and Bolt for Tight Seal

55 Gallon Drum Locking Ring

Heavy Duty 12 Gauge w/ Bolt

Full Parts List

Part #	Description	U/M
	Machines	
330-007	CFL Premium Bulb Eater®	EA
330-011	CFL Premium Bulb Eater® (220V)	EA
	Entry Tubes	
55-307	CFL Removable Chute	EA
55-483	T5 Entry Tube (24”)	EA
55-484	T5 Entry Tube (48”)	EA
55-476	T7 Entry Tube (24”)	EA
55-485	T8 Entry Tube (24”)	EA
55-486	T8 Entry Tube (48”)	EA
55-490	T10 Entry Tube (24”)	EA
55-495	T10 Entry Tube (48”)	EA
55-487	T12 Entry Tube (24”)	EA
55-488	T12 Entry Tube (48”)	EA
55-304	T17 Entry Tube (48”)	EA
55-305	T17 Entry Tube (24”)	EA
	Filters	
55-313	Powered Filter Unit w/o Mounting Bracket 120v, 50-60hz	EA
55-310	Filter Bags for VRS (20 disposable 1st stage filters)	PKG
55-325	Filter Cartridge (2nd stage HEPA grade)	EA
55-330	Filter Combo Kit (20 bag filters & one 2nd stage cartridge)	EA
55-135	Filter Combo Kit w/ Spinner	EA
55-334	Jumbo Filter Combo Kit (100 bag filters & 5 2nd stage cartridges)	EA
	Safety Equipment	
330-794	Plug for T5 Entry Tube	EA
330-792	Plug for T7 Entry Tube	EA
330-793	Plug for T8 Entry Tube	EA
330-796	Plug for T10 Entry Tube	EA
330-795	Plug for T12 Entry Tube	EA
330-798	Plug for T17 Entry Tube	EA
330-799	EPA Plug	EA
	Bulb Eater Replacement Parts	
331-720	Power Cord	EA
55-133	CFL Spinner Assembly w/ wrench	EA
55-340	Inlet Filter Hose w/ Fittings	EA
55-345	Outlet Filter Hose w/ Fittings	EA
55-420	Carbon, Activated 22 lbs, Sulfur impregnated	EA
55-450	Carbon Canister w/carbon	EA
330-207	Carbon Canister, w/o Carbon	EA
55-400	55 Gallon Drum, Epoxy lined, shipping lid & bolt ring clamp	EA
55-425	55 Gallon shipping lid w/ gasket	EA
55-440	55 Gallon locking ring, heavy duty 12 gauge w/ bolt	EA

Mercury Information

Why is mercury an environmental concern?
Mercury is a metallic element that can accumulate in living tissue. In sufficient concentrations, mercury may cause adverse health effects. Sources of mercury in the environment from human activity include coal-burning power plants, batteries, and fluorescent and HID lamps.

Small amounts of mercury are a necessary component in fluorescent and HID lamps, but when a lamp is broken, crushed, or dispensed in a landfill or incinerator, mercury may be released to the air, surface water, or groundwater. Considering this, it is a good policy to keep the mercury in fluorescent and HID lamps out of the solid waste stream by recycling.

How do i know if my waste is hazardous?
All generators of waste, except households, are responsible for determining if their waste is hazardous under current state and federal regulations. Hazardous wastes can either be included on specific lists or exhibit hazardous characteristics. This determination can be done by knowledge of the waste or by testing the waste.

What's hazardous?
Persons who generate wastes are responsible for determining whether their wastes are hazardous. One common method for determining whether a waste is hazardous is the Toxicity Characteristic Leaching Procedure (TCLP) test. The TCLP test is a laboratory test that simulates the potential leaching of hazardous wastes under conditions typically found in municipal solid waste landfills. If the concentration of mercury in water that is passed through a sample of crushed fluorescent lamp fragments exceeds 0.2 mg/liter, the crushed lamp fragments are classified as a hazardous waste. (See test method 1311 in "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods," EPA Publication SW846 for more information about the TCLP procedures.)

In most cases, standard fluorescent lamps and lamp fragments fail the TCLP test and are considered hazardous wastes. Facilities should treat the spent lamps and lamp fragments as hazardous wastes unless they test the spent lamps and fragments and determine that the wastes are non-hazardous. Facilities should manage the spent lamps as hazardous waste according to applicable federal, state, and local requirements.

New low-mercury lamps have been introduced into the market. While these lamps may pass the TCLP test and be considered non-hazardous, some states - like Minnesota and Vermont - still prohibit persons from disposing of even these non-hazardous lamps in a solid waste landfill. You may want to talk with a State EPA representative to find out how you may handle spent lamps in your state.

Please note that regardless of whether the State in which you are located allows you to dispose of lamps in your dumpster with other non-hazardous trash, the lamps do contain mercury and mercury vapors are released into our environment when you throw lamps in the trash. Typically, the lamps break in the dumpsters, during transportation or in the landfill and release mercury into the air or groundwater. These hazardous releases are a risk to surrounding communities.

Facilities that throw their spent lamps in the trash thinking they are saving money may be mistaken. Throwing spent lamps in the trash may result in the person being held responsible for the cleanup of a remote and costly Superfund site. Because of the potential liability under Superfund, Air Cycle Corporation believes facilities that decide to recycle their spent lamps are making a smart decision that benefits not only the environment but also the bottom line.

Mercury Emissions
The disposal of mercury-containing fluorescent lamps and the potential for emissions is of concern because mercury is a highly toxic metal that bioaccumlates through the food chain. Mercury also has a low vapor pressure of 2 x 10-3 mm (at 25ºC) and readily evaporates to forms mercury vapor at room temperature. Therefore, emissions of mercury in liquid or vapor form require health and environmental consideration. The

volatilization is especially significant with respect to human health, as it results in ambient mercury vapor that can be absorbed into the human body through various pathways. These include direct inhalation, ingestion through surface contamination, and absorption through the skin of elemental mercury. Generally, excessive exposure to various forms of mercury has been shown to adversely affect the human central nervous system, lungs, kidneys, skin, and reproductive system.

Local Effects
Mercury is a primary irritant of the skin and mucous membranes. It may occasionally be a skin sensitizer in some individuals.

Systemic Effects
Acute (short-term) poisoning due to mercury vapors adversely affects the lungs primarily, in the form of acute interstitial pneumonitis, bronchitis, and bronchiolitis.

Chronic (long-term) exposure to lower mercury levels over prolonged periods of time produces symptoms that can vary widely from individual to individual. These may include weakness, fatigability, loss of appetite, loss of weight, insomnia, indigestion, diarrhea, metallic taste in the mouth, increased salivation, soreness of mouth or throat, inflammation of gums, black line at the gums, loosening of teeth, irritability, loss of memory, and tremors of fingers, eyelids, lips, or tongue. In general, chronic mercury exposure produces four classical signs: gingivitis, excessive salivation, increased irritability, and muscular tremors. Rarely are all four seen together in an individual case. More extensive exposures to excessive mercury levels, either by daily exposures or one-time, can produce extreme irritability, excitability, anxiety, delirium with hallucinations, melancholia, manic-depressive psychosis, and adverse effects on the reproductive organs. Either acute or chronic exposure may produce permanent changes to affected organs and organ systems. Excessive exposure to various forms of mercury has been shown to adversely affect the human central nervous system, kidneys, and reproductive system.

Table 1 (page 15) provides a summary of the clinical importance of various forms of mercury.

Abrasion and Cut Hazards
The primary hazard resulting from handling broken lamps or crushing lamps is the potential release of airborne glass particulates resulting in skin, eye, and respiratory tract irritation with the possibility for cuts and lacerations to the eye, skin, and respiratory tract tissue upon contact. The eyes and skin can also be cut or lacerated by sharp glass edges or metal components contained in the crushed lamp waste.

Crushing Hazards
Perhaps the greatest potential for physical injury during the Bulb Eater® use other than laceration from broken glass or metal components is physical injury from movement or mishandling of the 55-gallon drums. Thus, forklifts or other suitable lifting devices equipped with drum grabbers and drum cradles must be used for transporting, moving, and positioning the lamp waste collection drums when filled with crushed fluorescent lamps. It is also extremely important that the manual be followed closely. Failure to operate the machine properly could lead to dangerous mercury vapor exposure. While boxing intact lamps intact, be careful to avoid breaking the lamps. When intact lamps break, unfiltered vapors are released.

Other
A review of manufacturers' fluorescent lamp Product Safety Data Sheets (PSDS) reveal there are no known health hazards from exposure to lamps that are intact. The PSDSs further disclose that no adverse effects are expected from occasional exposure to broken lamps but stated, "Avoid prolonged or frequent exposure to broken lamps unless there is adequate ventilation." The PSDSs indicate that the major hazard from an occasional broken lamp is the possibility of sustaining glass cuts.

Environmental Effects
Additionally, mercury is harmful to the environment. Mercury bioaccumulates in the food chain and as such poses many of the adverse effects described on the human body during the consumption of mercury-contaminated food (e.g., predator fish – swordfish, tuna, etc.) Mercury in the environment is deposited and revolatilized many times, with a residence time in the atmosphere of a few days.

Most mercury-containing fluorescent lamps must be recycled or disposed as a toxic characteristic

hazardous waste as defined in the Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA). This is due to the concentration of the mercury and/or other toxic metal content in the waste typically exceeding the US EPA's Toxicity Characteristic Leaching Procedure (TCLP) limits quantified by TCLP analytical tests.

The most environmentally sound and preferred disposal method for spent fluorescent lamps is recycling. Fluorescent lamp recycling allows the mercury to be separated from the other fluorescent lamp components (e.g. glass, metal, etc.) and collected for reutilization.

Table 1. Clinical Importance of Elemental and Inorganic Forms of Mercury

Form	Element State	Source	Absorption*	Primary Effects	Secondary Effects
Liquid Mercury	Hg^0	Thermometers; barometers; manometers; fluorescent lamps; switches; rectifiers; batteries (1)	Dermal contact – minimal absorption Ingestion – poor absorption	Poorly absorbed through GI tract (0.01%) or dermally; Systemic toxicity is rare	None
Mercury Vapor	Hg^0	Industrial	Inhalation – 80% absorbed Percutaneous – minimal absorption	Lungs, skin, eyes, gingiva (gums)	CNS**, kidneys (2)
Mercury Salts and Compounds	Hg^{+1} Hg^{+2}	Medicines; antiseptics; disinfectants; electric batteries; industrial compounds	Ingestion – 10% absorbed Dermal Contact – lethal doses can be absorbed by animals	Kidneys GI Tract	CNS

Table Abbreviations and Notes

CNS	Central Nervous System
GI	Gastroinstestinal
Hg	Atomic symbol for elemental mercury
*	In humans, the biologic half-life of all forms of mercury is 40-70 days
**	Crosses the blood-brain barrier
(1)	Breakage of any of these devices can result in the release and volatilization of liquid mercury in air as mercury vapor
(2)	Mercury accumulates in many tissues, but most importantly the brain and kidneys

Bulb Eater® Filter Replacement Log

Location ____

		BLUE CASE FILTER	
New Drum Start Date	Date Drum Became Full	1st Stage Filter Changed? change twice per drum*	2nd Stage HEPA Filter Changed? change every 10 drums*
		☐ YES ☐ NO Date __________	YES ☐ NO Date __________
		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________
		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________
		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________
		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________
		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________
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		☐ YES ☐ NO Date __________	☐ YES ☐ NO Date __________

*Or as needed

Place spent filters on top of crushed lamps in full drum for recycling.

Label each new drum with a Hazardous or Universal Waste Label.
(Depending on applicable state regulations.)

Save this form for your records

Warranty Information

The company warrants The Bulb Eater® for one (1) year from the date of original purchase from the distributor or manufacturer against defects in workmanship and/or materials under normal usage. This warranty does not cover damage resulting from shipping, negligent handling, misuse or lack of reasonable care. **Tampering with the machine and electronics will void this warranty**

Parts that prove to be defective during the one (1) year warranty period will be either repaired or replaced at the option of Air Cycle Corporation. The right is also reserved by Air Cycle Corporation to replace the product in lieu thereof.

The full remedy for breach of this warranty and sole obligation of Air Cycle Corporation is the repair or replacement of the defective Bulb Eater® at Air Cycle Corporation. Air Cycle Corporation shall have no liability whatsoever at any time for any personal injury or property damages or for any special, indirect, or consequential damages of any kind.

This warranty is strictly limited to its terms and is in lieu of any and all other understandings, warranties and conditions, written or oral, whether expressed or implied.

Thank you for your business.

Air Cycle Corporation

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www.aircycle.com

Shipping Date: **Serial #:**