

How to Use and Care For Your
Moonlighter[™]
Kerosene Heater



Owner's Guide



KERO-SUN[®]

QUICK REFERENCE

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Safety Features

UL Listed

Shut-off Protection: Automatic shut-off extinguishes the flame if heater is jarred.

Wick-feed: Fuel remains below burner and is unpressurized. If flame goes out, fuel flow stops, fuel cannot flood burner.

Low Center of Gravity: Weight concentrated in base, reducing chance of tip-over.

Rubber Seals: Burner, wick winder, fuel cap and other joints sealed with oil-proof rubber to prevent leaks if tip-over occurs.

Heavy Steel Construction: For high strength and durability.

High-efficiency: 99.9% combustion of kerosene eliminates hazard from odor, smoke and other combustion by-products when used according to instructions.

Specifications

Model: Moonlighter

Heater Rating: 8,700 BTU/hr; 2,190 kcal.

This includes heat produced by the Moonlighter plus heat that would be generated if water of combustion were condensed. This rating and "Heater Output" below should be used when making comparisons between heaters of different manufacture.

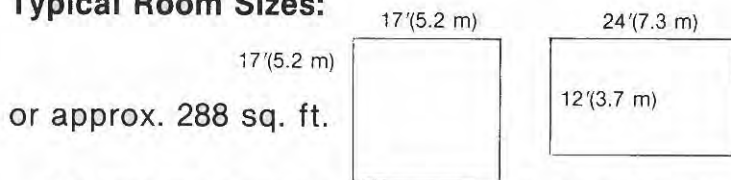
Heater Output: 8,200 BTU/hr., 2,020 kcal.

This is the heat produced by the Moonlighter, and is the amount of heat delivered to the room. (The wick-fed Kero-Sun heater is more than 99.9% efficient.)

Burning Time: 26-36 hours.

Burning time is a function of the condition of the wick, the setting of the flame regulator knob, fuel quality and atmospheric conditions.

Typical Room Sizes:



The area to be heated varies with outside air temperature, insulation R factors and square footage of the windows. The room sizes given above assume the Kero-Sun is the only heat source for the room.

Fuel Type: Kerosene

Fuel Tank Capacity: 1.7 U.S. gallons; 1.42 Imp. gallons; 6.43 liters

Wick Type: Cotton (Do not burn dry)

Batteries: 2 size D Cells (included)

Dimensions: Height, 16-7/8 in.; width, 16-1/4 in.; height, 430 mm; width, 412 mm.

Weight: 14 lbs.; 6.4 kg, empty

Special Features

Provides Heat, Light and Cooking: Especially useful during power failure or other emergency. (Optional frosted glass available for improved light diffusion.)

Push-button Ignition: No matches required.

Fuel Gauge: Shows remaining fuel at a glance. Avoids unnecessary filling or need to remove filler cap to check level.

Hand-pump Siphon: Provided for spill-free transfer of fuel.

Drip Tray: Protects floors and carpets.

Easy Service: No tools required to change wick or to perform other simple maintenance.

Baked Enamel Finish: High gloss, heat-proof, easy to clean.

Cooktop: Ideal for cooking where other facilities are not available (cabin, vacation home, etc.).

Unpacking

Before discarding any packing materials, be sure to check the carton for the following items: two batteries, warranty card, siphon, caution notice, drip tray and dustproof ring.

Lift the heater out of the carton by its carrying handle.

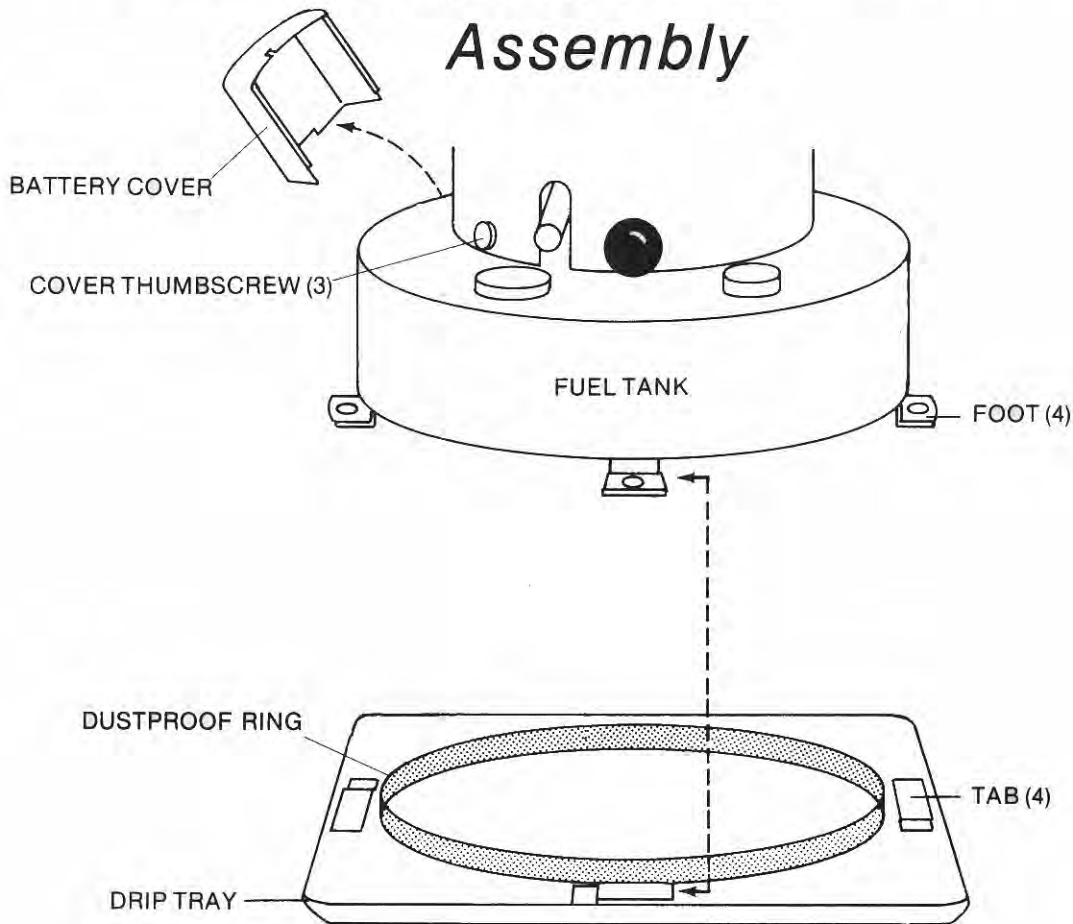
NOTE: Be careful not to discard the wick guide; a 2-inch plastic disk with a hole.

On the outside of the carton, look for a label with serial numbers. The peel off portion of the label will be fastened to the side of the heater, as described later.

To remove pad, spread ears of carrying handle and lift away handle.

Lift top plate support from retaining tabs and remove pad.

Reinstall top plate support, top plate and handle.



1. Install the Drip Tray

Place the drip tray on the floor.

Position dustproof ring in the center of the drip tray.

Lift the heater by its carrying handle and lower it onto the drip tray, fitting the lip of the heater over the dustproof ring.

Note how the four feet slide into the four tabs. Grasp the fuel tank and turn the heater until the feet lock into the tabs.

2. Tighten Cover Thumbscrews

Three thumbscrews around the bottom of the cover should be checked for tightness.

3. Install the Batteries

Remove the battery cover by sliding it up. Install the two size D cells in the holder according to the plus (+) and minus (-) markings shown on the cover.

Attach the wires from the battery cable to the terminals: red wire to "+"; white wire to "-". (If the battery cable won't reach the terminals, pull out the cable another half-inch from the heater.)

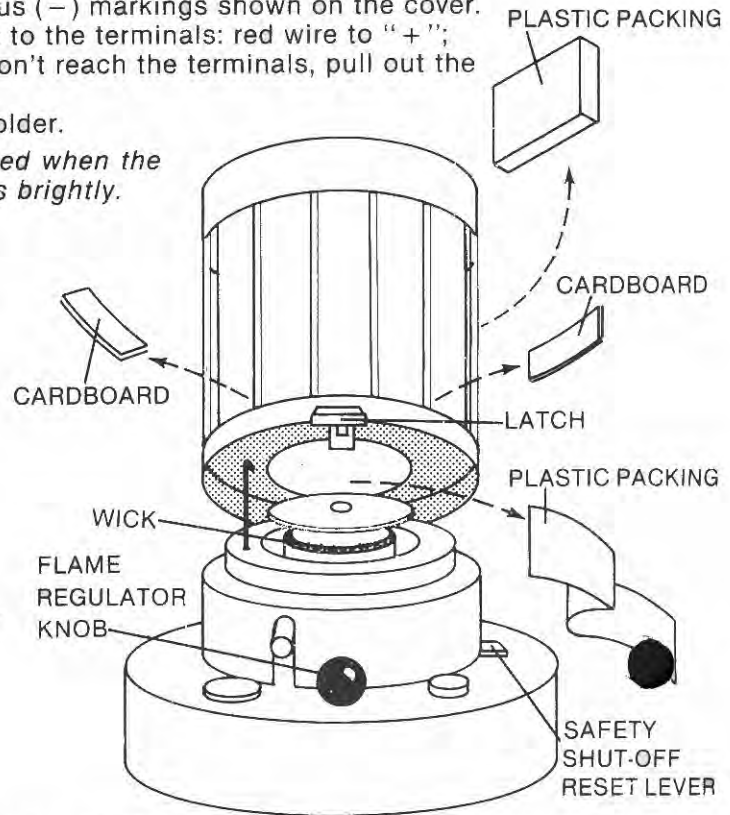
Slide the battery cover back over the holder.

Batteries should be replaced when the igniter coil no longer glows brightly.

4. Tilt the Cover

Lift the cover by pushing up on the latch. (The cover tilts back about 45 degrees.)

Remove the plastic packing from the wick area.



5. Engage the Safety Shut-Off Reset Lever

Press the lever down until it locks.

6. Locate Your Heater Away From Walls

Allow at least three feet of clearance between the heater and the nearest wall or vertical surface.

7. Check the Wick

As you turn the flame regulator knob back and forth, the wick should move freely up and down.

Close the heater cover.

8. Level the Heater

Your heater should be on a firm, level surface, preferably the floor.

A built-in level guide is provided to check if the heater is level. Find the small chain at the rear, above the fuel tank. When the heater is level, the chain will lie in the approximate center of the red circle.

9. Register Your Serial Number

On the outside of the shipping carton, find a label with the serial number for your heater. Remove the peel-off portion and press it to the rear of the fuel tank, next to the battery cover. If you need replacement parts or service in the future, please refer to this number.

Fill out and mail the warranty card.

Fueling

Warning

Do not refuel your heater while it is hot. First extinguish the flame and allow the cabinet to cool. Use only pure kerosene. Never use gasoline, white gas, camp fuel or other flammable liquids. Use of such fuels can result in an explosive fire and cause severe injury.



Using the Siphon

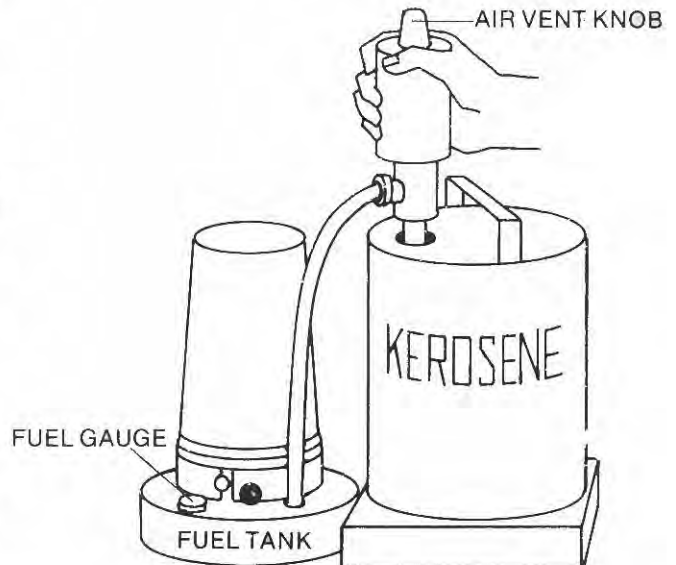
To operate the siphon provided with your heater, insert the straight tube into the kerosene container. Insert the siphon's flexible hose into the heater fuel tank. (Be sure to push this hose over the clip inside the tank. The clip holds the hose to reduce possibility of a spill.)

For good siphoning, raise the kerosene container slightly higher than the level of the heater fuel tank.

Note the knob at the top of the siphon; it controls an air vent. Before siphoning, close the vent by turning the knob clockwise. Squeeze the bulb vigorously six or seven times, pausing to allow the bulb to expand after each squeeze. (Once the kerosene flows it's not necessary to squeeze the bulb.)

To avoid overfilling the tank, watch the fuel gauge. As the needle enters the red zone, stop the flow of kerosene by turning the air vent knob counter-clockwise.

Remove the siphon slowly to allow excess kerosene to drain back into the container.



For added convenience, a five-gallon Kero-Sun fuel container is available from your dealer. The siphon provided with your heater fits snugly over the opening of this container for easier siphoning.

Ventilation

Before you light your heater, check for a source of air. It may be a half-inch opening of a door to an adjoining room, or a window opened one-half inch.

Be sure to provide a source of air whenever the heater operates in tightly confined areas, such as a bathroom or camper.

Avoid drafty areas or locations where the opening of a door might create a gust of air.

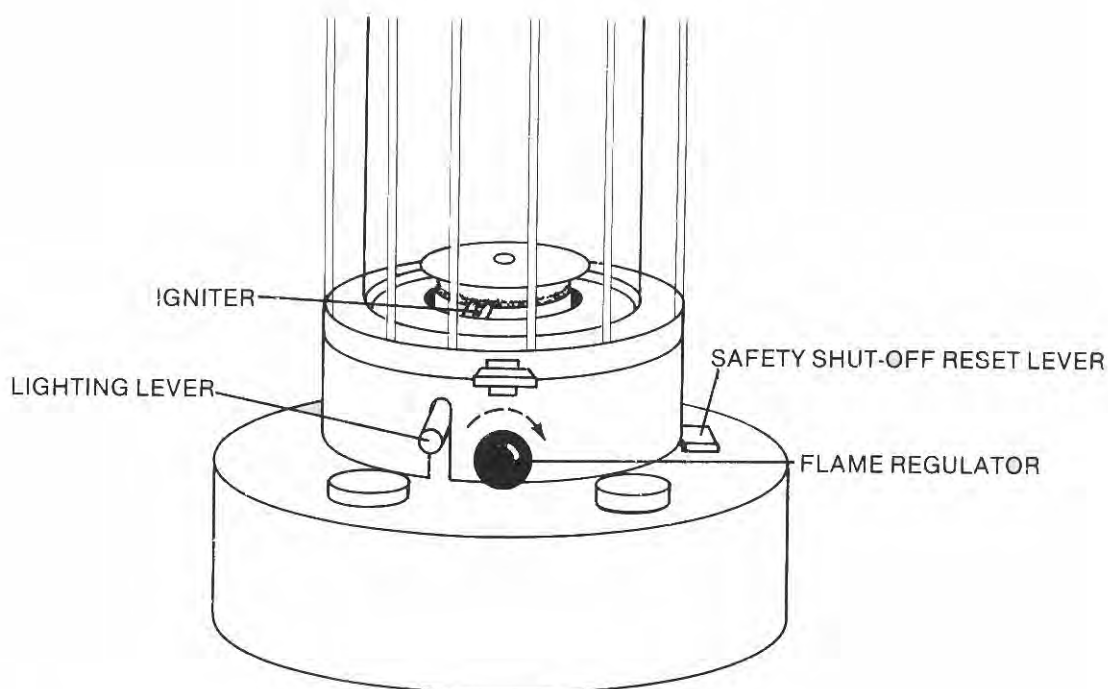
Safety Reminders

Before You Light Your Heater.

1. Use only water-clear, fresh, pure kerosene. Yellow or colored kerosene will smoke, smell and burn inefficiently.
2. **BURN ONLY KEROSENE** in this heater. **NEVER** use gasoline, white gas, camp stove or any other fuel. These fuels are extremely dangerous if used in kerosene heaters.
3. Store fuel far away from any heat source, in a can clearly marked **KEROSENE**. (A suitable Kero-Sun container is available from your dealer.)
4. Keep heater away from all burnable materials such as clothes, curtains, woods, etc.
5. Heater surfaces become hot. Keep children away.
6. Do not move, service or refill heater while it is burning or hot. Extinguish flame first and let heater cool.
7. Refuel heater outside when the cabinet is cool. Use the Kero-Sun siphon to prevent any spillage.
8. Provide adequate ventilation. The heater needs oxygen just as you do. Leaving a door ajar to an adjacent room normally provides sufficient ventilation. In small, tightly sealed areas, open a window slightly.
9. When turning heater off, make sure the flame is completely extinguished, using flame regulator knob.
10. Keep outside of heater free of dust or spilled kerosene.
11. Follow maintenance instructions for optimum performance.
12. Keep heater level.
13. Keep cap on fuel port tightly secured.
14. **Do not burn dry.** See "Caution" in "Care of the Wick" section.
15. Use only in accordance with local ordinances and codes.

Lighting

If the fuel tank has been empty for some time, or the wick is new, wait about 15 minutes after fueling for the wick to saturate.



1. Raise the Wick

Turn the flame regulator knob clockwise until it stops.

Recheck the safety shut-off reset lever; it should be down and locked.

2. Automatic Lighting

Press the lighting lever. While looking through the mica window, you should see the igniter brush against the side of the wick. When a flame appears, release the lighting lever. In about 40 seconds, the flame will spread completely around the wick.

3. Lighting With a Match

You should not have to light the heater with a match, but should it become necessary, lift the latch and tilt back the cover to expose the wick. Touch a lighted match to the wick. When lighting in this manner, don't allow burned parts of the match to fall or remain on the wick.

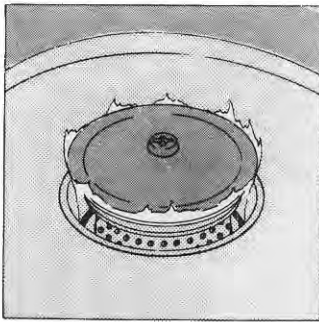
To restore your heater to automatic ignition, check for worn-out batteries or a defective igniter, as described later under "Troubleshooting."

A slight odor and occasionally some smoke after lighting a new heater is normal and is caused by a preservative oil on metal parts. Odor and smoke should disappear in a few minutes. For this reason, you may want to light your heater for the first time in a well-ventilated area, such as a porch.

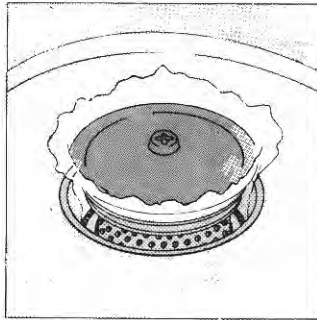
Adjusting the Flame

1. Wait for the Burner to Reach Operating Temperature

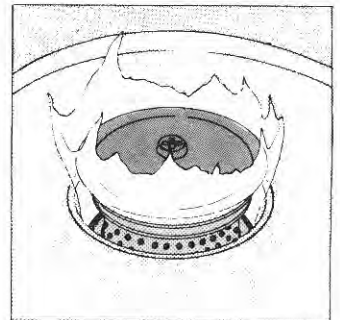
Several minutes after lighting, heat will spread through the burner. Then look for these signs of efficient operation:



TOO LOW



CORRECT



TOO HIGH

Look through the mica window and check the height of the flame. It should project about $\frac{3}{4}$ -in. beyond the top disk of the flame spreader.

To Extinguish Flame

1. Turn the flame regulator knob counterclockwise until it stops. (This requires about one half of a turn.)

NOTE:

Do not use the safety shut-off to extinguish the flame. Automatic shut-off should occur only when the heater is jarred or tipped. Some odor may be experienced when automatic shut off occurs.

2. Look to be sure flame is out.

Troubleshooting

Here are common symptoms which may appear during operation of your heater. Most are easily corrected, as shown below.

Symptom	Cause	Cure	Page
Smoke or odor.	Flame spreader not securely seated.	Lock in place.	10
	Wick damaged by burning dry.		11
	Flame too high.	Reduce wick height.	8
	Dirty wick.	Clean or trim wick.	10
	Contaminated fuel.	Drain tank, dry wick and replace with fresh, clean kerosene.	—
	Flame too low.	Raise wick.	
Flickering or dying flame.	Wick coated with tar or carbon.	Clean or trim wick.	10
	Water in kerosene.	Empty tank, refill with clean fuel. Remove wick, dry out on a sheet of newspaper. Re-install wick.	—
Wick won't ignite.	Out of fuel.	Check fuel gauge, add fuel.	5
	Igniter won't glow.	Replace batteries. Replace igniter coil.	4 14
	Water in kerosene.	Empty tank. Remove wick, dry out on sheet of newspaper. Re-install wick. Refill with clean fuel.	—
Flame regulator jams.	Excess tar on wick.	Clean wick.	10
	Water in kerosene.	Empty tank, remove wick, dry out on sheet of newspaper. Re-install wick. Refill with clean fuel.	—
Wick burns down too fast.	Kerosene contaminated with gasoline, paint thinner, denatured alcohol or other volatile substance.	Drain tank and replace fuel with fresh, clean kerosene. Replace wick. Refer to diagram on page 8.	8
High flame.			

Cleaning the Glass Cover

Allow the heater to cool completely.

Lift off the top plate and remove the carrying handle by pulling apart its sides.

Note how the top cover is held by three U-clips. Using a pliers, straighten the sides of the clips so they fall free. Lift off the top cover and the glass.

Do not use abrasive cleaners on the glass. Clean with soapy water and a paper towel.

When re-installing the glass cover, insert the U-clips, then twist their sides to hold the top cover.

Care of the Wick

CAUTION:

Never allow your Moonlighter to burn dry or run out of fuel. Burning the wick without kerosene will char the cotton fibers, permanently damaging the wick.

A damaged wick will cause your heater to burn improperly and may cause it to smoke.

Wick Contamination

Signs that a wick needs attention are: tars accumulating on the top edges; the flame regulator binds or jams; a flickering or dying flame.

Remove Ash, Cinders, Soot

Before cleaning the wick, allow your heater to cool completely. Be sure the safety shut-off lever is down and locked.

Unlatch the cover and tilt it up to expose the wick. The flame regulator should be turned fully clockwise.

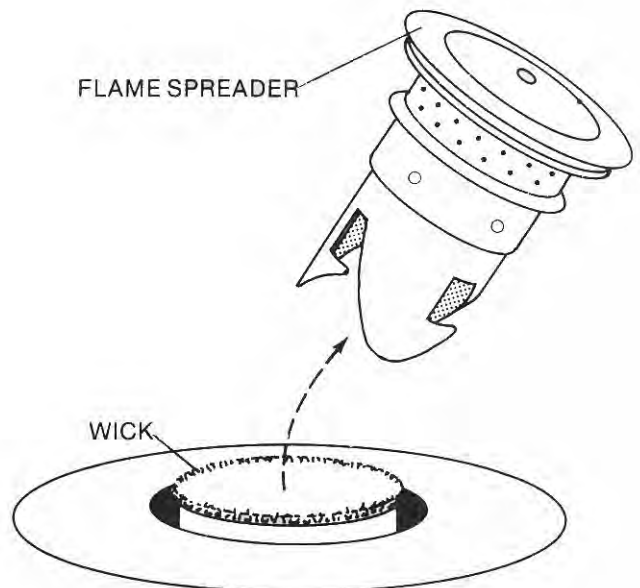
Remove flame spreader.

Grasp the flame spreader, turn it clockwise, then lift it out. The wick is now accessible for cleaning.

When reinstalling the flame spreader, turn it clockwise until it drops into place. Check if the flame spreader is locked in by pulling up. It should not lift out.

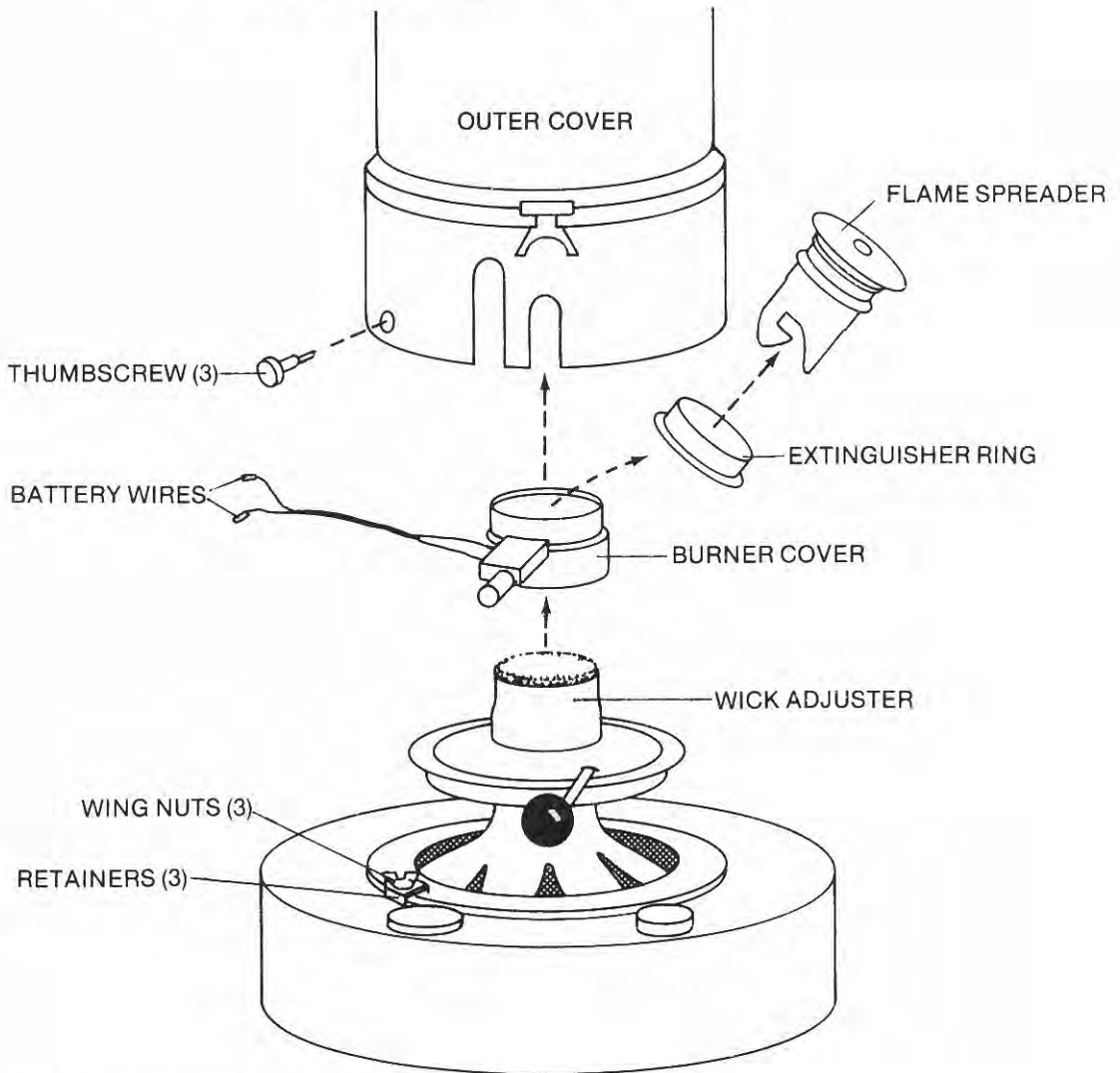
If residue is found on the wick, it can be removed by a small brush (an old toothbrush, for example). Cinders or soot in the burner area may be vacuumed away. Stubborn deposits on metal portions of flame spreader can be removed by scraping gently.

Be sure to check burner cover for char and debris. To remove this accumulation, lift out extinguisher ring. Remove burner cover and shake it gently over piece of newspaper.



To Replace the Wick

Before disassembly of your heater, allow it to cool completely.



1. Remove the Outer Cover

Loosen and remove the three thumbscrews holding the cover, then lift off the cover with the carrying handle.

2. Lift Out Flame Spreader and Extinguisher Ring

These parts are removed easily if the wick is first turned to its lowest position (flame regulator knob counterclockwise). As you lift the flame spreader, turn it clockwise.

3. Disconnect Battery Cable

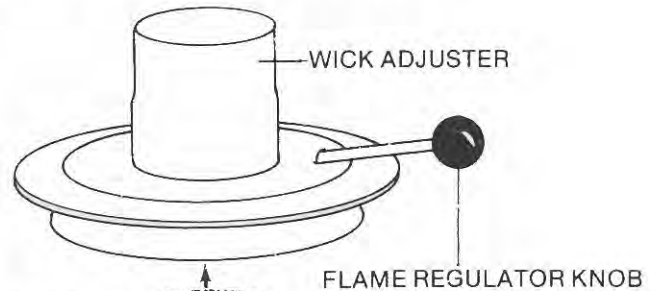
Remove the two battery wires from the top of the battery holder.

Before the next step, press and lock the safety shut-off reset lever. If the lever inadvertently springs closed during the following steps, you'll have difficulty removing the remaining parts. Recheck the lever for the down position.

4. Lift Off the Burner Cover

5. Remove the Wick Adjuster

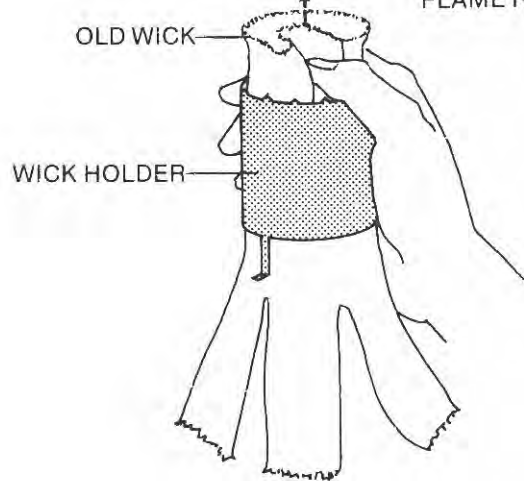
This assembly is released by loosening three wing nuts, and turning the three retainers to the side. Note: If the retainer to your right won't swing around, loosen the wing nut and remove it completely. Lift out the wick adjuster.



6. Remove the Old Wick

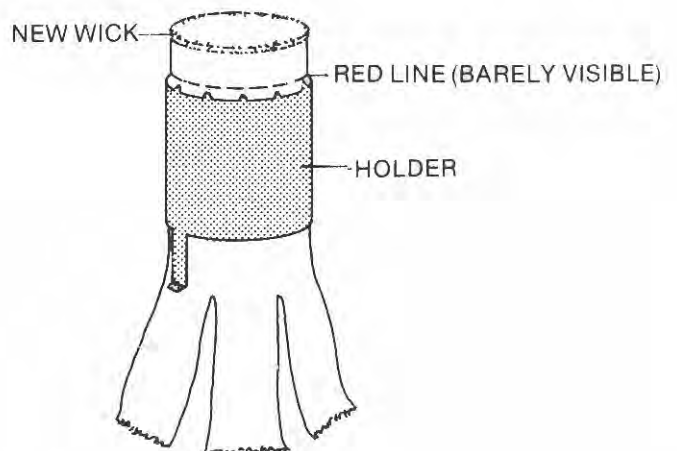
Turn the flame regulator knob counterclockwise until you can grip the wick holder and pull it out.

Fold in the wick until you can free it from the holder.



7. Install the New Wick

Fold the new wick until you can insert it into the holder. When the red line on the wick is barely visible along the top of the holder, unfold the wick and press it around the inner wall of the holder. This engages the wick against metal teeth inside the holder.

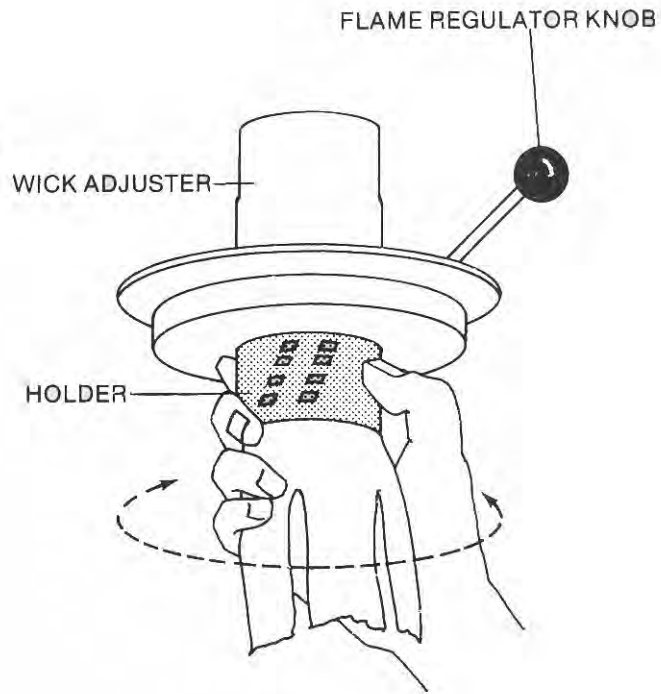


8. Insert the Holder in the Gear Mechanism

Push the holder into the wick adjuster, as shown; with the flame regulator knob to your right, and the double row of holes in the holder facing you.

Twist the holder back and forth until you feel it engage the gear mechanism.

Check for the correct gear action; as you turn the flame regulator knob, the wick should move up or down, with no slippage.

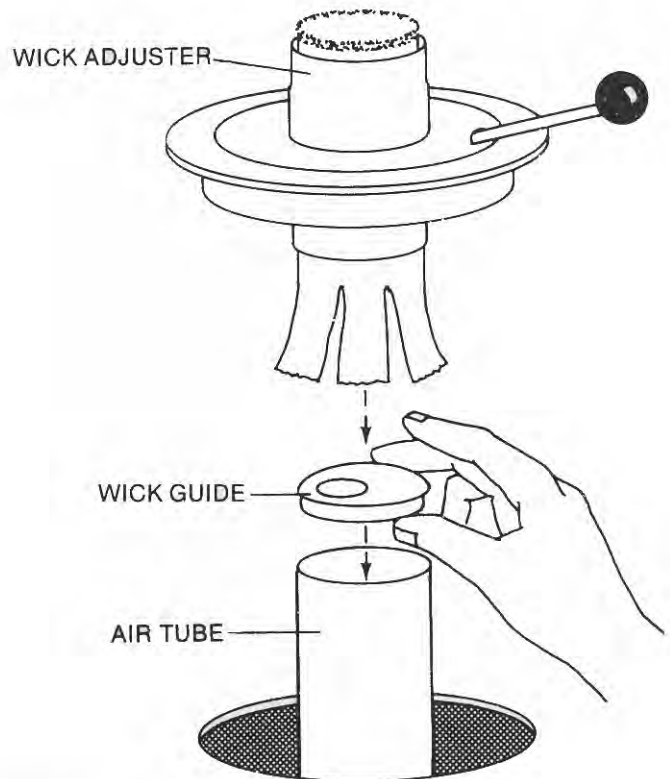


9. Install the Wick Adjuster

To prevent the wick from snagging during reassembly, temporarily place the plastic wick guide into the top opening of the air tube.

IMPORTANT—Remove wick guide before installing the wick adjuster. If guide is not removed, it will restrict air flow and cause improper combustion and may smoke.”

Lower the wick adjuster onto the air tube (locating the flame regulator knob between the fuel gauge and filler cap). During this step, check to see if the bottom of the wick enters the tank evenly, without folding back.



If you cannot seat the wick adjuster, press the safety shut-off reset lever to be sure it's not blocking the way.

10. Reassemble the Heater

(Refer to the illustration on page 3.)

Fasten the wick adjuster with three wing nuts and retainers.

Turn wick down and install the flame spreader (turn counterclockwise).

Replace the extinguisher ring, with the wide rim down.

Install the burner cover.

Slide the wires onto the battery terminals (red to +).

Push the safety shut-off reset lever down.

Install the flame spreader (turn clockwise).

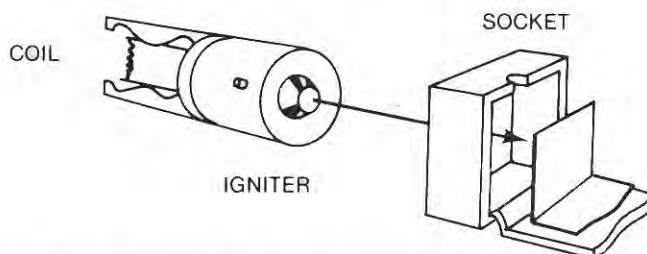
Fasten the outer cover with three thumbscrews.

Before lighting a new wick for the first time, allow 15 minutes for the material to saturate completely with kerosene.

Replacing the Igniter

When the igniter no longer glows sufficiently to light the wick, check the batteries. If replacement of batteries doesn't restore the glow, the igniter may be burned out.

To change the igniter, start by disassembling the heater, as described in Steps 1, 2, 3 and 4 in the preceding section; "To Replace the Wick." This releases the burner cover, which contains the igniter.



Be sure battery leads have been disconnected.

Press in the lighting lever and grasp the igniter with your other hand, as shown.

To remove the igniter from the socket, press in and twist slightly counterclockwise.

To install the new igniter, press it into the socket, while turning slightly clockwise.

Reassemble the heater as described in Step 10 of the preceding section; "Reassemble the Heater."

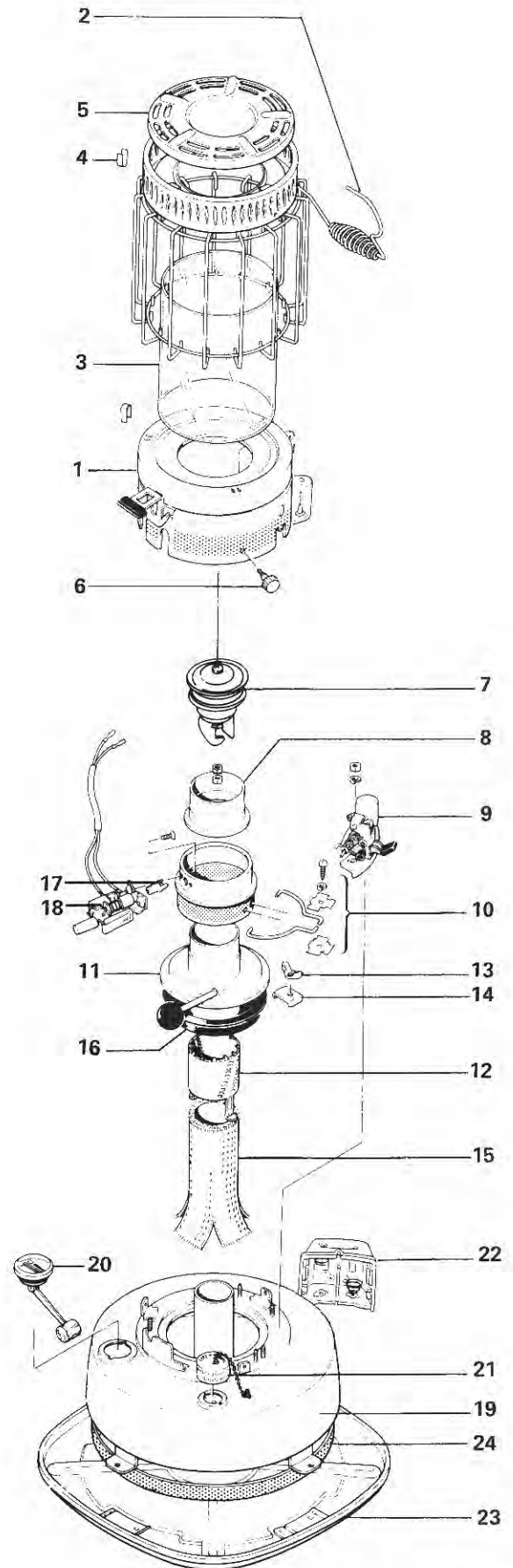
Parts and Service

For parts and service, see your authorized KERO-SUN dealer. If additional assistance is needed, send a brief letter stating the nature of the problem, the name and address of your KERO-SUN dealer, and your own address and telephone number to:

Customer Service
KERO-SUN, Inc.
Kent, CT 06757

Moonlighter Parts List

Part No.	Name	Ref. No.
OUTER COVER		
011070	Outer cover complete	1.
011007	Carrying handle	2.
011001	Pyrex mantle	3.
011065	C clip	4.
011002	Top plate	5.
000906	Thumbscrew for cover	6.
BURNER		
005051	Flame spreader	7.
005052	Extinguisher ring	8.
005070	Extinguisher unit	9.
005053	Burner cover and extinguisher lever	10.
005071	Wick adjuster	11.
005054	Wick holder	12.
000902	Wing nut	13.
000903	Retainer	14.
005025	Cotton wick	15.
005026	Rubber packing	16.
IGNITER		
000901	Igniter Coil	17.
005072	Igniter unit	18.
FUEL TANK		
011037	Fuel tank complete	19.
000910	Fuel gauge	20.
000915	Fuel filler cap with chain	21.
011068	Battery cover	22.
DRIP TRAY		
005041	Drip tray	23.
005066	Dustproof ring	24.



KERO-SUN, INC.
Limited Warranty

KERO-SUN, Inc. warrants each heater sold by it to be free from defects in material and workmanship, under normal use and service, for one year after the date of original retail purchase, subject to the terms and conditions stated below:

1. **WARRANTOR.** This Warranty is granted by KERO-SUN, Inc., Main Street, Kent, Connecticut 06757.
2. **PARTIES TO WHOM WARRANTY IS EXTENDED.** This Warranty shall be extended only to the original retail purchaser.
3. **PARTS COVERED.** All products and parts manufactured by or for KERO-SUN, Inc., except as provided for herein.
4. **PARTS NOT COVERED.** The following parts are not covered by this Warranty:

Normal wear and tear items, such as, but not limited to, wicks, batteries, igniter coils, and siphons.

5. **REMEDY.** If, within the applicable warranty period, any product or part included in this Warranty proves to be defective in material and/or workmanship, then KERO-SUN, Inc. shall, at its option, repair or replace the defective product or part.

6. **PROCEDURE FOR OBTAINING PERFORMANCE UNDER THIS WARRANTY.** In order to obtain performance of the obligations under this Warranty, the original purchaser must promptly [in no event later than thirty (30) days after discovery of the defect] notify any authorized KERO-SUN, Inc. dealer in the United States or Canada of the defect and return the defective part or product to an authorized KERO-SUN dealer. All transportation costs to and from the authorized KERO-SUN, Inc. dealer will be at the expense of the original retail purchaser.

If the instrument or any part thereof is returned for any cause not covered by this Warranty, a charge will be made for testing, handling, packing and/or any repairs made.

KERO-SUN, Inc. accepts no responsibility for any damage that occurs to the product or part during transit to or from the original retail purchaser.

ANY CLAIM MADE UNDER THIS WARRANTY MUST BE ACCOMPANIED BY PROOF OF ORIGINAL PURCHASE DATE—SALES INVOICE OR CANCELLED CHECK IS SATISFACTORY EVIDENCE.

7. **SOLE REMEDY.** The remedy and liability for any breach of warranty, express or implied, set forth above is the sole and exclusive remedy and the limit of liability for any such breach.

8. **DESIGN CHANGES.** KERO-SUN, Inc. reserves the right to make changes in the design or material of the heater without incurring any obligations to incorporate such changes in any product previously manufactured or advertised.

9. **EXCLUSIONS AND IMPLIED WARRANTIES.** This Warranty does not extend to any defect due to the negligence of others, failure to operate or maintain the heater in accordance with the operating and maintenance instructions furnished with each new heater, unreasonable use, accidents, alterations, ordinary wear and tear, the use of unauthorized or non-standardized parts or accessories or the use of any fuel other than good quality kerosene. **ALL IMPLIED WARRANTIES, IF ANY, ARISING UNDER STATE LAW IN CONNECTION WITH THE SALE BY KERO-SUN, Inc. OF ANY NEW INSTRUMENT ARE LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN WARRANTY. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OR MERCHANTABILITY, FITNESS OR OTHERWISE WHICH EXTEND BEYOND THIS WARRANTY, KERO-SUN, Inc. SHALL NOT BE RESPONSIBLE FOR LOSS OF USE OF ANY HEATER, LOSS OF TIME, INCONVENIENCE OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES WITH RESPECT TO BUSINESS OR PROPERTY, WHETHER AS A RESULT OF BREACH OF WARRANTY, NEGLIGENCE, STRICT LIABILITY IN TORT, OR OTHERWISE.**

NOTE: SOME STATES DO NOT ALLOW (a) LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR (b) THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

10. **NO VARIATION OF TERMS.** No person has the authority to orally, in writing, or in any other way vary the terms, conditions or exclusions of this Warranty or to make any express warranties other than those contained herein.

11. **LEGAL RIGHTS.** This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.



PORTABLE HEATERS

Kero-Sun, Inc., Kent, CT 06757 (203) 927-4611