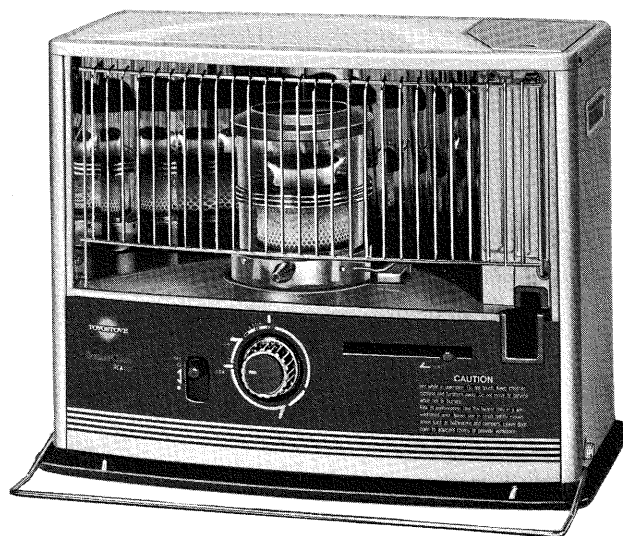




PORTABLE KEROSENE HEATER OPERATION AND MAINTENANCE INSTRUCTION

MODEL **RCA-87**



FOR SAFE AND EFFICIENT OPERATION OF YOUR TOYOSTOVE™ PORTABLE HEATER,
PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

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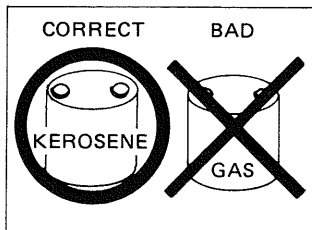
SAFETY TIPS

BEFORE OPERATING YOUR HEATER, PLEASE REVIEW THESE SAFETY TIPS:

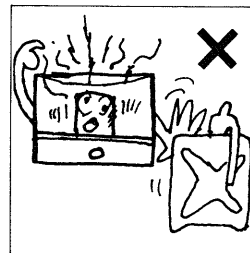
—WARNING—

RISK OF EXPLOSION

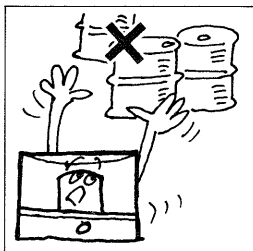
- Never use any fuel other than pure kerosene (ASTM 1K or equivalent).
Never use gasoline.



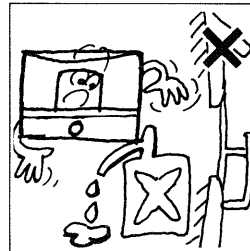
- Never refill heater fuel tank when heater is operating or still hot.



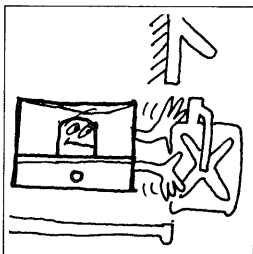
- Never use heater in areas where flammable vapors or gases may be present.



- Never fill heater fuel tank in living space. Fill heater tank outdoors.
Never overfill your heater. Always replace heater tank cap securely after refueling.

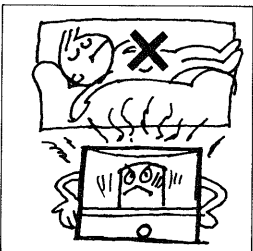


- Never store kerosene in any container other than an approved safety can or store kerosene in living space.

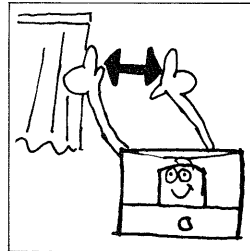


RISK OF BURNS, OR FIRE

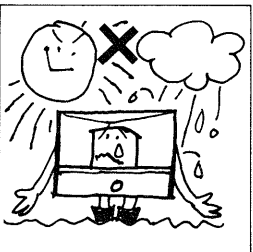
- Due to high surface temperatures, keep children, clothing and furniture away.



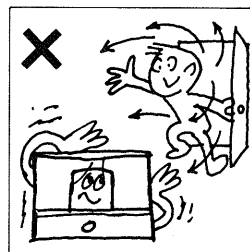
- Do not operate heater less than three (3) feet from walls, draperies, clothing, or furniture.



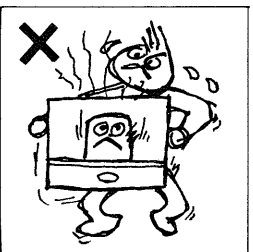
- Do not operate your heater in areas exposed to strong drafts.



- Do not operate your heater in high traffic areas such as doorways or hallways where it may be touched, jarred, or tipped accidentally.



- Do not move, fuel, or attempt to service your heater while it is burning, or still hot.



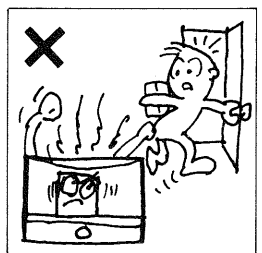
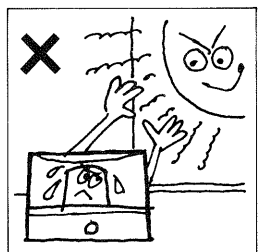
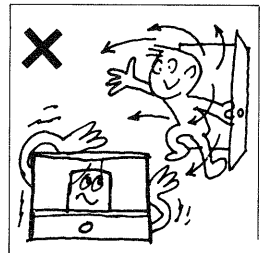
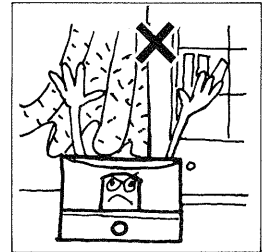
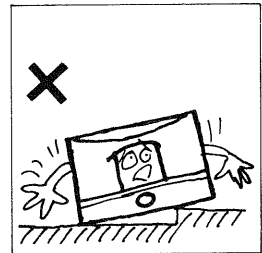
RISK OF ASPHYXIATION

- Use heater only in well ventilated areas.

"In a house of typical construction, that is, one that is not of unusually tight construction due to heavy insulation and tight seals against air infiltration, as adequate supply of air infiltration, an adequate supply of air for combustion and ventilation is provided through infiltration. However, if the heater is used in a small room where less than 200 cubic feet (5.7 m³) of air space is provided for each 1000 Btu per hour of heater rating (considering the maximum burner adjustment), the door(s) to adjacent room(s) should be kept open or the window to the outside should be opened at least 1 inch (25.4 mm) to guard against potential buildup of carbon monoxide. Do not use the heater in a bathroom or any other small room with the door closed."

SAFE LOCATION AND USE

1. Always keep heater level. To help you do so, a "plumb bob" is attached to the side of the heater. Always observe it when you place the heater in a new location. (See Item 2, page 6)
2. Keep heater at least three feet away from all combustible materials such as clothing, curtains, furniture, etc.
3. Do not operate your heater in areas where it will be exposed to strong drafts. Strong drafts can cause the flame to be unstable and the heater to be less efficient.
4. Do not operate heater in direct sunlight to avoid overheating, causing abnormal flame behavior. When room temperature goes above a level comfortable to you, open the door to the rest of the house, or turn heater down. Do not allow room temperature in the room to go above 80° – 85° F.
5. Before going out or at bedtime, turn the heater off, make sure the wick is in its lowest position (see Extinguishing the Flame on page 9), and flame is completely extinguished.



SPECIFICATIONS

MODEL	RCA-87
HEAT RATING*	9,400 BTU/hr.
FUEL TANK CAPACITY	1.24 Gallons
BURNING TIME/TANK	18 hours at 9,400 BTU/hr.
SIZE (W x H x D)	23" x 17-1/4" x 12"
WEIGHT	26.5 lbs., empty
WICK ADJUSTER	3-step
EXTINGUISHER	Automatic, Manual
IGNITER	Automatic, powered by two (2) "D" size batteries

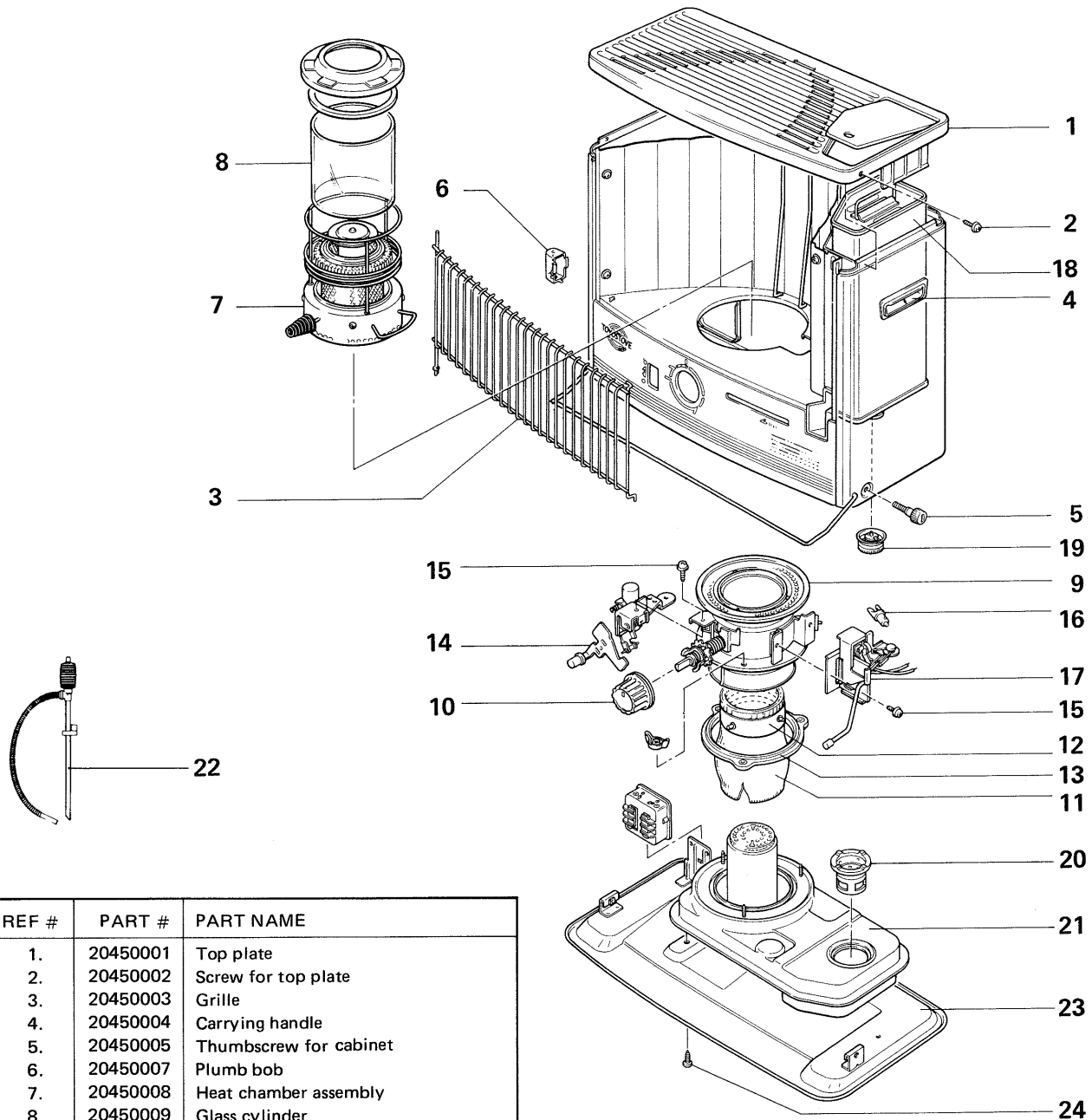
**Matching Room Size to HEAT RATING*

- Because the "Heat Load" of an area to be heated is influenced by so many factors, it is impossible to specify a heater output to an exact room size.
- If you use a heater too large for the area to be heated, the temperature you desire will be reached quickly. In such cases, to avoid overheating the area, the heater must be turned off frequently, or doors opened to other areas of the house, or windows to the outside opened to cool the area.
- If you use a heater too small for the area to be heated, it will take much longer to reach the desired temperature, in fact it may not be reached at all depending on the outside weather conditions.
- As a "rule of thumb", the following can be given as a guide:
If you live in an area of the country exposed to severe winter temperatures, multiply the primary area (in square feet) to be heated by 24 BTU/ft²/hr, if you live in a moderate climatic area, multiply the primary area (in square feet) by 12 BTU/ft²/hr.

OUTSTANDING FEATURES AND BENEFITS

- **AUTOMATIC EXTINGUISHER:** Automatically extinguishes the flame if heater is jarred or tipped. Extinguisher can also be activated manually in emergency situation.
- **FUEL FEED:** Fuel is fed to the flame through the wick. The fuel is not under pressure therefore, if the flame goes out, the fuel flow stops.
- **LOW CENTER OF GRAVITY:** The heater is designed such, that the weight is concentrated in the base making accidental tipover difficult, if not impossible.
- **REMOVABLE FUEL TANK:** Removable tank allows for ease of filling.
- **FUEL ACCEPTANCE FITTING:** Stops flow of fuel when contaminated with water.
- **HIGH EFFICIENCY:** The unique "Double CleanTM" combustion system increases combustion efficiency, thereby greatly reducing unwanted combustion products.
- **EASY MAINTENANCE:** No tools are required to change the wick, or perform other maintenance operations.
- **DUAL BURN CHAMBER:** Provides more efficient combustion and wide adjustment range of heat output.
- **THREE STEP WICK ADJUSTER:** Helps maintain good wick performance and extends useful wick life.

COMPONENT PARTS



REF #	PART #	PART NAME
1.	20450001	Top plate
2.	20450002	Screw for top plate
3.	20450003	Grille
4.	20450004	Carrying handle
5.	20450005	Thumbscrew for cabinet
6.	20450007	Plumb bob
7.	20450008	Heat chamber assembly
8.	20450009	Glass cylinder
9.	20450011	Wick adjuster with pendulum assembly
10.	20450012	Wick adjuster knob
11.	20450013	Glass fiber wick
12.	20450014	Wick sleeve
13.	20450015	Rubber packing
14.	20450016	Pendulum assembly
15.	20450017	Screw for pendulum and igniter
16.	20450018	Igniter coil
17.	20450019	Igniter unit
18.	20450022	Removable fuel tank
19.	20450024	Fuel tank cap
20.	20450025	Fuel acceptance fitting
21.	20450026	Fuel sub tank
22.	20450028	Manual fuel siphon
23.	20450029	Drip tray
24.	20450030	Screw for drip tray

You should register heater's serial number.

The serial number is located on the outside surface of fuel tank or cabinet.

You need replacement parts or service in the future, reference to this number will assure you of obtaining the proper parts quickly.

Your heater's serial number

SERIAL NO.

ASSEMBLY AND OPERATION

INSPECTION AND ASSEMBLY

NOTE: Please save the shipping carton and packing materials for future storage of your heater.

1. REGISTRATION CARD

Take out the registration card from the shipping carton and fill it out and mail it as soon as possible.

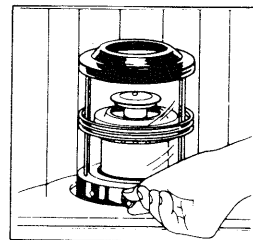
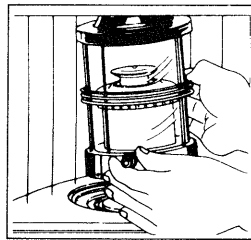
2. REMOVE PACKING MATERIALS

Open the grille by raising the lower right hand corner of grille and pulling straight out. Remove the styrofoam packing wedge from under the top plate of the cabinet to release the heat chamber assembly. Lift the heat chamber, in its protective packing, out of the cabinet.

3. REPLACE THE HEAT CHAMBER

Remove the styrofoam packing, and replace the heat chamber assembly. Point the wire handle to the front of the heater.

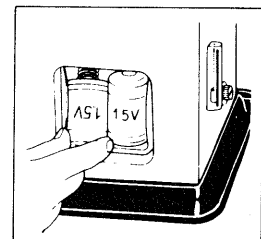
Close the grille.



4. INSTALL THE BATTERIES

Locate the battery holder on the back of your heater.

- Insert the two "D" size batteries according to the plus (+) and minus (—) markings.



5. TIGHTEN CABINET THUMBSCREWS

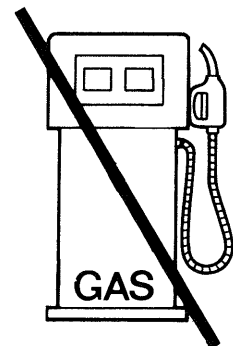
Tighten the three (3) thumbscrews around the sides and back of the cabinet.

NOTE: Wire frame resting on wick adjuster knob must be moved before operating heater. Pull the frame out and down allowing it to rest on the floor in front of heater.

FUELING

WARNING: RISK OF EXPLOSION

Never use any fuel other than pure kerosene (ASTM 1K or equivalent). Never use gasoline. Never refill heater fuel tank when heater is operating or while still hot. Never use heater in areas where flammable vapors, or gases may be present. Never fill heater tank in living space. Fill heater tank outdoors. Never store kerosene in any container other than an approved safety can or store kerosene in the living space. Never store kerosene in same area where gasoline is stored.



USE KEROSENE ONLY

1. LIFT OUT THE REMOVABLE FUEL TANK

Open the fuel tank lid on the top of the cabinet. Remove any protective packing, and lift out the removable tank.

Turn the removable tank upside down, and remove the fuel tank cap.

2. INSERT THE SIPHON

Insert the straight tube of the siphon into the kerosene container. Insert the siphon's flexible hose into the opening on the removable tank.

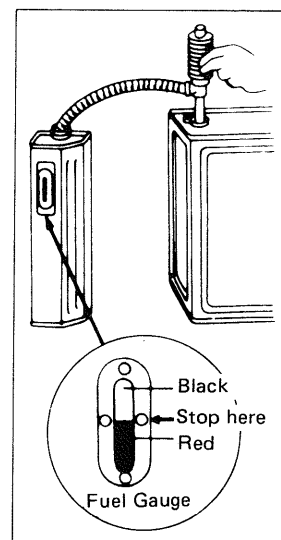
3. CLOSE THE AIR VENT

Turn the air vent knob on the top of the siphon clockwise to close the air vent.

4. SIPHON THE FUEL

To start the flow of kerosene, squeeze the bulb of the siphon vigorously 6 or 7 times. Once the flow begins, it is no longer necessary to squeeze the bulb.

NOTE: To avoid overfilling the removable fuel tank, watch the fuel gauge. When it shows half red, stop the flow by turning the air vent knob counterclockwise. (Be especially careful to avoid overfilling the fuel tank with very cold kerosene otherwise overflow of the fuel sub tank might occur when the fuel warms up.)



5. REPLACE THE FUEL TANK CAP.

6. SATURATE NEW OR DRY WICK

If your wick is new, or if the heater has been empty for some time, the wick should be turned to its lowest position and allowed to saturate with kerosene.

To lower the wick, turn the wick adjuster knob counterclockwise until it stops. Wait approximately 30 minutes before lighting the heater.

7. WHEN TO REFUEL

In order to determine when refueling is necessary, watch the Fuel Gauge Window on the front of your heater.

When the red begins to disappear, enough fuel remains in the fuel tank for approximately three hours of burn time.

CHECK BEFORE LIGHTING

1. LOCATE YOUR HEATER AWAY FROM WALLS

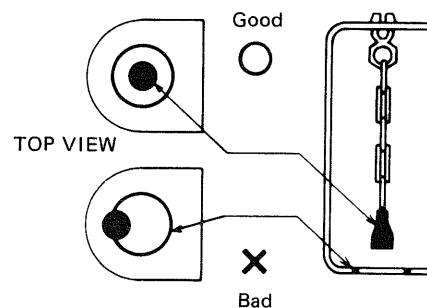
Allow at least 3 feet of clearance between the heater and walls, curtains, shelving or other combustible materials.

2. LEVEL THE HEATER

The heater should be operated on a firm, level floor.

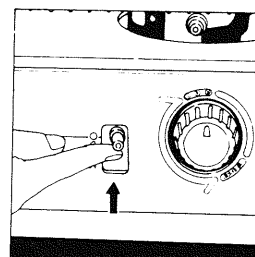
A built-in level indicator is located on the left side of the heater. When the heater is level, the end of the chain will lie approximately in the center of the red circle.

NOTE: If your heater is not level, change locations. Do not prop it with books or other objects.



3. ENGAGE THE AUTOMATIC EXTINGUISHER

Engage the automatic extinguisher by raising the set lever.



VENTILATION

WARNING – RISK OF ASPHYXIATION

"In a house of typical construction, that is, one that is not of unusually tight construction due to heavy insulation and tight seals against air infiltration, as adequate supply of air infiltration, an adequate supply of air for combustion and ventilation is provided through infiltration. However, if the heater is used in a small room where less than 200 cubic feet (5.7 m³) of air space is provided for each 1000 Btu per hour of heater rating (considering the maximum burner adjustment), the door(s) to adjacent room(s) should be kept open or the window to the outside should be opened at least 1 inch (25.4 mm) to guard against potential buildup of carbon monoxide. Do not use the heater in a bathroom or any other small room with the door closed."

The heat output of the RCA-87 is too high for small rooms such as bathrooms. Its use in such small areas is not recommended. Should it be necessary for it to be used in such as area temporarily, be sure a door to an adjoining room, or hallway is open.

AVOID DRAFTS

Do not operate your heater in drafty areas or locations where opening doors may create gusts of air. Drafts or strong air current may make flame unstable and affect heater performance.

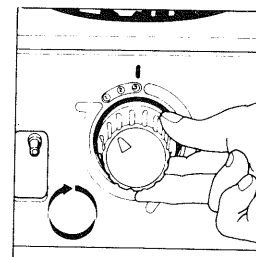
LIGHTING

NOTE: When you first use your new heater, ignite it out of the living area of your house, either in a garage or an area outside protected from strong drafts. Burn it for about 15 minutes to remove all of the protective oil present on the burner parts. If this 15 minutes "burn-in" is done inside, some objectionable odor will be observed. This procedure is necessary **ONLY THE FIRST TIME** you ignite your heater.

1. RAISE THE WICK

Turn the wick adjuster knob clockwise until it stops. As the wick rises within the heater, the wick adjuster knob turns with some resistance and makes a sound like the winding of a clock. Once the wick has reached its proper height, the automatic extinguisher is fully engaged.

The wick adjuster knob can now move freely left or right to adjust the flame.

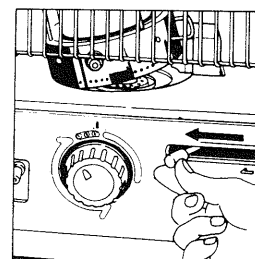


2. AUTOMATIC LIGHTING

Push the igniter lever gently to the left, the igniter coil should glow and touch the wick.

When flame appears, release the igniter lever.

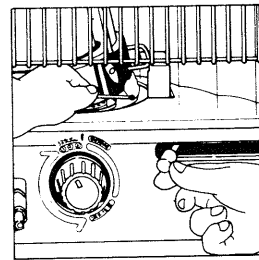
NOTE: If you have difficulty igniting wick, push back the igniter lever very slightly to remove the igniter coil from direct contact with the wick.



3. LIGHTING WITH A MATCH

You should not have to light the heater with a match, but should it become necessary, push the igniter lever and touch the match to the top of the wick. Do not allow burned parts of the match to fall or remain on the wick.

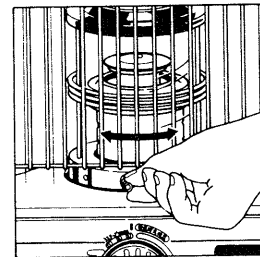
NOTE: To restore your heater to automatic lighting, check for weak or dead batteries or a defective igniter, as described on Page 14.



4. POSITION THE HEAT CHAMBER

Center the wire handle in the opening. Be sure that by moving the wire handle left and right, the heat chamber moves easily. This means that the heat chamber is properly seated.

NOTE: An improperly seated heat chamber will produce a high smokey flame and may cause smoke damage to your house, furnishings, and to the heater itself. Always observe the flame for 3-5 minutes after ignition to be sure it is burning properly.



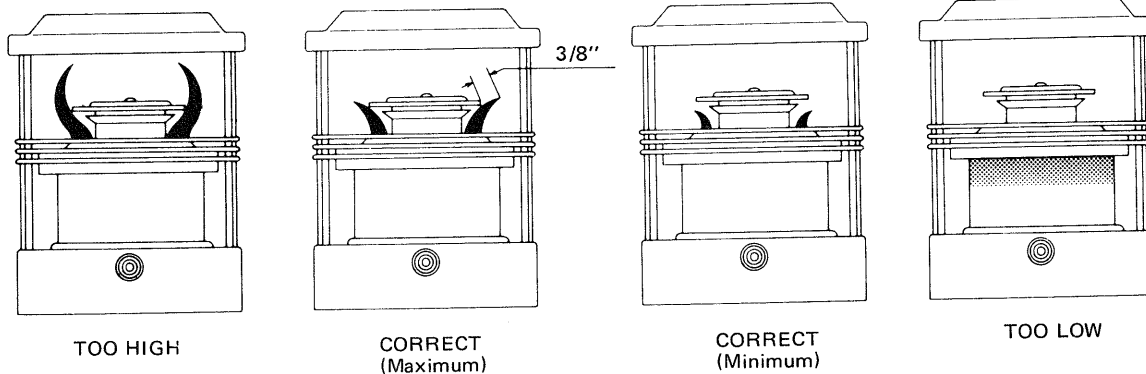
ADJUSTING THE FLAME

1. WAIT FOR THE HEAT CHAMBER TO REACH OPERATING TEMPERATURE

Several minutes after lighting, flame will reach the top of the heat chamber.

2. CHECK THE FLAME LENGTH

Look at the flame and check its length. It should project at least 3/8-inch beyond the top disk of the heat chamber. While the flame length may vary around the circumference of the disk.



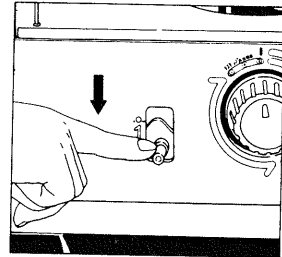
Adjust, if necessary, by turning the wick adjuster knob counterclockwise to lower the wick or clockwise to raise it.

NOTE: Operating your heater with wick set TOO LOW will decrease efficiency. It could lead to soot build-up in lower chamber and severely deteriorate heater performance. When operating heater, be sure wick is high enough to keep the primary heat chamber heated to a uniform red glow from its top to bottom.

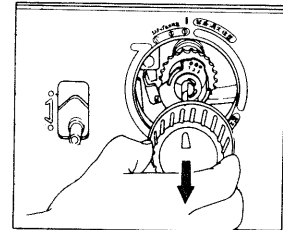
3. ADJUSTMENT OF MAXIMUM WICK HEIGHT

After using the heater over a long period of time, you may observe that the flame length in the heat chamber does not reach its normal level in several minutes after lighting. When this condition is observed, it means that the wick height needs adjusting using the unique 3-step adjuster.

To adjust the wick height using the 3-step mechanism first release the automatic extinguisher by pushing down on the set lever.

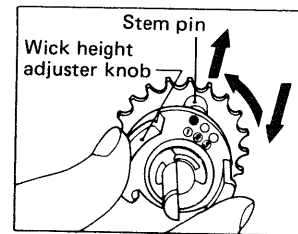


Pull the wick adjuster knob out completely (it can be removed completely from its shaft.).



The 3-step wick height adjuster, with three small holes marked ①, ②, and ③ can be seen. The stem pin is engaged in one of the holes. Pull the knob toward you and change the location of the pin from ① to ②, or from ② to ③. Each step from pin ① to ② will raise the maximum wick height by 2 mm per step. After this adjustment, replace the wick adjuster knob. Repeat Items 1-3 in the section titled "ADJUSTING THE FLAME".

When suitable flame height can no longer be achieved even on pin position ③, it is time to clean or replace the wick. AFTER REPLACING THE WICK, CHECK THE OPERATION OF THE AUTOMATIC EXTINGUISHER BEFORE LIGHTING YOUR HEATER.

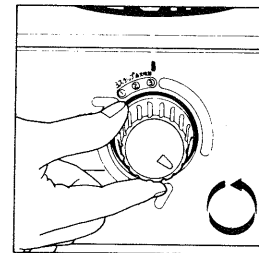


NOTE: Never use positions ② or ③ until position ① no longer gives adequate flame length.

EXTINGUISHING THE FLAME

1. Turn the wick adjuster knob counterclockwise until it stops. This requires about a half turn. At this point, the flame is completely extinguished and the heater is off.

NOTE: DO NOT use the automatic extinguisher to routinely turn off the heater. Automatic extinguishing should occur only when the heater is jarred or tipped.



2. Look to make sure the flame is out completely.
3. Do not try to relight the heater for at least 3 minutes after extinguishing it off as this may cause smoke and odor.

CARE AND MAINTENANCE

1. CLEANING THE WICK

NOTE: Your heater is designed to be assembled and disassembled for maintenance without the use of tools.

1. WICK LIFE

With proper care, the wick in your heater should last at least one heating season. Using only fresh, clean kerosene to avoid the unnecessary accumulation of tar, and periodically allowing the wick to "burn dry" as described below, will prolong its life.

2. WICK CONTAMINATION

Signs that a wick needs attention are:

- accumulation of tar on its top edge.
- difficulty in turning the wick adjuster knob.
- a flickering, dying or small flame.

3. BURNING DRY

After lifting out the removable tank, raise the wick to its highest position and allow the heater to operate until the flame goes out completely (about 1/2-hour after the flame disappears). This procedure burns the tar off the wick's edge and restores it to efficient operating condition, but does not harm the wick material.

NOTE: To avoid odor, the heater should be allowed to burn dry outdoors in a well-ventilated place.

4. REMOVING ASH, CINDERS, SOOT

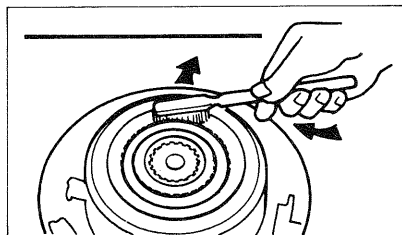
WARNING: Before beginning any further cleaning or maintenance, allow your heater to cool completely. Remove the batteries from the battery holder.

After the heater has cooled, remove the cabinet as described in Items 1 through 3 of the next section. Be sure the wick adjuster knob has been turned fully clockwise and the wick is in its highest position.

Remove any residue on the wick with a small nylon or plastic bristled brush. Working from bottom to top, and taking care not to fray the wick material, gently "comb" the bits of residue off the wick.

If the wick cannot be "combed" clean after burning your heater dry twice in a row, you probably need a new wick.

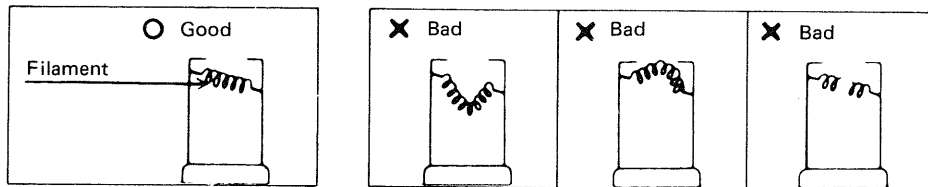
CAUTION: DO NOT brush back and forth across the wick. This procedure can damage the wick fibers.



Before reassembling the heater, take a few minutes to wipe the parts with a soft, cotton cloth. Loose cinders or soot may be brushed or vacuumed away. Reassemble the heater following directions in Item 8 of the next section.

2. INSPECTION OF IGNITER COIL

If the wick does not ignite or it is hard to ignite, check if the igniter filament is broken.



If the igniter coil is found to be defective, replace it as described on page 14.

REPLACEMENT OF PARTS

REPLACING THE WICK

USE TOYOSTOVE™ REPLACEMENT WICK MARKED "RCA-87" TO OBTAIN PROPER PERFORMANCE.

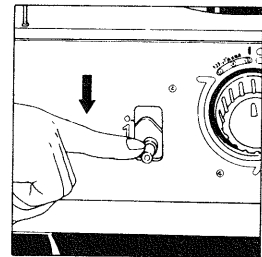
USE OF SUBSTITUTE WICKS CAN SEVERELY DAMAGE HEATER PERFORMANCE.

NOTE: Burning the old wick dry (see Item 3 under "Cleaning the Wick") before you remove it will eliminate most of the kerosene and make the wick easier to handle.

WARNING: Before disassembling your heater, allow it to cool completely.
Remove the batteries from the battery holder.

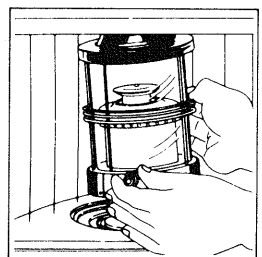
1. RELEASE THE AUTOMATIC EXTINGUISHER

To release the automatic extinguisher by pushing down on the set lever.



2. REMOVE THE HEAT CHAMBER

After the heat chamber has cooled completely, open the front grille and remove the heat chamber.

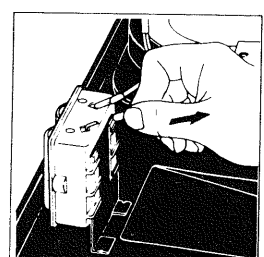
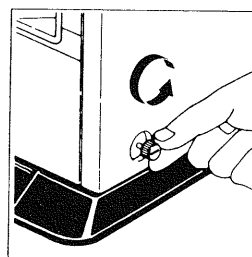
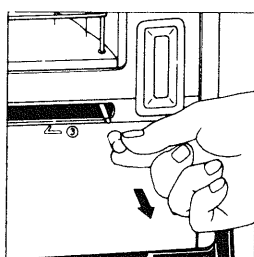
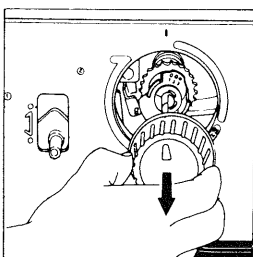


3. REMOVE THE CABINET

Grasp the wick adjuster knob and pull it straight off the wick adjuster shaft. Also take off the knob on the shaft of the igniter lever by twisting back and forth. Lift out the removable tank, and set it aside.

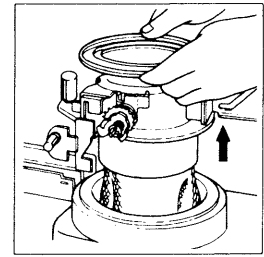
Remove the batteries.

Remove the three (3) thumbscrews at the sides and the rear of the cabinet. Finally, lift off the cabinet while bringing it slightly forward to clear the wick adjuster shaft and the igniter lever. Then disconnect the two electrical leads (red and white) attached to the battery holder.



4. REMOVE THE WICK ADJUSTER ASSEMBLY.

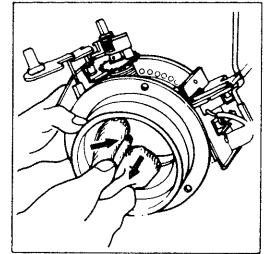
Remove the three (3) wing nuts around the wick adjuster assembly. Lift the assembly off the heater while moving it slightly back and forth.



5. REMOVE THE OLD WICK

Slide two fingers between the orange band on the wick and the silver wick sleeve attached to the wick adjuster. Lift the pins in the wick off the slots in the wick sleeve.

After lifting all three (3) pins off the slots, fold the wick and remove it. Leave the wick sleeve in place.



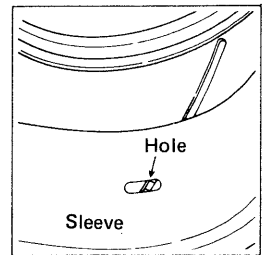
6. INSTALL THE NEW WICK

Use TOYOSTOVE™ replacement wick marked "RCA-87" to obtain proper performance. Use of substitute wicks can severely degrade heater performance.

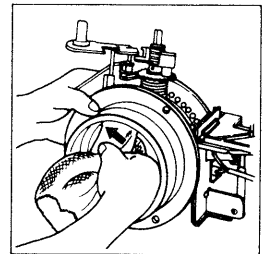
Replace the wick adjuster knob on the wick adjuster shaft.

Place the wick adjuster assembly on its side. Insure that the wick is in the wick adjuster with the three (3) holes in the section of the sleeve closer to the inside burn chamber.

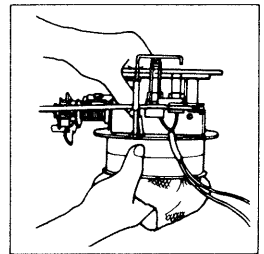
At this time, you must line up the three (3) openings in the wick adjuster: 1) the holes in the sleeve, 2) the diagonal slots in the fixed part of the wick adjuster and 3) the slots in the moving part of the wick adjuster controlled by the wick adjuster knob.



Fold the new wick in quarters and insert it into the assembly. Place one of the pins in one of the lined-up openings. If you experience difficulty, gently turn the wick adjuster knob clockwise. Then place the two other pins, turning the wick adjuster knob if necessary. Do not bend the sleeve.



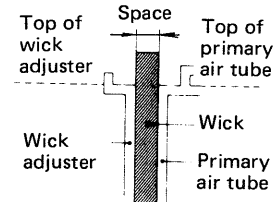
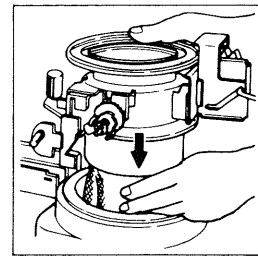
Finally, gently press the wick, all along its circumference, against the adjuster to insure that it is firmly in place.



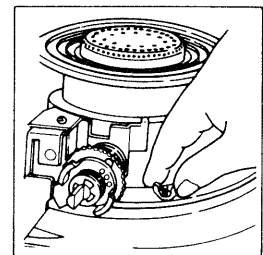
7. REPLACE THE WICK ADJUSTER ASSEMBLY

Lower the wick adjuster assembly into the fuel sub tank, guiding the tail of the wick so it fits over the primary air tube and evenly into place. Point the wick adjuster shaft to the front of the heater. Insure that the wick adjuster is centered over the studs on the fuel sub tank.

- A. The space between the wick adjuster and the primary air tube should be even all around.
- B. Make certain the top of the wick adjuster and the top of primary air tube are the same height. If they are uneven, the flames tend to be uneven, too.



Tighten the three (3) wing nuts around the wick adjuster assembly.

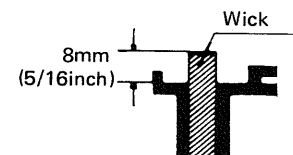
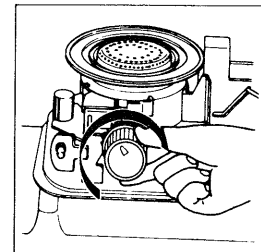


Insure that the wick moves smoothly up and down. Engage the automatic extinguisher by raising the set lever.

Turn the wick adjuster knob clockwise to raise the wick. Then turn it back and forth to observe the movement of the wick.

If the wick does not move smoothly and easily, do not use heater. Disassemble and repeat Items 6 and 7.

Wick height on position ① of 3-step wick adjuster should be 8 mm (5/16 in.) when wick adjuster knob fully clockwise. Please check.

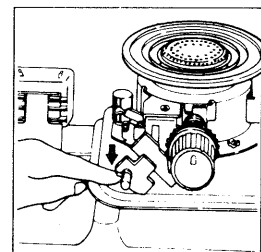


AFTER REPLACING THE WICK, CHECK THE OPERATION OF THE AUTOMATIC EXTINGUISHER.

NOTE: Be careful to trim ONLY stray fibers. DO NOT cut the body of the wick.

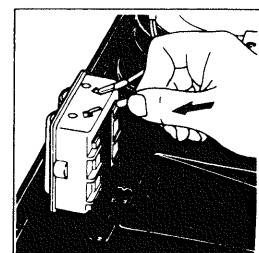
NOTE: Remember always start new wick on position ① of 3-step wick adjuster.

Remove the wick adjuster knob from the wick adjuster shaft once more.



8. REASSEMBLE THE HEATER

Reconnect the red and white electrical leads to the battery holder.



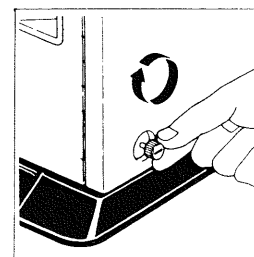
Lower the cabinet back on the unit (watch for the igniter lever and the wick adjuster shaft) and secure the cabinet with the remaining three (3) thumbscrews.

Install the heat chamber. Grasp the wire handle, then turn the heat chamber left and right to insure that it is properly seated.

Replace the wick adjuster knob on the wick adjuster shaft and the knob on the igniter lever.

Replace the removable fuel tank.

Once again, check the proper operation of the automatic extinguisher.



NOTE: Before lighting a new wick for the first time, turn the wick to its lowest position.

Allow the wick to saturate with kerosene for 30 minutes.

REPLACING THE IGNITER COIL

WARNING: Before replacing the igniter coil, allow the heater to cool completely.

1. FIRST CHECK THE BATTERIES

When the igniter coil no longer glows sufficiently to light the wick, replace the batteries. If proper glow is not restored, the igniter coil may be defective.

2. CHANGE THE IGNITER COIL

Remove the batteries from the battery holder.

Release the automatic extinguisher, and remove the heat chamber as described in Items 1 and 2 of the preceding section.

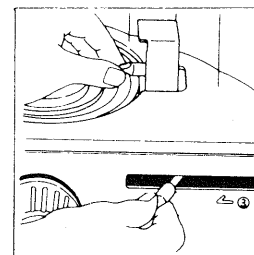
Push the igniter lever to bring the igniter coil into view.

Note that the igniter coil fits into a bayonet socket the same way a flashlight bulb fits into its holder.

To remove the igniter coil, push it in and twist it in either direction while holding the sides of the socket with your other hand.

Install the new igniter coil by pressing it into the socket and turning.

Replace the heat chamber, and reinstall the batteries.



STORAGE

At the end of each heating season, or when you do not plan to use your heater for an extended period of time, the following items are recommended:

1. CLEAN THE WICK AND HEATER

Follow directions in Items 3 and 4 under "CLEANING THE WICK".

2. DRAIN THE FUEL TANK

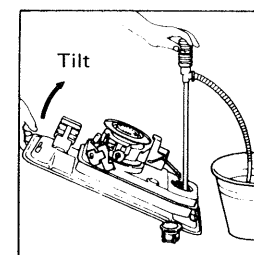
After you have burned your heater dry, a small amount of kerosene will remain in the fuel sub tank. It should be removed in order to avoid contamination when the heater is refueled at a later date.

To do this, disassemble the heater as described Items 1, 2 and 3 under "REPLACING THE WICK".

Remove the fuel acceptance fitting from the fuel port.

Tilt the heater toward the port, and remove the remaining kerosene with a siphon or a small syringe.

Replace the fuel acceptance fitting, cabinet and heat chamber.



3. REMOVE THE BATTERIES FROM THE BATTERY HOLDER

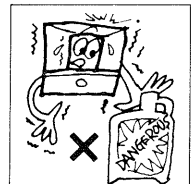
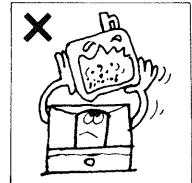
4. STORE THE HEATER

The original shipping carton is the best place to store your heater. If you do not have the original packing materials, cover the heater with a large plastic bag and store in a place that is low in humidity.

FUEL GUIDE

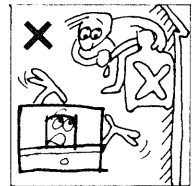
What to Buy . . .

- ALWAYS :** Crystal clear, colorless, high quality KEROSENE, ASTM 1K or equivalent.
- ALWAYS :** Kerosene free of contaminants, water or cloudiness.
- NEVER :** Gasoline, alcohol, white gas, camp stove fuel or additives.
- NEVER :** Yellow or sour-smelling fuel.



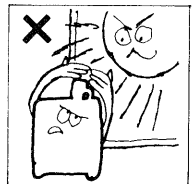
HOW to Use It . . .

- ALWAYS :** Fill heater away from living quarters when heater is cool; use siphon.
- ALWAYS :** Check wick frequently for tar build-up. (Rapid, heavy build-up may indicate poor quality or deteriorated fuel.)
- ALWAYS :** Watch fuel gauge to avoid over-filling heater.



How to Store It . . .

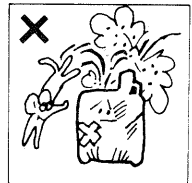
- ALWAYS :** In a clean container, clearly marked KEROSENE.
- ALWAYS :** AWAY FROM direct sunlight, heat sources or extreme temperature changes.
- NEVER :** In glass container, or one that has been used for other fuels.
- NEVER :** For longer than 6 months. (Begin each heating season with fresh kerosene; discard at the end of the season.)



Why is It Important . . .

Pure, clean kerosene is essential for safe, efficient heater operation. Poor quality or contaminated kerosene can cause:

- Excess tar deposits on the wick.
- Reduce wick life.
- Odor, smoke.
- Difficulty in igniting or extinguishing flame.
- Use of a highly volatile flammable fuel such as gasoline can produce uncontrollable flame creating a severe fire hazard.



TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION	PAGE
Wick will not ignite.	Out of fuel.	Check fuel gauge; add fuel if necessary.	5
	Igniter coil will not glow.	Replace batteries. Replace igniter coil, if necessary	5 14
	Water in Kerosene.	Drain tank. Remove, dry and reinstall wick. Refill with fresh, clean kerosene.	11 5
Smoke or odor.	Heat chamber tilted and not properly seated.	Move wire handle until heat chamber is properly seated and moves smoothly left and right.	8
	Flame too high.	Reduce wick height by turning wick adjuster knob counterclockwise.	8
	Dirty wick.	Clean wick as described under "Care and Maintenance."	10
	Drafts.	Relocate heater.	7
	Contaminated fuel.	Drain tank and rinse it with clean kerosene. Install new wick and refill with fresh, clean kerosene.	11 5
Flickering, dying or low flame	Dirty wick.	Clean wick as described under "Care and Maintenance". If necessary, install new wick.	10 11
	Water in kerosene.	Drain tank. Remove, dry and reinstall wick. Refill with clean kerosene.	11 5
	Wick is too low to sustain good flame.	Raise 3-step wick adjuster to step ② or ③. If already to step ③, replace wick.	9 11
Wick adjuster knob is hard to turn.	Dirty wick.	Clean wick as described under "Care and Maintenance".	10
	Water in kerosene.	Drain tank. Remove, dry and reinstall wick. Refill with fresh, clean kerosene.	11 5
	Damaged mechanism.	Contact your dealer for service.	
Flame too high and cannot be adjusted using normal procedure.	Fuel contaminated with gasoline, paint thinner, denatured alcohol or other volatile substance.	IMMEDIATELY shut off heater. Drain tank and rinse it with clean kerosene. Install new wick, refill with fresh clean kerosene.	9 11 5
	Wick installed too high.	Remove wick. Reinstall wick according to directions under "Replacing the Wick".	11

LIMITED WARRANTY

TOYOTOMI AMERICA INC. ("TOYOTOMI") warrants each heater (the "Product") and any parts thereof sold by it to be free from defects in materials or workmanship under normal use and service for TWELVE (12) MONTHS from the date of delivery to the original purchaser at retail subject to the following terms and conditions:

WHAT IS COVERED: Product or any parts thereof which are defective in materials or workmanship.

WHAT IS NOT COVERED:

(1) Product which has been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse including improper or contaminated fuels, repair using improper parts, or repair by anyone other than a service facility specified by TOYOTOMI;

(2) Normal wear and tear parts, including wicks, batteries, igniter coils and siphons.

WHO IS COVERED: The original purchaser at retail.

WHAT WE WILL DO: TOYOTOMI will either repair or replace, at its option, all defective parts free of charge that are covered by this limited warranty on a carry-in basis, to your nearest authorized dealer or distributor of TOYOTOMI.

WHAT YOU MUST DO FOR WARRANTY SERVICE: You must return the defective Product or part to any authorized dealer or distributor of TOYOTOMI with this LIMITED WARRANTY CARD and a copy of your bill of sale or credit card charge receipt or other document evidencing the date of the Product's delivery. If service is not available locally, please contact our CUSTOMER RELATIONS DEPARTMENT or call:

TOYOTOMI AMERICA INC.
604 Federal Road
Brookfield, CT 06804
(203) 775-1909

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No one other than TOYOTOMI has authority to extend or modify the terms of this Limited Warranty in any manner whatsoever.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so these limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other rights which vary from state to state.



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