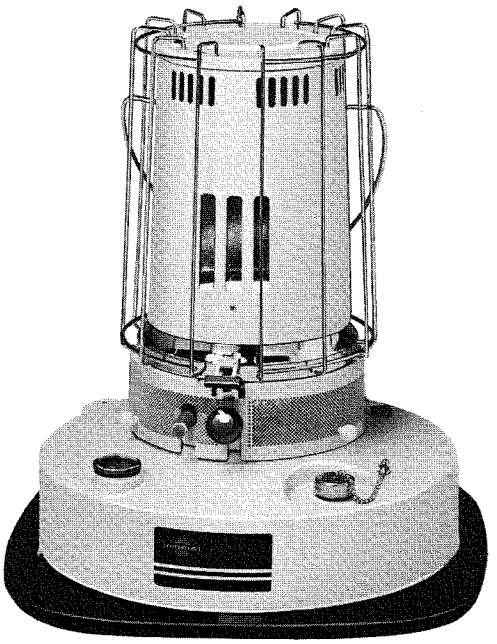
TOYOSTOVE

PORTABLE KEROSENE HEATER

OPERATION AND MAINTENANCE INSTRUCTION



MODEL **TSC-15** (UL®)

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

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Congratulations, you are ready to begin enjoying the benefits of one of the most popular kerosene heaters ever made. TOYOTOMI, the leader in kerosene heater technology, has tested and refined the "TSC-15" to assure you of long term safety and satisfaction. Please study the following instructions, use and care your heater carefully, and it will serve you well for many years.

SPECIFICATIONS

MODEL	TSC-15
HEAT RATING*	8,800 BTU/hr.
FUEL TANK CAPACITY	1.7 Gallons
BURNING TIME/TANK	26 ~ 36 Hours
SIZE (W x H x D)	16-1/4" x 18-1/8" x 16-1/4"
WEIGHT	14.1 Pounds., empty
EXTINGUISHER	Automatic
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 the heater is jarred or tipped.
- 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.
- HEAVY ZINC COATING OF FUEL TANK: Prevents corrosion when water is present in the fuel.
- EASY MAINTENANCE: No tools are required to change the wick, or perform other maintenance operations.

Remember that your portable kerosene heater is a well engineered and crafted heating appliance. Safety, reliability, and convenience have been engineered into the product but, as with any appliance, a common sense approach to its use will assure its maximum benefit to you.

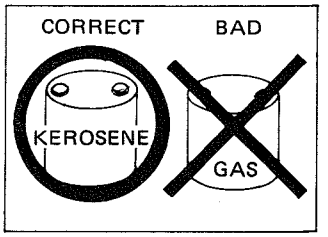
SAFETY TIPS

BEFORE OPERATING YOUR HEATER, PLEASE review these safety tips:

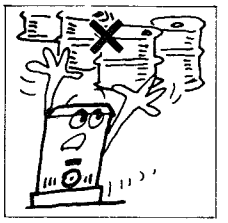
— WARNING —

RISK OF EXPLOSION

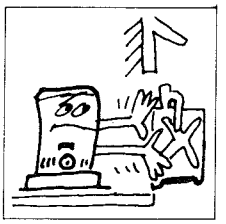
1. Never use any fuel other than pure kerosene (ASTM 1K or equivalent). Never use gasoline.



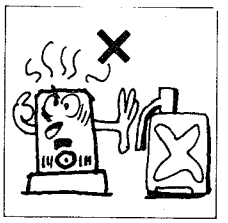
2. Never use heater in areas where flammable vapors or gases may be present.



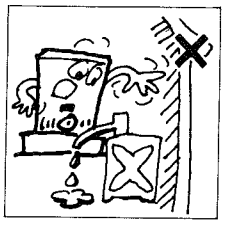
3. Never store kerosene in any container other than an approved safety can or store kerosene in living space.



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



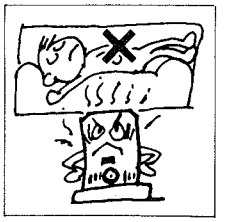
5. Never fill heater fuel tank in living space. Fill heater tank outdoors. Never overfill your heater. Always replace heater tank cap securely after refueling.



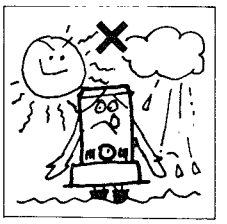
— WARNING —

RISK OF BURNS, OR FIRE

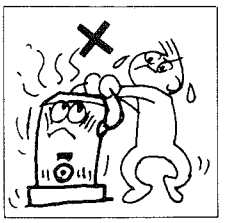
1. Due to high surface temperatures, keep children, furniture and clothing away.



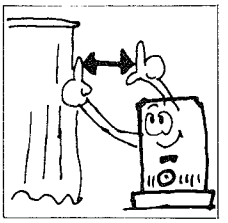
2. Do not operate your heater in areas exposed to strong drafts.



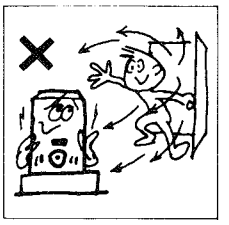
3. Do not move, fuel, or attempt to service your heater while it is burning, or still hot.



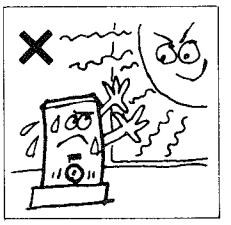
4. Do not operate heater less than three (3) feet from walls, draperies, clothing, or furniture.



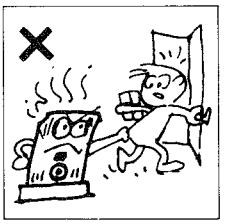
5. Do not operate your heater in high traffic areas such as doorways or hallways where it may be touched, jarred, or tipped accidentally.



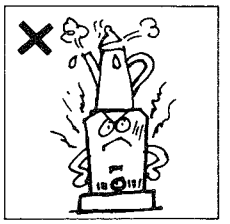
6. Do not operate heater in direct sunlight to avoid overheating, causing abnormal flame behavior.
   When room temperature goes above a level comfortable to you, open the door to the rest of the house, or turn heater down. Do not allow room temperature in the room to go above 80°F.



7. Before going out or at bedtime, turn the heater off, making sure the wick is in its lowest position (see Extinguishing the Flame on page 9), and flame is completely extinguished.



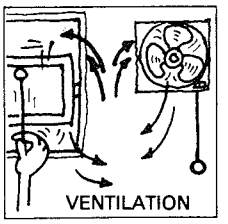
8. When using your heater, do not place cooking utensils, tea kettles, or other type containers on top of the heater. The heater is designed such that optimum air flow for combustion and temperature removal is achieved. When an object is placed over the top surface it can disrupt the air flow and affect performance.



— WARNING —

RISK OF ASPHYXIATION

USE HEATER ONLY IN WELL VENTILATED AREAS.
Never use in small tightly closed areas such as bathrooms and campers.
"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 build-up of carbon monoxide. Do not use the heater in a bathroom or any other small room with the door closed."

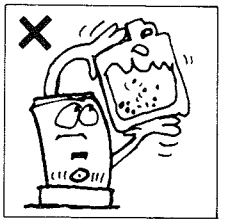


FUEL GUIDE

What to Buy . . .

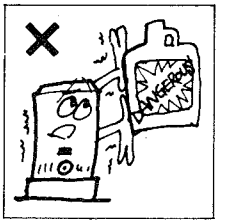
ALWAYS : Crystal clear, colorless, high quality KEROSENE, ASTM 1K or equivalent.

ALWAYS : Kerosene free of contaminants, water or cloudiness.



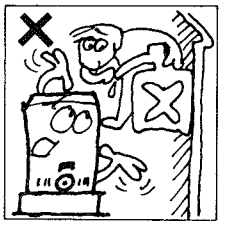
NEVER : Gasoline, alcohol, white gas, camp stove fuel or additives.

NEVER : Yellow or sour-smelling fuel.



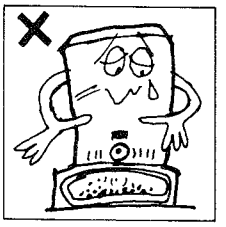
HOW to Use It . . .

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.)

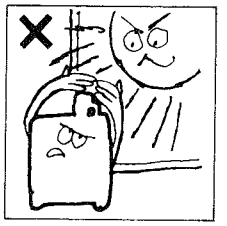
ALWAYS : Watch fuel gauge to avoid over-filling heater.



How to Store It . . .

ALWAYS : In a clean container, clearly marked KEROSENE.

ALWAYS : AWAY FROM direct sunlight, heat sources or extreme temperature changes.

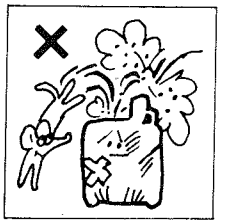


NEVER : In glass container, or one that has been used for other fuels.

NEVER : For longer than 6 months. (Begin each heating season with fresh kerosene; discard at the end of the season.)

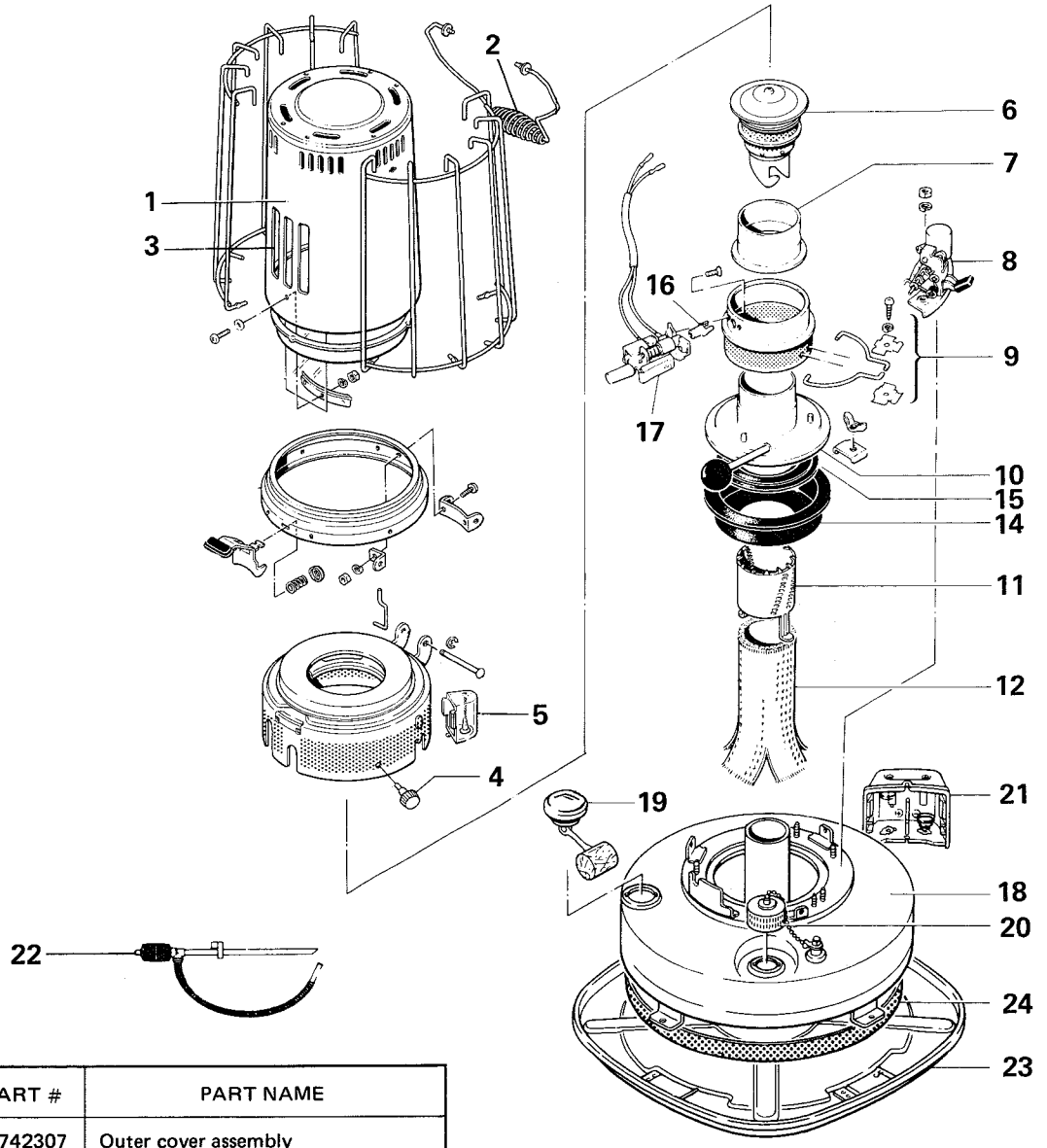
Why is It Important . . .

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

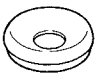


- Excess tar deposits on the wick.
- Reduce wick life.
- Odor, smoke.
- Difficulty in igniting or extinguishing flame.
- Use of a highly volatile flammable fuel such as gasoline can produce uncontrollable flame creating a severe fire hazard.

COMPONENT PARTS



REF #	PART #	PART NAME
1.	22742307	Outer cover assembly
2.	22742304	Carrying handle
3.	22742331	Mica window
4.	20451530	Thumbscrew for cover
5.	20450007	Plumb bob
6.	22742208	Flame spreader
7.	22742232	Extinguisher ring
8.	22742216	Extinguisher unit
9.	22742233	Burner cover
10.	22742211	Wick adjuster
11.	22742214	Wick holder
12.	22742213	Cotton wick
13.	22742235	Wick guide
14.	22742215	Rubber packing
15.	22742234	Inner packing
16.	20450018	Igniter coil
17.	22742319	Igniter unit
18.	22742322	Fuel tank assembly
19.	20452223	Fuel gauge
20.	20450124	Fuel tank cap
21.	22741927	Battery holder
22.	20450028	Manual fuel siphon
23.	22742229	Drip tray
24.	22742236	Dust proof ring

13 

NOTE : Keep the wick guide with this instruction manual for use when replacing the wick.

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.

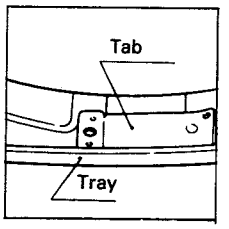
ASSEMBLY AND OPERATION

INSPECTION AND ASSEMBLY

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

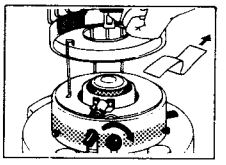
1. REGISTRATION CARD
   Take out the registration card from the shipping carton and fill it out and mail it as soon as possible.

2. INSTALL THE DRIP TRAY

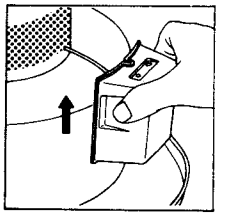


NOTE: DO NOT operate your heater without the drip tray.
   - Place the drip tray on the floor. Position the dustproof ring in the center of the drip tray.
   - Place the heater onto the drip tray, fitting the heater over the dust-proof ring and placing the four (4) feet of the heater next to the four (4) tabs on the tray.
   - Turn the heater clockwise until the feet slide into their tabs.

3. CHECK THE WICK
   Open the cover by pushing up on the latch. (The cover tilts 45 degrees.) Remove the plastic packing from the wick area. Then turn the wick adjuster knob clockwise and counterclockwise. The wick should move freely up and down. Close the heater cover.



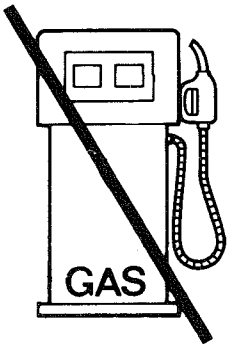
4. INSTALL THE BATTERIES
   Locate the battery holder on the back of your heater. Slide it up, slowly — to avoid damaging the wires.
   - Insert the 2 "D" size batteries according to the plus (+) and minus (—) markings inside the holder.
   - Slide the battery holder back in place.



5. CHECK THE THUMBSCREWS
   Make sure that the three (3) thumbscrews around the cover above the fuel tank are tighten.

FUELING

WARNING : Use only water clear kerosene, ASTM 1K or equivalent.
Never use gasoline or other flammable liquids.



USE KEROSENE ONLY

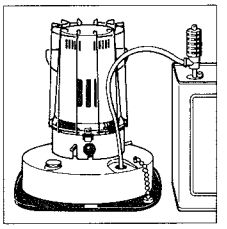
1. Insert the straight tube of the manual fuel siphon into the kerosene container.

   Remove the fuel tank cap on the heater, and insert the siphon's flexible hose into the fuel tank opening.
   To hold the hose in place, and reduce the possibility of a spill, push it over the wire guide inside the tank.

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

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

   To avoid overfilling the tank, watch the fuel gauge. As the indicator enters the red zone, stop the flow by turning the air vent knob counterclockwise.



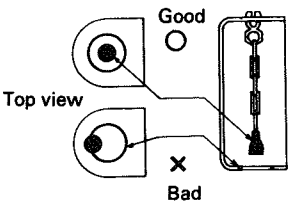
NOTE : Be especially careful to avoid overfilling the tank with very cold kerosene; otherwise overflow of the fuel tank might occur when the fuel warms up.

4. Remove the siphon carefully, allowing the excess kerosene to drain from the tube back into container.
   Replace the fuel tank cap and tighten it securely. Be sure to wipe away any spilled kerosene from tank or other parts of the heater.

CHECK BEFORE LIGHTING

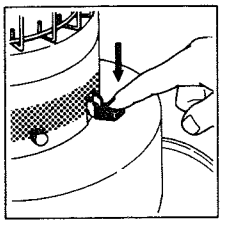
1. LOCATE YOUR HEATER AWAY FROM WALLS AND AVOID DRAFTS
   Allow at least three (3) feet of clearance between the heater and walls, curtains, shelving or other combustible materials.
   Do not operate your heater in drafty areas or locations where opening doors may create gusts of air. Drafts or strong air current may make flame unstable and affect heater performance.

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. Push the automatic extinguisher rest lever down which lowers the extinguisher ring to engage the automatic extinguisher.

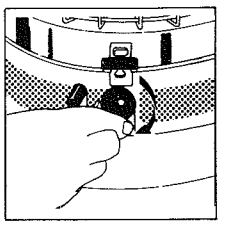


NOTE : Make certain the extinguisher ring is positioned slightly below the top edge of the wick adjuster. Unless the extinguisher ring is down, you will not be able to ignite the wick.

LIGHTING

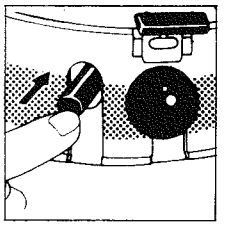
NOTE : If you have fueled your heater for the first time, or if you are refueling it after it has been out of fuel for a long time, you will need to wait about thirty (30) minutes for the wick to become fully saturated.

1. Gently turn the wick adjuster knob clockwise until it stops.
   This raises the wick to its maximum height.
   DO NOT FORCE the wick adjuster knob beyond this point, because, it forces the wick to spread causing the flame to fan out, while result is sooting, as well as mal-functioning of the automatic extinguisher.



2. AUTOMATIC LIGHTING

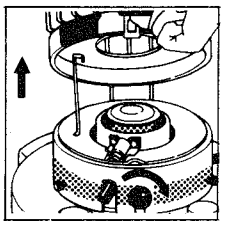
   While looking through the mica window, push the red igniter button. You should see the igniter touch the side of the wick. When a flame appears, release the igniter button.



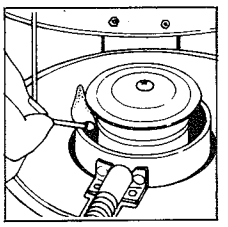
NOTE : If you have difficulty igniting wick, let up on the igniter button very slightly to remove the igniter coil from direct contact with the wick.

3. LIGHTING WITH A MATCH

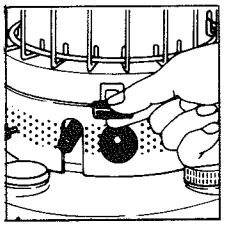
   You should not have to light the heater with a match, but should it become necessary, lift the latch, tilt back the cover and touch a match to the wick. Do not allow burned parts of the match to fall or remain on the wick.



NOTE : To restore the automatic igniter system to proper operation, replace worn out batteries, or if the igniter coil defective, replace it.



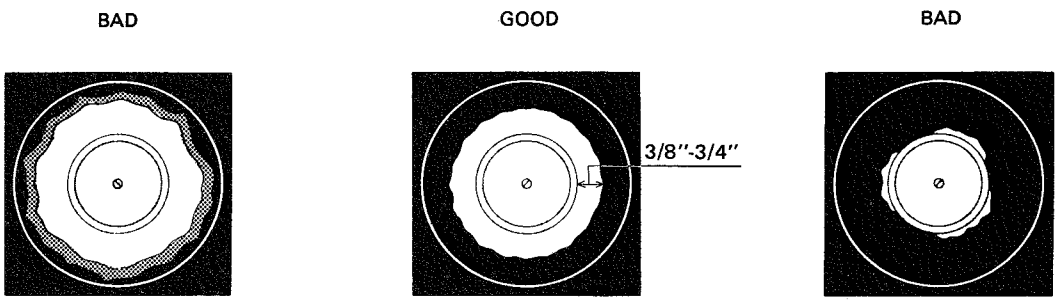
4. After lighting bring the cover back in its original position. Check to see if the latching is secure.
   If the latch is not engaged properly not only it may cause sooting, but, it would be dangerous to lift the heater by its carrying handle because the heater may come apart.



ADJUSTING THE FLAME

1. After lighting wait for the burner to reach operating temperature. Several minutes after lighting, heat will spread through the burner.

2. CHECK THE FLAME LENGTH
   Look at the flame and check its length. While the flame length may vary around the circumference of the disk of the flame spreader, the average should be between 3/8 inch to 3/4 inch.



TOO HIGH
Produces smoke and soot

CORRECT
Most efficient combustion

TOO LOW
Produces odor

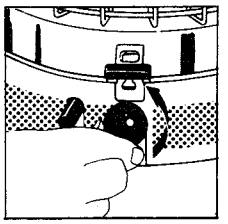
If necessary, raise or lower the wick by turning the wick adjuster knob to produce the proper flame condition.

NOTE : Do not operate your heater with wick set TOO LOW or TOO HIGH. Doing so will decrease combustion efficiency and increase production of unwanted emissions.

NOTE : If the room temperature rises to exceed 80°F, and the flame begins to grow and soot to appear, try opening the door or window to provide ventilation. Lower the wick and adjust output.

EXTINGUISHING THE FLAME

1. Turn the wick adjuster knob counterclockwise until it stops (about three-quarters turn).



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. Using the automatic extinguisher to turn off the heater will cause odor, smoke and soot.

2. Make sure the flame is out completely.

3. Do not try to relight the heater for at least three (3) minutes after extinguishing it off as this may cause smoke and odor.

CARE AND MAINTENANCE

As with any good appliance, preventive as well as corrective maintenance is occasionally required. Please read carefully the following section in order that you may enjoy the greatest benefits from your heater.

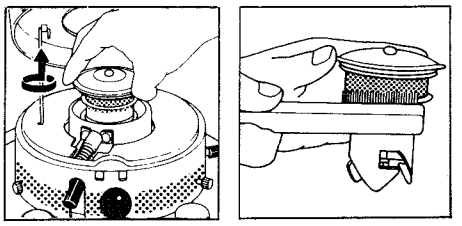
CLEANING THE BURNER

If the flame splits, or becomes elongated, please clean flame spreader, extinguisher ring and burner cover in the following procedure.

1. Remove the heater cover as described in Items 2, 1) through 2, 3) of the next section, "INSPECTION OF THE WICK"

2. CLEANING THE FLAME SPREADER

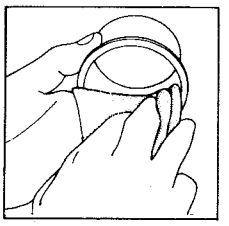
   Grasp the flame spreader, turn it clockwise and lift it out.
   Remove any accumulation of soot or debris on the flame spreader with a brush or scraper. Any lint collected on the inside of the flame spreader may be vacuumed away.



3. CLEANING THE EXTINGUISHER RING

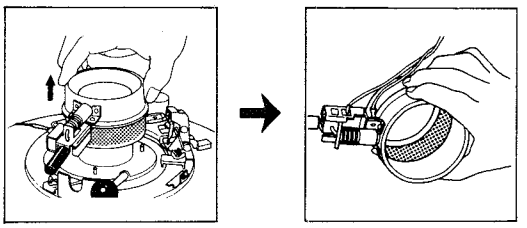
   Lift out the extinguisher ring, then cleaning the inside of the extinguisher ring by wiping with a soft cloth or paper towel.

   NOTE : Be especially careful to avoid bending or pressing it out of its original shape.



4. CLEANING THE BURNER COVER

   Lift the burner cover, then remove any accumulation of soot or debris by shaking the burner cover gently over a piece of newspaper. Any lint collected in the air holes of the burner cover may be vacuumed away.



5. Reassemble the heater following directions in Items 8) through 12) of the next section.

INSPECTION OF THE WICK

NOTE : One of the simplest but also the most important components of your heater is the wick. With proper attention, the wick can last at least one heating season and depending on the quality of the fuel used, it could be extended beyond that. It helps to perform routine maintenance operations on the wick.

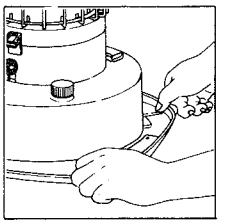
NOTE : NEVER ALLOW YOUR HEATER TO RUN OUT OF FUEL OR BURN DRY.
Burning the wick without kerosene will char the cotton fibers and permanently damage the wick. A damaged wick will cause your heater to burn improperly and produce smoke and odor.

1. Indications that the wick may need attention are:
   - Deposits of tars on the top edge of the wick.
   - Difficulty in turning the wick adjuster knob.
   - A flickering, dying or small flame.
   - The arch appears charred and crimbles to the touch.

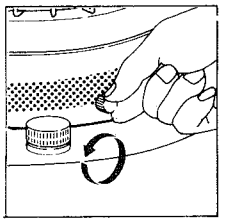
2. Clean or trim the wick in according to the following procedure.

   WARNING : Before disassembling your heater, allow it to be cool completely.

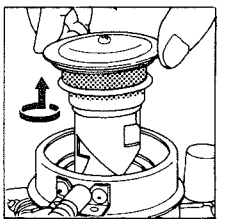
   1) Release the automatic extinguisher by jarring the heater.
   To do so, grasp the drip tray and quickly pull the heater toward you.



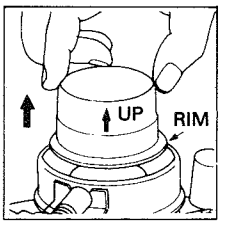
   2) Remove the three (3) thumbscrews holding the heater cover.
   Lift off the cover with the carrying handle.
   Remove the battery holder from the fuel tank and then remove the batteries from battery holder.



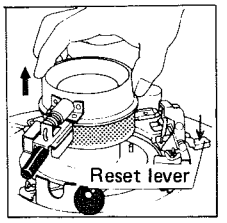
   3) Grasp the flame spreader, turn it clockwise and lift it out.



   4) Lift out the extinguisher ring.

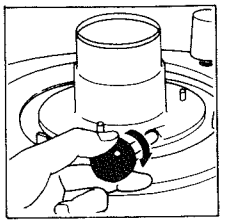


5) Press and lock the automatic extinguisher reset lever, then lift off the burner cover.



6) CLEANING THE WICK

Remove any residue on the top and side of the wick.
This can also be done by raising and lowering the wick a few times by turning the wick adjuster knob.

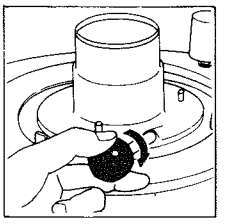


7) TRIMMING AND PULL UP THE WICK

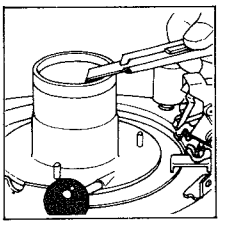
a. If the wick is frayed, trim away frayed parts with a scissors, cutting at a 45 degree angle to the top of the wick.

b. If the top of the wick is damaged because of burning it dry by mistake, you can trim off the burned portion of the wick trim evenly all around the wick in the following directions.

1. Raise the wick so that just the burnt, uneven portion of the wick shows over the top edge of the wick adjuster.



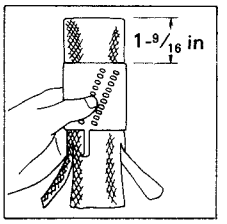
2. Take a sharp cutting tool such as a safety rasor and cut along the edge of the wick adjuster to even out the tip of the wick.



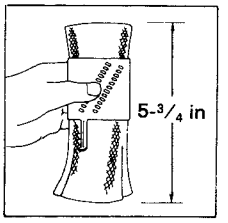
c. If you have burned the wick dry a number of times, or you have used the wick for a long time, and the tip of the wick has worn off and shortened pull up the wick higher as follows:

1. Disassemble the wick adjuster and wick as described in Items 2 and 3 of the next section "REPLACING OF THE WICK".

2. Fold in the wick to free it from the small "teeth" with in the wick holder. Pull up the wick until the length from the tip of the wick to the top of the wick holder measures approximately $1\text{-}^{9}/_{16}$ inches (40 mm).
The height of the wick should be even all around. Press fit the wick firmly against the teeth inside the holder.

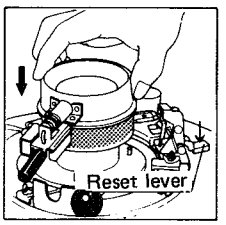


NOTE : The overall length from the tip of the wick to the bottom of the tails should be at least 5-3/4 inches (147 mm). If the wick gets any shorter it loses its capacity for adequate absorption. It's time to replace the wick for a new one.

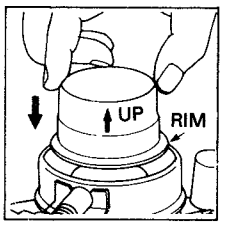


3. Reassemble the wick and the wick adjuster as described in Items 5 through 8 of the next section, "REPLACING THE WICK".

8) Check to see that the automatic extinguisher reset lever is down and locked. Turn the wick adjuster knob fully counterclockwise. (The wick will be in its lowest position.)
Replace the burner cover. See that the igniter button settles in the notch to the left of the wick adjuster knob.
WARNING : NEVER forget to engage the extinguisher reset lever down before replacing the burner cover.

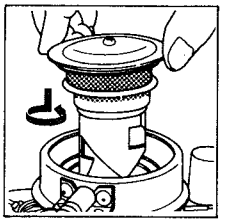


9) Replace the extinguisher ring with the wide rim down.
NOTE : DO NOT operate your heater without the extinguisher ring.
WARNING : NEVER replace the extinguisher ring up side down.

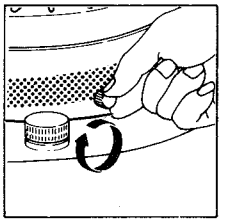


10) Replace the flame spreader by turning it counterclockwise until it locks into position.

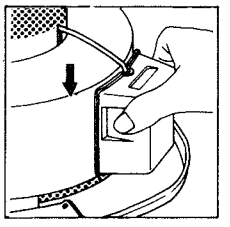
NOTE : Before replacing the flame spreader, be sure the wick is set in lowest position, i.e., recessed lower than the top edge of the primary air tube.



11) Replace the heater cover on the fuel tank and secure it into position with three (3) thumbscrews.
Check to be sure the wire is not pinched by the heater cover.



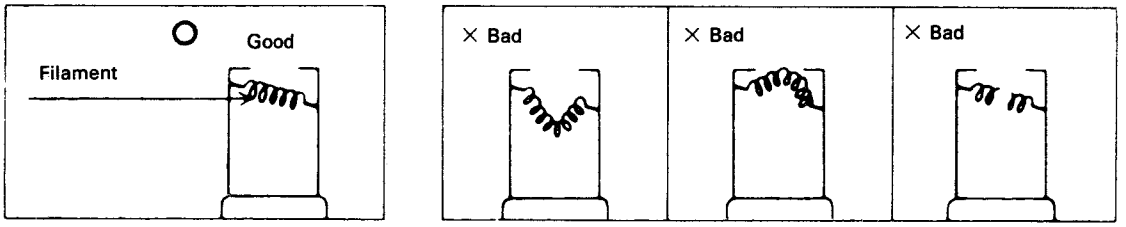
12) Replace the batteries in the battery holder.
Replace the battery holder to the fuel tank.



NOTE : If the flame still remains small after cleaning the wick, the wick may contain some water. It is then necessary to remove the wick to replace or dry while emptying all kerosene from the fuel tank.
Dry the tank throughly.

INSPECTION OF THE 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 16.

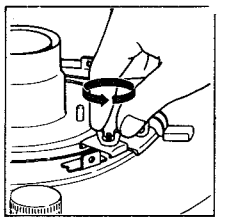
REPLACEMENT OF PARTS

REPLACING THE WICK

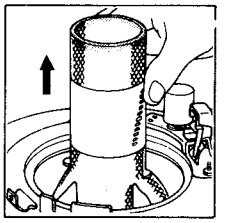
USE ONLY GENUINE TOYOSTOVE™ "TSC-15" REPLACEMENT WICK.
SUBSTITUTE WICKS CAN SEVERELY REDUCE PERFORMANCE.
WARNING : Before disassembling your heater, allow it to cool completely.

1. Disassemble the heater follow directions in Items 2, 1) through 2, 5) of the preceding section, "INSPECTION OF THE WICK".

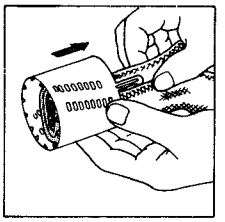
2. The wick adjuster is held in place by three (3) wing nuts and three (3) retainers. Loosen the wing nuts and turn the retainers until you can lift the wick adjuster out of the fuel tank.
   NOTE : The retainer on the right side of the heater will not swing around, REMOVE both the wing nut and the retainer.
   Then lift the wick adjuster out, while turning the wick adjuster knob counterclockwise. If the rubber packing remains on the tank, remove the packing from the tank.



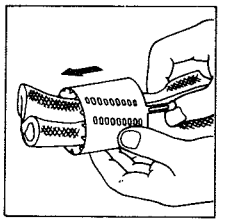
3. Pull the wick holder up and out of the fuel tank.



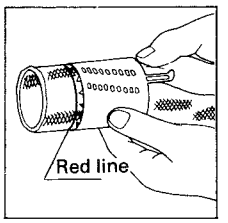
4. Fold the wick in towards the center to free it from the wick holder and then remove the old wick.



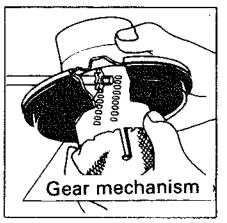
5. Fold the new wick and insert it, tails first, into the wick holder.
   NOTE : Use care not to damage the orange vapor barrier on the inside of the wick.



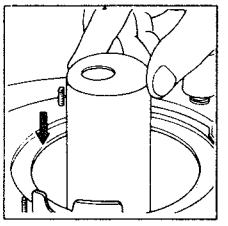
6. Position the wick so the red line around it is barely visible along the top of the holder.
   Unfold the wick and press it firmly against the teeth inside the holder.



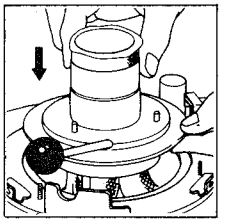
7. Insert the wick holder into the wick adjuster and twist the holder back and forth until you feel it engage the gear mechanism inside the wick adjuster. Check the gear action by turning the wick adjuster knob clockwise and counterclockwise. The wick should move up and down smoothly, with no slippage.
   NOTE : If the rubber packing is separated from the wick adjuster reassemble the packing to the wick adjuster.



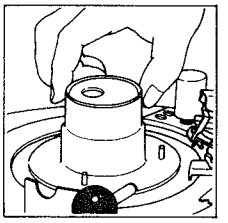
8. To prevent the wick from snagging during reassembly temporarily place the wick guide into the top opening of the primary air tube.



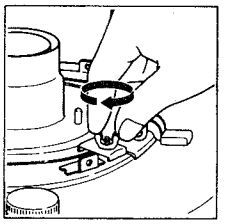
9. Lower the wick adjuster onto the primary air tube. Locate the wick adjuster knob between the fuel gauge and the fuel tank cap. Check to see that all tails of the wick enter the tank evenly, without folding back.



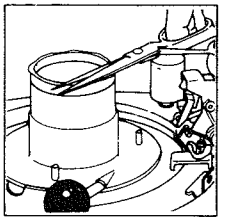
10. Position the wick adjuster shaft in the L-shaped guide at the front of the tank.
    NOTE : If you cannot seat the wick adjuster, check to be sure the automatic extinguisher reset lever is down and locked.



11. The space between the wick adjuster and the primary air tube should be even all around. Re-position the three (3) retainers and tighten the three (3) wing nuts that hold the wick adjuster. Remove the wick guide through the top of the primary air tube.
    NOTE : If the wick guide is not removed, it will restrict air flow and cause improper combustion and smoke.



12. If any ragged edges appear on the top of the wick, trim them with scissors carefully. DO NOT cut the body of the wick.
    Operate the wick adjuster knob to be sure the wick moves smoothly up and down.
    NOTE: If wick does not move smoothly and easily, disassemble and repeat Items 9 through 11.



13. Reassemble the heater follow directions in Items 2, 8) through 2, 12) of the preceding section, "INSPECTION OF THE WICK".

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

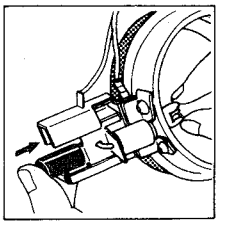
NOTE : Before lighting a new wick for the first time, turn the wick to its lowest position, and allow the wick to saturate with kerosene for about thirty (30) minutes.

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.
   Disassemble the heater as described in Items 2, 1) through 2, 5) of the preceding section "INSPECTION OF THE WICK". This releases the burner cover which holds the igniter.
   Note that the igniter coil fits into the bayonet socket the same way a flashlight bulb fits into its holder.
   Push the igniter button and grasp the igniter coil with your other hands. To remove the igniter coil, push it in and twist slightly counterclockwise. Install the new igniter coil by pressing it into the socket and turning it clockwise.
   Reassemble the heater follow directions in Items 2, 8) through 2, 12) of the preceding section, "INSPECTION OF THE WICK".



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 Item 2 under "INSPECTION OF THE WICK".

2. DRAIN THE FUEL TANK
   Remove the fuel tank cap and siphon the fuel from the fuel tank. A small amount of kerosene will remain in the fuel tank. It should be removed in order to avoid contamination when the heater is refueled at the later date. To do this, remove the fuel cap, tip the heater toward you and insert a small syringe into the bottom-most portion of the fuel tank. Empty the tank completely before storing.

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.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION	PAGE
Wick will not ignite.	Igniter coil will not glow.	Replace batteries.	6
	Automatic extinguisher not set.	Reset extinguisher.	7
	Extinguisher ring placed upside down in heater.	Reinstall extinguisher ring.	13
	Water in kerosene.	Drain tank. Refill with fresh, water-clear kerosne. Replace new wick.	16 7 14
Smoke and soot.	Wick damaged by burning dry.	Clean and trim the wick. Replace new wick, if necessary.	12 14
	Frayed wick with uneven top.	Trim the wick.	12
	Holes in flame spreader and burner cover clogged.	Clean the burner.	10
	Room temperature too high. (above 80 F°).	Lower the wick adjustment and ventilate the room by opening a door or window for a few minutes.	9 3
	Wick too high.	Reduce wick height by turning wick adjuster knob counterclockwise.	9
	Improper fuel — such as gasoline.	Drain tank refill with fresh, water-clear kerosene.	16 7
	Drafts.	Relocate heater.	7
Odor.	Fuel spill around tank, tray and wick adjuster.	Wipe away spilled kerosene from tank or other parts.	7
	Flame too low.	Raise wick by turning wick adjuster knob clockwise.	9
	Contaminated fuel.	Drain tank and rinse it with clean kerosene. Install new wick, refill with fresh, water-clear kerosene.	16 7
Flickerring, dying or low flame.	Out of fuel. (burning the wick)	Add fuel before burning dry. Trim the wick, if wick is damaged.	7 12
	Dirty wick.	Clean wick as described under "CARE AND MAINTENANCE". If necessary, replace new wick.	10 14
	Water in kerosene.	Drain tank. Remove, dry and reinstall wick. Refill with clean kerosene.	16 7
	Wick installed too low.	Remove wick. Reinstall according to directions under "PULL UP THE WICK" or "REPLACING THE WICK".	12 14

PROBLEM	CAUSE	SOLUTION	PAGE
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.	16 7
	Damaged mechanism.	Contact your dealer for service.	
Flame too high and can not 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. Replace new wick, refill with fresh clean kerosene.	9 16 14 7
	Wick installed too high.	Remove wick. Reinstall wick according to directions under "REPLACING THE WICK".	14

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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