

ATOM KEROSENE STOVE

Installation and Operating Instructions

Installation

The Atom Kerosene Stove kit comprises the brass stove, stainless steel gimbaled potholder, U-bracket mount, preheat wick, kerosene and alcohol bottles and assorted spares. The stove gimbal assembly bolts to the galley countertop or stove locker using a stainless steel U-bracket. An optional L-bracket and bulkhead mount plate or two slotted flat bulkhead mount plates are available for custom installation. Overall dimensions are 12 3/8-inch to top of U-bracket, 12 3/4-inch side to side at end of gimbal pins and 11 3/8-inch front to back, plus 7-inch swing room for gimbal. Your new stove's burner is discolored because stove is tested prior to shipping.

1. **Stove location** may already be fixed by the layout of your existing galley. If possible, it's desirable to install the stove near the companionway with burner about 18 inches below a fiberglass, wood or Formica headliner. This is the best area for ventilation and quick access to the cockpit. Having heat from the stove run up the cabin headliner and directly out the open hatch will please the cook on hot days. Also, it will be less messy if soot from an occasional flare-up can rise out the hatch. If the stove is not near the companionway, consider installing a hatch or vent above the stove in the coach roof. In any case, vinyl or other fabric headliners above the stove should be avoided as they are difficult to clean and a fire hazard. A sheet of stainless can be attached to the overhead with stand-off clearance, if needed. A stainless steel serving tray drip pan can be installed on the countertop under stove, but Formica is flame resistant enough for brief spills of burning fuel. Orient stove to gimbal side to side, not fore and aft. Pump slightly left of front center is standard position and should work for most installations. Tank is filled from above or rear with the supplied Kerosene fill bottle or a fuel funnel with a short hose leading to the tank filler.
2. **If using U-bracket:** Install the U-shaped bracket with 5/16-inch stainless steel bolts thru-bolted to the countertop. If there is some framing or obstruction under the countertop, use heavy lag screws instead of thru-bolts. There will be some spring in the U-bracket sufficient for you to pull the bracket arms outboard until the gimbal pins snap into the 1/4-inch holes in the ends of the bracket. Cotter ring clips in the ends of the gimbal pins ensure a secure fit. Certain installations may require the U-bracket mount on the port or starboard cabin trunk side or a fore and aft cabinet face. This will work, but requires a different gimbal lock mechanism.
3. **If using L-bracket:** If one end of the stove is against a cabinet or other vertical surface you can use one upright L-bracket bolted to the countertop and one flat plate with a hole in the center for the gimbal pin to insert in, screwed to the vertical cabinet side or aft end of the coach roof. If there is no metal heat shield on the vertical cabinet side then to prevent scorching, a stand-off block of at least 1-inch hardwood should be placed under the flat mounting plate.
4. **If using two slotted flat bulkhead mount plates:** If the stove is set down into a narrow locker and you prefer not to use the U-bracket, then two drop-in slotted brackets screwed to the vertical cabinets can be used. In that case, you need to build out the width of the cabinet with hardwood blocks, to the correct width for the gimbal pins to insert into two slotted flat bulkhead mount plates. A pin or bolt to lock the gimbal should be fit to at least one of the blocks. Don't mount the support brackets so close together that they bind the gimbal action.

Operating Instructions

1. Open tank cap and fill with kerosene to just below top, using fill bottle. Tank capacity is 950ml (32 oz). You can also use Mineral Spirits from a hardware or paint store or Jet-A fuel from an airport. Never use gasoline or other camp stove fuels.
2. Tighten cap and loosen vent next to cap.
3. Clean burner nozzle tip occasionally with provided wire pick as needed.
4. Unlock gimbal for use at sea by removing the locking bolts in U-bracket.
5. Place cooking pot on stove with water or cooking ingredients in pot so as not to burn an empty pot. At sea, adjust pan clamps to fit small pots by spiraling them inward.
6. Preheat stove by dipping preheat wick in bottle of denatured alcohol and clip wick under burner above preheat bowl. Close bottle top. Light wick with butane lighter. (Lacking a wick, preheat bowl can be filled with alcohol and lit. You can also preheat with high-proof rum. Lacking alcohol, preheat with kerosene, setting stove in cockpit due to smoke.)
7. Once preheat flame has nearly burnt itself out after about 90 seconds, close tank vent by turning vent knob fully clockwise and pump the stove two to three pumps. Immediately light burner with a butane lighter. Wick can be left clipped under burner.
8. Pump more for higher flame. Momentarily loosen vent knob for lower flame.
9. Swing lead counterweight outboard to compensate for the weight of a frying pan handle when using with unlocked gimbal. Lead weight locks in position with a wing nut.
10. To shut off stove, loosen tank vent. Do **not** retighten vent until next use.

Additional Notes and Troubleshooting:

To operate a pressure kerosene stove successfully you must follow a simple methodical operating procedure and learn some basic troubleshooting.

1. When **pumping stove**, support tank from behind with one hand. At sea when the gimbal is unlocked you may secure smaller pots with the three **pan clamps** if a heavy sea is running. When cooking ashore or anytime the stove is unsecured, use extreme caution to avoid spilling a hot cooking pot on yourself.
2. For kerosene to burn without smoke or odor, it must be **vaporized by a hot burner** preheated with denatured alcohol. Once stove is operating, heat from the burner flame itself keeps the burner hot enough to vaporize the kerosene. To ensure proper preheating, place your pot on top of stove before lighting the preheat wick. This prevents drafts from cooling the burner, gets you started cooking with the preheat flame and prevents scorching the boat's overhead. If the stove emits black smoke the burner was not preheated enough or it was allowed to cool during operation. This can happen by leaving the flame extremely low for a long time or by a wind blowing across the burner. If this happens, release the pressure and allow burner to cool one minute. Begin again by preheating with alcohol. Whenever a sooty flare-up of the flame occurs, release pressure, let cool, clean nozzle with pick and start over by preheating with alcohol.
3. There are **three types of kerosene burners**. The Atom Stove burner is called a "roarer" because of its relatively loud hissing noise, which is useful because its volume tells you if flame is on high or low without requiring that you visually monitor it. The second type is the "silent" burner, which although having the questionable advantage of less noise, also has a lower tolerance for blowouts by wind. Even the roarer burner cannot take too much direct wind so you may need to set up a temporary windbreak next to the stove at times or partially close a hatch. The third type is a silent burner that has an adjustment knob on the side to regulate the flame instead of using the pump and vent knob for regulation. This burner has more parts to maintain and prone to valve leaks.
4. Although **preheating stove** can be done by squirting alcohol from a plastic bottle into burner's preheat bowl, the provided preheat wick is safer and easier. Fill the supplied plastic jar with alcohol and dip the wick into it until fully saturated. Always close jar lid before lighting wick. Keep a hatch open during preheat to reduce alcohol fumes eye-

stinging effect. If unable to find denatured alcohol, you can use high-proof rum as a substitute. In rum producing countries it may be the cheapest available alcohol. Another source of alcohol is shellac thinner from a paint or hardware store.

5. **If flame is low** despite pumping, check filler cap and vent are closed. There may be a leak at one of the three gaskets in the burner assembly. Try gently tightening burner to reseal gaskets and, if needed, disassemble and insert new gasket above and below preheat cup. Between tank and burner riser tube is a lead washer. If tightening does not stop a leak here, insert a standard fiber washer gasket on top lead washer and retighten.
6. A **plugged nozzle** (burner jet) requires you release pressure to extinguish flame, use cleaning pick to clean nozzle, then pump stove and relight. If done within 20 seconds the burner will remain hot enough that you can relight without preheating. If you wait longer and allow the burner to cool, you must begin again by preheating with alcohol. To avoid a sooty flare-up, if in doubt, shut down and preheat again. It is essential to use clean filtered fuel and clean the nozzle tip occasionally with cleaning pick. If burner still produces sooty, erratic flame, it may be carbon plugged so **replace with new burner** and gaskets. Rarely, the one-way pump valve in tank could fail, requiring a new tank.
7. Obviously, another cause of a non-existent flame is an **empty tank**. Allow stove to cool for two minutes, refill with kerosene and preheat again. Keeping tank at least $\frac{1}{4}$ full will prevent overheating which decreases the life of the leather pump cup, gaskets and burner. Removing the rubber cap from supplied filler bottle may require pushing rather than pulling from end. Use the supplied screened funnel either when filling bottle or place in tank filler hole. Check fuel level by flashlight, or by cutting a narrow slip of paper and dipping it into tank filler hole and noting fuel level mark on the paper. A full tank provides 4-5 hours cooking time. Mineral spirits can be used if kerosene is unavailable.
8. A **dried-out leather pump cup** can cause insufficient flame. If you feel little resistance on pump handle, remove pump assembly and apply petroleum jelly to leather pump cup. If this does not improve it, replace with a spare leather cup. Spares come with a wood dowel and bolt to keep the cup spread open. Grip pump shaft with locking pliers, remove nut and leather, unscrew brass cup assembly with pliers and screwdriver and reassemble with new leather cup. You can resurrect the dried-out cup by soaking overnight in a cup of vegetable oil with the wood dowel gently spreading open the end of the softened cup. Take care not to crack the leather. Spare leather cups can be covered in petroleum jelly and stored on the dowel in a ziplock bag ready to reuse.
9. **Always leave tank vent open** when not using stove, otherwise temperature changes will cause some kerosene to spill out burner nozzle tip onto preheat wick or bowl. In this event, light preheat wick outside to burn off kerosene. If storing stove out of its gimbaled bracket, empty kerosene from the tank to prevent it leaking out the nozzle tip.
10. **To change burners**, use a wrench to hold burner riser tube while turning burner counterclockwise using another wrench placed above preheat bowl. Replace fiber gaskets above and below preheat bowl. Carry at least one spare burner and gaskets.
11. The stove itself is small so **carrying a spare stove is recommended**. If something breaks, swap stoves and repair when convenient.
12. The stove can **generate temporary cabin heat** by placing an upturned clay flowerpot on stovetop. Allow sufficient ventilation for safety and to reduce condensation inside the boat.
13. **An oven** can be fashioned by placing a thick cast aluminum pot with lid on stovetop with a baking dish inside on a mini cake-cooling rack. To retain more heat, wrap aluminum foil over pot. Cornbread, tortillas, even pizza can be baked in a thick, covered frying pan. Some recipes allow for baking in a pressure cooker.
14. The **stove can be taken ashore** or used in cockpit if you provide a windbreak and a board to set it on.
15. **Polish** your brass stove tank with Brasso or rub with a mixture of 1 part salt to 20 parts white vinegar mixed with flour to make a paste. Olive oil wiped on brass after polishing will retard tarnish.