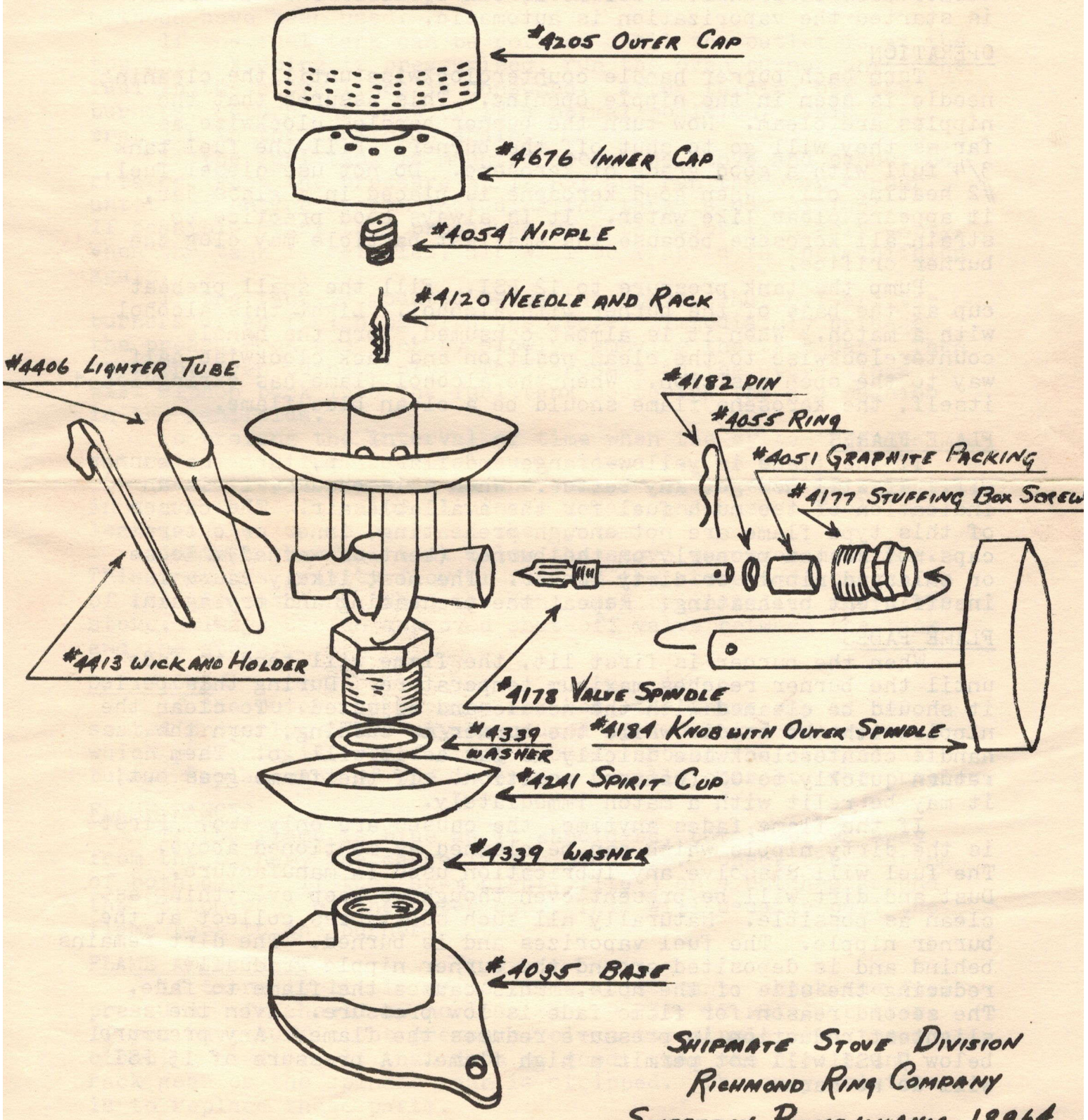
#4195 Kerosene Burner



Shipmate Stove Division
Richmond Ring Company
Souderton, Pennsylvania 18964
215/855-2609

The kerosene burners in your Shipmate Kerosene Stove convert liquid kerosene into a vapor which is then burned. This is accomplished by passing the liquid kerosene up through hollow tubes in the burner to a hollow ring at the top of the burner and then down another hollow tube to the valve. When the valve is opened, vaporized kerosene must be released. Therefore the burner must be preheated before it can be lit. Once a burner is started the vaporization is automatic.

OPERATION

Turn each burner handle counterclockwise until the cleaning needle is seen in the nipple opening. This assures that the nipples are clean. Now turn the burner handles clockwise as far as they will go to shut off the burner. Fill the fuel tank 3/4 full with a good grade of kerosene. Do not use diesel fuel, #2 heating oil. When good kerosene is placed in a glass jar, it appears clear like water. It is always good practice to strain all kerosene because the smallest particle may clog the burner orifice.

Pump the tank pressure to 12 PSI. Fill the small preheat cup at the base of the burner with alcohol. Light this alcohol with a match. When it is almost consumed, turn the handle counterclockwise to the clean position and back clockwise half way to the open position. When the alcohol flame has extinguished itself, the kerosene flame should be a clean blue flame.

FLAME FLARES

If the flame is yellow-orange and flares up, turn the burner off. It will not get any better. When this occurs, it is an indication of too much fuel for the available air. The causes of this type flame are not enough preheating, inner or outer caps not seated properly on the burner (bent or warped), loose or enlarged nipple or dirty burner. The most likely cause is insufficient preheating. Repeat the preheating and try again.

FLAME FADES

When the burner is first lit, the flame will tend to fade until the burner reaches maximum temperature. During this period it should be cleaned with the needle and adjusted. To clean the nipple with the needle while the burner is burning, turn the handle counterclockwise quickly as far as it will go. Then return quickly to ON (center) position. If the flame goes out, it may be relit with a match immediately.

If the flame fades anytime, the causes are only two. First is the dirty nipple which can be cleaned as mentioned above. The fuel will dissolve any lubrication used in manufacture. Dust and dirt will be present even though we keep everything as clean as possible. Naturally all such substances collect at the burner nipple. The fuel vaporizes and is burned. The dirt remains behind and is deposited around the burner nipple gradually reducing the size of the hole. This causes the flame to fade. The second reason for flame fade is low pressure. Even the slightest reduction in pressure reduces the flame. Any pressure below 9 PSI will not permit a high flame. A pressure of 15 PSI will do no harm.

FLAME PULSATES

The flame of these burners, when installed in groups all using the same fuel source, have a tendency to pulse. This pulsation is minimized by an air cushion provided in the manifolds. As you use your Shipmate Stove, this air cushion diminishes gradually and the burners may begin to pulsate. When it becomes necessary to replenish this air cushion several methods have been used:

If the fuel tank can be rotated until the outlet is at the top while keeping it pressurized, run the oven burner until the fuel in the stove lines is consumed. After turning off the burners, return the tank to it's normal position. This will trap air in the manifolds again.

If the fuel tank is mounted above the stove and cannot be rotated, keep the pressure at 12 PSI and run the oven burner until the entire system including the tank is out of fuel. If possible start this procedure when the tank is nearly empty. When the tank is refilled, air will be trapped in the manifolds again.

If the tank is mounted below the stove, shut off all the burners after finishing with the stove. Immediately release the pressure on the tank by slowly removing the tank cap. Then open the oven burner only. The kerosene in the stove lines will siphon back into the fuel tank restoring the air cushion in the manifolds.

To prolong the interval of time when the system becomes saturated with fuel, several suggestions may be used.

Never leave pressure on the tank or stove when it is not in use. This will also eliminate unsafe and unseen fuel leakage, should one occur in the system.

Install the fuel tank below the stove whenever possible. This prevents gravity flow of fuel to the stove and absorption of the air cushion. When the tank must be installed above the stove, always use an approved shut-off valve between the tank and the stove.

CAP GLOWS

If the outer cap becomes red hot, the inner cap is not seated properly. This may be caused by a damaged inner cap which prevents it from fitting loosely around the central air tube. Replacement of the inner cap usually corrects the problem.

FLAME DANCES

If the flame is blue as it should be, but it blows away from the burner, the cause is too much air. Check the seating of both caps. If they seem right, file 3 or 4 notches around the bottom edge of the outer cap. This will usually pull the flame back to the burner.

FLAME ADJUSTMENT

If there is little or no flame adjustment, check the fuel pressure. It should be no less than 9 PSI, 12 PSI is better. If you have sufficient pressure, clean the nipple with the cleaning needle. If that does no good, then the needle and rack gear or the spindle gear is stripped. The only solution is to replace these parts.

REPAIR

To replace the needle and rack and spindle, remove the outer and inner caps and remove the nipple with the long "T" wrench provided. Turn the knob counterclockwise until the needle and rack are free. Remove the needle and rack by pressing a match or pencil eraser onto the needle and lifting it out.

Unscrew the stuffing box screw (packing nut) and turn the knob counterclockwise until the spindle can be pulled from the burner. This may be tight because of the expanded packing. It is good practice to replace the packing every time the spindle is removed. Install a new spindle if necessary and put the brass ring (4055) over the spindle with the beveled edge toward the spindle gear. Screw in the spindle and replace the packing and stuffing box screw and tighten. Replace the outer spindle and knob on the valve spindle. Turn the knob clockwise to tighten snugly.

With the needle pushed into a pencil eraser lower it in place with the gear teeth facing the spindle gear teeth. Hold in position with slight pressure and turn the knob counter-clockwise until you have felt 4 or 5 clicks of the spindle gear passing the bottom of the needle and rack. Turn the knob clockwise until tight, then remove the pencil. Screw in the nipple until tight. It will be helpful to place a small piece of paper between the head of the nipple and the socket of the "T" wrench to hold the nipple while lowering it into the burner. Turn the knob to the clean position and you should see the needle tip protruding through the hole in the nipple. Turn the burner off. Replace the caps and tighten the stuffing box screw and the burner is ready for use. The total movement of the knob should be 1/3 to 1/2 turn.

LEAKS

Fuel leaks in the burner may occur at several places.
At the nipple: The valve is not closing properly. The cause could be a bad valve spindle, a bad needle and rack, or a damaged valve seat inside the burner itself. The only correction is proper replacement of the bad parts.
At the packing: Tighten the stuffing box screw or replace the packing as described above.
At the base of the burner: The washer may be cracked or the threads on the base of the burner may be stripped. When a leak occurs here, remove the burner from the base by turning the burner counterclockwise with the wrench provided. Check the threads to see if they are stripped. If all appears well, clean off any material from the spirit (preheat) cup, top and bottom, the burner base and the sealing area at the top of the burner threads. When a repair is being made to a burner it is good practice to use two washers. One should be at the top of the spirit cup and one below it. Permatex #2 or one wrapping of teflon tape may be used as a sealant. When tightening the burner to the base, you should use only the hexagonal area at the bottom of the burner. A wrench is provided for this or you can use a 3/4" open end wrench.

SHIPMATE STOVE DIVISION
Richmond Ring Company
Souderton, Pennsylvania 18964
215/855-2609