# THE SAFE OPERATION OF KEROSENE LAMPS

**This information is intended only as general advice for the safe operation of Kerosene/Paraffin Oil (UK) fuelled Lamps, Lanterns and Heaters (the appliances) which are not pressurised but use the principle of burning kerosene vapour evaporating from a cotton wick (I.E. the most common design of these appliances).**

**It is not intended as an operating guide for any particular appliance because some of them require quite specific fittings and operating procedures and it does not replace the responsibility of any person buying or using any appliances to ensure those fittings are in place and to understand the correct operating procedures. Nor does it void an operator only's personal responsibility to check and use the correct fuel, burners, wicks and chimneys for those appliances.**

**HISTORY:- Kerosene lighting and heating was in common use by many of our elderly parents and grandparents and it had that important role in most Westernised countries for around 100 years. The larger and more expensive Lamps were of sophisticated design, had good light output, burned very cleanly and were often very decorative.**

**Today they are often collected for historical or sentimental reasons and some are still used for back-up/emergency lighting. Others are collected simply because they are beautiful and decorative.**

**Chimneyless burners were often fitted to various Lanterns designed for use outside of the home, but the most common type of kerosene lamp had a glass chimney and its individual components such as the burner, the wick (and with centre draft lamps, a flame spreader) all needed to be of the correct design in order for the lamp to function properly and safely.**

**THEIR SAFETY RECORD:- I once viewed a 50 year collection of local area Police/Coroners records beginning in the late 1800's with a particular interest in accidents from Oil and Kerosene appliances. The records showed that of the total incidents, those appliances had one of the lowest cause rates.**

**The following risks were listed as the main cause of building fires and serious burns from Kerosene/Oil Lamps and in descending order of frequency: - Drunks overfilling or dropping the lamp, Using an unsuitable/unprotected house lamp rather than a lantern for work in the dairy or barn, Animals (dogs, cows, horses) knocking over a lamp, Children over balancing or dropping a lamp, Sudden strong winds coming through open windows causing a lamp flare which then set fire to nearby curtains or bedding, Hot fuelling (refilling while lamp is still alight and then overfilling or having the vapours catch fire) Having incorrect fittings (Wicks and incorrect fuel).**

**These same records showed that fires caused by simple open flame candles or from wood/charcoal open fireplaces had caused many more serious fires than Kerosene Lamps.**



***Collated and provided by Rob Gregor, August 2021***

## SAFETY REQUIREMENTS:-

- **Whether using candles, vegetable oil lamps or kerosene appliances; always have a working ABE Dry Powder type fire extinguisher readily available.**

- **Do not place lit lamps near open windows, Curtains or in drafts, or on uneven or easily moved surfaces.**

- **Only small 'Finger Lamps' and various Lanterns are designed to be carried (some of those have in-built baffles to further reduce risk of fuel 'surge') whereas any large lamp should not be moved while alight because surging fuel in the tank/font may be forced up into the wick guides, which can cause an uncontrollable flare.**

- *****Unless it has a self contained oxygen supply, the flame from any device requires some oxygen in order to burn, as you do to live, therefore never use them in a completely closed and unvented room. Always ensure there is some in-flow of outside air available, either via vents that allow fresh air into the room, or by opening a window or two by at least 15 to 20 mm.**

- **It is not wise to leave a lighted appliance alone with children, pets or any adult that is irresponsible or ignorant of safe kerosene appliance operations. Nor should the lighted appliance be left unattended for any length of time.**

- **Always ensure your appliance does not have any fuel leaks before lighting it and that its burner is complete and in good working condition with the correct chimney properly fitted into the fingers/crown.**

- *****Always ensure that it has a correctly fitting wick, which after it has fully soaked up kerosene, always fills the wick guides but without being at all tight to wind. Unless it is a large and thick wick; typically when dry and first installed, it should not have more than one millimetre of space between either of its sides and the inside of the wick guides**

- **N.B. 1- Any such space on either side of the wick, after it has soaked up kerosene and the lamp is in operation, will present an ignition path for hot vapours and that is a very high risk scenario for a dangerous "flash over" occurring into the fuel tank, should you choose to blow out your lamp. BE AWARE, that in the past, this situation has caused very serious burns and property damage.**

- **FUEL:-any use of alternative fuels in these appliances introduces greater risk and requires expert knowledge to do safely. Unless you have that knowledge, ONLY USE GOOD QUALITY HOUSEHOLD KEROSENE and ensure that, if it is labelled as Lamp Oil, then its container also carries a UN Number of 1223. Fuel that has any other UN number may have a much lower flash point which can make it quite dangerous to use, or even a higher flash point, which generally means it will just not burn well and may be odorous and smoke.**

- **N.B. 2 - Citronella oil for repelling insects should not be used in a good quality/valuable lamp because over time it will cause a gum build up in the wick guides and the wick itself and that may cause a jam or breakage.**

- **WHEN FILLING THE APPLIANCE:- ALWAYS leave approximately 15 mm of clearance from the fuel level to the base of the filler hole in the tank/font. That space is important to allow for safe expansion of the fuel as the burner heats up during normal operation.**

- **If the font/fuel tank is overfilled, the expansion from normal heating can force fuel up into the burner and that quickly becomes a high risk for generating an uncontrollable flare or possibly an explosion. With brass or ceramic fonts/tanks, it is best to use a simple dipstick to regularly check the level of the kerosene within the tank during refilling.**

- **Always ensure that there is at least 800 mm of space between the chimney top when lit and anything remotely flammable above it. Avoid placing an operating lamp close alongside of any flammable material.**

**LIGHTING THE LAMP:- Always light your lamp with a low flame and then turn it up slowly over a period of about 5 to 8 minutes until you have about 25 to 30 mm of flame above the wick (s). This reduces the risk of heat stress cracking to the chimney.**

**If red streaks appear from the flame, then the wick should be turned back. If the flame top is uneven or has narrow peaks, then you need to re-trim the wick until it is clean and level.**

**Note:- For good wick life and continued low odour operation, you should not use more than half of the fuel level in the tank/font. If you let the lamp burn the tank dry, it will smell badly, soot your ceiling and can waste up to 10 mm of the wick because it chars badly as it slowly burns out.**

**EXTINGUISHING THE LAMP:-If your lamp has an inbuilt extinguisher lever, then turn its flame down to about 10 mm (or less) and use that as your first choice.**

**Placing your hand above and to the side of the chimney top (and out of the hot gas path) then blowing sharply into it, is a long practiced and common method of "blowing out" a Lamp, but if you choose to do this, the lamp should first be turned down to about 10 mm of flame (or less) before you blow.**

**My own preferred method on any large lamp that does not have an extinguisher lever, is to turn it well down and in stages to allow the chimney to cool without stress and to then carefully place a slim cork or hardwood block over the chimney until the flame is out (do not use other materials for this).**

**CAUTION:- Both "blowing out" and "choking" a lamp with a block, needs to be done with a good deal of care because unless the chimney is properly seated and is a lightly firm fit within the finger grips, it is (A) very easily dislodged and a flaring flame may then occur (B) It is very hot to any accidental touch (C)The exhaust gas path from the chimney is often hot enough burn flesh.**

**After extinguishing, it is good practice to turn the top of the wick to about 5 mm lower than the top of the wick guides because if left stored during warm weather, this avoids the kerosene slowly evaporating and leaving a sticky residue in the top of the wick and the guides.**

**WHEN OPERATING THE APPLIANCE:-**

- **Have a full understanding of how to safely set up and operate it.**
- **Ensure all of the correct fittings are properly in place.**
- **Have a small funnel which properly fits the filler without risk of falling out.**
- **Have a dipstick to check fuel levels in brass or ceramic tanks/fonts (a thin wooden rod is OK but a thin non chromed Phillips head screwdriver is preferable).**
- **Obtain a set of medium and small, sharp and pointed hair trimming scissors for wick trimming (never use blunt paper scissors.**
- **Always take good care during filling and when operating the appliance.**

**TRIMMING & FITTING WICKS:- "Trimming" is the process of obtaining a good burning surface on the wick top after it has initially been levelled. Then it only needs regular removal of the small layer of char or occasional loose bits from the wick top after each second or third burn.**

**This is best done by carefully wiping/brushing the char from the top edge of the wick with a small square of coarse lint free cloth (Linen or coarse cotton from old jeans/jackets is ideal). It is best to wipe the wicks from each end towards the centre otherwise you may spread the ends of the wick.**

**It is only the easily loosened and dark bits of char that need to be removed and the remaining dark brown line will help to protect the wick material from unnecessary singeing. To obtain an odour free burn, the top of each wick needs to be level after each trimming. Cutting wicks with scissors is normally only required when you first install new wick(s) into the burner.**

**OTHER:- Do not force tight wick winders because you may damage either the mechanism or the wick. A tight winder indicates that something has jammed and it usually requires removal and examination of the wicks for gum or binding threads.**

**When unscrewing a burner, do not lever against the wick winder which may bend or break. Instead grip it tightly around the very base of the burner neck, just above the font/tank and then undo it.**

**<u>When lifting an unlit lamp around</u>, it is best to always remove and store the glass shade which typically sits loose in a recess on the shade carrier/gallery and don't lift a lamp from directly under the font/tank if it has a base, or by its burner if it is a drop in font.**

***I wish you the best in enjoying the safe use of your Lamp/lantern/heater.***

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