

Coal Gasifier Stove

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Using The Stove.

1. The stove was designed to burn bituminous coal with a volatile content of about 25%. Lower volatile content will be more difficult to ignite and burn slower.
2. The coal surface must always be level with the bottom of the smoke burner E, with the grate height set for the volume of coal to be used. Each 90 mm depth holds about 1Kg coal and gives about 2 hours of useful heat.

Fuelling the combustion unit.

3. The top layer of coal must be 6 to 12 mm size and about 10 mm deep.
4. The second layer must be 12 to 20 mm size and a minimum of 20mm deep.
5. Charges of up to 1 KG will only use 2 coal sizes as above.
6. For charges above 1 kg, larger coal is used below the top 2 layers, up to a maximum size of 40mm. See Fig 1. Adjust according to you coal's burning characteristics. Smaller coal will reduce the air flow and cause a slower burn.
7. After fitting the combustion unit to the stove, "little finger" sized fire wood is placed above the coal, filling the burner in pyramid fashion. Make sure that there are air gaps between the wood.
8. About 12 ml of kerosene (illuminating paraffin) or similar fire lighting fluid is poured over the wood. **NB. Do not use alcohol, gasoline, (petrol) or paint thinners.**

Lighting.

9. Fully open the air register D, Apply a lit match to the wood. And allow the flame to spread through the wood.
10. Place a pot with water on the stove.
11. The flame will roar in the beginning. As the flame lessens slowly close the air, keeping the flame tip just touching the bottom of the pot. This will draw air through the coal aiding it's ignition. The coal should start burning before the wood is burned out. Add more wood if necessary. The flame might be small at this stage, keep the air closed until it grows and fills the burner, after which the air can be opened until the flame has a blue/Yellow colour. There should be no smoke after this stage, and very little before.
12. Adjust the air to control the heat. Opening will reduce the heat and closing will increase the rate of burn and heat.
13. The flame-front will slowly move down the coal bed until it reaches the grate. When the yellow flame is exhausted, close the air. Then adjust as before to control the heat. During the latter stages of the burn the air must be closed completely to keep the surface red hot, in order to burn the carbon monoxide leaving the bed. This burns with a blue flame.

14. Always keep a large pot of water on the stove, when not cooking. It will humidify the air, reduce heat losses, up the chimney and supply hot water.
15. Never add coal to the stove to prolong the burn. This will cause a lot of smoke.
- 16. NB. The chimney must always exhaust the flue gasses to the outside of the house.**

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