

Charcoal Burning Attachment for the Champion TLUD Stove

Background :

TLUD (Top Lit Up Draft Gasifier Stove) stove produces some charcoal also as a by-product while generating pyrolysis gases for cooking energy. This high-grade charcoal measures around 20 % of the input fuel weight. This charcoal forms at the bottom of the fuel chamber and it is not advisable to burn it there, since little of this heat will reach the cooking pot which is far away from the charcoal fire (generally charcoal fired stove will have the cooking vessel close to the burning charcoal) and the high heat of charcoal fire can reduce the life of metal parts .

Although this charcoal can be dry-cooled in an air-tight container and used for several purposes like biochar, water purification, etc., some people prefer to use it as cooking fuel. A well designed charcoal stove will be the right answer here, but will be costly.

It is in this context, Servals has come up with a low-cost "charcoal burning attachment" which can be used with the canister of Champion TLUD stove.



The Equipment :

The heart of the attachment is a "charcoal burner" (with a mesh at the bottom) which sits on the top of the inner cylinder of the canister. The vessel support sits on the top of outer cylinder. Canister cover is not required. A square shaped mini pot-skirt is used as a wind-shield to protect the flame from wind movements around. The pot-skirt is reversible to accommodate different types of cooking appliances and also conserves some energy.

The entire combustion air comes through the 30 mm opening at the bottom where a cone is sometimes fitted. The cone and plunger mechanism controls the charcoal fire. The fire power ranges from 1 kW to 2 KW depending on the air flow through the charcoal bed and also the quality of charcoal. By blowing some air into the cone using a mini blower, the fire-power can be easily increased upto around 3 KW.

The attachment has a capacity of 100 to 150 grams of charcoal depending on the bulk density of charcoal used.

The attachment is intended only for medium heat cooking applications.

Operation :

Remove the ash deposits (from the previous operation) from the attachment and the canister. It is important to keep both meshes (in the attachment and canister) free of any ash deposits, since the combustion air has to pass through them without any obstruction.

Hot (from operating TLUD stove) or cold (from any source) charcoal is fed into the charcoal burner. When cold charcoal is used, the lighting of charcoal is done using any traditional method. Fire-power is

controlled by using the cone and plunger. If a higher fire-power is needed, a mini blower can be used to force some air into the cone.

Orientation of the pot-skirt can be chosen to suit the type of cooking appliance used. This also saves some energy.

Fresh charcoal (if needed) can be added over the burning charcoal to extend the cooking time.

Maintenance :

Basically, it is a sturdy equipment. Any worn-out parts (due to black color and prolonged use) will need replacement.

Caution :

It is preferable to operate any charcoal fire outside the house (ie. in open space) due to the possible presence of carbon monoxide gas.