Peasouper
Operator's Manual

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08/08/05

Please read this manual fully before using equipment

Peasouper Dry-Ice Fogger

The Peasouper is compact and portable dry-ice fogger. It is made of a durable corrosion resistant polyethylene that will give trouble-free use while producing a thick white low-lying fog.

The 'Dry-Ice' Fogger Principal

'Dry-Ice' is a solid form of carbon dioxide (CO_2). The term dry-ice is used because of its ability to sublimate; the process of transforming from a solid directly to a gas with out any liquid formation. Dry-ice reaches a temperature of minus 87.5C. When immersed in hot or boiling water, it sublimates and violently agitates the water, which throws up many water droplets into the air. The released cold CO_2 gas causes the water vapor in the air to form more droplets. This great expansion of gas and moisture pushes its way out of the machine. Because it is cold it sinks to the floor. Due to the droplets in the air this creates the effect we see as fog.

CAUTION !

1. Dry-ice should be stored in an insulated container to reduce sublimation. The released gas can lead to a dangerous pressure build-up if it is stored in a sealed container.
2. At no time must the dry-ice be handled, or brought into contact with bare skin. Solid CO_2 will lead to frostbite unless handled with protective gloves.
3. Do not engage in demonstrations which could lead to swallow CO_2 or allow it to sublimate in the mouth, this can lead to severe internal injuries.
4. When breaking solid blocks of dry-ice always use eye protection. Cover the ice with a piece of cloth to prevent fragments from flying. Use of a hide hammer is recommended.
5. Do not use or store solid CO_2 in confined spaces. Where solid CO_2 is used there should be adequate ventilation to ensure that low lying CO_2 gas does not cause dangerous concentrations. CO_2 gas is heavier than air and will sink to lower areas.

Operation

1. Place the machine on a firm level surface where it will be used. Take off the lid and fill with water (hot or cold) until the red light comes on.

2. Plug the cord into a grounded 15-amp receptacle. A ground fault interrupted receptacle would be preferred. The heater draws 12 amps at 120 volts.
3. While the machine is heating up (may take up to 60 minutes), raise the basket to its highest level with the black handle on the side of the machine and lock it in the highest stop.
4. When the water has reached boiling point (this will be determined after approximately 45-60 minutes by a large amount of steam coming from the front nozzle hole) the machine is now ready for use.
5. Using protective gear load the basket with dry-ice; it is best to use a mug or small saucepan. The basket size has been designed to give one large 'show' from each bag or block of dry-ice if filled to approximately 1-1 ½ " from the basket rim. The loading of the dry-ice should be done at the last possible moment. Due to the steamy atmosphere in the machine, it will start evaporating slowly if put in too long beforehand.
6. Remove any ice chips on the lid seal and place the lid on. Secure the lid by turning the two arms inward on the lid and push down on the levers to latch.
7. When the 'fog' is required, grasp the basket lever and slowly lower the handle. A full basket should not be plunged into the hot water. This would result in dangerous pressure build up due to the violent action of the dry-ice sublimating. A ratchet stop is provided to allow the basket to be stepped into the water. As the CO2 is immersed a 'fog' will be produced in thick clouds from the front nozzle. To increase the rate, lower the handle to the next stop. Raising the handle fully will quickly stop the effect, thus it is possible for an ON & OFF type of effect.
8. When the fog has finished being expelled through the nozzle, and the water is still warm, another basket full may be loaded as required. Once finished turn off the machine to prevent it from boiling dry. Check the water level periodically and top-up as necessary. Do not repeat the effect when the water is cold. This will only lead to the solid CO2 mixing with the cold water and producing a solidified mass in the basket. If this occurs pour very hot water into the basket to disperse the ice.
9. When the machine is to be emptied allow it to cool. Empty the machine into buckets where it stands rather than carrying it to the drain. Do not move the machine with hot or boiling water in it.

GUIDANCE FOR USERS

GENERAL: Carbon dioxide gas is released by immersing solid CO2 into boiling water. In its natural state this gas is colorless but suspends water vapor when emitted from the machine giving the 'fog' effect. Although carbon dioxide is an inert gas, it does not sustain life. Because the gas is heavier than air and sinks there is no problem, although care must be taken to ensure nothing is below the 'fog' level, i.e. small pets, people lying down etc. CO2 will dissipate very quickly. Remember the output of the machine creates humidity so do not use it in the vicinity of electrical equipment, power sockets, or any item that may be damaged by moisture. In any event do not use the machine in rooms smaller than 10 feet by 10 feet.

OVERFILLING: Many of the problems arise from putting too much water in the machine. There should be no water from the nozzle except from some condensation. If the water level is too high boiling water can be sprayed out when the dry-ice is submerged damaging floors or burning people.

OPTIONAL DUCTING ADAPTORS: Remember fog output will decrease in proportion to the length of the hose used. We recommend a maximum of 10' although the operator should use as little as possible.

1. Make sure that the machine cannot be tipped. If water gets into the tube it will be sprayed out under pressure. A "U" bend is advisable to help prevent this.
2. Try and have the end of the hose above the level of the machine.
3. Overfilling is always dangerous but particularly when ducting is being used. The machine is capable of spraying boiling water quite far.

If you are not familiar with ducting don't use it until it can be tested in a safe environment.

Optional Equipment

- An overfilled machine will eject water. Never fill with unit plugged in.
- Moisture and water poise electrical hazards use caution around this equipment. Ground fault circuits will trip from excess moisture.
- Only handle dry-ice with proper skin and eye protection.

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MAINTENANCE & HINTS ON USE

1. Keeping lid screws lightly oiled will protect them allow them to operate easily.
2. Make sure no dry-ice is on the rubber lid seal. This will allow gas escape through the lid gasket.
3. When you heat up the machine leave the lid off. This prevents the lid handles from getting hot before adding dry-ice.
4. Do not pour cold water directly onto hot heater element as this will cause premature failure.
5. To replace the element or repairing a broken seal:
    a. Remove element/ replace or clean.
    b. Replace the rubber gaskets and sealing washers. Do not reuse the old ones.
    c. Tighten bolts evenly to compress the seal.

SOLID CARBON DIOXIDE

The CO2 should be collected as near as possible to the time it is to be used. It will sublimate with time but storage in an insulated container will help. Your distributor may have storage containers available. A wooden box lined with foam insulated is acceptable. Blocks, slabs and pellets may be available depending on your supplier. The pellets are easier to use as they don't require breaking up. If a solid block is used, it must be broken up into small pieces preferably about 1" across. Slabs can be laid on a flat surface and broken like toffee! Cover the ice with a towel to reduce the danger of flying pieces while breaking.