

Instruction manual

Please read carefully before operating

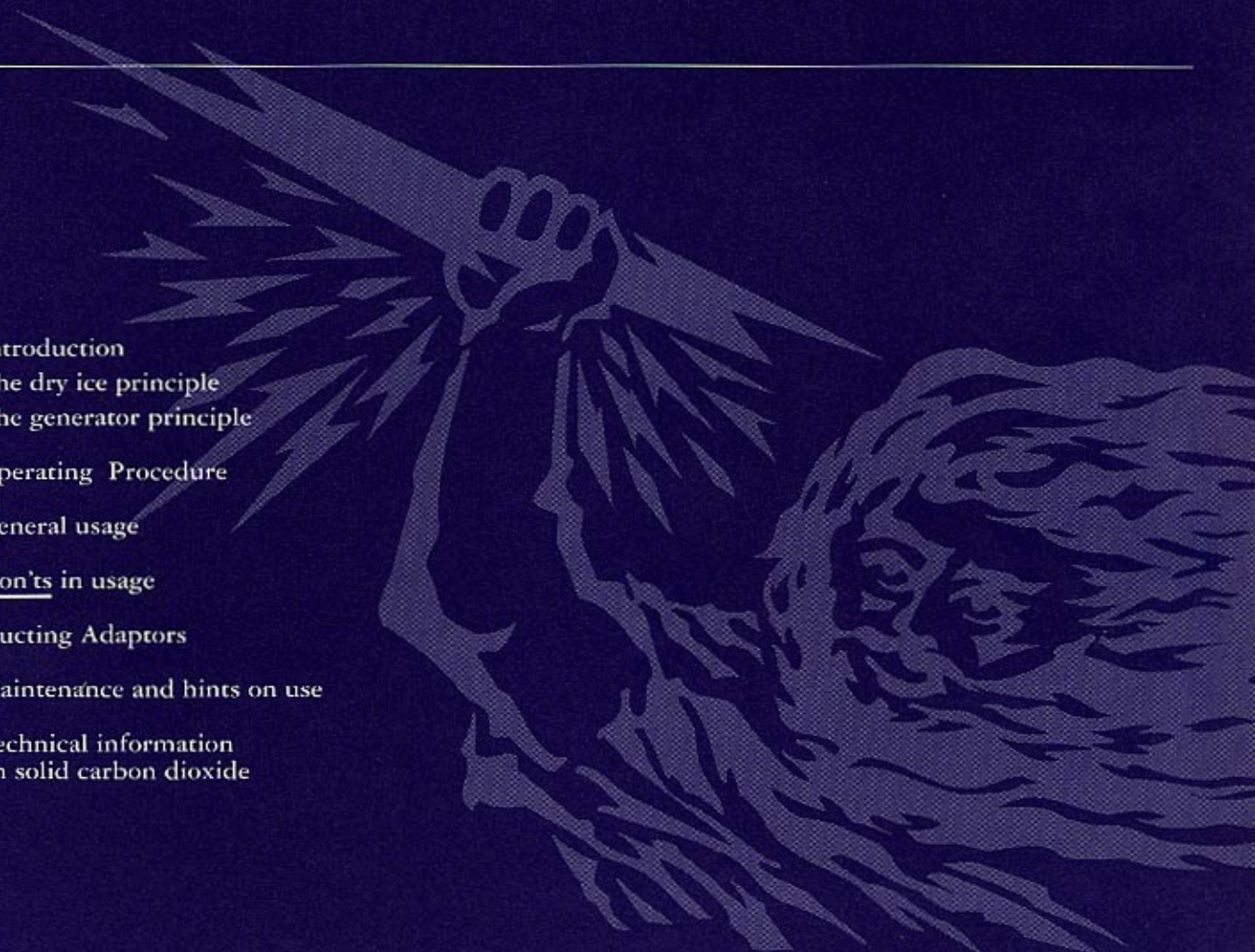


Le Maitre

The Pea Souper

Contents

- Page 3* Introduction
The dry ice principle
The generator principle
- Page 4* Operating Procedure
- Page 6* General usage
- Page 7* Don'ts in usage
- Page 7* Ducting Adaptors
- Page 8* Maintenance and hints on use
- Page 9* Technical information
on solid carbon dioxide





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The Pea Souper

Introduction

The machine has been professionally built in strong high density cross-linked polythene using only the best materials and should give trouble-free use and an excellent effect if the following instructions are read carefully.

The 'Dry-Ice' Principle

'Dry-Ice' is, in fact, solid carbon dioxide (CO₂) which in this form reaches a temperature of minus 87.5C. When the dry ice is immersed in boiling water it evaporates quickly, turning directly into CO₂ gas without going through an intermediary liquid stage. The refraction between the air and steam loaded CO₂ gas, gives the well known 'fog' effect.

The Generator Principle

'Dry-Ice' is loaded into the basket where, when the handle is lowered, is immersed in boiling water. Immediately the 'fog' will be produced and expelled through the nozzle at the front of the machine.

Operating procedure

- 1 Connect a standard 13 amp plug to the mains lead supplied (or a 15 amp plug which is connected into a circuit with suitable fuse protection). The current consumption is 12 amps.

Caution – *this machine must be earthed.*

- 2 Stand the machine on a reasonably firm, level surface in the place where it will be used. Take off the lid and fill up with hot or cold water until the white tube inside the water-level indicator reaches the top rim of the outer tube. When the two are even, then the machine is full, this will take approximately 3 bucket fulls – **do not overfill.**
- 3 Plug in mains lead and switch on.
- 4 Whilst the machine is heating up (it will take 20-25 minutes to reach boiling-point), raise the basket to its highest level by raising the black handle on the right hand side of the machine and lock it in place at the highest stop.
- 5 When the water has reached boiling point (this will be determined after approximately 20-25 minutes by a large amount of steam coming from the front nozzle hole) the machine is now ready for use.
- 6 Load the basket with dry-ice, it is best to use a mug or small saucepan. The basket size has been carefully designed to give one large 'show' from each bag or block of dry-ice if filled to approximately 1-1" from the basket rim. The loading of the dry-ice should be done at the last possible moment. Due to the hot, steamy atmosphere in the machine, it will start evaporating very slowly if put in too long beforehand.

- 7 Place the lid on, and secure a tight seal by screwing tight the 4 fasteners on the lid.
- 8 When the 'fog' is required, hold the basket - lower handle which is held by the ratchet-stop system.

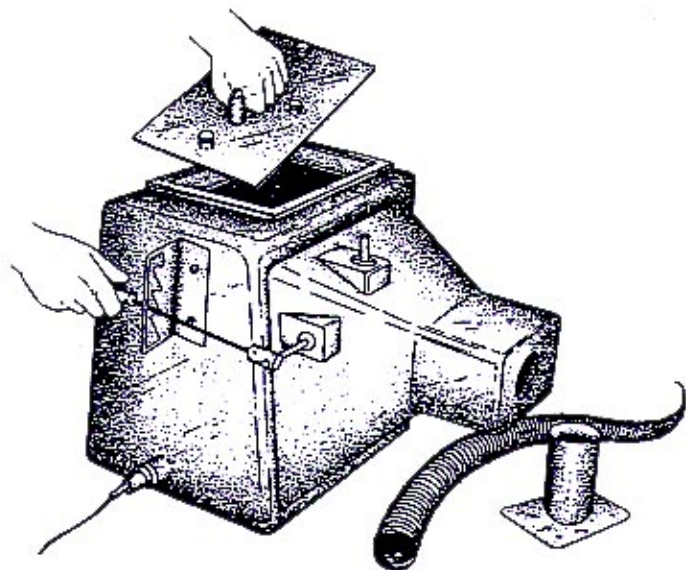
On no account must this ever be taken out or removed. If the basket is immersed completely there would be dangerous pressure build-up.

Slowly lower the handle (not all the way at first) and the 'fog' will be produced in thick clouds from the front nozzle. To increase the rate, lower the handle to the stop. Raising the handle sharply will immediately stop the effect, thus it is possible for a ON/OFF/ON/OFF type of effect if required.

- 9 When the fog is finished and no more is being expelled through the nozzle, if the water is still warm another basket full may be used if required, otherwise it is suggested that the machine be turned off if not required for some time or (if another full basket load is required) be allowed to re-boil. Check water level-indicator periodically, and top-up water as necessary. Do not try to 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, requiring very hot water poured onto it to disperse.

Operating procedure *continued*

- 10** There is an automatic thermal cut out inside the head of the heating element, which will function if the machine is ever left to boil dry or switched on without being filled with water. When the machine is unpacked check to make sure that the element is screwed up tightly. Replacement elements 3000 WATT may be obtained if required from your local dealer.
- 11** When the machine is to be emptied, it is advised that it is emptied into a bucket where it stands rather than carrying it to a sink, drain, etc.
- On no account should the machine be moved with hot or boiling water in.**
- 12** This machine has been specially designed to take large water capacity in conjunction with a larger dry-ice basket to give a much longer more powerful effect. Although the heating-up-time is 20-25 minutes this is necessary for the high power of the machine.



General usage

Carbon Dioxide is produced by immersing solid CO₂ into boiling water. In its natural state this gas is colourless, but suspends water vapour when emitted from the machine giving this '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 dissipates very quickly and there are no records of accidents, but it pays to be sure. Remember also, use of the machine creates a humidifying effect, 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 machines in rooms smaller than 10 feet by 10 feet.

Overfilling:

99% of the problems arise from putting too much water in the machine.

The water level indicator is set in the factory but by the time the end user gets the machine it may be displaced.

To check the indicator is correct:

- 1 Fill machine and boil.
- 2 Put a full load of CO₂ in the basket.
- 3 Lower the handle to its full extent.

There should be no water from the nozzle except for some condensation.

If too full adjust your indicator accordingly. An overfilled machine can ruin parquet flooring, carpets etc. or spray boiling water over people.

Don'ts in usage

- 1 Overfill or boil the machine dry.
- 2 Tip the machine in operation - especially if you are above an audience.
- 3 Put solid CO₂ into drinks for a 'Laboratory' effect. If consumed solid CO₂ can cause severe internal injuries.
- 4 Use in a room less than 10' x 10'.
- 5 Handle solid CO₂ without gloves - this can cause severe frostbite. Protect your eyes when breaking up blocks of CO₂. Cover the ice with a cloth to prevent chips flying.
- 6 Leave the machine in sub-zero temperatures when not in operation (to prevent damage to moulded shell).
- 7 Put dry ice into the machine when the water is cold.

Ducting adaptors

Remember fog output will decrease in proportion to the length of hose used. We recommend a max. 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 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 very undesirable in any case, but particularly so when ducting is being used. The machine is capable of spraying boiling water quite far.

In general, if you are a non-professional and not familiar with ducting, **don't use it!**

Warning

An overfilled machine will eject water. This will find its own level around the element of housing. Continued abuse may cause power leakage to the earth circuit and in venues with an 'Earth Leakage Circuit Breaker' will shut off the mains supply.

Maintenance and hints on use

- 1 The lid seal screws are heavily protected against corrosion. Keeping them lightly oiled will keep them loose and easy to use.
- 2 Make sure no dry ice is on the rubber seal. This will let gas escape through the lid gaskets.
- 3 When you boil the machine up, leave the lid off. This prevents the lid seal screws getting hot!
- 4 Make sure the element housing is protected. Continual abuse will crack the seal and cause a leak.
- 5 Replacing the element or repairing a broken seal:
 - a Remove element/replace or clean.
 - b Renew rubber washer.
 - c Coat Shoulder of element liberally with a high quality silicone sealant and replace.
 - d Leave on the element side to set for 24 hours.

Optional extras:

- 2" ducting/2" ducting adaptor
- 6" ducting/6" ducting adaptor

Technical information on solid carbon dioxide

The CO₂ should be collected as near as possible to the time it is required for use. If kept for any long periods uninsulated, it will disperse. This is called 'sublimation'.

If the CO₂ is required to be kept for any length of time (i.e. over the weekend) it should be stored in specially made containers. Your dealer or distributor may have insulated containers sufficient to take 1-2 blocks or bags, or if more is required to be stored a container may be made from wood and insulated on top, bottom and sides with expanded polyurethane. If there is any doubt regarding construction of this, your nearest CO₂ sales office should be contacted.

Your dealer/distributor may also stock solid CO₂ but, if not, look for the nearest depot i.e. for Southend, the nearest depot is Distillers Company at Dagenham. If this is too far to go it is almost certain that they have daily or bi-weekly deliveries to Southend to companies such as refrigerated transport, rubber de-flashing, hospitals, food manufacturers etc. They will be able to give details of any such company and from there it is simply a matter of contacting the company for them to supply a block or bag.

It may be more convenient for a few operators of dry-ice machines to 'club together' for supplies and storage containers – as the more that is bought at once, the cheaper it becomes.

It is easier to obtain and store dry-ice than most people imagine.

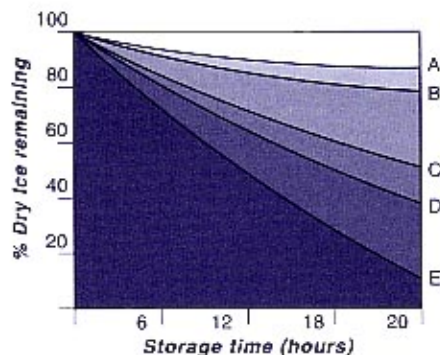
Technical information on solid carbon dioxide *continued*

Solid CO₂

Either a solid block may be purchased or (where available) it is recommended that CO₂ in peller form is used. This is easier to use as it requires no breaking.

If a solid block is used it must be broken up into small pieces preferably about 1" across.

Below is a graph showing sublimation losses of dry-ice in relation to various methods of storage. If blocks are used, try and obtain 'sliced block', as these can be laid on a flat surface and broken like a slab of toffee.



- A Storage container
- B 5-6" dry sawdust
- C Newspapers (x3)
- D Hessian sack
- E Paper wrapper

Caution

The following points must be observed:

- 1 Dry ice must not be stored in sealed containers. Evaporating gas will lead to a dangerous pressure build-up
- 2 At no time must the dry ice be handled, or brought into contact with bare skin. Solid CO₂ may lead to skin burns and frostbite unless handled with thick gloves
- 3 Do not swallow CO₂, or allow to sublimate in the mouth or bare skin (e.g. practical jokes with a piece of dry ice in tea to give a laboratory effect) this may lead to severe internal injuries
- 4 When breaking solid blocks of dry ice use a hide hammer and protect the eyes. If using a metal hammer, cover with a piece of cloth to prevent fragments from flying
- 5 Do not use or store solid CO₂ in confined spaces. Where solid CO₂ is used there should be adequate low level ventilation to ensure that the excess does not collect and cause dangerous concentrations