Please read these instructions fully before operating your PHANTOM Hazer System.
GENERAL INFORMATION

1. Use only CO₂ or Nitrogen as your propellant gas. DO NOT use CO₂ siphon cylinders. The cylinder must be a vapour take-off, non-siphon cylinder.

2. Use only the appropriate Pea Soup Phantom Hazer Fluid in your generator.

3. Always keep the machine upright and the CO₂ / Nitrogen hose kink free.

4. If hosing from the generator, always use an appropriate ducting adaptor, available from Pea Soup.

5. Use in well ventilated areas only. If using in confined spaces seek guidance from your gas supplier.

6. Ensure that CO₂ / Nitrogen cylinders are properly restrained.

7. If operating the Phantom from a power generator as opposed to conventional mains supply, you must ensure the generator produces both sufficient power and a 'voltage stabilised' (producing a pure sine wave) output otherwise damage can be caused to components inside the machine.

GENERAL DESCRIPTION (approx)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater block</td>
<td>1,100 watts</td>
</tr>
<tr>
<td>Size</td>
<td>41 x 18 x 37cm</td>
</tr>
<tr>
<td>Weight</td>
<td>12kg</td>
</tr>
<tr>
<td>Usable oil capacity</td>
<td>1,300ml</td>
</tr>
<tr>
<td>Max working pressure</td>
<td>8.2 bar (120psi)</td>
</tr>
<tr>
<td>Optimum working pressure</td>
<td>6.9 bar (100psi)</td>
</tr>
<tr>
<td>Duration at maximum (dense smoke) output</td>
<td>40 minutes</td>
</tr>
<tr>
<td>Electrical supply</td>
<td>110/120v, 11A</td>
</tr>
<tr>
<td></td>
<td>230/240v, 5A</td>
</tr>
<tr>
<td>Maximum output</td>
<td>466,000ug/sec.</td>
</tr>
</tbody>
</table>
PREPARATION

1. Fit suitable fused plug to mains power supply cable.
2. Check that the reservoir contains Phantom Hazer Fluid by checking sight glass. **DO NOT OVERFILL.** Ensure filler cap is replaced. Ensure that only the correct fluid is used (Pea Soup Phantom Hazer Fluid)
3. Check that you have sufficient inert gas supply. To do this, fit the regulator to the cylinder. Set the Pressure Adjusting (PA) screw to zero and open up the stop valve on the cylinder. The cylinder gas pressure will now be displayed. A minimum of 27bar (400psi) is recommended.
4. Make sure all switches are in the OFF (O) position.
OPERATION

1. Connect the generator to a suitable power supply. Put the POWER switch to ON (1). The RED INDICATOR neon in the Switch and the DIGITAL DISPLAY will light.

2. After 5 minutes the READY indicator will come ON. For best results and superior haze quality, wait a further 10 minutes before operating.

3. Connect the CO₂/Nitrogen line to the generator, set the pressure on the regulator to 1 bar (approx 15psi).

4. To produce haze, put the HAZE switch to ON (1). The volume of haze output can be adjusted by increasing or decreasing the pressure on the regulator. 
   **NOTE: Do not exceed MAX Working Pressure of 120psi (8.2bar)**

   A small amount of haze will be produced after a few seconds (the time taken for the pressure tank inside the unit to equalise), and the fan on the front of the unit (available on the PS49 model) can be switched on using the switch near the fan to mix free air into the haze stream and create a superb, long lasting haze. Haze output can be adjusted up or down by adjusting the pressure regulator, care should be taken when increasing output that all of the haze produced by the nozzle is caught in the airflow of the fan. Haze fluid and gas consumption is extremely low on a haze setting.

5. When haze output is no longer required, put the HAZE switch to OFF (O). At this point the gas in the reservoir tank is exhausted through the heat exchanger, clearing it of any fluid. Haze production ceases within a few seconds.

6. **SHUT DOWN:** When the generator is no longer required, unscrew the regulator PA screw to zero and close the cylinder stop valve. Turn the POWER switch to OFF (O). Allow the unit to cool down before enclosing it in a flight case, if supplied.

REMOTE OPERATION

All standard units are supplied with a basic remote control switch on a 5 metre cable. This connects into a shuttered socket in the rear of the generator and duplicates the action of the HAZE switch on the generator. To operate from the REMOTE HAZE SWITCH, the HAZE switch on the generator must be in the OFF (O) position.

![Remote Control Switch Diagram]

To engage, push together and rotate clockwise until the lock clicks.

To disengage, pull back lock, rotate anti-clockwise and part.
PHANTOM AS A SMOKE GENERATOR

Although the Phantom can be used as a powerful and impressive haze generator, it can also be used to produce a thick white smoke of the highest quality, outlasting water based smoke generators dramatically.

To achieve this, set the regulator output gauge to zero, put the haze switch to on, and slowly increase the regulator pressure to 6.9 bar / 100 psi. Smoke output can be adjusted up or down by adjusting the pressure regulator, although if using with the fan on the front of the unit (PS49 model) or external fan, care should be taken that all of the smoke produced is caught in the airflow of the fan (thus avoiding concentrated smoke forcing its way through the fan airflow). It is recommended practice to introduce smoke into the resulting air stream of a fan and not the air intake of the fan so that the smoke does not touch the blades.

OUTPUT DENSITY ADJUSTMENT (OPTIONAL)

If your Phantom is fitted with a Haze Density Adjustment (HDA) Valve on the top of the unit, this allows the thickness of the resulting haze to be adjusted by increasing / decreasing the amount of inert gas being mixed with the haze fluid prior to heating. The thickest haze (smoke) is with the HDA Valve fully closed (fully clockwise). To make the smoke less dense (thinner) turn the HDA Valve anticlockwise - but bear in mind that by doing so your gas consumption will increase. This adjustment becomes more evident at high output levels, where its degree of control is very significant.

TIPS TO REDUCE GAS USEAGE

Make sure the fluid tank is filled with fluid. If it only has a small amount of fluid, more gas is used to fill the empty space in the tank not taken up by fluid so that it not only uses more gas to start haze production, it also takes longer to start producing the effect until the pressure in the tank equalises.

Switching the unit’s output on and off a lot uses more gas than leaving it on for longer periods at a reduced output.
HOUSING

If hosing smoke from the nozzle of the generator then a ducting adaptor with appropriate air inlets (available from Pea Soup) must be used. Hose must not be affixed directly to the generator and the air holes in the spout of the generator must not be obstructed in any way. For permanent installation, or for the introduction of smoke into positive pressure areas, the use of centrifugal blowers is recommended. Consult Pea Soup.

THERMAL CUT OUT

All units are fitted with a Thermal Cut Out (TCO). If the generator overheats for any reason the TCO will tip, cutting off all power to the heater and Digital Module. To check if TCO has operated, disconnect the generator from the power supply, remove the right hand side panel of the generator and depress the red rubber button on the heat exchanger. If the button clicks down and on restoring power to the generator the unit functions, the TCO has tripped. Monitor the Digital display temperature. If the temperature exceeds 400°C turn off the generator and consult Pea Soup. If the temperature stabilises below 400°C and cycles around the Main Set Points (316°C for standard Phantom Hazer Fluid) use the generator as usual. If the TCO trips again, consult Pea Soup.

IF FLOW IS STILL NOT PRODUCED - CONSULT PEA SOUP

MAINS OUTLET (OPTIONAL)

If your Phantom unit does not have a front mounted fan, it may have a shuttered mains power outlet (fused at 2A) on the front of the machine, appropriate to the voltage of the Phantom unit. A mating Buccaneer connector PX 0731/S is available from Pea Soup.
ADJUSTMENTS TO HAZE QUALITY

for units without external haze density adjustment (HDA) valve fitted

Changes in environmental conditions can cause slight variations in the smoke quality produced.

If you have an external density adjuster fitted to the outside of your Phantom unit, **DO NOT** touch this internal valve.

The smoke from the Phantom at full output should be dense and white in colour, and should not leave a visible deposit on an operator’s hand left in the smoke stream for 1 – 2 seconds, 500mm from the front face of the generator.

The simplest way of making these adjustments is to produce smoke with the right hand side panel of the machine removed. However, if this is done, extreme care should be taken to avoid electrical components and leads and avoid the heat exchanger chamber, which will be operating at a high temperature. **Do not** remove the nylon spacer ring from the mixing valve.

To adjust the haze quality, slacken off the locknut on the stem of this valve.

Whilst making smoke, (100psi recommended for 1.1kw units/ 80 psi for 2.2kw units), rotate the knurled control knob clockwise to thicken haze (increasing particle size, producing a wetter smoke), or anticlockwise to thin haze (decreasing particle size, producing a dryer smoke). Once again, the optimum position is where dense, dry haze/smoke is produced. Always gently tighten the locknut after adjustments have been made and replace the side panel of the machine. **DO NOT FULLY CLOSE THE VALVE.**
MACHINES FOR TRANSIT

Always drain all fluid from the generator before transit. A drain plug underneath the generator is provided for this purpose, along with a spanner in the maintenance kit supplied.

INSTALLATIONS

All Pea Soup generators can be configured to interface with PLCs or remote consoles if required. Consult Pea Soup for further information. Pea Soup cannot accept liability for installations where the works have been carried out by others.

MAINTENANCE

Very little routine maintenance is required, because of the automatic purging facility incorporated within the unit.

1. Periodically clean out the nozzle of the heat exchanger with the 2mm drill provided, to a depth of 25mm (2 inches). The more often this can be done the better, but it need not be done after every use.
2. Periodically remove side covers, carefully tighten all compression joints and wipe away any oil deposits.
HEALTH AND SAFETY

The smoke produced by all Pea Soup Phantom smoke generators has been rigorously tested to ensure that in normal conditions it is non toxic. Independent health and safety reports indicate that dense smoke concentrations can be entered without any serious health risk for short periods of time. However, we recommend that persons who are asthmatic or suffer from a respiratory complaint are not subjected to dense smoke concentrations, and the use of suitable PPE in the event of extended exposure to such environments. Should the artificial smoke be used in conjunction with live fires, where, by definition the potential for products of combustion to be formed from the fireplace would occur along with other hazards (unburnt propane etc), breathing apparatus should be worn. Copies of independent reports on the safety aspects of Pea Soup smoke are available on request.

SERVICE

We recommend that your smoke/haze generator is returned to Pea Soup or an authorised distributor (details available from Pea Soup) on an annual basis for cleaning, servicing and testing to ensure that the equipment and its resulting smoke remains in optimum condition.

CE MARKING

All Phantom Hazers supplied by Pea Soup and produced from 1st January 1996 comply with the EMC Directive EN89/336/EEC, in that they meet the requirements of EN50081/1 and EN50081/2 and the Low Voltage Standard EN60204. Units are CE marked accordingly.

NOTE E&OE: Pea Soup’s policy is one of continual improvement. Pea Soup’s warranty may become void if Operating Instructions are not followed.
FOR HAZE GENERATION

LOW PRESSURE CO₂ REGULATOR
INFORMATION

Although your Phantom 1.1kW unit will operate with a maximum working pressure of up to 8.2 bar [120psi] for very high 100% output, to optimise the performance and output control for lower output haze production, the regulator included is restricted to 3.5 bar [56.7psi] which will give a maximum of approx. 60% total volume output that the unit is capable of producing.

Therefore, your unit can be operated at a pressure between 0.5 and 3.5 bar (7.2psi to 50 psi).

The greater the pressure, the greater the volume of haze/smoke produced.

If you require full 100% smoke output, please contact Pea Soup to purchase a standard CO₂ regulator or ask your local gas supplier for one.

The supplied CO₂ cylinder (except US/Canada) can be refilled at most industrial gas suppliers, fire extinguisher maintenance companies and even some aquatics centres.
Pea Soup Phantom Hazers can be configured with a DMX 512 interface, which allows the **Haze On / Off function** to be controlled via a DMX controller / lighting desk.

### To set up the DMX interface

- Power up the Phantom.
- The DMXit red display will light and the current address of the unit will be displayed in the “START ADDRESS” box.
- To change this address press “ENTER”, use the ▼▲ arrows to select the new address, and press “ENTER” to capture.
- Power down the Phantom.

### To operate the machine using DMX

- Power up the Phantom, ensuring that the “Haze Switch” on the machine is in the “Off” (0) position. The Green “DATA IN” LED will come on if connected to a DMX system.
- When the machine has reached working temperature, haze can be produced by a 100% (max) signal from the DMX system.
- Haze production ceases and the unit will automatically purge the heater when the DMX signal is removed.

**NOTE:**
If the Haze Switch on the Phantom System or the remote control switch is in the “on” (1) position, this will override any signal from the DMX system.

Always reference the relevant Phantom machine’s operating instructions in addition to this guide.
**PHANTOM HAZER – VISUAL OPERATING INSTRUCTIONS.**
Always refer to full operating instructions.

<table>
<thead>
<tr>
<th>1. Always ensure you:</th>
<th>2. Push gas hose onto regulator as shown</th>
<th>3. Tighten nut with spanner</th>
<th>4. Attach regulator to CO2 cylinder and tighten with spanner supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Phantom Haze fluid</td>
<td>Use an Inert Gas</td>
<td>Keep the machine on a level surface</td>
<td></td>
</tr>
<tr>
<td>Always refer to full operating instructions.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Remove filler cap and slowly add haze fluid to the Phantom. Check the sight glass and do not overfill. If an airlock is seen in the sightglass simply rock the machine gently forward and backward until it has cleared.

6. The fluid level is indicated on the sightglass. Remember to replace the filler cap!

7. Connect gas hose to the Phantom. Open CO2 cylinder, and adjust regulator so output gauge is showing 1 bar (15psi).

8. Put power ON (red switch). The green number displayed is the programmed operating temperature (°C) and the red number is the current temperature. After approx 4 minutes the green READY light will come on.

**To make haze** press the Black Haze Switch to On (1). 3-4 seconds later haze production will start. **To increase** haze output increase pressure (8.2 bar / 120psi max for 1.1kw systems). To decrease lower pressure. **To stop** haze press the Black Haze Switch to Off (0). Haze production will stop after the gas has cleaned the heat exchanger (30 secs approx). The gas hose can now be removed if you have finished with the machine.

To use remote, push in and twist to the right. The remote switch then duplicates the function of the Black Haze Switch on the machine. If either switch is on, the Phantom will produce haze. To remove, pull back on the metal latch, twist to the left and pull out.

Refer to the full instructions booklet for more details on any of these steps.

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**Pea Soup**
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sales@smokemachines.net
Made in the UK

For replacement fluid consumables, regulators, cylinders, ducting adaptors, ducting hose and transit / storage cases and spare parts for Phantom Hazer systems contact:

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Website: www.phantomhazer.com
Email: sales@smokemachines.net