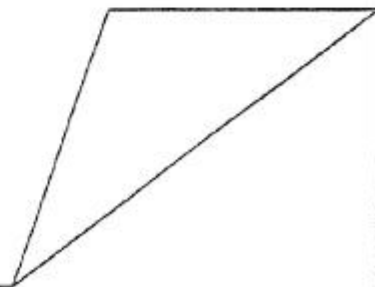




HEAVY FOG 2500

INSTRUCTIONS FOR USE



INTRODUCTION

For many years, people wishing to create an effect of low lying fog clinging to the floor have been all too aware of the problems involved in achieving this. Invariably, it entails a long journey to a chemical company for supplies of dry ice, and just getting it to site results in the loss of 25% of this expensive commodity into thin air! Even expensive containers (essential) don't solve the problem. By the time the show is due on, you may not have enough left, and if there are any cancellations - all that expense and effort is lost for good. And we all know how long it takes to boil 100 gallons of water!! And what do you do if they want more fog - just after the water has cooled right off??

JEM came up with the answer to all these problems. Two years ago, after no less than 30,000 hours of research and development, the Heavy Fog 6500 was launched to cater to the needs of the television, theatrical and major pop/rock tour businesses. This large but incredibly powerful machine has now become the industry standard, however at the time of its launch our research and development department had already started to design a cost-effective, Heavy Fog machine with reduced facilities but the same high output and reliability as its big brother. Two years later and we have the answer.

HEAVY FOG MODEL 2500

The Heavy Fog 2500 is a completely self-contained effects machine capable of producing a low-lying layer of fog. Heavy Fog has taken 3 years and over 30,000 hours of development and has completely revolutionised smoke and fog effects throughout the leisure industry. In addition, it is in extensive demand by Fire Services, Aerospace Industries and Armed Forces throughout the world for training and development purposes.

Heavy Fog is not just a machine that simulates a dry-ice (look-a-like) effect - it is vastly superior in every way and is capable of producing a vast range of special effects such as **WATERFALL EFFECTS, CLOUD EFFECTS, VOLCANO** and 100's more!

JEM's research and development department has developed a specialised low temperature freezing plant capable of temperatures below -20°C, combined with a high power industrial fog generator. HEAVY FOG has an enormous output and is able to throw a layer of fog to cover a floor 10,000 square feet (3,100 sq. metres) to between a few millimetres thick and 8 feet (2½ metres) thick at the touch of a button. It is truly **smoke on demand!**

IN THIS MANUAL

This manual covers both the U.K./European model, plus the North America/Japan model. American terminology, where different, appears in brackets, e.g. Earth (Ground). **VERY IMPORTANT:-** There are separate wiring instructions for the North America/Japanese model. See below.

WIRING INSTRUCTIONS FOR SINGLE PHASE 220/240 VOLT - U.K./EUROPEAN MODEL

BROWN WIRE + 2 BLACK WIRES - ALL CONNECT TOGETHER TO LIVE
BLUE WIRE - NEUTRAL
GREEN/YELLOW - EARTH

WIRING INSTRUCTIONS FOR 3 PHASE 220/240 VOLT SUPPLIES - U.K./EUROPEAN MODEL

BROWN - PHASE 1 - Compressor, 20A
BLACK 1 - PHASE 2 - Heater 1, 10A
BLACK 2 - PHASE 3 - Heater 2, 10A
BLUE NEUTRAL
GREEN/YELLOW EARTH



On U.K./European 220/240 volt models, do not connect the blue wire to a live phase otherwise 440 volts will be supplied to the machine's circuits which will cause severe damage !

WIRING INSTRUCTIONS FOR TWO PHASE (LEG) 110 VOLT SUPPLY - N. AMERICA/JAPAN

BROWN WIRE + 2 BLACK WIRES ALL CONNECT TO PHASE 1 (LEG 1)
BLUE WIRE PHASE 2 (LEG 2)
GREEN/YELLOW GROUND



No neutral connection is necessary when the machine is wired across 2 x 110 volt separate phases {legs}. This is done to achieve a voltage of 208 volts across the two phases. If you wire the blue wire to neutral instead, the voltage supplied is only 110 volts and the machine will not operate. This method of wiring only applies to 208 volt machines supplied to 110 volt countries such as the U.S.A., Canada and Japan.

If a single 208/220 volt feed is available, wire as per instructions for a single phase 220/240 volt machine with Blue connected to neutral.

Power consumption of HEAVY FOG machines is 40 Amps total, either as one 40A single phase supply or split across three phases as one 20A phase and two 10A phases. North America/Japanese models operate on 208 volts, achieved from 2 x 110 volt phases (legs) as detailed above. Consumption per phase (leg) is 23 amps. It is not possible to manufacture a HEAVY FOG for 110 volt single leg operation due to the excessive current requirements this would entail.

APPLICATIONS

Model 2500 is ideal for use in theatres, T.V. studios, film sets and large auditoriums. It is also extensively used by world famous recording artistes on their various world tours. To further increase the versatility of the machine, JEM have developed four special water-based, non-toxic heavy fog fluids:-

- | | |
|---------------------------|--|
| A1 HEAVY FOG FLUID | <i>Quick Dispersing</i> - Use A1 fluid for ice shows and stage productions where an effect is required for a limited period only and must then disperse quickly. This fluid can be used when an effect is required to disperse before reaching the edge of a stage and dropping into the auditorium. |
| B2 HEAVY FOG FLUID | <i>Medium Dispersing</i> - Use B2 fluid for nightclubs and touring bands when Heavy Fog must cover a larger area and is required to remain active for lighting effects etc. |
| C3 HEAVY FOG FLUID | <i>Slow Dispersing</i> - Use C3 fluid for outdoor events where air currents may cause fast dispersion and for situations requiring very dense fog. This fluid is also recommended when creating 'waterfall' effects. |
| C4 HEAVY FOG FLUID | <i>Very Slow Dispersing</i> - Use C4 fluid for situations which require a long lasting, extremely dense effect |

We also supply a wide range of perfumes for use with our liquids, and, again, we can arrange specialist scents for specialist applications. For example, we supply various Fire Services with a special scent that simulates burning wood & rubber for their training centres.

INSTALLATION



Before using or installing HEAVY FOG, be sure to read these instructions for use very carefully!

HEAVY FOG should be connected to the mains (A.C.) supply in accordance with these instructions for use. Be sure that qualified personnel are used to connect the HEAVY FOG machine to the mains (A.C.) supply using a suitable single or 3 phase supply (North American/Japanese models only need 2 separate phases (legs)). In all cases, be sure that the feed can supply sufficient current without overloading (40 AMPS total). We also recommend that in all cases, the feed be from a suitable breaker or isolator for additional safety, in line with modern practice.



Do not install HEAVY FOG machines above people's heads.

PREPARING YOUR HEAVY FOG MACHINE FOR USE

Your Heavy Fog 2500 is supplied with bottle cap and fluid line assembly. The bottle cap is screwed onto the appropriate bottle of Heavy Fog Fluid and the other end of the fluid line is engaged into the push-in compression fitting. The fluid line can be felt 'clicking' into position, then pull to engage. To release the fluid line, simply press the brass ring at the base of the fluid line inwards with your thumb nail and pull the fluid line out. If at any time this bottle cap and fluid line assembly becomes damaged or mislaid, replacements are available from your JEM dealer.



Only use genuine JEM Heavy Fog fluids manufactured by JEM Smoke Machine Co. Ltd and by JEM Pyrotechnics & Special Effects Co. Ltd. otherwise the performance of your machine could be seriously impaired. Use of any fluids not manufactured by JEM could seriously damage your machine and will invalidate your guarantee.



Always ensure that there is plenty of JEM Heavy Fog fluid in the machine. Excessive prolonged use allowing the machine to be run dry may result in permanent damage to the pump.

EXCESS WATER DRAINAGE

Your Heavy Fog 2500 contains a uniquely designed refrigeration plant which produces excess water, especially when the machine is switched off and allowed to defrost. This water leaves the machine via a drainage pipe in the bottom and needs to be collected in a suitable receptacle.

SWITCH ON PROCEDURE

Switch "ON" using the Mains On button, this will automatically put the machine in the "Smoke only" mode. The red heating LED will illuminate, indicating the HEAVY FOG machine is heating. After 5 minutes, this light will extinguish and the "READY" LED will come on. **At this point Smoke may be produced but it will not be chilled and will act as a conventional smoke machine.** Depressing the Heavy Fog button will bring in the freezing plant, however, there will be a 90 second automatic delay before the compressor starts. The heating time for HEAVY FOG to reach full power is 5 minutes. The freezing plant will take 5 minutes to reach the correct low temperature after which Heavy Fog Effects can be achieved.



It is important to remember that the ventilation points should not be obstructed. It is also important not to box-in HEAVY FOG in an enclosed area. There must be continuous air-flow around the machine.

ROUTINE MAINTENANCE

Care should be taken not to spill liquid when changing the fluid bottles. Occasionally it may be necessary to wipe the outlet duct at the front of the machine as Heavy Fog is produced at temperatures between -5°C and -10°C and moisture can form. Also, the external cover of the machine should be wiped clean regularly with a damp soft cloth using a little mild washing-up liquid. Do not use cream cleaners or abrasives.

The ventilation points should be vacuumed once a month, or when they become clogged with dust. The frequency of this service aspect will vary according to a machine's operating environment. In dusty climates, this may be required more often. Failure to carry out this routine service may impair the efficiency of the machine.



HEAVY FOG should be operated on a level surface. Do not operate on gradients. If, for any reason, the machine is turned on its side, the machine should not be operated for at least 2 hours to allow the oil and refrigerant time to settle.

SERVICING THE HEAVY FOG MACHINE

Other than routine maintenance as detailed above, Heavy Fog should only be serviced by qualified electrical and refrigeration engineers, in conjunction with the manufacturer's service manual.



ALWAYS DISCONNECT THE MAINS {A.C.} SUPPLY BEFORE ANY COVERS ARE REMOVED. Higher than normal voltages exist in the Heavy Fog and removing the covers exposes live apparatus. Machines connected to 3 phase supplies have 440 volts between phases. REMEMBER THAT ELECTRICITY KILLS!

Service work carried out by non-qualified persons may cause expensive damage to the machine, and will invalidate the guarantee.

We can supply 5-way and 4-way ducting adaptors for Heavy Fog. Use the 4-way (larger diameter) ducting for long runs of ducting. For a full list of available accessories, see the "Accessories" section in this instruction manual.

ADDITIONAL INSTRUCTION MANUALS

Additional copies of this manual are always available from JEM. It is a good idea to ensure that all personnel involved in using this machine read the manual.

FACTORS THAT MAY AFFECT PERFORMANCE

HEAVY FOG is capable of creating many excellent and varied effects, but like dry ice, certain disrupting elements should be avoided:-

- Draughts from open windows and doors
- Draughts from fan-cooled lighting effects and power amplifiers sited at ground level.
- Heat rising from central heating radiators and heated floors.
- Suction from air-conditioning or extraction systems.

If operation in a draughty area is unavoidable, then the machine should be positioned so the draught comes from behind.

KNOWING YOUR CONTROL PANEL

STANDBY

STANDBY turns HEAVY FOG machine "OFF".

MAINS ON

By depressing the mains "ON" button, the HEAVY FOG machine is turned "ON" and the smoke machine section will automatically heat.

HEATING LED

Heating takes approximately 5 minutes.

READY INDICATOR

The READY indicator LED will illuminate after the heating LED has extinguished.

HEAVY FOG BUTTON

By depressing the HEAVY FOG button, the low temperature freezing plant is activated. There is an automatic 20 second delay from the time of pushing the HEAVY FOG button before the compressor will start operating. The freezing plant will take approximately 5 minutes to reach optimum operating temperature.

TIMER CIRCUIT

When the timer circuit is not required, the single operation button should be depressed. This will automatically bring on the "OFF" LED. To operate a single cycle effect, set the "ON" period and the "OFF" period to the desired time and press the START button. The single time cycle will then operate. If the REPEAT cycle is required press REPEAT. The AUTO time cycle circuit overrides the smoke button.

FOG/SMOKE OUTPUT SLIDER

This slider varies the amount of HEAVY FOG output.

SPECIAL EFFECTS REQUIRING ADDITIONAL ACCESSORIES



When using these accessories, remember that long lengths of ducting will cause a delay in appearance of fog, so in some cases a high initial fog output will help to "accelerate" the appearance of fog.

WATERFALL (use Waterfall Adaptor - optional extra)

To create a WATERFALL effect the machine should be fitted with the five way ducting adaptor and the appropriate length of duct plus the JEM Waterfall Adaptor (optional extra). The Waterfall Adaptor is normally mounted onto a wall or ceiling to allow the fog to "cascade" down. Adjust the slider for best effect.

VOLCANO (use VOLCANO Adaptor - optional extra)

To create a VOLCANO effect the machine should be fitted with the JEM 5-way ducting system and the JEM Volcano Adaptor (optional extra), which is best mounted on a wall, ceiling or floor. An initial more vigorous fog output, tapering off to a trickle can create spectacular results. We suggest experimentation with differing settings to achieve the desired result.

CURTAIN (use CURTAIN Adaptor - optional extra)

To create a CURTAIN effect the machine should be fitted with the JEM 5-way ducting system and the JEM Curtain Adaptor (optional extra). As with the Waterfall and Volcano effects, the Curtain Adaptor should be sited on a wall or ceiling for best effects. A lower fog output produces best results, but this will vary according to the length of ducting used.



For applications using long lengths of ducting, JEM have introduced a new 6" diameter ducting hose with a matching 4-way adaptor. This larger diameter greatly enhances the performance of the system and results in a faster response time (i.e. fog appears at the end of the ducts more quickly). It also reduces condensation problems. Special 4" to 6" adaptors to fit the waterfall, volcano and and curtain adaptors can be made on request.

FAIL LIGHTS ON CONTROL PANEL

There are four warning lights:- HEAT FAN FAIL, FREEZE FAN FAIL, SOLENOID SWITCH FAIL and COMPRESSOR FAIL. If any of the warning lights illuminate and the Heavy fog machine shuts down, leave the machine for 3 or 4 minutes and then switch it back on again. If the fail light(s) illuminate again, telephone your nearest distributor or dealer in the first instance or, in emergency, call our Service Department at JEM PYROTECHNICS & SPECIAL EFFECTS CO. LTD. at (0790) 54052 (International dialling code from outside U.K. is 44 - check with your operator). It is always best to have your machine close at hand so our engineer can "talk it through" with you.

HEAVY FOG FEATURES

BLACK BOX TEMPERATURE LIMITING CIRCUIT

JEM's research and development department have developed a special circuit which is completely fail safe. In the event of any excess temperature rise or fall (overheating or freezing) inside the Heavy Fog machine, the machine is automatically shut down.

MOVING THE HEAVY FOG MACHINE

It goes without saying, that the HEAVY FOG is a very heavy machine, and suitable precautions must be taken when manhandling the machine to protect both the persons involved and the machine itself.



Never lift the machine by any other means than by the lower 'grab' bars. Only qualified electricians should be permitted to disconnect 3 phase power feeds.

Remember that if the machine has been tilted on its side, it must be left upright for at least 2 hours to allow the coolant fluids and oil levels to stabilize. If the machine is to be transported some distance, we advise that excess smoke and fog liquids be syphoned off into their appropriate containers.

REMOTE CONTROL FACILITY

The HEAVY FOG machine controller has a remote control facility which is located on the side of the control panel. The input is +10 volts D.C. variable. This enables the HEAVY FOG machine to be plugged into mixing desks etc. for remote control.

REMOTE TANKS

If a HEAVY FOG machine is to be used for permanent installation, a special facility can be added to enable HEAVY FOG to be connected to external tanks.

OPTIONAL EXTRAS (for supply, contact your Dealer)

5-way Ducting Adaptor
4" (78mm) Diameter Ducting *available in two types - one for Portable use - one for Installation*
4" (78mm) Extension Connectors
4" (78mm) Diameter Jubilee (pipe) Clips
4" (78mm) "Y" Connectors
5-way Ducting System - includes 5-way adaptor, 5 metres x 4" ducting
5-way Servo Controlled Ducting System complete with controller

4-way Ducting Adaptor
6" (153mm) Diameter Ducting
6" (153mm) Extension Connectors
6" (153mm) Diameter Jubilee (pipe) clips
6" (153mm) "Y" Connectors
4-way Ducting System - includes 4-way adaptor, 5 metres x 6" ducting.

Waterfall Adaptor
Volcano Adaptor
Curtain Adaptor

Flight case (for Heavy fog and accessories)

HEAVY FOG GUARANTEE

HEAVY FOG has a one year guarantee (parts and labour) and an additional four year's parts only guarantee. To qualify for the additional four year's guarantee on parts, the Heavy Fog machine must be checked over annually by JEM PYROTECHNICS & SPECIAL EFFECTS CO. LTD. or an authorized Distributor or Dealer. JEM PYROTECHNICS & SPECIAL EFFECTS CO. LTD will not be liable for any carriage or ancillary charges in this respect.

Any servicing of the Heavy Fog machine must be carried out by qualified, authorized personnel in order not to invalidate the guarantee. All service work must be carried out in conjunction with the manufacturer's *Instructions for Use* and *Service Manual*. Service work must be carried out with the mains supply properly isolated. **DO NOT ATTEMPT SERVICE WORK UNLESS THIS IS DONE.**

This guarantee is invalid if the Heavy Fog machine has been tampered with, mis-used, repaired by unauthorized personnel, accidentally damaged, wilfully damaged, modified in any way (except with the written permission of JEM), incorrectly connected, badly installed, has had non-standard parts fitted or has been used with smoke and/or fog fluids other than those officially recommended by the manufacturer. If so, all labour, parts and delivery charges will be charged at cost.

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WHAT DO I DO IF PROBLEMS ARISE?



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1. DON'T DESPAIR! CHECK OBVIOUS POINTS LIKE THE FUSE AND IF YOU HAVE FLUID IN THE MACHINE. IS THE RED LIGHT ON PERHAPS? ACTUAL FAULTS ARE RARE!



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2. IF ALL ELSE FAILS, CALL YOUR DEALER FIRST, OR CALL US! WE KNOW OUR MACHINES INSIDE OUT AND WILL KNOW WHAT TO DO!





ATTENTION!

READ THIS!

SPECIAL NOTES FOR YOUR ATTENTION

- THIS MACHINE SHOULD ONLY BE USED FOR THE PURPOSE INTENDED
- THIS MACHINE MUST BE INSTALLED AND USED BY EXPERIENCED PERSONNEL ONLY.
- REMEMBER! THIS IS AN ELECTRICAL PIECE OF EQUIPMENT. PLEASE TREAT IT WITH THE RESPECT NORMALLY AFFORDED TO ELECTRICITY.
- AS WITH ALL ELECTRICAL ITEMS, KEEP WELL AWAY FROM WATER.

INSTALLATION OF THE HEAVY FOG 2500

- UNDER NO CIRCUMSTANCES SHOULD THE HEAVY FOG 2500 BE PLACED DIRECTLY OVER PEOPLE'S HEADS.
- MACHINE SHOULD BE KEPT ON A LEVEL SURFACE AND UPRIGHT AT ALL TIMES. A DRAIN OFF PIPE IS FITTED TO THE HEAVY FOG 2500 AND SHOULD BE ATTACHED TO A SUITABLE CONTAINER AND CHECKED PERIODICALLY AND EMPTIED. CONTAINER NOT SUPPLIED.
- ALTHOUGH EVERY EFFORT IS MADE TO INSULATE THE HEAVY FOG 2500 AGAINST CONDENSATION, BECAUSE OF THE LOW TEMPERATURES PRODUCED, SOME DRIPPING MAY OCCUR AT THE FRONT OF THE MACHINE IN WARM CONDITIONS AND A DRIP TRAY MAY BE NECESSARY.

IMPORTANT

- USE ONLY ZR/HEAVY FOG FLUID, MANUFACTURED BY JEM SMOKE MACHINE CO. LTD. IN ALL JEM SMOKE/FOG MACHINES, USING OTHER BRANDS WILL INVALIDATE THE GUARANTEE AND GIVE REDUCED PERFORMANCE.



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