

Mk. V & Mk. X
Smoke Machine
Operating Instructions

CONCEPT

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THE CONCEPT SMOKE MACHINES GIVE ...

SMOKE WITH A DIFFERENCE: The smoke produced has special features which make it particularly suitable for a number of uses for which ordinary smoke is unacceptable.

- (1) It is non-toxic and non-irritant.
- (2) It is non-contaminating.
- (3) It is ductable — that is, it can be passed through long lengths of hose without losing its density (with catch pot fitted).
- (4) It is flame proof.
- (5) It can be passed through dry ice to give a low lying mist effect (with dry ice container fitted).
- (6) Dense and white in appearance.

A CHOICE OF 3 MACHINES — one to suit *your* application:—

COMET — mains operated, light weight, aerosol powered.

The GENIE Mk. **V** — mains operated, popular model.

The GENIE Mk. **X** — mains operated, high output, twin system.

- (1) Fully portable and simple to operate.
- (2) Robust and reliable.
- (3) Low running costs.
- (4) Attractively styled.
- (5) Remote control available.
- (6) Automatic systems designed to meet your requirements.

THE CONCEPT SMOKE GENIE USED BY TELEVISION, FILM STUDIOS, THEATRES, EXHIBITIONS AND INDUSTRY.

DESIGN AND INSTALLATION FACILITIES ARE AVAILABLE TO MEET YOUR REQUIREMENTS & SPECIAL EFFECTS PROJECTS UNDERTAKEN.

MK **V** and MK **X** OPERATING INSTRUCTIONS

Please read these instructions fully before operating your smoke machine. If the correct operation and maintenance procedures are followed unnecessary repairs will be avoided

GENERAL INFORMATION

1. Concept smoke machines are designed for operation with CO² only. **DO NOT** use any other gas or compressed air.

As the CO² is stored in the cylinders as a liquid the pressure reading on the regulator gauge is not an indication of the cylinder contents. For an accurate measure of the contents the cylinder should be checked weighed against markings on shoulder of cylinder.

2. Only Concept special 'Smoke Oil' must be used in your Concept smoke machine, as the thermostat controlling the working temperature of the machine is calibrated to suit specific boiling/flash point. Use of any other oil will cause poor smoke, possible damage to machine and may be dangerous.

3. Always keep machine upright to prevent oil leaking from reservoir, and ensure that CO² nylon hose remains kink-free.

4. When smoke is required to be hosed away from machine a catchpot (available from Concept) must be used. This acts as an adaptor for 52mm bore flexible hose. The maximum length of usable hose depends upon the rises, bends and falls in the run, but on average approximately 15 metres may be used. Consult Concept for special applications.

WARNING: When using catchpot and/or hose avoid naked flame in the vicinity of the smoke outlet.

5. If machine is required for longer smoke production without changing CO² cylinder, a larger cylinder may be used, free standing with machine, when this is the case a rubber flexible hose should be used from the regulator to machine, this provides a more durable connection which is less prone to damage. (consult Concept)

WARNING: Syphon cylinders should NOT be used.

6. When machine is required to be wired into a customers control panel separate instructions and wiring diagrams should be obtained from CONCEPT.

7. When low lying smoke is required a 'Dry-Ice' attachment should be used. This is a container which is packed with 'Dry-Ice' (solid CO²) and fitted to the outlet of the smoke machine, the smoke passes through the container and is chilled, causing it to stay close to the ground. (Durability dependant on circumstances).

N.B. As the smoke flow from this attachment is very slow the smoke cannot then be hosed.

8. All Concept smoke machines must be used in well ventilated areas. If the machine is required to be used in confined spaces Distillers booklet ref: Safety data book – "Carbon Dioxide in cylinders" should be obtained and carefully read with reference to CO² concentration and its likely effects.

MK V

GENERAL DESCRIPTION

Size: 235mm diameter × 350mm high
Weight:- (inc. CO² cylinder) 17.5Kg (approximately)
Usable oil capacity:- 1.5 litres (approximately)
Tank capacity:- (from empty) 1.7 litres (approximately)
Maximum working pressure:- 8.3 bar (120 psi.)
Optimum working pressure:- 6.9 bar (100 psi.)
CO² cylinder capacity:- 1.1Kg
CO² cylinder weight (full):- 4.6Kg (approximately)
Duration at continuous max. working pressure:- 45 mins (approximately)
Max. output rate (approximately) 15m³/min. at 1½m visibility
Electrical supply:- 230v AC single phase (110v AC optional) 50-60 Hz
Power consumption:- 550 watts
Smoke output control:- Variable from zero – maximum

A Genie Mk V is available in two basic models:

- A. Standard – manual
- B. With remote control

The units comprise:

- A. Genie Mk V smoke machine with 1.1Kg CO² cylinder, pressure regulator with pressure gauge fitted, 1 litre special Concept smoke oil, funnel, spanner for regulator, 3 metre supply lead and operating instructions.
- B. As for (A) but with Remote control box on extension multi way cable.

N.B. Supply cable enters Remote Control box **NOT** machine.

PREPARATION Mk V

1. Fit suitable fused plug to supply cable (5 amp)
2. Check cylinder contains CO². Unscrew (anticlockwise) pressure regulator key to zero then open stop valve on cylinder, gauge pressure should be at least 28 bar (400 psi.) (See GENERAL INFORMATION NOTE (1)). If machine is to be used leave stop valve open, if not close valve firmly.

To change CO² cylinder, close stop valve, disconnect regulator (using spanner provided) loosen the clamping bolt and slide out empty cylinder, slide in a new cylinder, tighten clamping bolt firmly, reconnect regulator to cylinder, (using spanner provided). Ensure red fibre washer is in place on regulator spigot before fitting to cylinder.

3. Check that the reservoir contains oil by removing cover, unscrewing filler cap/dipstick and removing. Wipe dipstick clean with a lint free cloth replace in filler hole and screw into place. Unscrew and lift out again and inspect oil level. Re-fill as required with Concept special smoke oil.
Volume from 'L' (min) mark to 'H' (max) mark is approximately 1.0 litre. Replace filler cap/dipstick hand tight. **DO NOT** use force or any form of tool. Replace cover.

WARNING: Do not overfill reservoir tank or damage will occur and wet smoke will be produced.

4. Make sure all switches are in the OFF position.

OPERATION Mk V

A. STANDARD MACHINE

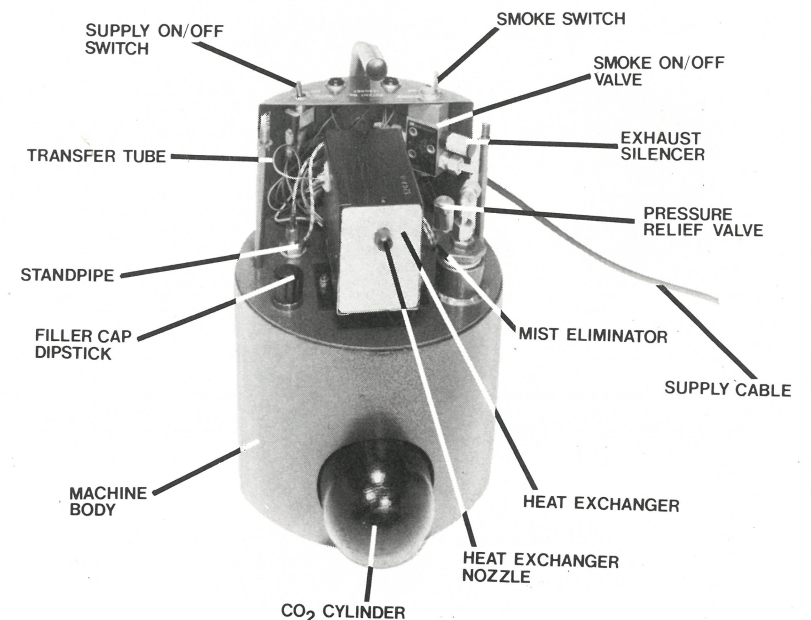
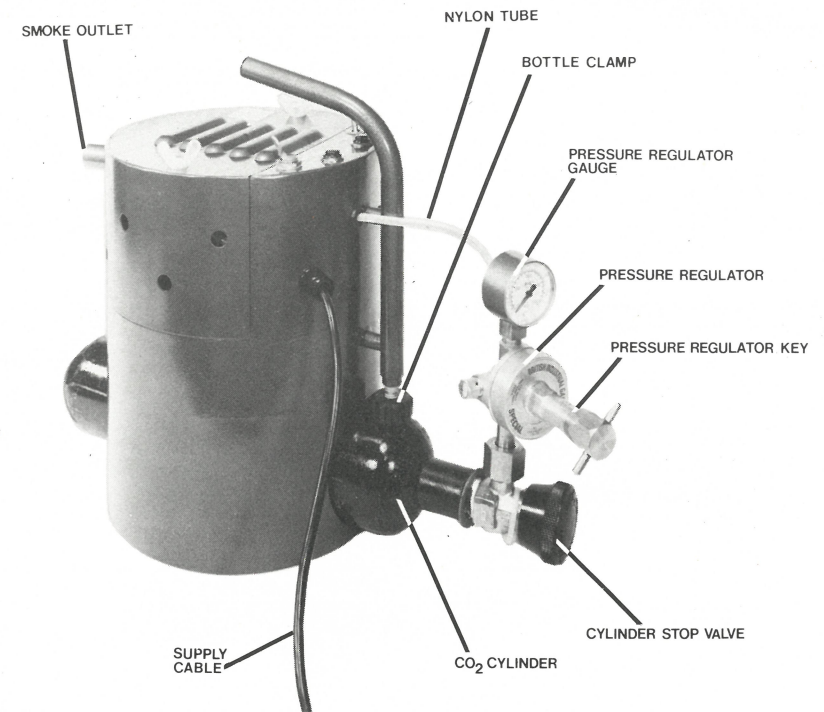
1. Plug in mains lead into appropriate supply and operate switch on top of machine marked 'SUPPLY'. The two Indicator lamps will now light, 'RED' for supply indication, 'GREEN' for temperature indication.
2. Screw in the pressure regulator key to approximately 3 bar (45 psi) as indicated on the regulator stem.
3. The green temperature indicator lamp will go 'OFF' when machine reaches its working temperature (approximately 15 mins). The machine is now ready to produce smoke. (see note 6)
4. To produce smoke operate switch on top of machine marked 'smoke'. Volume of smoke produced can be adjusted by screwing the pressure regulator key clockwise to increase, anticlockwise to decrease.
5. **Never operate smoke switch until 'GREEN' temperature indicator lamp has gone out or if 'RED' supply indicator lamp has gone out, as damage will occur to machine.**
6. The thermostat keeps the machine at the correct working temperature, consequently the machine may be used to produce smoke after the 'GREEN' temperature indicator lamp has gone out for the first time, whether the lamp is subsequently 'ON' or 'OFF', providing the 'RED' supply lamp is 'ON' and the supply has not been interrupted.

7. When the smoke is no longer required, turn 'Smoke' switch to the 'OFF' position. At this point the CO₂ stored in the reservoir tank is exhausted into the atmosphere and smoke production ceases.
8. **SHUT DOWN:** When machine is no longer required: Unscrew pressure regulator key to zero and close cylinder stop valve. Turn supply switch to 'OFF' (O) position and remove mains plug from supply. Allow machine to cool, remove cover and generally wipe clean, re-fit cover and store in warm, dry conditions. (Replace machine into carry case or tri-wall box if supplied).

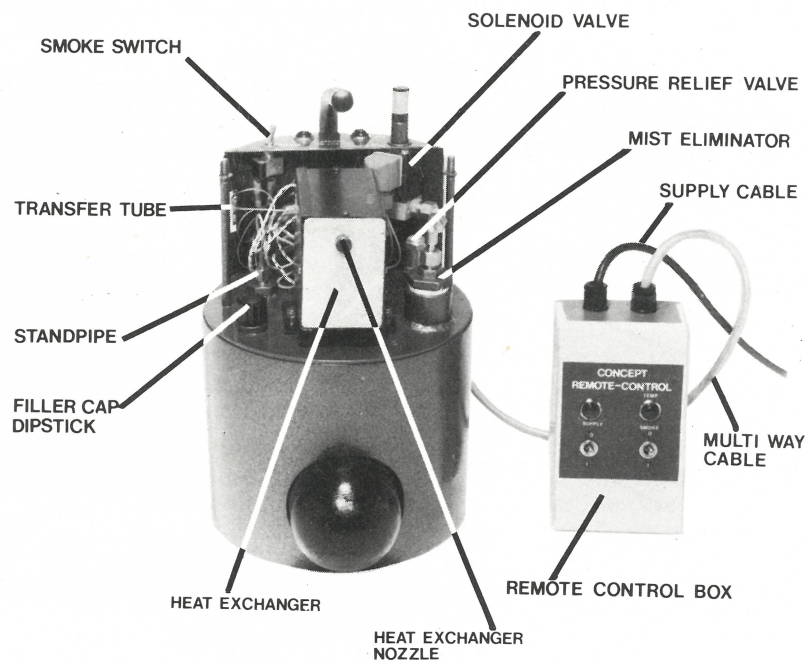
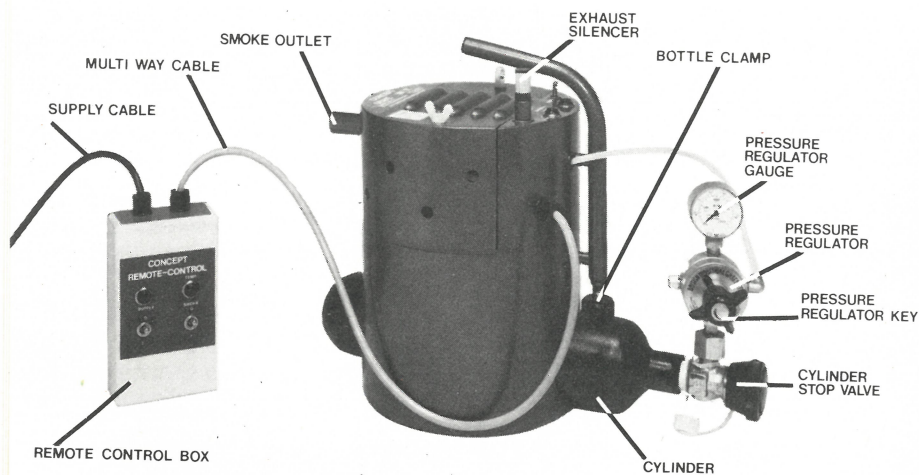
B. REMOTE CONTROL

1. Check 'Smoke' and supply switches are in 'OFF' (O) position on machine and remote control box.
Plug in mains lead to appropriate supply and operate switch in remote control box marked 'supply'. The two indicators on the remote control box and the two indicators on the machine will now light. 'RED' for supply indication, 'GREEN' for temperature indication.
2. Screw in the pressure regulator key to approximately 3 bar (45 psi) as indicated on the regulator stem.
3. The 'GREEN' temperature lamps will go off when the machine reaches its working temperature (approximately 15 mins.) The machine is now ready to produce smoke. (see note 6)
4. To produce smoke operate either switch marked 'Smoke' on machine or remote control box. Volume of smoke can be adjusted by screwing the pressure regulator key clockwise to increase, anticlockwise to decrease.
5. **Never operate smoke switches until 'GREEN' temperature indicator lamps have gone out or if 'RED' supply indicator lamps have gone out, or damage will occur to machine.**
6. The thermostat keeps the machine at the correct working temperature, consequently the machine may be used to produce smoke after the 'GREEN' temperature indicator lamps have gone out for the first time, whether the lamps are subsequently 'ON' or 'OFF' providing the 'RED' supply lamps are 'ON' and the supply has not been interrupted.
7. When smoke is no longer required turn 'Smoke' switch to the 'OFF' position. At this point the CO₂ stored in the reservoir tank is exhausted into the atmosphere and smoke production ceases.
8. **SHUT DOWN:** When machine is no longer required:— Unscrew pressure regulator key to ZERO and close cylinder stop valve. Turn supply switch to 'OFF' (O) position and remove mains plug from supply. Allow machine to cool, remove cover and generally wipe clean, re-fit cover and store in warm, dry conditions. (Replace machine into carry case or tri-wall if supplied).

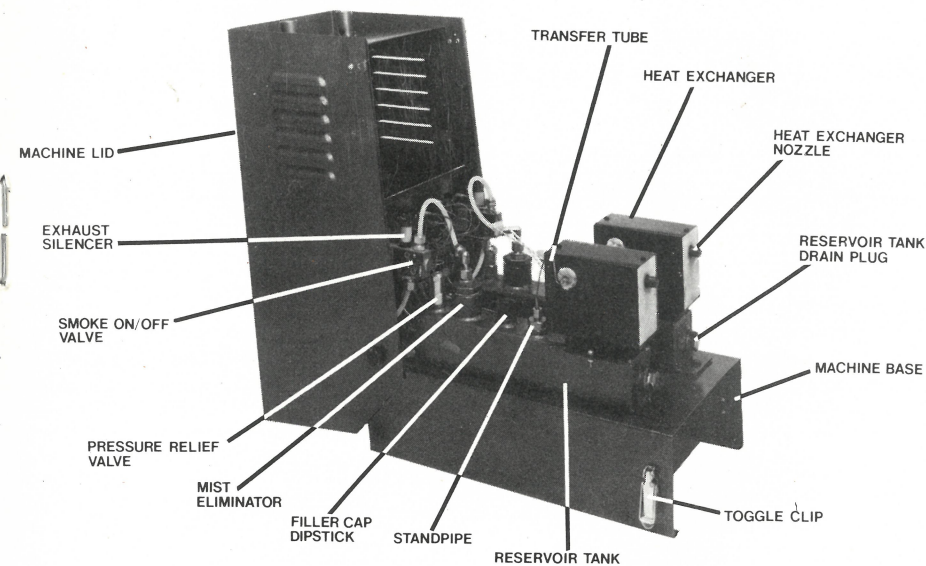
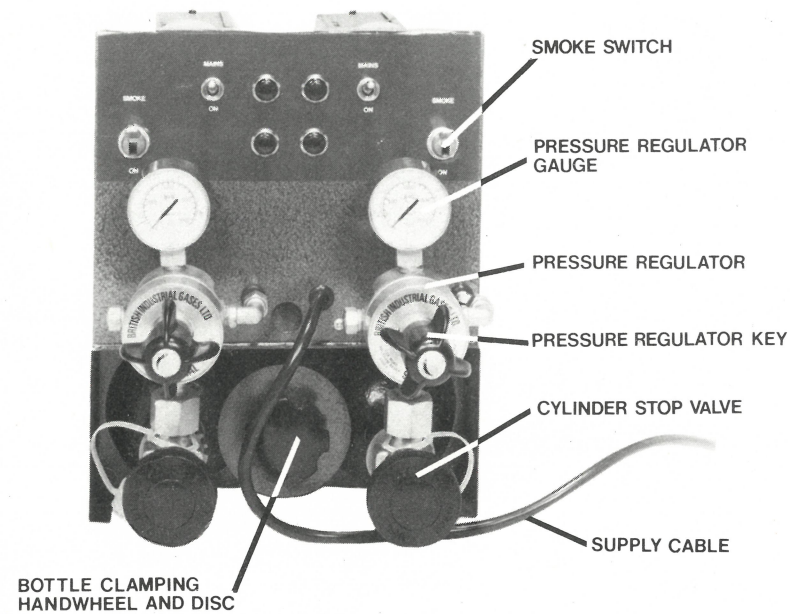
Mk V STANDARD



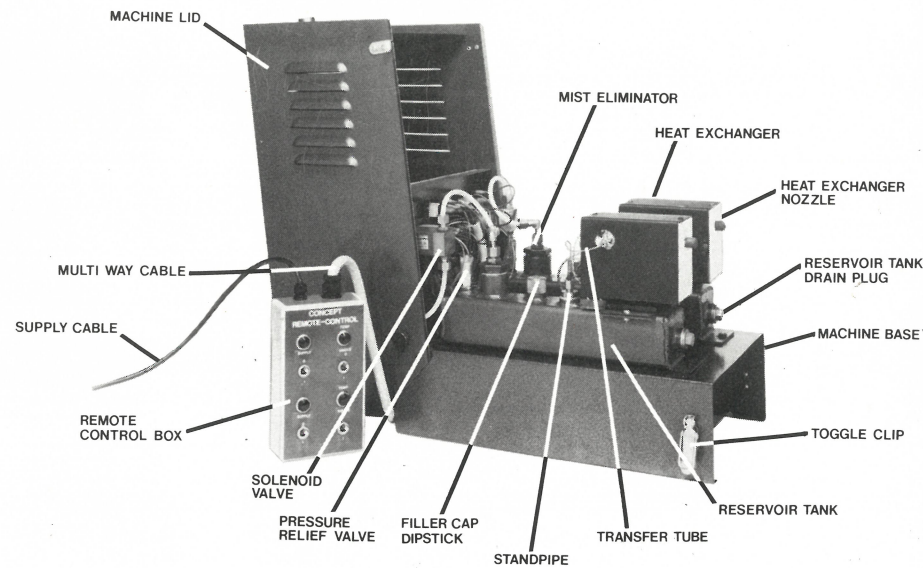
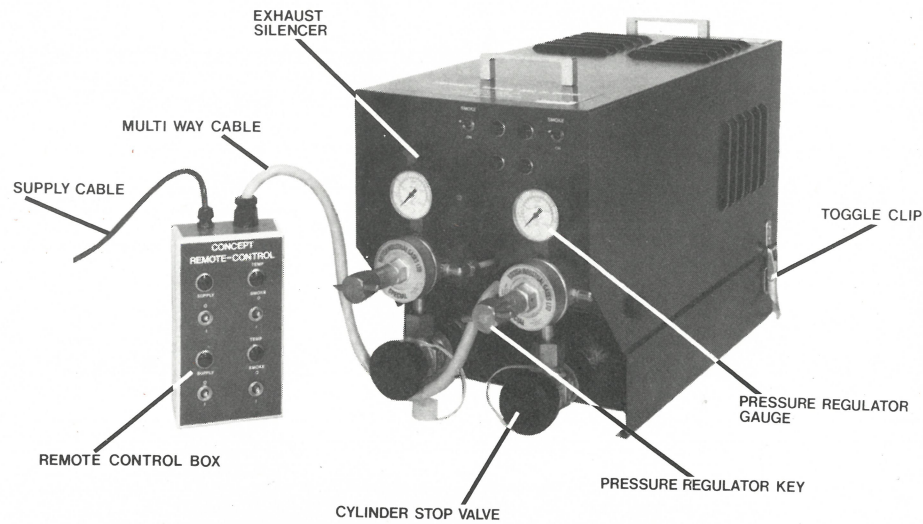
Mk V REMOTE



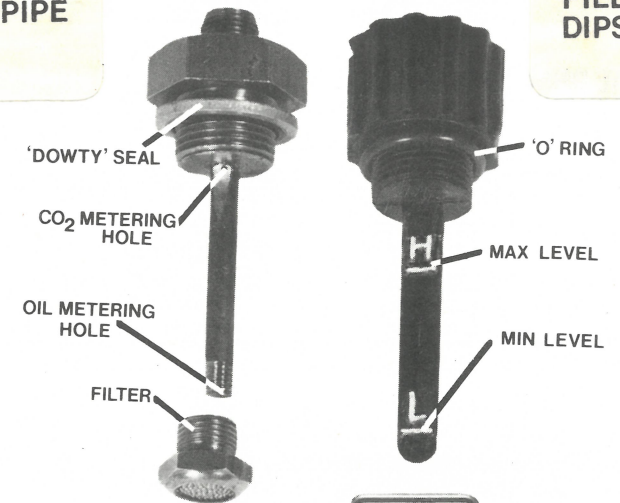
Mk X STANDARD



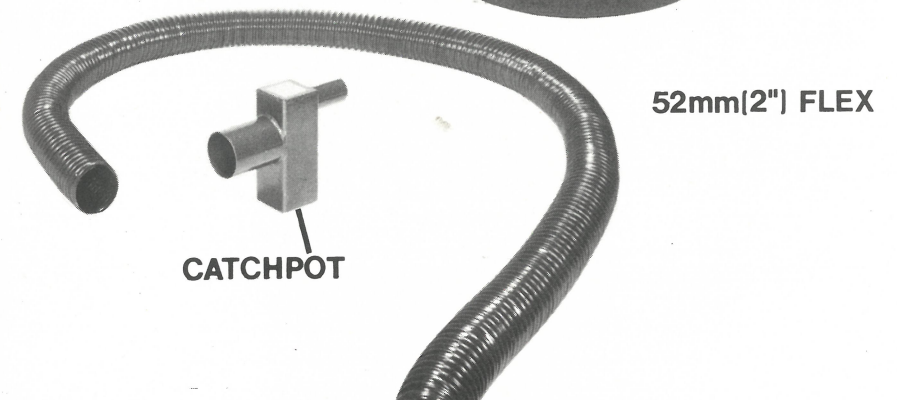
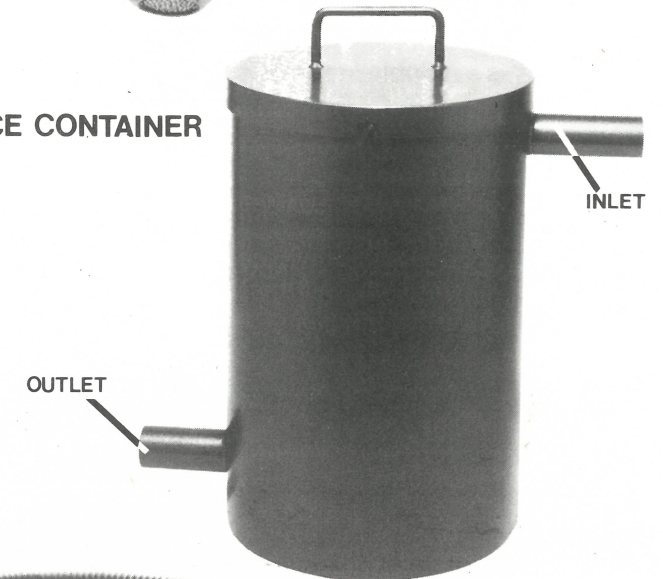
Mk X REMOTE



STANDPIPE



DRY ICE CONTAINER



GENERAL DESCRIPTION MK \bar{X}

Size: 610mm × 280mm × 380mm

Weight (including CO² cylinders):- 33Kg (approximately)

Usable oil capacity, per tank:- 650cc.

Tank capacity (from empty):- 800cc.

Maximum working pressure:- 8.3 bar (120 psi)

Optimum working pressure:- 6.9 bar (100 psi)

CO² cylinder capacity:- 1.1Kg

CO² cylinder weight (full):- 4.6Kg (approximately)

Duration at maximum working pressure per outlet:- 45 mins.

(approximately)

Maximum output rate per outlet:- 15³/min at 1½m visibility

Electrical supply:- 230V AC single phase (110V AC optional) 50-60 Hz

Power consumption per outlet:- 550 watts

Smoke output control:- Variable from zero – maximum

A Genie Mk \bar{X} is available in two basic models.

A) Standard – manual

B) With remote control

The units comprise:-

A) Genie Mk \bar{X} smoke machine with 2 × 1.1Kg CO² cylinders, 2 × pressure regulators with gauges fitted, 2 × 1 litres Concept oil, funnel, spanner for regulators, 3 metre supply lead, operating instructions.

B) As for (A) but with remote control box on extension multi way cable.

NB. Supply cable enters remote control box **NOT** machine.

PREPARATION MK \bar{X}

1. Fit a suitable fused plug to the supply cable (10 amp).
2. To check cylinder contains CO². Unscrew pressure regulator key to ZERO then open stop valve on cylinder, gauge pressure should be at least 28 bar (400 psi) (see general information note (1)). If the machine is to be used leave stop valve open, if not close valve firmly.
To change CO² cylinders, close stop valves, disconnect regulators (with spanner provided), remove clamping handwheel and disc, slide out cylinders, slide in new cylinders, re-fit clamping handwheel and disc, and tighten.
Re-connect regulators to cylinders (using spanner provided).
Ensure red fibre washers are in place on regulator spigots before fitting to cylinders.

3. Check that reservoirs contain oil by unfastening toggle clips and hinging lid back. Unscrew filler cap/dipstick and wipe dipstick clean with lint free cloth. Replace into filler hole and screw into place. Unscrew and lift out again and inspect oil level. Re-fill as required with Concept special Smoke Oil, volume from 'L' (min) mark to 'H' (max) mark is approx 0.5 litre, Replace filler cap/dipstick hand tight, DO NOT use force or any form of tool. Repeat for second tank. Hinge cover back into position and re-fasten toggle clips.

WARNING: Do not overfill reservoir tank or damage to the machine will occur and wet smoke will be produced.

4. Make sure all switches are in the 'OFF' (O) position.

OPERATION MK \bar{X} (per outlet)

For both outlets duplicate for other side of machine. One or both outlets may be used at the same time!!

A. STANDARD MACHINE – (Manual)

1. Plug supply lead into appropriate supply and operate switch on machine marked 'SUPPLY'. The two indicator lamps will now light 'RED' for supply indication, 'GREEN' for temperature indication.
2. Screw in the pressure regulator key to approx. 3 bar (45 psi) as indicated on the regulator stem.
3. The 'GREEN' Temperature indicator lamp will go 'OFF' when machine reaches working temperature (approx. 15 mins). The machine is now ready to produce smoke.
4. To produce smoke, operate switch on back panel marked 'Smoke'. Volume of smoke produced can be adjusted by screwing the pressure regulator key clockwise to increase and anti-clockwise to decrease.
5. **Never operate smoke switch until 'GREEN' temperature indicator light has gone out, or if 'RED' supply indicator lamp has gone out as damage will occur to machine.**
6. The thermostat keeps the machine at the correct working temperature, consequently the machine may be used to produce smoke after the 'GREEN' temperature indicator lamp has gone out for the first time, whether the lamp is subsequently 'ON' or 'OFF', providing the 'RED' supply lamp is 'ON' and the supply has not been interrupted.
7. When smoke is no longer required turn 'Smoke' switch to the 'OFF' position. At this point CO² stored in the reservoir tank is exhausted into the atmosphere and smoke production ceases.

8. **SHUT DOWN:-** When machine is no longer required – unscrew pressure regulator key to ZERO and close cylinder stop valve. Turn supply switch to 'OFF' (O) position and remove mains plug from supply. Allow machine to cool, unfasten toggle clips and hinge back lid, generally wipe clean and re-fasten toggle clips.

B. REMOTE CONTROL

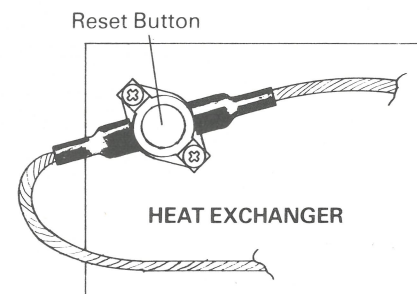
1. Check 'Smoke' and 'Supply' switches are all in the 'OFF' (O) position on machine and remote control box.
Plug in supply lead to appropriate supply and operate switch in remote control box marked 'Supply'. The two indicator lamps on the remote control box and the two indicators on the machine will now light. 'RED' for supply indication, 'GREEN' for temperature indication.
2. Screw in the pressure regulator key to approx. 3 bar (45 psi) as indicated on the regulator stem.
3. The 'GREEN' temperature indicator lamps will go 'OFF' when machine reaches working temperature (approx. 15 mins).
The machine is now ready to produce smoke (see note 6).
4. To produce smoke operate either switch marked 'smoke' on machine or remote control box. Volume of smoke produced can be adjusted by screwing the pressure regulator key clockwise to increase and anti-clockwise to decrease.
5. **Never operate switches until 'GREEN' temperature indicator light has gone out or, if 'RED' supply indicator lamp has gone out, as damage will occur to machine.**
6. The thermostat keeps the machine at the correct working temperature consequently the machine may be used to produce smoke after the 'GREEN' temperature indicator lamp has gone out for the first time whether the lamp is subsequently 'ON' or 'OFF', providing the 'RED' supply lamp is 'ON' and the supply has not been interrupted.
7. When smoke is no longer required, turn 'smoke' switch to the 'OFF' position. At this point CO₂ stored in the reservoir tank is exhausted into the atmosphere and smoke production ceases.
8. **SHUT DOWN:-** When machine is no longer required – unscrew pressure regulator key to ZERO and close cylinder stop valve. Turn supply switch to 'OFF' (O) position and remove mains plug from supply. Allow machine to cool, unfasten toggle clips and hinge lid back, generally wipe clean and re-fasten toggle clips.

HOSING:-

When smoke is required to be hosed away from the machine a catchpot, (available from Concept) MUST be used. This acts as an adaptor for 52mm bore flexible hose and traps larger droplets of liquid which occur when hosing, and which would otherwise be deposited in the hose. Care should be taken when fitting catchpot to machine outlet not to cover air intake holes. At regular intervals (after an hour or so of hosing smoke) the catchpot must be removed and any liquid poured out, and discarded after which the catchpot may be replaced in position. (For permanent installations, the catchpot may be fitted with a drain tap.) Failure to empty the catchpot regularly may result in oil running back into the machine causing damage. The maximum length of hose that may be used depends upon the number and severity of bends and falls in the run, but on average 15 metres may be used. Consult Concept for special applications.

THERMAL 'CUT-OUT':-

THERMAL CUT-OUT



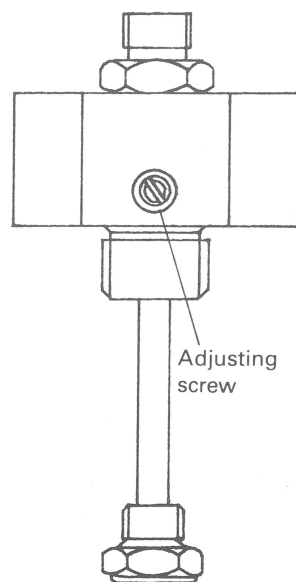
The Thermal 'cut-out' acts as a safety over-ride if the thermostat should fail in the ON position or, if the machine has had its wiring wrongly modified to bypass the thermostat. When the block overheats the 'cut-out' operates and cuts off the power to the heaters and thermostat thereby avoiding further damage to the block, and heaters. If the Thermal 'cut-out' trips, all lights on the machine i.e. Temperature indicator and mains indicator will go out. To check if 'cut-out' has operated, leave mains supply connected and mains ON/OFF switch in the ON (1)

position. Remove lid, carefully depress red button on 'cut-out'. If it clicks and the lights come ON, the 'cut-out' has operated — consult CONCEPT or your Agent. If the 'cut-out' has not operated check supply is live and that the plug fuse is intact.

When the 'cut-out' operates, machine should not be used until the fault has been located and rectified. After rectification depress red button on the Thermal 'cut-out' to re-set system.

The Thermal 'cut-out' includes the facility for continuing smoke production, when this is vital, even after the device has tripped. As some risk of damage to the heat exchanger is involved, if you are interested in this facility, telephone Concept for further technical information.

ADJUSTABLE STANDPIPE:-



ADJUSTABLE STAND PIPE

Changes in local conditions can cause a slight variation in the quality of smoke produced (due to change in the viscosity of the oil) i.e. cold conditions may cause the smoke to be produced slightly thin and hot conditions may cause smoke to be damp.

The Adjustable standpipe allows for fine tuning of the machine to compensate for such changes. Adjusting the screw anti-clockwise causes the smoke to be thinned, clockwise rotation causes the smoke to be more dense. Care should be taken to find the optimum position, which is between the thin and the wet smoke settings, to give dense, dry smoke. Before attempting to adjust the standpipe setting, allow the machine to warm up for 30 minutes.

NOTE:- In this type of standpipe there is NO metering hole for CO₂ in the wall of the copper tube. In the event of the adjustable screw and 'O' ring being removed, the 'O' ring should be lubricated with a small amount of Concept special smoke oil, before the adjustable screw and 'O' ring are replaced.

MACHINES FOR TRANSIT:-

Prior to transportation or despatch, any oil in the reservoir of the machine must be drained out, for which purpose a drain plug is provided. If a machine is shipped containing oil, contamination by leaked oil can render the complete heat exchanger useless. The cost of replacement will be charged to the customer.

INSTALLATION WARNING:-

Design and installation facilities are available to meet any special requirements, from advice about simple hosing of smoke to complete automatic systems.

CONCEPT cannot accept responsibility for any damage or malfunction caused to or by, Concept smoke machines, or any consequential damage, where ducting of smoke or electrical switching or any other deviation from the standard machine supplied, is carried out by any other than CONCEPT ENGINEERING LIMITED.

MAINTENANCE

Very little routine maintenance is required for your smoke machine, if this maintenance is regularly carried out expensive repair bills will be avoided.

1. After each use clean down the machine as in operation (8).
2. Periodically remove cover, fit 2.0mm Ø drill supplied into hand drill, carefully insert drill into nozzle of heat exchanger and gently drill out carbon deposits to a maximum depth of 25mm. The more often this can be done the better, but it need not be done after every use.
3. Periodically remove cover, carefully tighten all nuts and olives on nylon tubing and fittings.

Notes