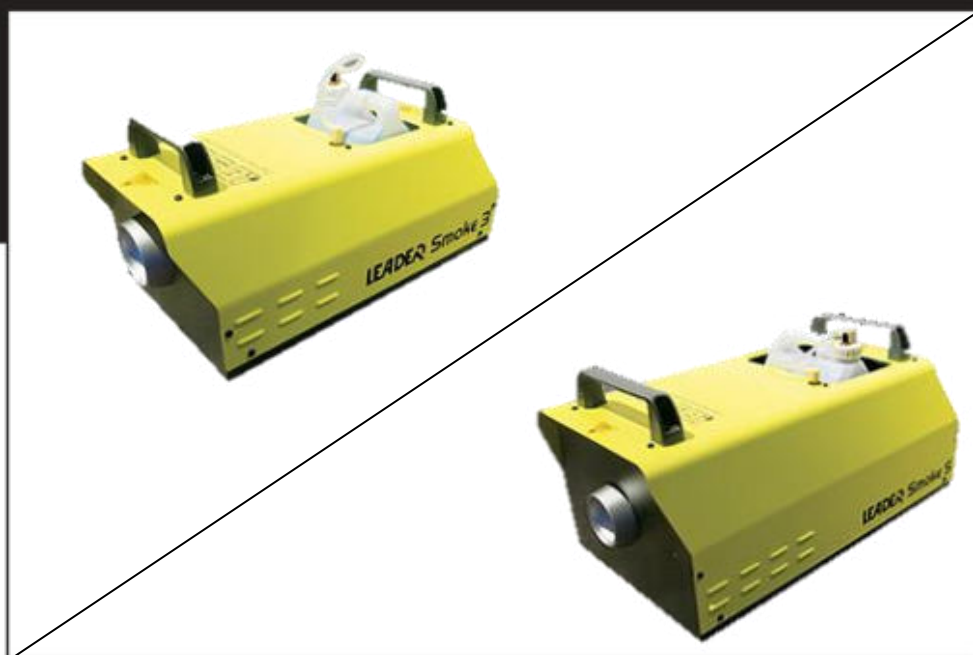


User manual



LEADER Smoke 3
LEADER Smoke 5



EN

Read this manual carefully, before the first use

LEADER

Product references

R20.00.113	LEADER Smoke 3	600 m³ per minute-220 v-50/60 Hz
R20.00.114	LEADER Smoke 5	1320 m³ per minute-220 v-50/60 Hz
R20.00.115	LEADER Smoke 3	600 m³ per minute-115 v-50/60 Hz
R20.00.116	LEADER Smoke 5	1320 m³ per minute-115 v-60 Hz

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1 INTRODUCTION

The **LEADER Smoke 3 and 5** from **LEADER** provide a versatile and convenient solution for fire training. It can produce a variety of effects from and optically translucent haze to a dense ‘white out’ that very effectively simulates dense smoke for realistic firefighter training to a wide range of fog requirements whether permanently installed or taken on the road.

The units have been designed to cope with the rigors of training with a tough out casing and rugged water-resistant design.

The units are controlled using an advanced control panel with LCD screen can be operated on the machine or removed and used as a remote controller. They also have an auxiliary input to allow remote control devices to be used with the product for maximum flexibility.

2 SAFETY INFORMATION

LEADER Smoke 3 and LEADER SMOKE 5



Read the safety precautions in this manual before installing, operating or servicing this product.

The following symbols are used to identify important safety information:



Danger!
Safety hazard. Risk
of personal injury



Danger!
Hazardous voltage.
Contact will cause electric
shock.



Caution!
Burn hazard.
Hot surface.
Do not touch.



Caution!
Fire hazard.



Warning! This product is not for household use. It presents risks of injury due to electric shock, burns, falls and respiratory problems!

Read this manual before operating the machine, follow the safety precautions listed below, and observe all warnings in this manual and printed on the machine. Use the machine only as described in this manual and in accordance with local laws and regulations.

If you have questions about how to operate the machine safely, or if you have followed the instructions in this manual and the machine is malfunctioning, please contact **LEADER**.



Preventing electric shocks

- Always ground (earth) the machine electrically.
- Use only a source of AC power that complies with local building and electrical codes, and that has both overload and ground-fault protection.
- Before connecting the machine to power, check that the voltage indicated on the machine's serial label matches your local AC power voltage. If your AC power voltage does not match, do not use the machine. Contact **LEADER** for assistance.
- Before using the machine, that all power distribution equipment and cables are in perfect condition and rated for the current requirements of all connected devices.
- If the machine or any cables connected to it are in any way damaged, defective, wet, or show signs of overheating, stop using the machine and contact **LEADER** for assistance. If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer.
- Disconnect the machine from AC power before servicing and when not in use.
- This machine is water-resistant but not totally waterproof. Do not immerse in water or any other liquid. Do not expose to high-pressure water jets.
- Do not spill fluid over or inside the machine. If fluid is spilled, disconnect AC power and clean with a damp cloth. If fluid is spilled on to electronic parts, take the machine out of service and contact **LEADER** for advice.
- Do not remove the covers or attempt to repair a faulty machine. Refer any service not described in this manual to **LEADER**.
- Do not operate the machine if any parts are damaged, defective or missing.
- Moisture and electricity do not mix. Do not aim fog output at electrical connections or devices.



Preventing burns and fire

- The fog produced by the machine is hot enough to cause burns when it leaves the nozzle, and very hot droplets of fluid escape occasionally. Keep people and objects at least 600 mm (24 in.) away from the fog output nozzle.
- Do not touch the fog output nozzle during or after use – it becomes extremely hot and remains hot for several hours after the machine has been shut down.
- Do not attempt to bypass thermostatic switches, fluid sensors or fuses.
- Replace fuses only with ones of the type and rating specified in this manual for the machine.
- Provide a minimum free space of 100 mm (4 in.) around the machine.
- Provide a minimum free space of 500 mm (20 in.) around fans and air vents and ensure free and unobstructed air flow to and around the machine.
- Keep the machine at least 600 mm (24 in.) away from combustible and heat-sensitive materials.
- Do not operate the machine if the ambient temperature (T_a) is below 5° C (41° F) or above 40° C (104° F).
- Do not operate the machine if the relative air humidity exceeds 80%.
- Do not recycle dense smoke into the machine.



Preventing injuries

- Ensure that any surface on which the machine is installed can safely hold the weight of the machine.
- Suspending the machine directly over people's heads is not recommended. Use smoke ducting instead.
- Do not point the smoke output directly at a person's face or at face height.
- Do not operate the machine with missing or damaged covers or shields.
- In the event of an operating problem, stop using the machine immediately and disconnect it from power. Do not attempt to use a machine that is obviously damaged.
- Do not modify the machine in any way not described in this manual or install other than genuine **LEADER** parts.
- Refer any service operation not described in this manual to a qualified technician.
- Fog output can cause condensation. Do not point the output at smooth floors. Floors and surfaces may become slippery. Check these frequently and wipe dry as necessary to avoid any danger of slipping.
- Fog fluid contains food-grade glycols in solution but may present health risks if swallowed. Do not drink it. Store it securely. If eye contact occurs, rinse with water. If fluid is swallowed, give water and obtain medical advice.
- This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge.

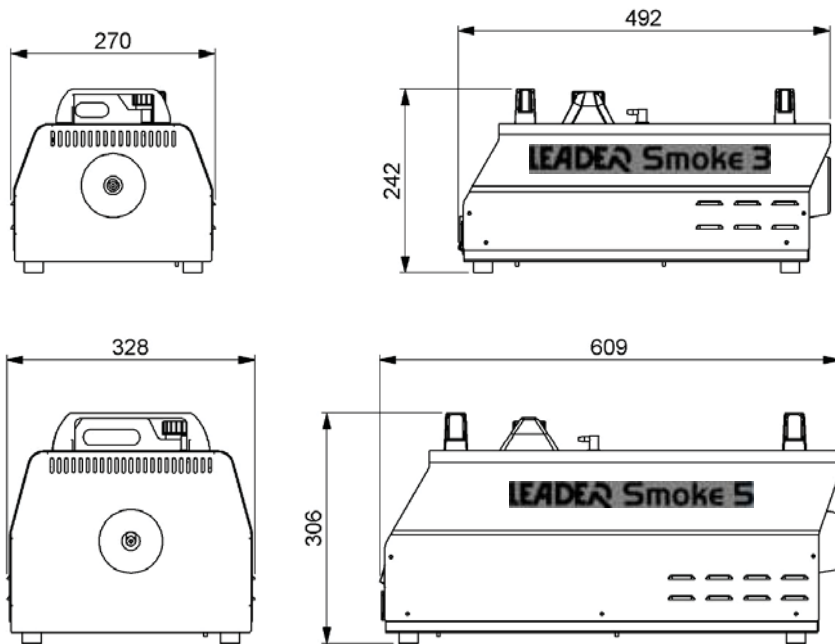


Preventing breathing problems

- A machine can operate safely only with the fog fluid it is designed for. Use the machine only with fluids specified under "Approved fluid types" on **page 16** or you may cause the release of toxic gases, presenting a severe health hazard. You will also probably damage the machine.

3 TECHNICAL SPECIFICATIONS

All dimensions are in millimetres.



- Robust water resistant design.
- Integrated digital remote control.
- Continuous micro-processor controlled output.
- Two fluid options for different applications.
- Soft start technology.
- Fluid sensing system.
- Easy external fluid hook-up.
- Optional ducting kits.



Use only an approved LEADER fog fluid as shown on page 16.

Use of other fluid will void warranty.

Physical

	LEADER Smoke 3	LEADER Smoke 5
Length	485 mm (19.1 in)	602 mm (23.1 in)
Width	335 mm (13.2 in)	395 mm (15.6 in)
Height	242 mm (9.6 in)	306 mm (12.1 in)
Weight.dry	11.2 Kg (24.7 ib)	17.7 Kg (39.1 ib)
Weight.filled	13.5 Kg (30.2 ib)	22.7 Kg (50.0 ib)

▪ Performance

	LEADER Smoke 3	LEADER Smoke 5
Coverage volume	660 m ³ per minute	1320 m ³ per minute
Fluid consumption (max)	88 ml per minute	176 ml per minute
Continuous effect output Ready time	7 minutes*	10 minutes*

* Please note the 110V units may take approximately 10% longer to reach their ready temperature.

▪ Control and programming

	LEADER Smoke 3	LEADER Smoke 5
Control options	Integrated digital remote control	
Control parameters	Continuous or timer-controlled output	
Fog	Variable output control, 0-100%	

▪ Structure

	LEADER Smoke 3	LEADER Smoke 5
Housing	Steel and Aluminium	
Colour	Yellow	
Heat exchanger	1150w (thermally protected)	2000w (thermally protected)
Fluid pump	Oscillating piston, high pressure	
Fluid management	Fluid out sensing, sealed for transportation	
Fluid reservoir	2,5 L drop-in reservoir with quick-connect fitting	5 L drop-in reservoir with quick-connect fitting
External fluid control	Fluid sensing	
Remote control	Integrated digital remote with 3 m cable, 3-pin XLR	

▪ Installation

	LEADER Smoke 3	LEADER Smoke 5
Mounting	Standing	
Clearance around machine	100 mm (4 in)	
Orientation	Up to +/- 40° from horizontal	

▪ Connections

	LEADER Smoke 3	LEADER Smoke 5
Remote control	3-pin locking XLR	
Flimware	AVR socket	

▪ Electrical

	LEADER Smoke 3		LEADER Smoke 5	
Ac power	220 v-50/60 Hz	115 v-60 Hz	220 v-50/60 Hz	115 v-60 Hz
Current	5.3 A	8.75 A	9.2 A	15 A
Power	1200 w	1050 w	2100 w	1800 w
Main fuse	6.3 AT (slow-blow)	10 AT (slow-blow)	12.5 AT (slow-blow)	20 AT (slow-blow)

▪ Thermal

	LEADER Smoke 3	LEADER Smoke 5
Maximum ambient temperature (Ta max)	40° C (104° F)	
Exterior surface temperature	Etat stable à 20° C (32° F), température ambiante 30° C (86° F)	
Max nozzle temperature	290° C (554° F)	
Minimum ambient temperature (Ta min)	5° C (41° F)	

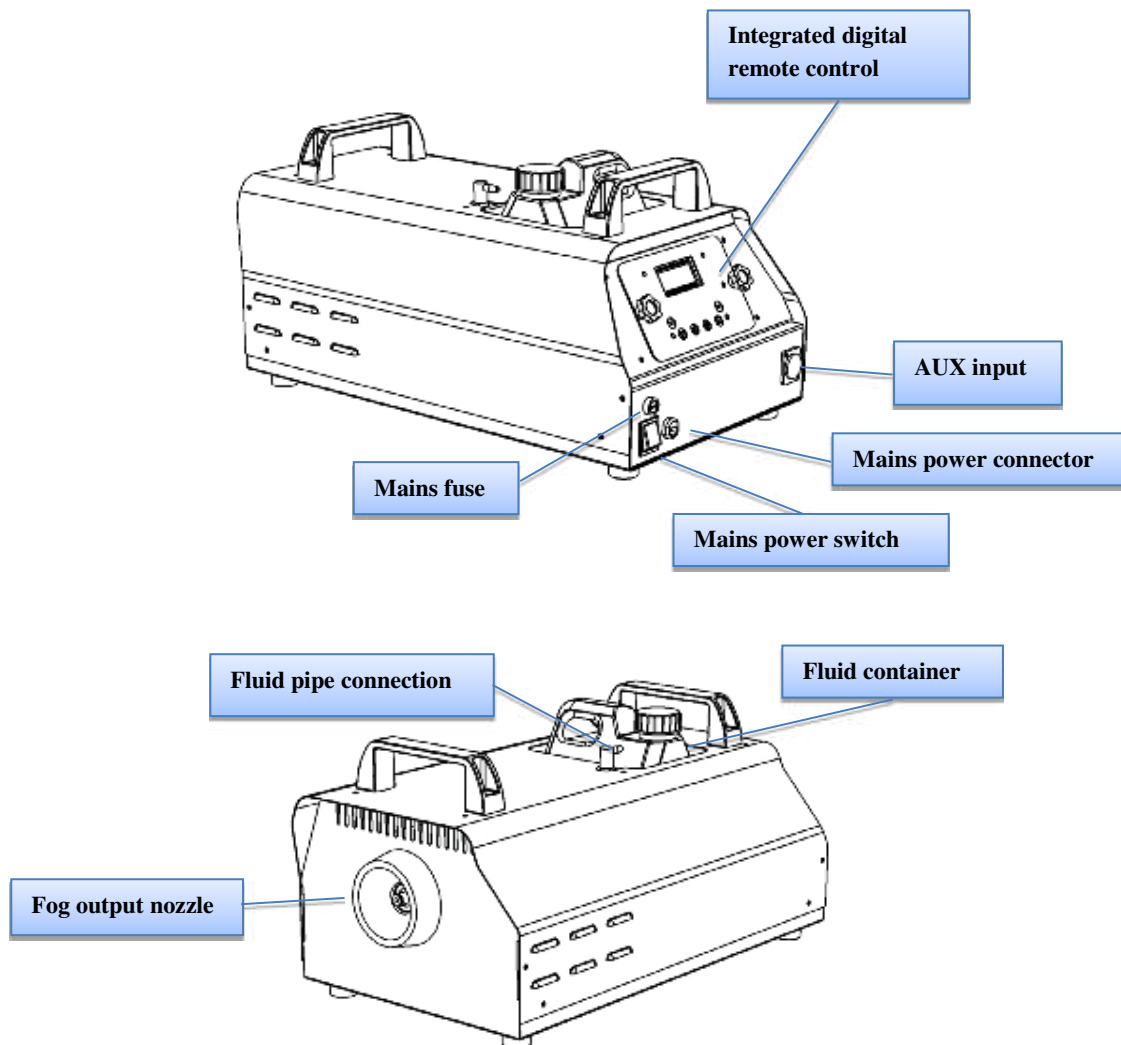
▪ Approvals



EU Model	LEADER Smoke 3	LEADER Smoke 5
EU Safety	EN 60 335-1+A15, EN62233	
EU EMC	EN 61000-6-3	
EU Immunity	EN 61000-6-1	
Australia/NZ (pending)	RCM	

4 PRODUCT DETAILS

LEADER Smoke 3 / LEADER Smoke 5



Warning!
High temperature vapour and surfaces

5 QUICK START

If you are familiar with this type of product, this section will help to get you started quickly. However, please also make the time to read the safety and servicing instructions in the remainder of this manual.

5.1 Setting up

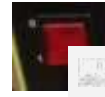
Locate the machine in a suitable area with nothing in front of the fog output.

Install approved **LEADER** fog fluid as shown on **page 16**.

Connect the machine to a suitably rated power source. The power requirements are:

LEADER Smoke 3	1200 W, 5.3 A / 240 V (EU) 1050 W, 8.75 A / 110 V
LEADER Smoke 5	2100 W, 9.2 A / 240 V (EU) 1800 W, 15 A / 110 V

Now set the mains switch on the rear of the unit, to the 'ON' (I) position.



The display will show **HEAT**.



After about 6-8 minutes the display should show **READY** and the current programmed output level %.



5.2 Making fog

If you want to adjust the fog output level press the output **up/down** buttons until the display shows the desired output level.



Press the **Smoke** button



to begin fog production.

The unit will continue to produce fog until the button is pressed again or the fluid supply is depleted (whichever is sooner).



If no fog is produced the first time the unit is fired after a fluid out, it may be necessary to prime the machine. Program the output to maximum power and fire the machine until fog is emitted.

6 INSTALLATION AND SETTING UP



DANGER! DO NOT operate the machine until you have read and observed all the precautions listed under “Safety information” on page 4.

6.1 Location

The Trainer **LEADER** range of machines are designed to be located on the floor or any surface suitable to support their weight. The machine can operate in any orientation from 45 degrees upwards to 45 degrees downwards. Steeper tilting may cause fluid leakage.

Ensure that there is at least 100mm (4 in.) clearance all-round the machine and at least 600mm (24 in.) in front of the fog output.

7 AC POWER

Before using the machine, ensure that a grounding-type (earthed) power plug that fits the local power outlets is installed on the power cable provided.



DANGER! Make sure the power plug is correctly rated:

For UE **LEADER Smoke 3** and **LEADER Smoke 5** models use a plug rated at 10 A minimum.

When installing the plug, follow the plug manufacturer’s instructions and connect pins as follows:

Yellow and green wire to ground (earth), blue wire to neutral and brown wire to live.

The table below shows some common pin identification schemes.

Wire	Function	Marking	Screw colour
Brown	Live	« L »	Yellow or Brass
Blue	Neutral	« N »	Silver
Green/Yellow	Earth		Green

Before connecting the machine to power, verify that the AC supply is adequately dimensioned for the current draw of the machine.

LEADER Smoke 3 1200 W, 5.3 A / 240 V (EU)
 1050 W, 8.75 A / 110 V

LEADER Smoke 5 2100 W, 9.2 A / 240 V (EU)
 1800 W, 15 A / 110 V

Check that the local AC voltage is appropriate, as indicated on the machine’s serial number label. If your AC voltage is outside the appropriate range, do not use the machine. Contact **LEADER** for assistance.

7.1 Setting up

Fill the fluid tank with an approved **LEADER** fluid as shown on **page 16**.

7.2 Final checks

Before applying power to the machine, verify the following:

- The machine is safely located or installed and meets the location requirements stated on **page 11**.
- The operator is familiar with, and able to comply with, the requirements for safe operation listed on **page 4**.
- The fluid is one of the Approved **LEADER** fluids listed under “Approved fluid types” on **page 16**.
- The machine is electrically grounded (earthed).
- The AC power distribution circuits and lines are adequately rated for the current load.

7.3 Turning on the power

Set the mains switch on the rear of the unit, to the ‘ON’ (I) position.



The display will show **HEAT**.



When the display shows **READY**



the unit is ready to produce smoke.

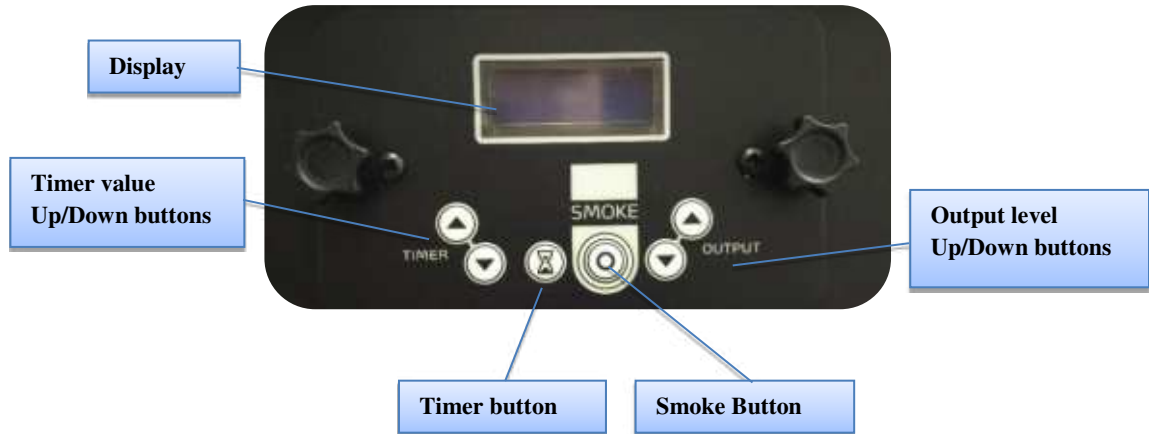


To obtain maximum output, wait another few minutes after the **READY** indication is shown, as the machine continues to heat to full operating temperature and fog output is reduced while the unit is heating up.

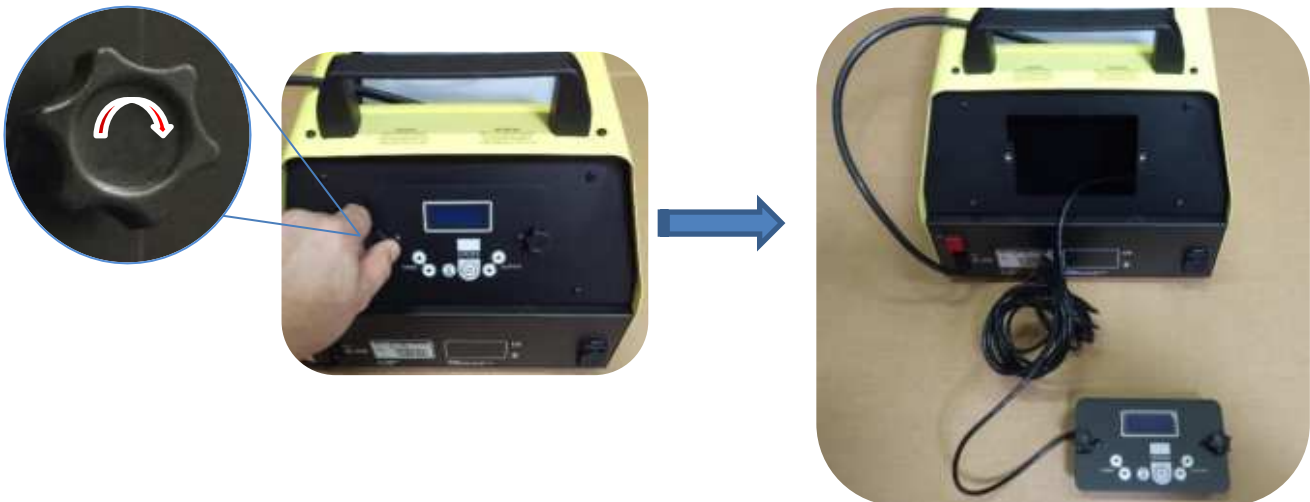
8 CONTROL SETTINGS

8.1 Overview

The integrated digital remote control on the rear of the machine allows you to configure it using option menus.



The integrated digital remote control may be removed from the unit and used as a handheld remote control by removing the two hand wheel bolts either side of the display.



8.2 Setting smoke output level

Use the output “UP” / “DOWN” buttons



to select the desired output

performance. Once the value is selected it is automatically stored.



The machine will automatically default to standby at power up as opposed to resuming any previous operational state.

8.3 Setting continuous operation

At power up the machine will automatically heat to its operating temperature. When the operating temperature is reached the display will show “READY”.



To set continuous operation, adjust output level to desired value and press “SMOKE” button.



Whilst the unit is producing smoke the screen will display “Continuous xx%” to indicate its mode and output level.



The unit will continuously produce smoke until the “SMOKE” button is pressed again or the fluid supply is exhausted (whichever is sooner).



8.4 Setting the Timer

Use the timer button to toggle between “runtime”

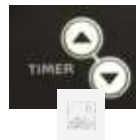


and “offtime”.



To enable the run timer function, set a non-zero value to the runtime using the timer

UP/DOWN buttons.



When runtime is zero the runtime is shown as “OFF”



, indicating the timers will not run.

To Select the off timer value, set a non-zero value to the offtime.

To engage the timer press the “SMOKE” button with a programmed runtime value.



Whilst the unit is producing smoke the screen will display “Timer xx%” to indicate its mode and output level.

The machine will begin a cycle of producing fog for the programmed runtime and stopping

production for the programmed offtime until the “SMOKE”



button is pressed again or the fluid supply is depleted (whichever is sooner).

8.5 Resetting the machine after fluid out

If the machine runs out of fluid, it will automatically shut down and show **FLUID OUT** on the display to prevent damage to the pump(s).

FLUID OUT

To reset this, fault down power the system and refill the fluid reservoir.

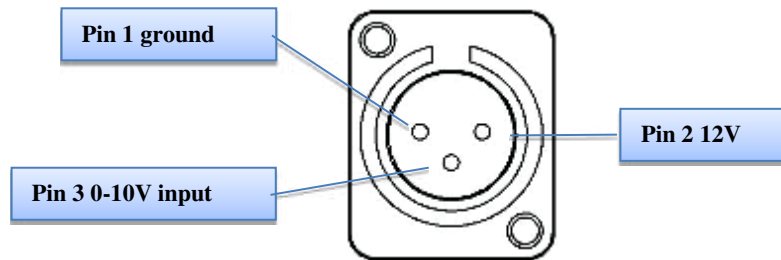
Avoid prolonged operation without fluid, since this will damage the pump and prevent the machine from re-priming.

8.6 Auxiliary input

AN auxiliary input is provided for applications requiring an additional means of triggering the machine other than the remote control.

The rear mounted XLR socket provides 12V DC at 50mA to power an interface device. This can be used to trigger the machine using a clean contact closure.

The interface may also be used with a common 0-10V signal.



The input signal at pin 3 will trigger the machine operation when it is taken above 2V.

The operating level and mode (continuous or timer) will be taken from the current settings on the remote, as will the output level.

9 APPROVED FOG FLUID TYPES

The **LEADER Smoke** machines must only be used with the **LEADER** fluids listed below. **LEADER** supplies high quality fog fluids

that are based on ultra-pure deionized water. No other fluid is suitable for use.

Trainer Fluid (Medium)

This fluid is used in areas where shorter duration training exercises occur and faster dispersal of the fog is required.

Trainer fluid (Heavy)

This fluid is used when maximum persistence is required or a very heavy

density of fog is required to simulate a complete “white out”.



DANGER! The **LEADER Smoke** range machines can run safely only on the specific fog fluids they are designed for. Use **ONLY** the **LEADER** fog fluids designated in this manual. **NEVER** use any other type of fluid, or toxic gas may be produced. You will probably also cause damage to the machine that will invalidate the product warranty.

Do not dilute fog fluid with water or any other liquid. Discard fog fluid if it becomes contaminated.

10 BASIC SERVICE



Before servicing the Trainer machines, read and observe all the precautions listed in “Safety information” on page 4. Any service not described in this section must be carried out by a LEADER technician.

10.1 Cleaning

Excessive dust, fog fluid, and dirt build-up will degrade performance and cause overheating and damage to the machine that is not covered by the product warranty. To maintain adequate cooling, dust must be cleaned from the outer casing and air vents of the machine periodically.



Isolate the machine from power and allow to cool completely before cleaning. The fog output nozzles remain hot for a period after use.

- Remove dust from the air vents with a soft brush, cotton swab, vacuum, or compressed air.
- Clean fog fluid residues from the fog output of the machine using a damp cloth.
- Clean the outer casing with a damp cloth only.

10.2 Fuse replacement



The main fuse for the machine is located adjacent to the power inlet on the rear panel. There is also a T3.15 A fuse located on the electronics board inside the unit which protects the supply to the pump.

DANGER! Disconnect the power supply before removing any covers or changing fuses. Live parts inside!

Rear panel fuse

LEADER Smoke 3: 6.3 AT (slow-blow), 250 V

10 AT (slow-blow), 110 V

LEADER Smoke 5: 12.5 AT (slow-blow), 250 V

20 AT (slow-blow), 110 V

Replace fuse only with one of exactly the same size and rating. Contact **LEADER** if the fuse blows repeatedly.

To replace the internal fuse, disconnect the power cord from the supply, unscrew the screws holding the top cover of the unit and remove the cover. The electronics board is located in the side compartment.

11 TROUBLESHOOTING

Problem	Probable cause(s)	Suggested remedy
Machine will not produce fog when control panel set to CONTINUOUS or fog button pressed	Machine not at operating temperature	Wait until HEAT message no longer shown
	FOG option set to 0	Increase setting
Fog output is weak	Machine requires priming	Down power the unit, ensure the fluid bottle is full and the tube is fully inserted.
Wet, greasy, non-uniform fog output, fluid drips or spits from nozzle, or very loud noise when firing machine	Incompatible fog fluid	Use approved fluid!
Machine appears dead	Mains fuse blown	Replace fuse (page 17)
	No power at AC cable inlet	Check power cable and circuit breaker
Loss of control from remote	Communication issue between remote and machine	Check cable connection between remote and machine

12 Status messages

Message	Reason
HEAT	The unit is heating up to operating temperature.
READY	The heater is at operating temperature, but Fog is not turned on (RUN set to STANDBY).
FLUID OUT	Run out of fluid. Refill the fluid tank and then down power the machine to reset the fault.
CALIBRATION ERROR	The machine has detected an error with its calibration settings and will not operate. Call LEADER for assistance.
SYSTEM ERROR	The machine has detected an error in the temperature sensor and will not operate. Call LEADER for assistance.
COMM ERROR	Remote has lost communication with the machine and will not operate. Call LEADER for assistance.

Notes

13 WARRANTY



LEADER equipment has a contractual limited guarantee from the date of purchase, defined below by product, parts and labor (excluding transport costs and travel).

This warranty is specifically limited to replacing or repairing the equipment (or its parts) which proves defective after examination for reasons attributable to **LEADER**.

To initiate this warranty, with the agreement of **LEADER** the claimant must return the equipment in the shortest possible time after discovery of the defect to the following address: **LEADER SAS, Maintenance Department, ZI des Hautes Vallées Chemin No. 34, CS 20014, 76930 Octeville Sur Mer, France.**

OUT OF WARRANTY EQUIPMENT

A complete analysis will be carried on your faulty equipment, after which a detailed quote will be offered.

For faults and non-warranty repairs, a diagnosis fee will be applied independently of the acceptance of the repair estimate.

Our after sales service is committed to a processing time, upon acceptance of the quote.

LEADER AFTER SALES SERVICE

After Sales Service is composed of areas of expertise organized by product departments.

The benefits of our service are numerous:

- o Support on and off in our warranty repair
- o Expertise and assistance remote troubleshooting
- o Expert technicians at your disposal to share our expertise and knowledge

LEADER

MANUFACTURER

LEADER S.A.S.

Z.I. des Hautes-Vallées
Chemin n° 34
CS20014
76930 Octeville sur Mer
France



www.leader-group.eu

www.LeaderNorthAmerica.com

Our policy is to constantly seek to improve our products. We therefore reserve the right to change their technical specifications at any time and without prior notice. - Non contractual images



PLEASE RECYCLE

Code Notice :
LEADER SMOKE 3et 5.00.ZN4.33. EN.0