



User Manual Trainer 301/501

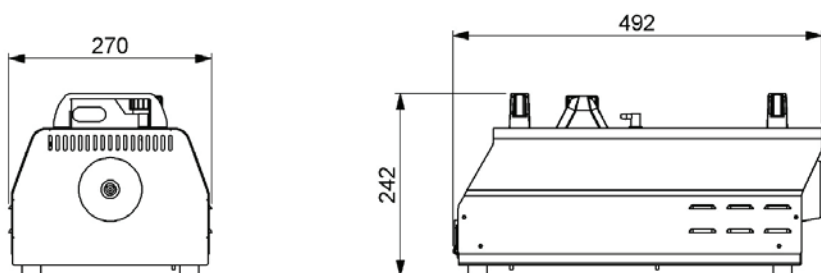
READ AND SAVE THESE INSTRUCTIONS



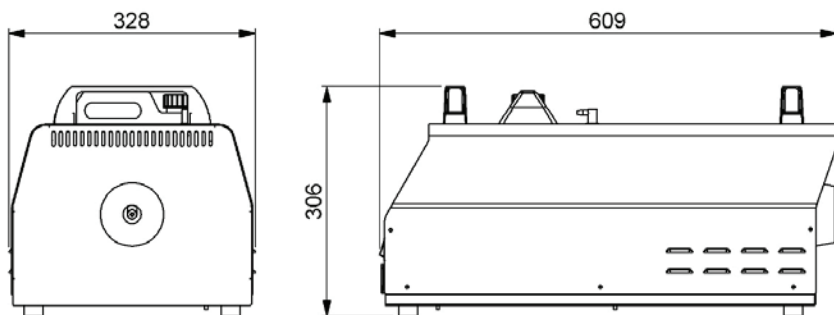
Dimensions/Legal

All dimensions are in millimeters

Trainer 301



Trainer 501



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Safety information



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 MSS Professional A/S.



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 MSS Professional A/S for assistance.
- Before using the machine, check 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 MSS Professional A/S 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 onto electronic parts, take the machine out of service and contact MSS Professional A/S for advice.
- Do not remove the covers or attempt to repair a faulty machine. Refer any service not described in this manual to MSS Professional A/S.
- 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 MSS Professional A/S 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.

Product overview

Product description

The Trainer 301 and 501 from MSS Professional A/S 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.

Features at a glance

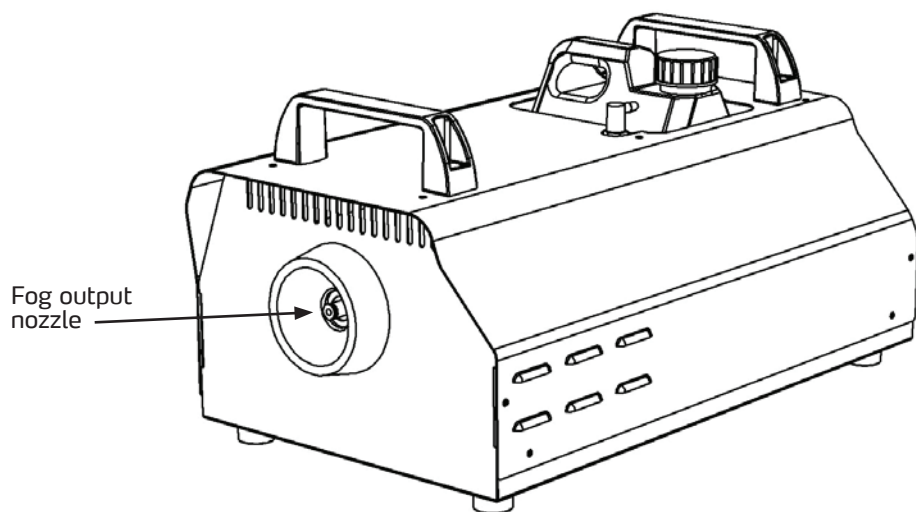
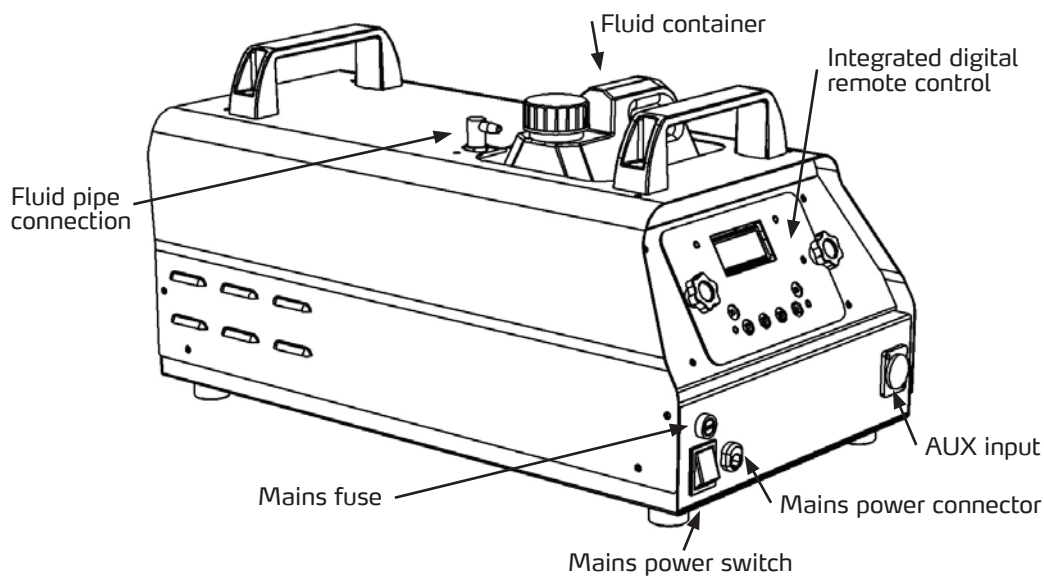
- Robust water resistant design
- Integrated digital remote control
- Continuous micro-processor controlled output
- Two fluid options for different applications
- Soft start technology
- Fluid sensing system
- Easy external fluid hook-up
- Optional ducting kits



Use only an approved MSS Professional A/S fog fluid as shown on page 16. Use of other fluid will void warranty.

Product details

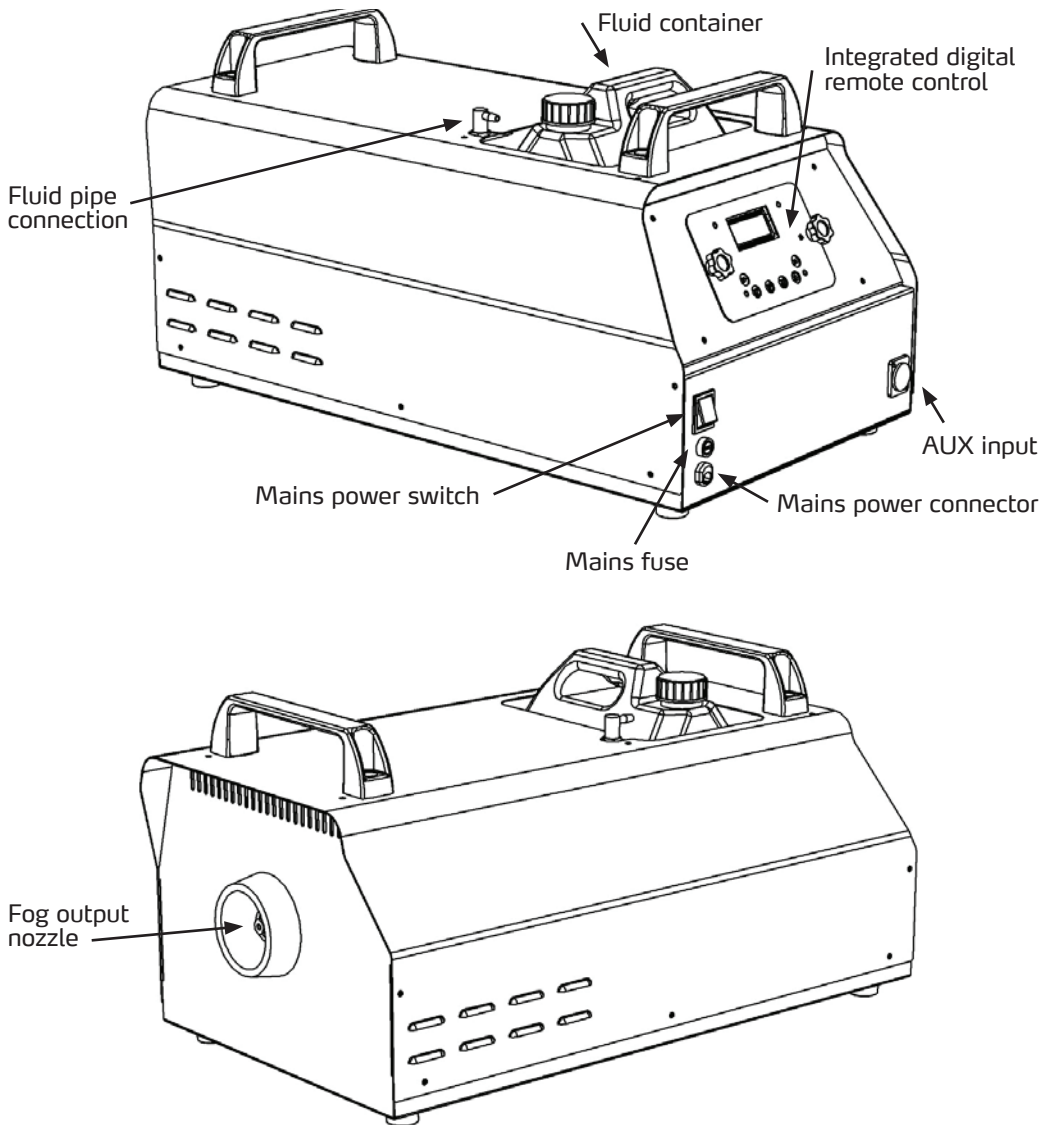
Trainer 301



Warning!

High temperature vapour and surfaces

Trainer 501



Warning!

High temperature vapour and surfaces

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.

Setting up

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

Install approved MSS Professional A/S fog fluid as shown on page 16.

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

Trainer 301	1200W, 5.3A @240V EU 1050W, 8.75A @110V
Trainer 501	2100W, 9.2A @240V EU 1800W, 15A @110V

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 %.

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.

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.

Location

The Trainer 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.

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 EU Trainer 301 and Trainer 501 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.

Trainer 301	1200W, 5.3A @240V EU 1050W, 8.75A @110V
Trainer 501	2100W, 9.2A @240V EU 1800W, 15A @110V

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 MSS Professional A/S for assistance.

Setting up

Fill the fluid tank with an approved MSS Professional A/S fluid as shown on page 16.

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 MSS Professional A/S 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

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.*

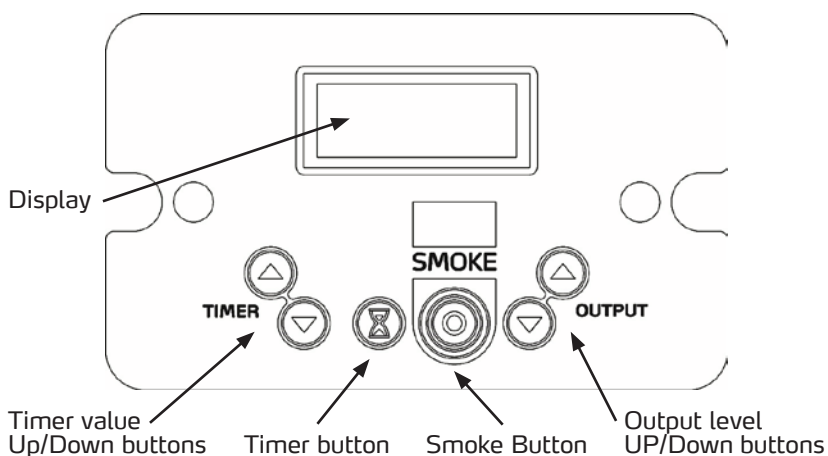
Control Settings

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.



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).

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.

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).

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).

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

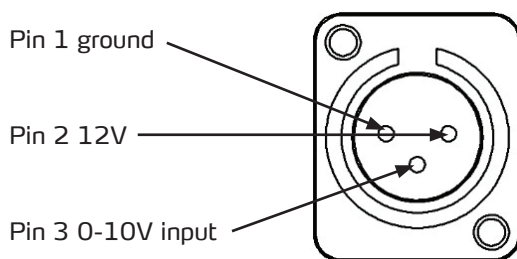
Avoid prolonged operation without fluid, since this will damage the pump and prevent the machine from re-priming.

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.

Approved Fog Fluid Types

The Trainer machines must only be used with the MSS Professional A/S fluids listed below. MSS Professional A/S 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 Trainer range machines can run safely only on the specific fog fluids they are designed for. Use **ONLY** the MSS Professional A/S 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.

To find your local dealer visit www.smokecloak.com

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 MSS Professional A/S technician.

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.

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

Trainer 301:	6.3 AT (slow-blow), 250V 10AT (slow-blow), 110V
Trainer 501:	12.5 AT (slow-blow), 250V 20AT (slow-blow), 110V

Replace fuse only with one of exactly the same size and rating. Contact MSS Professional A/S 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.

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

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 MSS Professional A/S for assistance.
SYSTEM ERROR	The machine has detected an error in the temperature sensor and will not operate. Call MSS Professional A/S for assistance.
COMM ERROR	Remote has lost communication with the machine and will not operate. Call MSS Professional A/S for assistance.

Technical Specifications

Physical

Trainer 301

Length.....	485 mm (19.1 in.)
Width	335 mm (13.2 in.)
Height	242 mm (9.6 in.)
Weight, dry	11.2 kg (24.7 lb.)
Weight, filled	13.7 kg (30.2 lb.)

Trainer 501

Length.....	602 mm (23.1 in.)
Width	395 mm (15.6 in.)
Height	306 mm (12.1 in.)
Weight, dry	17.7 kg (39.1 lb.)
Weight, filled	22.7 kg (50.0 lb.)

Performance

Trainer 301

Coverage volume.....	660 m ³ per minute
Fluid consumption (max.)	88 ml per minute
Continuous effect output.	
Ready time.....	7 minutes*

Trainer 501

Coverage volume.....	1320 m ³ per minute
Fluid consumption (max.)	176 ml per minute
Continuous effect output.	
Ready time.....	10 minutes*

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

Control and programming

Control options.....	Integrated digital remote control
Control parameters.....	Continuous or timer-controlled output
Fog	Variable output control, 0-100%

Construction

Housing	Steel & aluminium
Colour.....	Red
Heat exchanger, Trainer 301	1150 W, thermally protected
Heat exchanger, Trainer 501	2000 W, thermally protected
Fluid pump, Trainer 301.....	Oscillating piston, high pressure
Fluid pump, Trainer 501.....	Oscillating piston, high pressure
Fluid management	Fluid out sensing, sealed for transportation
Fluid reservoir, Trainer 301	2.5 l drop-in reservoir with quick-connect fitting
Fluid reservoir, Trainer 501.....	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

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

Connections

Remote control	3-pin locking XLR
Firmware	AVR socket

Electrical

All models

AC power (EU models)	220-240 V nominal, 50/60 Hz
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Trainer 301

Main fuse (220-240V power)	6.3 AT (slow-blow), 250V
.....	10AT (slow-blow), 110V

Trainer 501

Main fuse (220-240V power)	12.5 AT (slow-blow), 250V
.....	20AT (slow-blow), 110V

Typical Power and Current

Trainer 301	1200W, 5.3A @240V
.....	1050W, 8.75A @110V
Trainer 501	2100W, 9.2A @240V
.....	1800W, 15A @110V

Thermal

Maximum ambient temperature (Ta max)	40°C (104°F)
Exterior surface temperature, steady state, at 20°C ambient	30°C (86°F)
Max nozzle temperature.....	290°C (554°F)
Minimum ambient temperature (Ta min).....	5°C (41°F)

Approvals

EU Model

EU safety:	EN 60 335-1+A15, EN62233
EU EMC:.....	EN 61000-6-3
EU Immunity:	EN 61000-6-1
Australia/NZ (pending)	RCM



Included items:

Trainer 301	P/N 92256305
Trainer 501	P/N 92256325
User manual.....	P/N 35010515
Digital remote Trainer	P/N 55765050
Fluid reservoir Trainer 301, 2.5 l.....	P/N 34300521
Fluid reservoir Trainer 501, 5 l.....	P/N 34300506

Accessories

Trainer 301 Ducting System, with 5 m (16.4 ft.) ducting	P/N 92622041
Trainer 501 Ducting System, with 5 m (16.4 ft.) ducting	P/N 92622042

Approved Fluids

- Trainer fluid (medium)
- Trainer fluid (heavy)

**Various sizes available*
– contact your dealer or see www.smokecloak.com for details.

Specifications subject to change without notice.
For the latest technical specifications, see www.smokecloak.com

Notes



MSS Professional A/S
Agerhatten 25
DK - 5220 Odense SØ
Tel: +45 6473 1407

www.smokecloak.com