



Pyromaster

Aerosol flame projector
with spark effect

**Safety instructions and
operating manual**



Flame projector Pyromaster

Safety instructions



Caution! The directions in this manual must be followed strictly. The safety instructions and the manual must be completely read and understood before start-up! **The device may only be operated under the constant supervision of trained personnel.** Maintenance of the device may only be carried out by the manufacturer. In occurrence of malfunctions or dangerous situations the device must immediately be shut down! The device must not be used in heavy airflow or precipitation (e.g. rain or snowfall).



WARNING! Non-observance of the following safety instructions may lead to severe damage to persons and/or property, by fire, explosion or electric shock!

1. Transport and storage



Check the incoming goods for damage and completeness. Notify the shipper immediately of any transport damage.



The parts must be unpacked with great care and caution to prevent damage to sensitive components, such as controls.



The components of the device must not be stored unsheltered outdoors. Protect against moisture and precipitation. The permissible ambient temperatures are +5° C to +45° C.



Before transporting the device, the cartridges must be removed and the system must be emptied (see "8. Shutdown" in the operating manual).

2. Installation



The device is suitable for indoor use. When installing it on outdoor stages, make sure the device is protected against wind or heavy airflow, precipitation or heavy moisture.

Ensure that the device is installed with good stability and that third persons cannot change its position. The assembly of the device must be carried out de-energized. No impact or vibration may occur. Installation must only be carried out in a manner that the flame is projected vertically upwards. The device must be secured against unauthorized access. Any contact with the hot parts of the burner must be avoided.



Sufficient safety distance to the area involved in performance and to flammable materials must be considered when installing the device. Use a fireproof base, e.g. a sheet metal plate. The base must be large enough to completely shield the device from the floor. Performers and participants must be clear of the safety distances beforehand, and the operation must be rehearsed. In dangerous situations the device must immediately be shut down!

The lateral safety distance to persons and flammable objects in still air is 2.5 m.

The safety distance to persons and flammable objects above the burner is 7.5 m.

Caution: very light objects that move easily in the air, such as confetti, tinsel or small pieces of paper, may be sucked into the combustion chamber from below and catch fire or block the flame nozzle!

Caution: the simultaneous triggering of several cartridges increases the flame height to up to 6 meters. The temperature of the cartridges has an influence on the height of the flames: cold cartridges make for lower flames, warm cartridges for higher flames. The cartridges must not get cooler than 5° C or warmer than 45° C. The ideal cartridge temperature is 20° C.

In draft or wind the emitted flame may drift. That means the safety distance must possibly be extended to a range where danger to persons and property is excluded.



Maintenance on the device may only be performed by the qualified personnel of the manufacturer. The casings of the burner or the control panel must not be opened. Risk of electric shock!

By opening the casings of the burner or the control panel any guarantee and/or warranty expires. The manufacturer assumes no liability for consequential accidents and damage to persons or property.



The disassembly of the burner must not be carried out until it has sufficiently cooled down.



For the assembly and operation of the device only original parts from the manufacturer may be used. The usage of other parts can lead to severe damage to persons or property.

3. Start-up



The initial operation may only be carried out after complete assembly of all necessary components and safeguards by trained personnel, in consideration of all topics addressed in these safety instructions and the operating manual. The manufacturer disclaims liability for improper start-up carried out by an untrained third party.



Necessary extinguishing agents must comply with preventive fire protection regulations and must be kept ready.

4. Operation



The flame projector is used at events. Before start-up, the usage of the device must be cleared by preventive fire protection and the location management.



The operation of the unit is only allowed for the designated purpose, within the boundaries of design, by trained personnel. The manufacturer assumes no liability for inappropriate use, which can lead to severe damage to persons and/or property. Furthermore, any warranty expires.



Safeguards must not be removed or disabled! Do not open components of the unit (e.g. casing covers or front panels) – risk of burns and electric shock!



In dangerous situations the device must immediately be shut down and disconnected from the power supply.



Eliminate all sources of ignition, like open flame and spark-producing equipment, and never smoke when connecting the fuel cartridges or filling the device with Sparklepowder.



The device may only be operated by trained personnel. Sufficient safety distances during operation, protection against accidental contact with hot burner parts and safe assembly must be ensured. Extended safety

distances in draft or even breezes must be considered. The device must not be operated in strong winds or precipitation.



The device may only be operated with original fuel cartridges and original Sparklepowder from TBF-PyroTec. No liability is assumed for consequential damage caused by use of other fuels or powders. Moreover, any warranty from the manufacturer expires.



Before replacing cartridges or filling the device with Sparklepowder, make sure that the Pyromaster has completely cooled down. There is danger of explosion or fire when changing cartridges while the device is still hot!

5. Shutdown



During idle periods of more than 12 hours, the cartridges must be removed from the **completely cooled down** device. Make sure that the needle valves (turning knobs) are closed before changing or removing the cartridges (see "8. Shutdown" in the operating manual).



At least once a year the device should undergo a safety inspection, maintenance and adjustment by the manufacturer. Either an appointment must be made with the manufacturer to have the unit inspected, or it must be sent in.

Flame projector **Pyromaster**

Operating manual

1. Note: please read and follow the safety instructions closely!

2. Preface

The flame projector Pyromaster is capable of projecting effect flames and spark effects with a height from two to six meters. The Pyromaster uses up to three cartridges containing specifically developed fuels for the flame effect, and the TBF-Sparklepowder for the spark effect. The rugged construction and the built-in safety features allow operating the device with the highest possible safety and reliability.

The device is basically designed for in-door use; the use on outdoor stages is only possible if the unit is protected against precipitation, humidity, strong drafts and winds (also see safety instructions).

The assembly of the Pyromaster is simple and quick. The device can be triggered via DMX 512 signal. It accepts up to three different fuel cartridges, which are individually controllable by DMX. By using cartridges with fuels that burn in different colours, flames of different colours can be created with one single device. The Pyromaster can also be loaded with three cartridges of the same colour and project a flame column with a height of up to six meters when all three cartridges are triggered at once. If the flame effect is simultaneously triggered with the spark effect, the Pyromaster creates an imposing spark effect with a height from two to six meters.

3. Components of the unit

The system consists of:

- Burner with three cartridge slots, compartment for Sparklepowder, and DMX Receiver
- Full cartridges and Sparklepowder.
- Compressed air supply with 60 psi – 145 psi and max. 2,8 dry standard cubic feet per minute (DSCFM).

4. System functionality

The Pyromaster is loaded with three cartridges, each containing a special fuel. By triggering the flame channels, the fuel flows into a custom-built combustion chamber where it is finely atomized, thus producing an aerosol. In the combustion chamber, the fuel aerosol is ignited by a high-voltage arc. The emerging flame is emitted vertically upwards. By triggering the channel for the spark effect, the Sparklepowder is blown into the flame to create an imposing spark effect. The spark effect can only be triggered in combination with the flame effect, as the Sparklepowder must be ignited by the flame.

A tilt switch in the device provides additional safety. If the device accidentally tilts or is inclined at more than 40°, it will automatically shut down.

The following cartridges are currently available:

- Fuel normal, for yellow flames
- Fuel red, for red flames
- Fuel green, for green flames
- Fuel blue, for light blue flames

5. Installation of the device

Installing the flame projector:

Start by setting up the flame projector. Make sure there are no flammable materials in the safety area and ensure that no persons are in the safety area during operation (see safety instructions).

The flame projector must be mounted on a horizontal, flat and fire-proof base. Flammable objects in the safety area must either be impregnated flame-retardant with appropriate agents or covered with fire-proof materials, so no ignition can occur. Dust accumulations above the flame, also outside the safety area, must be removed at all costs, as they could be stirred up by the flame and cause dust explosions.

Caution: very light objects that move easily in the air, such as confetti, tinsel or small pieces of paper, may be sucked into the combustion chamber from below and can catch fire or block the flame nozzle!

Keep in mind that the flames may drift in winds or draft. This can necessitate a considerable increase of the safety distances. The device may only be operated on outdoor stages if a sufficient protection from the effects of weather, as heavy draft, winds and precipitation (rain, snowfall, etc), is ensured.

The flame projector must be sufficiently secured against dislocation or falling over. When installing the device, select a place that is not exposed to impacts or strong vibrations.

Loading the Pyromaster with cartridges:

Prior to connecting the system to the power source, the fuel cartridges must be screwed on. Before doing so, make sure that the control knobs for the flame height are shut (clockwise, to the right). Never use force when turning the knobs, as the sensitive needle valves would be irreversibly damaged.

The cartridges may only be replaced or removed when the device has completely cooled off and the needle valves are shut!

Place the cartridge with the screw thread facing down and screw it tightly into one of the cartridge slots of the Pyromaster with one hand. A hissing noise should only be heard shortly. A continuing hissing noise can indicate a damaged gasket or an insufficiently tightened cartridge. Should the noise remain even if the cartridge was screwed on tightly, the cartridge must be removed, as probably a gasket is damaged. In this case the device and the cartridge must be sent back to the manufacturer or dealer. A leaky system must not be operated!

When replacing the cartridges, avoid sparks, flames, heat and smoking, as small amounts of fuel will briefly escape during that process. However, the fuel will evaporate completely within three minutes. After inserting the cartridges and a waiting time of three minutes, the device is ready.

Always disconnect the plug from the mains before changing the location of the device!

Filling the Pyromaster with Sparklepowder:

The Pyromaster can now be filled with Sparklepowder. Caution: use only the original Sparklepowder from TBF-PyroTec! It is not a pyrotechnic composition. Other powders can destroy the device or cause severe damage to persons and property.

Open the screw cap on top of the device and put it aside. Fill the original Sparklepowder into the swirl chamber. Accidentally spilled powder must be removed completely. Do not fill more than one bottle of powder into the compartment. This amount is sufficient for approximately 50 shots. Close the chamber with the screw cap. Make sure there is no powder on the thread or the cap; clean it up if necessary to make sure the cap shuts tightly.

6. Start-up

Open the control valves for the flame height by turning them two turns counter-clockwise. Now connect the flame projector to the mains with the power chord. The blue PowerCon jack on the device is the power input, the white PowerCon jack on the device is the power output. This allows to link up to eight Pyromasters with each other to connect them to an electric circuit with a 16A fuse.

Connect the supplied black air hose to the air input coupling of the device. The other end of the air hose must be connected to a compressed air system with 60 psi to 145 psi. With the air output coupling you can interconnect as many devices as the compressed air system can supply. The spark effect of the Pyromaster consumes max. 2.8 dry standard cubic feet per minute. The ideal output pressure of the compressed air system is 110 psi.

Now connect the Pyromaster to a DMX controller (DMX 512) with a 5-pin DMX cable. When using multiple burners, the devices should be linked with each other before connecting them to the DMX controller. If all devices are properly wired and the DMX controller is turned on, a green LED next to the DMX display indicates the connection to the DMX controller.

Select the input channel by using the two black pushbuttons on the left of the display and confirm it with the black pushbutton on the right side.

The Pyromaster has a safety function: triggering the burner is only possible if it is unlocked via DMX. The selected DMX channel, indicated on the seven-segment display, is the channel for unlocking. If this channel is activated by the DMX controller, the DMX channel display on the burner flashes to signal readiness for ignition. The subsequent channel is used for triggering the first cartridge, the next three DMX channels trigger the second cartridge, the third cartridge and the spark effect.

Caution: the channel for unlocking the flame projector should only be activated shortly before or simultaneously with activating the channels for ignition. The unlocking channel can be activated for up to five minutes. However, this will considerably heat the ignition transformer and necessitates a cool-down time of at least five minutes.

Example: Channel 001 is selected in the segment display.

The flame projector is unlocked when the DMX controller sends a signal on DMX channel 001. When the DMX controller now sends a signal on channel 002, the first cartridge will be ignited. Channel 003 triggers the second cartridge, channel 004 the third cartridge and channel 005 the spark effect. If channel 001 to 005 are activated at the same time, all three cartridges and the spark effect are triggered simultaneously.

For a higher flame, load all three cartridge slots with identically coloured cartridges. If all three cartridges are now triggered at once, the height of the flame column will be increased to up to six meters.

The Pyromaster can create two different spark effects: for a "ball of sparks", first trigger the spark channel and then the flame effect, approximately 0.5 seconds later. For a "spark column", trigger the spark channel and the flame channels at the same time.

CAUTION: depending on the air movement and the created spark effect, the Sparklepowder may not burn completely. This results in unburned Sparklepowder collecting on the floor. Sparklepowder is generally not combustible unless it is swirled with air. However, larger amounts of Sparklepowder should be removed, as they could be stirred up and thus become flammable. The manufacturer recommends to remove the Sparklepowder from the floor around the Pyromasters after five emptied loads of the spark effect compartment.

MAKE SURE THAT NO PERSONS ARE IN THE SAFETY AREA OF THE BURNER WHEN TRIGGERING THE FLAME!!

DURING OPERATION, THE PERSON TRIGGERING THE BURNERS MUST OBSERVE THEM AT ALL TIME!!

BEFORE CHANGING THE LOCATION OF THE PYROMASTER, DISCONNECT THE PLUG FROM THE MAINS!

7. Replacing the cartridges and refilling the Sparklepowder compartment

To replace the fuel cartridges and fill the Sparklepowder compartment, disconnect the device from the mains and close the needle valves for the flame height with the black knobs on the back of the device (turn clockwise, without using force). After the last burst of flame, let the device cool down for at least five minutes, then remove the empty cartridge by unscrewing it counter-clockwise. Load the new cartridge by firmly screwing it clockwise into the device with one hand. The spark effect compartment is filled as described under "5. Installation of the device / Filling the Pyromaster with Sparklepowder".

Now open the needle valves for the flame height again, turning them counter-clockwise. When replacing the cartridges or filling the Sparklepowder compartment, open fire, sparks and smoking must be strictly avoided since small amounts of fuel will escape in this process. However, after three minutes the spilled fuel will completely evaporate, and the device can be used again.

8. Shutdown

First close the needle valves for the flame height on the back of the device by turning them clockwise. Do not use force! If cartridges with coloured fuels were used, they should be replaced with a "normal coloured" fuel cartridge to clean the device. To do so, quickly unscrew the cartridge with the coloured fuel counter-clockwise and remove it from the cartridge slot.

Insert a "rinsing cartridge" or a cartridge with "normal coloured fuel" by firmly screwing it clockwise into the device with one hand. Open the adjustment valves for the flame height on all channels loaded with cartridges. When changing cartridges, open fire, sparks and smoking must be strictly avoided, since small amounts of fuel will escape in this process. However, the fuel will completely evaporate within three minutes.

Now unlock and trigger all channels for which coloured fuels were used until the colour of the flame changes to the normal yellow. This rinses the slightly more aggressive coloured fuels out of the fuel lines and increases the lifetime of the device.

Close all needle valves for the flame height and unlock and trigger the channels loaded with fuel cartridges until the flame height is lower than 10 cm. After a cool-down time of three minutes, the fuel cartridges can be removed from the device. Disconnect the device from the mains and put the plastic caps on the cartridge openings. The device can now be transported or stored.

9. In case of emergency

If serious malfunctions occur that pose a threat to persons and property, the device must immediately be shut down. Unplug the power cable to do so. Extinguishing agents must be readily available, use them if necessary. CO₂ fire extinguishers, foam extinguishers and ABC dry chemicals are suitable.

10. Care, maintenance and storage

Dirt on the unit should be removed with a soft and moist cloth. Suck up sooting from the lattice of the burner head with a vacuum cleaner and wipe it clean with a cloth afterwards. Never try to clean the electrodes inside the burner head by inserting any objects! Do not use aggressive cleaning agents.

Maintenance of the device can only be carried out by the manufacturer and should be carried out **once a year.** Please make an appointment with the manufacturer or the authorized dealer, or send the unit in.

The unit should be stored and carried in the designated hard cases after usage.
During longer idle periods, the cartridges should be removed from the unit.
The cartridges must not be exposed to temperatures above 45° C.

11. Technical specifications

Dimensions:	approx. 17 x 8.7 x 7.9 in
Weight:	approx. 28 lb incl. cable and pressure hose
Power input:	110V AC
Power consumption:	300W
DMX:	DMX 512, channels freely selectable by pushbutton
DMX display:	3 seven-segment LED channel displays, LED to detect presence of DMX signal
DMX connectors:	5-pin DMX input (male) and output (female) for signal routing

Contact Details

Le Maitre USA, LLC
Mailing Address:
PO Box 365077
Las Vegas, NV 89036
USA

Shipping Address:

13975 Grand Valley Parkway
Las Vegas, NV 89165
USA

Tel: +1 (702)-843-5080

Fax: +1 (702)-843-5070

Email: info@lemaitreusa.com

Warranty

The Pyromaster is sold with a one year's warranty, which includes parts and labour from the date of purchase. This warranty covers manufacturing defects, providing that the unit has been regularly serviced by an authorized agent and has only used genuine canisters.

Le Maitre Ltd considers all of its products to be safe for use in the application it was intended. Le Maitre Ltd takes no responsibility for misuse or incorrect use. Always refer to the equipment owner's manual for proper use, and be aware of local legislation governing the products use.

TBF-PyroTec GmbH

Lichterfelder Str. 5 A
21502 Geesthacht

Tel.: +49 (0)4152 157 9950 Fax: +49 (0)4152 157 9951