

# Power Flame System II



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# Power Flame System II

Power Flame System II can shoot LPG flame up to 10 meter high.

The LPG gas tank(30L) is housed inside the system and LP gas from the external gas cylinder flows into the system inside-installed gas tank. After one shot, the system needs about 25 seconds to charge LPG to the inside-installed gas tank from the external gas cylinder. So, you have to consider the shooting interval .

For safety, this system has safeguard system which is composed of flame sensing rod and its flame sensing board. Without the solid pilot flame, the solenoid valve does not open and accordingly, it cannot shoot the flame. The pilot flame strike process repeats till the pilot flame becomes solid and even during the show, when the pilot flame is gone unexpectedly, the pilot re-strike resumes automatically and immediately within 0.3seconds. During this re-strike process, the solenoid valve keeps closed so that no danger to shoot the flame accidentally.

This system is controlled with standard DMX 512 controller or our handy DMX controller.

## Specification

- Item : Power Flame System II
- Power : 120VAC, 50~60Hz
- Size : 45cm(L) x 70cm(W) x 80cm(H)
- Fuel : LP Gas or Propane
- Working Pressure : 3-5bar  
(3.5BAR is recommended pressure.  
At 5 bar, the gas pressure is very strong so that  
it may not catch the fire occasionally.
- Control : DMX 512 control.  
(CH1 – Pilot Channel, CH2-Main Flame)
- Gas Tank Capacity : 30 Liter of LPG can be charged.
- Shooting Interval : 25 seconds. (shooting interval means that after one shot, you need  
the time for charging gas to the system)
- Flame Sensor and Flame Sensor Board are installed.



# System Overview



Pilot Flame Igniter & Flame Sensor Rod

Flame Nozzle



Pilot Gas Pressure Gauge & Regulator : This gauge indicates the gas pressure to the pilot flame. Set the pressure at 1.0-2.0bar. If the pressure is highly set, the pilot gas cannot catch fire. So, it is very important to set the proper pressure. This regulator is non-release type. After you light the pilot flame, then, you can see the exact pressure. Slightly pull out the handle and turn it right or left for setting pilot gas pressure. After setting, push it for fixing.

Main Flame Gas Pressure Regulator : This gauge indicates the gas pressure to the main flame. Set the pressure at 3.5bar. If the pressure is highly set over 4 bar, the pilot cannot catch fire to the main flame. So, it is very important to set the proper pressure. This regulator is non-release type. After you shoot the flame one time, then, you can see the exact pressure. Slightly pull out the handle and turn it right or left for setting main flame gas pressure. After setting, push it for fixing.

E-Stop S/W : Emergency Stop Switch



Pressure Gauge : This pressure gauge indicates the inside pressure of the gas tank.

# Warnings

- ❖ This system is intended to provide a flame special effect. As with all potentially dangerous special effects, the operator should be in full view of the systems at all times during operation.
- ❖ The system's flame height is about 10meter high. Appropriate clearance for flame and its heat is required.
- ❖ Under the rainy or strong-windy weather, do not use the system. Under the rainy weather, the igniter can be broken.
- ❖ Don't shoot flames toward people or any flammable objects.
- ❖ Place the system on flame resistant surface and secure the proper safe distance on all side.
- ❖ Understand completely how to operate and control the system before using.
- ❖ Always keep the working pressure stipulated in this manual. Always abide by the working pressure.
- ❖ Always check any leakage of gas for the system, hoses and tanks before using.
- ❖ Also, check all the power and signal cables if there is any damage or trouble before using.
- ❖ During transportation and storage, remove all the gases and pressure from the system and keep the manual ball valve tightly for preventing the remaining gas from being leaked.
- ❖ Always place the fire extinguisher beside the operator or at the right place.
- ❖ The modification or usage for other purposes of the system are prohibited.
- ❖ Abide by the law imposed by your authority about the usage and operation of the system.

# System Set-Up

This power flame system II is lit by pilot flame and pilot flame is monitored during whole show with flame sensor and flame sensor board. If pilot flame fails to be solid or is gone, the main solenoid valve becomes closed immediately and the system resumes to light the pilot flame with HV spark by igniter.

Only when the pilot flame is solid, then main valve opens and the system turn to be on standby to shoot the main flame. Without the solid pilot flame, the shooting is not possible and the main valve is closed automatically.

- Locate the system on the safe place tightly.
- Locate the LPG tank on the safe and isolated place and keep the security guard for the safety.
- Connect DMX signal cable and power code to the system.
- Connect LPG hose to the system first and then connect it to the gas tank.
- After the hose connection, slightly start to open the valve of gas tank.
- Be sure that you have to check if there is any leakage on the system, hose and gas distributor.
- If there is no problem in the system and other accessories, then turn on the power switch.
- Before shooting main flame, you have to test pilot flame first and check if the pilot gas pressure is proper. When you confirm that everything is fine and okay to go, then, open the manual ball valve.
- When programming the show, you have to consider at least the shooting interval
- After the show, at first, close the main gas tank and then shoot 4~5 times for removing all the remaining gas inside the hoses, system and the inside-installed gas tank. Completely remove the gas from the system. Then close the manual ball valve.

**CAUTION** : Always keep the system and especially pilot parts dry without moisture. If the igniter and flame sensor rod is wet, the system can mal-function and cannot work properly.

**CAUTION** : When you change the nozzle, please use Teflon tape for sealing on the thread. If not, gas can be sneaked out of the thread of nozzle during its shooting.

## DMX Control

This system is programmed and controlled with standard DMX 512 controller.

Every system has two DMX channels. One is for pilot flame and the other is for main flame.

The 1<sup>st</sup> Channel is for MAIN FLAME and CH2 is for PILOT FLAME.

DIP Switch for changing start address.

Every dip switch's value is as follows;

| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 | SW7 | SW8 |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 1   | 2   | 4   | 8   | 16  | 32  | 64  | 128 |

For example, if you want to set starting address as 13,

Turn on SW1, SW3, and SW4. When you add all these turned-on dip switch's values(1+ 4+ 8), it will be 13 and it is starting address of that system.



Address Monitor      DIP Switch

## Handy DMX Controller

Handy DMX Controller (DMX 512 protocol) is for simple control of the system.

- Free voltage, 3 XLR pin, 6 Channels, Flash Mode and can set the starting address.
- Flash Button : While flash button is on-state, the controller works only while you touch the buttons.
- Pilot Button : Use only when pilot channel is allocated to CH 100.

How to set the starting address ;

- Push flash button for 3 seconds or longer, then you can see the flash button led is flickering.
- Button No. 1 is hundred digit and Button No. 2 is ten digit and Button No. 3 is single digit.

For example, to set the starting address 128, push Button No. 1 one time and push Button No. 2 two time and push Button No. 3 eight time. You can see 128 on DMX address monitor (FND).

This controller is separate sale. It is not included to the set of the system.



# Maintenance

## Maintenance

- Under cold weather, the pilot fuel may not be gasified very well and so that pilot flame can't be solid. In this case, increase the gas quantity to pilot flame with pilot gas pressure regulator.
- After show, ensure that Gas remaining inside the system was removed from each system and the manual ball valve is closed tightly.
- Keep out of reach of children or don't allow unqualified people to touch the system.
- Always keep the system clean and safe.
- Store the system in clean, dry and cool area away from flammable or heat sources.
- Check periodically the tubing, hoses, cables and gas piping, if they are damaged.

## Trouble Shooting

- Pilot Flame Trouble
    - In case of no spark, check the distance of igniter's two legs and keep the proper distance. Or check the transformer if it works properly. Or check if ignition cable and igniter's harness is connected correctly.
    - In case that there is no pilot flame even if the pilot gas is issued, check the pilot gas pressure. It is too high. Set the proper pressure of the pilot gas.
    - In case of no pilot flame even if the igniter sparks, check if the pilot flame sensor becomes loose. If it is loose, fix it tightly. The pilot flame sensor cannot sense the pilot flame in the loose state.
    - If the flame sensor cannot sense the pilot flame, firstly check if the flame sensing rod is contacting pilot tube or pilot cover. If it contacts some parts of pilot area, it cannot sense the pilot flame. When pilot flame sensing rod senses solid pilot flame, the GREEN LED of the flame sensing board lights. RED LED light is POWER LAMP.
  - DMX Trouble
    - When DMX signal works normally, the address number is displayed in address monitor firmly after 3 times flashing. When there is flickering address monitor or no address number on monitor, DMX signal is not transmitted to the system from the controller. Check signal cable and its input and output.
- OR DMX Board might be broken. Also, when you use your own DMX cable, please check the pin numbers if they matches the pin numbers of the system.