SPARK ONE™

PYROTECHNIC SIMULATORS

OWNERS MANUAL

SPARKTACULAR FX MACHINES

COLD SPARK TECHNOLOGY

877-792-1101 • SparktacularFXmachines.com

Warnings and Cautions

Designed to alert you to potential hazards and important information to assist with carrying out activities on this machine safely and efficiently. Examples and descriptions of safety statements have been provided as follows:

Warning: A warning alerting to harmful or potentially dangerous activities. A suggestion is given to prevent accidents. DO NOT ignore this advice.

Please note that the SparkOne Machines must be operated using time intervals. The maximum operational running time is 90 seconds per single discharge cue. If the maximum operational running time of 90 seconds is used, a 1-3 minute interval in between cues is recommended.

Eye Protection

While the SparkOne Machine is in operation it is advised that those in proximity to the fallout area wear safety glasses. If the material enters the eye, flush thoroughly with water.

Voltages

Warning: High voltages are present in the machine and controller when electrical power is present. There is a danger of injury from electrical shock. Under no circumstances are you permitted to, or should you attempt to dismantle the machine and/or controller or attempt to remove or adjust any components fitted within/to the machine and/or controller. **ONLY FULLY TRAINED SPARKTACULAR SERVICE ENGINEERS ARE QUALIFIED TO DIAGNOSE AND MAINTAIN THE MACHINE AND CONTROLLER.** Customers who open their machines will have their warranty VOIDED.

Caution Against Liquids

Warning: The machine should never be exposed to wet conditions. Keep the machine and controller dry and do not use on rainy or snowy days unless covered. Do not leave the machine exposed to excessive humidity.

Warning Fountain Nozzle

Please make sure no debris drops into the fountain nozzle of the SparkOne unit. If debris enters the nozzle, clean out all debris before resuming normal operation. Uncleared debris can cause the machine to malfunction and present an increased risk of fire or overheating. DO NOT cover the fountain nozzle or ventilation.

Warning on Granules - Extinguishing Methods

If the granules ignite, the suggested method of extinguishing is by a Class D extinguisher or sand. If granules are activated DO NOT try to empty the SparkOne unit as the rush of air will initiate the granules into a spark. DO NOT use water-based or ABC extinguishers to put out granules. If granules are poured into the fountain nozzle, DO NOT SHOOT THE MACHINE! Contact Sparktacular FX Machines immediately for further assistance

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Safe Distance

The minimum recommended safe distance for performers is 6-10 feet. For audiences a minimum safe distance of 12-15 feet is required. Flammable materials need to be kept at a distance of 15 feet. Keep the SparkOne machine out of reach of the public and children. Ensure the machine is protected from flammable materials.

Warning Temperature

NOTE: DO NOT CHANGE THE TEMPERATURE ON THE BACK OF THE MACHINE WITHOUT CONSULTING WITHA SPARKTACULAR FX SAFETY TECHNICIAN. Granules are affected by the temperature and under on circumstance shoule altered. Pleae refer to the temperature chart for granule size and machine model.

Warning Firing Effect

Do not touch the sparks when the machine is operating. The sparks created from the machine should never be touched. Use the appropriate safety distance mentioned in Safe Distance section.

In Case of Emergency

If an emergency arises in which the SparkOne machine(s) needs to be shut off immediately, hit the “Stop All” button on the touch screen controller to stop operating and turn the key to the "safe" position. Turn off all high voltage inside the SparkOne unit. The machine will still be connected to the console and turned on but only the low draw DMX brain has power.

Noise Emission

The noise that emits from the SparkOne Machine does not exceed 80db. This means that the machine is not harmful to hearing. Hearing protection is not required while operating, using, or standing near the SparkOne machine.

Cleaning

Before operating the SparkOne machine some checks must be done to keep the machine running at optimal performance. Before each use inspect the fountain nozzle. Make sure that there are no burnt granules building up in the fountain nozzle. To clean the unit, if there is debris in the tub, invert and shake. If the buildup does not break loose, a cleaning brush is recommended to remove the buildup. Before and after every use you must go through the clear material process to ensure granules do not build up inside the machine, which will prolong the life of the machine.

Power Supply Requirement

Please be sure to use the correct connector according to the operating power of the SparkOne unit. All USA models are 110V. European and other international models are 220V. If necessary, connect directly to a power distribution box with separate cables. Please note: one power cord can support a maximum of 2 SparkOne units (One 20-amp circuit can handle the 2 units). Each unit can be powered individually, or daisy chained together with the powercon series cables provided.

SPARKTACULAR FX MACHINES

TABLE OF CONTENTS

1 - Description of Products

SparkOne is a revolutionary and innovative pyrotechnics simulation machine. It uses a newly designed delivery control system for a fountain style special effect that uses DMX communication and is compatible with other DMX controlled equipment.

Dimension: 8.12” × 8.59” × 9.68”

Weight: 17.0lbs

Input: AC 100-120V/60Hz/5.5A
AC 200-240V/50Hz/2.7A

Power: 600W

Work Temp.: 968 F- 1040 F

Casing: Galvanized Metal

Fountain Height: 6.5’ – 17’

Hopper Capacity: 150g

Lifetime: >3 years

Interface type：double DMX input interfaces, double AC power interfaces

2 - Instructions

The SparkOne system has two main components, the SparkOne SH-03B and the Pyro Sim Controller. The SparkOne SH-03B has all safety features built into the smart feedback protocol, which is viewable on both the SparkOne unit itself and the Pyro Sim Controller.

NOTE: IF THE SPARK ONE UNIT IS CONNECTED DIRECTLY THROUGH DMX AD DOES NOT RUN THROUGH THE HOST CONTROLLER, THE FEEDBACK CANNOT BE ACCESSED OR VIEWABLE ON THE DMX CONTROLLER.

3 - Brief Introduction of the Functions

a - The SparkOne is controlled through the DMX 512 standard. The SparkOne machine is designed to work on 2 DMX channels or 4 DMX channels. (selectable on unit and controller)

b - The effect is adjustable by height, density, and duration.

c - Adjustable effect height- SparkOne currently has 4 height increments. Heights are dependent on granule size being used. Please speak to a Sparktacular FX Machines representative about granule sizes.

NOTE: HEIGHT INCREMENT LEVEL 1 IS INACTIVE. THE LOWEST HEIGHT INCREMENT BEGINS ON HEIGHT INCREMENT 2 AND GOES THROUGH HEIGHT INCREMENT 5

d - The machine has continuous feedback when connected to the host controller for overheating protection and redundant safeties when connected to the Pyro Sim Controller.

e - The Pyro Sim Controller can display feedback from the SparkOne unit and diagnose its working status with error codes.

4 - DMX512 Signal Link

When using DMX512 mode, the signals among those units are in parallel. The Shielded-Twisted-Pair cable must be applied when connecting multiple units. Each unit is connected through the DMX signal receptacles (XLR connector) Input and Output, and the three pin XLR plug terminals connecting the unit must be corresponding to each other. While connecting communication cables, it is suggested to use DMX signal terminal to avoid signal weakening caused by the signal reflection. DMX signal terminal is a three pin XLR plug with 120ohm/1m resistance. The terminator should be plugged into the DMX out port of the last unit being used.

The configuration of the three Pin XLR Plug: 1 Signal Ground line; 2 Signal-; 3 Signal+

NOTE:

ATTENTION!!! SparkOne unit automatically heats once powered on. Press “HEAT” two times until “STOP HEAT” is read across the digital screen.

After turning on the SparkOne unit, press the “Heat” button on the Pyro Sim Controller. SparkOne will then begin to warm up to working temperatures. Please allow 3-4 minutes for the units to heat up. When the READY sign on the back of the SparkOne unit turns solid green, it indicates that the SparkOne is ready. Additionally, the temperature displayed on the digital screen of the Pyro Sim Controller will turn solid green indicating the SparkOne is ready.

The key must then be turned to the ARM position to activate shooting. Turning the key from the “ARM” position to the “SAFE” position will stop the effect immediately.

To prevent anything from effecting cool down or impeding operation, do not cover the fountain nozzle, top or sides of the SparkOne unit. Please allow room around the machine for air to flow and air vents to breathe.

Please add granules if you observe the machine producing inconsistency in effect appearance. DO NOT pour granules in chamber while machine is active.

Operations Panel

CARD SWIPE AREA

Radio Frequency Identification

Each packet of Spark Pack granules comes with an RFID card that has 12 minutes of shot time on it. This card gets scanned (touched) to this area. When scanned successfully, the machine display will darken, then light up and display the new time remaining after the ready light flashes once. This process is used to initialize the machines on first use and is performed every time the machine is low on time. (E4) The time is put onto the machine, and the clock will run when the machine is shooting. The card is single use only. The maximum amount of time allowed to be scanned onto the machine is 30 minutes of shot time. If the RFID card has already been used or is faulty, the ready light will flash rapidly, and the display will not flash or display remaining time.

LED

FAN

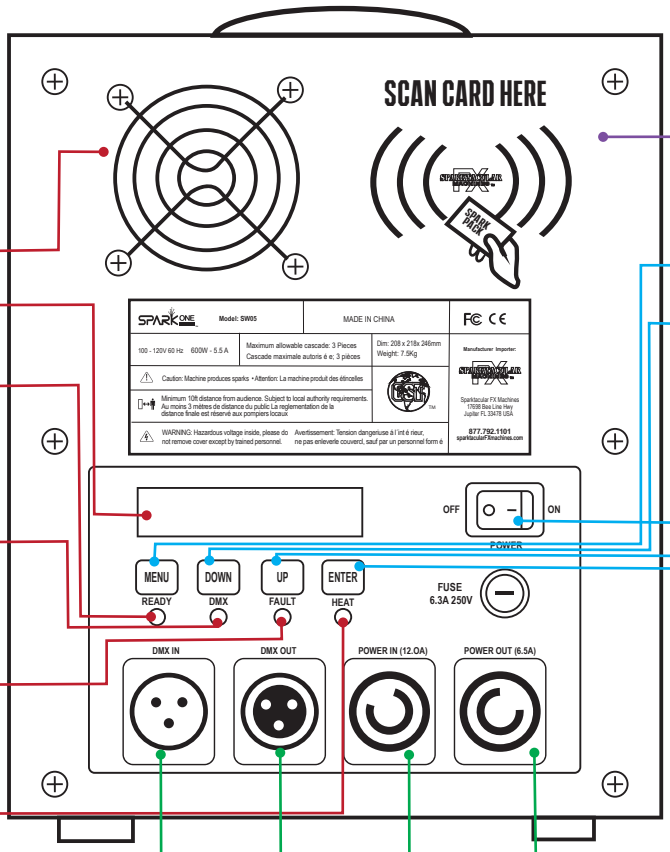
LCD
Displays user

READY
The indicator will change from flashing to solid status after heating is completed. The machine will enter ready-to-operate status.

DMX
Solid LED means DMX communication is successful. If LED is not flashing it means communication is unsuccessful.

FAULT
When this LED is lit, there is a fault code. Look at LCD screen to see what error code is displayed.

HEAT
: LED is lit when the system is fully heated



CONTROL BUTTON AREA

MENU
Select to enter into menu

UP
Increase parameter

DOWN
Decrease parameter

ENTER
Confirm and save parametersdisplayed.

ON OFF SWITCH

DMX IN
SH-03B 110Vac
DMX Communication Cable

POWER IN
SH-03B is 110Vac
blue/gray Powercon
connector

DMX OUT
SH-03B 110Vac
DMX Communication Cable

POWER OUT
SH-03B is 110Vac blue/gray
Powercon connector

INTERFACE PLUGGING AREA

Main Interface

- Displays DMX Address.
- Displays the present temperature of the inner core.
- Displays the error information if any.

ERROR CODE	DESCRIPTION
E0 System IC	Systematic error. Power cycle machines
E1 Motor Protect	Over current protection of the motor. Power cycle machine
E2 Temp. Sensor	Temperature sensor is not connected or damaged
E3 P Temp. Over	The equipment stops due to the over-heat of the chassis
E4 Time Remain	The SparkOne is low on shot time remaining
E5 K Temp. Over	The equipment stops due to overheating of the heating assembly
E6 Heating Failure	Heating system may have issues. Please power cycle when this error happens. If the error still persists, try E-stopping the system. If problem still persists, call Sparktacular
E7 Tip Over	The equipment stops due to tip over.

The Interface Setting

Press “MENU” button to enter the interface to set either temperature or DMX address. Each time the MENU button is pressed, the interface will show different setting options before returning to main interface

OPTION	SCOPE	ILLUSTRATION
Set Temperature	550 C	Set Temperature (should be on 550 C for Spark One)
Set DMX Address	1-512	Set DMX address
Set DMX channel mode	2 or 4 Channel	Set DMX Channel

The following chart is for the 2 channel settings:

SparkOne No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DMX Address	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35

Advanced Interface

OPTION	SCOPE	ILLUSTRATION
Set Temperature	520-560	Default setting 550
Density@ Height 1		Adjusts the Value of the Granular feed or density #1*
Density@ Height 2		Adjusts the Value of the Granular feed or density #2*
Density@ Height 3		Adjusts the Value of the Granular feed or density #3*
Density@ Height 4		Adjusts the Value of the Granular feed or density #4*

Density of granules at each height can be adjusted at 50%,75%,100%

DMX Channel Mode:

2 DMX Channel, when the system occupies two channels.

FIRST CHANNEL	FUNCTION
0-39	Stop
40-90	Fountain Height 1
91-140	Fountain Height 2
141-190	Fountain Height 3
191-255	Fountain Height 4

SECOND CHANNEL	FUNCTION
0-10	Pre-heat Off
20-40	Emergency Stop Pre-heat Off
60-200	Clear Material
240-255	Pre-heat On

DMX Channel Mode: 4 DMX Channel, when the system occupies four channels

FIRST CHANNEL	FUNCTION
0-39	Stop
40-90	Fountain Height 1
91-140	Fountain Height 2
141-190	Fountain Height 3
191-255	Fountain Height 4

SECOND CHANNEL	FUNCTION
0-20	Pre-heat Off
21-25	Pre-heat On

THIRD CHANNEL	FUNCTION
0-20	Clear Material Off
21-255	Clear Material On

FOURTH CHANNEL	FUNCTION
0-20	Emergency Stop Off
21-255	Emergency Stop On

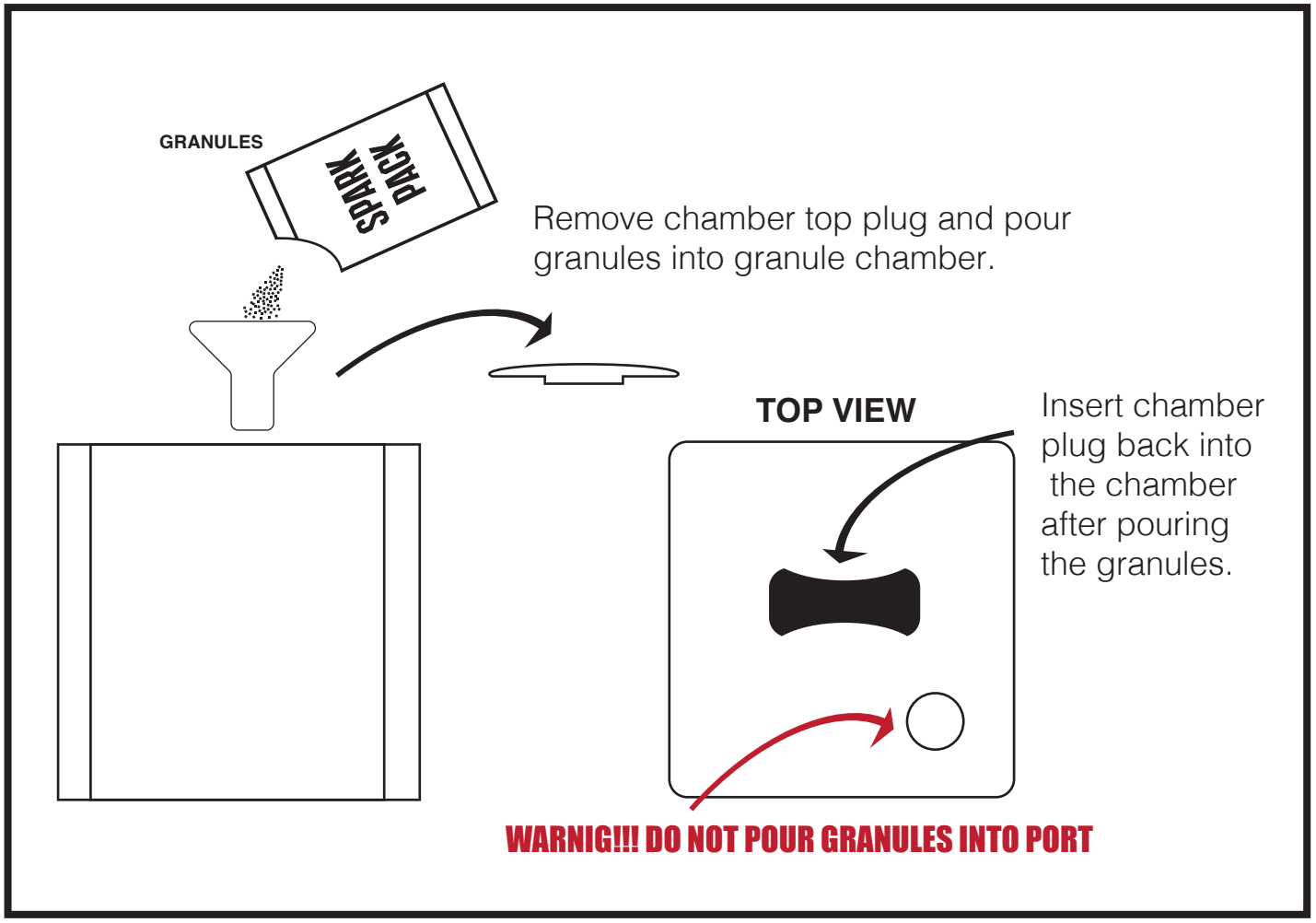
System Preparation and Start

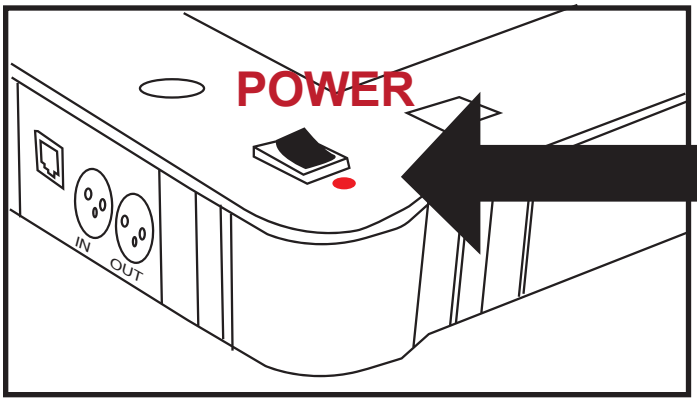
Fill the SparkOne units with granules

Fill granules into the hopper on the top of SparkOne unit. The hopper has a maximum storage capacity of 150 grams of granules.

Please Note that there are 2 sizes of the granules 1) Medium and 2) Large. They are of different meshes, and the effect height varies from 6.5ft to 17 feet depending on what granule size is used.

1 Fill the unit with granules

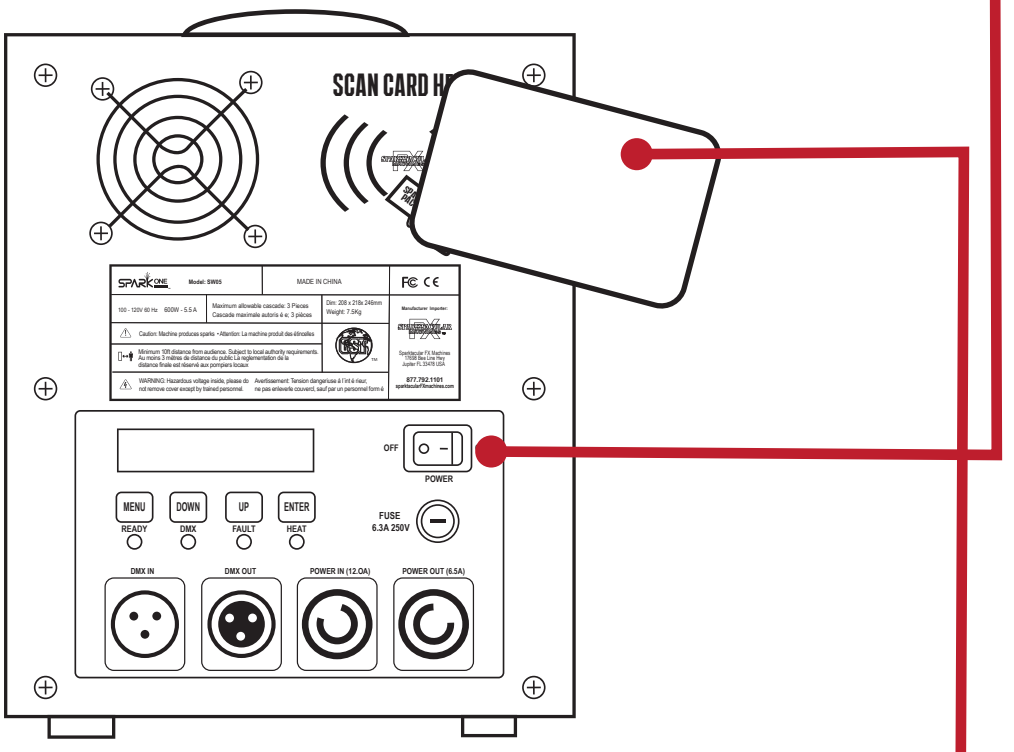




2 Power On Controller

ATTENTION!!!
READ PYRO SIM MANUAL
PRIOR TO USE

3 Power On SparkOne



4 Activate Machie

To activate the SparkOne unit, the RFID card needs to be scanned at the closest possible distance. Once activation succeeds, the remaining usage time of the machine will be displayed on the screen.

5 Start system

After setting parameters, please turn key from “safe’ to “arm”. Press the “Fire” button to start SparkOne. Files can be selected manually or can be selected in any of firing Modes. There are 8 file modes per effect file that can be programmed and selected. Once units are firing, the only buttons that will work are “stop all” on the digital screen and the “fire” button. Turning the key from “arm” to “safe” during the firing of the effect will immediately stop the firing of the effect.

6 Clear Material

CLEAR MATERIAL MUST BE PERFORMED AFTER EVERY USE TO AVOID DAMAGE!!!

• Switch power off on SparkOne unit. Remove chamber cap on top of the machine and have containment material in place for the granules (can be a piece of paper, bag, jar, etc).

• Turn the SparkOne upside down and empty remaining granules in chamber. Once chamber is clear of remaining granules, place SparkOne upright and reattach the chamber cap.

• Switch power on and make sure HEAT is turned on (HEAT must be activated to run clear material procedure.)

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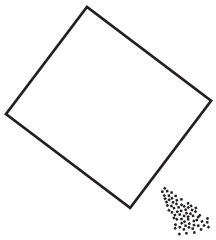
• Press the FIRE button to shoot one last “LIVE” shot. Allow the last “LIVE” shot to run until granules are no longer exiting the fountain nozzle (this can take up to 30 seconds depending on granules lodged in the tract of the SparkOne).

• After firing the last “LIVE” shot, press CLEAR MATERIAL button on Pyro Sim Controller. Allow for CLEAR MATERIAL to run for 30-40 seconds or until granules are no longer exiting fountain nozzle. --Once granules are no longer exiting the fountain nozzle, please turn HEAT off to begin cool down period.



Warning: Please follow this process to clear materials and extend the life of your machine.

Please store the unused granular materials in a container (such as a glass jar) or sealed bag and store in a cool, dry area. The SparkOne Granules should not be exposed to humid environments for long durations of time. If necessary, dispose of the granular materials by burning. Make sure granules are clear of foreign matter and refilled back into hopper when using the machine to dispose of excess granules.

5 Shut off system

After completing the clear material procedure, allow 30-40 minutes for SparkOne units to cool down. Allowing the SparkOne units to cool down is a MUST to prevent damage to the inside of the machine. Once SparkOne units have returned to idle temperatures, they may be placed back in their road cases or housing. Invalidating the HEAT button and keeping the unit on will speed up the cooling process. Never place your fingers or any objects in the fountain nozzle