

FORMULA FLAMER

SF-F5

USER MANUAL



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- ★ Please read this manual carefully before operating this product.
- ★ Warranty card attached in the manual, please keep it well.

⚠ WARNING

Unauthorized repair is prohibited, it may cause serious incident .

⚠ WARNING

Before connecting the power, make sure that the power supply voltage matches the rated voltage of the equipment and use a grounded outlet. Turn off the machine by disconnecting the power plug when not in use.

⚠ WARNING

Please connect the communication DMX cable before turning on the power, and make sure the communication command is non-injecting and the device is in test mode.

⚠ WARNING

The device can only be placed horizontally. Safety distances are marked on the device (at least 5m in all projection directions, at least 5m to the other sides of the device).

⚠ WARNING

After turning on the device, no person allows to stay in the danger area. Ensure all persons that are part of the show be informed about the safety distance, risks and functions of the device.

⚠ WARNING

Always have a CO₂ fire extinguisher and an extinguishing blanket in case of needed.

⚠ WARNING

If there be any doubt as to the safety operation of the device in any circumstances, the device should be taken out of service immediately. Be sure the device is in good operating condition before use. If fail to fire correctly, immediately shut down and check it accordingly Any questions please always contact SPARK FABRICA (info@sparkfabrica.com) for help.

⚠ WARNING

Be sure to use high quality flame fluid, otherwise, it is easily to failure or clanger. Be careful when refill the flame fluid tank. Please keep flame fluid away from heat source, sparks, fire or other possibility of ignition. Do not smoke!

⚠ WARNING

The operator responsible for the control of FORMULU FLAMER F5 must always have a clear view of the device, so that he/she can stop the show immediately when there is danger. The main AC power switch should near operator. So that operator can turn off the power of all devices in case of abnormal.

⚠ WARNING

The device shall not be altered and applied to other use purpose .

DISCLAIMERS

Changsha Spark Technology Electronics Co. Ltd excludes liability for unsafe situations, accidents and damages

1. Ignoring warnings or regulations as shown on flamer or this manual.
2. Use for other applications or circumstances other than those indicated herein.
3. Changes to the flamer, including use of non -original spare parts.
4. Removed safety cover without authorization from SPARK FABRICA.
5. Use this machine by unqualified or untrained personnel.
6. Improperuse of machine.

FOREWORD

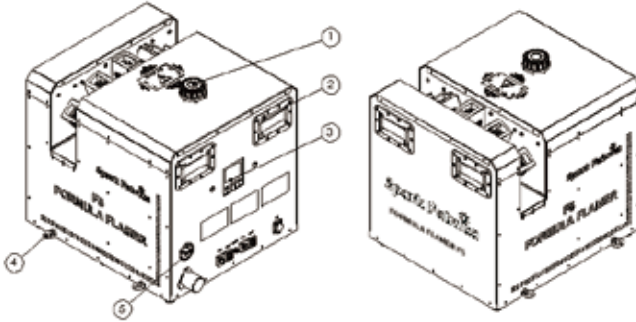
Thanks for choosing SPARK FORMULA FLAMER F5.Please read following manual carefully andcompletely before operating this product. Operate according to instructions is very important for safety, and can elongate the service life of the machine.Strictly follow the instruction in the manual when operate FORMULA FLAMER F5. If you have any doubts, please contact Changsha Spark Technology Electronics Co. Ltd by info@sparkfabrica.com.We assume the person who use or come in contact with the device are familiar with how the device should be handled. This includes proper use, maintenance and repair of the machine as defined in this user manual.

1 PRODUCT INTRODUCTION

1.1 TECHNICAL PARAMETERS

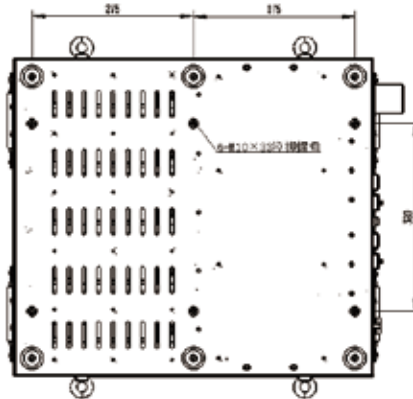
Identification	Manufacturer	SPARK FABRICA
	Name	FORMULA FLAMER
	Model	SF-F5
AC Power	Input Voltage & Frequency	100-120V , 60HZ 200-240V , 50HZ
	Work Power	2200W
	Power Input Connector	SEETRONIC
	Power Output Connector	SEETRONIC
	DMX Signal Interface	3 PIN / 5PIN Double DMX Interface
Interface Type	Signal Interface	3 PIN / 5PIN Double DMX Interface
	Signal Interface	15V-24V Fireworks Ignition Signal Interface
Waterproof	IP Rate	IP55
Hopper	Fuel Bottle Capacity	34L
	Removable Hopper	N/A
Control	Control Protocol	DMX-512
	Control Mode	Standard DMX Signal Control
	Effect Angles	80° (±40°)
	SMPTE	Music Triggered
Accessory	Power Plug	SEETRONIC (1.6Meter)
	DMX Cable	√ 3Meter
	Power Cable	√ 3Meter
	Safety Loop	√
	Safety Rope	√
	Update Box	Optional
Oil Consumption	Firing Head	60ml/s
Ignition	Ignition Mode	High Voltage Electronic Ignition
Weight	Net Weight (No Fuel)	86kg
	Gross Weight	111kg
Dimensions	Machine Dimensions - L*W*H	612mm*543mm*604mm
	1 Unit Flight case Size - L*W*H	724mm*664mm*792mm
Fuel Oil	Kind	ISOPAR

1.2 STRUCTURE OF FORMULA FLAMER F5



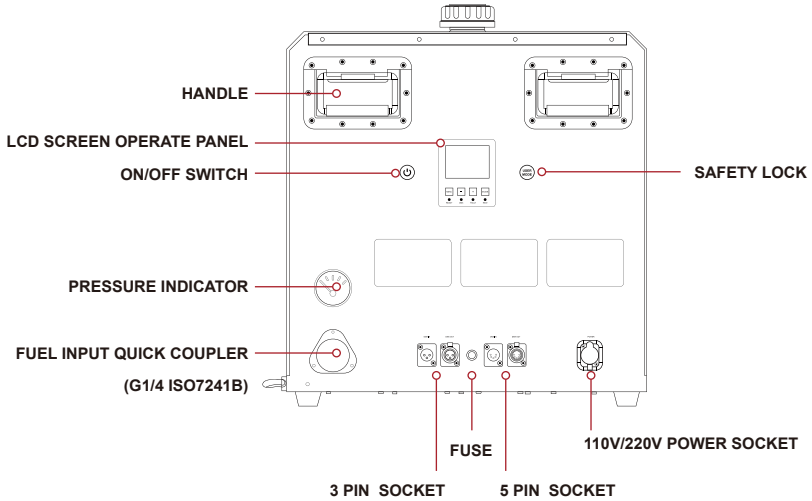
1. Oil tank cap 2. Handle 3. Operation interface 4. Hanging rings 5. Oil level gauge

1.3 BOTTOM BRACKET CONNECTION DIMENSIONS

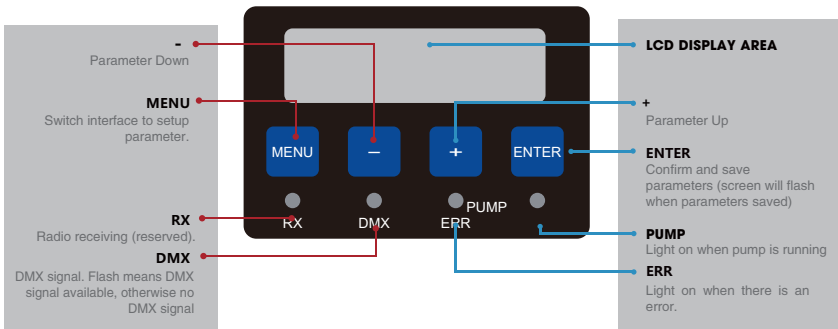


2 OPERATING MACHINE

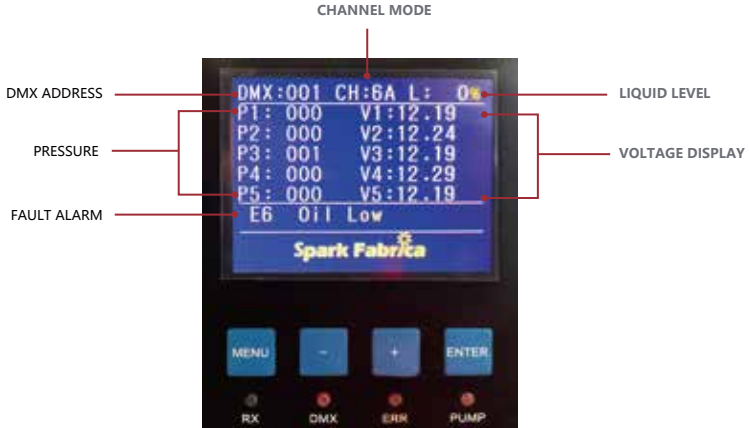
2.1 OVERVIEW OF CONTROL PANEL



3 OPERATION PANEL



3.2 MAIN INTERFACE



3.5 ALERT MESSAGE

ALERT MESSAGE	EXPLANATION
E0 Test Mode	Safety lock located at TEST MODE
E1 PRESSURE ERR	Pressuriser for about 13s, pressure value failed to reach 100%, system Will report E1.
E2 PRELIEF ERR	Possible fault: no fuel, pump failure, pipeline problem etc. Pipeline can't release pressure leads to pressure relief error. Possible fault: pressure release valve failure, pipeline problem or control system problem etc.
E4 EXTIGNITE ON	The extignite time is switched to on
E6 LOW FUEL	When fuel wo report E6 low fuel
E7 TIP ERR	If the machine slant over 45°, it stops running, system will report E7

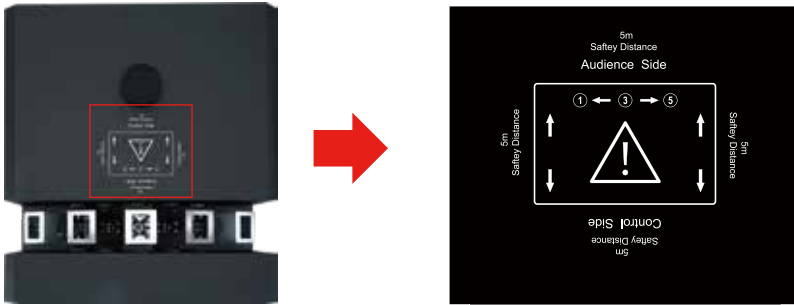
3. 4 INTERFACE SETUP

Press the MENU key to enter the setting screen, press MENU to enter different options until you return to the main screen.

MENU	CONTENTS	EXPLANATION
LANGUAGE	CHINESE/ENGLISH	Language selection
MENU SETTING	DMX ADDRESS SETTINGS	1~512
	CHANNEL MODE SETTINGS	6A(channel normal mode)/6B (channel specific mode)
	PRESSURE SETTINGS	60-90Bar
	OFF/ON	Tilt settings
	OFF/ON	Remote refueling function settings
	OFF/ON	manual opening of the fuel charging valve.
	OFFION	Restore the default device parameter settings
DRIVE TEST	PUMP(1-5)	Pump works for one second.If the pressure exceeds the set targetpressure, the pump will not work.
	LGNITER(1-5)	Igniter works for one seconde
	RELIEF VALVE(1-5)	Relief Valve work onceSafety
	JET VALVE(1-10)	Lock must be in USER MODE After the pressure relief valve opens for 6 seconds, the corresponding injection valve operates once
	REFUELING VALVE	Refueling valve operates once
VERSION	VERSION NO.	

4 OPERATION INSTRUCTIONS

4.1 DIRECTION EXPLANATION



1. 1-5 indicate the related head number of FORMULA FLAMER F5. Right side one is head 1, head 3 is in the middle, left side is head 5.

2. Audience side and control side are indicated in the picture.

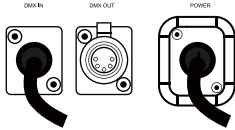
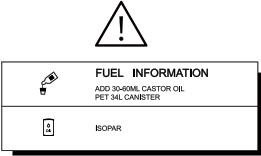

3. Safety distances for FORMULA FLAMER F5 are indicated in above picture. At least 5m in all projection directions, at least 5m to the audience side and control side.

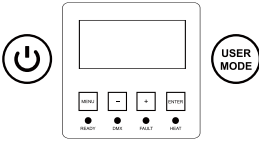

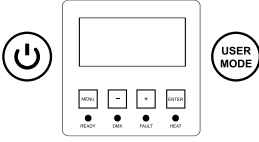

NOTICE







In order to indicate correct direction, please place the top panel correctly.

4.2 QUICK OPERATION SHEET

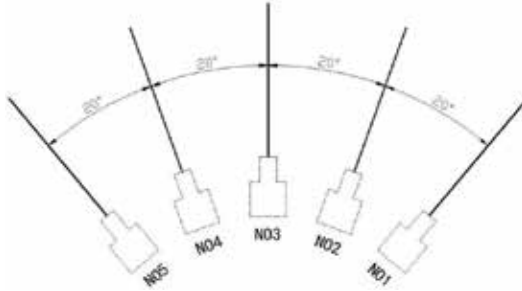
Upon receiving the machine, unpack the packing carton and check the machine in a good condition immediately. Ensure safety operation of machine, please do following below operation procedures when operate FORMULA FLAMER F5.

OPERATION STEP	SCHEMATIC DIAGRAM AND EXPLANATION	EXPLANATION
<p>1</p> <p>Installation</p>		<p>The device can only be placed horizontally, if placed on truss, please locked with extra safety ropes.</p>
<p>2</p> <p>Power and DMX cable connection</p>	 <p>The diagram shows three connection points: 'DMX IN' with a 3-pin XLR connector, 'DMX OUT' with a 5-pin XLR connector, and 'POWER' with a 2-pin power connector.</p>	<p>Provide two types of power access:</p> <ul style="list-style-type: none"> • 110v/220v electric socket • 12v Battery power connector
<p>3</p> <p>Fueling</p>	 <p>The diagram includes a warning triangle with an exclamation mark and a fuel information label that reads: 'FUEL INFORMATION', 'ADD 30-60ML CASTOR OIL', 'PET 3ML CANISTER', and 'ISOPAR'.</p>	<p>Please add the recommended fuel type according to the user manual</p>
<p>4</p> <p>Switch ON the machine</p>	 <p>The diagram shows a circular power button icon with a vertical line through it.</p>	<p>Before turning on the power switch, make sure that the USER MODE is in the non-on state, also called test mode</p>

<p>5</p> <p>The test mode</p>		<p>USER MODE a non-on state means test mode, the device can simulate ignition action. However, the fuel injection function is disabled and no fuel or flame will be emitted. USER MODE open state means usage mode, the device can be used normally. You need to strictly observe the requirements related to safety distances in the first part of the content of the manual, and clear all staff and flammable and explosive materials within the safety distance.</p>
<p>6</p> <p>Set DMX address</p>	<p>Set DMX Address 1</p>	<p>Please refer to “6 DMX CONTROL”.</p>
<p>7</p> <p>Pressure</p>		<p>Controller: press the “HEAT” button (light up) DMX controller: turn the address 6 to 50-200</p>
<p>8</p> <p>Check device status in TEST MODE</p>		<p>Before testing, reconfirm that the unit is not on (TEST MODE). There will be electrical sparks during the test, but no fire will be emitted.</p>
<p>9</p> <p>Pressure Relief</p>		<p>Controller: press the “HEAT” button (light off) DMX controller : turn the address 6 to (0-49) / (201-225).</p>

<p>10</p> <p>Switch to the USER MODE</p>		<p>Empty people and flammable materials within a safe distance in accordance with the instructions. Switch the safety lock into USER MODE</p>
<p>11</p> <p>Pressure</p>		<p>Controller : press the Heat button (light up) DMX controller : turn the address 6 to(0-49) / (201-255)</p>
<p>12</p> <p>Firing</p>		<p>Host controller: Press "FIRING" key DMX console: switch DMX value of channel 3 to 254-255</p>
<p>13</p> <p>Pressure Relief</p>		<p>Relief pressure when show finished or FORMULA FLAMER not use for a long period. Host controller: Press "pre-heat" key(light off) DMX console: switch DMX value of channel 6 to 0-49/201-255</p>
<p>14</p> <p>Make sure the USER MODE in non-on condition</p>		<p>Ensure the safety of next usage.</p>
<p>15</p> <p>Power off</p>		<p>Power off, tear down power cable and DMX cable, pack up the device when it is cooled down.</p>

4.3 ANGLE DEFINITIONS



5 FIRING SEQUENCE LIST

FORMULA FLAMER F5 with more than 97 preset firing sequences. Operator use related channel DMX value or sequence No. to access certain sequence. Sequence list as below:

5.1 SINGLE IGNITION SEQUENCE LIST

SEQUENCE NO.	IGNITION HEAD NO.	DESCRIPTION	Flame Activity	Duration (for reference)	Reference Value
1	1	Single ignition SHORT flame	Static	0. 1s	3-5
2	2	Single ignition SHORT flame	Static	0. 1s	6-7
3	3	Single ignition SHORT flame	Static	0. 1s	8- 10
4	4	Single ignition SHORT flame	Static	0. 1s	11- 12
5	5	Single ignition SHORT flame	Static	0. 1s	13- 15
6	1	Single ignition LONG flame	Static	0.28s	16- 17
7	2	Single ignition LONG flame	Static	0.28s	18-20
8	3	Single ignition LONG flame	Static	0.28s	21-22
9	4	Single ignition LONG flame	Static	0.28s	23-25
10	5	Single ignition LONG flame	Static	0.28s	26-28

SEQUENCE NO.	IGNITION HEAD NO.	DESCRIPTION	FLAME ACTIVITY	FIRING DURATION (FOR REFERENCE)	CH5 DMX REFERENCE VALUE
11	Step 1-5	SHORT flame Step sequence	L -> R	0.54s	29-30
12	Step 5- 1	SHORT flame Step sequence	R -> L	0.54s	31-33
13	Step 1>3>5>2>4	SHORT flame Step sequence	L>M>R>L> R	0.54s	34-35
14	Step 5>3>1>4>2	SHORT flame Step sequence	R>M>L>R> L	0.54s	36-38
15	Step 1>5>2>3>4	SHORT flame Step sequence	L>R>L>M> R	0.54s	39-40
16	Step 5>1>4>3>2	SHORT flame Step sequence	R>L>R>M> L	0.54s	41-43
17	Step 1>5>2 >4>3	SHORT flame Step sequence	L>R>L>R> M	0.54s	44-45
18	Step 5>1>4>2>3	SHORT flame Step sequence	R>L>R>L> M	0.54s	46-48
19	Step 2>4>1>5>3	SHORT flame Step sequence	L>R>L>R> M	0.54s	49-50
20	Step 4>2>5>1>3	SHORT flame Step sequence	R>L>R>L> M	0.54s	51-53
21	Step 2>4>3>1>5	SHORT flame Step sequence	L>R>M>L> R	0.54s	54-56
22	Step 4>2>3>5>1	SHORT flame Step sequence	R>L>M>R> L	0.54s	57-58
23	Step 2>3>4>1>5	SHORT flame Step sequence	L>M>R>L> R	0.54s	59-61
24	Step 4>3>2>5>1	SHORT flame Step sequence	R>M>L>R> L	0.54s	62-63
25	Step 3>1>5>2>4	SHORT flame Step sequence	M>L>R>L> R	0.54s	64-66
26	Step 3>5>1>4>2	SHORT flame Step sequence	M>R>L>R> L	0.54s	67-68
27	Step 3>2>4>1>5	SHORT flame Step sequence	M>L>R>L> R	0.54s	69-71
28	Step 3>4>2>5>1	SHORT flame Step sequence	M>R>L>R> L	0.54s	72-73
29	Step 2>3>4	SHORT flame Step sequence	L>M>R	0.32s	74-76
30	Step 4>3>2	SHORT flame Step sequence	R>M>L	0.32s	77-79
31	Step 1>3>5	SHORT flame Step sequence	L>M>R	0.32s	80-81
32	Step 5>3>1	SHORT flame Step sequence	R>M>L	0.32s	82-84

33	Step 1>5	SHORT flame Step sequence	L->R	0.21s	85-86
34	Step 5>1	SHORT flame Step sequence	R->L	0.21s	87-89
35	Step 2>4	SHORT flame Step sequence	L->R	0.21s	90-91
36	Step 4>2	SHORT flame Step sequence	R->L	0.21s	92-94
37	Step 1-5	LONG flame Step sequence	L->R	1.45s	95-96
38	Step 5- 1	LONG flame Step sequence	R->L	1.45s	97-99
39	Step 1>3>5>2>4	LONG flame Step sequence	L>M>R>L> R	1.45s	100- 101
40	Step 5>3>1>4>2	LONG flame Step sequence	R>M>L>R> L	1.45s	102- 104
41	Step 1>5>2>3>4	LONG flame Step sequence	L>R>L>M> R	1.45s	105- 107
42	Step 5>1>4>3>2	LONG flame Step sequence	R>L>R>M> L	1.45s	108- 109
43	Step 1>5>2 >4>3	LONG flame Step sequence	L>R>L>R> M	1.45s	110- 112
44	Step 5>1>4>2>3	LONG flame Step sequence	R>L>R>L> M	1.45s	113- 114
45	Step 2>4>1>5>3	LONG flame Step sequence	L>R>L>R> M	1.45s	115- 117
46	Step 4>2>5>1>3	LONG flame Step sequence	R>L>R>L> M	1.45s	118- 119
47	Step 2>4>3>1>5	LONG flame Step sequence	L>R>M>L> R	1.45s	120- 122
48	Step 4>2>3>5>1	LONG flame Step sequence	R>L>M>R> L	1.45s	123- 124
49	Step 2>3>4>1>5	LONG flame Step sequence	L>M>R>L> R	1.45s	125- 127
50	Step 4>3>2>5>1	LONG flame Step sequence	R>M>L>R> L	1.45s	128- 130
51	Step 3>1>5>2>4	LONG flame Step sequence	M>L>R>L> R	1.45s	131- 132
52	Step 3>5>1>4>2	LONG flame Step sequence	M>R>L>R> L	1.45s	133- 135
53	Step 3>2>4>1>5	LONG flame Step sequence	M>L>R>L> R	1.45s	136- 137
54	Step 3>4>2>5>1	LONG flame Step sequence	M>R>L>R> L	1.45s	138- 140
55	Step 2>3>4	LONG flame Step sequence	L>M>R	0.86s	141- 142
56	Step 4>3>2	LONG flame Step sequence	R>M>L	0.86s	143- 145
57	Step 1>3>5	LONG flame Step sequence	L>M>R	0.86s	146- 147

58	Step 5>3>1	LONG flame Step sequence	R>M>L	0.86s	148- 150
59	Step 1>5	LONG flame Step sequence	L>R	0.57s	151- 152
60	Step 5>1	LONG flame Step sequence	R>L	0.57s	153- 155
61	Step 2>4	LONG flame Step sequence	L>R	0.57s	156- 158
62	Step 4>2	LONG flame Step sequence	R>L	0.57s	159- 160
63	Step 15>3>24	SHORT flame Step sequence	LR>M>LR	0.40s	161- 163
64	Step 24>3>15	SHORT flame Step sequence	LR>M>LR	0.40s	164- 165
65	Step 15>24>3	SHORT flame Step sequence	LR>LR>M	0.40s	166- 168
66	Step 3>24>15	SHORT flame Step sequence	M>LR>LR	0.40s	169- 170
67	Step 3>15>24	SHORT flame Step sequence	M>LR>LR	0.40s	171- 173
68	Step 24>15>3	SHORT flame Step sequence	LR>LR>M	0.40s	174- 175
69	Step 24>135	SHORT flame Step sequence	LR>LMR	0.25s	176- 178
70	Step 135>24	SHORT flame Step sequence	LMR>LR	0.25s	179- 181
71	Step 15>234	SHORT flame Step sequence	LR>LMR	0.25s	182- 183
72	Step 234>15	SHORT flame Step sequence	LMR>LR	0.25s	184- 186
73	Step 15>3>24	LONG flame Step sequence	LR>M>LR	0.86s	187- 188
74	Step 24>3>15	LONG flame Step sequence	LR>M>LR	0.86s	189- 191
75	Step 15>24>3	LONG flame Step sequence	LR>LR>M	0.86s	192- 193
76	Step 3>24>15	LONG flame Step sequence	M>LR>LR	0.86s	194- 196
77	Step 3>15>24	LONG flame Step sequence	M>LR>LR	0.86s	197- 198
78	Step 24>15>3	LONG flame Step sequence	LR>LR>M	0.86s	199-201
79	Step 24>135	LONG flame Step sequence	LR>LMR	0.57s	202-203
80	Step 135>24	LONG flame Step sequence	LMR>LR	0.57s	204-206
81	Step 15>234	LONG flame Step sequence	LR>LMR	0.57s	207-209
82	Step 234>15	LONG flame Step sequence	LMR>LR	0.57s	210-211

SEQUENCE NO.	IGNITION HEAD NO.	DESCRIPTION	FLAME ACTIVITY	FIRING DURATION (FOR REFERENCE)	CH5 DMX REFERENCE VALUE
83	12345	Multi ignition SHORT flame	Static	0.1s	212-214
84	1245	Multi ignition SHORT flame	Static	0.1s	215-216
85	234	Multi ignition SHORT flame	Static	0.1s	217-219
86	135	Multi ignition SHORT flame	Static	0.1s	220-221
87	15	Multi ignition SHORT flame	Static	0.1s	222-224
88	24	Multi ignition SHORT flame	Static	0.1s	225-226
89	12345	Multi ignition LONG flame	Static	0.28s	227-229
90	1245	Multi ignition LONG flame	Static	0.28s	230-232
91	234	Multi ignition LONG flame	Static	0.28s	233-234
92	135	Multi ignition LONG flame	Static	0.28s	235-237
93	15	Multi ignition LONG flame	Static	0.28s	238-239
94	24	Multi ignition LONG flame	Static	0.28s	240-242
95	3	Multi ignition LONG flame	Static	User defined	243-244
96	234	simultaneously	Static	User defined	245-247
>97	12345	simultaneously	Static	User defined	248-255

6 DMX CONTROL

6.1 NORMAL CHANNEL MODE

CHANNEL	FUNCTION
CH1	MANUAL MODE HEAD SELECTION 0: all five heads 52-102: head NO.2 154-204: head NO. 4 1-51: head NO.1 103-153: head NO.3 205-255: head NO.5
CH2	/
CH3	Ignition ON/OFF: (0~253) ignition OFF; (254~255) ignition ON
CH4	Firing duration setup 0-255 is permanent firing (8s is limit duration firing time, 5 heads simultaneously firing limit time is 2s) 1-254 correspond to 10~2540ms duration time (Manual firing duration = DMX Value * 10ms)
CH5	PROGRAM SEQUENCE SETUP 0-2: no preset sequence; set according to CH1 and CH4 3~255: preset sequence. DMX Value = 2+Sequence No. * 2.55 (round off). CH1 and CH4 invalid.
CH6	MODE SETUP 0~49: Pressure Relief Mode (Emergency Stop) 50-200: Firing Mode 201 ~255: Pressure Relief Mode (Emergency Stop)

6.2 PROFESSIONAL CHANNEL MODE

CHANNEL	FUNCTION
CH1	Head NO.1: 0~253: Firing OFF; 254-255: Firing ON
CH2	Head NO.2: 0-253: Firing OFF; 254-255: Firing ON
CH3	Head NO.3: 0-253: Firing OFF; 254-255: Firing ON
CH4	Head NO.4: 0-253: Firing OFF; 254-255: Firing ON
CH5	Head NO.5: 0-253: Firing OFF; 254-255: Firing ON
CH6	MODE SETUP 0~49: Pressure Relief Mode (Emergency Stop) 50-200: Firing Mode 201-255: Pressure Relief Mode (Emergency Stop)

7 CARE AND MAINTENANCE

NOTICE

To maintain the system in good performance and running status, it is recommended to running the device at least once per month.

NOTICE

Maintenance of the nozzle: Nozzle need to be cleaned up , and it is recommended that once every six months (depending on the environment and frequency of use). In the process of using the equipment, if the flame shape is seriously deformed or the fuel injection line is significantly deformed or coarsened, the nozzle should be removed immediately for cleaning.

NOTICE

Maintenance of the O-ring: If it is found that the O-ring of the nozzle is damaged or ageing when cleaning the nozzle, the O-ring should be replaced in time (material and size of O-ring: Fluoridated rubber O-ring, the outermost diameter is 14 mm, and the line diameter is 2 mm).

NOTICE

In order to lubricate the pipeline and pump it is highly recommended to add 10-20ml carter oil per 10L canister.

NOTICE

Software can be upgraded with download cable from SPARK FABRICA.

NOTICE

Switchable power input design, switchable between 110V and 220V as show below (voltage will show on it). The power supply is located on the side of the electric control, and you should remove the cover in order to change it.

8 HOW TO OPERATE FLAME MACHINE WITH CONSOLE CT-05

8.1 CT-05 INTRODUCTION

A newest digital console which can work with special effects, audio and video. Through serious networking protocol, it affords serious control, such as controlling spark machines remotely. This new console achieved more perfect sparking effect for wedding, content, sport events and meeting, etc.



8.2 HARDWARE DESCRIPTION

\ MODEL: CT-05

\ DIMENSION: 300×200×120mm

\ WEIGHT: 3.1kg

\ VOLTAGE: 100-240V, 50/60Hz

\ POWER: 5W

\ MAX CASCADE OF DEVICE: 18units (ZK6200)/ 54units (ZK6300)

\ SUPPORT MACHINES: SPARKULAR series, CIRCLE FLAMER series, SONICBOOM series

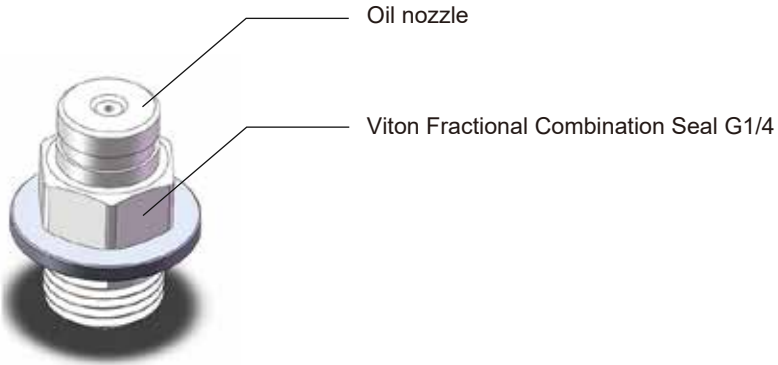
8.3 SPARK FABRICA HOST CONTROLLER INTRODUCTION:

1. Standard DMX512 signal output
2. Support 18units (ZK6200) or 54units (ZK6300) of FORMULA FLAMER F5
3. 5 standard dynamic modes: Synchronization, Center to Ends, Ends to Center, Left to Right, Right to Left. And an user definable Special Effect mode, support 8 files, each file support 36000 lines maximum (effects lasts for 30min)
4. Multi trigger sources: manual, music or midi input
5. RDMX monitoring function: system can send back FORMULA FLAMER F5 working status info such as pressure, warming etc. and display on the screen
6. Emergency stop function

8.4 OPERATIONAL PANEL

1. Cable connection area
2. Manual firing operation region
3. Mode selection area
4. LCD display area
5. Edit/Control area

9 MAINTENANCE



1. To maintain the system in good performance and running status, it is recommended to running the device at least once per month.
2. Maintenance of the nozzle: Nozzle need to be cleaned up , and it is recommended that once every six months (depending on the environment and frequency of use). In the process of using the equipment, if the flame shape is seriously deformed or the fuel injection line is significantly deformed or coarsened, the nozzle should be removed immediately for cleaning.
3. Maintenance of the O-ring: If it is found that the O-ring of the nozzle is damaged or ageing when cleaning the nozzle, the O-ring should be replaced in time (material and size of O-ring: fluororubber O-ring, the outermost diameter is 14 mm, and the line diameter is 2 mm).

10 ACCESSORIES LIST

No.	PART NO.	DESCRIPTION	QTY
1	RMWAS025	Fluororubber O-ring	5
2	RMBOT036	Safety loop	2

WARRANTY INSTRUCTIONS

Sincere thanks for your choosing FORMULA FLAMER F5, you will receive quality service from us.

The product warranty period is one year. If there are any quality problems within 7 days after shipping out from our factory, we can exchange a brand new same model machine for you.

We will offer free of charge maintenance service for machines which with hardware malfunction (except for the instrument damage caused by human factors)in warranty period. Please don't repair machine without factory permission.

Below situations NOT included in warranty service:

1. Damage caused by improper transportation, usage, management, and maintenance, or damage caused by human factors;
2. Disassemble, modify or repair products without SPARK's permission;
3. Damage caused by external reasons (lightning strike, power supply etc)
4. Damage caused by improper installation or use;

For product damage not included in warranty range, we can provide paid service.

Invoice and warranty card are necessary when applying for maintenance service from SPARK FABRICA.

WARRANTY CARD

Product Name:		Serial No.	
Purchase Date:			
Tel:			
Address:			
Info, feedback about the problem:			
Actual problem:			
Maintenance detail:			
Service Engineer:		Service Date:	

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