

KID POWER

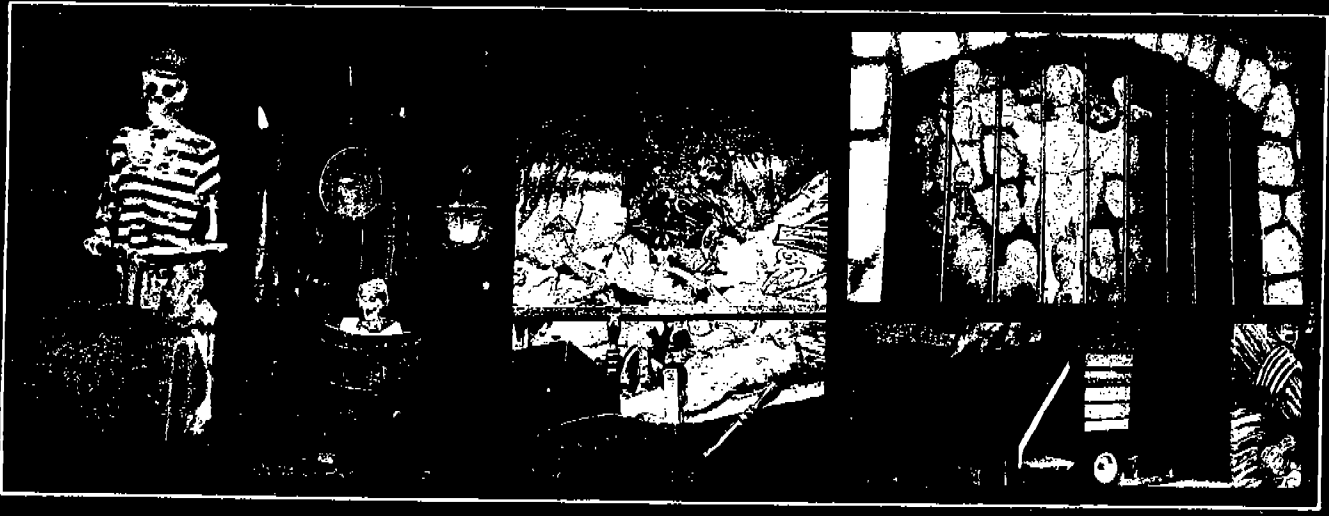
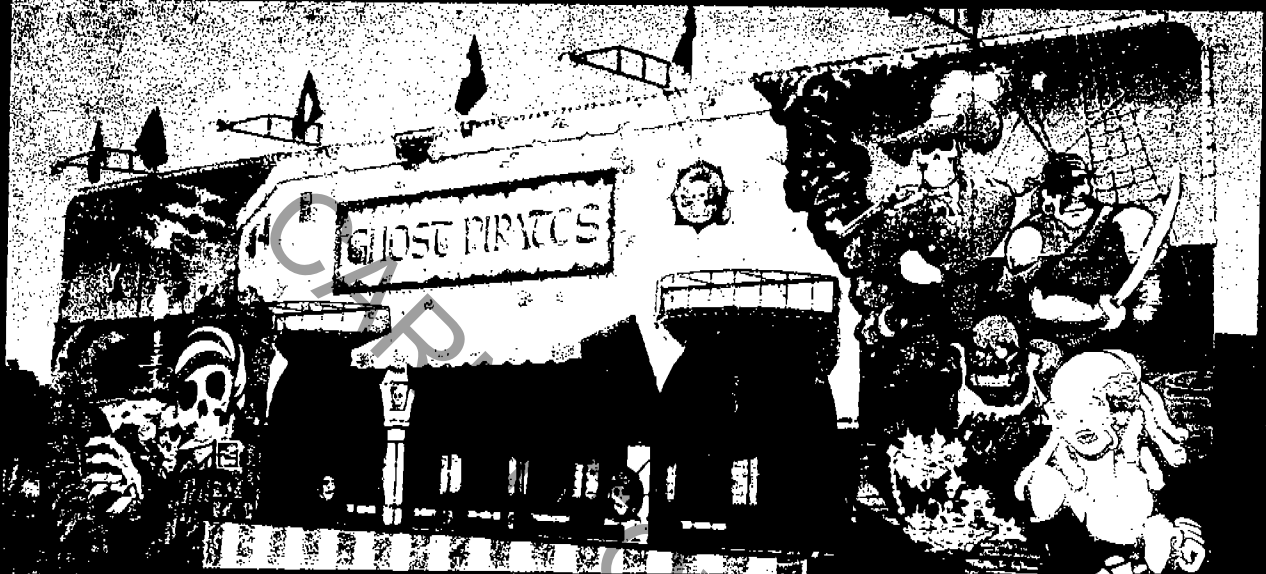


SYSTEM

MFG: Kid Power Sys.  
RIDE: Ghost pirate/party

# Ghost Pirates

DARK RIDE





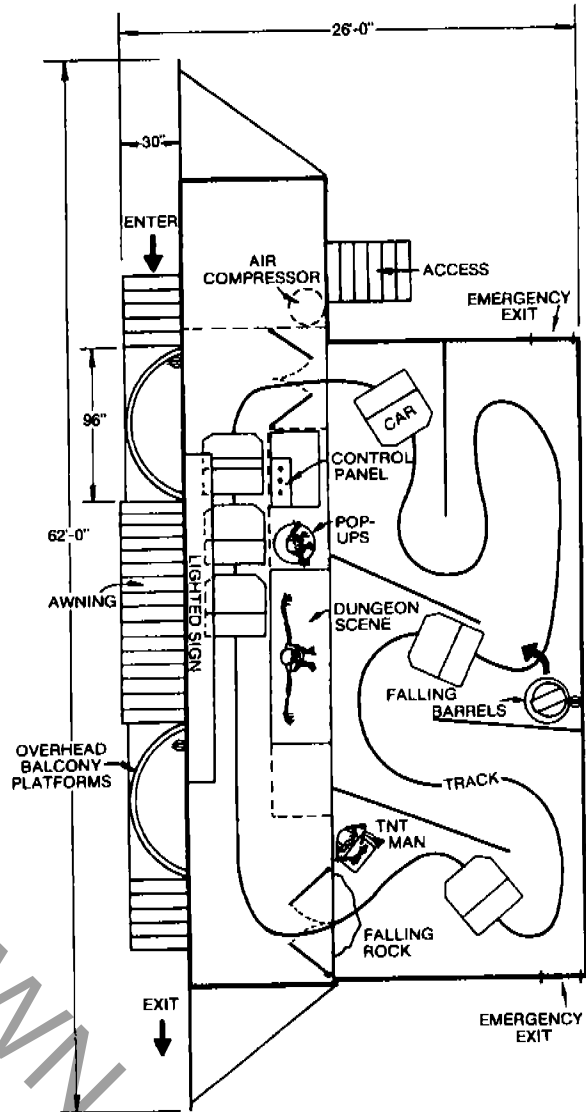
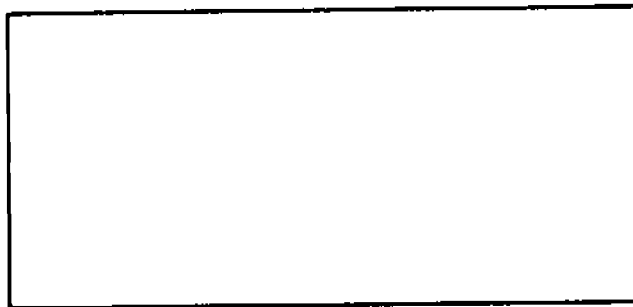
**KID POWER  
SYSTEMS  
PRESENTS:  
GHOST  
PIRATES**

**Portable Dark Ride  
Trailer Mounted**

**GHOST PIRATES** - A themed, production built dark ride for all ages is setting a new standard in the industry for appearance and quality. One of the most attractive and appealing dark rides to come along in years. **GHOST PIRATES** will keep them coming back time after time. Great attention to detail and superior craftsmanship in the front painting and the animation of the tricks makes **GHOST PIRATES** a real power house. The pirate theme is consistent throughout, from the design of the front, the cars, the tricks and the custom made audio system sound tracks that play with each trick. **GHOST PIRATES** is designed for both dependability and convenience on the midway and down the road.

**GHOST PIRATES Dark Ride** - a superior constructed heavy duty unit that would be a profitable and proud addition to any midway line-up.

*VIDEO TAPE AVAILABLE UPON REQUEST*



**STANDARD SPECIFICATIONS**

- Custom built 46 foot low boy trailer
- Tandem Axles, Duals 8:25/15 Tires
- Gross weight 30,000 lbs.
- 6 each air operated, animated stunts
- 1 each animated exterior trick standard
- 6 each 1 piece fiberglass cars with locking lap bar
- Full differential drive dark cars
- 210' track; duration of ride - 1 minute
- Low voltage track - 24 v - 5 KVA transformer
- Digital sound system with custom script/effects
- 30 gallon vertical air compressor
- Complete workshop area provided
- Deluxe back lit, back painted lexan front sign
- All steel structure with steel skin
- Brass hinge pins throughout standard
- Electric 220 v single phase 100 amp
- 150' 8/4 power lead provided
- Over 500 exterior chase lights
- 4 each 500 watt quartz overhead fixtures
- 12 volt emergency lighting standard
- 2 fire emergency exit doors
- Deluxe scroll tubing handrails
- 7 each Jolly Roger flags standard
- Set up time - 2 men in 2 hours

**Manufacturers of  
JUNGLE OF FUN / KID POWER Play Area / SPLASH N CRASH  
GHOST TOWN Fun House**

FUN TECH INDUSTRIES INC.  
PO BOX 2514  
CLACKAMAS, ORE. 97015  
PH. 360-695-7292 FAX 7295

**GHOST PIRATES DARK RIDE**

OWNERS MANUAL 1996

MANUFACTURED AS PER ASTM STANDARDS

MODEL # 46T007C

SERIAL # GP6-696-FTI

CARNIVALTOWN.COM



**Recommended Tools:**

7/16" nut driver 5/16" allen wrench

1-1/8" wrench 1-1/16" wrench

Hammer

Level

**Recommended Lubricants:**

A good penetrating oil

90 wt. Gear oil

Bearing grease

Never-seize

Spray graphite for track

Non-Detergent oil for air compressor

**GHOST PIRATES DARK RIDE**

**SET-UP PROCEDURE**

- 1) Spot and level the trailer.

The front side of the ride is on the drivers side of the trailer. The front landing gear are two speed. The 2 rear landing gear are drop pin and screw down for ease. With a level, level the trailer in both directions. Perfect accuracy is not necessary.

- 2) Connect the ride lead to the generator. etc.( 60 amp 220VAC)

- 3) Lower front loading and un-loading platform.

Access to the front car loading stations can be easily reached through the cabin door (and ladder) and entered through the large car access door. One man must be in the loading platform and two men must be on the ground. Unpin and pivot out the front platforms support braces. Ea. Platform has 4 ea. 'R' keys, 2 up and 2 down. Remove all 'R' keys and lower onto support braces. At this time make sure that the braces are

located in between the stops that are provided to keep the braces properly located. Lower the other side in the same fashion. Unpin and pivot the small, short fence which locks the two front fences together. This will require 1ea. 5/16 snapper pin.

#### **4) Entrance, Exit stairs, Handrails, Awning, Bally Cloth**

The stairs are located on the inside of the rear of the trailer. These stairs pin to the respective ends of the front platform with a 36" long, 1/2" rod. Level the stairs with the adjustable feet that are provided. These stairs are not interchangeable as the pockets for the handrails must be to the outer side of the stairs (away from the front of the ride). These handrails are located inside the back wall of the rear tip-out behind the front wall of the ride. Access to these items may be delayed until the rear of the ride is opened up. These handrails are interchangeable and can be at either entrance or exit end of the front platform.

In the center of the front there is located pivot out brackets that support the front awning. Lift out the 12" cross bar, turn over, swing out the end brackets and drop in the cross bar. Make sure that the snaps end up located to the back side of the cross bar.

The front platform has a bally cloth the snaps on across the entire front edge. It is stowed in the cabin, snaps on only one direction. There are two 1" aluminum pipes that are provided that will slide into a pocket that is sewn into the back side of this bally cloth for the purpose of stability.

#### **5) Assembling the rear building support structure.**

There are 10 floor beams provided. They are racked on the passenger side of the trailer. They are number one through ten. There are five support brkts. provided. They are racked in the cabin under the work bench. There are ten screw jacks provided. They are located inside the cabin racked under the work bench also.

Insert screw jack into beam support brkt. Note: The 2 ea. support brkts. which are colored red at the outside corners, are to be located at the ends

of the main assembly only. Lay them flat on the ground and slide up into the bottom of the jackstands.

As you face the back side of the ride, The floor beams must be installed as numbered left to right as you read a book. A pair of floor beams rest on 1 ea. Beam support brkt.

The numbered end of the floor beams will face out away from the trailer. All floor beams must be assembled 90 degrees ( perpendicular) from the trailer. There are 4 ea. spreader bars provided for the purpose of spreading the pairs of floor beams equally. They are also located in the cabin and are interchangeable

#### **6) Lowering the main floor:**

At this point the ride must have power and the winch breaker must be on. Unpin and remove the two vertical lock-in pipes which hold in the two outer walls. Swing these walls out and raise and lower as required the end floor beams as required in order to get the walls perpendicular to the trailer. Adjust as reqd. the end floor beam jacks until the walls are firmly supported. With a string or facsimile connect both end beams and raise or lower all floor beams so as to make all floor beams level. Pull out the drum control switch and between a combination of manually pulling out on the lower edge of the floor and engaging the winch, lower the floor slowly and carefully. Manually pull out on floor assy. only a foot or two so as allow the floor to rest on the floor beams. (V shape) Once this is done, remove workers and the with the use of the winch lower the floor all the way down until level. Do not allow the floor to intersect and become caught against the side walls. If this should occur raise the floor up somewhat, move the outer walls outward somewhat and begin again.

Once the floor is all the way down, unhook the nylon straps from the floor and power the straps back up onto the drum. Unpin and fold up the rear back wall. This is in 2 sections. Pin at both ends

## **7) Complete set-up of the main rear bldg.**

- a) Install the only 2 removable track sections. Insert 1/2" pins and tighten with 5/16" allen wrench.
- b) Insert the remaining 1/2" pins in all the track connections and tighten at this time.
- c) Install all roof beams. 3 of them have sprinkler heads. Insert them so that the fire hose will reach the quick disconnect fitting.
- d) Install the 4 internal curtains. Use the spreader bars which are provided to hang them on. They are color coded.
- e) Install the 2 ea. Stunt boxes. Use the wing nuts provided. Plug in and connect air line.
- f) Place the falling barrel stunt in place and pin to the floor. From overhead connect ac line and air line. From floor, connect to trip switch.
- g) Place pop-up barrel into position. No connections are required.
- h) Install the 2 ea. Emerg. Exit steps. Level with screw feet. Install handrails on both sides.
- i) Un-tie and pull down roof tent top. Lace on sides and use bungy cords on rear to secure around the perimeter.
- j) At either end of the trailer, unpin and fold out the end wings. Insert brace arm and key. Unpin and fold down the lower end wing and pin. Rear end assembly will require a 9/16" pin.

## **8) Erect the top panels and wings.**

- a) 2 men to climb up onto the roof.
- b) Unpin the center wing two places.
- c) Raise up center wing first. Insert 2 brace arms and pin.
- d) Hand up onto roof the 4 ea. Overhead fixtures and the 6 ea. Flags. Also at this time hand up a 6' ladder.
- e) Unpin and raise up the next roof panel that is adjacent to the center panel. Pin to center panel and insert brace arm and key.
- f) Either end panels can now be raised. Insert the flag onto the flag rod. Unpin end panel and raise up. Insert brace arm and key. With the aid of a ladder, reach over the end wing and remove key from locking pin. Swing panel around 180 degrees and insert the 2 ea. Brace arms and key.
- g) Repeat this process at other end of trailer.

h) Install remaining flags and install the 4 ea. Overhead light fixtures. These are all interchangeable. Plug lights into outlets provided.

**) Installing front marquees with motorized figures.**

- a) There are 2 ea. such devices racked on the wall in the station area for the cars. Either device can be raised and positioned without order.
- b) 2 men to release from the support pegs and set unit onto the front handrail. From above, connect and lower down the provided block & tackle assy. Connect to ring on marquee device and raise into position. Connect to pegs provided and plug into nearby 110 v outlet. Disconnect rope.
- c) Repeat above process to other
- d) Install 11 watt med. base bulbs into sockets on bottom of both marquees.

## **GHOST PIRATES DARK RIDE**

### **STUNTS -- TRICKS**

All stunts are 110 volt. They operate with a 10 amp DPDT 8 pin socket relay, where applicable.

**NORMAL STUNT SEQUENCE:** Car trips microswitch, engages relay, relay then energizes the air direction valve, lights, motors etc.

Timing of the tricks can be accomplished by either a adjustable timer wired into the system location of the trip microswitch on the floor or adjusting the flow control valves on the air cylinders (metered out).

### **STUNT-MAINTAINANCE**

#### **1) Skeleton on anchor:**

Grease the pillow lock bearings, grease the armature which is connected to the gear motor.

Check the oil level in the gear box (#90 wt. Oil). Do not over fill.

Check the bolts which connect the motor to the base plate.

Check all the set screws in all the bearings and key ways.

#### **2) Two pop-up heads:**

Grease the corresponding slide bar that the head slide up on. Check for air leaks. Air line can be removed holding the collar of the air fitting and pulling the air line straight out. Inspect the heads/artwork for integrity. Keep relays plugged in tight.

**3) Falling Barrels:**

Visually inspect all safety chains. Grease the front pivot hinge. Check the pivot bolt on the top and bottom of the cylinder. Keep all fasteners.

**3) Dungeon scene:**

Keep the main relay and the time delay plugged in tight. Inspect the springs which are connected to the skull. Keep all light bulbs in working order.

**4) TNT Skeleton / Falling rock:**

Grease the slide bar that the cylinder slides up. Keep the skeleton together. The trip switch for the falling rock is located inside of the TNT box. It is wired normally opened. Do not allow it to fail or not to be engaged as the rock will not function.

**Note:** All exterior stunt lights/spots should be no more than a 50 watt mini-spot or less than a 30 watt. Keep the spots pointed in the most optimum direction.

## **GHOST PIRATES DARK RIDE**

### **MAINTAINCE – Track and Cars**

#### **CAR MAINTENANCE**

Inspect the tires. Inspect the air pressure to recommended levels. Check the drive belts. Access to the drive can be reached by lifting up on the car seat as it is hinged. Inspect the chain for missing teeth, needed lubrication, and tension. Check the oil level in the gear box. Make sure that the drive chain is of the proper tension. Chains stretch over time. Adjust motor plate by setting adjusting bolts.

The guide unit must be removed by driving out the 2 roll pins so that it can be greased (if applicable) Remove the 2 lead wires first. Do not allow the unit to hang from these wires. Check the unit for good 'lord mounts', good 'lead wires' guide wheels that are not broken or frozen. The cars can be tipped up on their backs but be aware that the oil will leak out of the breather plug on the gear box.

Check the lap bars for the proper tension on the pivot bolts. Do not allow the cross bar on the lap bar to become loose. Grease the four pillow block bearings on the main axle 2x yearly.

#### **TRACK MAINTENANCE**

Keep the track free from dirt and debris. Do not allow trash inside the ride under any circumstances. Do not overtighten the track bolts. Do not replace the bolts with any thing but original hardware. Do not replace the track slide pins but with original ½" cold roll rod. Repair all broken welds immediately as each weldment is an electrical connection. With neverseize or equivalent, grease the track bolts at least twice a year.

#### **GRAPHITE THE TRACK**

Spray the graphite onto the top of the track evenly and neatly. Do not glob on or allow it to slop over the edges. Only graphite every other 2 ft. Keep area around the track clean. The more use that the ride experiences dictates how often the track is to be graphited. Do this

procedure at night so as to allow time for it to dry for optimum performance.

## **GHOST PIRATES DARK RIDE**

### **The Sound System – Digital**

#### **INTERNAL:**

There are 5 digital sound boxes provided and installed. (DMR'S). They are centrally placed in a 24" x 36" elec. below the main disconnect switch.

Note: These devices are susceptible to heat, low voltage, water (moisture).

Volume level is pre-set.

#### **EXTERNAL:**

This system consists of a PRO-PACK PLUS device. It is power conditioned protected. There is a 12vdc power supply connected to a DC-AC power inverter. This power system will protect the PRO-PACK unit from dirty power, low voltage faults to ground etc.

This tape player will only play tapes that have been specifically recorded at a speed conducive to this unit. All elements are fused and spare fuses are recommended.

# GHOST PIRATES DARK RIDE

## GENERAL OPERATING PROCEDURE

The main electrical service is located inside the back wall just inside the access door where the operator stands. There is a main disconnect (100 amp) and a circuit breaker box.

### **START UP SEQUENCE: SEE SAFETY SYSTEM MANUAL**

Engage main and all operational circuit breakers. Push on green start button on the control console. This will engage the starter relay (which has a 110 vac coil) which will energize the track, 6 KVA transformer. The cars can now be controlled by energizing any of the four station push buttons.

### **RUNNING SEQUENCE:**

Load car and manually lower the lap bar. Push the green, #1 station button and hold down until the dark car proceeds onto the main rail. Disengage button. Push buttons 2,3,4 and index the cars forward. When the first car has passed track #1 a second car can be allowed to enter the main floor. Optimum running sequence allows for three cars in the station and four cars equally spaced inside the main floor.

**DO NOT**- allow an exiting car to collide with a car left in station #4. Always bring the last car up.

**DO NOT** – overload the cars.

**DO NOT** – repeatedly push a stations inching a car forward. This will result in motor damage.

**DO NOT**- allow any patron to ride near or to come close to the swinging skeleton which swings over the cars on the anchor in the center of the car station.

**DO NOT** – allow a car to push another car.

**DO NOT** – assume that just because a car enters the building that it will come out as expected.

## **GHOST PIRATES DARK RIDE**

### **DAILY MAINTANCE**

*(THIS INSPECTION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING.)*

#### **AIR COMPRESSOR**

Drain filter  
Check oil level  
Check air pressure at regulator  
Check for air leaks  
Open pit cock under tank and drain moisture only

#### **DARK CARS**

Check lead wires on guide unit  
Check drive belt  
Check drive chain  
Check plug on motor, and fuse  
Inspect on/off switch for correct functioning  
Check lap bar for correct functioning  
Inspect upholstery for repair  
Check wheel lugs

#### **DARK CAR TRACK**

Inspect track bolts for tightness. Do not overtighten. Inspect welds on the track. Check for debris and remove anything metallic from the track.

#### **12 VOLT SYSTEM**

Check electrical connections at the battery charger and inspect the 12 volt connections for corrosion. Make sure that both internal 500 watt quartz fixtures are good condition.

#### **HOUSE LIGHTS**

Make sure that all 3 internal 500 watt quartz are operating properly.

## **EMERGENCY EXITS**

Check to see that the doors open properly and that they are not blocked.

## **EXIT/ENTER DOORS**

Visually check each of the 4 doors to see that they operate properly. Do not allow the doors to become obstructed. Check for sharp edges and repair.

## **TENT TOP**

Inspect the tent top for water build up and remove. Check the ropes to see that the tent is tied down and secure.

## **OTHER**

Blocking, supports  
Pins and keys; on fence entrance, exit, building  
General housekeeping  
Trip and fall hazards

During normal hours, one attendant.

During busy periods, two attendants:

Attendant #1: Take tickets and load passengers

Attendant #2: Operate controls

## GHOST PIRATES DARK RIDE

### RECOMMENDED SPARE PARTS

Cutler Hammer Micro Switch – L S A 1 A P/N stunt trip on floor

Cutler Hammer Loop - L S Z 6 1 P/N

Micorswitch - B Z N 2 6 Base Mount

Guide 'shoe' Fun Tech P/N GS-2534-DR

Guide 'lead wire' - Fun Tech LW-1010-DR

Guide wheels – Fun Tech P/N- GW-3030-DR

Lord mount – Fun Tech P/N LM-1034-DR

Track connector – Fun Tech - TC-1555-DR

Lead wire terminals Grainger - 5X534

Screw in fuses 20 amp, slow blow

## **GHOST PIRATES DARK RIDE**

### **SAFETY GUIDELINES**

UPDATED 1999

This ride may be operated in wet and windy conditions. The ride does not have to be balanced for proper performance. Adult patrons may ride with children 36" tall or taller. Riders may ride alone and they may board and fasten themselves without attendant assistance. The attendant must ensure that passenger restraints are snug and in the down position. This ride is equipped with an automated fire system. Physically and mentally handicapped persons are permitted with a companion. Bare-feet are not permitted under any circumstances. Persons that may be pregnant or that may have a heart condition are permitted, but are not recommended. Smoking or open flames are not permitted on the ride. Patrons must WALK at all times. No food or drinks on the ride.

### **EMERGENCY PROCEDURES**

1. Ensure that ride has stopped and cannot restart.
2. Evacuate passengers as quickly and safely as possible.
3. Call your supervisor and First Aid or other services if required.

# **FUN TECH SAFETY MONITOR SYSTEM©**

*Revised February 28, 1996*

## **GENERAL DESCRIPTION**

The Safety Monitor System, made by Fun Tech Industries, Inc., is designed to oversee specific input signals and generate specific output states when required. These input signals originate from some commercially available equipment such as smoke/heat detectors and sprinkler interlock equipment. Other input signals such as operator controls and power supervision are custom designed to fit the requirements of the installation. The output states that result are specified by various authorities, such as the on-site Fire Marshall and insurance companies, in the event of smoke or sprinkler detection, while other output states are coordinated with unique equipment configurations.

## **SYSTEM SPECIFICATIONS**

### **POWER SUPPLY**

#### **Battery Backup**

The system shall be able to run totally from an internal battery backup system, that will recharge itself as soon as AC power becomes available. The battery system use an internal 6 volt battery for running the micro-processor and its support chips. This battery can maintain the micro-processor function for over 48 hours without recharging. If the system has not been connected to AC power to recharge the battery, a low battery monitor will cut the battery loose from the load to avoid battery damage. As soon as AC becomes available, the charging circuit immediately recharges the battery. The battery will be fully charged approximately 2 hours after the AC power has been applied.

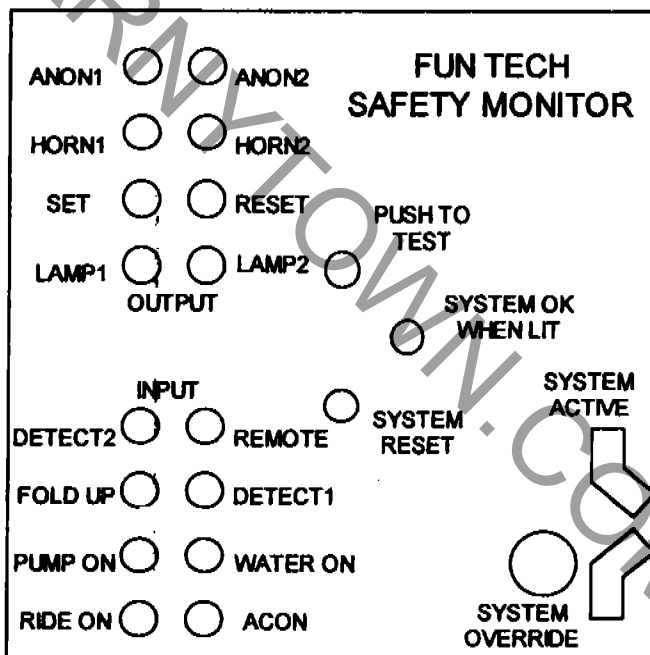
#### **Battery Powered Lighting & Control**

A separate external 12 volt battery is used to supply the power for such things as emergency lighting, horns, optional announcement systems, and interlock control of the ride. This battery system also includes an integrated charger that will maintain full battery charge whenever AC power is available. When the lights are turned "ON" and the battery is in need of a charge (less than 11.8V), the system will begin a 20 minute warning timer. The horn will sound for 1 second, once every minute, during the first 10 minutes after the battery voltage falls below the limit. During the 10 to 15 minute time range, the horn will sound for 1 second, twice every minute. Finally for the 15 to 20 minute range, the horn will sound for 1 second, three times every minute. At the end of that 20 minute period, if the AC has not been turned "ON", the unit will disengage the emergency lighting. If some reason the battery voltage continues to drop, at 11.5 volts

the system releases the 12 volt battery from all loads. The only way to recover is to turn the AC "ON". The battery will begin to recharge immediately. Then pushing the button at the top of the main panel labeled "PUSH TO ENGAGE" will latch in the battery for normal operation. If the AC is turned "ON" during the initial 20 minute time-out phase, the timer is reset and the battery begins to recharge. The charger will supply a significant amount of the load current required during operation if it has AC power available to it. To extend the useable battery power, try to have the AC power "ON" during use. The battery should be fully charged, approximately 5 hours after AC has been supplied.

### AC Power

The monitoring system must recharge the batteries and operate on AC power as soon as it becomes available. Power for the main unit charges its battery (6V) and supplies the monitoring system processor board. The external battery charger is supplied by its own power cord. The AC power for the whole system including battery chargers is only approximately 2 Amps.



SYSTEM STATUS PANEL

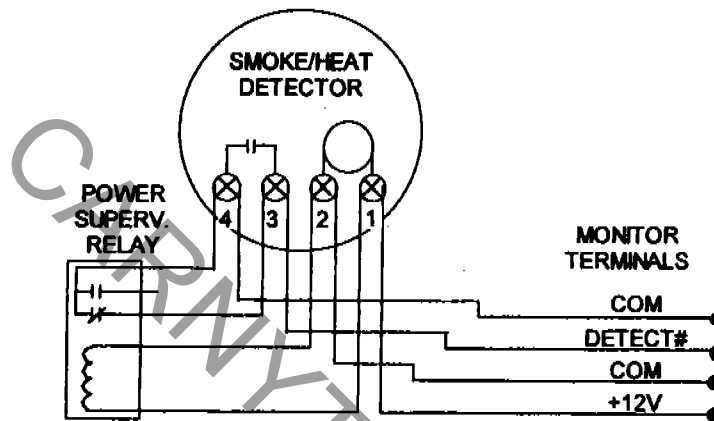
### INPUTS

#### Smoke/Heat Detector Monitor

The smoke/heat detector inputs have to know if a Smoke/Heat and/or circuit problem has been detected. For detection, the input circuitry is looking for a closed contact. If a closed contact occurs for approximately 2 seconds, the system initiates an

event response. When the Reset System button is pressed, power is taken away from the detector supply terminals, which will reset the detector. The detector circuit includes a "Power Monitoring Device(relay)" at the end of the wire. This relay is connected to the supply leads of the circuit to insure that power is available all the way to the end of the circuit. If power is lost, this relay's normally closed (NC) contact activates the monitor. This loss of power condition activates the system the same way as a real Smoke/Heat event, but pushing the "Reset" button will not clear the event.

These inputs are indicated when the LEDs marked "Detect1" and "Detect2" are lit. See "EVENT CONDITIONS" on pages 8-10 for more details.

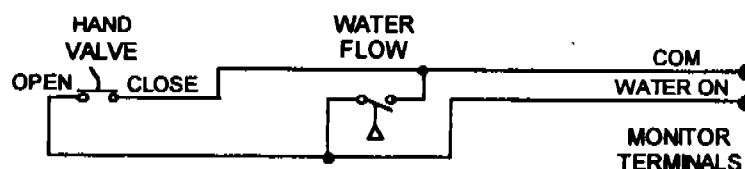


GENERIC SMOKE DETECTION CIRCUIT

Water "ON"/Pump "ON"

The sprinkler system interlocks are mechanical switches incorporated into the plumbing to indicate if water is flowing. The safety monitor must detect if any of these contacts have closed, which indicates that water is flowing. A second input is monitoring the sprinkler system water pump if one is supplied. This will activate the monitor if the pump turns "ON". Pushing the reset button in the unit will clear the condition only after the water flow has stopped or the water pump is turned "OFF".

These inputs are indicated when the LEDs marked "Water ON" and "Pump ON" are lit. See "EVENT CONDITIONS" on pages 8-10 for more details.

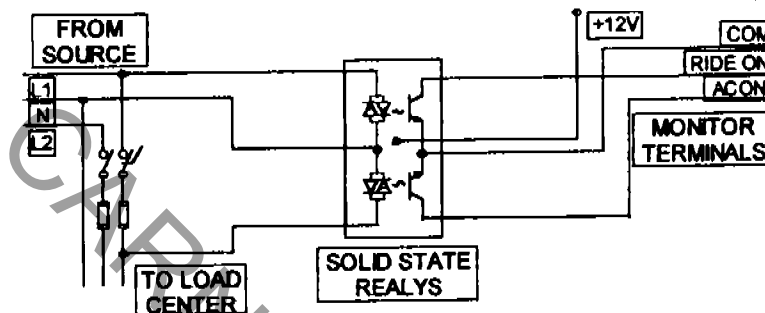


GENERIC WATER FLOW DETECTION CIRCUIT

## AC Power Monitor

The AC supply to the ride has two solid state relays installed in the main disconnect panel. When AC power is applied to one of these devices, a closed contact appears at its respective input to the monitor. If the ride is running and the AC line fails, the system must trip. The reset button will clear the event, even if the AC power has not been restored.

These inputs are indicated when the LEDs marked "ACON" and "Ride ON" are lit. See "EVENT CONDITIONS" on pages 8-10 for more details.



GENERIC AC DETECTION CIRCUIT

## Remote Operators Switch

The operator may have a need to turn the emergency lights "ON" during a non-event state. This switch when flipped will turn the lights "ON", as long as battery power is available. The operator may also need to silence the horn during an event. If the switch is flipped the horn will be turned "OFF," but all other event conditions will remain engaged.

This input is indicated when the LED marked "Remote ON" is lit.

## Fold Up Switch

This input has a loosely defined function of turning the monitor "OFF" if the ride is not in use. The intent is to disable the system during transport if needed. No other definition is planned or required, but future functions could use this or even some of the other inputs to fill some unique requirements.

This input is indicated when the LED marked "Fold Up" is lit.

## OUTPUTS

### Emergency Lamps

The system is able to supply 12 Volt DC to as many as 6 incandescent lamps (2.5 Amps each). The outputs are individually fused at 5 Amps per lamp and use 2 high current relays to switch the lamps ON and Off. The emergency lighting will be activated by a Smoke/Heat, an AC Lose, or a Water "ON/Pump "ON" event. The lights may be manually powered up with no horns or ride shutdown by the Remote Operators Switch. See schematic for details.

These outputs are indicated when the LEDs marked "Lamp1" and "Lamp2" are lit. See "EVENT CONDITIONS" on pages 8-10 for more details.

### Electrical Interlock (Main & Aux.)

These contacts are supplied to interlock motor control with the Safety Monitor. When the 12 volt battery is engaged, these outputs become normal SPDT type of isolated contacts which are fused at 5 Amps each. The Main and Auxiliary outputs operate the same as any DPDT contacts on a normal relay. When an event occurs, the contacts change state. These contacts return to the normal position as soon as the system has been reset. The state of these contacts are identical no matter which event activates the system. See schematic for details.

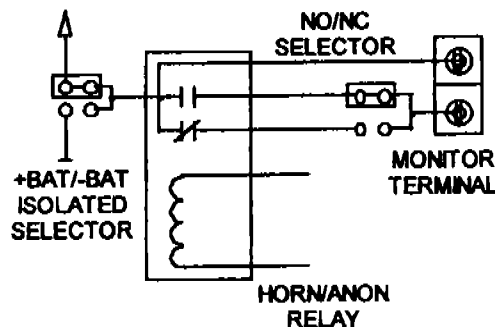
When the output indicator "Set" is ON and "Reset" is OFF, the ride should be able to run. When the output indicator "Set" is OFF and "Reset" is ON, then the ride should "NOT" be able to run. See "EVENT CONDITIONS" on pages 8-10 for more details.

Note: If the 12 Volt battery drops below the minimum acceptable battery level, the system latches the battery out to avoid over-discharge. If this happens, the DPDT outputs become all Normally Open(NO) contacts.

### Horn (1 & 2)/Anon (1 & 2)

Horn1 and Anon1 are activated when a Smoke/Heat or AC Loss event is detected. The horn will only stay "ON" for 90 seconds, but the Anon output will stay latched until the system is reset. The Horn2 and Anon2 LEDs are activated when a Water "ON" or Pump "ON" event is detected. The Horn again will only stay "ON" for 90 seconds, but the Anon output will stay latched until the system is reset. If a two tone horn is installed with this system, the "Whoop/Whoop" sound will indicate a Smoke/Heat or AC Lose event (Horn1/Anon1), while a "Steady" horn blast will indicate a Water "ON"/Pump "ON" event (Horn2/Anon2).

The Horn#/Anon# outputs are specially configured with jumpers to provide a NC or a NO contact, which ever is required for that particular installation. A second set of jumpers can connect the common side of these contacts to +Bat, isolated, or -Bat, which ever suits the application.



HORN#/ANON# RELAY (NO & +BAT)

These outputs are indicated when the LEDs marked "Horn1" and "Anon1" are lit, in the case of the Smoke/Heat or AC Lose. The "Water ON/Pump ON" will cause the output LEDs marked "Horn2" and "Anon2" to light. See "EVENT CONDITIONS" on pages ??? for more details.

## STARTUP AND OPERATION

### INITIATING THE SYSTEM

#### First Time

After the initial installation is complete, the system is started by pressing the button at the top of the main panel marked "Push to Engage". This latches in the 12 volt battery, which supplies power to the smoke detectors, the interlock relays, emergency lighting, and the input detection circuitry. The unit will become fully active only after the AC power is turned "ON" for the first time. From this point forward, the system will be fully active, with or without AC power, assuming the batteries remain adequately charged..

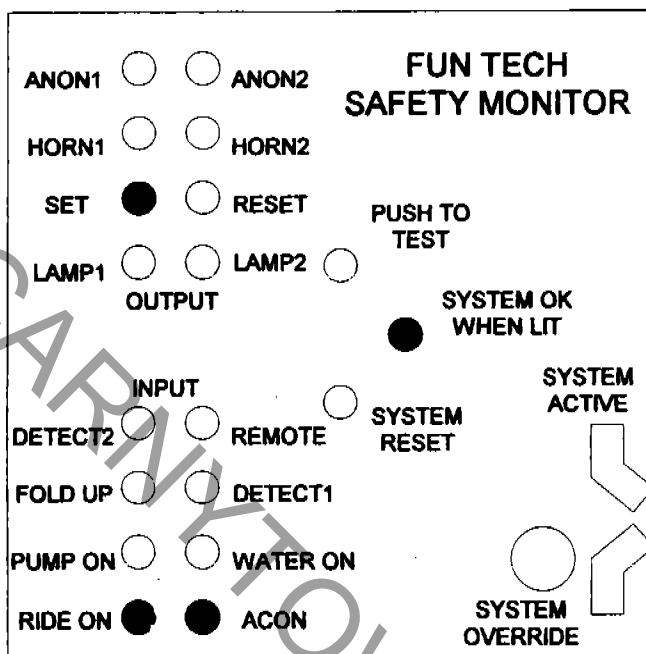
#### After Battery Discharge

As before, the battery must first be "Latched In" before the system can become active. If the battery voltage is to low, the "Latch In" circuit will again disconnect the battery. At this point the AC Power must be turned "ON" to begin charging the batteries. Once the charger has started, pressing the "Push to Engage" button should initiate the 12 volt battery. The system is now active.

## NORMAL OPERATION

### Regular Ride Operation

The system is designed so that the operator should not have to perform any special procedures to maintain protected operation. The system once activated will monitor when the ride is running and is not running (main disconnect Open or Closed).



NORMAL RUN STATUS DISPLAY

There will be some procedures required to avoid nuisance trips. The following items are suggested:

- 1) (AC Loss Initiates Horn) When turning the ride power "ON" and "OFF" for the day, the main ride disconnect at the load center should be set to "OFF" before the generator or AC source is shutdown or disconnected. The unit will know that the ride has been shut down and will not trip because of a loss of AC power.
- 2) (Sprinkler Initiates Horn) If a sprinkler system is equipped with the ride, the system will trip if the water supply is turned "ON" or the sprinklers are pressurized for the first time. The water must first fill the pipes before the system can be reset.

## Nightly Shut Down

When the ride is shut down at the end of the day, there will be nobody available to service an event if it should occur in the night. Night time events are normally the result of AC loss.

- 1) (AC Loss Initiates Horn) When turning the ride power "ON" and "OFF" for the day, the main ride disconnect at the load center should be set to "OFF" before the generator or AC source is shutdown or disconnected. The unit will know that the ride has been shut down and will not trip because of a loss of AC power.

## EVENT CONDITIONS

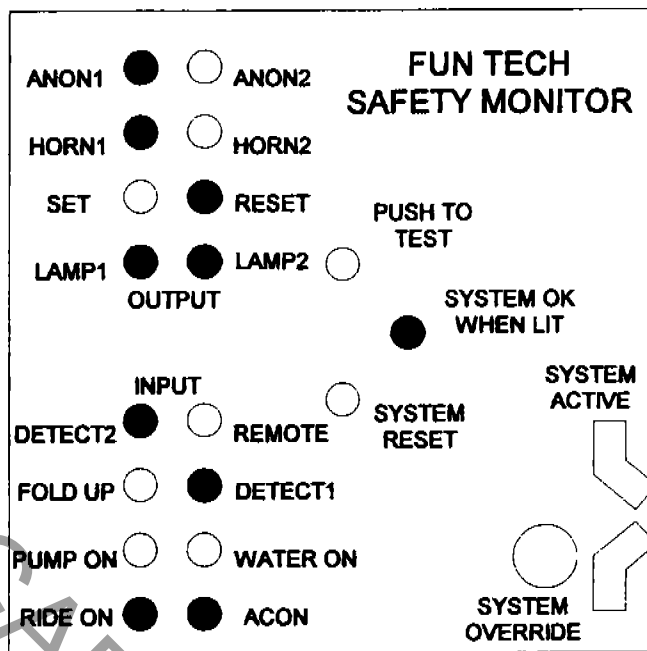
### WHOOOP/WHOOOP HORN SOUND

#### Smoke/Heat Event

This state is indicated when the Horn1/Anon1 indicators are lit (producing the Whoop/Whoop horn sound) and one or both the Detect1/Detect2 input indicators are lit.

If during the course of operations some smoke is created, (welding fumes, smoke from fog generators, etc.) one of the smoke detectors may trip. Normally, the system can be reset as soon as the smoke has cleared. If the detector is dirty, the event may not clear. The red LED on the smoke detector will turn "ON" as soon as the system resets and the horn will continue to sound. In this case, the detector must be opened and the dust filter in the smoke chamber should be cleaned out. If the system still continues to trip, the detector itself may need to be replaced.

If the red LED on the smoke detector does not come "ON" when the horn sounds and the system indicator shows that a detector is tripped, the voltage to the detector should be checked. At first look at the smoke detectors red LED. If the detector has power, that LED will flash briefly every few seconds. If this does not happen, the detector is not receiving power. An electrician should be called to check the supply leads to the detector. The system will only reset if this problem is corrected.

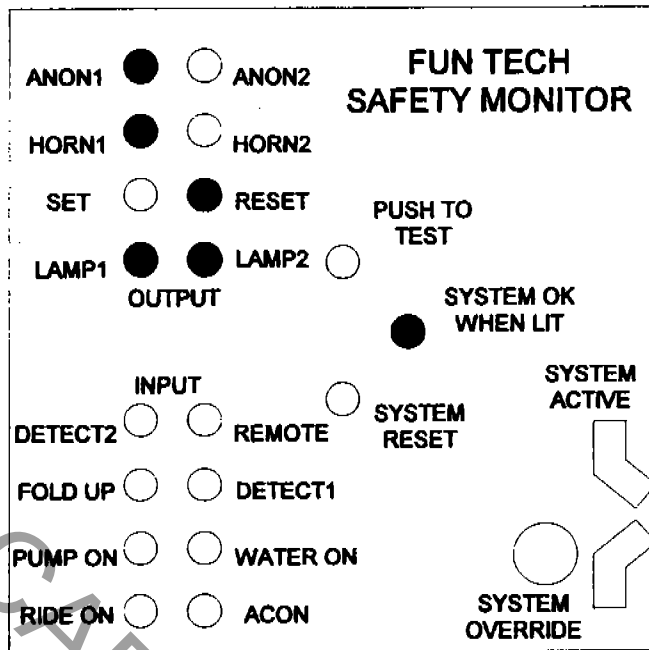


**SMOKE/HEAT EVENT STATUS DISPLAY**

**AC Lose Event**

This state is indicated when the Horn1/Anon1 indicators are lit (producing the Whoop/Whoop horn sound) and the ACON indicator has turned OFF during ride operation. The Horn1 LED will stay ON for only 90 seconds.

This condition may be momentary, in the case of a brown out condition or a transient power loss. So the only indication may be that the Horn1/Anon1 are lit. This event detection is designed to provide safe conditions for ride evacuation during a power loss. If this condition becomes a nuisance, an electrician needs to be called to determine why the AC line to the ride is so unstable.



AC LOSS STATUS DISPLAY

**STEADY HORN SOUND**

Water ON Event

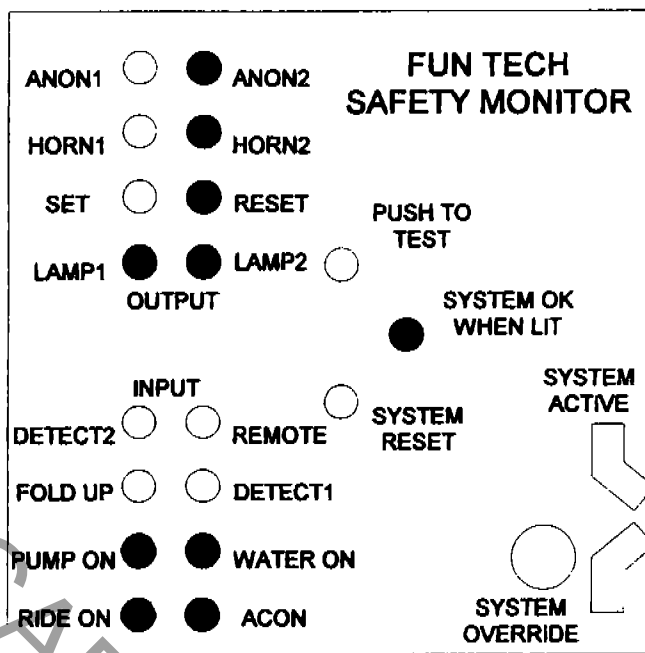
This state is indicated when the "Horn2/Anon2" LEDs are lit (producing the steady horn sound) and the "Water ON" LED is lit. The Horn2 LED will be ON for only 0 seconds.

This condition takes place when there is water flow in the sprinkler system. Normally a flow switch is deflected by the water flow and after two seconds, the monitor detects the condition. If the system has a limited reservoir, the flow will stop when the water runs out and the system can be reset. If the water supply is unlimited, the water must be shut OFF before the system can be reset.

Pump ON Event

This state is indicated when the "Horn2/Anon2" LEDs are lit (producing the steady horn sound) and the "Pump ON" LED is lit. The Horn2 LED will be ON for only 0 seconds.

This condition is caused by a water pump interlock contact engaging. The pump normally is turned ON by a loss of pressure (as in a pressurized sprinkler system). The pump must be shut OFF before the system can be reset.



PUMP ON & WATER ON STATUS DISPLAY

## TROUBLE SHOOTING

### SYSTEM DOES NOT RUN

#### No Battery LED

The 12 volt battery supplied with this system is equipped with a built in charger. If the AC has not been turned ON for a long period of time, it is possible that the battery has been discharged below the minimum battery cut-off point of 11.5 volts. If this has happened, first power the ride, turn on the breaker labeled "Safety Monitor," and then press the button labeled "Push to Engage." The green "Low Battery LED" should turn ON. Then leave the AC on for approximately 5 hours to fully charge the battery. If the LED does not come ON or turns OFF after the charge cycle is complete when the AC is turned OFF, the battery, battery charger, or battery cables may need attention.

#### Ride Will Not Turn ON

If no event has caused the Horn to sound, the following check list should be observed:

- 1) All breakers in the load center have been turned "ON" or reset if tripped.
- 2) AC power is available to ride, no bad fuses, all motor control switches are "On", and all ride safety interlocks have been checked.
- 3) The "SET" LED indicator in the Safety Monitor is lit and the "RESET" LED is not lit.

## Ride Stopped During Operation

If an event has stopped the ride, the following checklist should be observed:

- 1) Note which input LEDs are lit, (Detect1, Detect2, Water ON, Pump ON, ACON) clear the indicated fault, and reset the system.
- 2) If the fault does not clear, refer to the description of that input state, review the steps taken to clear the fault, and then attempt a system reset.
- 3) Electrician should verify that the input signal is or is not performing properly and correct the problem.
- 4) Record the steps taken to clear the problem and contact a qualified Fun Tech representative.

## SAFETY LIGHTS TURN OFF

### Horn Sounds Then Lights Go OFF

The Safety monitor is equipped with a battery monitor, which is able to turn the emergency lights OFF approximately 20 minutes after a low battery is detected. This cut-off point is set to begin the time out when the battery voltage falls below 11.8 volts. If the green Battery Low LED is not lit, the battery voltage is below the cut-off point. The timer starts the moment some event or input turns the emergency lights ON. For timer sequence details, see Battery Powered Lighting & Control at the beginning of this manual.

## SYSTEM POWER SOURCE

### MAIN BATTERY & CHARGER

#### Main Battery

The main battery is a 12 volt/40 amp hour sealed lead/acid battery designed for extended float charge life. This means that the battery and charger combination creates a power source that is maintained at peak charge at all times. This is accomplished by holding a manufacturer specified voltage on the battery at all times and recharging the battery immediately after any discharge has taken place. To protect the battery against uncontrolled discharges, a low voltage cut-off circuit has been designed into the system. If the battery voltage drops below 11.8 volts, the system attempts to warn the user that the battery is in need of charge. The emergency lighting will be disconnected from the battery in 20 minutes, if the battery voltage remains below 11.8 volts. If the battery voltage drops below 11.5 volts, the system disconnects the battery from the system all together. The battery must beginning charging before it can be re-connected to the system.

This battery system will provide as much as 2 hours of emergency lighting without recharging. If AC power is available to the charger during lighting use, the useable life can be extended for many hours.

### Charger Characteristics

The charging system provided with this system uses the "Two Step, Float Voltage" charging method. The charging cycle has three unique charging phases, where the voltage and current are controlled for optimum battery performance. The phases are called the "Bulk Charge", "Over Charge", and "Float Charge" states. These phases are controlled by the charge level that exists in the battery. As a result, the charging time will vary in length, from cycle to cycle. The "Bulk Charge" phase delivers the manufacturers fixed maximum recommended charge current to the battery, until the voltage comes up to a specified level. Then the "Over Charge" phase locks the voltage at that level while dropping the current toward zero. Once the current drops to a specified level, the "Float Charge" begins. The charge cycle is now complete and the battery is fully charged. The purpose of the "Float Charge" phase, to deliver just enough current to over come the self discharge or leakage current of the battery. With this technique, the battery will maintain full charge for the life of the battery itself. Based on charging phase and battery charge level, the voltage on the battery will be controlled by the charger. Any specific questions about the charge methods or charging values should be referred to a qualified Fun Tech representative.

### INTERNAL BATTERY & CHARGER

The internal battery is a 6 volt/9.5 amp hour sealed lead-acid battery. This battery only drives the micro-processor and its support chips. It supplies voltage to the voltage regulator when the AC power is not available. During normal operation this battery would keep the system running for more than 48 hours without charging. As soon as AC power becomes available, the charger begins to recharge the battery with the same charging method used for the 12 volt charging system.

### MAIN SYSTEM

The main system consists of a control board and a mother board. The control board includes all the red LEDs for input and output display, test and reset buttons, mini speaker, and micro-processor. The mother board has the terminal strips, relays, connectors, and voltage regulator circuits. The control board runs the system based on input information and the program running the system. The mother board carries all the hi-power control circuits and fusing. Problems with these devices units must be dealt with by a qualified technician. If there are problems with the system, document the symptoms according to the information provided in this manual and consult a Fun Tech representative.

## TESTING THE SYSTEM

### Input Signals

Individual device inputs may be checked by a qualified electrician. The inputs to this system are generally open contacts, that close when a fault or an event condition exists. The red input LEDs on the control board provide indication of that particular input condition. If the LED is lit, the contact connected to that input is closed.

### Output Signals

Individual output signals are unique for each output and may vary from installation to installation. The general rule is that if the red output LED is lit, a corresponding relay is energized. To determine what state the contacts or output signals should be in, refer to the installation schematic and documentation.

### Overall System

At any time the overall system can be tested by pressing the "Push to Test" button on the control board. This test causes the unit to walk through a sequence output pattern. This sequence is as follows:

- 1) "Lamp1" from OFF to ON to OFF
- 2) "Lamp2" from OFF to ON to OFF
- 3) "Set" from ON to OFF to ON
- "Reset" from OFF to ON to OFF
- ("SET" and "RESET" always operate together)
- 4) "Horn1" from OFF to ON to OFF
- 5) "Anon1" from OFF to ON to OFF
- 6) "Horn2" from OFF to ON to OFF
- 7) "Anon2" from OFF to ON to OFF
- 8) "System OK" from ON to OFF to ON
- 9) "Detect1 & 2" from OFF to ON to OFF
- 10) "Mini Speaker" short tone (indicates system ready)

This test sequence changes state of every output circuit of the system.

### Reset Sequence

When the system has activated because of some input condition, pushing the "System Reset" button causes the Micro-processor to completely reset itself. The response to the button push is as follows:

- 1) "System OK" from ON to OFF to ON
- 2) "Detect1 & 2" from OFF to ON to OFF

- 3) "Mini Speaker" short tone (indicates system ready)

### **HELPFUL INFORMATION**

#### **DO THIS:**

- 1) Regularly check the system for function. Perform prescribed test procedures.
- 2) Inspect the battery for contamination and secure connections.

#### **DO NOT DO THIS:**

- 1) The battery requires no water. This is a long life, no service, gel-cel battery. If all goes well, this battery should last in excess of 5 years (as per manufacturers. Spec.).
- 2) Do not use this battery for any purpose other than running the alarm system. This battery will be destroyed if it is used in an automobile type application.
- 3) Do not replace the battery with anything other than original equipment. The charging system is specifically designed for this battery and will be damaged if the wrong battery is installed.
- 4) Do not attempt to charge any other battery with the battery charger equipped with this system. The charger will be damaged by alternate batteries.