Spin Zone
Electric Bumper Car

Ride Manual

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1. RIDER AND BUMPER CAR SPECIFICATIONS

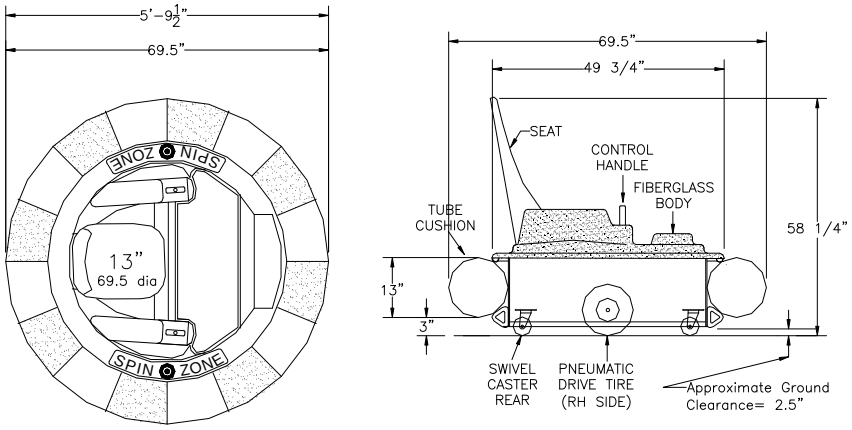

DIAGRAM 1

SPIN ZONE BUMPER CAR: AGE-HEIGHT-WEIGHT-SPEED RESTRICTIONS

Application: Bumper Car Attraction

Seating Capacity: Single Passenger

Driver- Minimum height: 36"

Minimum age: 5 years old

Maximum weight: 350 lbs.

Maximum safe speed: 4 MPH

BUDDY SEAT: (child passenger seat)

Min. Age: 3 years old Max Age: 7years old

Max. Weight: 65 lbs. Max. Height: 50”

NOTE: Model #, Serial #, and Date of Manufacturing are located on the nomenclature plate attached to each car.

NOMENCLATURE PLATE: (this is mounted on each vehicle)

SPIN ZONE BUMPER CAR

Manufactured by: Amusement Products, LLC

Chattanooga, TN (800)438-3558

Application: Bumper Car

Seating Capacity: Single Passenger

Driver- Minimum Height 36"

Minimum age: 5 years old

Maximum weight: 350 lbs.

Maximum safe speed: 4 MPH

Model #: BC 1000

Serial #:

Date of MFG.:

Not for Street use--Rider must wear seat belt

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2. BUMPER CAR ARENA

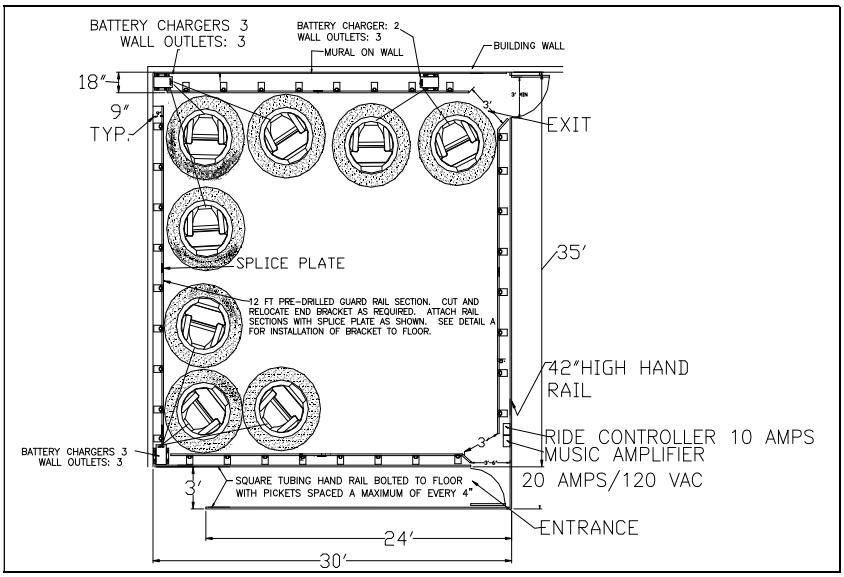

DIAGRAM 2

The bumper car arena is the place where the cars run. Each Spin Zone operator will provide the dimensions of the space and the ceiling height (if indoors) for Amusement Products to custom design the Spin Zone arena in the space provided (see example in Diagram 2 above). The Arena design will show the proper placement of the car rail (to contain the cars), hand rails (to keep spectators out of the arena), a lighting layout and the location of the electrical items needed for the arena operation.

The Spin Zone cars are battery operated and do not require a special floor. A clean, machine troweled concrete floor to a slick finish, typical of a commercial building, is the best choice. The cars will run on wood or asphalt floors also but may experience more tire and castor wear and reduced battery life depending on the floor's roughness. If wood is used, paint with an epoxy finish to durability and reduced tire wear. For the best car operation, keep the floor clean of trash and dirt by sweeping the arena floor daily. Using the "Bumper Car Floor Treatment" compound (available from Amusement Products) also helps lubricate the floor while picking up dust and dirt. It leaves behind an oily residue that helps the cars slide when bumped. The Floor Treatment should be used daily on busy days and at least twice a week in the slower times. You can also use a slick track lube supplied by Amusement Products to slick up the floor also. This works best on porous floors.

A. Arena Design

The Arena requires a low friction barrier for the bumper cars to run up against to keep the cars contained. We recommend a plastic border that is 1 ½" thick by 8" wide. A bumper rail with the proper anchors and hardware is available from Amusement Products. The centerline of the barrier should be 9.5" off the ground to match up to the centerline of the tube around the bumper car. (See Diagram 3) The barrier is anchor bolted to the floor using 5/8" lag bolts as shown in diagram. There needs to be one pedestrian entrance and one exit for the riders. These should be placed in a corner (see DIAGRAM 2). The exit should be 36" wide to allow for handicap accessibility. By placing the entrance in a corner, the opening will not get the tube near the opening edges to protect them and still have a clear walk space for access to the cars. Outside the car barrier (at minimum of 10" from the face of the barrier) a secondary wall a minimum of 42" tall must be placed. (See Diagram 3)

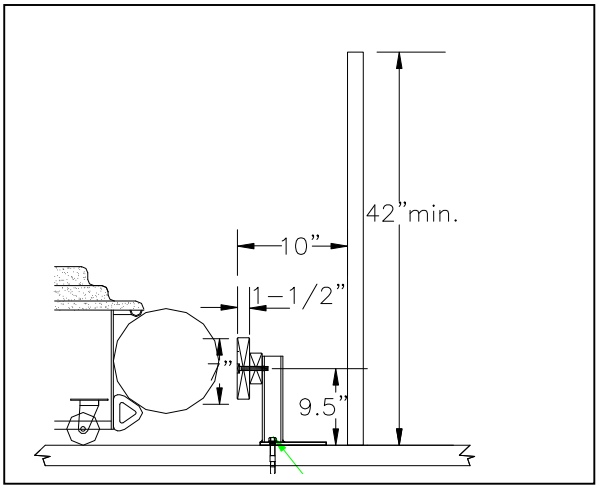

DIAGRAM 3: Barrier Design

The back and side walls can be full height (8' tall or more). The entry side should be 42" minimum to 48" and should be decorative steel (available from Amusement Products) or high end commercial plastic coated fence material. This will increase the visibility of the Arena and prevent spectators from wandering out on to the floor during ride operation. The rider entrance must have a gate/turnstile 36" wide (handicap accessible) to prevent anyone from entering the ride Arena during the ride. All gates should have automatic closers for safety.

NOTE: PEOPLE STANDING INSIDE THE ARENA BORDER RAIL ARE SUBJECT TO SEVERE LEG INJURY AND SHOULD NOT BE ALLOW ANYWHERE ON THE FLOOR WHILE THE CARS ARE OPERATIONAL (SEE OPERATING INSTRUCTIONS).

The battery chargers should be positioned in a corner of the arena. Each car requires one charger. The charging cord is 9ft long that plugs into the bumper car. Each charger requires a 20 amp 110v circuit. If a corner is not available for all cars, a charger can be placed mid rail. Amusement Products can supply drawings for the proper charger placement around the arena.

ADDING EXCITEMENT:

DECORATING THE ARENA:

We strongly suggest putting artwork on the back and sidewalls to make a professional arena. Amusement Products can supply these wall decorations as banners or large format wall paper (self-adhesive). Examples of this can be seen on Amusement Products website). Some manufacturers suggest using mirrors. This idea makes smaller arenas look bigger before a ride. However, it does nothing to promote the attraction or entice people to ride. The graphics we have designed promote that the ride is both a Spinning and Bumping attraction. The wall space should be used as space to sell the attraction “pre-show”.

LIGHT SHOW:

Adding show lights and the sound system make the ride much more exciting and help generate higher revenue. These add dramatically to the energy level of the attraction and encourage a wider range of ages to ride it. The lights will be hooked up to the ride controller for automatic operation. Amusement Products’ Light Package uses sound activated lights that move in time with the music automatically. They also change patterns during the ride. The most modern

LED lights, they use very little power but provide a show a DJ would be proud of even though they operate automatically. You will also need to add white fluorescent house lights (not part of AP Light Package) to light the arena between rides. This is required in many states. It helps with the safe entry and exit of the cars for riders. It is also useful for arena cleaning and maintenance. The white lights will also be controlled by the ride controller as well and have a built in “forced on” feature.

SOUND SHOW:

Lastly, one of the most exciting additions to the Spin Zone is the integrated sound show. This system automatically tells the rules and operating instructions at the start of the ride and a safe exit message at the end of the ride. When the ride starts, the system automatically starts a new song at the start of each ride. You can add up to 999 songs to the music files. Exciting, upbeat music playing in concert with the light show draws new riders to the ride. The Spin Zone bumper cars should be a fun sound, light and ride experience. The controller has been designed to control all three automatically: House lights, show lights and sound systems.

The Sound show has five different music formats the ride can be started in and a sixth to use the system as a juke box to play music even when the ride is not going. It can also do an ATTRACTION DEMONSTRATION on command (1 minute long). The five music formats, Juke Box mode and the Demo mode are all started by pressing the “#” sign then reading the display to choose the proper selection (MUSIC: 1-5, JUKE BOX: #7, DEMO #8).

NOTE: The use of recorded music is protected by ASCAP and the location is responsible for contacting them at www.ascap.com or **1-800-505-4052.**

B. Arena Installation- Barrier system

The barrier system is typically a bolt down system using expansion anchor bolts. We suggest using 5/8" to 3/4" anchor bolts to anchor the rail system down. There are two anchor bolt holes on each support post plate.

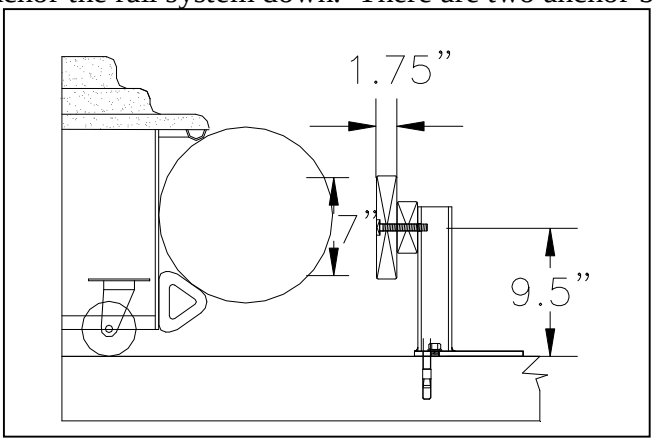

DIAGRAM 4 Support Post

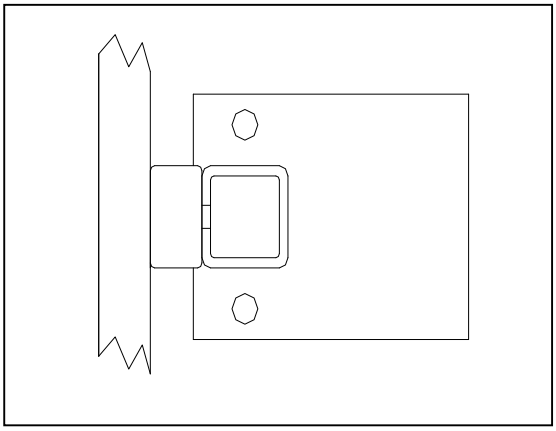

DIAGRAM 5 Top View

The support brackets should be placed no more than 4 feet apart and preferably at 3' apart. Where the pedestrian entrance and exit is, leave a 36" gap in the rail. It is best if the gap is in a corner. Do not leave an overhang past a post unsupported that is longer than 16” if the car can hit it directly.

C. Installation- Arena Shape

The bumper cars are a maximum of 72" in diameter so you don't want any space that is narrower than that in your arena. If there is an area closer than that, you will want to block it with a bolt down rail section. The shape of the arena is also very flexible since the floor is the same floor that exists in the building (preferably smooth troweled concrete). Amusement Products can supply a design for your space if you need one. You will need to supply the building space dimensions, roof heights, which sides have permanent walls, and the permanent wall dimensions. Any obstructions that are in the space like girders protruding into the space on the perimeter or columns in the space can be worked around. Please specify where these are located in the space for their solution to be included in the design.

D. Spin Zone Arena Power Requirements

NOTE: All power is 120volt 60 Hz
The transmitters operate on 900 MHz with a digital signal

Transmitter- One 120 VAC 20 amp circuit (standard duplex outlet within 3 feet of Transmitter as shown on Amusement Product's (AP) arena layout).

Digital sound system- One 120 VAC 20 amp circuit (standard duplex outlet within 3 feet of Amplifier as shown on Amusement Product's (AP) arena layout).

Digital Light Show- (Supplied by AP) - 120 VAC circuit (CONNECTS TO: Transmitter Circuit)*. These require a standard duplex outlet for each light within 3" of the location shown on the "light layout" from Amusement Products (AP). The power for these outlets is 120 VAC and originates from the Transmitter box so they can be switched automatically. The Wall Washers (LED LIGHT BARS) are often left out and run continuously so they decorate the banner on the wall (see below).

House Lights (white lights for before and after ride {provided and installed by electrician}) - 120 VAC powered by Transmitter Circuit.*

* Note: If power load exceeds 5 amps, a relay will need to be added to trigger a separate circuit to carry the additional load. This relay will be controlled by the transmitter.

NOTE: The power for the "House Lights" and "Digital Show Lights" are switched by the ride Transmitter. Both need the circuit for each of these light sets to go through the transmitter.

Chargers (one per car) - 120 VAC 13 amp/60Hz (can put two on a thirty amp circuit)
Charger weighs 46 lbs. without the bracket. The single charger bracket (hangs from wall) adds 15 lbs. to the charger weight for a total of 61 lbs. The chargers are typically mounted in a three charger vertical rack supplied by Amusement Products. This allows the cords to reach their cars and consolidates the floor space used by the chargers.

The charger dimensions are 10.5" high x 10" wide by 17.5" deep
These are located as shown on the AP charger layout for the arena.

Wall Washer LED Lights (continuously on) - 120 VAC 3 amps per fixture.
Usually two or three per arena. Use standard duplex outlets. These outlets that are always on (not switched by the transmitter) and should be placed where the Mega Pixel lights are shown on the light layout. These are in addition to the circuits above and are not switched by the transmitter.

3. Operating Procedures

A. Personnel:

Operations-

The Spin Zone bumper cars should be able to be run by one employee using the Spin Zone Operating system

Maintenance-

While the Spin Zone is not a complicated ride to maintain, at least one person should be trained in the maintenance of the cars. This person should be familiar with a Multi-meter in order to check the connections, fuses and batteries.

B. Rules

1) Safety Signage requirements (NUMBER is Amusement Products Part Number):

a) The general rules sign should list the following (Available from Amusement Products (BC201)):

You must be a minimum of 36" tall and 5 years old to ride this ride.
Anyone over 350 lbs. should not ride this ride.
Anyone with broken bones or existing neck or back problems should not ride
Shirts and shoes must be warn while riding
No smoking, eating or drinking in the Spin Zone arena
Keep feet and hands inside the vehicle
Whenever the car is on (lights on car are on) - STAY SEATED.
Fasten seat belt before the ride starts and keep it on until the ride is over.
If car malfunctions, stays seated and raise hand
Secure all hair over shoulder length and any loose clothing.
Failure to follow the rules will result in termination of your ride- No Refunds!
All persons using this ride do so at their own risk.

b) Operations Sign (#BC202):

When car lights are on, car is on
To move the car forward, push both handles forward
To move the car backward, pull both handles backward.
To turn, release the handle in the direction you want to turn while pushing the opposite handle forward.
To stop, release both handles and returns them to the center position.

c) Safety Notice Signs: (NUMBER is Amusement Products Part Number)

NOTICE: Persons using this facility do so at their own Risk. (U446)

Keep Seat Belts Fastened. (K602)

WARNING- This is a rigorous Activity... (K403)

NOTICE- The Bumper Cars are completely safe when driven responsibly (K407)

Stay in your car until asked to exit by the Attendant (KF01)

NOTICE- Children must be supervised (M477)

2) Operational Rules

a) The attendant should not allow the rules above to be broken. All safety rules listed on these signs should be enforced by attendant.

C. How to Run a Ride

1) OPERATOR DUTIES:

a) ALLOWING RIDERS INTO THE SPIN ZONE ARENA

(Done when patrons entering the ride are at the entrance gate).

The Operator should do the following when admitting the riders into the Spin Zone Arena:

1) Check that <u>all</u> bumper car lights are off!
2) Check that they paid admission (take ticket, swipe card, and show receipt)
3) Check for long hair (longer than shoulder length) and loose clothing and have them tie it up
4) Make sure the riders are suitably dressed (have shirt, wearing shoes)
5) Make sure the rider is not eating, drinking or smoking as they enter
6) Make sure the rider is old enough and tall enough (5years & 36"min)
7) Make sure the rider is not wearing casts or a neck brace

b) PRE-RIDE CHECK: After the riders enter the arena, the Operator should do the following:

1) Make sure all riders find a car
2) Make sure each rider is safely seated with their seat belt fastened.
3) Make sure the digital safety announcement message is played.

Once the above items are completed and checked, the ride can be started by pushing the "#" button then select the music format (1-5). The digital safety announcement message will play automatically when the ride is started. After the safety message has played, the Spin Zone transmitter will automatically turn the show lights on, turn off the house lights and turn on the sound system and music.

c) DURING THE RIDE:

The ride Operator should:

1) Make sure no riders release their seat belt buckle.
2) Make sure no riders try to stand while their car is turned on
3) Make sure no riders are hanging their hands or feet outside the car.
4) All cars are operating correctly
5) If a rider unfastens his/her seatbelt or tries to stand up, press the "STOP "button immediately to stop the ride. After fixing the situation, press the "RELEASE" and the ride and ride timer will resume the rest of the ride.

d) END OF RIDE:

The cars shut off, sound turns off, show lights go off, and the house lights go on when the ride is over. Once this happens, the digital exit message will automatically play. The Operator should direct customer toward the gate.

1) Make sure the riders exit their cars safely
2) Make sure no one runs
3) Make sure the riders take their personal possessions with them.

4) Make sure the car is clean and ready for the next rider.

2) RIDE ORDER OF OPERATION:

a) Admit the riders to the Spin Zone Arena doing all the checks and duties

b) Do the Pre-ride checks

c) Start the ride by pressing the yellow # button– then press buttons 1-5 (to select the music format to be played on the hand held remote (ride), or by pressing the same sequence on the transmitter. (EXAMPLE: #1 starts the ride with the family friendly music).

The five music formats are so the sound can be tailored to the customers. We suggest:

1) Family Friendly Top 40
2) Birthday
3) Country
4) Hip Hop (adult)
5) Classic Rock
7) Juke Box (#7) - a mix of your choice of music (plays without running a ride).
8) Instant Attract Mode (used to promote the attractions by running with no one in the cars).

NOTE: For customers like our bowling centers that have a late night Adult Only crowd, they can run the ride in #4 Hip Hop and spice it up for their late night crowd while keeping it family friendly during the day.

d) During the ride perform the DURING THE RIDE duties listed above.

e) If a problem arises during the ride, press the red STOP button and fix the problem.

f) Once the problem is fixed, press the green RELEASE button.

g) If a customer does not want the SPIN feature, input the car number they are in and press the SPIN LOCKOUT button (aqua). To return the Spin feature, press the blue RELEASE SPIN LOCKOUT button. The spin feature of all cars is automatically reset to "spin" at the start of each new ride by the ride controller.

h) The Cars should stop automatically at the end of the ride. If they don't, press the red stop button.

I) Perform the END OF RIDE duties shown above.

3) OPTIONAL ITEM FOR OPERATION:

There is a grey ALL SPIN button on the controller that can be used during the ride. When pressed, all cars go into a spin. It is sometimes fun for the customer for all to spin at once. We suggest no more than two attendant pushes of the "ALL SPIN" button during a single ride so as not to offend the riders. The transmitter now includes two automatic ALL SPINS during the ride so this is not necessary. Sometimes an Attendant can use this to help separate riders being too hard on the cars like trying to push other cars around.

4) PROBLEMS DURING THE RIDE;

If a problem occurs during a ride, the attendant should press the red STOP button on the remote or main panel. The attendant should make sure the lights on all cars go out indicating they are turned off. Once the problem is corrected, press the green RELEASE button will return the ride to normal operations. If a single rider is causing a problem, that car can be turned off individually by pressing the car number and them the STOP button. Be careful if the individual stop is used since it may allow the stopped rider to get out of his car while other cars are still moving.

D. Spin Zone Control Options- NO SPIN FEATURE

Before the ride starts, the spin feature can be locked out for the next ride. Input the car's number and press the SPIN LOCKOUT button. For individual car spin lockout, input for all cars to be locked out from spinning, only

push the SPIN LOCKOUT button and all cars will not spin. Individual car(s) or all the cars will have the SPIN ZONE feature returned automatically to "spin" on the next ride. (Or if the release spin lockout button is pushed).

4. Maintenance

A. Daily Maintenance/operational requirements- Start of the Day

(Check list is in Section 10)

1) A "daily inspection report" should be filled out daily (see Section 10 for lists).

2) When the Spin Zone attendant first arrives, unplug all chargers. Coil up and stow the charging wires by the charger.

3) Wipe down all seats, controls and bodies. Inspect seat belt for fraying of belt material and proper operation of the buckle.

4) Sweep the floor clean using Bumper Car Floor Treatment from Amusement Products. This not only cleans the floor, it also treats the floor making it easier for the cars to slide when they bump. To use the sweeping compound, dump about half of the bucket of compound on the floor and using a soft fine bristle push broom, push, spread, and work the material into the floor making many passes to treat the floor. Sweep the compound into a pile to one side. Move the bumper cars to the side of the arena that has been treated and treat the other side. Sweep up the material and return to the container. Note: Do not discard the sweeping compound after each application, reuse until the compound dries out. (Usually over a month).

4) Pick up trash and empty waste baskets

5) Inspect each car for damage and note on daily report any new damage.

6) Inflate each bumper car tube, proper inflation is critical. Using the inflator available from Amusement Products, part number BC800. Inflate each tube to the maximum pressure that the inflator provides. It will not over inflate the tube. Maintaining proper (maximum) pressure in the Bumper Car tube will greatly reduce the risk of tube punctures. Inflating first thing in the morning is the recommended procedure for indoor facilities as the ambient temperature is about constant. For outdoor facilities, it is recommended to inflate the tubes daily at the hottest part of the day due to the expansion of the air in the tube as the temperature rises.

WARNING: OUTDOORS, A TUBE INFLATED IN THE MORNING, BY AFTERNOON WILL HAVE TOO MUCH AIR PRESSURE AND COULD CAUSE DAMAGE TO THE TUBE, AS WELL AS CAUSE THE SPIN FEATURE TO NOT WORK PROPERLY

7) Turn on each car by pulling the red mushroom switch out on the back of the car. Take care to position yourself so that if the car should start to spin, for whatever reason, you will not be hit by the spinning seat or tube.

a) Observe that all the lights are activated on all of the cars.

b) Push the cars to so that there is space around each car so that the spin feature can be checked. Kick each side of each car in the spin zone target area to make sure the spin feature is working properly. This is the left and right quadrants of the car. Turning around and kicking the tube with your heal is often easier to trigger a hit on the target.

8) Turn on the ride transmitter and start a ride sequence checking for:

a) House lights turn on
b) Pre ride safety announcement plays
c) House lights turn off
d) Show lights turn on
e) Sound comes on and plays at proper level
f) Test spin feature
g) Test stop feature

When music stops:

h) Show lights turn off

i) House lights turn on
j) All bumper car lights turn off
k) Exit message plays.

After this ride sequence has been completed, the bumper cars are electronically turned off and are safe for unloading and reloading for the next ride. **Do not turn the cars off with the red mushroom button until the end of the day unless for an emergency or maintenance reasons.** If a car is turned off and back on with this button, the car will be active or "hot" and not safe to load. In this situation, press the "STOP" button to turn the car off and get it ready for the next ride. Remember when the car's lights are "on ", the car is on and is not safe to load..

9) Make sure tickets, scanner or whatever ride admittance tracker is ready for the day.

10) Look at all the charger gauges while the cars are still plugged in and make a note of any car not showing a fully charged condition (CC on the charger display). Report this to the maintenance department to check.

B. Daily Maintenance - End of day Procedure for closing the Spin Zone arena
(Check list is in Section 10)

1) Push/Drive cars to charger station area
2) Push in mushroom button on rear of each car turning the car off.
3) Connect all cars to chargers using charger plug to grip wire. (Do not pull on wire)
4) Check the battery meter on the charger for all cars to see if any car is significantly lower in remaining charge than the other cars. (Charge percentage is displayed on charger once the car is plugged into charger)
5) Inform maintenance if a car has significantly less charge.
6) Turn off the Spin Zone transmitter
7) Turn off all area lights/ house lights

NOTE: Do not turn the charger off at the charger or by cutting off the house breaker supplying current to the charger. The car requires charging all night (every night). The charger will monitor the state of charge of the batteries and cut itself off automatically when batteries are fully charged. It is not recommended to charge a car while other cars are in operation. The car being charged (plugged in) could have the charging wires pulled out if hit by the other cars during operations. A quick charge (80+ %) can be done in an hour.

C. Weekly Requirements- SAME AS DAILY MAINTENANCE (SEE B. ABOVE)

D. Monthly Maintenance (check list is in Section 10)

1) Check tires for proper inflation- 35-40 psi.

NOTE: Under inflated tires will not allow car to rock front to rear as well as allowing the tire to grip the floor too much. It is desirable that the tires spin when the car is against an object that prevents the car from moving. As a tire wears out it will get smaller in diameter and will not allow the car to rock with the proper tire pressure. It is then time to replace the tires. (Replace the tires in pairs)

2) Check all belts to make sure they are tight (should defect approx. 3/8" when pressed).
3) The front castor of car has been adjusted at the factory so that it is approximately 3/16" off the floor. Should it become necessary to adjust this clearance, remove the caster and remove/add a 5/16" flat washer(s) between the caster and the chassis of the car until the gap is the correct 3/16" off the floor.
4) Check all battery connections for tightness. (Do not over tighten as the lead battery posts will compress and deform if over tightened) Spray all battery post connections with WHITE LITHIUM GREASE (available at a Home Center or Hardware Store in an aerosol spray can).
5) Check all battery terminals for corrosion. Clean as necessary. (NOTE: use fan to blow over batteries for at least 2 minutes before performing terminal maintenance. Also, disconnect the positive (red) lead and secure where it will not touch the frame or a black wire connection.

E. Yearly Maintenance

1) Grease the two zerk fittings on each wheel caster
2) Blow Brush dust out of both motors
3) Check tire wear and replace as necessary
4) Check seat belt for wear and correct function of the buckle
5) Inspect seat, hand controls, and fiberglass cover for wear. Replace or repair as necessary.
6) Check each battery for properly holding its charge (see battery maintenance procedure in Section 4-f-6 below).

F .Maintenance Procedures:

Before performing any maintenance on the bumper car remove the BLACK NEGATIVE wire from the BATTERY PACK. This will deactivate the car and allow it to be safely worked on.

!!CAUTION!!

Always wear protective eye shields when working with batteries. Batteries contain acids which can cause bodily harm. Do not put wrenches or other metal objects across the battery terminals or battery top. Arching or explosion of the battery can result. Do not wear jewelry when working around batteries. Arcing can cause severe burns. Before performing any maintenance on any electric go kart or other equipment with a battery, disconnect the battery pack by first removing the Black wire going to the negative battery post. If this is not done, any metal jewelry or metal wrenches touching a charged wire terminal and metal chassis frame will result in a direct short causing a possible burn injury.

1) TO REMOVE AND INSTALL TIRE ASSEMBLY:

a. Turn car off (push in red mushroom switch)
b. Remove seat (4 hitch pins)
c. Remove fiberglass body. (Be sure to unplug wiring harness before lifting body off)
d. Remove the black 4 gauge wire on the right front battery that goes to the center solenoids. This will disable the electrical system making the unit safe to work on.
e. Remove tube retaining ring (4 bolts) notice that the number on the ring goes to the rear of the car close to the red on/off switch.
f. Lift tube up and off of the chassis. (Not necessary to deflate tube) Notice that when reinstalling the tube, position the valve under the red on/off switch.
g. Remove the pivot bolt allowing the spin sensor arm to be removed. This will allow access to remove the wheel.
h. Using a ½" deep well socket and ratchet wrench, loosen the 4 wheel lug nuts.
i. Lift side of bumper car with a car lift as supplied by Amusement Products or use 2” x 4” x 8 ft. long board as a lever to lift each side of the car. And place 4” x 4” block of lumber or other suitable material under the car to

support the car off of the floor allowing the wheel to be removed.

j. Remove tire and rim assembly.
k. To reinstall, reverse above steps.
Notice that the lug nuts are tapered on one side allowing the wheel rim to self-center. Install the nuts with the taper side toward the wheel rim

2) TO REMOVE AND INSTALL TIRE FROM RIM:

Notice that the rim is a two piece rim held together with (4) 3/8" bolts, lock washers, and nuts.

a. Remove the valve stem in the tube to allow any air in the tube to be expelled.
b. Remove the (4) 3/8" bolts from the rim.
c. Using a claw hammer to break the tire bead from the rim, insert the claws of the hammer between the tire and the rim and roll the hammer over (Do not pry like pulling a nail) to push the tire bead away from the rim. Move around the rim in small increments pushing the tire away from the rim until the rim is freed from the tire. Flip tire over and follow the same procedure to break the other half of the rim from the tire. It is best to leave the 1st half of the rim in place to help support the tire while breaking the second half of the rim.
d. Remove tube from tire and patch or replace.
e. Inspect the inside of the tire for cord separation or other issues that may have caused the tube to fail. Replace tire if necessary.

Note: If tire is worn out, replace both tires so that the bumper car will travel straight. (Uneven sized tires can cause car to pull to one side and make it hard to drive the car straight)

f. Reinstall tube in tire.
g. Air tube up slightly so that it will fit into tire properly. (Do not inflate too much so that tube pushes out of tire into rim area)
h. Spray a small amount of WD-40 onto tube area that will contact rim.
i. Insert valve stem into rim while inserting rim in to tire.
j. Insert other half of rim, install bolts and tighten.
k. Air up tire to specified air pressure
l. Set tire aside and recheck tire pressure before installing onto equipment to be certain tube does not have a leak

3) **TO ADJUST SPIN FEATURE:**

a. See section 4-F-1"To remove and install tire assembly" and perform steps a, b, and c.
b. Turn the car "off" before making any adjustments to the switch and make certain the tube is completely inflated (using the inflator provided from Amusement Products, put all the air that it can put in).
c. Adjust the black micro switch by bending the flat metal arm as necessary to achieve the correct spin activation.

Note: As a starting point, there should be approximately 3/8 to ½ inch air gap between the contact point on the 3/8 rod (going down and under the tube) and the flat metal switch arm when the switch clicks (turns on & off).

d. Turn the Bumper Car on. (This car should not have a rider in it). Using another bumper car, have someone drive into one side of this bumper car (directly at the drive wheel location) at full speed from approximately a 1 ft. distance away. The car may be pushed sideways, but should not spin. If it does spin, adjust the switch so that it will not spin. Impact the car at full speed from approximately a 2 ½ - 3 ft. distance. The car should spin. If it does not spin, adjust the switch so that it will spin. The objective is to allow the car to spin by a direct impact from another bumper car but not activated by the car just sliding along another car or the barrier rail. Adjust the arm on the micro switch by bending it as required.

CAUTION – BE CERTAIN TO TURN THE CAR OFF AT THE RED MUSHROOM SWITCH BEFORE

ADJUSTING THE MICRO SWITCH. IF NOT TURNED OFF, THE CAR WILL SPIN WHEN YOU TRY TO ADJUST THE SWITCH ARM. Do this to the other side of the car.

e. Reverse step one to reassemble.

4) **TO CHECK TIRE PRESSURE:**

a. See section 4-F-1"To remove and install tire assembly" and perform steps a, b, and c.
b. Adjust tire pressure as required. (Recommended pressure- 35-40 lbs.)
c. Reverse step one to reassemble.

5) **TO INFLATE BUMPER TUBE:**

a. Remove grey valve stem cover on multi-colored tube.
b. Turn on inflator and insert hose into valve opening. Hold in position until tube is fully inflated. (Inflator noise will change indicating air is no longer flowing into tube).
c. Replace the grey valve stem cover.
d. Outdoors, the pressure should be checked in the hottest part of the day.

NOTE: If another device is used to inflate the tube, do not exceed 3 PSI.

6) **PATCHING THE BUMPER CAR TUBE:**

- Not all holes can be patched.
- A hole at the edge of a seam or the raised protective rub strip or a hole at the valve cannot be patched.
- Holes in the vinyl coated fabric material that the patch material can completely surround can be patched.
- Remove the tube from the Bumper Car.
- Locate the holes: Inflate the tube and mark all holes with a marker. Use soapy water in a spray bottle to find small holes.
- Using the inflator, remove most of the air from the tube to allow the tube to lay flat on the work surface.
- Trim the patch material to the correct size for the repair.
- Clean the tube around the hole. Use a clean rag and Klean-Strip MEK Substitute (solvent/cleaner) available from Home Depot, Lowes, or hardware stores. Clean around the hole and the back side of the patch. This is an important step as this cleaner not only cleans the area to be patched, but also softens the material of the tube and the patch to aid adhesion of the glue.
- Apply a thin coat of glue to the tube and the back side of the patch and let dry until tacky.
- Center the patch on the hole and using a roller (wall paper seam roller) start at the center of the patch and roll outward removing any air pockets. It may be necessary to apply a small amount of heat with a hair dryer on low heat while working out the bubbles.
- Allow tube to rest undisturbed for 24 hours before using.

7) **REPLACING THE VALVE:**

- Using a Valve Removal tool (Available from Amusement Products – Part No. BC603, unscrew the valve (Counter Clockwise).
- Reach on the other side of the tube and hold the back side of the valve from turning while removing the outside part.
- While still holding the back side of the valve in place, install a new valve and tighten.
- If the back side of the valve (inside the tube) has been damaged, cut a slit on the back side of the tube opposite the valve just long enough to insert your hand inside the tube.
- Remove the broken valve, insert a new part and install the outside part of the valve.

- Patch the slit as you would a hole.

8) CHECKING FOR BAD BATTERIES:

- **Indications that there is a bad battery:**
  - **a.** Car run time is less than normal
  - **b.** Charger reads “ER” (error) at completion of cycle.
  - **c.** “Rotten egg” smell coming from the car which indicates that one or more batteries in the battery pack is overheating and off gassing an excessive amount of gas vapor.
- **Typical operation the Bumper car battery:**

  The purpose of the battery is to store energy. When the battery is used to produce work, operating the bumper car, energy is depleted from the battery and a small amount of hydrogen gas is produced and released from the battery vents. There is always a small amount of hydrogen gas on top of the batteries. The hydrogen molecule is the smallest molecules know and these hydrogen molecules rise quickly and find their way out of a building. Therefore the small amount of hydrogen is that may be on top of the batteries is inconsequential in the normal operation of the bumper car.

  During the charging process a larger amount of hydrogen is produced. However, the hydrogen is continuously rising up and not allowing the concentration of hydrogen to become problematic. When the charger is turned off, the hydrogen quickly deposits. However for as a precaution it is recommended that a fan be position to blow across the batteries before working on the battery pack right after disconnecting from the charger.
- What to do when the rotten egg small occurs:
  1. This is a problem that must be addressed quickly due to the excessive amount of hydrogen being released from the batteries.
  2. Try to identify the car that is causing the problem if not, check them all.
  3. Usually this rotten egg smell indicates that one or more batteries in the battery pack is overheating and off gassing an excessive amount of gas vapor. This generally occurs for one of two reasons:
     a. As the batteries reach the end of their useful life, one or more batteries in the battery pack may fail to take a charge. When this happens, the voltage in this battery will allow the voltage of the entire battery pack to rise to a point where the charger will recognize that the battery pack is fully charged and continue to charge at a high rate. With the charger continuing to charge at a high rate, the good batteries in the pack will be overcharged resulting in excessive of gassing, the “rotten egg” small, and damage to the good batteries.

b. If the batteries have not been watered adequately, the water level will drop below the charging plates in the battery. When these plates are exposed out of the electrolyte, they become hot and produce an excessive amount of gas vapor and the "rotten egg" smell. A battery that the plates have been exposed out of the electrolyte will be permanently damages within 1 or 2 days. Attach the watering cart and determine how long it takes to fill the batteries. (When the balls or pin wheel in the sight glass stops moving) It should take me more than 7 seconds. If more than seven seconds, the batteries were probably quite low on water.

4. **Additional precautions:**
   a. The "rotten egg" smell indicates on excessive amount of hydrogen gas. In high concentration hydrogen gas will ignite or explode and all it takes is a spark. If the wire connections on the battery terminals are oxidized, corroded, or loose, this poor connection may provide this spark. Keep the terminals clean and tight. (See section)
   b. A good battery that has no indication of a problem may develop an internal connection should produce a spark, the battery will explode internally usually resulting in the top of the battery being blow off.
   c. In either case, a loud explosion, a quick flame and perhaps pieces of plastic is the only consequence one the hydrogen gas ignites it is burnt off and the event is over. There is no source of fuel.

- After determining that there may be a bad battery, the bad battery (s) must be identified.
  1. Charge the bumper car overnight.
  2. Disconnect the battery charger and drive the bumper car for 1-2 minutes
  3. Remove the seat and body from the bumper car.
  4. Place a fan to blow air over the battery pack.
  5. Disconnect all battery connections from each battery.
  6. Using a volt meter measure the voltage in each battery. If one or more batteries is significantly Lower in voltage then the others, suspect that these batteries are possibly bad.
     Note: Using a volt meter is a one way but not the best way to determine the condition of a battery.
     The best way is with a load tester. If you don't have a load tester we recommend the following unit: sb-3, 500 amp load tester or sb-5, 800 amp load tester available from autometer.com
     If you do not wish to purchase a load tester, you can get a golf cart or equipment handling company to come and load test the batteries.
  7. Load test each battery to determine the bad batteries.
  8. Once a bad battery is found, it must be replaced.
     Note: Batteries in a battery pack should be of similar age and condition. If a new battery is put in with older batteries, the new battery will be damaged quickly. If one battery is bad, replace all six batteries in the pack. Save the good "old" batteries to be used in the future in case a battery is needed in another car.
     Bear in mind that if one battery should fail due to "old age" the other batteries in that pack may not be far behind.

G) **TROUBLE SHOOTING GUIDE**

PROBLEM	**ACTION**
Charger will not charge	Check 200 amp fuse at negative battery terminal (black wire) Replace if blown Check wires on charger leads at plug. Check to make sure charger is plugged in and that there is current at the plug.
Car will not run at all	Check on/off switch, is it on? Unplug wire going to lights on body. With switch on, measure the voltage of the red wire coming out of the chassis. If no voltage, fuse or switch is bad.
Controller with a known good unit	Check 200 amp fuses on power wire.
Any issue with the movement of the car.	Replace controller with a known good unit And check, if this does not fix the problem; check the magnetic switches on the control handles.
Lights do not work	Check wiring connections and plug on fiberglass body. Replace controller with a known good unit And check to see if this fixes the problem.

5. Warranty

All of the general Limited Warranty information found on the warranty page of the internet for all our products applies here also. The following is the specific warranty issue for Spin Zone Bumper Cars

SPIN ZONE BUMPER CAR- LIMITED WARRANTY:

This warranty is limited to the sale of new product packages of Spin Zone Bumper Car equipment packages sold by Amusement Products, LLC 5954 Brainerd Rd., Chattanooga, TN 37421. The warranty applies to the original equipment purchaser only.

PRODUCTS COVERED BY THIS WARRANTY	**LENGTH OF WARRANTY**
Spin Zone Steel Frame	1 Year
Spin Zone Tube	90 days
Spin Zone Tube Seam Separation	2 Years*
Spin Zone Components	90 days
Spin Zone Accessories	30 days
Spin Zone Battery	30 days

* As supplied by tube manufacturer. AP warranty is 90 days if not honored by tube supplier.

Specific Exclusions:
Normal wear and tear items such as tires, belts, fuses, drive and driven pulleys caused from normal use. Excess wear caused by improper maintenance or neglect such as tube over/under inflation, tire over/under inflation, careless shorts when working on batteries or battery cables, etc. Tube wear caused by rubbing against sharp objects, splinters, etc. Punctures cause by willful damage (stabbed with a knife). Damaged tires caused by neglect (ex. Run while flat), damaged tires caused by floor issues, sensors damaged by incorrect adjustments, damage to fuses, relays, and electronics caused by shorts or crossed wires. Appearance related damage: scratches, dents, nicks, fading paint/trim and corrosion.

6. Training Personnel-**Test for proficiency (see Spin Zone TEST below).**

SPIN ZONE OPERATORS TEST

FOR:_____

ADMINISTERED BY:_____

1) To Start the ride press the
   a. red STOP button
   b. green RELEASE button
   c. yellow Start button
   d. yellow 1 Ride button
   e. Both c & d above
2) During the ride, the cars can be stopped if there is a problem by pressing:
   a. red STOP button
   b. green RELEASE button
   c. yellow Start button
   d. yellow 1 Ride button
3) The Grey Spin button on the controller
   a. Makes all cars explode when pressed
   b. Is what you press to make your dinner order
   c. puts all cars into a spin during the ride
   d. turns off the spin feature
4) To Turn off the Spin Zone Feature on a car off you should:
   a. Push in the red Mushroom button on the rear of the Car.
   b. kicking the side of the car
   c. Press the red Stop Button

d. Input the car's number and then press the aqua Spin Lockout button before you start the ride

5) If someone tries to stand up in a car while the ride is going, you should
   a. Stop the ride immediately
   b. Tell the customer he must sit down to operate the ride
   c. Make sure their seatbelt is fastened correctly
   d. Restart the ride
   e. All of the above
6) At the start of the day, the Spin Zone operator should
   a. Clean all cars
   b. go to lunch
   c. turn all car off
   d. Do all the "Start of Day" duties
7) The tires on the car should be checked
   a. Daily
   b. Weekly
   c. Monthly
   d. never, they are solid
8) As riders enter the Spin Zone arena, the attendant should
   a. talk to the pretty girls in line
   b. Check to see if the riders are wearing shoes.
   c. eat lunch
   d. read the newspaper
9) The red mushroom button on the rear of each car is what?
   a. turns the cars off at the end of the day and for can be pressed in an emergency
   b. makes the car spin
   c. activates the ejection seat
   d. tells how much charge is left in the batteries.
10) During the ride, the attendant should watch the riders
   a. occasionally when they're not busy
   b. only when the feel like it
   c. when not talking to other customers
   d. Any time the ride is in operation.

7. OPERATING THE SELECT 1 RIDE COMMANDER

The **Ride Commander** is a radio-controlled unit that controls all the bumper cars at the push of a button (individually or collectively) The **Ride Commander** uses an automatic timing system that controls the length of the ride, house lights, show lights, as well as sound.

Transmitter location

The transmitter needs to be placed in a location that is advantageous for the operators to reach at the start of every ride cycle and where ride attendants would normally be standing during the operation of the ride. Do not place either of the two antennas on the transmitter in contact with any steel object nor in close proximity to heavy steel beams as the antenna signal transmitted to the cars and the signal received from the hand-held remote will may be greatly reduced.

Hand Held Remote

This is the operational tool supplied with most Spin Zone packages. It is used to operate the ride most of the time since you do not have to be standing at the main Transmitter location to run the ride.

Programming:

To set frequency:

1. Press function/start until display reads “r”
2. Press frequency (freq)
3. Select 1 thru 8
   Note: Frequency must match transmitter frequency
4. Press function/start to set frequency in the remote.

To show current frequency:

1. Press function/start until display reads “r”
2. Press frequency (freq)

To show battery voltage:

1. Press function until display reads “r”
2. Press battery and hold down to display voltage.
   Note: Replace battery when voltage reads below 6.5 volts.

Operation:

Operates the same as transmitter. (See below)

Ride Controller
(Transmitter)

Installation:

1. Attach the transmitter to a wall or other suitable structure.
   Note: There are two antennas (one on the top and one on the bottom). These antennas are positioned vertically and should not be bent over or touch any steel structure.
2. Hook up 110 VAC power supply wires*
3. Hook up House light switch circuit*
4. Hook up show light switch circuit.*
   * See Drawing BC101
5. Install the songs you wish to play on the memory card.
   A) Press memory card down and release. The card will pop up permitting removal.
   NOTE: The memory card comes preprogrammed with a pre-announcement message (rules), a post announcement message (exit), and sample song files.
   Each sound file has a 5 digit number that the player looks for. The first two digits is the file category and the last three digits is the song number.

   B) Install card in your computer and load song files you wish to play. Each song file number begins with a two digit file number followed by a three digit song number. (Example: 00001, 00002, 01001, 01002). Each set of file numbers must be consecutive and start with 001. If a number is skipped, the player will play up to the skipped number and then start over with the first file number. If you title the song files, there must be a space after the file number. The songs can be of any length. The player will stop at whatever ride time has been programmed into the bumper car transmitter. If the song is shorter than the ride time set, the player will automatically play the next song file.
   C) When programming the Five Music Formats uses the following numbering system:
   Pre-determined files are:
   60000 is the #1 rules message file (do not remove or replace)*
   60001 is the #2 rules message file (do not remove or replace)*
   61000 is the exit message file (do not remove or replace)*
   62000 is the attract mode message (do not remove or replace)
   62001 is an alternate attract mode message (do not remove or replace)
   *Note: The rules message file and the exit message file can be replaced if another language is desired. Just be certain that the 5 digit number is the same as above.

   To add songs to each of the sound files use the following number method:
   #1 Song files
   00001 is the first song file.
   00002 is the second song file (etc.)
   #2 Song Files
   01001 is the first song
   01002 is the second song (and so on)
   #3 Song Files (Birthday Party Songs)
   02001 is the first song The Birthday Song

02001 is the second song (and so on)
#4 Song Files
03001 is the first song
03002 is the second song (and so on)
#5 Song Files
04001 is the first song
04002 is the second song (and so on)
#7 Juke Box Song Files
10001 is the first song
10002 is the second song (and so on)

Removal of computer board for repair:

1. Unplug T-1 plug (bottom of board)
2. Unplug wire ribbon plug (going to door)
3. Unplug antenna wire top of board.
4. Unplug antenna wire left side of board.
5. Remove the seven (7) screws attaching board to box.
6. Remove computer board and carefully pack
7. Enclose note along with board to include:
   Name and address of location
   Name of person to contact if we have a question
   Phone number
   Problem with transmitter (be specific)

Initial Set-up/Programming:

Note: Only selected personnel should have knowledge of this programming procedure.

1. Make sure transmitter is turned off.
2. Press buttons 1, 2, 3 down and hold down.
3. Turn transmitter on while continuing to hold buttons 1, 2, 3 down until the LED screen asks for a 6-digit code number.
4. Release buttons 1, 2, and 3
5. Enter **369238**

Screen will read: Enter run time
Min:Sec 03:00 (a 3 minute ride)

6. Current run time is displayed, to accept this time and advance to the next menu, press "*".

To change run time:

Press "0" until all numbers read "0"
Enter run time desired
Example: For 4 minutes 45 seconds, press 4, 4, 5. Screen will read 4:45
Press "*" to enter and advance to the next menu.

Screen will read: Attract Mode

Delay minutes 00

7. Current status of automatic activation of attract mode is displayed. The number displayed indicates the minutes between activations. (00 indicates the feature is turned off. To accept this setting and advance to the next menu, press "*".

To change time:

Enter desired time (00 – 99)
Press "*" to enter and advance to the next menu.

Screen will read: Chaos Mode 2
1=ON 2=OFF

8. Current status of automatic activation of Chaos Mode is displayed. "Chaos Mode" is a feature that allows the car to "take over" control from the rider for approximately 10 – 15 seconds and run on its own, going in unpredictable directions before return of control to the rider. This feature, if turned on, works only once during the last part of the ride. To accept this setting and advance to the next menu, press "*".

To switch feature on or off:

Enter "1" to turn on
Enter "2" to turn off
Press "*" to enter and advance to the next menu.

Screen will read: Set Channel 1-8
1

9. Current frequency is displayed. To accept this frequency and advance to the next menu, press "*".

To change Frequency:

Enter desired frequency (1-8)
Press "*" to enter and advance to next menu

Screen will read: Press # To Set
Channel in Car

10. This screen is to set or change the Frequency of the Receiver/Controller unit in a Bumper Car to the frequency in the Transmitter. This may be necessary if a new Receiver/Controller is installed in the Bumper Car and the Transmitter is not communicating with it. If this feature is not required, press "*" to advance to the next screen.

To Set the Frequency of a Bumper Car:

(With only the car to be programmed turned on)
Press "#" to enter the frequency.
Press "*" to advance to the next screen.

Screen will read: Press # To Set
Car Number to 00

11. This screen is to set or change a car number of the Receiver/Controller unit in a Bumper Car. If this feature is not required, press "*" to advance to the next screen.

To Set the Car Number of a Bumper Car:

(With only the car to be programmed turned on)
Enter the car number (01 – 93)
Press "#" to enter the car number.
Press "*" to advance to the next screen.

Screen will read: Clear Race Counter 1 = Yes

8. Clear Race Counter.
   Press 1 to reset counter to "0"
   To leave counter as is, do nothing.
   Press "*" to enter and advance to next menu

Screen will read: Change Pass code 369238

9. Current Pass code is displayed:
   To accept this code and advance to next menu, Press "*"

To change code:

Enter any 6 digit number
Note: Be certain to retain this number in safe keeping as it will be required to enter the programming mode of the transmitter in the future.
Press "*" to enter and advance to next menu.

Screen will read: Exit? 1 = Yes 2 = No

10. Exit programming mode or not?
    Press 1 to exit program mode and return to normal operation mode.
    Press 2 to return to beginning of programming menu.

Operation

1. Turn transmitter on:
   (House lights are on, Car lights are off)
   Note: If car lights are not off, Push "Stop" button before loading cars.

2. To Start Ride:
   Press start (# Button)
   Screen will read: Select 1-5 = Ride 7 = Jukebox 8=Attr
   There are five files of songs to choose from. These files allow you to set up your own selections of songs. For example: File 1 – Youth, File 2 – Hip Hop, File 3 – Country, File 4 – Pop, File 5 – Birthday.

Choose a song file and press that number (1, 2, 3, 4, or5).
Pre-ride announcement starts and plays for 30 seconds.
Then House lights are off, show lights are on, car lights are on, sound is on, and ride counter starts.

. 3. To stop individual car(s):
Enter car number (i.e. 01, 06, 10, etc.)
Press stop (1st arrow button - Top)
To stop additional cars, repeat above procedure.

4. To release individual car(s) from stop:
Enter car number
Press release (2nd arrow button down)
To release additional cars individually stopped, press the 2nd arrow button down.
Note: When individual cars are stopped, the timer does not stop and the sound does not stop.

5. To stop all cars:
Press stop (1st arrow button - Top)
Ride timer will pause
Sound stops

6. To release all cars:
Press release (2nd arrow button down)
Ride timer and sound resumes.

7. To lockout "Spin Feature" - Individual cars
Enter car number
Press Spin Lockout (3rd arrow button down)

8. To release lockout "Spin Feature" - Individual cars
Enter car number
Press Release Spin Lockout (4th arrow button down)

9. To lockout "Spin Feature" - All cars
Press Spin Lockout (3rd arrow button down)

10. To release lockout "Spin Feature" - All cars
Press Release Spin Lockout (4th arrow button down)

11. When time runs out, show lights and music turn off, cars turn off, and the announcer asks riders to exit without running (automatic features).

12. To turn on Juke Box:
Press Start Ride (# Button)

Screen will read: Select 1-5 = Ride
7=JukeBox 8=Attr

Press Button #7

Songs will start playing and will continue playing until this feature is turned off.

13. To turn off Juke Box:
    Press Start Ride (# Button) or
    Press Stop Button

14. To manually turn on Attract Mode:
    Press Start Ride (# Button)

    Screen will read: Select 1-5 = Ride
    7=Juke Box 8=Attr

    Press Button #8.

    Introductory announcement starts. After 25 seconds, house lights turn off, show lights turn on, and Bumper Cars start to move. This continues for another 45 seconds, then the attract mode ends. The Attract Mode lasts for a total of approximately 68 seconds.

    Press Start Ride (# Button) or Stop Button to stop Attract Mode at any time.

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8. BATTERY CHARGER OPERATIONS

I. **PROGRAMMING:**

1. **Charging Profile**
   There are 4 charging profiles available:
   F1- Starting or gel batteries
   F2- Deep cycle wet batteries- The charger will recycle if the volts drop below 2.10 VPC
   F3- Deep cycle wet batteries- The charger float the cells at 2.26 VPC*
YOUR PROPER SETTING IS F3
   F4- AGM Batteries**
* This is the charging profile the bumper car requires if 6 volt flooded lead acid batteries are used. The batteries used in the current bumper cars are flooded lead/acid wet cell batteries and should be set to F3.
** This is the charging profile the bumper cars require if 12 volt AGM batteries are used.

To set the charger to F3:
a) Disconnect the charger from the bumper car
b) Push and hold the battery voltage button until the display starts to flash. If the display does not start to flash, insert a straightened out paper clip wire in the hole in the battery voltage button and hold until the display starts to flash. Let off, and then press repeatedly until the desired profile is selected. (F3).
c) Let off button
d) Wait till the display stops flashing and profile is held in memory.

2. **Gassing Cycle**
There is 3 gassing cycles available:
d0- 3 hour fixed * **YOUR PROPER SETTING IS d0**
d1- 10 hour proportional
d2- 16 hour proportional
* This is the gassing cycle program the bumper cars require.

To set the charger to d0:

a) Disconnect the charger from the bumper car.
b) Push the battery voltage button twice the current setting is displayed.
c) If different from d0, push and hold the button until display begins to flash.
d) Release the button and push again until the correct d0 setting is shown.
e) Wait till display stops flashing and profile is held in memory.

II **OPERATION (Charging the cars)**

NOTE: Charger does not need to be turned off when not connected to bumper car.

1. Turn off car before plugging in (push red mushroom switch in car rear down)
2. Plug charger into gray plug in back of bumper car.
3. If charger is not on, flip switch on charger to "on" position.
4. After the charger starts, the LED will stay on steady RED indicating the battery pack is below 80% charge and the display will indicate the percent of charge in the battery. (The battery voltage button may be pushed anytime the charger is on). As the percent of charge increases to over 80% the LED will turn yellow and the charger will enter gassing cycle. At the end of the cycle, the display will show "CC" (Charge Complete) and the LED a flashing or steady green.
5. If the battery pack has been depleted to a very low level, the LED will flash alternating Red/Yellow on start up. This is normal because the charger is "pulse charging" the battery pack at this low state of charge until the volts per cell reaches approximately 1.6 volts. Then the LED will burn solid RED and the display will start at 06. It may take a long time before the display starts advancing upward.
6. If the LED flashes alternating Green/Red, there is a break or intermittent connection in the DC line or the battery voltage is near zero and too low to turn the charger on. Use a jumper battery pack to raise the voltage.
7. If the display reads "ER" (which means error) and the LED is Green, the batteries failed to reach 2.45 volts per cell and the timer timed out. This indicates there is a defective battery on the kart that must be replaced.
8. What circumstance can justify the Bumper Car not being fully charged overnight? If the display reads "80" within one minute of plugging the charger into the car, the car does not need to be charged. Disconnect the charger from the car. Charging a car overnight that may not need it does no harm to the batteries. It uses very little power from the charger and may evaporate some of the water out of the battery. This water is replaced during the weekly watering check.
9. At the beginning of the day, **BEFORE TURNING ON THE CAR**, disconnect the charging plug from the bumper car. **DO NOT PULL ON THE WIRES.** Grasp the plug only when removing the plug from the Bumper Car. Spray lithium grease into the ends of the charging plugs to facilitate the insertion and removal of the plug.

WARNING: It is important to get the correct charger profile settings. If F3 setting is used to charge AGM Batteries, the batteries will be over charged and will dry out, resulting in premature failure of the battery. If F4 setting is used to charge flooded lead acid batteries (what new cars come with from Amusement Products), these batteries will be under charged resulting in less than expected run time.

9. TROUBLE SHOOTING BATTERY CHARGER ISSUES:

TROUBLE SHOOTING GUIDE FOR CHARGER

PROBLEM	**ACTION**
No power is present across the DC leads when a voltmeter is connected.	This is good. The charger will not turn on until battery voltage is detected when connected to the car.
The LED flashes alternating GREEN RED	The charger is connected reverse polarity to battery.
Charger won't trip to "CC"	A battery with one, or more shorted cells may not allow the voltage to climb high enough to trip the charger. A battery in this condition should be Identified and replaced.
LED screen does not light up	Check to see if charger is plugged in. Circuit breaker to the AC wall plug may be tripped or turned off. Control board in charger may be bad. Replace control board

10. SIGN LAYOUTS- samples

A. Spin Zone bumper car rules
B. How to operate the car
SEE NEXT TWO PAGES

SPIN ZONE BUMPER CAR RULES

You must be a minimum of 36" tall and 5 years old to ride this ride.
Anyone over 350 lbs. should not ride this ride.
Anyone with broken bones or existing neck or back problems should not ride.
Shirts and shoes must be worn while riding.
No smoking, eating or drinking in the Spin Zone arena

Keep feet and hands inside the vehicle
Whenever the car is on (lights on car are lit) - STAY SEATED.
Fasten seat belt before the ride starts and keep it on until the ride is over.
If car malfunctions, stay seated and raise hand
Secure all hair over shoulder length and any loose clothing.

Failure to follow the rules will result in termination of your ride- No Refunds!

All persons using this ride do so at their own risk.

HOW TO OPERATE THE CARS:

1. When car lights are on, car is on
2. To move the car forward, push both handles forward
3. To move the car backward, pull both handles backward.
4. To turn, release the handle in direction you want to turn while pushing the opposite handle forward.
5. To stop, release both handles and return them to the center position.

NOTICE: PERSONS USING THIS FACILITY DO SO AT THEIR OWN RISK

11. DAILY CHECK LISTS:

DAILY CHECK LIST: OPENING PROCEEDURE

Check Off	Procedure
	1) A "daily inspection report" should be filled out daily. Check each car and inspect for damage and need for repair
	2) Make sure all charges read "CC" for complete charge before unplugging car. If not, put on inspection report and notify manager.
	3) When the Spin Zone attendant first arrives, unplug all chargers. Coil up and stow the charging wires by the charger.
	4) Wipe down all seats, controls and bodies.
	5) Sweep the floor clean using floor sweeping compound.
	6) Inspect seat belt for fraying of belt material and proper operation of the buckle.
	7) Pick up trash and empty waste baskets
	8) Check each tube for proper pressure. Firm to the touch (tight with at least 2" of movement when pressed by hand)
	9) Unplug each car from the charger before turning them on.
	10) Turn on each car by pulling the red mushroom switch out on the back of the car. Take care to position yourself so that if the car should start to spin, for whatever reason, you will not be hit by the spinning seat or tube.
	11) Observe that all the lights are activated on all of the cars.
	12) Push the cars to so that there is space around each car so that the spin feature can be checked. Kick each side of each car in the spin zone area to make sure the spin feature is working properly.
	13) If car spins, turn off and adjust spin trigger (see adjustment instructions)
	14) Turn on the ride transmitter (after all cars unplugged and tested) and start a ride sequence checking for: **a) House lights turn on** **b) Pre-ride safety announcement plays** **c) House lights turn off** **d) Show lights turn on** **e) Sound comes on and plays at proper level** **f) Test "ALL SPIN" feature** **g) Test stop feature**
	15) When music stops: **h) Show lights turn off**

	i) House lights turn on **j) All bumper car lights turn off** **k) Exit message plays.**
	16) Make sure tickets, scanner or whatever ride admittance tracker is ready for the day.

When Check list is done, leave cars and transmitter on. If a car is turned on after the test and its lights are on, press the STOP button on the transmitter to turn it off. The Spin Zone is now ready.

DAILY CHECK LIST: CLOSING PROCEEDURE

Check Off	Procedure
	1) Turn off the Spin Zone transmitter
	2) Push/Drive cars to charger station areas
	3) Push in mushroom button on rear of each car turning the car off.
	4) Connect all cars to chargers using charger plug to grip wire. (Do not pull on wire). Do not plug in a car unless already turned off.
	5) Check the battery meter on all cars to see if any car is significantly lower than the other cars. (Charge percentage is displayed on charger once the car is plugged into charger)
	6) Inform maintenance if a car has significantly less charge than the others. This could indicate a bad battery.
	7) Turn off all area lights/ house lights

NOTE: Do not turn the charger off at the charger or by cutting off the house breaker supplying current to the charger. The car requires charging all night (every night). The charger will monitor the state of charge of the batteries and cut itself off automatically when batteries are fully charged. Even if the facility is not to open for several days, leave the cars plugged in and the chargers on.

It is not recommended to charge a car while other cars are in operation. A car being charged could have its charging wire pulled out of the charger if it is hit by another car while it is plugged in.

WEEKLY CHECK LIST (same as daily checklist)

MONTHLY MAINTENANCE CHECK LIST

Check Off	Procedure
	1) **Check tires (drive tires) for proper inflation- 35-40 psi.**
	2) **Check all castors for wear. Replace if damaged**
	3) **Grease all castors**
	4) **The front castor of car has been adjusted at the factory so that it is approx. 3/16” off the floor. Should it become necessary to adjust this clearance, remove the caster. Add a 5/16" flat washer(s) between the caster and the chassis of the car to lower the caster. To raise it, remove washers. This helps keep the car from rocking.**
	5) **Check all belts to make sure they are tight (should defect approx. 3/8" when pressed).**
	6) **Check all battery connections for tightness. Blow air over batteries with a fan or the air pump to dissipate any gas before working on the batteries.) (Do not over tighten as the lead battery posts will compress and deform if over tightened). Use rubber gloves and eye protection when doing this maintenance.**
	7) **Spray all battery post connections with WHITE LITHIUM GREASE. (available at a Home Center or Hardware Store in an aerosol spray can)**
	8) **Inspect watering system for leaks. Repair or replace as needed.**

YEARLY MAINTENANCE CHECK LIST

Check Off	Procedure
	1) Grease the two Zirk fittings on each wheel caster
	2) Grease the wheel bearings using a grease gun. They have ZIRK fittings to do this.
	3) Blow Brush dust out of both motors
	4) Check tire wear and replace as necessary. They have a "wear dimple" that disappears when the tire is worn out (new it is approximately 1/8" deep)
	5) Check Castor for wear or damage and replace as needed.
	6) Check seat belt for wear and correct function of the buckle
	7) Inspect seat, hand controls, and fiberglass cover for wear. Replace or repair as necessary.
	8) Check for damaged or corroded terminals. Blow air across the batteries before doing maintenance. Replace batteries with damaged terminals. Wire brush corroded terminals. Use rubber gloves and eye protection when doing this maintenance.
	9) Check for damaged or cut wires. Replace or cover with electrical tape.
	10) Make sure all drive belts are tight
	11) Check drive belts and pulleys for wear and replace as needed
	12) Inspect lights for damage or burned out bulbs. Replace as needed
	13) Check for corrosion. Neutralize acid and repaint.

12) Statement of ASTM RIDE COMPLIANCE in manufacturing.

AMUSEMENT CONSTRUCTION Co. Inc.
We Build Fun Things.

5954 Brainerd Rd. Chattanooga, TN 37421 phone: 423-892-7264 fax: 423-855-0432

February 4, 2011

To Whom It May Concern:

All Amusement Products Spin Zone bumper cars, manufactured by Amusement Products, LLC have been designed and built in accordance with the ASTM F2007-07A standards. The materials and designed standards followed for the vehicles are in accordance with these standards. Furthermore, the specifications and schedules for non-destructive testing of the vehicles as well as copies of the information found on the identification plates are found in the operations and maintenance manuals for the cars. The identification plates have all the operator requirements for the cars. Lastly, the operation manual contains the design specifications for the arenas, guide for safe operation of the arena, and maintenance schedules for the cars.

If you should have questions about the design, operations or maintenance of the Spin Zone Arena and its cars, please give us a call.

Sincerely,
Dutch Magrath
President
Amusement Products, LLC

13) Statement of ASTM Fabrication and Non-Destruction Testing Requirements:

AMUSEMENT PRODUCTS, LLC

5954 Brainerd Rd. Chattanooga, TN. 37431-3598 USA PHONE: 800-438-3558FAX: 423-855-0432

www.amusementproducts.com dutch@amusementproducts.com

MANUFACTURER'S RECOMMENDED TESTING STANDARDS FOR NON-DESTRUCTIVE TESTING OF SPIN ZONE CARS

The bumper car chassis made by Amusement Products all fall under the Spin Zone brand. They are made to be extremely durable for commercial use. The following are recommendations for testing the frame's integrity during the life cycle of the cars.

For cars run at the manufacturer's pre- set speed under 4mph and used on a smooth, defect free surface with no humps, bumps, dips or holes and using a continuous safety barrier that keeps the cars in the arena at all times during operations, The following testing applies:

0-5 years- Visual inspection by location mechanic or owner checking all welds and moving components- Frequency: annually

6-10 years- Visual inspection by location mechanic checking all welds and moving components- Frequency: Twice a year

11 years+ - Inspection done by qualified NDT inspector or Amusement Products representative using standard testing procedures. A magnetic resonance test would be an appropriate method to use to inspect such components as the drive assembly, steering assembly, frame members and welds, body attachment points, and body integrity. All testing should be done on an annual basis.

For arenas where the cars run on an irregular surface that allows the car to leave the ground (partially or completely), bottom out against the surface, hit bumps or holes more than 2" or any combination of the above, the testing should be as follows:

0-5 years- Visual inspection by location mechanic or owner checking all welds and moving components- Frequency: Twice a year

6-10 years- Visual inspection by location mechanic checking all welds and moving components- Frequency: Four times a year

11 years+ - An annual inspection must be done by qualified NDT inspector or Amusement Products representative. The inspection should use standard NDT testing methods. We recommend Magnetic Resonance testing to include: the drive assembly, steering assembly, frame members and welds, and body integrity.

Frequency- The NDT testing should be done on an annual. In addition, one time per year (approximately 6 months after the NDT test) a visual inspection can be done by the staff mechanic or owner.

NOTE: FRAME MODIFICATIONS

Any welding done to the frame should be done by a certified welder. Welding should only be done to repair cracked or broken welds or frame members. No alterations to the original structural design are approved by Amusement Products and must be submitted for approval in advance. Only changes done with written permission of Amusement Products are allowed. Any changes done without written approval will remove Amusement Products as Manufacturer of Record for the vehicle.

14) Statement of Operational Restrictions Relating to Environmental Conditions:

WIND-

The Spin Zone bumper car arena can be safely operated in windy conditions less than 30 mph. If the wind speed exceeds 30 mph, the arena should stop operations until the wind speed falls below that mph. The Spin Zone car has a low center of gravity, a dead load of over 800 lbs., 3" of ground clearance, and a round shape to cut through the wind. It would be stable and not flip in wind speeds up to 60 mph. However, the cars are open to the elements and flying sand and debris would make operating the Spin Zone in wind speeds over 30 mph unsafe.

WET WEATHER-

The Spin Zone cars are not made to ride in the rain or other wet conditions. The arena should be Clean and dry before operating the vehicle. A wet arena may be slippery and a hazard to riders entering and exiting the cars.

SNOW CONDITIONS-

When operating an outdoor Spin Zone Bumper car arena, the arena should not be operated when snow is present. Both the cars and the arena should be free of snow, ice and water before operating the Spin Zone outdoors.

TEMPURATURE FLUCTUATIONS-

The temperature does not affect the rider other than to the extent the riders are fully exposed. Indoors the ride should be kept above 65 degrees for rider comfort (70 is suggested). Outdoors, we suggest stopping the ride below 32 degrees.

15) QUICK REFERENCE TROUBLE SHOOTING GUIDE (PRE-2012 MODELS):

ELECTRICAL TROUBLE SHOOTING GUIDE
SPIN ZONE BUMPER CAR

PREPARE THE CAR FOR SERVICE

1. Remove the seat and body to access the electrical components.
2. The tube may be removed to provide easier access if so desired.
3. Lift both tires off of the floor to make certain the car will not move.
   NOTE: Amusement Products has a lift (Part No. P452A)to lift the car on one side. Two lifts to lift and support both sides or one lift and (3) 2x4 board 6" long to support one side will work also.
4. Secure the control handle in the position that the car will not run or move when called for below. (A rope, bungee cord, tie down strap . . . works well)

Determine if the solenoids are producing an audible clicking noise when the control handle is moved forward and backward. If they are clicking, then the control circuit is working. Start by diagnosing the drive circuit. If they are not clicking, then start with diagnosing the control circuit.

DIAGNOSING THE CONTROL CIRCUIT (SMALL WIRES)

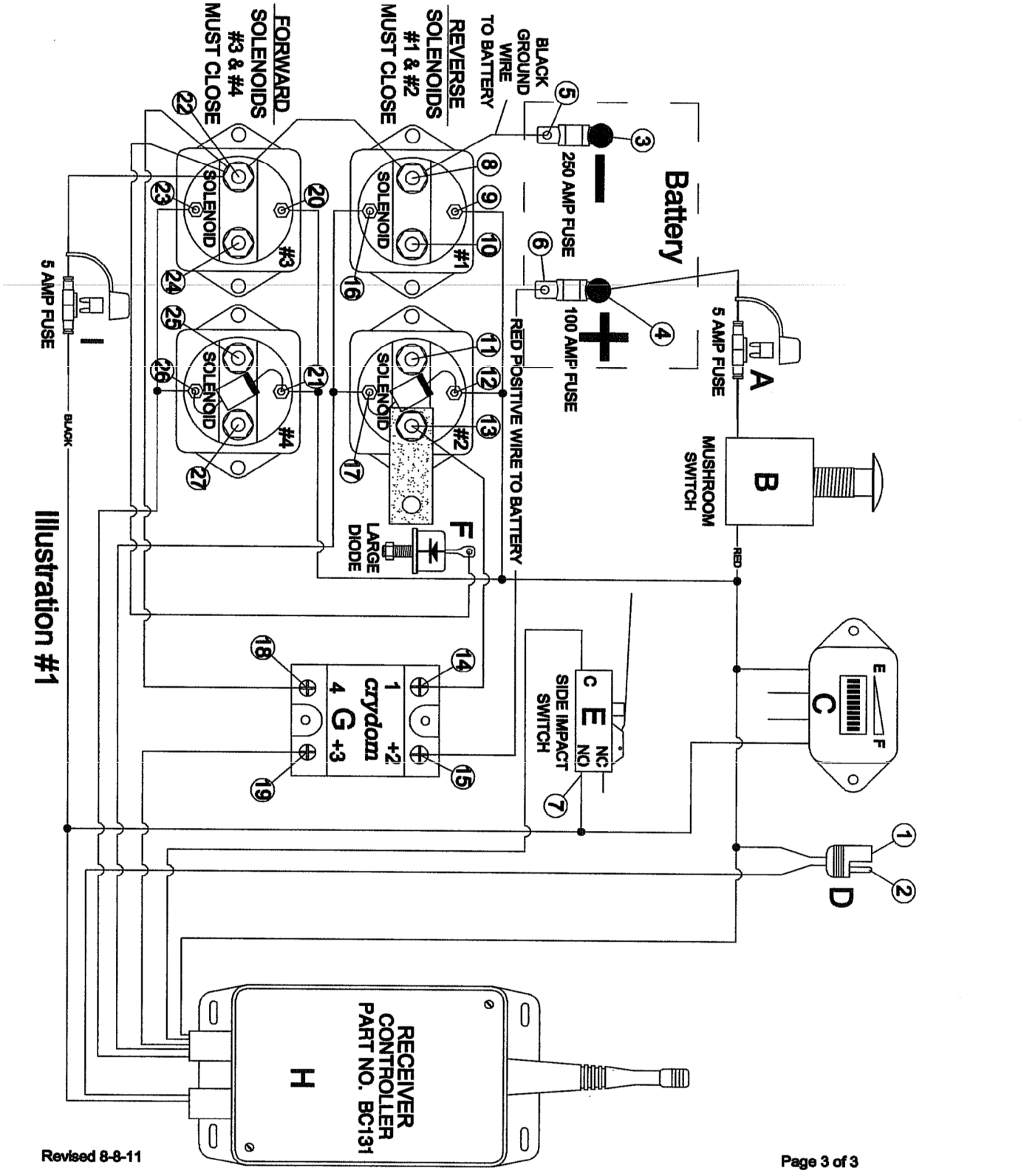
1. Reference Illustration No. 1. Begin at the power source (battery pack at the back of the car) and work your way down stream to the receiver (H).
2. Measure between 3 & 4. This will determine if the battery pack is good (12+). Measure between 4 & 5. If (0) volts, the 250 amp fuse is blown. If (12+) volts, wiggle and pull slightly on the fuse. The voltage should not change. If it does, the fuse is broken and should be replaced.
3. Turn car on at mushroom switch (B).
4. Measure voltage between 1 & 5. (Should be 12+) If not, check 5 amp fuse (A), check mushroom switch, and wire connections to switch.
5. Measure between 1 & 7 (Should be 12+). If not, check 5 amp fuse (I).
6. If voltage is present, move to the solenoids and check voltage between 8 & 9. If 12+ voltage is present, the solenoids and the receiver has power. If not, the wire has been compromised between the red mushroom switch and the solenoids.
7. With the car prepped for service, move the control handle forward & backward. If you hear a clicking in the solenoids, go to step 8. If not, one of the magnet switches at the control handle may be bad or the receiver may be bad. First plug in a spare receiver (H) to see if this fixes the problem. If not, cut the wires to the suspect magnet switch. Strip back the wire insulation and touch these wires together. If solenoids click, replace this magnet switch. Note: If you discover that the switch works, but the switch has to be very close (almost touching) to the magnet (the part on the control handle without wires), this magnet is weak and should be replaced. The solenoids should now be clicking.
8. With the solenoids now clicking but the car will not run, tie off the control handle in this position and measure between 18 & 19 (voltage should read 4.5+). If not, replace the receiver (H).
9. Motor should be working now. If not, diagnose the drive circuit.
10. Check the LED light circuit output. To do this, turn the car on with the mushroom switch and read voltage between 1 & 2 (should be 12+). If not, replace the receiver (H). The light circuit in the receiver has been damaged.
11. If the 5 amp fuse (A) continually blows, the problem probably is in the LED light circuit. Unplug the LED lights (D) and run the car without lights for a day. If the fuse does not blow check the lights and wiring harness in the body for the problem. (Probably a light that has a short or a wire that has shorted to another wire.)

DIAGNOSING THE DRIVE CIRCUIT (LARGE WIRES)

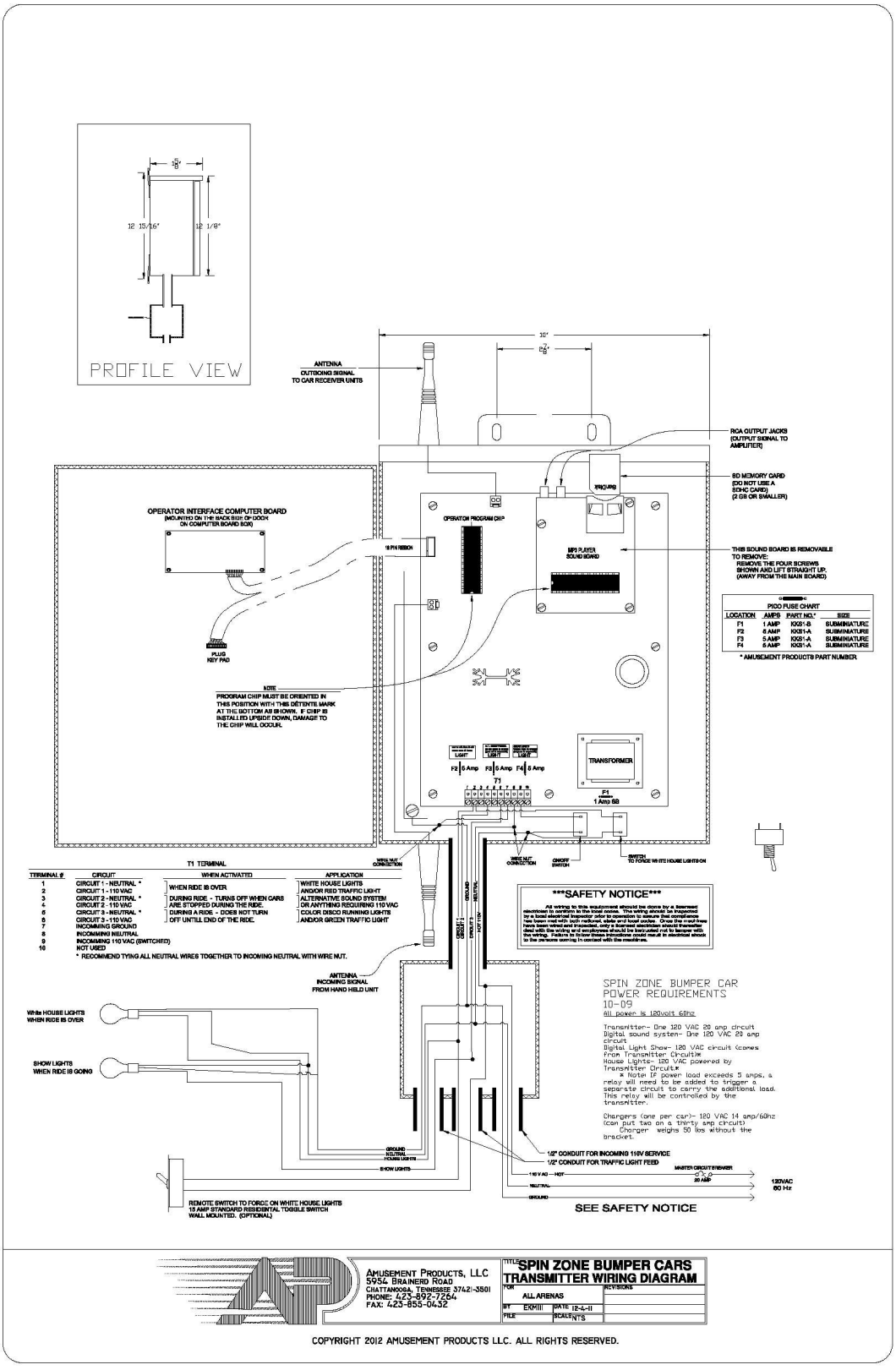
1. If not already done, prepare car for service (see page 1) Reference Illustration No. 1.
2. Measure between points 3 & 4. This will determine if the battery pack is good. The voltage should read 12+ volts. All future voltage reading should be close to this voltage unless otherwise stated.
3. Measure between 3 & 6. If (0) volts, the 100 amp fuse is blown. If (12+) volts, wiggle and pull slightly on the fuse. The voltage should not change. If it does, the fuse is broken (not blown) and should be replaced.
4. Measure between 8 & 9. (voltage should be 12+) If not, see Diagnosing the ***control circuit*** item #6.
5. The Crydom switch protects the solenoids by switching on or off before the solenoids are switched. This prevents the solenoids from switching under "load" which burns the contacts in the solenoids. The Crydom switch can fail in two ways, not closing (open circuit) or not opening (welded shut / closed circuit). In either case, usually the problem is that the diode failed, which allows reverse current from the motor or a solenoid has "welded shut" creating a direct short. To check the Crydom electronic switch:
   A. Measure between 8 & 14 (Voltage should be 12+ volts) If yes, the Crydom switch may be good or it may be welded shut.
   B. Release the control handle to it's (off) position, then check voltage between 8 & 14 (voltage should be 0), If there is voltage (12+), the Crydom switch is welded shut and must be replaced. If voltage is "0", the switch is good.
   C. Before replacing this switch. Disconnect the black ground wire at battery terminal 3. It must first be determined if a solenoid has "welded shut" causing the Crydom switch to fail. Remove the wires from terminals 10,11,25,& 26. With a multi-meter, check for continuity between the large terminals on each solenoid. (The control handle should be in the center "off" position). If any solenoid has continuity, this solenoid is "welded shut" and must be replaced.
   D. Replace any bad solenoids and reinstall wires on terminals 10,11,25,& 26.
   E. If the Crydom switch was determined to be bad, replace this switch (G) along with the diode (F) at this time.
   F. Reconnect the black ground wire at battery terminal 3 and resecure the control handle in the position that the car was not running. The car may now be running. If not . . .
   G. Measure voltage between 8 & 14 (voltage should be 12+). If yes, go to step 6. If not, measure voltage between 18 & 19 (voltage should be 4.5+). If it is, the Crydom switch is bad. Replace this crydom switch (G) and the diode (F). It is critical to replace this diode along with the switch if the switch failed in this manner and not from a "welded shut" solenoid. This diode protects the switch and if the diode fails, the Crydom switch will fail also. If the voltage between 18 & 19 does not read 4.5+ volts, see diagnosing the control circuit (small wires) item #7.
6. Next check the solenoids. The solenoids can fail for three reasons.
   1. Solenoid can be welded shut (This has been covered in 5C above).
   2. The signal to activate the solenoid is not being received from the receiver.
      To check for problem #2 (car will not run in reverse direction):
      Read voltage between 12 & 17 and 9 & 16. If voltage is 12+, a signal is being sent to turn the solenoid on. If no voltage, the receiver may be bad. (Turn car off at the red mushroom switch before disconnecting or connecting the receiver.) Plug in a known good receiver and recheck. If voltage is now 12+, replace the receiver.
      To check for problem #2 (car will not run in forward direction):
      Read voltage between 20 & 23 and 21 & 26. Follow steps above "checking for not running in reverse direction"
   3. The solenoid has failed internally.
      To check for problem #3 (car will not run in reverse direction):
      Read voltage between 11 & 13. If there is no voltage, the solenoid is good. If there is voltage (12+), the solenoid is bad. Read voltage between 8 & 10. If there is no voltage, the solenoid is good. If there is voltage (12+), the solenoid is bad. Turn off red mushroom switch and replace any bad solenoid.
      To check for problem #3 (car will not run in forward direction):
      Read voltage between 22 & 24. If there is no voltage, the solenoid is good. If there is voltage (12+), the solenoid is bad. Read voltage between 25 & 27. If there is no voltage, the solenoid is good. If there is voltage (12+), the solenoid is bad. Turn off red mushroom switch and replace any bad solenoid.
7. After the bad solenoids have been replaced, the motor should now be running.
8. Release the control handle. Move the handle to the opposite position. The motor should be running in the opposite direction. If not, check the solenoids as described in step 7 above. Remember, the front solenoids #3 & #4 are used to move the car forward and the rear solenoids #1 & #2 are used to move the car backward (on the side that you are working).
9. This discussion has been in diagnosing the right side of the car. Follow the same procedures to diagnose the left side, just remember that Illustration 1 will be "mirrored".

16) <u>WIRING DIAGRAM FOR SPIN ZONE CARS (PRE- 2012 MODELS):</u>

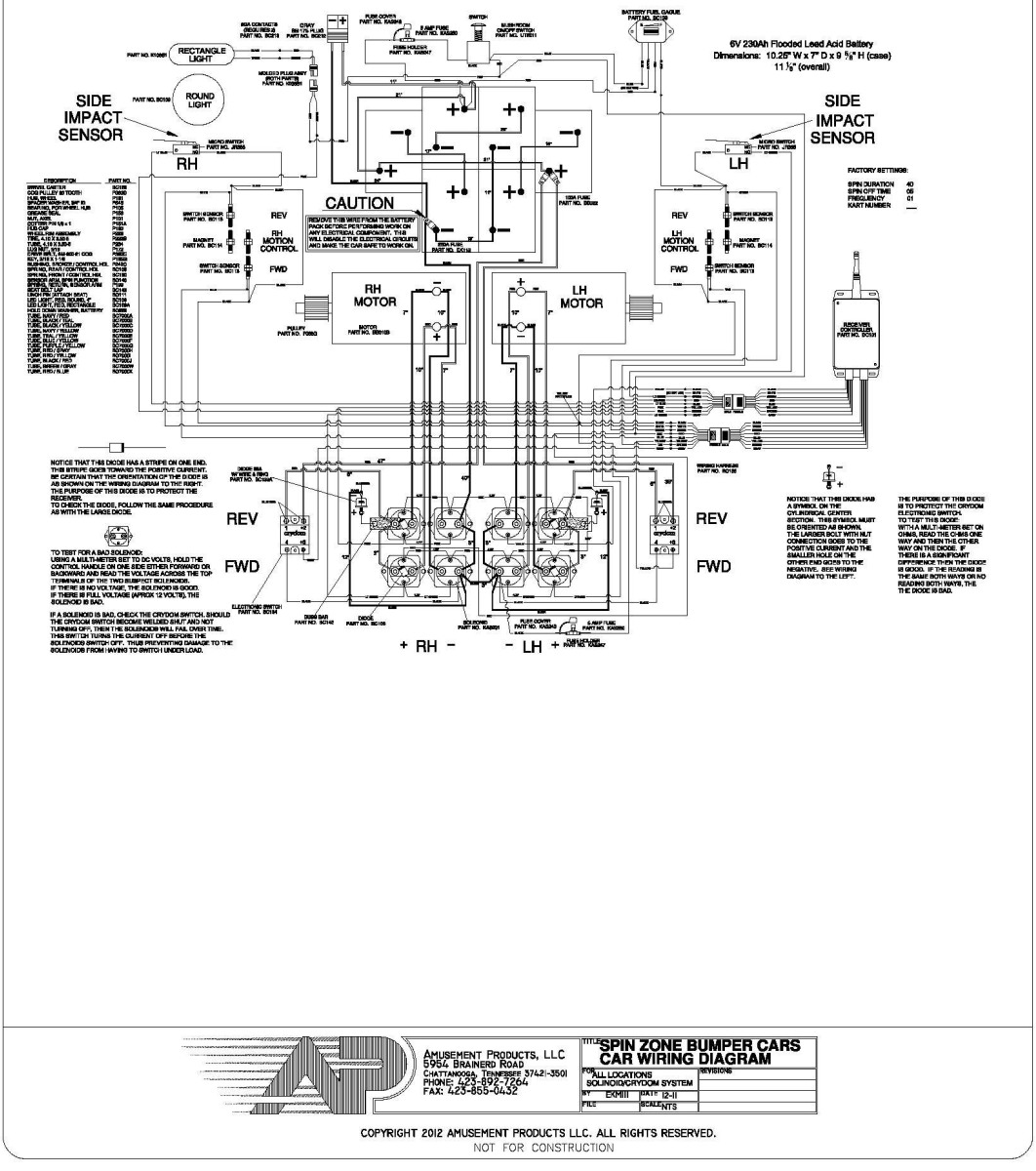
<u>Relay and Solenoid versions- goes with Quick Trouble Shooting Guide in (15) above.</u>



17) WIRING DIAGRAM FOR BUMPER CAR TRANSMITTER:



18) WIRING DIAGRAM FOR BUMPER CAR (SOLENOID/CRYDOM) PRE: 12-31-2011 MODELS



AMUSEMENT PRODUCTS, LLC
5954 BRAINERD ROAD
CHATTANOOGA, TENNESSEE 37421-3501
PHONE: 423-892-7264
FAX: 423-855-0432

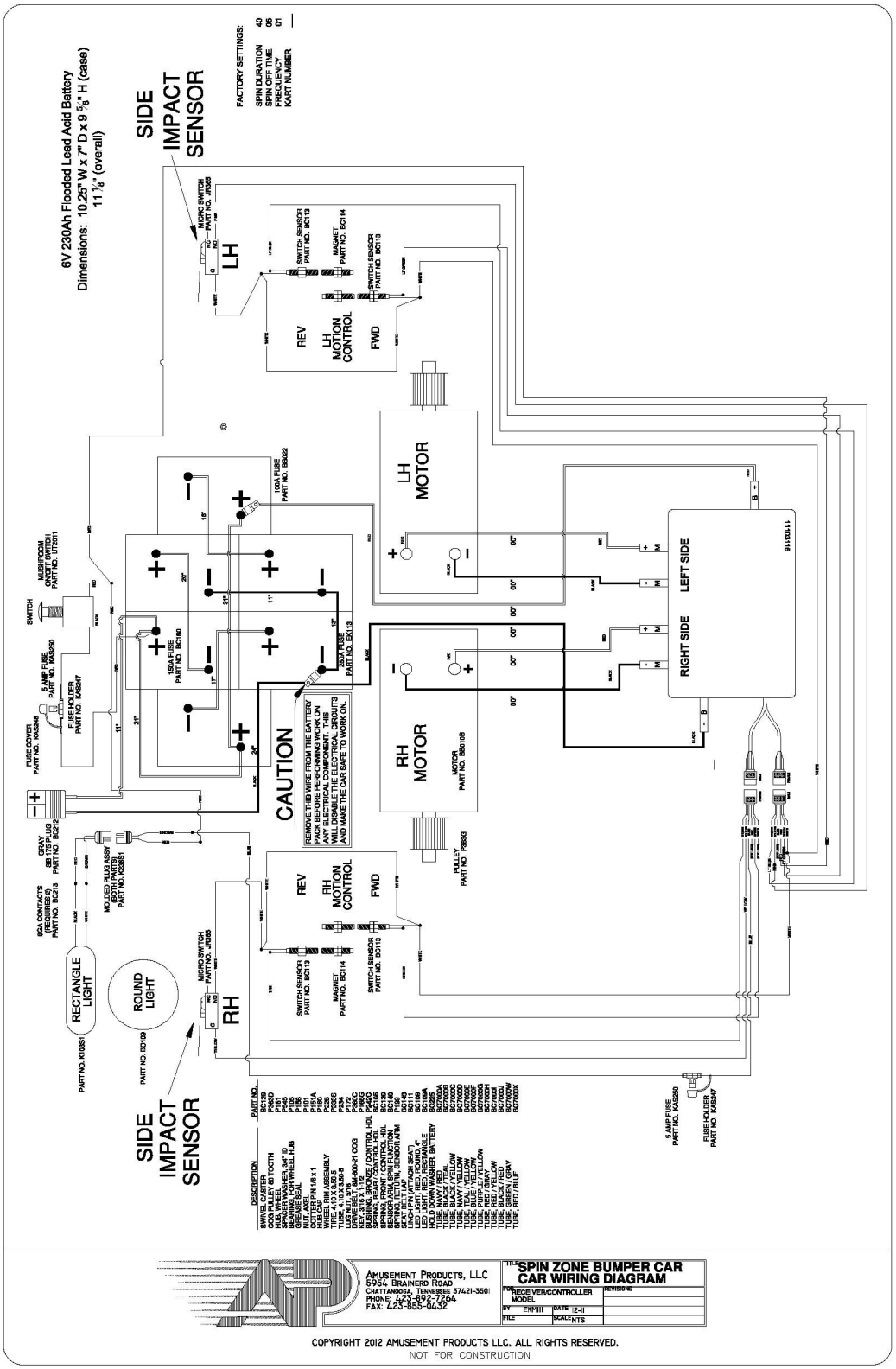
TITLE: **SPIN ZONE BUMPER CARS**
CAR WIRING DIAGRAM

FOR: ALL LOCATIONS
SOLINOID/CRYDOM SYSTEM

BY: EXMIII | DATE: 12-11 | FILE: | SCALE: NTS

REVISIONS

19) WIRING DIAGRAM FOR BUMPER CAR (MOTOR/CONTROLLER) POST 1-1-2012



20) INSPECTION CHECK LIST: PRE-OPENING

Check Off	Procedure
	1. Is floor clean and free from trash and loose materials
	2. Is there a bumper rail mounted rigidly to the floor: 9.5" centerline; plastic face min 6" tall x 1.5" thick; anchor bolts secured firmly allowing no movement
	3. Is there a secondary barrier 360 degrees around the car rail separated by a minimum of 9" to the wall.
	4. Whether solid wall or 40" tall OSHA handrail with vertical pickets less than 4", is it mounted firmly to the ground.
	5. Entry/ Exit gates have operating self-closers that are working appropriately.
	6. Chargers are mounted where they do not contact the cars when the cars hit the rail
	7. Transmitter Controller is located within easy reach of the attendant station (near entry gate)
	8. Sooth floor free from holes, items sticking, with no edges sticking up (example: Different height slabs)
	9. Check the transmitter/ride controller for proper operation
	10. White lights are on before the ride starts and when the ride ends **11. Cars are off prior to ride start** **12. Rules are told electronically prior to cars being turned on** **13. Cars start automatically when rules are finished** **14. Cars go off when the "STOP" button is pressed during the ride** **15. Cars stop (are turned off) automatically when ride times out** **16. Exit Message plays automatically when ride ends**
	17. Seat belts are on all karts and are functioning
	18. Cars turn on the ride starts and off when it is over.
	19. Lights on the cars are on when the controls are active
	20. Tubes on cars are firmly inflated.
	21. Rules signs are posted and easily seen by riders prior to the ride.
	22. Ride attendants are trained on how to start the ride and turn cars off in an emergency.