

PACER

Manufacturing Co. Inc.

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MFG: PACER MFG. CO., INC.
NAME: GO-KARTS
TYPE: NON-KIDDIE

INTRODUCTION

The purpose of this manual is to inform track owners and employees about the methods of successfully operating a safe and profitable go-kart track. It represents a compilation of many years of track operating experience, including that of PACER MANUFACTURING COMPANY and other track owners. Many guidelines and procedures are presented which are beneficial to the safe and efficient operation of a go-kart track. Because operating procedures vary among track owners, your comments or suggestions are encouraged. This manual will be continually updated to meet the ever changing world of karting.



April 1, 1985

Manufacturers of the **PACER RACER**



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1. TRACK OPERATION

A. Go-Kart Track

When constructing a go-kart track, the design and engineering are very important. PACER MANUFACTURING COMPANY can help you in the design of your track by custom-fitting a track on your property in blueprint form.

After deciding on the shape and design of the track, consider the following suggestions:

(1) PACER MANUFACTURING COMPANY recommends a concrete track rather than asphalt for several reasons. Concrete will last for decades while asphalt will need to be re-surfaced every few years. Concrete has a smoother finish than asphalt which results in a more thrilling ride and provides for more adequate draining and quicker drying after it rains. Concrete will not erode from gasoline spills while asphalt will. Concrete will cost more initially but will more than pay for itself in the long run.

(2) All concrete should be 3000 Lb. test. This will provide ample strength.

(3) The track should be approximately 4" thick with a steel trowel-slick finish. Do not use a broom finish on the track because this will cause adverse tire wear and drainage problems. A trowel finish will make the track smooth but not slippery.

(4) Wire mesh, 6 x 6 x 10 x 10 size, should be laid into the concrete to prevent shifting and extensive cracking.

(5) A 1" deep saw joint should be cut in the concrete every 20'. This will help eliminate cracks in the track surface.

(6) Track length will depend on the amount of space available. We suggest a minimum length of 500'-600' and a maximum of 1,200'. An 800' track is about average and will accommodate about 15 karts. Track length is measured by the centerline.

(7) Track width should be about 20'. A 16' width would be minimum and 25' is maximum. On an oval track the turns should be about 5' wider than on the straightaways.

(8) Straightaway length should be no more than 200'. The more turns there are on the track, the more exciting the ride.

(9) The track should be sloped to the inside 3" to 4" in a 20' width to allow for water drainage.

(10) Be sure all drain pipes and electrical wires are installed before the track is poured. The drainage area should be able to accommodate the water coming off the track. Drain pipes should be a minimum of 10 inches in diameter so that they are easier to clean out.

(11) If the track cannot be formed in one continuous pour, make sure that all cold joints are key-locked.

(12) All permits and insurance (including builders' risk and workers' compensation) should be provided by the contractor.

(13) PACER MANUFACTURING COMPANY recommends a safety steel guard rail be installed around the inside and outside perimeter of the track. This is the most effective way to reduce accidents. Tires or dirt banks around the track are not effective in absorbing the shock of an accident. The steel rail will reduce maintenance on the karts by over half of what it would be with stacked tires as safety guards. (Refer to 1-D for Rail Installation.)

(14) The minimum radius of the turns is 15'. A 20' to 30' radius is recommended if space is available.

(15) The most desirable shape of the track is a closed "M" or "W" for a total of 5 turns. The turns in the track are what make the ride exciting. People would rather have the thrill of making the curves and turns than just driving the straightaways.

(16) The pit area should be large enough to accommodate 2-3 karts side by side and about 5-6 karts lengthwise. The pit should be located adjacent to a straightaway, as opposed to a curve. This will give the kart riders the opportunity to slow down before entering the pit area.

(17) An alternate surface for the track is asphalt, and it should be sealed as soon as possible with a water base sealer. This will protect it from damage by gas and oil leakage. When constructing an asphalt track, use a 4 to 6 inch stone base, then use 2" to 3" of asphalt, using crushed lime stone mix up to the size of 3/8" to give it stability. Do not use a sand or dust asphalt mix for the finish coat as the small go-kart tires will roll this type of finish into ripples. It is recommended that the stone base be treated with a herbicide before applying the asphalt.

In choosing a contractor, keep in mind that no amount of specifications beats getting a reliable contractor. Paving either asphalt or concrete is very similar to painting in that preparation, knowledge, and honesty are important. While it may cost more initially to do a job right, you will save in the long run. Also, like painting, a poor job might look about the same as a good job when it is finished. Then, by the time you find out you have a poor job, it is too late.

(18) A protective fence is a necessary part of a go-kart track. A 6' high chain link fence with posts every 10' is recommended to surround the track. The fencing material should be placed on the side of the posts that are closest to the track for safety reasons. However, some tracks may have noise restrictions; so, in this case, a wooden fence should be built. The wooden fence should be 10' high and 1/2" thick. Its function is to block noise and for aesthetic purposes.

(19) Adjacent to the fence, there should be bleachers for spectators. The spectators' seating area must be separated from the track by a fence for safety reasons. Be sure the bleachers are in a location that is easily accessible and can be closely observed.

(20) Fire extinguishers are a necessity on a go-kart track. They should be placed in prominent positions around the track. One fire extinguisher should be located inside the shop, one in the pit, and another on the part of the track farthest from the pit area. They should be 5 lb. dry chemical type extinguishers; however, a 2½ lb. size should be sufficient for track-side. Fire extinguishers must be recharged after each use and should be checked on a weekly basis to be sure that they are sufficiently charged. A fire blanket should be kept on hand.

(21) Fuel for go-karts should be kept in 5 gallon cans clearly marked "gasoline", 20 gallons should be sufficient to operate a track for one day. After refueling the karts, do not leave gasoline cans in the pit area for safety reasons. Also, the gasoline should be stored in a separate metal building away from the maintenance building.

(22) The timing device should be in a stationary location. A red light (flashing) wired into the timer should be positioned on the track well ahead of the pit area to attract the attention of customers. This will reduce damage to karts because they will have enough time to slow down. It will also ensure a safe pit area. If a remote control, such as the Kart Kommander, is being used, the karts will be controlled by the track attendant. (See Section 4-D for Kart Kommander.)

(23) Another item which is necessary is a box or bucket in which to put the used tickets. Before a customer starts his ride, he will give the track attendant a ticket or token. A box with a small hole in the top can be used by the attendant to dispose of the used tickets. It should be strategically placed near the customers' entrance.

B. Parking Area

Your parking lot will make a favorable impression on your customers, if you:

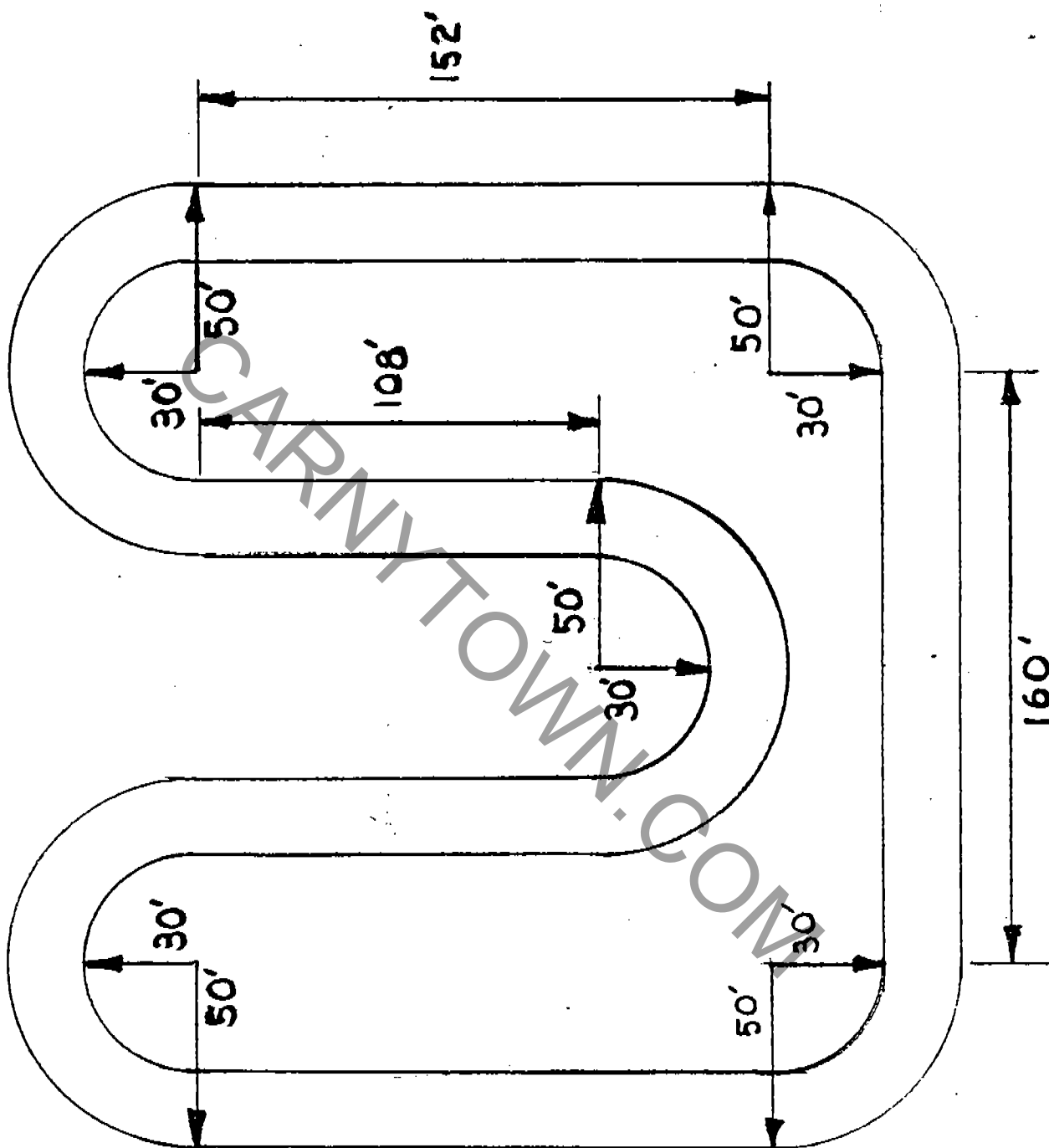
1. Keep it clean, well lighted, and the traffic controlled.
2. Post signs, where necessary, to show proper entrances and exits.
3. Outline parking spaces with painted lines.
4. Do not allow loitering, horn blowing, rowdiness or any cars other than those belonging to the customers or employees.

There should be between 50 and 75 parking spaces for your go-kart track. If there are other activities at your complex, such as mini golf or batting cages, then more space should be added.

C. Track Design

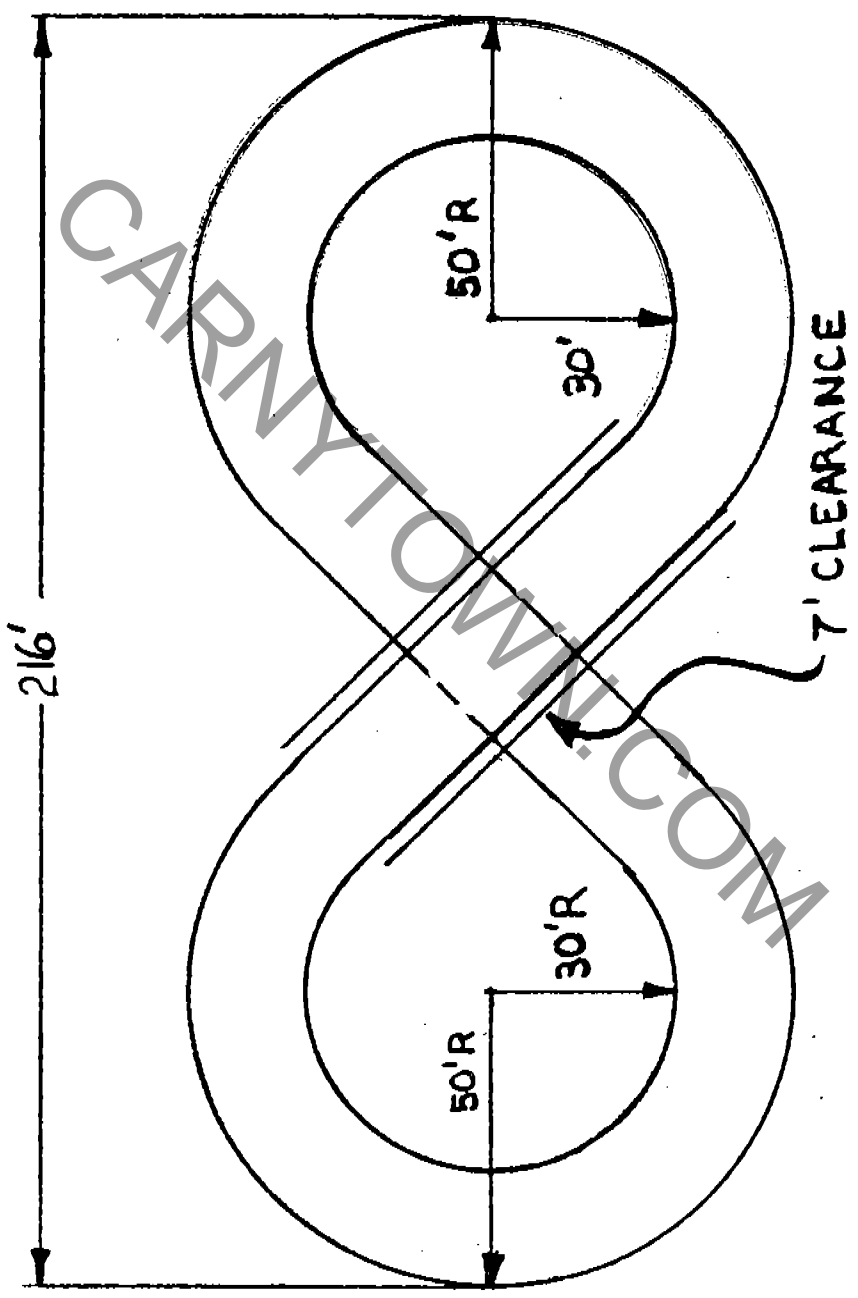
The following are suggested designs for track layouts. They represent many different lengths and sizes. PACER MANUFACTURING COMPANY will custom design a track to fit your particular dimensions. By far, the most popular track design is drawing #1. It gives four right hand turns and one left hand turn, assuming that the karts are driven clock-wise. Most of the tracks are driven clock-wise, since the drive wheel is the left rear wheel and this direction of motion has a tendency to keep that wheel on the ground with the force of the right hand turn.

NOTES: LENGTH
TRACK 1160'



PACER MFG.	CJ.PARKER	TRACK LAYOUT	3/2" = 4'	4-16-81
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NOTES: LENGTH OF
TRACK 552'



GARDEN AREA

TIN WORKSHOP

BUILDINGS NOT TO SCALE

TRACK CENTERLINE DISTANCE 1,012'

HOUSE

2 ROOM BRICK HS.

DRIVEWAY

PIT AREA

PARKING AREA

MONTEREY

227'

110'

355'

182'

20'

45'

25'

20'

25'

45'

25'

45'

45'

25'

292

DRAINAGE DITCH

HIGHWAY

PACER MFG.

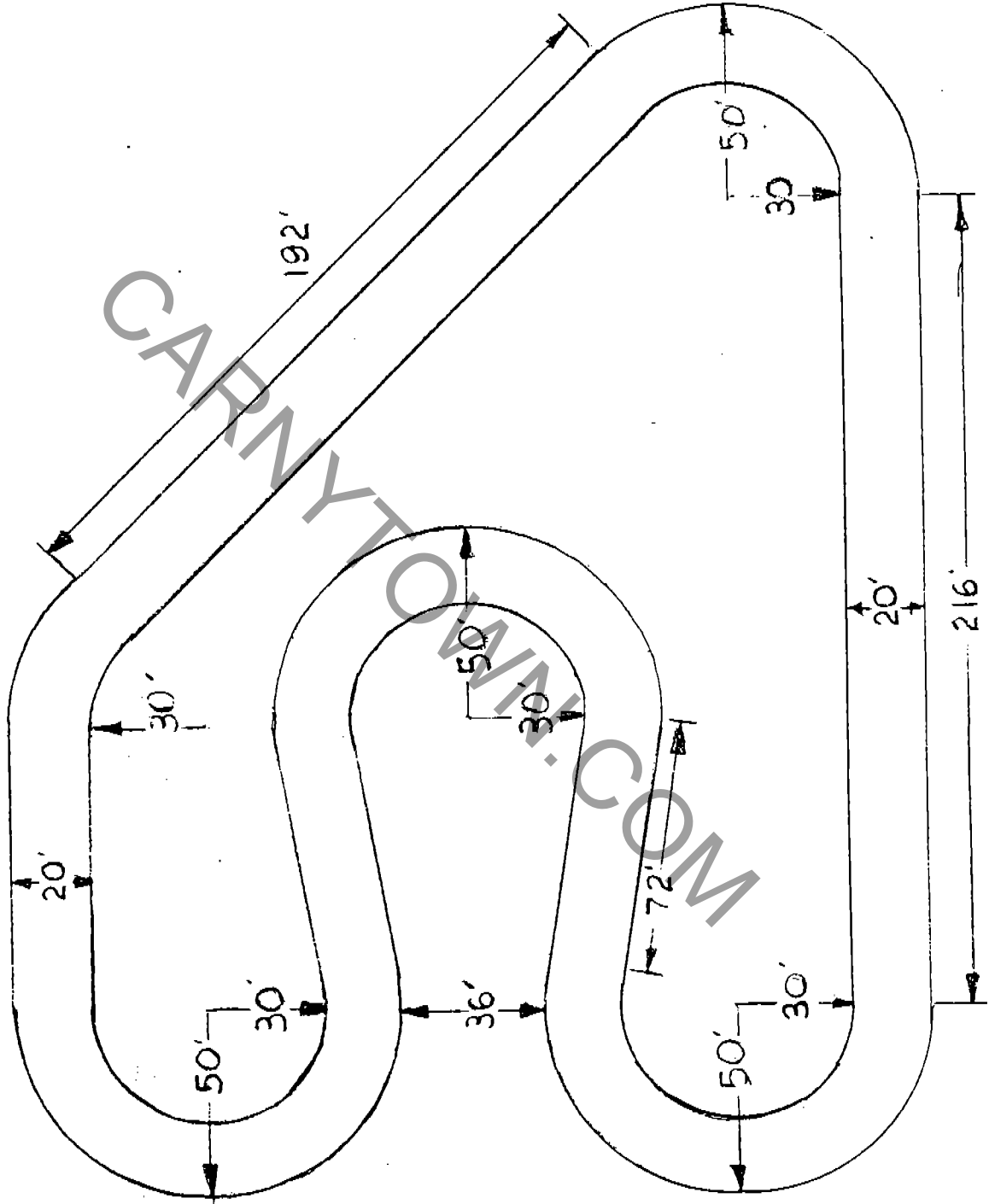
CJ. PARKER

.0938" = 4'

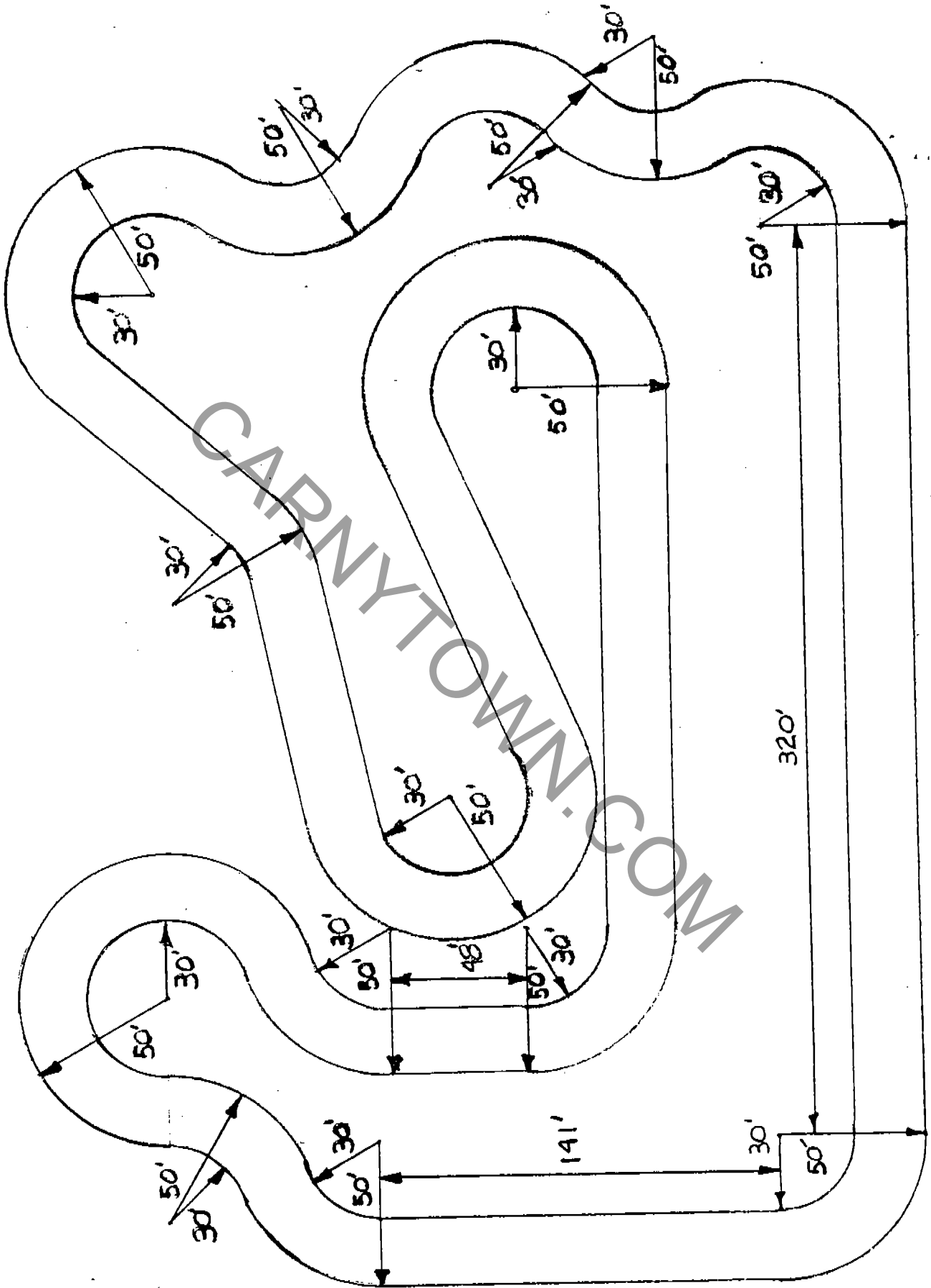
4-6-81

CARNY TOWN.COM

NOTES: LENGTH
TRACK: 1132'



NOTES: LENGTH F
TRACK 1924'



5-4-81

1/16" = 3'

TRACK LAYOUT

CJ PARKER

PACER MFG

RAIL INSTALLATION

SAFETY RAIL

Pacer recommends the use of a steel safety guard rail bolted to 15" steel belted radial tires on the track side and 1 1/2" x 1 1/2" angle iron stakes on the outside. The rail on the tires absorb and cushion the shock when a kart strikes it. The rail is far superior in absorbing shock and protecting both the kart and driver than the old method of stacked tires or mounded up dirt.

Instructions for installing the guard rail are listed below:

1. The guard rail is bolted to tires and surrounds the inside and outside perimeter of the track. The tires are connected to angle irons placed in the ground.
Use a 3/4" flat wood drill bit and the steel tire gauge shown in Figure "1" to ensure that the tire holes are drilled at the proper height.

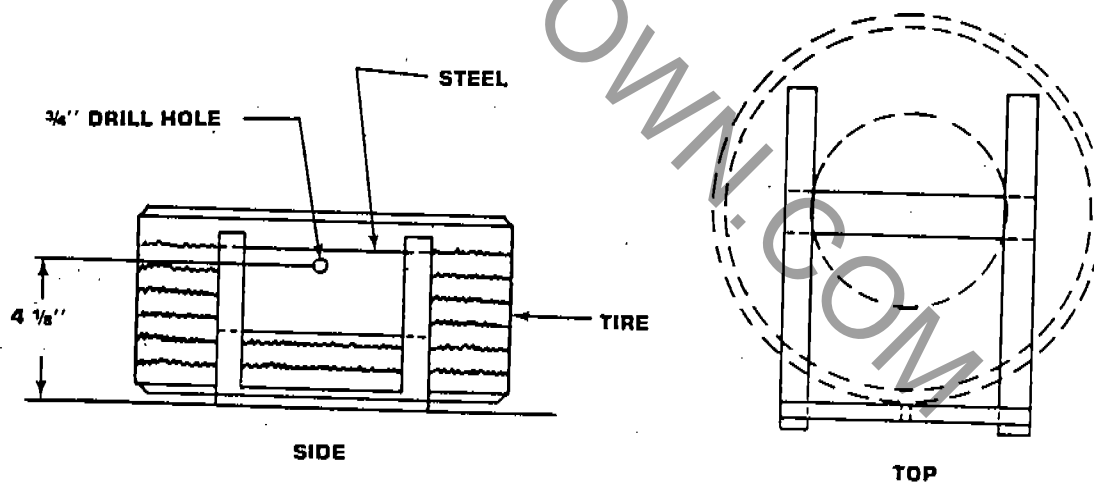


FIGURE 1: GUIDE TO DRILL TIRES:

The gauge is available from PACER MANUFACTURING COMPANY. It is preferable to use 15" steel-belted radial tires because they support the rail better than non-steel belted tires. Drill two holes on opposite sides of the tire. The steel tire gauge will ensure that the holes are at the same height. Tires in the pit island will need four (4) holes (two for the rail, two for the angle iron). (See figure "2"). A small triangular hole, approximately 1 1/2" wide and in line with the drilled holes, should be cut in the side of the tire facing down to allow for rainwater drainage. This hole can be cut with a heavy-duty razor knife or a hole saw. The white wall side or lettered side should be facing up so that all drilled holes will be uniform.

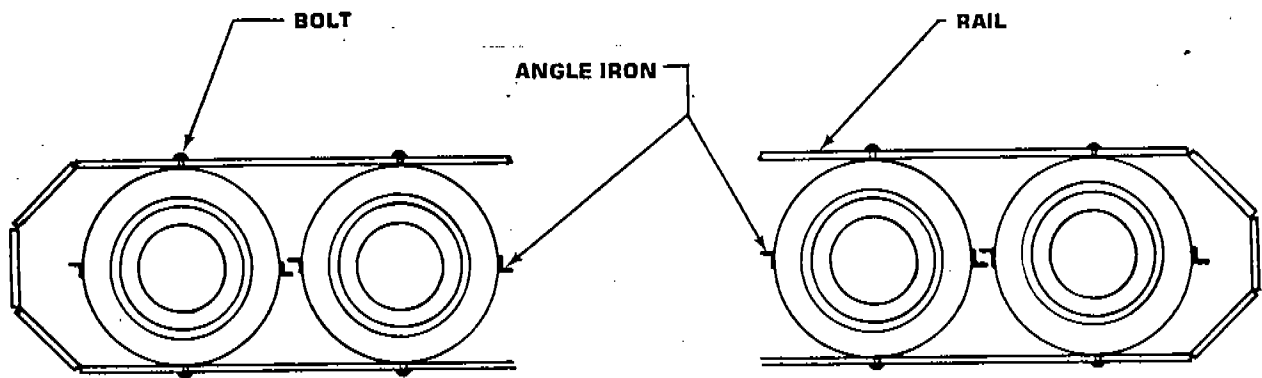


FIGURE 2: TOP VIEW OF PIT ISLAND

Make sure that the drainage hole will be at the low side of the track after the tire is connected to the rail.
(See figure 3)

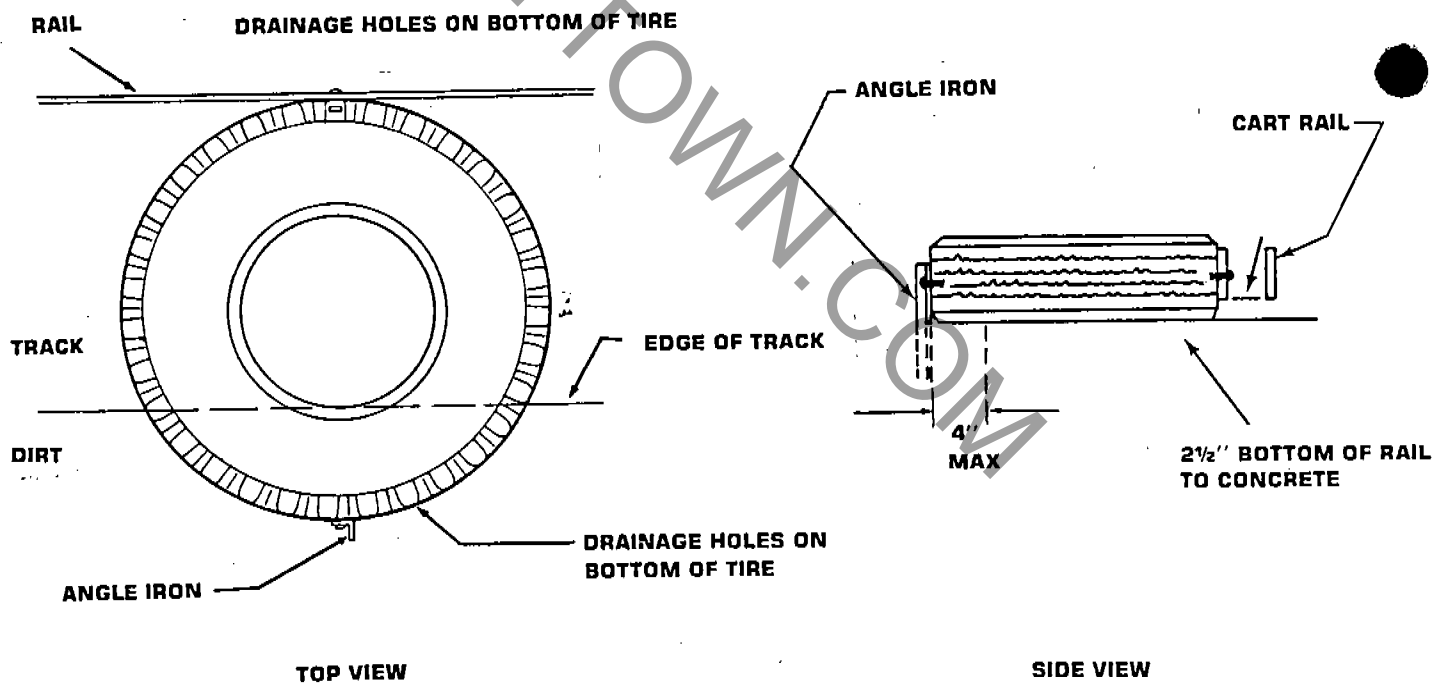


FIGURE 3: TIRE AND RAIL DETAIL

2. The rails come with a red or gray oxide shop-coat. For painting these rails use black enamel. We recommend painting the tires with an inexpensive paint, preferably Latex (Bright colors look best). Stack three or four tires and paint with a roller or spray gun. There is no need to paint the part of the tire that goes on the ground.
3. To mount the tires on the rail place 6 carriage bolts into the punched holes in a 20 ft. section of rail and lay flat on the concrete track with threaded side of bolt facing up. (Fig. 3 and 4.) Connect tires by forcing bolt through the drilled hole.

6 tires per 20' of rail.
 Use 15" steel belted radials only (approximately 27" in diameter.)

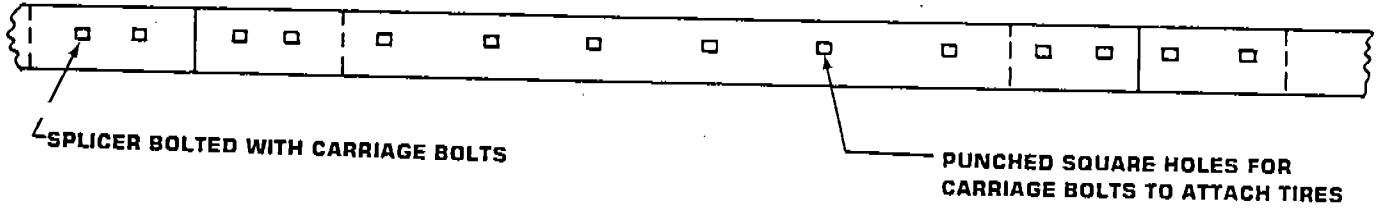


FIGURE 4: RAIL DETAIL

- Next, put on the fender washer and nut for each tire and use a power ratchet to tighten. After the 6 tires are bolted to the rail, lay the section down in the appropriate position. Choose a starting point that will allow the pit area to be completed last. (If you prefer to weld the steel railing, see Figure 5). Bolting, however, is recommended because of ease of installation and repair.

FIGURE 5: WELDED RAIL

Rails can be welded together instead of bolting. The tire bolts can be welded behind rails instead of using punched holes.

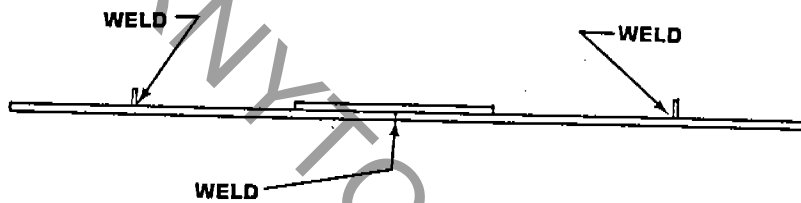
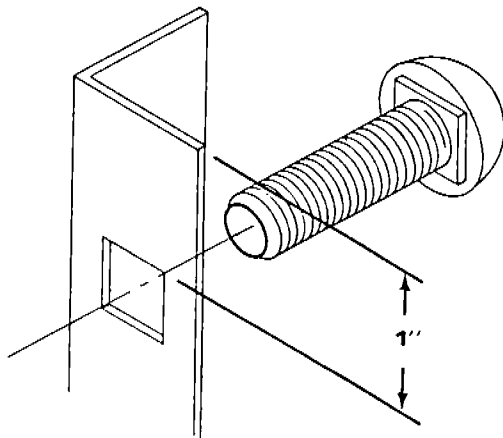
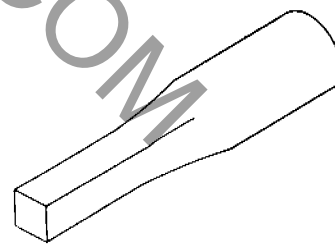


FIGURE 5: WELDED RAIL

- After the rail is set in place and the correct amount of tire overhang is determined (figure 3), drive the angle iron for the rear tire support into place being careful to use a hole peg to keep the hole in the angle iron from closing (figure 6). Put a bolt through the angle iron and into the tire. Finish the connection using a fender washer and nut on the end of each bolt and tighten.



SQUARE HOLE FOR CARRIAGE BOLT
 (Won't turn when tightened)



PEG TO PROTECT THE SQUARE HOLE
WHEN HAMMERING THE ANGLE IRON
IN THE GROUND

FIGURE 6: ANGLE IRON TOP

- When a 20' section is in place, use a splice bar and connect the other sections (already bolted w/tires) to it. When going around curves in the track, the sections will have to bend appropriately. Three of these sections spliced together will provide enough leverage to bend around curves.

- If the last section, does not match up with the starting point, then it will be necessary to cut the steel rail with a blow torch. Then, either bolt or weld the two sections together.
- After the rest of the track is completed, the pit area can be set up. There are several points in the pit where the steel will have to be bent (Fig. 7). Heating the steel with a torch and then striking the area with a sledge hammer will accomplish this.

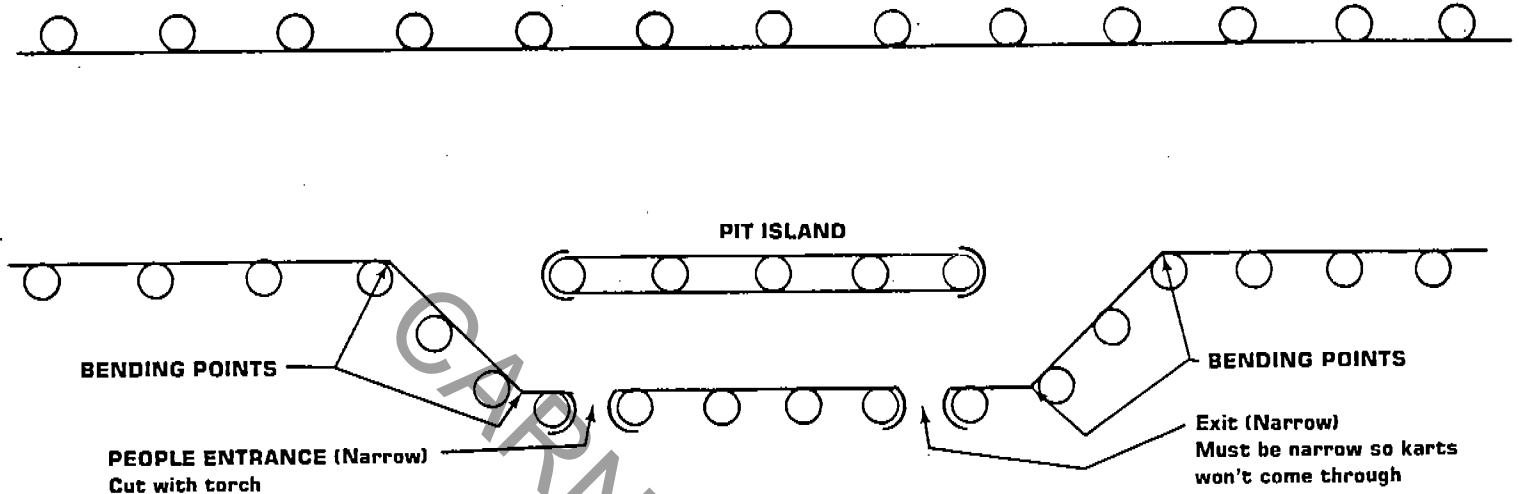


FIGURE 7: PIT AREA

- The pit island should be set up next (Fig. 7). The end pieces are bolted to the sections as shown. A torch must be used to cut an end piece from a 20 ft. section and to make a bolt hole for the end tire. (Angle irons for pit island should be placed before concrete is poured.) Prebent end pieces are available from Pacer.
- When track is complete, exits and entrances must be made. The rail should be cut so the karts may leave the track to go into the workshop. Also, an exit and entrance should be made for customers into the pit.
- When karts are operating, there should be a removable section of rail blocking the entrance to the workshop. Use an appropriate length of rail with bolted tires to block entrance. Do not fasten it into the ground; make sure the rail can be removed as needed.

The chart below lists the approximate amount of material needed for a track with a centerline distance of 500 feet.

Number of tires:	340
Number of 20' sections:	58
Number of splice plates:	58
Angle irons:	355
Fender washers:	680
Nuts:	800
Bolts:	800

NOTE: If you bolt the rails together, you will need the following additional items:

Carriage bolts:	232
Lock washers:	232
Nuts:	232

TRACK SAFETY STEEL RAIL

Dimensions of Material:

Angle iron-	1 1/2" x 1 1/2" x 1/4" x 30'
Rail-	1/2" x 4" flat bar hot rolled (5" may be used)
Bolt-	for: rail to tire, angle iron to tire;
	1 1/2" x 2 1/2" carriage bolt (1/2 x 3" may be used)
Bolt-	for: splice bar to rail; 1/2" x 2 1/2" carriage bolt

(Use appropriate lock washers, fender washers and nuts)

TRACK SAFETY STEEL RAIL

Dimensions of Material:

- Angle iron - $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{4}$ " x 30"
- Rail - $\frac{1}{2}$ " x 4" flat bar hot rolled (5" may be used)
- Bolt - for: rail to tire, angle iron to tire;
 $\frac{1}{2}$ " x $2\frac{1}{2}$ " carriage bolt ($\frac{1}{2}$ " x 3" may be used)
- Bolt - for: splice bar to rail; $\frac{1}{2}$ " x $2\frac{1}{2}$ " carriage bolt

(Use appropriate lock washers, fender washers and nuts)

E. Signs:

Every go-kart track must have information and warning signs. The following are examples of recommended signs at a go-kart track:

Approximately 30" x 30"

1 Sign

FOR THE PROTECTION OF ALL DRIVERS

- ALL RIDERS MUST BE 4'10" AND TEN YEARS OLD
- NO SMOKING ON TRACK
- PERSONS DRINKING NOT ADMITTED
- BUMPING OR RECKLESS DRIVING WILL FORFEIT
REMAINDER OF LAPS OR TIME
- LONG HAIR MUST NOT BE WORN LOOSE
(RUBBER BANDS AVAILABLE AT COUNTER)
- SHIRT TAILS MUST BE TUCKED INSIDE CLOTHING WHILE DRIVING
- KEEP BOTH HANDS ON THE STEERING WHEEL
- ONLY PARENTS OR ADULTS 21 OR OLDER MAY RIDE WITH SMALL CHILDREN
- ALL RIDERS MUST WEAR SHOES
- IF THE KART STOPS, REMAIN SEATED AND RAISE YOUR HAND
- VIOLATORS WILL BE ASKED TO LEAVE

FUN IS OUR BUSINESS!!

Approximately 18" x 24". Letters should be a minimum of two inches:

1 Sign

- KEEP BOTH HANDS ON STEERING WHEEL
- NO BUMPING KARTS
- NO PASSING ON CURVES
- DO NOT BLOCK OR CROWD OTHER KARTS
- DO NOT STOP OR SWERVE DURING RIDE
- DO NOT TAMPER WITH ENGINES
- VIOLATORS WILL FORFEIT RIDE

Approximately 18" x 24". Letters should be a minimum of two inches:

1 Sign

- REMAIN SEATED AFTER PARKING UNTIL DIRECTED BY THE STARTER
TO OFF-LOAD.
- OFF-LOAD TOWARD EXIT.

Approximately 12" x 18":

1 Sign

- GO KART TICKETS GOOD ONLY ON DAY OF PURCHASE

E. Signs, cont'd:

Approximately 12" x 18":
2 Signs

IF KART STOPS, PLEASE REMAIN SEATED AND RAISE YOUR HAND.
AN ATTENDANT WILL START YOUR KART

Approximately 4" x 8"
1 Sign

EXIT

Approximately 4" x 8"
1 Sign

ENTRANCE

Approximately 12" x 18"
1 Sign

DO NOT BLOCK ENTRANCE

Approximately 18" x 24"

A D M I S S I O N

GO-KART RIDE ... \$2.50

These signs should be painted on 3/8" exterior plywood. The plywood should be painted on both sides with two coats of white paint. Then have a local sign-painter to do the lettering in black and red in letters easily read. Letters should be a minimum of two inches high if they are to be read from the track. The admission sign and the large 30" x 30" sign should be placed at the ticket booth where customers will read them while standing in line; therefore, the letters need not be so large.

F. Maintenance Equipment

To maintain the appearance of the track, certain equipment must be kept on hand. This equipment is listed below:

1. An air blower is a near necessity. It is a labor saving device as well as a time saver. Debris can be removed from the track and sidewalk areas in a matter of minutes. A blower may cost several hundred dollars but it is worth the price.
2. A lawnmower should be used to maintain all grassy areas. A grass catcher attachment will help keep the area clean.
3. A wheelbarrow should be kept for hauling and transporting material.
4. Small tools, including a rake, shovel, broom, dust pan, edger, shears, and pruner should be kept in the mechanic's shed. They are necessary for lawn maintenance.
5. Three or four garbage cans should be placed around the pit area. Plastic liners will keep the cans clean. The cans should be emptied and washed as needed.

II. ADMINISTRATION

A. Personnel

An organization is only as good as the personnel comprising it. For that particular reason, you should be discriminating in choosing your employees.

Depending upon the area in which you are located, you may have to make do with people you would not normally hire. Always remember that it is wiser to pay a good employee overtime than a bad employee straight time. Bad employees not only misrepresent you to the public and seriously damage your image and reputation, they also cost you money and are a disruptive and negative influence on your other employees.

Managers particularly must be carefully screened. Ask yourself the following questions: "Does this man conduct himself as I would? Is he capable of making the right management decision without me? Can he be firm and at the same time be understanding toward his subordinates? Is he a leader? Does he command respect? When faced with an emergency, is he capable of remaining calm and collected while performing his duties? Can I trust him with my money?" If the answer to all of these questions is "yes", then, by all means, put him in charge.

Ticket sellers are the only employees other than the manager who will have access to your money. They, too, should be carefully chosen. Our own policy in hiring ticket sellers is that they be local residents with some family permanently living in the area. Prior to hiring ticket sellers, we check their family background and personal references. You may want to establish a dress code for your employees. They should be at least 18 years old and mature enough to cope diplomatically and calmly with the problems created by troublesome customers.

Mechanics are vital to your operation. Get good ones. The inexperienced ones not only cause you loss of income, they can also damage your equipment beyond repair and cause accidents. Good mechanics usually own a complete set of tools. Often, teenagers who have worked with cars or motorcycles can quickly learn and become excellent mechanics.

The starter runs the track and is in charge of operations. Speed is essential in a starter. Choose athletic people if you can (preferably between the ages of 21 to 45). Remember that they deal directly with your patrons and should be able to handle crowds and troublemakers while remaining polite and calm. Flagmen and daytime starters can be teenagers; however, they must be mature enough to handle unusual situations.

As a general rule in hiring your employees, state from the beginning what is expected of them. Cover every possible area of their work, including their responsibility toward the public, toward you and toward each other. We have found in the past that all this could be done in the go-kart operating procedure sheets handed out to each employee upon hiring. Outline the rules in these sheets and enforce them.

A good way to discourage pilfering of tickets is to make free passes available to all employees upon request. Do not give them the tickets you sell to your patrons. Have some complimentary passes printed with no monetary value and use them not only for your employees, but also in your public relations. (See Advertising and Promotion Section).

II. ADMINISTRATION

A. Personnel, cont'd

Try to build "Esprit de Corps" among your employees, and make them feel that they can depend on you, as you will depend on them. Make them feel that they are a part of a team, not just one unimportant individual.

Be sure to have each employee fill out a complete application. You must have the following minimum information:

- Full name (as it appears on Social Security Card).
- Social Security Number (if the person does not have one, provide an application blank for one. They are available at Post Offices and at Social Security Offices. Be sure to get the number from that person as soon as he or she receives the card).
- Current address and permanent mailing address if different (to send W-2 form at the end of the season).
- Telephone number (home and work if this is a second job).
- A filled out W-4 or W-4E form for tax status.
- Whom to notify in case of an emergency (with telephone no.)
- What days and hours the person is available for work.
- Any other pertinent information regarding that person which you feel is of value to you.

Uniform - everyone working on the track should be dressed alike to aid customers in identifying workers. The uniform should consist of a T-shirt supplied by the track to workers and blue jeans. The workers should be neat and tuck in their shirts. The employees will also need grease rags and these are furnished by a linen service.

B. Functions:

1. Track Operation

Both the cashier and starter should have a supply of rubber bands to give to customers with long hair if needed. This keeps the long hair from being caught in the engine, chain or belt drive (Note: this can be avoided by using P-1000, P-2000 or LeMans 500 bodies).

The starter should notify the cashier of any trouble and inform the cashier if he bars a customer from the track so that the cashier will not sell him tickets.

The customer waits in line after buying his ticket until the starter is ready to begin another ride. The starter collects the tickets and seats riders in the karts. The starter should ask riders to sit in the front karts so that they can get onto the track easily.

After tickets are collected, they should be torn in half and placed in a can where they can be destroyed by pouring oil or dye on the tickets. While the riders are standing in line, the starter gives operating instructions:

"Green is gas; Red is the brake; No bumping and no reckless driving or you will forfeit your ride!" The starter should give individual instruction to small children and older people who do not understand clearly.

B. Functions:

1. Track Operation, cont'd

The starter starts the karts and as the last kart enters the track, he starts the timer. If a rider is unable to complete his ride because of mechanical failure, the customer should be given a free ride on the next turn.

After the karts are on the track, the starter and flagmen watch the drivers and call down any bumping or reckless driving, removing them from the track if necessary. The starter and flagmen should watch the track at all times and if a kart stops or goes off the track the flagmen should run to the customer's assistance at once.

When the ride is over, the starter signals the flagmen to slow down the karts. The drivers should be given advance warning of at least 50-75 ft. before they enter the pit so they will have time to slow down. Do not try to stop the drivers by standing in the pit. The drivers should be motioned to stop before they get to the pit area. A last lap warning should not be given because the drivers tend to drive recklessly on the last lap since they won't lose any time when they are removed from the track for violating the rules.

Keep the drivers seated in the karts until the last kart is stopped. The starter should tell the drivers: "Thank you, please come again. Please leave through the exit gate."

If a customer has bought more than one ticket, he must leave through the exit gate and stand in line to wait for another turn. This prevents the people from waiting too long.

The starter should use as many karts as possible on each ride to reduce the amount of waiting time.

2. Problem Situations:

Occasionally, problems arise in trying to enforce the rules of the track. Many times the rules are broken accidentally and no action should be taken. However, when rules are broken on purpose, the rider who violates the rules should be removed from the track. Deciding who should be removed and who can remain on the track often depends on the judgment of the starter and flagmen. Remember that if the rules are strictly enforced, people will be less tempted to challenge the rules to see if they will lose their ride.

Problem situations should always be dealt with politely and firmly. The manager is responsible for the actions of his employees in such situations and he should be sure they are properly trained to handle the customers politely.

When any bumping, swerving or reckless driving occurs, the starter and flagmen should whistle immediately and motion for the driver to stop. If it happens again, the driver should be motioned into the pits. Sometimes a driver should be pulled off the track when he first breaks a rule, if it is obvious that he broke the rule on purpose. The starter and flagmen must use their judgment in deciding whether a driver broke the rules accidentally or on purpose, and if it was serious enough to pull a rider off the track.

B. Functions

2. Problem Situations, cont'd

Sometimes when a customer is pulled into the pit for violating a rule, the starter should explain the rules clearly and tell the driver that if it happens again that he will forfeit the rest of his ride. By talking to the driver in the pits, he is penalized because of lost time. He has also been told the rules; so, if he breaks them again, he automatically loses his ride.

The starter should not allow anyone who is obviously intoxicated to ride the go-karts. People who are drinking are not allowed on the property and should be removed. Anyone loitering who is drunk or disorderly should be asked to leave the property.

Employees are not to physically react to any person on the track. They should be polite to the people no matter how the people talk to the employees. Anyone who is using abusive language should be removed from the property at once.

If a driver begins to argue, tell him to leave or you will call the police. Then call the police if necessary. Soon the customers will respect you and realize that you mean business.

If a driver is removed from the track, the starter may tell that driver not to ride again that night. The starter should also tell the cashier of his decision. Sometimes if a driver is very abusive and refuses to obey the rules, the starter may bar this person from the track permanently.

3. Opening

Each day, before the track is opened, the track should be cleaned and all maintenance work should be performed. The parking lot should be cleaned and the vending machine filled. At least 8 to 10 karts should be on the track at all times and ready for customers.

On busy days the karts will need to be refueled during the day shift and the night shift. When refueling, all the karts should be stopped and the engines cut off. All customers should be kept out of the area while refueling. All of the track employees should help to finish refueling as quickly as possible.

On days when weekly maintenance is performed, it is often helpful to have extra mechanics on the day shift to help finish the increased workload. Odd jobs and track maintenance can be done whenever the track is not busy. Mechanics can perform track maintenance if the karts are in running condition. However, one person must be on the track at all times when customers are riding.

If it begins to rain, the cashier should immediately stop selling tickets. If the track gets wet, it becomes too slick for karts to operate and the track should be closed down. If a customer does not complete his ride or is not allowed to ride, he should be given a raincheck. The number of rainchecks should be recorded on the daily report when they are made.

After it stops raining, the track should not be reopened until it is dry. The employees should sweep off standing water and use the air blower to dry off the track as quickly as possible. If the track is still wet late in the evening and it does not look like it will dry, then the track should close early.

B. Functions

4. Closing

All karts, equipment and tools should be put inside and the work bench cleaned up.

Any kart that is not in running order should be marked "repairs needed" so that the day mechanics may work on the kart.

Fill out the daily report, including rainchecks, "paid outs" and the payroll. On paydays, attach time cards and payroll deduction slips for all employees on the payroll.

Next, sub-total the register, remove the tape and enter the closing amount on the daily report. Record ticket number difference after the last ticket is sold for the day.

Before leaving, make sure all power and lights are turned off except the ones for the burglar alarm system. Be sure all doors and gates are locked.

C. Job Outline

1. Manager

The manager is responsible for overseeing the work of the employees and making sure that proper care is being taken of the track and the karts. The manager's responsibilities involve:

- a. Keeping the money and cash register in order, completing all records and forms and giving them to the owner. The manager makes a daily bank deposit.
- b. Providing an adequate supply of parts and supplies and maintaining the grounds, track and karts.
- c. Handling accidents and troublesome situations. The manager's prime responsibility is customer relations.
- d. Paying personnel and making local purchases needed to operate the track. The manager also contacts the owner when he needs outside help to repair the track and he is responsible for seeing that all work is done properly.

2. Starter

One starter is always necessary and he serves as track manager. The starter collects tickets, seats the riders, and gives operating instructions before seating riders. The instructions should be given loudly and specifically. For example: "Green pedal is the gas, red pedal is the brake. There will be no bumping, no swerving, and no reckless driving or you will forfeit your ride."

The starter should go over operating instructions with younger children individually, being sure that they understand how to stop the kart. The starter starts the go-karts in single file to space them around the track and as the last kart enters the track, he starts the timer.

C. Job Outline, cont'd

2. Starter

At the end of the ride, the starter signals for the karts to return to the pit area. He reminds riders to remain seated until all karts are stopped and then allows the riders to exit. The starter has the responsibility to keep order on the track and to remove problem drivers. The starter makes sure that no bare foot drivers are allowed, makes sure that no long hair is loose, and makes sure trouble makers are not allowed to ride.

3. Flagman

The flagman assists the starter in collecting tickets and getting the karts started. Then the flagman takes a position along the track and watches for violators. He signals the starter to remove violators from the track when it is necessary. If a kart breaks down or stops on the track, the flagman runs to assist the driver, making sure that the driver remains seated at all times. He either gets the kart moving again or escorts the driver to the pit area. At the end of the ride, the flagman gives the drivers warning so that they can prepare to stop. He should be about 50-75 feet before the entrance to the pit area to tell the drivers to slow down as he signals with his hands to slow down.

When a second flagman is used, he functions as a safety policeman on the track to keep order and to help the stalled drivers. He should remain at the furthest curve of the track at all times.

4. Mechanic

It is the mechanic's responsibility to keep the karts repaired and to give proper maintenance. Daily and weekly maintenance are his most important duties. The mechanic should keep the maximum number of karts on the track, with the exception of light business during the daytime. The mechanic helps the starter when he needs help, such as refueling or when trouble develops on the track. He should help with general track supervision when there is no maintenance work to be done.

5. Cashier

The primary responsibility of the cashier is to sell tickets and to operate the cash register. The cashier should refuse to sell tickets to anyone not wearing shoes, to anyone who is obviously intoxicated or under the influence of drugs and to people who have been barred from the track, or to those who are known to be trouble makers. The cashier should stop selling tickets if it begins to rain and should wait until the starter says the track is dry enough to ride before he or she starts selling tickets again. If the cashier is not busy, he should clean up the ticket area and should serve as flagman to aid the starter if the track is not busy.

III. TRACK OPERATION

A. Seasonal Operation

The following is applicable to tracks that are not open all year:

III. TRACK OPERATION, cont'd

A. Seasonal Operation

1. Spring Preparation requirements to be accomplished before opening:

- Ample supply of tickets
- Licenses in order
- The purchase of spare parts and other supplies
- Long lead-time items stocked
- Labor force lined up
- Advertising program finalized
- Lawn and shrubbery contracts completed
- Concession contracts completed
- Insurance coverage in force
- Certificate of Insurance for concessions on file
- Accident reports, payroll, and applicable administrative forms in stock
- Buildings and fences repaired and painted
- Interior and exterior lighting operational
- Light poles painted
- All signs repaired and painted
- All equipment repaired and painted
- All equipment set up and operationally checked
- Track properly marked
- Parking lot properly marked
- All plumbing in order

2. Fall Preparation

After the season is over, the following should be done:

- All equipment should be disassembled, overhauled, painted and stored in dry, waterproof buildings.
- Inventory should be taken and requirements reviewed for the next season.
- All outdoor switch boxes, motors, etc. should be covered with plastic or other waterproof material.
- If your telephone can be put in suspended service, notify the telephone company that you are closing for the winter.
- Secure buildings, leave lights on for protection against theft and vandalism. Be sure that the police are notified that buildings are locked for the winter.

B. Track Maintenance

The appearance of the track will account for the success of the track; therefore, the grounds and track should be cleaned every day by:

- Picking up litter on parking lot, track and grounds
- Straightening tires around the track and placing them so that they touch the outside of painted lines. This does not apply to a track where there is a safety guard rail.
- Air blowing the track to remove dirt and gravel.
- Cleaning the building, wiping up all spilled oil and placing parts and tools in their proper place.

III. TRACK OPERATION

B. Track Maintenance, cont'd

Grounds and Track should be kept clean everyday by:

- Stocking the Vending Machines
- Cleaning the restroom and stocking them with paper towels.

Each week the grass should be cut and trimmed around fences, walkways, and buildings. Whenever needed, other repairs should be made to keep track in top shape. Light bulbs should be replaced, vendors kept working, and the track should be kept well lighted and repaired. Keep in mind that good maintenance breeds success.

C. Rules and Procedures All Employees Should Know and Use:

Rules are necessary to insure the smooth, safe operation of the track. The safety of the customer is of the utmost importance; so, the go-kart track operator must enforce the rules without exception. It is important that the customers enjoy their rides so that they will return for more rides. The best way to insure this is to make everyone follow the rules. Also, employees should follow the rules and set a good example for the customers to follow.

The following should be reviewed by all track employees:

1. Track Rules:

- (a) No smoking inside kart or within pit area
- (b) No bumping
- (c) No weaving or reckless driving
- (d) No cutting off or blocking
- (e) Tie up or tuck excessively long hair inside shirt or cap
- (f) Button up jackets or other loose garments
- (g) Individual must be at least 4'10" tall and 10 years of age
- (h) Shoes must be worn
- (i) No food or drinks allowed inside or on kart
- (j) Both hands must be on steering wheel at all times
- (k) Feet must be inside kart on the floorboard
- (l) If the kart stops, remain seated in the kart and raise your hand
- (m) Any child under 10 years old or who is under the required height must ride with parent or adult accompanying him or her.

2. Loading Procedures:

- (a) Track attendant will conduct a visual check of customer's appearance for alcohol or drugs - if considered excessive, the person will not be allowed to drive, but will be given a refund.
- (b) Have customers put out cigarette/cigar, etc. before entering the pit area.
- (c) Check ticket or token to ensure that it is genuine and is properly authorized. Immediately place all tickets in the ticket box.
- (d) Accept only paid admission tokens or tickets at the gate. All free passes must be exchanged at ticket office for the proper tickets.

III. TRACK OPERATION

C. Rules & Procedures All Employees Should Know & Use, cont'd:

2. Loading Procedures, cont'd:

- (e) Ensure that the number of karts needed for customers are operational, prior to taking a ticket. Always start kart engines from rear to front. This will prevent a gate crasher from driving off.
- (f) Load all customers from the first kart in line towards the rear.
- (g) Keep all unauthorized persons behind the fence. Customers, visitors, etc. are never permitted to remain in the pit area.
- (h) Customers or visitors are not permitted inside the garage area, unless escorted by the manager/owner.
- (i) Keep entrance ways to track locked at all times when not in use.
- (j) Be prepared to explain operation of pedals to small children or to others.
- (k) Watch to ensure that all karts are moving once you have activated the timer.
- (l) Give instructions to customers standing in line before they board karts while current ride is on the track.

3. Tickets or Tokens:

- (a) One ticket will allow a customer to operate a go-kart about the track under the conditions set forth in the posted rules for a specified length of time.
- (b) Take only 1 ticket from each customer per ride. Allowing customers to ride repeatedly while others wait in line is bad business overall.
- (c) After completion of the customer's ride, ensure that all remain seated until the last kart has entered the pit area. Have all customers depart immediately through the exit gate. NO STANDING ABOUT IS ALLOWED IN THE PIT AREA.
- (d) Under no circumstances does anybody operate a go-kart without first presenting an authorized ticket.
- (e) The track timer will be set prior to opening and periodically checked throughout the day to ensure it is set on the specified time.

4. Breakdown Procedures

- (a) In the event a kart becomes inoperative, i.e., flat tire, broken chain, etc. while a customer is riding, then place the customer at the front of the ticket line and allow him another complete ride. Track policy is that we give our customers a complete good and safe ride.
- (b) If track is busy when a breakdown occurs, push kart to the garage area.
- (c) Repair kart only when time allows. Evaluate broken karts in sequence and fix the quickest ones first to return them to the line.
- (d) Keeping a visual and constant watch over kart drivers is the utmost priority and it is always down above all else. Repair karts or other maintenance items only when no drivers are on the track.

III. TRACK OPERATION

C. Rules & Procedures All Employees Should Know & Use, cont'd:

4. Breakdown Procedures, cont'd:

- (e) Keep a sharp eye and ear out for unusual noise coming from the karts as they pass the pit area. This will reduce costly repairs if a kart is repaired as soon as a problem is detected. Don't wait for it to break down.

5. Operating Track

- (a) Prior to opening the track for the day or night, walk around the track and inspect for unsafe items. If an unsafe feature exists and cannot be readily corrected, the track will remain closed until such hazard is corrected.
- (b) While karts are sitting in line and during refueling stops, periodically conduct a safety check, i.e., steering columns, tires and loose chains.
- (c) When checking tires for wear, ensure that maximum rubber is used, but never at the risk of safety. Minimize blow-outs by checking tire wear.
- (d) Never allow 2 minors on the same kart - even if they both have tickets.
- (e) If kart drivers are on the track, always keep a constant watch. If you fail to do so, the public will be aware of such and will drive accordingly.
- (f) If anyone takes a hand off of the steering wheel, inform that person immediately to use both hands.
- (g) Be especially watchful to ensure that all track railing and tires are in their proper places.
- (h) Pick up all litter on track, pit loading area and the customer line area - this includes cigarette butts. If the track is kept clean, the public will help you.
- (i) Watch small children exceptionally close. If a child is turning or looking about, then stop him or her and caution the child to always to look straight ahead.
- (j) Watch for driver's lighting a cigarette - instruct him or her to extinguish it immediately.
- (k) Be sure that the driver's feet are kept on the floorboard of the kart.
- (l) Have ladies with excessively long hair (middle of back) tuck it into their clothing. While they are riding, be sure that their hair remains tucked into their clothing.
- (m) All loose shirts, jackets, etc. must be fastened before riding.
- (n) Be especially watchful of deliberate bumping. Accidental bumping will occur, but the track attendant must be able to differentiate between the two. When a bumping occurs on purpose, warn the driver on the next lap around by pointing at him. If a recurrence takes place, remove the driver from the track. Bumping, if tolerated, will create a constant safety hazard to all drivers and rapidly destroy a kart.

III. TRACK OPERATION

C. Rules and Procedures All Employees Should Know & Use, cont'd

5. Operating Track, cont'd

- (n) No form of driving that constitutes a threat to a person's safety or damage to a kart will be tolerated at any time. There are too many obedient and rule-abiding drivers to allow others to disregard safety.
- (o) When time permits, check seat of karts to ensure that valuables (i.e., wallet, keys, etc.) are not accidentally lost. When valuables are found and the person has left the track area, immediately give them to the manager/owner for safe-keeping.
- (p) Whenever a driver is removed from the track because of his or her failure to obey the rules, do not argue with the driver under any conditions. Inform the driver to take all complaints to the manager/owner and return to your job of attending the track.
- (q) Keep entrance gate to the pit area closed at all times, except when loading.
- (r) Never gas up the karts with the engines running or when people are in the loading area or sitting in a kart.

6. Accident

- (a) In the event an accident does occur and it appears that a person has sustained an injury, then take the following action:
 - 1. Ask person the nature of the injury
 - 2. You are not a qualified medical person, so do not venture an opinion or "play doctor" under any circumstances.
 - 3. Immediately remove or assist the person from the track and keep him or her out of view. If it appears that the individual should not be moved due to the nature of the injury, then do not do so.
 - 4. Do not discuss insurance claims, law suits or personal payment with the injured. Direct all such questions to the manager/owner.
 - 5. Inform the manager/owner as soon as possible.
 - 6. The attendant supervising the track at the time of the accident should immediately recollect how it occurred and at the earliest opportunity put it in writing. Make a special notation of any rules that may have been violated, whether there were witnesses, etc. Get addresses and telephone numbers of witnesses if at all possible.
 - 7. Do not discuss the accident with strangers or customers.
 - 8. Do not immediately re-use the kart. Have the kart mechanically checked and allow customers to clear the area before testing the kart.

IV. GO-KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

The most important equipment at a go-kart track are the go-karts. The karts are easily kept operational if the daily maintenance procedures are followed. Most maintenance is simple and quick and saves many hours of labor in future repairs.

The following maintenance procedures are broken down into three categories: Daily Maintenance, Weekly Maintenance and General Maintenance.

DAILY MAINTENANCE ITEMS

1. The daily maintenance schedule is the most important factor in a good maintenance program because it enables the mechanic to correct minor problems that could become more severe if left unattended. The daily maintenance schedule consists of the following:

- a. Check the gas tank for:
 1. Quantity (fill up)
 2. Fuel leaks at carburetor lines, and tank
(Note: Any leakage requires immediate attention).
 3. Fuel line switch in "on" position
 4. Proper operation
- b. Check engine oil quantity and make sure it is at the appropriate level.
(Note: Wipe away any spillage or excess oil).
- c. Clean the karts
 1. Clean the bodies, steering wheel, seats, and floor mat.
 2. Keep greasy hands off of these areas once they are clean.
- d. Check the tires for:
 1. Proper inflation pressure (28 - 30 PSI)
 2. Loose hub nuts
 3. Tire condition
- e. Check brakes by test driving for smooth, effective stop.
- f. Check bumpers for:
 1. Loose or damaged D rubbers
 2. Loose or damaged bumper rail (i.e., cracks or bends)
- g. General inspection for loose parts

WEEKLY MAINTENANCE ITEMS

2. A good, strong weekly maintenance program is just as important as a daily maintenance schedule. It helps the mechanics focus on specific areas of the kart. There are two ways to handle a weekly maintenance schedule. One way is to schedule certain days to do specific maintenance items (i.e., change the oil in all the karts every Thursday). The other method is to do all weekly maintenance on a few cars everyday (i.e., do the weekly maintenance on the red karts on Monday). Either of these two methods are good, depending on your specific situation, you may choose one over the other because it may be easier for you. The weekly maintenance items are listed as follows:

a. Tire Care

Tires should be checked daily for wear and the correct pressure. Improper tire pressure will cause unusual wear that can shorten the life of a tire and cause the kart to ride oddly. The correct tire pressure is 28 to 30 PSI. An over inflated tire will show abnormal wear on the sides of a tire (Note: this can also be caused by bad camber which is when a tire leans in or out improperly).

IV. GO-KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

WEEKLY MAINTENANCE ITEMS

2.

a. Tire Care, cont'd:

If a tire is properly inflated and aligned, it should wear evenly across the tread. A tire should be replaced if it has worn abnormally or if the wear dimples have disappeared. If the ply cords are allowed to show before the tire is removed, you run a high risk of blowing the tire and ruining a tube and rim. Here is a precautionary list for tire care:

1. Daily maintain a tire pressure between 28 - 30 PSI
2. Replace tires when the wear dimple disappears
3. Never disassemble a tire while it is inflated. This can cause the last couple of threads on a bolt to strip and shoot the bolt away, causing a safety hazard.
4. Make sure rim bolts and lug bolts remain tight and that the bevel on the lug nuts face in and the valve stem faces out. If the lug nuts are not seated correctly, the tire will wobble out the rim and can fall off, creating a safety hazard for the customers. So, remember to use a beveled lug nut with the bevel toward the wheel hub and place the wheel with the valve stem pointing out.
5. Finally, partially inflate the tube when putting the hub on a tire to avoid pinching the tube.

b. Changing the oil:

To help prolong the life of your engines, a weekly oil change is essential. The reason for this is due to the continuous running and heavy duty that a go-kart is put through. The following is a good system for changing the oil in a kart:

1. Remove the body from the kart and drain the oil from the motor into a pan under the kart while the motor is still warm. Use the drain hole on the low side of the motor (i.e., most likely the drain hole next to the seat).
2. Use a measuring cup to refill the oil, using the amount of oil specified for your model Honda engine (shown in the Honda Manual in the rear of this manual).
This method allows for a speedy and accurate oil change.

c. Cleaning the Kart Frames:

Often people choose to clean the kart frames just after changing the oil. This way you can do both jobs while you have the kart body off. There are several methods for cleaning the frames. These include steam cleaning, soap and water, and kerosene based engine cleaner. Often, when a kart has not collected too much dirt, the rubber dust can be brushed off with a dry rag. When the karts are especially dirty, it is usually best to use a kerosene based engine cleaner and a stiff bristle brush followed by hosing down the frame with a high pressure nozzle. (Note: after cleaning, wait until the frame dries and re-lubricate the chain and lubrication points.)

IV. GO KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

WEEKLY MAINTENANCE ITEMS

2.

d. Checking the Brakes:

The brakes should be periodically checked for wear, looseness, positioning, and effectiveness. The following are some things to check and their remedies:

1. If the brake pads appear badly worn or appear to have developed surface irregularities, they should be replaced.
2. If the pads are loose they will rattle when the kart is moving. This can be remedied by tightening the nut and bolt that attach the pads to the brake system.
3. The pads should be positioned with equal tire clearance about 1/8" to 1/4" clear of the tires. Any closer to the tires and the tires will contact the pads and wear out the tires and the pads will tend to grab the tires with the slightest pressure. Uneven tire clearance usually means over or under tire inflation or that one tire is worn more than the other. To adjust the tire clearance, adjust the clevis assemblies on the brake linkage. Two special precautions should be noted:
 - a. Avoid running two different diameter tires on the same axle (ex: a new and a old tire on the drive axle).
 - b. Adjust the pads when replacing the tires.
4. Check the clevis assemblies for wear and replace as needed.
5. Oil the brake pad rods as needed.
6. Check the brake pedal to make sure the bolt is not loose.

NOTE: We do not recommend operating on a wet track. This is dangerous when you use slick racing tires and could jeopardize the safety of the driver and result in loss of control.

e. Checking the Air Filter:

The air filter should be checked and cleaned according to the instructions in the Honda Manual.

f. Checking Lubrication

Lubricate all grease fittings and joints as needed.

g. Checking the Motor Connections:

Check the motor mount bolts and all hardware connecting other parts to the engine and drive components. Replace as needed.

IV. GO-KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

WEEKLY MAINTENANCE ITEMS

2. Cont'd

h. Checking the Drive Train:

Chain and belt drives should be checked for proper deflection and alignment. The sprockets need to be checked to see that they are in line and tight. They also need to be checked for warping and wear. On a chain drive, the chain should be tightened until there is a 1" give in the chain when pushed in and out. A belt should be tighter and not give at all. Check for twisting and breaks in chains and belts.

(Note: Lubricate the chain with a motorcycle type chain lube and it will be less likely to collect dirt or cause premature chain wear.)

i. Checking the Starter Assembly:

The following is a short check list for the starter assembly:

- a. Is it tightly secure?
- b. Is the screen installed and in good condition?
- c. Is the rope in good condition?
- d. Is it operating properly?

j. Checking the Steering Assembly:

Periodically the bolts that hold the steering column and steering wheel together need to be tightened. Also, the steering needs to be oiled weekly in the holes on the top and bottom of the steering shaft to allow for free steering movement. Also, the tie rods and tie rod ends need to be checked for loosening, damage, or wear.

k. Checking the Gas Filter:

The gas filter needs to be checked periodically for dirt and blockage and cleaned when it is necessary.

The combination of daily and weekly maintenance will cut down on unnecessary down time and lost income. It will also help prevent accidents and increase the life of your car and engine.

GENERAL MAINTENANCE

3. General Maintenance is work that is done on a kart less often than once a week. Some general maintenance work is preventive while other work is done whenever necessary. This includes extra items not normally done on a scheduled basis, such as:

- a. Checking the spark plugs
- b. Checking the points, if so equipped.
- c. Testing chains, sprockets, belts and pulleys.
- d. Engine overhaul/replacement

Refer to the engine owner's manual for other maintenance tips.

IV. GO KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

GENERAL MAINTENANCE

3. Cont'd:

Pacer Manufacturing now has two go-kart models to choose from: The P-177 Pacer Racer and the P-182. Both are available with fiberglass bodies or plastic seat and metal seat back.

The Pacer Racer Go-Kart is designed to be as maintenance free as possible. Of course, some maintenance is still required to keep the kart in top condition. The following are some general maintenance procedures you can expect to encounter during the course of a year. Most of the preventive steps mentioned below should be done about once a month.

GENERAL MAINTENANCE ITEMS

a. Front End Alignment

Front spindles, tie rods and the front end should be inspected thoroughly. This is a critical area regarding safety in the kart. Faulty steering is dangerous to the kart driver and others on the track. The tie rods should be straight and true, and the tie rod end should be tight and in good shape. Replace worn items immediately. Steering should be smooth and precise. Replace cracked, bent, or sloppy spindles. Alignment is also important. This keeps the steering working properly and keeps the tire wear even. To align the front end, set the wheels straight ahead and adjust the tie rod ends so that the tires point slightly inward. This is called "toe in".

b. Wheel Bearings Inspection

Check wheel bearings on a dirty track every two weeks; otherwise, every six weeks is sufficient. Every few weeks you should grasp each wheel and shake it, this will tell you if the bearing needs adjusting. Also, rotate each wheel. It should turn smoothly without binding or popping. If binding or popping occurs, remove and repair as needed. A rule of thumb for bearing adjustment is to rotate the wheel. It should turn one complete revolution when spun. Do not over-torque the bearing, as this will cause overheating and premature bearing failure.

c. Carburetor Adjustment

Check carburetor adjustment: refer to your engine manual.

d. Linkage Inspection

Linkages should be checked for cracks, bends, rubbing, chafing, binding, and the condition of the clevis assemblies. Periodically lubricate the clevis pin and bushings.

e. Floor Pan Inspection

Check the floor pan for cracks. Especially check for weld cracks and repair immediately. If any rust is found, sand it out and then use a primer coat of zinc or iron oxide. Use a fast drying paint.

IV. GO-KART MAINTENANCE AND EQUIPMENT

A. Kart Maintenance

GENERAL MAINTENANCE ITEMS

3. Cont'd

f. Seat Back Inspection

Check the firewall/buffer/rollbar. These should be checked for cracks, bends, and twists.

g. Bumper Inspection

Check the bumpers for cracks and bends. Check the condition of the D rubbers and the attached nuts and bolts.

h. Frame Inspection

Check the frame for cracks, bends, twisting, or sagging. Check, also, the nerf boxes, the engine plate, the condition of all support brackets, the gussets and all welds.

i. Axle Inspection

Check the axle for bending and cracking. Check also the axle bearings.

B. Maintenance Records and Forms:

There are a number of ways to schedule maintenance and keep accurate records. Charts 4B1-4B3 can be utilized for the daily/weekly maintenance schedules and serve as a source of information for records. We recommend the following approach for general maintenance records. Locate each kart and engine serial number and record it on a card for each kart and/or engine combination. The cards can be as elaborate as an automobile work order or as simple as a 5 x 7 index card. Record all replacement parts put on the kart. Have a card for each month and keep the old cards on file. This system enables the mechanic to refer back to any given month and check for recurring problems. Also, the maintenance cost per kart and per season are easily calculated from these cards.

1. Go-Kart Maintenance Schedule

The following is a maintenance schedule example:

- | | |
|-----------|---|
| Monday | - Check the tires and clean the kart frames |
| Tuesday | - Clean the air filters and finish cleaning the karts |
| Wednesday | - Do any needed ground maintenance and any needed general maintenance (ex: mow the grass) |
| Thursday | - Change the oil and lubricate all areas that need it |
| Friday | - Finish changing the oil and check the drive train and motor mounts. |
| Saturday | - Check the brakes and the steering and starter assemblies. |
| Sunday | - Short, busy day. So, any needed weekly follow up |

IV. GO-KART MAINTENANCE AND EQUIPMENT

B. Maintenance Record and Forms, cont'd

1. Go-Kart Maintenance Schedule Example

Note 1: The daily duties are done everyday along with the preceding daily schedules. These jobs are to be done when the workers are not busy during the day and by the mechanic at night.

Note 2: Pick a certain day each month to do monthly maintenance items, (Ex: on the first Tuesday of each month, check the wheel bearings and carburetor adjustments).

CHART: 4B1

(SAMPLE: TITLE - MONTHLY MAINTENANCE CARD)

Kart No: Engine No:		Month/Year	Oil Change (Dates)
Qty.	Date	Kart	Initial

2. Go-Kart Check List:

The following Go-Kart Check List (4B2) can be used to keep track of daily and weekly maintenance. Each day perform the tasks indicated and have the person performing the task to put his initial in the appropriate square. Also, perform the weekly check and use the same procedure as is indicated on the daily check list.

CHART 4B2
GO KART CHECK LIST

DAILY	WEEK ENDING							WEEK ENDING						
	SAT	SUN	MON	TUES	WED	THUR	FRI	SAT	SUN	MON	TUES	WED	THUR	FRI
WASH KART BODY														
CHECK TIRES														
CHECK OIL														
OIL CHAIN														
CHECK BUMPER														
CHECK STEERING														
CHECK BRAKES														
TIGHTEN LOOSE BOLTS														
GAS														
WEEKLY														
CHANGE OIL														
CLEAN KART FRAME														
GREASE														
CHECK BRAKE AND STEERING														
CHECK STARTER AND MOTOR MOUNTS														
TIGHTEN BOLTS														
CHECK TIRES														
CHECK AIR AND GAS FILTERS														
CHECK DRIVE TRAIN AND RPM														

Go-Kart Daily Checklist

Kart Number	Steering	Brakes	Tires	Seal Belt	Safety Bumper	Tighten Loose Bolts	Check Oil	Fill Gas	All Items OK	Kart Number	Steering	Brakes	Tires	Seal Belt	Safety Bumper	Tighten Loose Bolts	Check Oil	Fill Gas	All Items OK	
1										15										
2										16										
3										17										
4										18										
5										19										
6										20										
7										21										
8										22										
9										23										
10										24										
11										25										
12										26										
13										27										
14										28										

Checked By: _____ Day: _____ Date: _____

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SLICK TRACK																				
1																				
2										6										
3										7										
4										8										
5										9										
										10										

Checked By: _____ Day: _____ Date: _____

IV. GO-KART MAINTENANCE AND EQUIPMENT

B. Maintenance Record and Forms, Cont'd

3. Go-Kart Repair List (4B3)

This report informs the owner of the problems you are experiencing in the operation of the go-kart track.

Each time a repair is made the mechanic should initial the Go-Kart Repair List. At the end of two weeks the manager should total the number of repairs under the Total Column.

At the bottom of the list is a section pertaining to KART CONDITION. Use the following rating scale to grade the karts and put the number of karts receiving each grade in the proper space.

<u>Grade</u>	<u>Category Description</u>
A:	Number of karts in top condition
B:	Number of karts running but needing repairs
C:	Number of karts not running but need minor repairs.
D:	Number of karts not running needing major repairs or parts.

GO-KART REPAIR LIST

KART NUMBER _____

REPAIRS

Week Ending _____

Week Ending _____

FRONT TIRES		
REAR TIRES		
RIM		
DRIVE ASSEMBLY		
CLUTCH		
ACCELERATOR ASSEMBLY		
GOVERNOR		
ENGINE		
RECOIL STARTER		
BUMPER SYSTEM		
FIX FRAME		
BRAKES		
SEAT, HEADREST		
STEERING		
MISCELLANEOUS		

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KART CONDITION GRADE	DATE : SIGNED :	DATE : SIGNED :	DATE : SIGNED :	DATE : SIGNED :
A: Looks Good/Runs Good				
B: Looks Okay/Runs Good				
C: Looks bad/Runs Okay				
D: Looks bad/Runs Bad				

IV. GO-KART MAINTENANCE AND EQUIPMENT

C. Tools and Equipment

The following list contains the recommended tools and equipment for a go-kart track:

HAND TOOLS

Tool Box	Screw driver, Phillips 6"
Socket Set	Screw driver, Phillips 4"
Ratchet 3/8" drive	Screw driver, Craftsman, 6" Ph.
Extension 3/8" dr. 6"	Screw Driver, common 6"
Extension drive 3"	Screw driver, common 4"
Handle 6", hinged 1/4" dr.	Screw driver, common 2"
Socket, spark plug 3/8" dr. 13/16"	Screw driver, common 1"
Socket 3/8" dr. 1/2" deep	Wrench, crescent 10" adj.
Adapter 3/8" to 1/4" dr.	Wrench, Stilson
Socket 3/8" to 3/4" dr.	Pliers, vise grip, large
Socket 3/8" drive 11/16"	Pliers, vise grip, small
Socket 3/8" drive 5/8"	Hammer, ball pen
Socket 3/8" drive 9/16"	Pliers, water pumps
Socket 3/8" drive 1/2"	Hack saw, 10"
Socket 3/8" drive 7/16"	Blades, 10" (2 ea)
Socket 3/8" drive 3/8"	File 6", mill bastard
Socket 1/4" drive 1/2"	File 10" mill bastard
Socket 1/4" drive 7/16"	File 6" slim taper
Socket 1/4" drive 3/8"	File 6" round
Socket 1/4" drive 11/32"	Bits 1/16
Socket 1/4" drive 5/16"	Bits 5/64
Socket 1/4" drive 9/32"	Bits 3/32
Socket 1/4" drive 1/4"	Bits 7/64
Allen Wrench, 050	Bits 1/8
Allen Wrench, 1/16"	Bits 1/4
Allen Wrench, 5/64"	Bits 7/32
Allen Wrench, 3/32"	Bits 3/16
Allen Wrench, 7/64"	Bits 5/32
Allen Wrench, 1/8"	Bits 9/64
Allen Wrench, 9/64"	Drill Electric 3/8" dr.
Allen Wrench, 5/32"	Lock, padlock, steel
Allen Wrench, 3/16"	Wrench Open end 3/8 X 7/16"
Allen Wrench, 7/32"	Wrench, Comb. 7/16"
Allen Wrench, 1/4"	Wrench Open end 1/2" X 9/16"
Wrench Comb. 1/2"	Wrench open end 19/32" X 11/16"
Wrench Open end 5/8" X 3/4"	Wrench open end 3/4" X 7/8"
Wrench Open end 15/16" X 1"	Pliers, comb. slip joint
Pliers diagonal cutting	Pliers, needle nose
Wrench, crescent 6" adj.	Chisel
Punch	Wrench Comb. 11/16"
Wrench comb. 9/16"	Wrench Comb. 3/4"
Wrench comb. 5/8"	

C. Tools and Equipment, Con't.

METRIC SOCKET SET

Socket 3/8" drive 4mm	Wrench, comb. 4mm
Socket 3/8" drive 6mm	Wrench, comb. 5mm
Socket 3/8" drive 8mm	Wrench, comb. 6mm
Socket 3/8" drive 9mm	Wrench, comb. 7mm
Socket 3/8" drive 10 mm	Wrench, comb. 8mm
Socket 3/8" drive 11mm	Wrench, comb. 9mm
Socket 3/8" drive 12mm	Wrench, comb. 10mm
Socket 3/8" drive 13mm	Wrench, comb. 11mm
Socket 3/8" drive 14mm	Wrench, comb. 12mm
Socket 3/8" drive 15mm	Wrench, comb. 13mm
Socket 3/8" drive 16mm	Wrench, comb. 14mm
Socket 3/8" drive 17mm	Wrench, comb. 15mm
Socket 3/8" drive 18mm	Wrench, comb. 16mm
Socket 3/8" drive 19mm	Wrench, comb. 17mm
	Wrench, comb. 18mm
	Wrench, comb. 19mm

SHOP TOOLS

Air Compressor -- NOTE -- All air compressors should be equipped with a high pressure relief valve in accordance with state and federal regulations.

Air blow gun or nozzle	Fire extinguisher (dry type)
Safety glasses and/or goggles	Work bench
Bench grinder	Storage bins for nuts, bolts, parts etc.
Drip pans and buckets	Floor dry
Shop towels or rags	
Air ratchet 3/8" drive	

SHOP EQUIPMENT -- The following is a recommended list of equipment required to perform 100% repair and maintenance on go-karts.

Ring Compressor	Industrial brooms for shop & track
Strap wrench	Work bench (2)
Gear puller	Supply shelves and bins
Chain breaker	Desk and chair
Small 185 amp arc welder	Filing cabinet
Acetylene Torch	Air compressor
Medium vise	Air hose (25' or 50')
Bench grinder	Hose (25') for cleaning solvent
Tap and die set	15 gallon drum & fittings (for cleaning solvent)
Easy out set	Cleaning gun
Electric hand drill	Paint gun
High speed bit set	Air gun
Standard hand tool set	Fittings and Quick disconnects for guns
Extra 1/2" - 9/16" open end wrenches	Tire pressure and gauge combination
Extension light	Oil pump (for 55 gallon drum)
Extension cords	

V. PACER RACER ASSEMBLY GUIDE

The purpose of this guide is to aid in the final assembly and maintenance of the Pacer Racer Go-Kart. It is to be used in conjunction with the Pacer Racer Parts Catalog.

The Pacer Racer Go-Kart is shipped assembled, with the exception of the engine and drive components, throttle rod, steering wheel and shaft, and the seat/body assembly. All parts necessary for the final assembly are shipped in cartons along with the go-kart shipment.

This guide is divided into assembly sections and contains assembly instructions and maintenance tips for the go-kart. All page number references in this guide correspond to the parts catalog.

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SECTION 1 - GO KART FRAME ASSEMBLY

SECTION 2 - SEAT/SEAT BACK ASSEMBLY

SECTION 3 - STEERING ASSEMBLY

SECTION 4 - BUMPER ASSEMBLY

SECTION 5 - REAR ASSEMBLY & REAR HUB ASSEMBLY

SECTION 6 - GAS & THROTTLE ASSEMBLY

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SECTION 1 - GO-KART FRAME ASSEMBLY (Ref. Diag. pg 3)

- (a) No assembly required.

* Maintenance Tip * Inspect the frame weekly, Look for cracked welds and chipped paint. It is recommended that the kart be kept painted to avoid corrosion.

SECTION 2 - SEAT/SEAT BACK ASSEMBLY (Ref. Diag. pg 9)

- (a) The frame is pre-drilled for the seat. It requires 4 ea. 5/16" x 3/4" bolts, supplied with the kart, for attachment. Tighten securely.
- (b) Locate the 2 ea. 1" square tube seat back frame holders just behind the nerf boxes on each side of the kart. Apply a small amount of grease to the metal seat back frame tubes and install the seat back frame into the holders. Be sure that the frame tubes are all the way down. Rock the seat back to seat in the tubes - do not seat it with a hammer.
- (c) Locate the seat back frame support and attach it to the seat back and rear frame assembly with 2 ea. 1/4" x 1" bolts. Use 2 ea. 1/4" nylon lock nuts to secure the frame support.

SECTION 3 - STEERING ASSEMBLY (Ref. Diag. pg 5)

- (a) The front spindles and tie rod are already installed but some assembly is required. Remove the tape from the drag link and the tie rod and install the jam nut and tie rod and onto the drag link.
- (b) Locate the steering wheel, steering column, steering yoke, steering wheel pad and yoke pad. (Safety Pads, Ref. Diag. pg 8)
- (c) Install the steering yoke pad onto the yoke and then install onto the frame, using 2 ea. 1/4" x 1" bolts and nylon lock nuts.
- (d) Install the steering column through the yoke. There is a 5/16" bolt at the end of the shaft that must go through the tube, use a 5/16" nylon lock nut and flat washer to secure the column.
- (e) Lift the steering shaft up into the U-bolt on the steering yoke. Using the steering shaft retainer and 2 ea. 5/16" nylon lock nuts, secure the column to the yoke.
- (f) Place the steering wheel on the steering column and secure with 3 ea. 1/4" x 3/4" bolts and nylon lock washers. Install the steering wheel pad on the steering wheel.

SECTION 3 - STEERING ASSEMBLY (Ref. Diag. pg 5)

- (g) With yoke, column and wheel secured to frame, position the shaft so that the lower control flange is in an upright, vertical position. Tighten and secure the tie rod end mentioned in (a) of this section. This step is important because it will eliminate the possibility of the steering going over center and locking. Make sure the wheels are straight before tightening the tie rod ends. Adjust as necessary and secure with a 3/8" jam nut.

* Maintenance Tip * Tie rod ends should be checked daily and tightened as necessary. Front wheels should also have a slight degree of toe-in. This is adjusted from the long tie rod.

SECTION 4 - BUMPER ASSEMBLY (Ref. Diag. pg 8)

- (a) The bumper and "D" bumpers are already installed.

* Maintenance Tip * There are two types of "D" bumpers used on the Pacer Racer Go-Karts and installation procedure for each differs slightly. The black rubber "D" bumper is installed with two steel inserts and utilizes a 3/8" x 2" bolt, flat washer, lockwasher and nut to secure it to the frame. The bumper should be installed just tight enough to start compressing the rubber. Do not overtighten.

The polyurethane "D" bumper utilizes the same components with the exception of a 3/8" nylon lock nut replacing the lockwasher and nut. This "D" bumper should not be compressed. The bumper should be snug but never tight. Both "D" bumpers attach to the bumper assembly in the same manner.

Replace cracked or broken "D" bumpers immediately to avoid damage to the kart and bumper assembly.

SECTION 5 - REAR ASSEMBLY & REAR HUB ASSEMBLY (Ref. Diag. pgs 6 & 7)

- (a) Place the engine on the motor base plate. Situate the engine over the mounting holes closest to the center of the kart. Secure the engine to the base plate with 4 ea. 3/8" x 2" bolts, lockwashers, and nuts. Tighten the bolts evenly because over-tightening will put undue stress on the engine mounting base.
- (b) Once the engine is mounted to the base plate, lift the plate and remove the top nut on each of the motor adjustment pin bolts. Turn the remaining nuts down the bolt about 2". Position the adjustment bolts through the holes in the base plate and re-install the nuts previously removed. Leave them loose.

SECTION 5 - REAR ASSEMBLY & REAR HUB ASSEMBLY (Ref. Diag. pgs 6 & 7)

- (c) Using the keyway supplied with the engine, install the pulley/sprocket on the engine shaft. Do not tighten set screws at this time.
- (d) Remove tire and hub assembly and install the sprocket/pulley to the hub. Use 4 ea. 5/16" x 1" bolts with nylon lock nuts to install the drive.
- (e) Re-install the hub, bearings and tire on the kart. The bearings should not be over-tightened. If the tire and hub assembly makes one complete revolution when spun, the bearings are torqued correctly.
- (f) Install chain/belt onto the drives. Be sure the sprockets/pulleys are lined up so as to avoid premature chain/belt failure. When aligned, tighten set screws on upper drive.
- (g) Turn the adjustment nuts on the motor adjustment pin counter-clockwise to raise the engine and adjust the chain/belt. Lock the top nuts to the plate.
- (h) Locate the chain guard, chain guard bracket and 2 ea. 8mm bolts. Attach the bracket to the engine reduction housing, using the metric bolts. Install the chain guard to the bracket with 2 ea. 3/8" x 3/4" bolts.

* Maintenance Tip *. After the kart has been in operation for approximately an hour, re-adjust the chain/belt. New chains/belts stretch slightly. It is important to maintain chains/belts at the proper tensions to insure long life.

SECTION 6 - GAS & THROTTLE ASSEMBLY (Ref. Diag. pg 6)

- (a) Locate the throttle linkage rod, clevis, clevis pins, jam nuts, and 1/8" cotter pins and install.

* Maintenance Tip* After throttle linkage is installed, check for freedom of movement. Throttle should return to idle freely.

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