MFG: Zamperla
RIDE: Cruisin Bike shop

OPERATOR'S MANUAL

for

1993

CRUSIN UMBRELLA

MODEL CRUSIN BIKE SHOP
SER # 1F95HW3T6PM063023
Weight Cap. ~ 2100 lbs.
- 24 riders

RPM 7.5

WISDOM INDUSTRIES

WISDOM
INDUSTRIES, Ltd.
P.O. BOX 5000
STERLING, CO 80751

MERINO, COLORADO
(970) 522-7515
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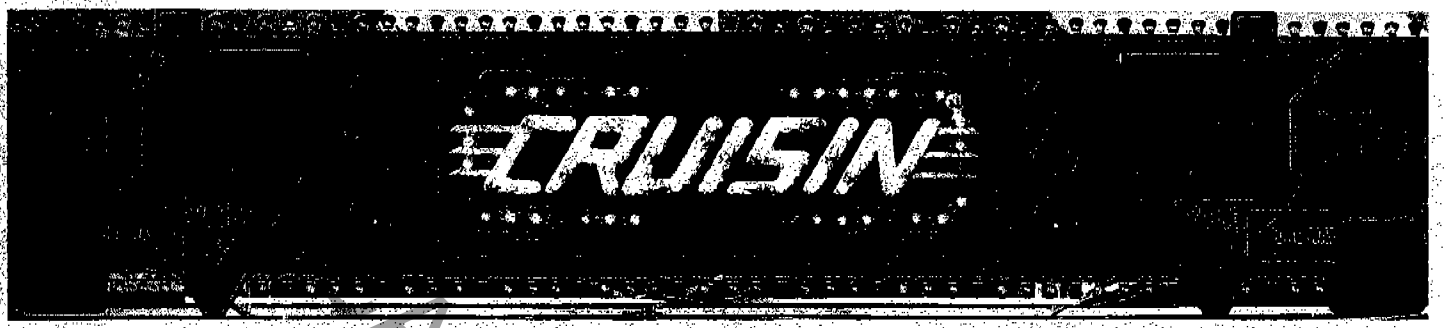
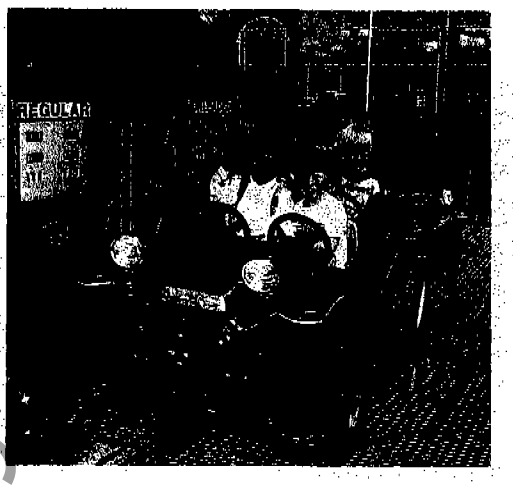
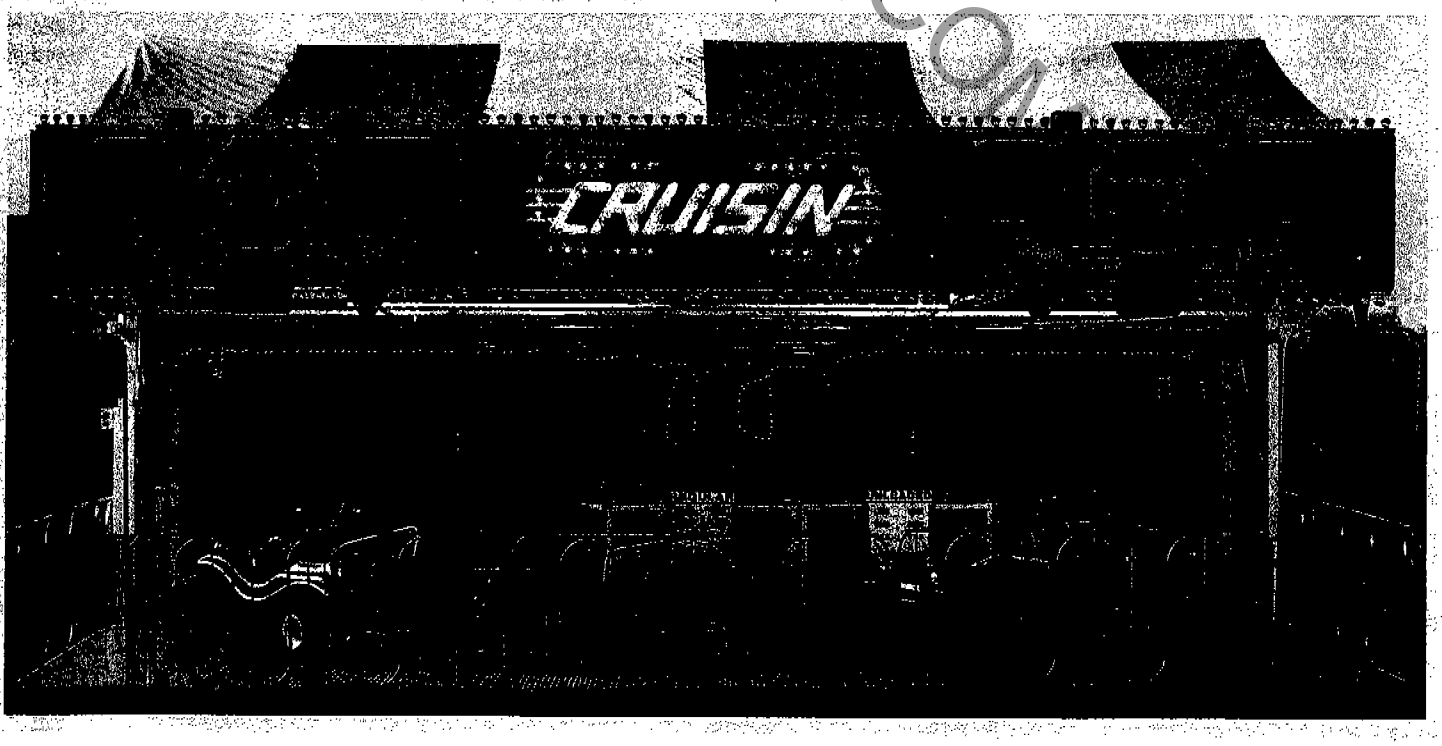
Wisdom

CRUISIN







CRUISIN

DESCRIPTION:

CRUISIN ... a hot car ride from Wisdom that returns its riders (and companions) to those vivid memories of the fabulous '50s and our favorite Saturday night activity...

Cruisin for a Bruisin
Achin for a Brakin
Pickin for a Lickin

Colorful front marquee, nostalgic backdrop scenery, spectacular night lighting and fun jalopies, all combined gives CRUISIN real kid-drawing excitement.

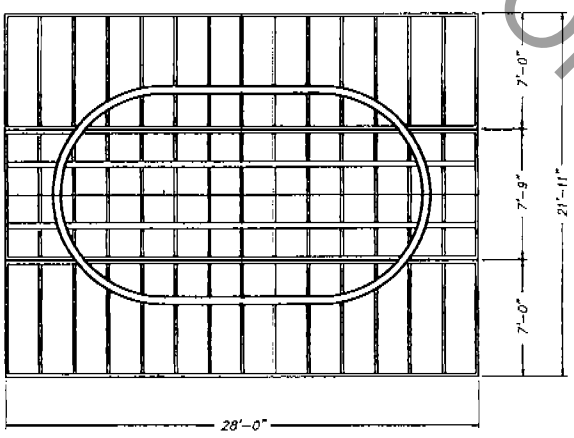
CRUISIN has 6 attractive pickup and dune buggy cars, equipped with front running lights and steering wheels, and holds 4 children each. It sets up easily to a 28' wide by 22' deep layout in less than 1 hour with 1 to 2 people. The 24 volt drive system provides long life and low maintenance.

CRUISIN is built with Wisdom's 20 year tradition of reasonable prices, easy portability, attractive looks and exceptional profits.

SPECIFICATIONS:

DIMENSIONS		POWER REQUIREMENTS		CAPACITY	
Fence to Fence	28' long x 21'11" wide	Drive Unit	3 HP 24 Volt DC variable speed	Cars	6 Cars
Trailer Mounted	28' long x 8'6" wide x 13'5" high 14,000 pounds gross weight Tandem axle with electric brakes	Electrical	5 kW	Seating	24 Children
		Total	7 kW	Hourly	720 Passengers

TRACK CONFIGURATION:



WISDOM INDUSTRIES, LTD.

PO Box 5000 Sterling, Colorado 80751
(303) 522-7515 Fax (303) 522-2902 Customer Service Hot Line 1-800-634-6097

Family Entertainment Centers • Parks • Carnivals • Malls

CRUISIN'

OPERATIONS MANUAL

WISDOM INDUSTRIES LTD.
Box 5000
Sterling, CO 80751

970-522-7515
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This manual is for the WMI Cruisin' Amusement Ride

Serial Number: _____

Date of Manufacture: _____

UMBRELLA ROAD RACE

DAILY PRE OPEN INSPECTION LIST.

	DAY CHECKED						
OUTSIDE RIDE	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Check entrance and exit gates	[]	[]	[]	[]	[]	[]	[]
Check fencing	[]	[]	[]	[]	[]	[]	[]
Check for objects inside fence	[]	[]	[]	[]	[]	[]	[]
Check signage	[]	[]	[]	[]	[]	[]	[]
CARS							
Check connection of cars to sweeps	[]	[]	[]	[]	[]	[]	[]
Check connecting bolts to sweeps	[]	[]	[]	[]	[]	[]	[]
Check wear of swivel rod ends for wear	[]	[]	[]	[]	[]	[]	[]
Check steering wheels secure	[]	[]	[]	[]	[]	[]	[]
Check security of head lights and tail lights	[]	[]	[]	[]	[]	[]	[]
Check seat belts	[]	[]	[]	[]	[]	[]	[]
Check loose or broken plastic or fiberglass	[]	[]	[]	[]	[]	[]	[]
Check for cracks where attached to sweeps	[]	[]	[]	[]	[]	[]	[]
Check security where attached to fiberglass	[]	[]	[]	[]	[]	[]	[]
Check vehicle tires for wear.	[]	[]	[]	[]	[]	[]	[]
Check vehicle tire air pressure (22 psi)	[]	[]	[]	[]	[]	[]	[]
check for loose tires or bearings	[]	[]	[]	[]	[]	[]	[]
MOTORCYCLES							
Check connection of motorcycles to sweeps	[]	[]	[]	[]	[]	[]	[]
Check connecting bolts to sweeps	[]	[]	[]	[]	[]	[]	[]
Check wear of swivel rod ends for wear	[]	[]	[]	[]	[]	[]	[]
Check security of head lights and tail lights	[]	[]	[]	[]	[]	[]	[]
Check seat belts	[]	[]	[]	[]	[]	[]	[]
Check loose or broken plastic or fiberglass	[]	[]	[]	[]	[]	[]	[]
Check for cracks in frames	[]	[]	[]	[]	[]	[]	[]
Check for cracks where attached to sweep	[]	[]	[]	[]	[]	[]	[]
Check motorcycle tires for wear.	[]	[]	[]	[]	[]	[]	[]
Check motorcycle tire air pressure (20 psi)	[]	[]	[]	[]	[]	[]	[]
Check aluminum floor security	[]	[]	[]	[]	[]	[]	[]
Check handles bars for security	[]	[]	[]	[]	[]	[]	[]
Check for loose wheels or bearings	[]	[]	[]	[]	[]	[]	[]
RIDE TOP							
Check security of light fixtures and bulbs	[]	[]	[]	[]	[]	[]	[]
Check for loose frames.	[]	[]	[]	[]	[]	[]	[]
Check canvas top for loose fasteners	[]	[]	[]	[]	[]	[]	[]
CENTER OF RIDE (open canvas at seam)							
Check V belts for tightness	[]	[]	[]	[]	[]	[]	[]
Check V belts for wear	[]	[]	[]	[]	[]	[]	[]
Check drive motor for mounting security	[]	[]	[]	[]	[]	[]	[]
Check gear box mounting	[]	[]	[]	[]	[]	[]	[]
check gear box oil level (sight glass full)	[]	[]	[]	[]	[]	[]	[]
Check Drive tire air pressure (50 psi)	[]	[]	[]	[]	[]	[]	[]
Check drive tire mounting tight	[]	[]	[]	[]	[]	[]	[]
Check Drive rim clean	[]	[]	[]	[]	[]	[]	[]
Check drive tire for cuts or wear	[]	[]	[]	[]	[]	[]	[]
Check sweep rod ends for wear	[]	[]	[]	[]	[]	[]	[]

CENTER OF RIDE INSPECTION (cont.)

Check sweep rod end fasteners for security	[]	[]	[]	[]	[]	[]	[]
Check sweeps for cracks	[]	[]	[]	[]	[]	[]	[]
Check wiring for loose wires	[]	[]	[]	[]	[]	[]	[]
Check electric cords for wear spots	[]	[]	[]	[]	[]	[]	[]
Close Center canvas.	[]	[]	[]	[]	[]	[]	[]
Check center canvas fastening at center	[]	[]	[]	[]	[]	[]	[]
Check that center canvas is fastened at cars.	[]	[]	[]	[]	[]	[]	[]
Check center canvas for cuts where a passenger could push a foot through while ride is running	[]	[]	[]	[]	[]	[]	[]
Lubricate ride as nessessary	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]
Check for foreign objects around ride.	[]	[]	[]	[]	[]	[]	[]
	[]	[]	[]	[]	[]	[]	[]
Run ride at least two complete cycles before riding passengers.	[]	[]	[]	[]	[]	[]	[]

UMBRELLA LUBRICATION SCHEDULE

	TYPE OF LUB				PERIOD OF LUBRICATION		
	1	2	3	4	DAILY	WEEKLY	AS NEEDED
CARS AND MOTORCYCLES							
Rear wheel bearings		X				X	
Front wheel bearings		X				X	
Motorcycle front wheel bearings		X				X	
Motorcycle handle bar pivots	X				X		
CENTER							
Main center bearing		X				X	
Sweep pivot rod ends			X		X		
Gear box				X			X

TYPE OF LUBRICATION

Type 1
Machine Oil
Light machine oil 1-2 drops allow to seep into hinge or pivot area

Type 2
Grease
Use quality grease similar to MYSTIC JT-6 1-2 shots turn ride repeat.

Type 3
Hinge pin lubrication use WD-40 OR light machine oil. Allow to penetrate hinge.

Type 4
Gear box oil
Use a 90 weight oil fill to sight gauge on gear box.

SET-UP INSTRUCTIONS

1. Select location with adequate space. The minimum space is thirty-five (35) feet wide, and twenty four (24) feet deep and fourteen (14) feet for head room.

2. Disconnect towing vehicle; remove hitch if desired.

3. Connect power cord to 220 V. 3 Phase Y connected power source. (Check phasing for proper rotation)

4. Lower the front floor section with the winch provided. DO NOT GET UNDER THE FLOOR AS IT IS BEING LOWERED.

5. Lower the back floor using the same winch that was used on the front floor When the floor is about 36" from the ground stop winch. Swing down the rear floor support stands, then lower the floor onto the floor support sand pads.

6. Stand up the back wall, and swing out the end panels. Adjust the floor support jacks (Up or Down) so that the end panels will fit properly; pin and key in place.

7. Fold out the front sign and overhead structure. Pin and key in place.

8. Unfold the ride cover. Secure to the front sign and back wall. Install ride tightening cams, one at each end of the trailer. Tighten the turn buckles.

9. Loosen the car front floor brackets . Remove the floor brackets and install the cars on the track. Then install the car spacer links, and finally, install the filling station wheel housing cover.

10. Double check all pins, and safety keys. Check the car track for obstructions, and check the ride for proper grounding and phasing.

11. Open the ride.

CAUTIONS

CAUTION: NEVER ALLOW A CHILD TO GET IN FRONT OF A MOVING AMUSEMENT RIDE VEHICLE. IT COULD RESULT IN A SERIOUS INJURY OR DEATH.

CAUTION: NEVER RIDE ANYONE WITHOUT THE PROPER SEAT RESTRAINT.

CAUTION: NEVER LET ANYONE LEAN OVER OR SIT ON THE FENCE WHILE THE RIDE IS IN MOTION.

CAUTION: NEVER OPERATE THE RIDE WITHOUT WATCHING THE RIDE WHILE IN MOTION.

CAUTION: NEVER OPERATE THE RIDE WHILE ANYONE THAT IS NOT ON THE RIDE IS INSIDE THE FENCE.

PERSONAL CONDUCT

The following should not be permitted while operating the ride:

1. Any use of alcohol or illicit drugs.
2. Eating, smoking, or drinking beverages at the ride.
3. Failure to follow the instructions of your supervisor.
4. Failure to follow standard operating procedures and safety rules.
5. Arguing or using profanity in front of customers.
6. Leaving the ride unattended.
7. Listening to radios or tape players.
8. Visiting or having long conversations with others.

AVOIDING LAW SUITS

In addition to providing a safe operation, a little PR can go along way in preventing a minor injury from becoming a major lawsuit. We recommend you train your employees in the art of being courteous, helpful, and considerate to anyone with even the slightest injury. Employees should immediately notify their supervisors so that they may show additional extraordinary consideration to make absolutely certain that the injured party and friends know that you are concerned and have done everything possible to keep the injury from spoiling a day of fun.

IF AN INCIDENT SHOULD OCCUR:

a. Stop the ride.
b. Get help from the office or y our supervisor.
c. Aid the injured as best you can, but do not move him.
d. Stay calm.
e. Control crowds.
f. When help arrives, assist them.
g. Remember the facts, don't gossip, you will have plenty of time to tell the real story at a later time.

OPERATIONAL INSTRUCTION

1. Always make absolutely certain everyone is properly seated and strapped in before starting the ride.

2. Check carefully that everyone is clear of the ride and outside the fence before starting the ride.

3. Do not let anyone climb on, play on, or lean over the fence.

4. Keep the fence a safe distance from the ride.

5. Use common sense.

6. Understand that everything inside the fence is your personal responsibility.

7. Should there be an incident and there is any evidence that you may be under the influence of alcohol or drugs, you could be charged with a felony and sentenced to prison.

8. When erecting or dismantling a ride, most injuries occur because:
   a. Something falls on someone.
   b. Someone slips and falls.
   c. Something touches a high voltage line. Remember the wires on regular wooden electrical poles carry 7200 volts.

9. Preventing a child from being injured is by far your most important job.

10. Periodic factory safety bulletins should be put into effect immediately and added to this manual.

11. When you leave the ride, turn the power off.

12. Be cautious and ready for the unexpected when dealing wit children.

PHYSICAL INFORMATION

The following is presented in accordance with ASTM F698-83 Standard Specifications for PHYSICAL INFORMATION TO BE PROVIDED FOR AMUSEMENT RIDES AND DEVICES.

3.2 Ride Serial Number

3.2.1 Name Plate

Located on the electrical enclosure at the rear of the trailer of enclosure stand on stationary models.

3.3 Model Number

The name Cruisin' is used in lieu of a model number.

3.4 Date of Manufacture

Located on the name plate

3.5 Trailering Information

The trailer used to transport the Cruisin' is twelve feet high by eight feet six inches by thirty two feet long. (12' x 8'6" x 32'). The trailer weighs approximately 12,000 pounds with the ride.

3.6 Static Information

The ride including the trailer, fence, and safety gates, is approximately twelve feet high, by thirty feet wide, by twenty four feet deep. (12' x 30' x 24'). The ride weighs 12,000 pounds.

3.7 Dynamic Information

When the ride is operational, it's dimensions are the same as when it is at rest.

3.8 Ride Speed

N/A or lap time is approximately 15 seconds.

3.9 Direction of Travel

Forward movement of vehicles on a directed path.

3.10 Power Requirements

3.10.1 Electrical

The ride requires 200 volts single phase, fifty (50) amps, 10 KW. The voltage should not vary 10% from this recommendation.

3.10.2 Mechanical

Each vehicle requires one 1 1/2 hp 24 volt DC motor.

3.12 Passenger Capacity

3.12.1 Maximum total passenger weight is 2100 pounds.

3.12.2 Maximum number of passengers is 24 children.

3.13 Ride Duration

The recommended ride duration is 2 minutes.

3.14 Recommended Balance of Passenger Loading or Unloading

Precise weight distribution is not critical to the operation or safety of the ride.

3.15 Recommended Passenger Restrictions

No children under age three (3) unless accompanied by an adult or parent. No person suspected of drinking. No obese person.

3.16 Environmental Restrictions

The ride should not be operated in a high wind, rain or other condition which would impede traction of the drive motors, limit visibility of the ride operator, or result in slippery conditions for loading or unloading.

3.17 Fastener Schedule

All fasteners, pins, cables, safety ropes and cleats must be replaced with items provided by the manufacturer.

The following information is provided in accordance with ASTM F770-82 STANDARD PRACTICE FOR OPERATION PROCEDURES FOR AMUSEMENT RIDES AND DEVICES.

3.1.1 Description of the Ride, Function and Operation

The ride consists of six (6) vehicles which are propelled by 1 1/2 hp motors around a course defined by aluminum channel guides.

3.1.1.1 Description of the Motion

The ride runs clockwise in a prescribed course, perhaps up and down a ramp, depending on the model.

3.1.1.2 Description of the Recommended Passenger Loading Procedures

The ride operator should unlock the entrance gate and permit the proper amount of persons to enter the ride area only after the vehicle to be loaded has come to a complete stop.

3.1.2 Recommended Safety Procedure

3.1.2.1 Maximum Riders, Weight and Ride Total

The ride should carry no more than four (4) children.

3.1.2.2 Description of Passenger Restraint

The lap belt or rope over the riders comprises the passenger restraint for this ride. Always advise the riders to remain seated until the ride comes to a complete stop.

3.1.2.3 Ride Operator's Safety Check

Before starting the ride, the ride operator should check that the seat belts are properly attached. The ride operator should watch the ride in operation at all times. Any abnormal facial or body expressions is reason to stop the ride entirely. If any vehicle stops for any reason, the operator should stop the entire ride immediately to avoid collision.
NOTE: Do not let anyone sit on or lean over the fence while the ride is being operated.

3.1.2.4 Instruction to Patrons

Remain seated until the operator signals the ride is over.

3.1.3 Operator's Location and Operating Procedure

The operator should have a clear view of all functions of the ride at all times. The operator control console should be placed to the outside of the launch section as shown in Figure 1. The operator should have an understanding of the distance a vehicle can coast after the power is shut off.

3.1.3.1 Daily Pre-Opening Inspection

1. Check safety latches to insure they are working properly.
2. Check the electrical pick-ups to insure that all connections are secure and that the wheels turn freely.
3. Check the connections to the chassis to insure that they are secure.
4. Check for any loose wire connections on the body and replace burned out bulbs.
5. Check all jackstands to insure they are properly vertical and positioned on solid ground. Block if necessary.
6. Check all track camlock and twistlock connections.
7. If the ride has not been operated for a couple of days, use a Scotch-brite pad to clean the aluminum track, removing all aluminum oxide. A clean track insures proper electrical transmission.
8. Check to insure the ground wire on the main lead is secure as it's power source.
9. Clean up the area.
10. Be alert and think safety the rest of the day.

3.1.3.2 Ride Operator's Position and Function

The ride operator should be positioned at the end of the loading area so he has a clear and unobstructed view of the loading area as well as the main track. The operator should know and understand the operation of the control console. The operator should know and understand hand signals used by the loading/unloading operators.

3.1.3.3 Recommended Series of Steps to Operate the Ride

1. Open the safety gate and let the required amount of patrons in.
2. Close and lock the gate.
3. Load the required amount of patrons.
4. Tell the patrons to put their hands in their laps.
5. Close the safety lap belts.
6. Signal the operator that the car is loaded.
7. Always be alert and watch the vehicles.

3.1.4 Emergency Procedures

If anyone begins to stand up in his seat, stop the ride immediately.

3.1.4.1 Recommended Evacuation of the Ride
Evacuate the ride through the front gate exit.

3.1.4.2 Use of Emergency Power Equipment - N/A

3.1.4.3 Description of Emergency Equipment - N/A

3.1.4.4 Description of any Emergency Procedure Made Necessary by an Interruption of Power, and Restart Procedures-

With the interruption of electricity, turn off the ride and do not restart until checking that everyone is seated and no one is inside the fence.

OWNER/OPERATOR'S RESPONSIBILITY OPERATION PROCEDURES

4.1 Each owner/operator of an amusement ride or device shall read and become familiar with the contents of the manufacturer's recommended operating instructions and specifications, when received as provided in 3.1. Each owner/operator shall prepare an operating fact sheet. This fact sheet shall be made available to each ride or device operator and attendant of the amusement ride or device. The owner's/operator's fact sheet (on a ride-to-ride basis) shall include but not be limited to:

4.1.1 Specific ride or device operation policies and procedures with pertinent information from the manufacturer's instructions.

4.1.1.1 Description of the ride or device operation.

4.1.1.2 Duties of the specific assigned position of the ride or device operator or attendant.

4.1.1.3 General safety procedures.

4.1.1.4 Additional recommendations of the owner/operator.

4.1.2 Specific Emergency procedures in the event of an abnormal condition or an interruption of service.

4.1.3 The owner/operator shall provide training for each ride or device operator and attendant of an amusement ride or device. This training shall include but not be limited to the following, where applicable:

4.1.3.1 Instructions on ride or device operating procedures.

4.1.3.2 Instructions on specific duties of the assigned position.

4.1.3.3 Instructions on general safety procedures.

4.1.3.4 Instructions on emergency procedures.

4.1.3.5 Demonstration of the physical ride or device operation.

4.1.3.6 Supervised observations of the ride or device; operator's physical operation of the ride or device.

4.1.3.7 Additional instructions deemed necessary by the owner/operator.

4.1.4 The ride or device operator of each amusement ride or device shall conduct a daily pre-opening inspection of each ride or device prior to carrying passengers. This inspections shall include but not be limited to the following:

4.1.1.1 Visual check of all passenger-carrying devices, including restraint devices and latches.

4.1.4.2 Visual inspection of entrances, exits, stairways, and ramps.

4.1.4.3 Test of all communications equipment necessary for the operation of the ride or device.

4.1.4.4 Prior to carrying passengers, the ride or device shall be operated for a minimum of one complete operating cycle.

3.1.3 Recommended Lubrication Procedures

3.1.3.1 Recommended Types of Lubricants

1. Front wheel bearing should be PACKED with multi-purpose lithium base grease.
2. Grease the steering king pin with a multi-purpose grease through the zerk located on the front side of the spindle block.
3. If your ride is equipped with rod ends on the steering linkage made of a brass material, grease the bearing with a multi-purpose grease through the zerk on the side of the rod end.

3.1.3.2 Recommended Frequency of Lubrication

1. Check all front wheel bearings every three (3) months. Lubrication should be done by PACKING with grease.
2. The steering king pins should be greased every two (2) weeks.
3. The rod ends, if necessary, should be greased every two (2) weeks.

3.1.3.3 Lubrication Chart - N/A

3.1.3.4 Recommended Special Lubrication - N/A

3.1.4 Description of Recommended Daily Pre-Opening Inspection
See 3.1.3.1 of F770-82.

3.1.5 Description and Frequency of Recommended Maintenance Inspections and Testing Other Than Daily Pre-Opening Inspections

3.1.5.1 Recommended Wear Limits or Tolerances

1. The stainless steel wire electrical pickup wheels should be checked weekly. When the diameter of the wheel has worn to 3 1/2", it should be replaced.
2. The urethane guide wheels are 4" in diameter when new. They should be replaced when they have worn to 3 1/2" in diameter. Any smaller in diameter and they will not contact the micro switch arms on the track.
3. The rubber tires should be replaced when tread depth becomes less than 1/16 of an inch.

3.1.5.2 Recommended Operational Tests

1. At each set-up point or at least weekly, the following items should be checked:

   A) Is proper voltage being used to operate the ride/
   B) Check for belts or taper lock bushings which may be loose.
   C) Check to make sure that all electrical connections on the electrical pickup and the electric motor are tight.

3.1.6 Recommended Specifications for the use of Replacement Fasteners

1. Replacement of the winch cable should be factory manufactured original equipment.
2. Replacement of the winch should be provided by the factory only.
3. Safety latches should be factory provided or manufactured original equipment.

3.1.7 Electrical Schematic

3.1.7.1 Description of Recommended Maintenance for Electrical Components

1. The aluminum track is an electrical conductor. Keep it clean and tightly bolted for maximum conductivity.
2. The stainless steel wire brushes are to roll freely on the aluminum channel. Replace any worn or damaged brushes before running the ride.
3. The light bulbs in the fixtures on the vehicles are standard automotive bulbs. Replace them when burned out to keep your ride looking good.

4. Periodically spray all relays with a contact cleaner to insure proper operation.
5. Replace quartz bulbs by using a towel or rag to keep oil from your hands off the bulb. The oil will decrease the life of the bulb.

3.1.8 Non-Operating Procedures

Minor scratches in fiberglass can be buffed out by using a fine grit auto rubbing compound and following up with a coat of wax. Deep scratches (deeper than the gel coat) - call the factory for a repair kit. State color required.

Cracks due to mishandling or abuse can be repaired from the underside using fiberglass mat and activator. Be sure surface is clean and dry.

Clean fiberglass with a soft cloth and a mild liquid detergent. Do not use scouring powder, steel wool, or an abrasive cleaner as this will dull the surface.

Models with aluminum fence and safety gates - clean aluminum with dry Scotch Brite (green scouring pads, available at most grocery stores).

3.1.9 Description of Recommended Assembly and Disassembly Techniques as Deemed Necessary by the Manufacturer - N/A

OWNER/OPERATOR'S RESPONSIBILITY
MAINTENANCE

4.1 Each owner/operator of an amusement ride or device shall read and become familiar with the contents of the manufacturer's maintenance instructions and specifications when received, as provided in 3.1 Based on the manufacturer's recommendations, each owner/operator shall implement a program of maintenance, testing, and inspections providing for the duties and responsibilities necessary in the care of each amusement ride or device. This program of maintenance shall include a checklist to be made available to each person performing the regularly scheduled maintenance on each ride or device. The owner/operator's checklist (on a ride-to-ride basis) shall include but not be limited to:

4.1.1 Description of inspections to be performed.

4.1.2 Special safety instructions, where applicable.

4.1.3 Any additional recommendations of the owner/operator.

4.2 The owner/operator of the amusement ride or device shall provide training for each person performing the regularly scheduled maintenance on the ride or device, pertaining to their duties. This training shall include, but not be limited to the following:

4.2.1 Instruction on inspection and preventive maintenance procedures.

4.2.2 Instruction on the specific duties of the assigned position.

4.2.3 Instruction on general safety procedures.

4.2.4 Demonstration of the physical performance of the assigned regularly scheduled duties and inspections.

4.2.5 Supervised observation of the maintenance person's physical performance of their assigned regularly scheduled duties and inspections.

4.2.6 Additional instructions deemed necessary by the owner/operator.

4.3 Prior to carrying passengers, the owner/operator shall conduct or cause to be conducted a daily documented and signed pre-opening inspection, based on provided instructions, to insure the proper operation of the ride or device. The inspection program shall include, but not be limited to the following:

4.3.1 Inspection of all passenger-carrying devices, including restraint devices and latches.

4.3.2 Visual inspection of entrances, exits, stairways, and ramps.

4.3.3 Functional test of all communication equipment necessary for the operation of the ride.

4.3.4 Inspection or test of all automatic and manual safety devices.

4.3.5 Inspection or test of all brakes, including service brakes, emergency brakes, parking brakes, and back stops.

4.3.6 Visual inspection of all fencing, guarding, and barricades.

4.3.7 Visual inspection of the ride structure.

4.3.8 The ride or device shall be operated for a minimum of one complete operating cycle.

4.4 Following an unscheduled cessation of operation, and the unloading of an amusement ride or device, necessitated by malfunction, adjustment, environmental conditions, mechanical, electrical, or operational modification, that affected the operation, the ride or device, or the specifically affected element, shall be appropriately inspected, and operated, without passengers, to determine that the cause for cessation of operation has been corrected and does not create an operational problem.

OWNER/OPERATOR'S RESPONSIBILITIES INSPECTION

4.2.1 Owner/operators of amusement rides or devices shall have a program consistent with the inspections outline in Practices F770 and F853.

4.2.2 Inspection documents deemed appropriate by the owner/operator to be maintained in the ride file shall be filed according to the procedures outline in Practices F770 and F853.

4.2.3 The owner/operator of an amusement ride or device shall promptly notify the manufacturer of an incident, failure or malfunction which, in his judgment, seriously affects the continued proper operation of the ride or device and is information of which the manufacturer should be aware.

OWNER/OPERATOR MEETING AFTER INSPECTIONS

Try to encourage them to become a coach-counselor, emphasizing the following:

1. Give your employees a chance to do their job with pride.
2. Make certain they know their job.
3. Make your employees feel important and contributing.
4. Take steps to reduce employee turnover.
5. Listen and learn from your employees.
6. Most accidents are the result of a chain of relatively unimportant situations.

As a safety inspector, your job is accident prevention in its broadest concept.

1. Apply your efforts to those areas most likely to prevent accidents.
2. Help, don't hinder, the profitability of the ride operation. A profitable ride operation is invariable a safer operation.

GENERAL GUIDELINES
OPERATOR SELECTION AND INSTRUCTION

1. Select competent, mature operators capable of understanding the function and use of amusement rides and their control.

2. Instruct each operator fully in the proper use and function of the ride he is to supervise, including:

   A. Controls and procedures for normal and emergency operation.
   B. Manufacturer's recommended maximum load.
   C. Manufacturer's recommended length of ride time.
   D. Any foreseeable misuse of the ride as determined by the manufacturer or owner, or by special conditions such as weather, location or crowds.
   E. Each operator must have IMMEDIATE AVAILABILITY and a complete working knowledge of the manufacturer's operator's manual for the ride he supervises.

3. Require each operator to inspect the ride he supervises on each day of operation.

   A. Determine that no portion of the ride is damaged, omitted or work in such a manner that it is unsafe or that may develop into an unsafe condition.
   B. Report any irregularities to superintendent or owner.
   C. Do not operate the ride if any irregularities are found until such condition is corrected.

4. Instruct the operator to allow no passenger to ride who is visibly ill or under the influence of drugs or alcohol.

5. Instruct operators and attendants on the proper methods of securing passengers in the ride. Do not allow a passenger in the ride who cannot be properly secured due to passenger size or because of malfunction of the securing device.

   A. Stop the ride immediately if any passenger is observed tampering with any restraining device or behaving dangerously, such as standing up.

6. Advise the operator against starting or operating the ride while any person (passenger, spectator, or employee) is in an endangered or unsafe position on the ride or within the ride area.

7. Insist that each operator remain in full control of the operating controls during operation of the ride, and give his full attention to the ride and its passengers.

8. Instruct operator to allow no other person, other than another trained operator, to operate the controls of the ride.

9. Instruct operator and attendants fully as to the proper method of assembly and disassembly of portable rides. Supply adequate personnel and equipment to do this safely.

10. Instruct operator to inspect and correct or replace damaged, lost or worn parts that are unsafe or that may develop into unsafe parts simultaneously with assembly or disassembly.

11. Advise operator of owner/operator procedure for assisting ill or injured passengers.

12. Advise operator that factory-installed safety devices are not to be tampered with or removed.

13. Instruct operators and attendants that patrons are required to secure all loose articles such as keys, change, eye glasses, etc.

14. We recommend that every operator take a first aid course after their first season.

OPERATIONAL LOAD TESTING

Any operational test including load testing performed on a ride shall be completely nondestructive in nature. Overload testing exceeding the rated limits listed on the information plate, operation manual, field inspection guide or specifications sheet shall be deemed inappropriate. Where maximum total passenger weight is not readily available passenger capacity multiplied by 170 pounds per adult and/or 90 pounds per child may be used.

Nondestructive testing with inert loads can be accomplished only with special care as to placement of the load so that it is centered both vertically and horizontally as would be the load of the passenger it replaces. Extra seat reinforcement must be used to offset any load concentration created. Such tests shall be documented and certified as nondestructive by the person making the test and the agency requiring it. Results of all load tests shall be communicated to the factory upon completion by the Certifying Agency.

Conduction of a nondestructive operational load test assures the testing agency only that it will carry a given load in a given way at a given moment and in no way assures future safety of the ride.

Conducting a destructive load or overload test also assures the testing agency that it will carry a given load in a given way at a given moment and in no way assures future safety of the ride. However, it also introduces the probability of inflicting serious irreparable damage to the ride that may or may not be apparent at the time of the test.

We consider inert load testing of any nature appropriate only for situations requiring experimental development of stress-strain testing during prototype development. A certificate of load test on the prototype and certification that each production ride met the design criteria when it was manufactured is available from the factory upon request.

ASSOCIATIONS

ASTM, American Society for Testing and Materials, is a non-profit organization which, through the use of industry volunteer committees, sets the standards that manufacturers, operators and inspectors are urged to follow. WMI LTD. is a member of ASTM. If you as a ride owner are interested in working with the industry to set the standards, contact ASTM.

Venture has been very active in the American Recreational Equipment Association (AREA) since 1972.

Each January at a U.S. ride manufacturer's facility, AREA hosts its annual Maintenance and Safety Seminar. Participants include employees of traveling shows, amusement pars, and state and federal officials responsible for ride inspection and safety. The seminar includes five days of classes designed for every level of employee. Classes include electrical, hydraulics and pneumatics, welding, non-destructive testing, inspection techniques, the psychology of safety, truck driving, developing a safety program, developing a maintenance program, and training and evaluation of ride personnel. Venture is an active participant and strongly recommends that all ride owners, operators, and maintenance personnel attend the seminar annually. Contact AREA for exact dates, times and tuition.

For your convenience, below is a list of amusement-related associations, including addresses and phone numbers.

American Recreational Equipment Association (AREA)
P.O. Box 557
Delaware, OH 43015 (614) 363-9715

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103 (215) 299-5585

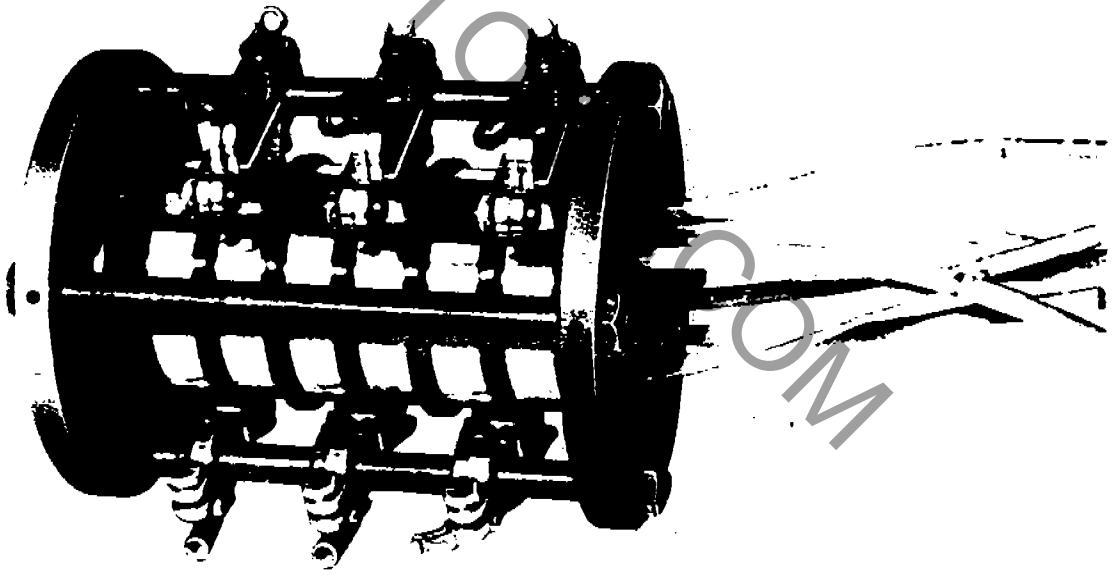
International Association of Amusement Parks and Attractions
4230 King Street
Alexandria, VA 22302 (703) 671-5800

International Independent Showmen's Foundation
P.O. Box 188
Gibsonton, FL 33534 (813) 677-9377

Outdoor Amusement Business Association (OABA)
4600 W. 77th Street
Minneapolis, MN 55435 (612) 831-4643

INSTALLATION-OPERATING-MAINTENANCE INSTRUCTIONS

ALL PURPOSE COLLECTOR RINGS



INSUL 8

CONDUCTIC DIVISION

IER

BASIC SAFETY

1. ELECTRICAL WARNINGS

(a) The Collector Ring should be interfaced with the unit on which it is installed and the entire unit grounded in accordance with the National Electric Code and local codes and ordinances.

(b) DANGER: Hazard of electrical shock or burn. Always disconnect or remove the power from the Collector Ring before attempting to perform any service function.

(c) Do not use this Collector Ring with electrical loads greater than the rated current and voltage of the Collector Ring.

2. OPERATIONAL AND MAINTENANCE WARNINGS

(a) Collector Rings must be enclosed or otherwise protected from contact by any personnel. Means for the provision of this protection is the responsibility of the user.

(b) All fasteners or hardware should be checked periodically to assure tightness. Care should be exercised when handling the collector ring while servicing, adjusting or during operation.

(c) WARNING: Modification of this equipment may cause excessive wear and void warranty. Modification may cause safety and fire hazards. Contact manufacturer regarding change or modifications of equipment which could affect reliability or safety.

A. OPERATION

1. **Collector Rings** may be installed with either the Brush Stud Assembly or the Slip Ring Core rotating. One of these two units should be stationary.

B. INSTALLATION

1. **Install** the Slip Ring Assembly on a shaft and lock it in place with set screws in the drive collar.

2. **On a Standard Collector Ring** Installation, screw Brush Stud in place (at proper center distance), place Brush Assembly in place and secure clamp bolt. Be sure Brush Box is located so that the top of the brush is parallel with the top of the brush box. Brush sides should not be in contact with the walls of the insulator ring.

3. **Make connections** at lugs on Brush Holders and ends of lead wires or busbar. Be sure connections on brush assemblies do not interfere or exert tension on the brush holders. It is recommended that flexible wire be used for brush and core terminations.

C. MAINTENANCE

1. GENERAL

(a) **Periodic inspection** and adjustment are essential to the maintenance of a collector ring assembly. Proper care of brushes, brush rigging, rings and current collection parts is a fundamental necessity for satisfactory performance of a collector ring assembly.

(b) **Environmental conditions** affect the performance of the collector ring and these conditions should be considered in the enclosure design. Periodic inspection of the enclosure is essential maintenance of the collector ring assembly.

2. COLLECTOR RING INSPECTION AND ADJUSTMENT

(a) **Brush Rigging**

(1) Brush studs are supported between (2) outboard bearings. The brush studs extend through the outboard bearings and they are secured by a setscrew in the outboard bearing. The setscrews prevent rotation of the brush stud. The setscrews should be checked for tightness. Some collector ring assemblies are furnished with additional brush stud anti-rotation devices. These devices are located on the outboard side of the outboard bearings. They incorporate an additional setscrew to prevent brush stud rotation. The additional setscrew must also be checked for tightness.

(2) The spacing between the outboard bearings is critical to assure the free rotation of the brush rigging. The brush stud insulator sleeves are cut to length in order to provide the proper spacing. The outboard bearings should be located snuggly against the insulator sleeve without any deformation of the materials. Hand tighten the outboard jam nuts and then secure the brush stud with the setscrews referred to in 2.(a)(1). Caution: Do not overtighten the outboard jam nuts. Overtightening can preload the bearings and cause excessive rotation friction. Final check should be made to assure no binding of outboard brush rigging or binding of brushes with insulator barriers.

(b) **Brush Holders**

(1) Inspect brush holders for proper alignment. Brush holders should be located so that the entire brush contact surface rides squarely on the ring with the brush moving freely in the brush box. The top of the brush should be parallel with the top of the brush box.

(2) Brush holder clamps should be checked for tightness. Clamp bolts should be set at 40-45 lbs.-in (75 lbs.-in maximum). Loose clamps will allow the brush holder to rotate, causing the brush to lift from the surface of the ring. Brush lift will cause arcing and excessive heat concentration.

(3) Brush terminations at the holder should be inspected to assure that no external force is imposed on the holder that would cause rotation of the holder on the stud. Flexible or soft wire leads are recommended for these terminations. External clamps should be used to support the entire weight of the leads.

(4) A final check should be made to assure that the brush studs can not rotate. See 2(a).

(c) **Brushes**

(1) Inspect for wear. If the distance from the top of the brush to the top of the brush box is over half the depth of the brush box, the brush should be replaced.

(2) Inspect brush contact surface by removing the brush and checking the brush surface for dirt, oxidation, pitting or other contaminants. Remove any large particles and follow seating instructions in paragraph 2.(c)(3).

(3) Check brush contact surface for proper seating. If the seating is not proper, the contact surface will be tracked differently in different areas. To reseat the brushes, lay a piece of sandpaper between the ring and the brush. Install the brush in the brush holder in proper alignment and rotate the core while applying pressure on the brush. If the core cannot be rotated, the sandpaper must be pulled across the brush surface. Wrap sandpaper at least 180° around the ring to prevent rounding of the brush edges. Recheck the brush contact surface and repeat the sanding process if necessary until the entire contact surface appears uniform and without pits. Caution: Do not use emery paper or cloth to seat brushes since the emery will become embedded in the brush and continue the abrasive action against the ring and brush. Emery and many other abrasives are conductive and must not be used.

(d) **Brush Springs**

(1) Inspect and test springs for proper tension. The brush tension springs should be set at 1.5-3.0 lbs. per spring and as uniform as possible. Uniform settings for each brush prevent selective action by which certain brushes carry more or less than their share of the load. Insufficient brush pressure can cause loss of contact and overtension can cause excessive brush and ring wear.

(2) The spring tension should be periodically tested on all brushes to assure uniform brush tension. Test for tension as shown in Figure 1. See paragraph 5(b) for spring tension adjustment.

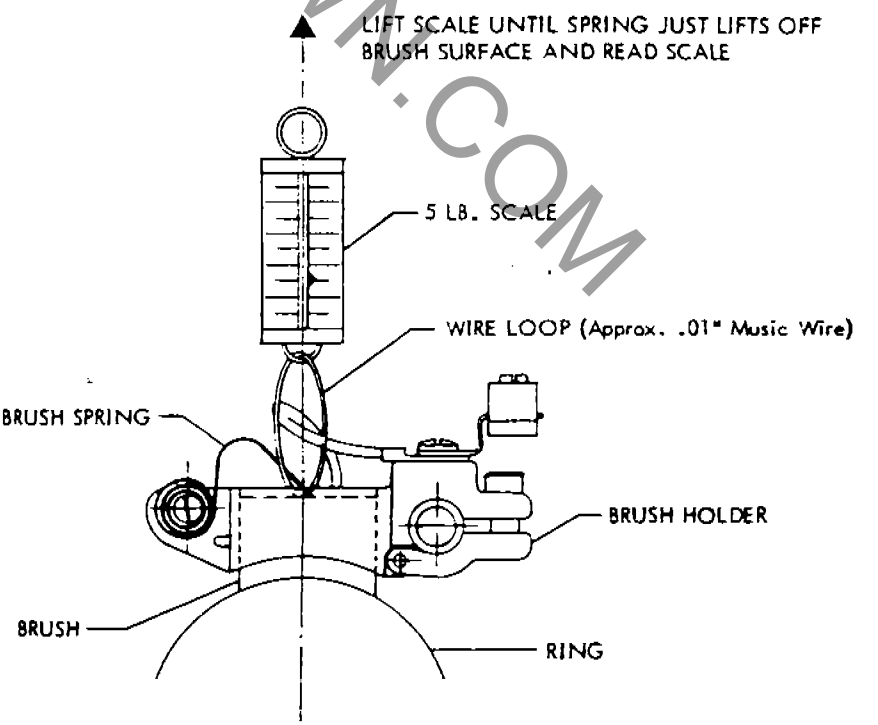


FIGURE 1

(e) **Rings**

(1) Inspect the ring surface for dirt, oxidation or other contaminants. A properly operating ring will have a film that appears burnished in color where the brushes track with a darker surrounding color. If this condition does not exist, cleaning will be necessary.

(2) The ring should be cleaned with a non-conductive abrasive such as Ideal Industries' Flexible Abrasive for collector rings. Hold the abrasive against the ring with a medium amount of pressure while turning the core. If the core cannot be turned, the abrasive must be rubbed over the ring. Continue this process until the ring surface is polished without any dirt or contaminants left on the surface. To prevent abrasive from being lodged in the brushes, they should be lifted off the ring.

(3) Inspect rings for pitting. Pitting of the ring must be corrected since pits will produce arcing, leading to the development of larger and more pits. Small pits can be removed by hand stoning of the area. If large pits and/or a considerable amount of pits are present on the surface, the surface must be machined. Machining is also necessary if concentricity of the surface is questionable. When stoning or machining rings, remove only enough material to eradicate the pits. Again, the brushes should be lifted from the surface when stoning or machining. Finish the ring surface to a 16-32 microfinish as described in 2(e)(2).

(f) **Electrical Connections**

(1) Inspect all electrical connections for corrosion and tightness. Clean corroded parts with a wire brush and/or muriatic acid. Loose and/or corroded terminations will cause a concentration of excessive heat.

3. ENCLOSURE INSPECTION

(a) **Moisture** is a major cause of collector ring deterioration. Corrosion of parts and insulation breakdown can be attributed to the presence of water. Dust and dirt present within the enclosure will affect the proper operation of the assembly. Most dusts cause excessive brush and collector ring wear and conductive dusts, if allowed to accumulate, will form a path for short circuiting.

(b) **A properly designed enclosure** will be dust tight and watertight; however, condensation may still form on the walls of the enclosure. In some environments, condensation can be eliminated with the addition of a breather and drain. Other environments, particularly dusty ones, require a thermostatically controlled heater to eliminate condensation.

(c) **An inspection** should be periodically performed by removing the enclosure and checking for condensation, water and dust collection. If contaminants are found, the enclosure and the assembly should be wiped down with a lint free cloth. If the problem appears persistent, steps should be taken to remedy the leakage or condensation problem.

4. FREQUENCY OF INSPECTIONS

(a) **The first inspection** should be made shortly after installation and before operation. Continuing inspections should be made on a regular basis after every 200-400 hours of operation under normal conditions.

5. REMOVING AND REPLACING BRUSHES AND SPRING TENSION SCREWS

(a) **Brush Holders with non-adjustable spring tension** (Figure 2)

(1) Pull spring free end (B) out of brush holder recess and slide spring off of fixed hub (A).

(2) Unscrew binder screw (C) and take off brush shunt connector (D) and remove brush (E).

(3) Install new brush, reversing above procedure.

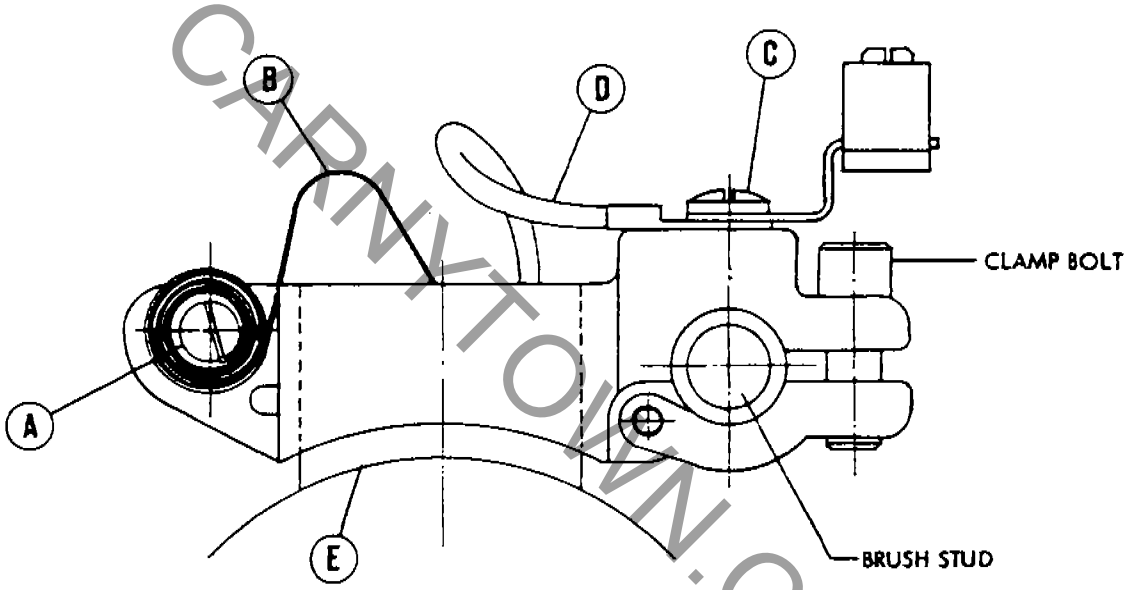


FIGURE 2

(b) **Brush Holders with adjustable spring tension** (Figure 3)

(1) Release spring tension on the brush spring by holding the spring tension screw with a screw driver at slot (A) and loosening spring tension nut on opposite side. Do not completely remove the nut, just loosen. Screws can be adjusted with 9/32 wrench without removing from stud.

(2) Pull spring (B) up and out of the way and unscrew binder screw (C). Take off brush shunt connector (D) and remove brush (E).

(3) Install new brush, reversing above procedure.

(4) Tension is applied on brush spring by holding nut with wrench and turning screw with screw driven clockwise until inner coils are tight. Back off ¼ turn, then tighten the nut. Spring should have a minimum of 1 pound pull at the brush. See paragraph 2.(d)(1).

(5) To replace brush spring tension screw (A), simply take spring tension screw nut off and pull the screw and spring out of the holes in brush holder (F). Use above steps in reverse order to replace spring tension screw.

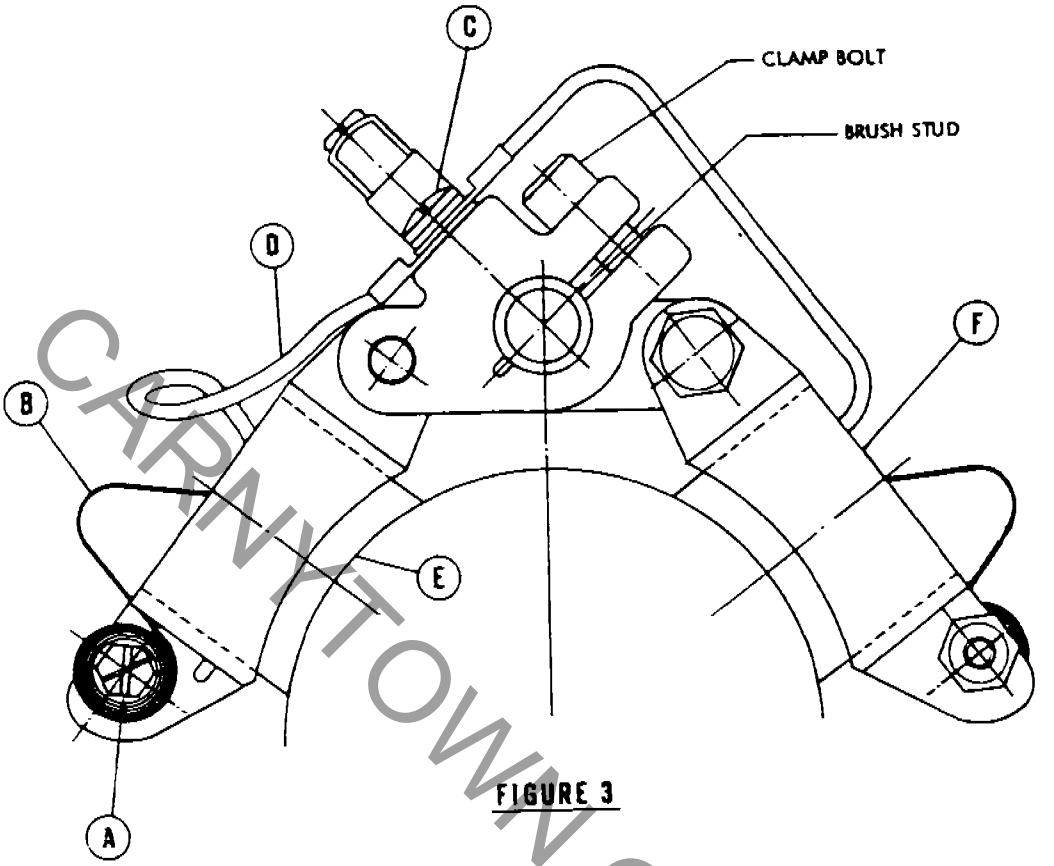


FIGURE 3

D. STORAGE

When not in use, the collector ring should be kept in a clean, dry place, protected and preferably at room temperature. Collector Ring Enclosures should be opened periodically to check for condensation. It is recommended that a self-contained or bagged absorbent material be placed in the Collector Ring Enclosure during extended periods of storage. Remove absorbent material before putting the collector ring into operation.

E. RECORD

It is imperative that the following information is available when ordering replacement parts or discussing the collector ring with the factory. Please record the information now in the spaces provided below.

CATALOG NO. OF COLLECTOR RING _____

SERIAL NUMBER M-_____