

MF#: CHARLE
RIDE: CARROUSEL 20FT.

20- FOOT FANTASY CARROUSEL

Field inspection and test guide

Contents

Introduction	2
Ride description	2
Manufacturer's specifications	3
Operation	4
Operating controls	4
Operating the ride (test cycle)	6
General inspection and testing	7
Testing	7
Field performance testing of amusement rides	7
Non-destructive testing	9
Fasteners	10
Capscrews	10
Pins	14
Inspection	16
Joint inspection	16
General safety guidelines	17
Sweep and crankshaft inspection	18
Horse inspection	19
Electrical and lighting inspection	20
Leveling inspection	20
Platform and fence inspection	20
Bibliography	21

CHANCE RIDES, INC.

4219 Irving
P.O. Box 12328
Wichita, KS 67277-2328

phone (316) 942-7411
toll free 1-800-242-6231
fax (316) 942-7416

Introduction

Proper maintenance is essential to the safe operation of this ride. The tests and inspection points outlined in this field guide are not intended to replace the recommended maintenance schedule. This guide does not contain maintenance and repair procedures and should only be used as a ride inspection and test guide.

When repairs are necessary, use only those components authorized, specified or provided by the manufacturer. If any alterations, modifications and/or additions, installations of unauthorized components are made to the original design without the manufacturer's explicit written consent or without direct supervision by a manufacturer's representative, CHANCE RIDES, INC. makes no claims as to the integrity of the altered or modified ride (product).

Information in this field inspection and testing guide applies only to products manufactured by CHANCE RIDES INC. built after January 1, 1986.

CHANCE RIDES INC., reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to such changes.

Ride description

The **20-Foot Fantasy Carrousel** is mounted on a stationary base plate. The center section and sweeps all rotate about the base plate.

Tower erection is accomplished using specialized material handling equipment, including a set-up dolly for the center section and other heavy components, and a jib crane to raise the center pole, fabric top and finial.

The ride rotates in a counter-clockwise direction, powered by a variable frequency AC electric drive with integral electro-mechanical (spring) brakes.

Ride information plaque

The ride information plaque is mounted to the main tower structure in the center of the ride. The plaque lists specifications, operating dimensions, ground loads, as well as model and serial number and date of manufacture.

Detailed operation and maintenance information is available in the *20-Foot Fantasy Carrousel Service Manual* (manual number 24327216). For more information, or to order manuals, contact CHANCE RIDES, INC.

Manufacturer's Specifications⁵

Reference Standard:

ASTM - F24 Standards on Amusement Rides and Devices

1. F583 Maintenance Procedures for Amusement Rides and Devices
2. F893 Inspection of Amusement Rides and Devices
3. F1159 Design and Manufacture of Amusement Rides and Devices

Chance Rides, Inc., at the time of the initial design and prototype manufacture, determines by calculations and testing the appropriateness of the functional design criteria. The visual esthetics of the ride are also evaluated and together with the functional design criteria make up the manufacturer's design specifications. These design specifications are adhered to on all subsequently produced rides of the same style. Occasionally, through field experience, it becomes necessary to specify a modification to the original design specifications. Actual modification to meet the change in design specifications can only be performed by qualified personnel, following the directives of a Chance Rides, Inc. Service Bulletin, Service Kit, or a Chance Rides, Inc. representative, where applicable.

Any modification performed on a Chance Rides, Inc. product outside the recommended directives established by Chance Rides, Inc. as referenced above, constitutes an unauthorized modification. Chance Rides, Inc. specifically disclaims any liability for losses associated with any unauthorized alteration and/or modification to any of its products. Chance Rides, Inc. will not issue letters for the operation of rides which do not meet the manufacturing specifications; this includes cases where the non-conforming modification is of an aesthetic nature only.

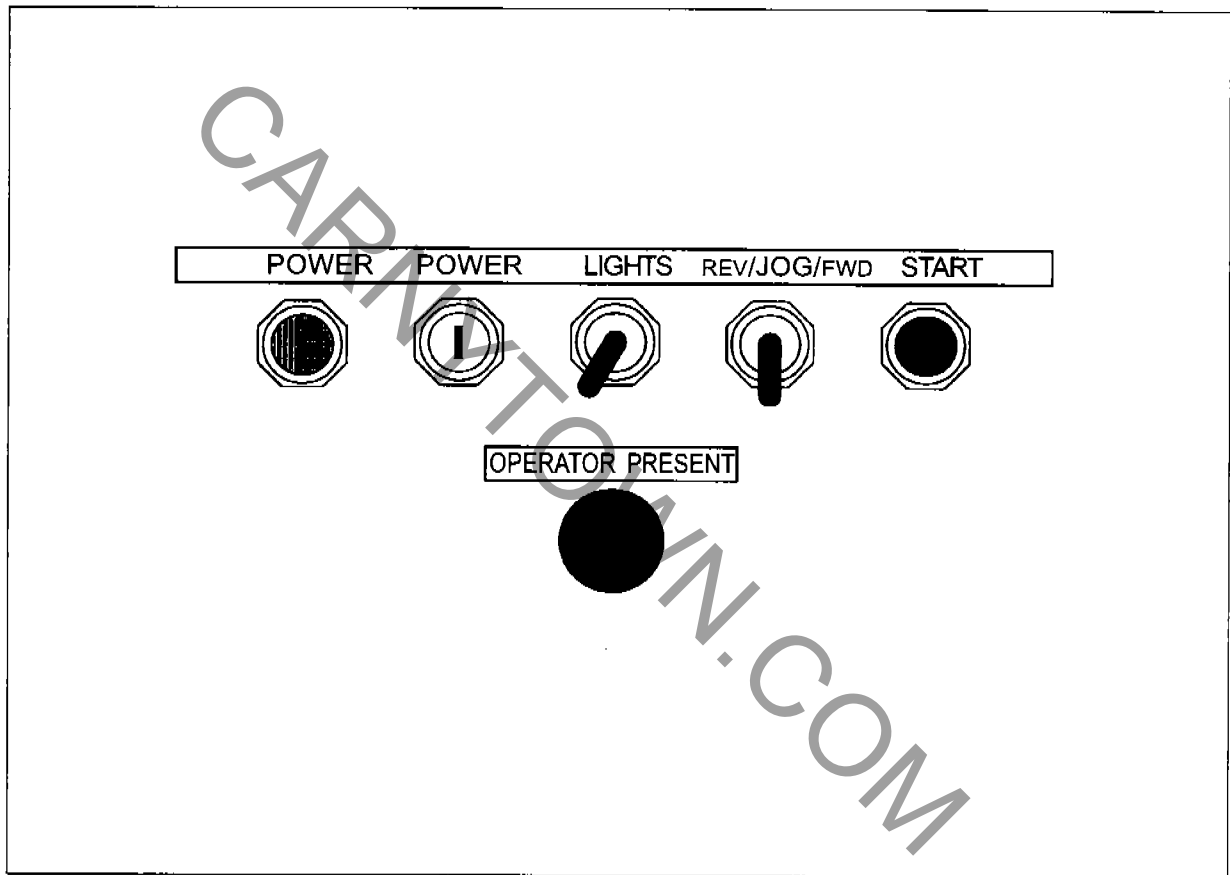
It is the responsibility of the individual inspector to thoroughly inspect the ride as deemed necessary, based on his knowledge and field experience to determine that the ride meets the manufacturer's specifications and/or is safe for operation.

Operation

1. **Power indicator light** - This green light indicates that power is being supplied to the control panel. It comes on when the main power circuit breaker is on.
2. **Power switch** - Use this switch to turn off the main power circuit breaker on the side of the control console.
3. **Start switch** - Use this switch to start the programmed ride cycle. The start button operates only when the OPERATOR PRESENCE SWITCH is depressed and the LIGHTS switch is in the "ON" position.

NOTE: If the ride is equipped with a wheelchair ramp, the ramp must be in the stowed position to start the ride.

4. **Lights switch** - Use this switch to turn on the decorative lighting on the ride. This switch must be in the "ON" position to start the ride.
5. **Operator presence switch** - This push button switch must be depressed to operate the ride. This switch interrupts the drive program when released. The ride will come to a normal, programmed stop.
6. **Jog switch (wheelchair ramp equipped rides only)** - Use this switch to slowly turn the ride counter-clockwise to position the wheelchair ramp.
7. **Main power circuit breaker (not shown)** - This control is located below the control panel on the control console. Turn it to the "ON" or "OFF" position to control the main power for the ride at the control console.



Operating the ride (test cycle)

The operating procedure is provided in the *20-Foot Fantasy Carrousel Service Manual*. Make sure that a copy of the manual is readily available.

Test the operation of all controls. Throughout the ride cycle, check for correct speed and proper brake operation. Check the overall performance of the ride based on previous operating performances of the individual ride.

CARNYTOWN.COM

General inspection and testing

Testing

Field performance testing of amusement rides¹

The following specifications conform with ASTM F846 standard guide for *Testing Performance Of Amusement Rides And Devices*, in effect on date of ride manufacture.

Erection or installation testing

Each erection or installation of a ride shall be given an inspection prior to carrying passengers that shall include but not be limited to the following:

- a. Determine that ride has been erected according to the set-up procedures in the operations manual.
- b. Inspect field inspection points listed in the *Field Inspection Guide*.
- c. Visual check of all passenger carrying devices including restraint devices and latches, and the pins and capscrews securing them.
- d. Visual inspection of entrances, exits, stairways and ramps and devices securing them.
- e. Test of all communications equipment necessary for operation of the ride or device.
- f. Operate the ride to determine that direction of travel conforms to the information plate, ride manual field inspection guide of specification sheet.
- g. Operate the ride for a minimum of three ride cycles to determine that the ride speed does not exceed the speed specified in the information plate, ride manual field inspection guide of specification sheet.

Daily pre-opening inspection

This inspection shall include a daily inspection of all items as specified in the previous item (erection or installation testing).

1. B090R1002-0 May 14, 1986

Documented field performance and operational testing

Documentation and certification shall be performed by a person who, by demonstrated education and field experience, is knowledgeable with construction, erection, operation, maintenance and repair of amusement rides.

Operational load testing

Any operational test including load testing performed on a ride shall be completely non-destructive in nature. Overload testing exceeding the rated limits listed on the information plate, operation manual, field inspection guide or specification 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.

Non destructive 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 non-destructive 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.

Conducting a non-destructive 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.

CHANCERIDES, INC. considers 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.

Non-destructive testing²

- REFERENCE** 1. *ASTM-F24 Standard On*
STANDARD *Amusement Rides And Devices*
- a. *F846-86 Testing Performance Of Amusement Rides*
 - b. *F853-86 Maintenance Procedures For Amusement Rides And Devices*
 - c. *F893-87 Inspection Of Amusement Rides And Devices*

CHANCE RIDES, INC., at the time of design and manufacture, determines by calculations and testing of a prototype amusement ride the appropriateness for use, of not only the parts, but the entire system of a newly designed ride. These calculations and tests are utilized to, as feasibly as possible, determine the requirements for expected design life of major components. Based on this design criteria, CHANCE RIDES, INC. does not identify critical components on amusement rides to be singled out for non-destructive testing.

If through field experience, there is an indication that a structural or mechanical problem may develop on rides currently operating, CHANCE RIDES, INC. will notify owners by bulletin of the recommended procedures to inspect and correct the possible problem. Any possible defect which could affect the continued safe or proper operation of the ride should be reported immediately to the manufacturer by the owner/operator. This information is necessary so that a determination can be made for either the repair or replacement of the possible defective parts.

Field repairs should not be undertaken without the approval and proper instructions from the manufacturer and should be performed by qualified personnel. These persons should have a complete understanding of both the component's function and the manufacturer's instructions.

It is the responsibility of the individual inspector to thoroughly inspect the ride as he deems necessary based on his knowledge and field experience and manufacturer's recommendations. If the inspector finds an area or component that could be a problem, structural or otherwise, the factory should then be notified. It is then the responsibility of the inspector to ensure that the manufacturer's recommendations for repair, replacement or otherwise have been completed and are in compliance with the required specifications.

Load testing is a destructive form of testing and is not recommended by the manufacturer, as per previous topic "Field performance testing of amusement rides."

Fasteners

Capscrews

Capscrews used by CHANCE RIDES, INC. are classified as functional load-carrying capscrews if:

- They are used as tension members in the erection or operation of the ride and/or
- They are required to resist shear through friction-type connections in the erection or operation of a ride.

Capscrews are selected with consideration to grade, size and quantity, using joint capacities based on tightness torques of 60% rated yield and group joint efficiencies of 62.5%

Torque requirements⁴

Capscrews must be tightened to the torque values listed in the torque chart. These values were selected to produce a tightening torque range of 60% to 70% of proof load, when tightened with a hardened washer under the nut or capscrew head (whichever is accessible for tightening). When the capscrew is tightened from the head end, apply anti-seize lubricant to the shank end of the capscrew. When the threads are lubricated, use 10% less torque to tighten the capscrew.

DO NOT TIGHTEN CAPSCREWS OVER THE RECOMMENDED TORQUE. This can damage the capscrew, due to variances in coefficients of friction and torque wrench accuracy.

Always use a torque wrench. It is impossible to accurately measure the tightness of a capscrew by other methods. Torque wrenches must be checked for accuracy twice each operating season.

Size Diameter - Threads/inch	Foot pound torque range (see notes 1 and 2) with locknut and hardened washer	
	SAE J429 Grade 5 ASTM A325	SAE J429 Grade 8 ASTM A490
1/4 - 20	5-6	7-8
1/4 - 28	6-7	8-10
5/16 - 18	11-13	15-18
5/16 - 24	12-15	17-21
3/8 - 16	19-24	27-33
3/8 - 24	22-27	31-38
7/16 - 14	30-35	45-55
7/16 - 20	35-40	50-60
1/2 - 13	50-60	65-80
1/2 - 20	55-65	75-90
5/8 - 11	95-115	130-160
5/8 - 18	105-130	150-180
3/4 - 10	165-200	235-285
3/4 - 16	185-225	260-320
7/8 - 9	270-325	380-460
7/8 - 14	295-360	415-505
1 - 8	400-490	565-690
1 - 12	440-535	620-755
1 1/8 - 7	495-600	800-975
1 1/8 - 12	555-675	900-1095
1 1/4 - 7	700-850	1135-1380
1 1/4 - 12	775-940	1255-1525
1 1/2 - 6	1215-1480	1975-2395
1 1/2 - 12	1370-1660	2220-2700

Torque chart

Torques for functional load carrying cold finished hex head capscrews with dry rolled threads, used with locknuts (see note 3), and tightened with an ASTM A325 hardened washer under the capscrew or locknut head (whichever is accessible for tightening).

This torque range will develop 60% to 70% of proof load.

Refer to **Replacement of capscrews and locknuts** for conditions requiring replacement

NOTES

1. Use anti-seize lubricant on capscrew shank when tightened from head end.
2. Use 10% less torque when anti-seize or other lubricant is used on threads.
3. Use same torque range for holes tapped in steel.


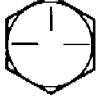










Capscrew grades

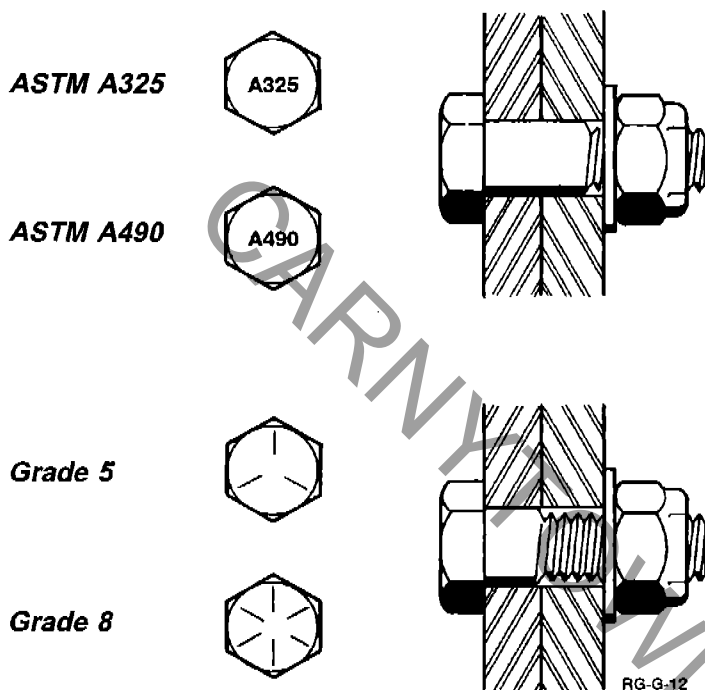
CHANCE RIDES, INC. uses only grade 5 or better capscrews and grade 8 locknuts, with A325 hardened washers for functional loads. The *Grade markings chart* shows the capscrew markings to be found on CHANCE rides. The manufacturer's identification symbols must be present on all functional load carrying capscrews.

CHANCE RIDES, INC. requires the use of cold-formed hex head capscrews with rolled threads. Hex bolts and hot formed hex head capscrews are not recommended because they may have machined threads and can have die seams along the shank.

NEVER REPLACE CAPSCREWS OR NUTS WITH PARTS OF A LESSER GRADE, OR DIFFERENT LENGTHS THAN THOSE SHOWN IN THE CHANCE PARTS CATALOG.

Grade markings for functional load carrying capscrews
 Manufacturer's identification symbols must be present on all capscrews

Correct markings	Examples of unacceptable markings	
<p>SAE J429 Grade 5 Medium carbon 81,000 yield</p> 	 <p>Grade 5.1 Low carbon</p>	 <p>Grade 5.2 Low carbon martensitic</p>
<p>ASTM A325 Type 1 Medium carbon Longer shank and shorter thread length than Grade 5 81,000 yield</p>  <p>ASTM A325 Type 3 Corrosion resisting Longer shank and shorter thread length than Grade 5 81,000 yield</p> 	 <p>ASTM A325 Type 2 Low carbon martensitic</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">RG-G-11</p>	
<p>SAE J429 Grade 8 Medium carbon 130,000 yield</p> 	 <p>ISO R898 Class 8.8 Medium carbon 92,000 yield</p>	
<p>ASTM A490 Alloy steel Longer shank and shorter thread length than Grade 8 130,000 yield</p> 	 <p>ISO R898 Class 10.9 Alloy steel 130,000 yield</p>	



Capscrew comparison

ASTM A325 and A490 cap screws have longer shanks and shorter threads than Grade 5 and Grade 8 cap screws of the same size.

RG-G-12

Replacement of cap screws and locknuts

When permanently installed cap screws and locknuts are disassembled for repair or adjustment, they must be replaced if they have been in service over five (5) years, or corrosion, or other damage requires over-torquing for removal. If a torque wrench is not used to measure excessive removal torques, the cap screws and locknuts must be replaced.

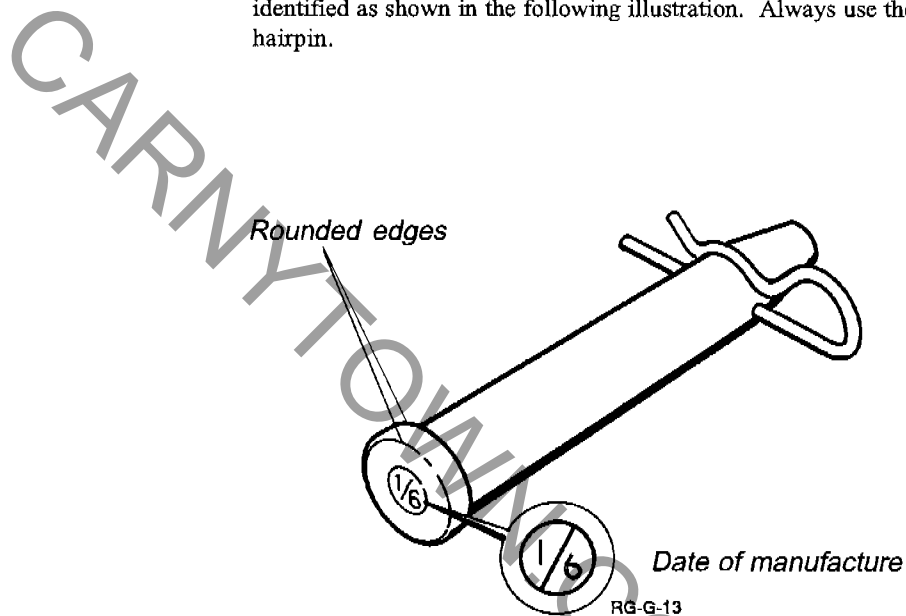
Cap screws and locknuts which are frequently disassembled for portability must be replaced each operating season. If the cap screws and locknuts become damaged, corroded or require excessive torque for removal, they must be replaced. If a torque wrench is not used to measure excessive removal torques, the cap screws and locknuts must be replaced.

Pins³

Tapered pins used on amusement rides are subject to deterioration due to improper use and wear. CHANCE RIDES, INC. specifies certain pins for certain applications on amusement rides. These pins have been developed over a period of years, taking into account size, design, material and hardness characteristics.

Use only the pins specified by CHANCE RIDES, INC. These pins are identified as shown in the following illustration. Always use the correct hairpin.

Pin identification

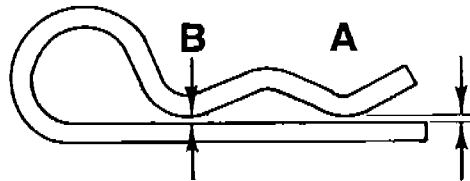


Use care when installing and removing tapered pins. Since these pins are hardened (as are hammers and punches) care must be taken to strike the pin straight on. Striking a pin at an angle can cause the pin to chip, resulting in personal injury. For this reason APPROVED SAFETY GLASSES OR GOGGLES MUST BE WORN AT ALL TIMES when tapered pins are being installed or removed. If a tapered pin is chipped, bent, or “mushroomed” on either end, discard it and replace it with a new pin.

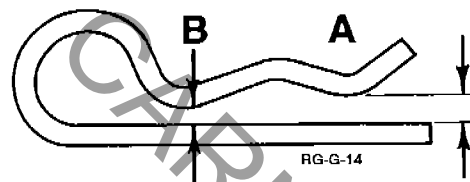
Pin keepers

All keepers (R-keys, hair pins, lynch pins, etc.) must be inspected for wear. If a keeper is bent out of shape or “sprung”, it must be replaced.

Hairpins are expendable parts. After repeated use, they become worn and “sprung” as shown.



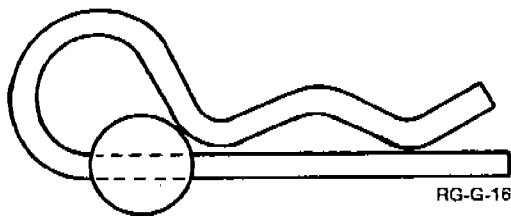
Acceptable hair pins
Dimension "A" equals dimension "B" in a relaxed position



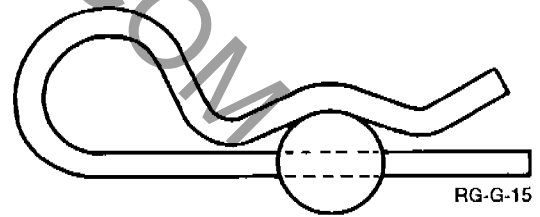
Unacceptable hair pins
Dimension "A" is greater than dimension "B" in a relaxed position

NEVER ATTEMPT TO BEND A HAIR PIN BACK INTO SHAPE. REPLACE IT WITH A NEW PART.

The correct installation of a hairpin is shown. Incorrectly installed hairpins are more likely to fail, and will distort after only a few uses.



Incorrect



Correct

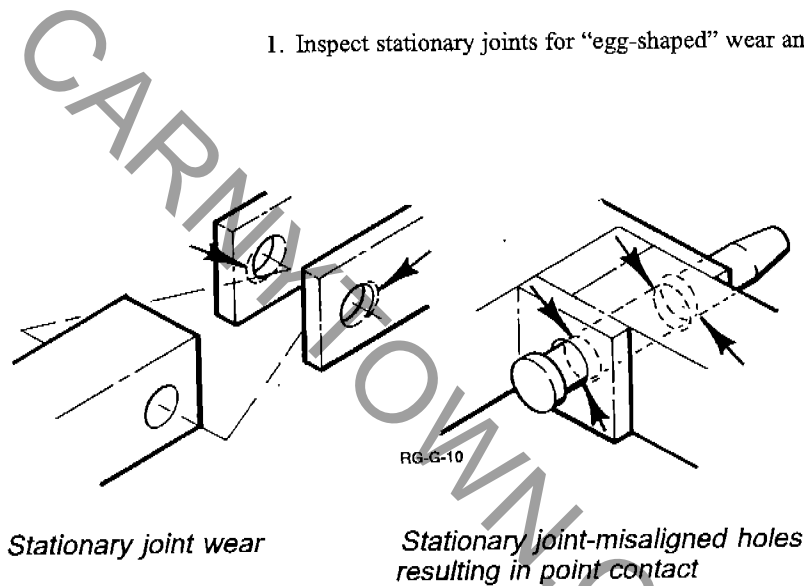
CHANCE RIDES, INC. recognizes and recommends the safety procedures specified in *ASTM Standards F770 Operation Procedures for Amusement Rides and Devices* and *F853 Maintenance Procedures for Amusement Rides and Devices*.

Inspection

Joint inspection

Some joints will appear to wear rapidly on new rides. This is usually a result of the holes not aligning in the mating parts. When this condition occurs it results in "point contact". A joint with this condition will generally wear rapidly until the load is distributed evenly over the fastener and the parts. If in doubt about the condition of a bolt, pin or hole on a new ride consult CHANCE RIDES, INC., and replace as required.

1. Inspect stationary joints for "egg-shaped" wear and loose pins.



2. Inspect moving joints for wear and lubrication.
3. Inspect welded structural joints for cracking or fatiguing.
4. Inspect bolted structural joints for cracking, fatiguing and proper bolt tightness.
5. Inspect pins and keepers on all pin joints for wear and proper installation.
6. Inspect all pins for proper CHANCE identification marks.

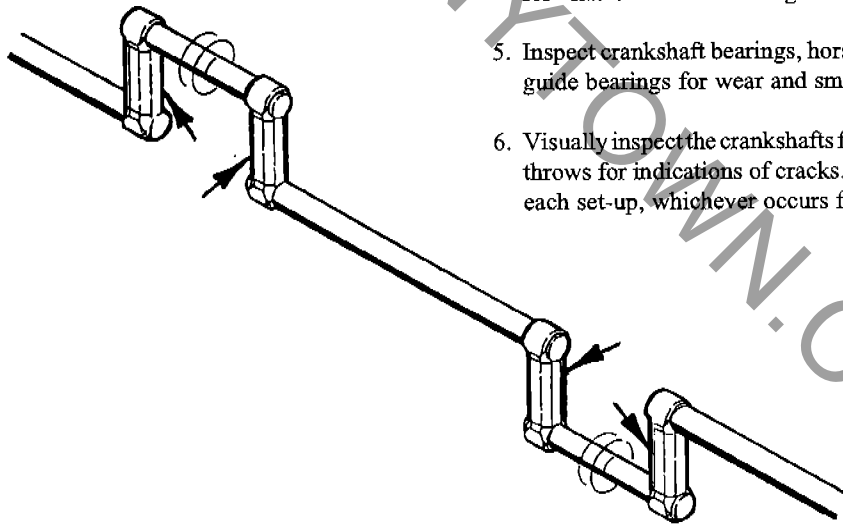
General safety guidelines

The following is a list of general safety rules to which everyone should adhere.

1. All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation.
2. Inspect the ride before each day of operation to determine that no portion of the ride is damaged, missing or worn in such a manner that unsafe conditions can develop.
3. Perform the manufacturer's recommended maintenance procedures at the intervals and in the manner specified in the operation and maintenance manual.
4. Study each job carefully to determine all hazards so that necessary safety precautions can be taken.
5. Examine safety devices (tools, ladders, etc.) before they are used to make sure they are in good condition. Use only OSHA approved safety items. Ladders must be clean and unpainted.
6. Use the proper tool or equipment for each job. All hand electric power tools must be properly grounded.
7. Wear close fitting, comfortable clothing when working on or near moving parts or live electrical circuits. Avoid finger rings, jewelry or other articles which can be caught in moving parts or come in contact with electrical circuits.
8. Protect your eyes by wearing approved safety glasses or goggles.
9. Wear a hard hat at all times. When working in elevated areas, use a safety belt.
10. Where work performed is hazardous, never work alone.
11. If guards are removed from equipment, make sure they are replaced before leaving the job.
12. Clean up after each job, disposing of surplus materials.
13. Keep a record of parts replaced and the date of replacement. Inform the manufacturer of any replacement requirements which are frequent or cause unsafe conditions.
14. Make modifications and additions only as outlined in manufacturer's service and safety bulletins.

Sweep and crankshaft inspection

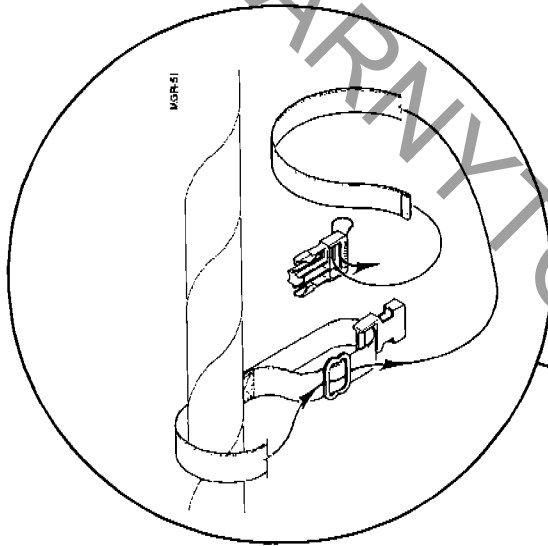
1. Inspect upper and lower sweep attach points for signs of wear.
2. Inspect the installation of the spreader bars between the upper sweeps and lower sweeps. Check for proper installation of capscrews and nuts.
3. Inspect the installation of the guy rods to the upper sweeps.
4. Inspect the upper and lower sweeps and spreader bars and crankshafts for visible cracks or damage.
5. Inspect crankshaft bearings, horse pole support bearings and horse pole guide bearings for wear and smooth operation.
6. Visually inspect the crankshafts for cracks or damage. Inspect crankshaft throws for indications of cracks. Perform this inspection monthly or at each set-up, whichever occurs first.



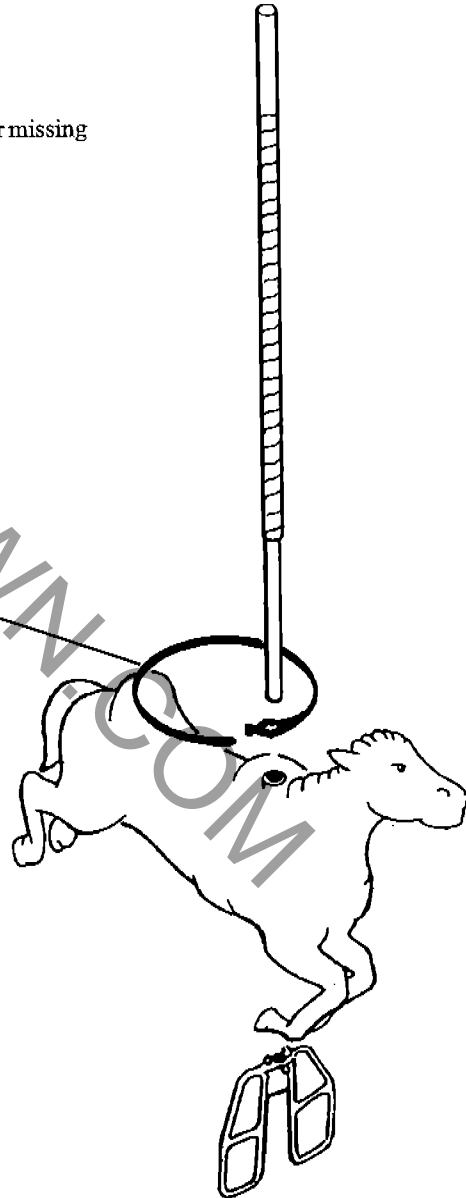
6. Inspect the horse drive covers (which cover the crankshaft at the floor) for wear, damage and smooth operation.

Horse inspection

1. Inspect all horses, seat belts and horse steps for broken, worn or missing parts.



Detail of correct seat belt installation



████████████████████
**Electrical and
lighting inspection**

1. Inspect cable leads, electrical connections and grounding per local code.
2. Test the operator controls for correct function.

████████████████████
Leveling inspection

Inspect the leveling of the ride at each set up and at the start of each day.
Rides erected in soft locations require more frequent inspection.

DO NOT USE WOOD BLOCKING UNDER THE BASE PLATE.

████████████████████
**Platform and
fence inspection**

1. Check for correct platform height of $13" \pm 1"$, from the ground to the top of the platform.
2. Inspect fences for proper installation.

Bibliography

The following service bulletins and manuals are referenced in the preceding text. Service bulletins issued after publication of this guide are located at the back of each section. Any future bulletin releases affecting a ride will be provided by CHANCE RIDES, INC. Bulletins received after receipt of this guide should be considered updates to this guide.

20-Foot Fantasy Carrousel Service Manual
24327216
November, 1996

CHANCE RIDES, INC.
4219 Irving
P.O. Box 12328
Wichita, KS 67277-2328

1. *Field Performance Testing Of Amusement Rides*
B090R1002-0
May 14, 1986
2. *Non-destructive Testing*
B090R1022-0
March 21, 1988
3. *General Safety - Taper Pins*
B090R1056-0
February 9, 1990
4. *Replacement And Torque Requirements
For Functional Load Carrying Capscrews*
B090R1075-0
May 25, 1990
5. *Manufacturer's Specifications*
B090R1126-0
March 12, 1993

The following Product Improvement Notices are not referenced in the preceding text. The product improvements are not mandatory and may be incorporated at the owner's discretion.

Rust Stain Remover
P090R1179-0
September 22, 1997

Preventive Maintenance
P409R1183-0
September 5, 1997

CARNYTOWN.COM