MFG: CHANCE RIDES, INC.

NAME: ALPINE

BOBS/THUNDERBOLT
TYPE: NON-KIDDIE

THUNDERBOLT, ROCK AND ROLL ALPINE BOBS

Field inspection and test guide
Manual number 24329307



THUNDERBOLT, ROCK AND ROLL, ALPINE BOBS

Field inspection and test guide

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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 (Thunderbolt, Rock And Roll, or Alpine Bobs serial number 392-00886 and on).

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.

Manufacturer's Specifications¹⁸

Reference Standards - 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

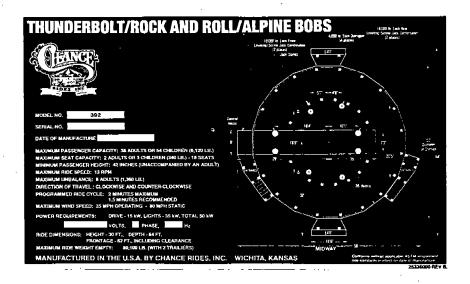
Chance Rides, Inc., at the time of the initial design and prototype manufacture, determines by calculations and testing the appropriateness of the functional design criteria. The visual esthetics of the ride are also evaluated and together with the functional design criteria make up the manufacturer's 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.

The **Thunderbolt**, **Rock And Roll** and **Alpine Bobs** are each mounted on a single trailer, with an auxiliary trailer providing additional racking provisions for portability. The rides have an electro-hydraulic drive system, with hydraulic braking. The ride information plaque is mounted to the center hub support tower. It 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 *Thunderbolt Operation And Maintenance Manual* (manual number 24326800). For more information, or to order manuals, contact CHANCE RIDES, INC.



The ride information plaque is mounted to the center hub support tower. The ride information plaque shown is for example only. Always refer to the information plaque mounted to the ride being inspected.

The terms "right hand" and "left hand" as used in this manual are determined by standing in front of the ride and facing the ride.

Operation

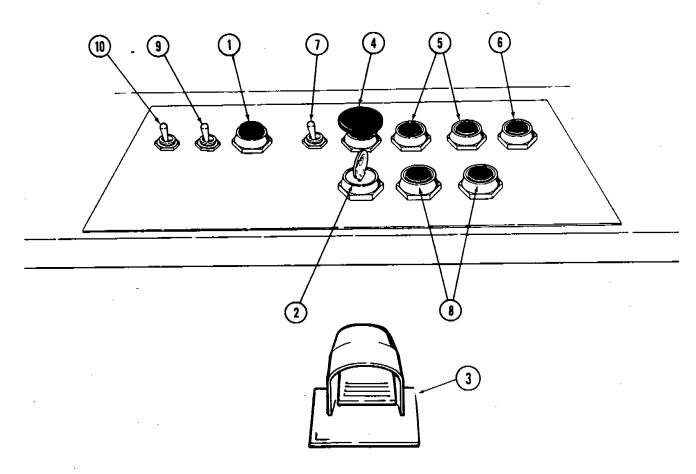
Operating controls

mending and state of the second of the secon

- 1. Power switch This switch turns off the main power circuit breaker in the motor control cabinet.
- 2. Program switch This key-operated switch selects the short or long ride program for the "RUN" mode. Do not change the program switch after the ride is started.
- **3. Operator presence switch** This foot switch must be depressed to operate the forward, reverse or jog switches. If the switch is released, the drive program is interrupted and the ride will brake to a stop.
- **4. Stop switch** This switch interrupts the drive program. The ride will brake to a stop.
- **5. Forward and reverse switches** Use these switches to start the programmed ride cycle. The operator presence switch must also be depressed. Stop the ride completely before changing the direction of rotation.
- **6. Extended program switch** After the ride starts, hold this switch down to extend the length of the ride cycle. As soon as the extended program switch is released, the ride will slow and brake to a stop.
- **7. Pump switch** This switch controls the hydraulic pump. Turn the switch off before leaving the control house. Do not stop the ride by turning off the pump.
- 8. Jog forward (clockwise) and jog reverse (counterclockwise) switches These switches allow the operator to slowly rotate the ride to any position for erecting the ride or loading passengers. The operator presence switch must also be depressed.
- **9. Flood lights switch** This switch controls the flood lights on the outer posts.

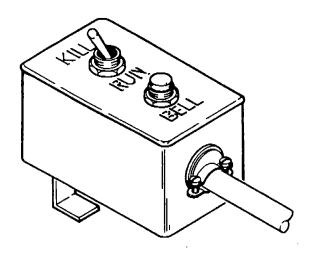
Operator's control panel 1. Power switch

- 2. Program switch
- 3. Operator presence switch4. Stop switch
- 5. Forward and reverse switches
- 6. Extended program switch
- 7. Pump switch
- 8. Jog forward and reverse switches
- 9. Flood lights switch
- 10. House lights switch



10. House lights switch - This switch controls the lights inside the control house.

Remote stop / bell switch



11. Remote stop / bell switch - During normal operation, there must be two operators, one in the control house and one platform operator at the opposite ride entrance. The platform operator uses the remote stop / bell switch. The stop switch has on and off positions to stop the ride in an emergency. The bell is used to communicate with the control house operator.

Operating the ride (Test cycle)

The operating procedure is provided in the *Thunderbolt Operation Manual and Parts Catalog*. Make sure that a copy of the manual is readily available. This ride requires two operators.

Check for excessive vibration or excessive oscillation of the vehicles. Check the overall performance of the ride based on previous operating performances of the individual ride.

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).

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.

CHANCE RIDES, 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 testing⁷

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

• The 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 requirements14

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.

DONOTTIGHTEN 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.

 $S_{\mathbf{B}} = C(S_{\mathbf{B}}, \mathbf{x}, \mathbf{y}) + \cdots + C(S_{\mathbf{B}}, \mathbf{y}, \mathbf{y})$

	Foot pound torque range (see notes 1 and 2) with locknut and hardened washer	
Size Diameter - Threads/inch	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	440-5 <u>3</u> 5	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 antiseize or other lubricant is used on threads.
- 3. Use same torque range for holes tapped in steel.

Capscrew grades

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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.

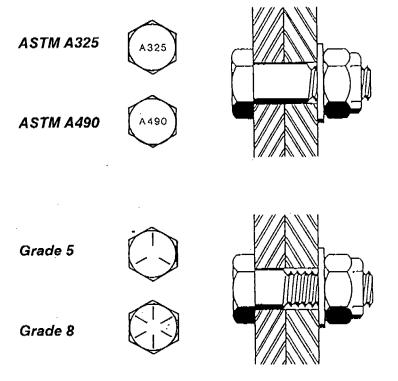
CHANCE RIDES, INC. requires the use of cold-formed hex head capscrews with rolled threads. Hex bolts and hot formed hex head capscrews are not recommended because they may have machined threads and can have die seams along the shank.

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
SAE J429 Grade 5 Medium carbon 81,000 yield	Grade 5.1 Low carbon martensitic
ASTM A325 Type 1 Medium carbon Longer shank and shorter thread length than Grade 5 81,000 yield ASTM A325 Type 3 Corrosion resisting Longer shank and shorter thread length than Grade 5 81,000 yield	ASTM A325 Type 2 Low carbon martensitic
SAE J429 Grade 8 Medium carbon 130,000 yield	ISO R898 Class 8.8 Medium carbon 92,000 yield
ASTM A490 Alloy steel Longer shank and shorter thread length than Grade 8 130,000 yield	ISO R898 Class 10.9 Alloy steel 130,000 yield

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Capscrew comparison ASTM A325 and A490 capscrews have longer shanks and shorter threads then Grade 5 and Grade 8 capscrews of the same size.

Replacement of capscrews and locknuts

When permanently installed capscrews 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 capscrews and locknuts must be replaced.

Capscrews and locknuts which are frequently disassembled for portability must be replaced each operating season. If the capscrews 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 capscrews and locknuts must be replaced.

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Pins¹¹

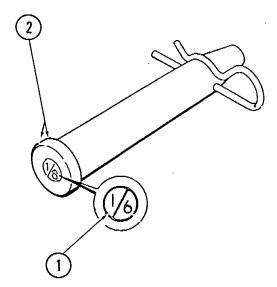
Tapered pins used on amusement rides are subject to deterioration due to improper use and wear. CHANCE RIDES, INC. specifies certain pins for certain applications on amusement rides. These pins have been developed over a period of years, taking into account size, design, material and hardness characteristics.

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

1. Date of manufacture

2. Rounded edges



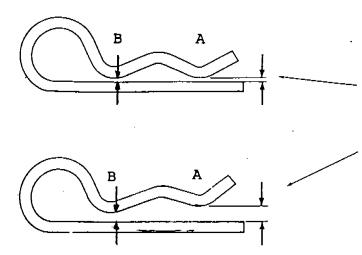
Use care when installing and removing tapered pins. Since these pins are hardened (as are hammers and punches) care must be taken to strike the pin straight on. Striking a pin at an angle can cause the pin to chip, resulting in personal injury. For this reason APPROVED SAFETY GLASSES OR GOGGLES MUST 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.



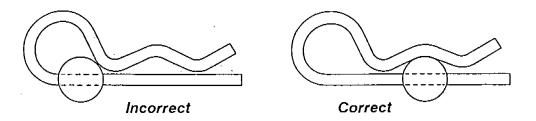


Acceptable hair pins
Dimension "A" equals dimension "B" in a relaxed position

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.



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

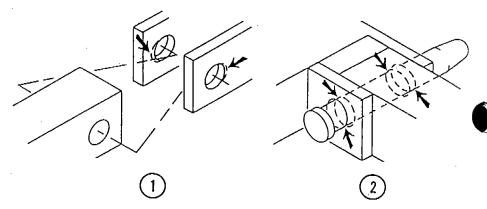
Joint inspection

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.

 Stationary joint wear
 Stationary joint-misaligned holes resulting in point contact



- 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.

Cable inspection

Inspection of drive cables and cables which support the ride during operation¹³

Replace cables if any of the following conditions exist. If more than one cable is used, cables must be replaced as a set.

- 1. Severe corrosion
 - a. Rust appearing to stem from interior of cable.
 - b. Cable appears clean but previous corrosion is evident from pitted condition in wires.
- 2. Severe stretching occurring in a short section of cable, indicated by a marked reduction in the diameter of the cable.
- 3. Severe physical damage such as kinking, crushing or "bird caging".



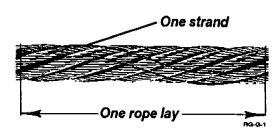




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- 4. One strand being 75% broken through.
- 5. A number of wires, equal to the number in a strand, broken in the length of one rope lay.

"Lay" as a unit of measure



Inspection of cables used for rigging, slings, and hoists¹⁹ Reference standards:

- OSHA 1926-550 Subpart N
 Cranes, derricks, hoists, elevators and conveyors
- ANSI B30.5
 - 5-2.4.3 Rope Replacement
 - 5-2.4.4 Rope Maintenance

Chance Rides, Inc. recognizes the above listed standards with regards to cables (wire rope) used for rigging, slings, and hoists for the purposes of setup and/or tear-down of an amusement ride. It is further recognized the no precise rules can be given to determine the exact life expectancy of any given cable, due to the variables to which that cable may be subjected. Continued use of a cable depends on the judgement of the individual who is authorized to evaluate the cable.

Chance Rides, Inc. requires that prior to each setup or teardown of an amusement ride, the owner's authorized representative inspect and evaluate all cables. Cables must be replaced if any of the following conditions exist.

- 1. Six randomly distributed broken wires in one lay;
- 2. Three broken wires in any one strand in one lay;
- 3. Wear of one-third the original diameter of outside individual wires:
- 4. Physical damage such as kinking, crushing, "bird caging", or any other damage resulting in distortion of the cable structure;
- 5. Damage due to heat of any kind;
- 6. Reductions from the nominal cable diameter of more than any of the following:

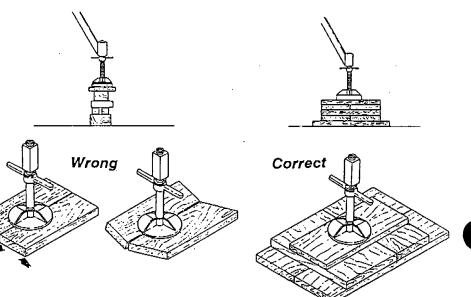
NOMINAL CABLE DIAMETER	MAXIMUM REDUCTION
5/16" and smaller	1/64"
3/8" to 1/2"	1/32"
9/16" to 3/4"	3/64"
7/8" to 1-1/8"	1/16"
1-1/4" to 1-1/2"	3/32*

Leveling and blocking (portable models)

- 1. Inspect leveling and blocking at each set up and at the start of each day (rides erected in soft locations require more frequent inspection).
- 2. Inspect for proper cross blocking or crib blocking. Cross blocking distributes weight evenly.

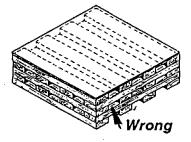
Always cross block Cross blocking distributes weight evenly.

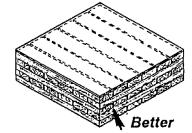
Recommended blocking: 3 X 12 X 36" and 3 X 12 X 24" unless otherwise noted.



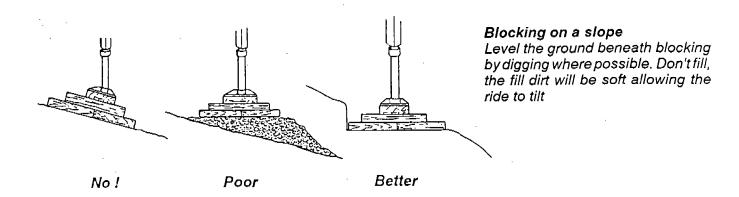
To avoid crushing under load "crib" blocking should be spaced no more than 1/4" for drainage.

"Crib" blocking
Large voids can let blocking crush
under load. 1/4" spaces allow
adequate drainage.

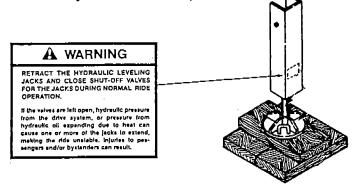




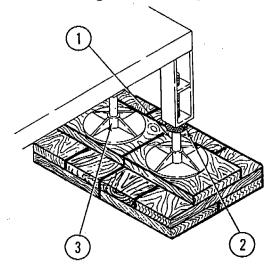
- 3. Inspect blocking for proper contact with ground.
- 4. Level ground under blocking by digging where possible, instead of filling. Fill dirt will be soft and allow settling.



5. Inspect hydraulic leveling jacks for leaks at every set-up. The hydraulic jacks are for leveling purposes only. They must be retracted and their shut-off valves closed during normal ride operation. Likewise, they must be fully retracted and their shut-off valves closed before transporting the ride. Check for placement of safety decals on each jack⁸.



6. Check the lock rings on all screw jacks for tightness.



- 1. Screw jack
- 2. Locking ring
- 3. Hydraulic leveling jack

General safety guidelines

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

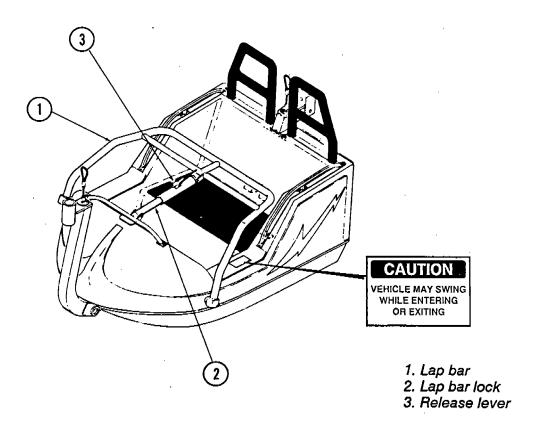
- 1. All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation.
- 2. Inspect the ride before each day of operation to determine that no portion of the ride is damaged, missing or worn in such a manner that unsafe conditions 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.

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14. Make modifications and additions only as outlined in manufacturer's service and safety bulletins.

Vehicle inspection

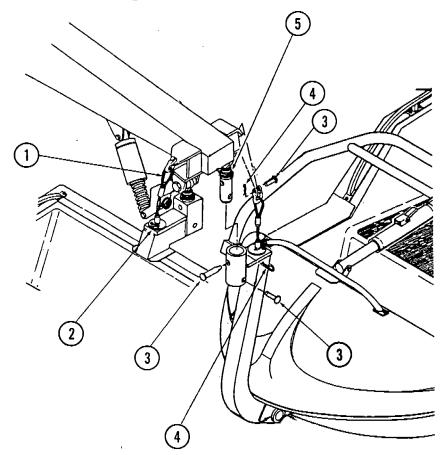
1. Check the operation of the lap bars, lap bar locks and release levers. Inspect overall condition and appearance of lap bars. Inspect vehicle safety decal¹⁷.



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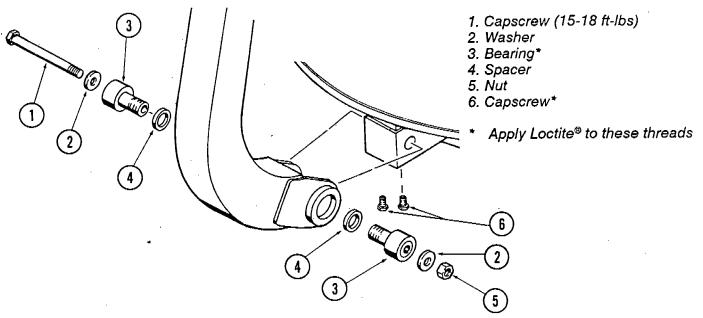
2. Inspect vehicle attachment at both front and rear of each vehicle. Pins and hairpins must be in place and the lock nut must be tight.



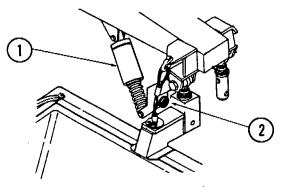
- 1. Cable
- 2. Cable lock
- 3. Pin
- 4. Hairpin
- 5. Jam nut

- 3. Inspect vehicle hangers (especially the rod end) weekly or at every set-up. Look for signs of wear, cracks, bends or damaged threads. The rod end is not serviceable separately.
- 4. Inspect the cables which run through the vehicle frame daily, especially around the cable locks and in the vehicle frame pivot area. Check for signs of fraying and crimping. Repaired or spliced cables are not acceptable.
- 5. Check the installation of cable locks to hold the cables securely in position.
- 6. Inspect the vehicle frame structures for cracks, bends and other damage, especially in the pivot area. Look for distorted holes, and make sure the bearings turn freely.

7. Inspect the frame pivot bearings. Bearings must turn freely, and be installed with the hardware shown. Green Loctite[®] sealant must be applied to the areas noted in the illustration⁵.



8. Inspect overall vehicle appearance, including the flooring and seat mats. Exterior abrasions can indicate vehicle oscillation problems. A back brace for the fiberglass back rest area is optional on ride serial numbers 392-00886 through 392-01086, and standard equipment thereafter.



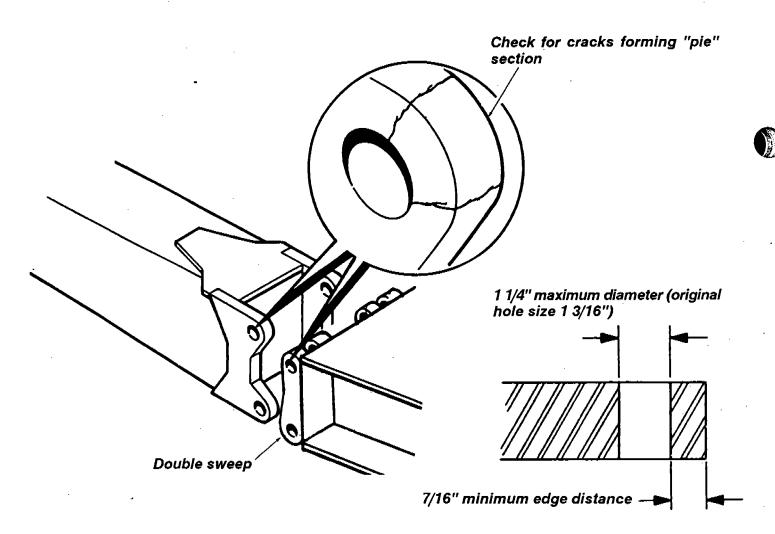
- 9. Inspect the shock absorber and rubber bumper for each vehicle. Check the operation and adjustment of the shock absorbers (initial setting is at 2-1/2). The shock should not bottom when the vehicle is pushed in with moderate force. If the shock bottoms, turn setting down in 1/2 setting increments.
- 1. Shock absorber
- 2. Rubber bumper

⁴ B392R1015-0 June 30, 1987

⁵ B392R1016-0 September 9, 1987

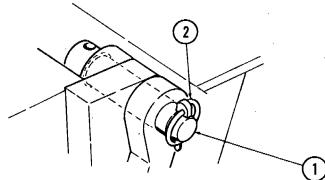
Sweep inspection

1. Inspect the attaching ears on all sweeps and double sweeps. Check for cracks and wear as shown¹². Cracked attaching ears MUST be replaced with new parts, do not weld ears.

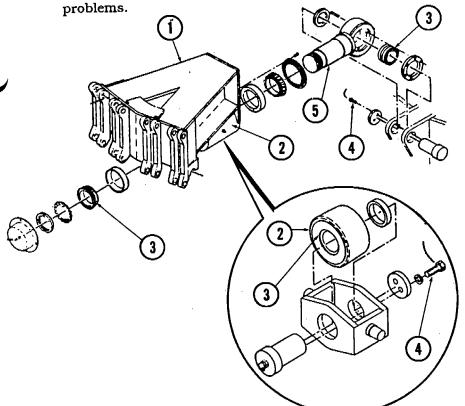




2. Inspect pins and lynch pins which attach sweeps to double sweeps.



- Pin
 Lynch pins
- 3. Inspect sweep rollers for lubrication and even contact with track. Uneven contact can indicate spreader bar adjustment



4. Inspect the bearings and capscrews in the roller cradle assemblies. Check performance of rollers at low speed. Check safety wires in the roller shaft capscrews.

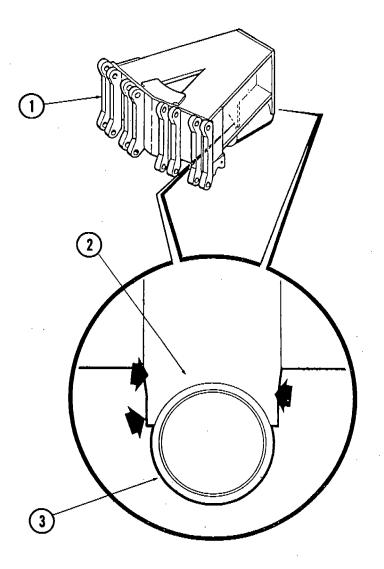
- 1. Roller cradle assembly
- 2. Sweep roller
- 3. Bearings
- 4. Roller shaft capscrew
- 5. Sweep spindle

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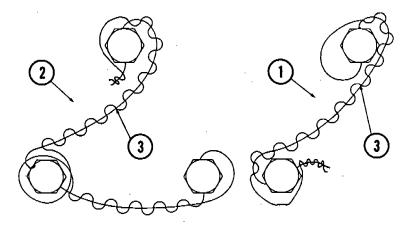
5. Inspect the double sweeps for cracks around the bearing housing support plates every 30 days using the following procedure¹⁶:

- Thoroughly clean all areas to be inspected. All areas must be free of grease and other foreign materials which could hamper inspection.
- Visually inspect all areas as indicated on the illustration below.
- This inspection must be done every 30 days or at each set-up, whichever occurs first.

- 1. Double sweep
- 2. Bearing housing support plate
- 3. Bearing housing



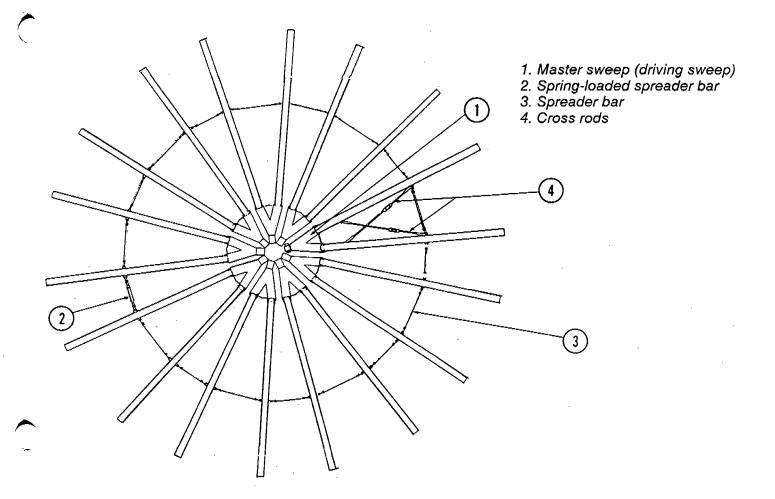
6. Inspect double sweeps for safety wire in sweep spindle shafts.



Safety wire installation

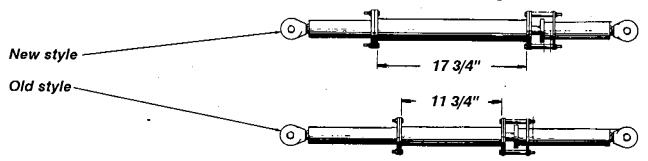
- Two bolt pattern
 Three bolt pattern
- 3. Safety wire

7. Check the installation of cross rods.

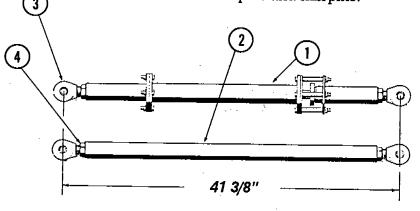


Spreader bar inspection

1. Inspect spreader bars for equal length spreader bars. Unequal length spreader bars are no longer acceptable⁹. All units MUST have the "new style" spreader bar.



- 2. Inspect spring loaded spreader bar for proper configuration as shown⁹.
- 3. Check adjustment of spreader bars monthly or at every setup, using the following procedure²:
 - a. Inspect all spreader bars and their attaching ears for cracks or bends. Inspect the spreader bar rod ends and the bushings in the attaching ears for wear or damage. Check the condition of all pins and hairpins.
- 1. Spring-loaded spreader bar
- 2. Spreader bar
- 3. Rod end
- 4. Jam nut



b. With all spreader bars removed from the ride, including the spring loaded spreader bar, loosen all jam nuts (two on each spreader bar). c. Measure the length between the rod ends, center-tocenter, on all spreader bars, including the spring-loaded spreader bar. This measurement must be 41-3/8 inches. Adjust the rod ends, but do not tighten the jam nuts at this point. THIS LENGTH IS USED AS A "BASE-LINE" MEASUREMENT ONLY, AND MUST BE ADJUSTED AS REQUIRED IN THE FOLLOWING STEPS.

IMPORTANT: Both rod ends must be threaded into the spreader bars an equal number of turns. Always adjust both rod ends equally, within one-half turn.

d. Install the spreader bars on the ride, using the correct pins and hairpins.

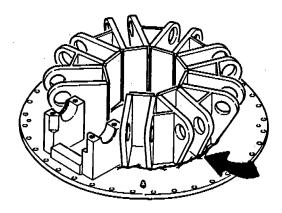
NOTE: The spring-loaded spreader bar must be installed 180° from the master sweep (driving sweep).

1. Master sweep (driving sweep) 2. Spring-loaded spreader bar 3. Spreader bar

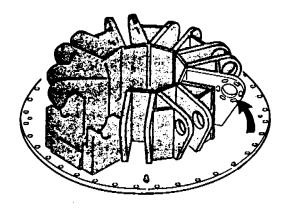
e. The vehicles must be installed to properly adjust the spreader bars. If the vehicles are not on the ride, install them at this time.

Center hub inspection

1. Inspect center hub base plate for cracks near the points at which the spindle ears are welded.



2. Check the inside surfaces of all spindle ears for circular gouges or other indication of contact with the spindles. Spindle contact can indicate spreader bar adjustment problems.



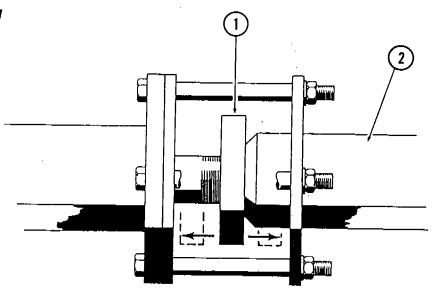
Circular gouges

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f. Rotate the ride counter-clockwise at least one complete revolution by hand, using two or three men. As the ride turns, watch the indicator ring on the spring-loaded spreader bar, as the spreader bar extends and retracts. The indicator ring must travel the same distance from "neutral" in both directions.

Indicator ring travel must be equal in both directions

- 1. Indicator ring
- 2. Spring loaded spreader bar



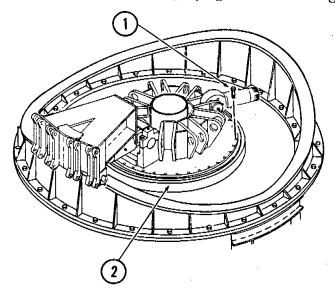
g. If the travel is equal in both directions, tighten the jam nuts on all spreader bars. If the travel is not equal in both directions, adjust the length of each spreader bar (either longer or shorter) by turning the rod ends. ALL SPREADER BARS, INCLUDING THE SPRING-LOADED SPREADER BAR, MUST BE THE SAME LENGTH. If one spreader bar is adjusted to a longer length, ALL spreader bars must be lengthened by the same amount. Repeat Steps f. and g. until the travel is equal.

h. As a final check, get into the vehicle closest to the spring-loaded spreader bar. Observe the action of the spring-loaded spreader bar during normal ride operation, at both low and high speeds. If the indicator ring travel is equal in both directions, the adjustment is satisfactory.

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3. Check the capscrews which attach the center hub to the bearing and the bearing to the frame weekly or at each set-up. These are $5/8-11 \times 2-1/4$ Grade 8 capscrews. Check for 130 to 160 ft-lbs. torque on these capscrews. When all capscrews are tightened, visually check the edge of the center hub base plate to be sure it is drawn tightly against the bearing.

- 1. Center hub-to-bearing capscrews
- 2. Bearing-to-frame capscrews

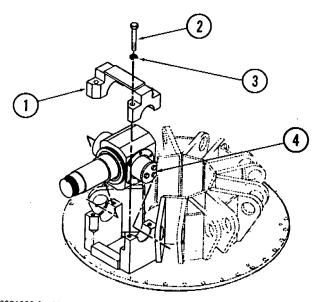


4. Check the capscrews which attach the master sweep bearing cap weekly or at each set-up.

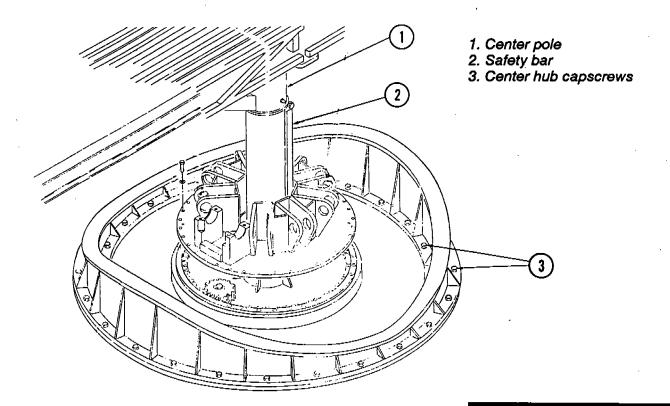
These are $7/8-9 \times 4-1/2$ Grade 8 capscrews with a hardened washer. Check for 460 ft-lbs. torque on these capscrews⁶.

Master sweep bearing cap

- 1. Bearing cap
- 2. Capscrew
- 3. Hardened washer
- 4. Safety wire



- 5. Check the capscrews which attach the track to the center hub. These are 3/4-10 Grade 5 capscrews with a hardened washer. Check for 165 to 200 ft-lbs. torque on these capscrews.
- 6. Check installation of safety bar on center pole.

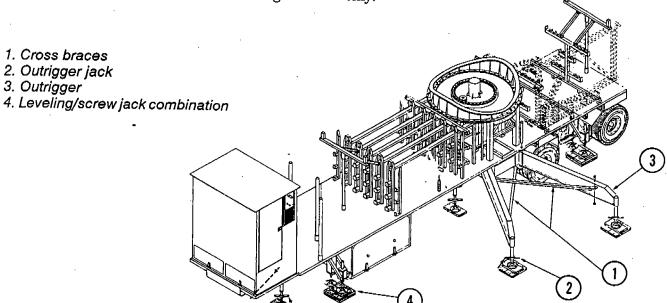


Electrical and lighting inspection

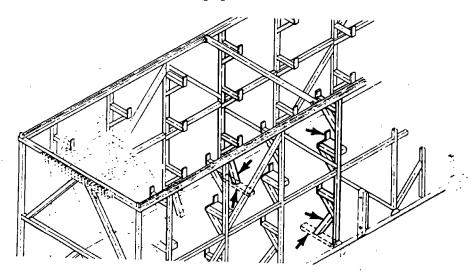
- 1. Inspect cable leads, electrical connections and grounding per local code.
- 2. Test the operator controls, including stop switch and power switch.
- 3. Inspect all quartz flood lights for installation of special clear tape on outside of lens²⁰.

Trailer inspection

1. Inspect trailer outriggers. Outrigger braces must be fastened with Grade 5 capscrews. Screw jacks must be tightened evenly.



2. The reinforcing braces shown for the auxiliary trailer are optional on ride serial numbers 392-00886 through 392-01486, and standard equipment thereafter³.



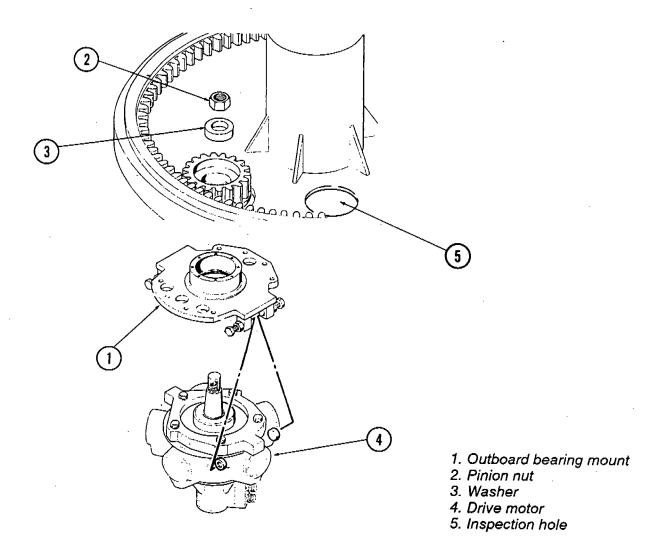
Auxilliary Trailer racking

AND THE RESERVE OF THE PROPERTY OF THE PARTY OF THE PARTY

1. Cross braces 2. Outrigger jack 3. Outrigger

Drive inspection

- 1. Inspect the entire hydraulic system including hoses, tubes, fittings and other components for leaks.
- 2. Inspect the drive motor mount. All rides must be equipped with the outboard bearing mount shown⁸.



Platform and fence inspection

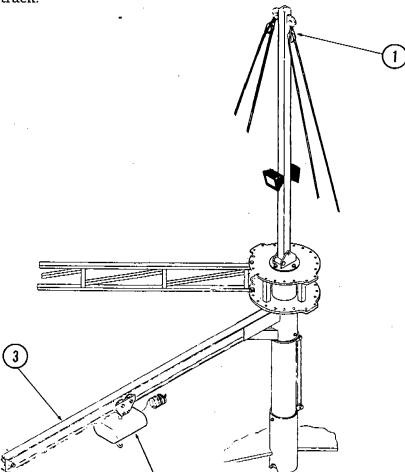
1. Inspect hand rails, ramps, steps and walkways.

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- 2. Inspect all gates and queue line chains. Self-closing exit gates must operate properly.
- 3. Exit gates must read "EXIT ONLY". Check entrance signs (if equipped).
- 4. Inspect floors and jackstands for proper installation and leveling.

Material handling equipment inspection

- 1. Inspect the general condition of all chains, cables, winches and rigging. Look for broken, worn or missing parts.
- 2. Inspect block and tackle for tent top and sign. The rope must not be cut or frayed.
- 3. Check for proper operation of the sweep hoist, and crane jib.
- 4. Check for proper operation of the vehicle hoist, trolley and track.



- 1. Tent top block and tackle
- 2. Sweep hoist
- 3. Crane jib

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.

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- Field Performance Testing Of Amusement Rides B090R1002-0 May 14, 1986
- Installation, Inspection And Adjustment Of Spreader Bars B392R1004-A December 31, 1988
- Auxiliary Trailer Rack Rework B392R1010-0 June 30, 1987
- 4. Vehicle Back Brace B392R1015-0 June 30, 1987
- Vehicle Frame Pivot Modification B392R1016-0 September 9, 1987
- Master Sweep Bearing Cap Rework (capscrews)
 B392R1020-0
 March 21, 1988

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7. Non-destructive Testing B090R1022-0 March 21, 1988

- Operation Of Shut-off Values For Hydraulic Leveling Jacks B392R1023-0 November 28, 1988
- Spreader Bar Inspection And Rework B392R1027 December 31, 1988
- 10. Hydraulic Motor Mount ReworkB392R1042-0July 12, 1989
- General Safety Taper Pins B090R1056-0 February 9, 1990
- 12. Sweep Ears B392R1006-0 May 22, 1990
- 13. Cable Inspection B090R1071-0 May 25, 1990
- 14 Replacement And Torque Requirements For Functional Load Carrying Capscrews B090R1075-0 May 25, 1990
- 15. Safety Decal B090R1083-0 August 17, 1990
- 16. Double Sweep Inspection B392R1089-0 December 15, 1990
- 17. Load / Unload Safety Decal B392R1091-0 February 28, 1991

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- 18. Manufacturer's Specifications B090R1126-0 March 12, 1993
- 19. Cable Inspection B090R1128-0 April 28, 1993
- 20. Flood Light Safety B090R1133-0 August 6, 1993

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