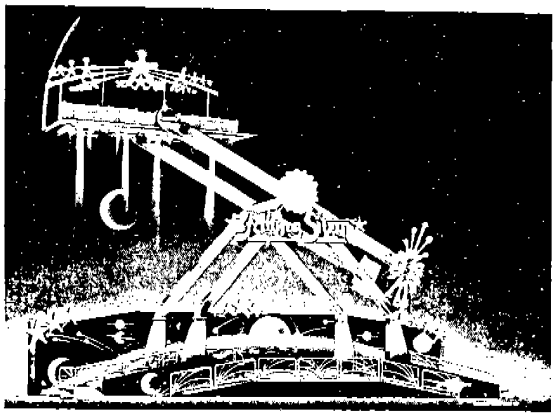
SPECIFICATION

This ride conforms with all applicable ASTM amusement ride standards in effect on the date of

MFG: CHANCE RIDES, INC.
NAME: FALLING STAR
TYPE: NON-KIDDIE



SEATING

Number of seats 20
Maximum number of passengers per seat . . . . . 2 adults or 3 children
Maximum total weight per seat . . . . . 340 lbs.
Maximum total number of passengers . . . . . 40 adults or 60 children
Maximum total passenger weight . . . . . 6,800 lbs.
Minimum passenger height . . . . . 42 inches (unaccompanied by adult)
Loading . . . . . All seats simultaneously
Maximum unbalance . . . . . 8 adults (1,360 lbs.)

PERFORMANCE

Direction of travel . . . . . Clockwise and counter-clockwise
Ride speed . . . . . 33 ft./sec.
Ride duration (maximum) . . . . . 2½ min. programmed cycle
Ride duration (recommended) . . 2 min. programmed cycle
Maximum wind speed (operating) . . . . . 35 mph
Maximum wind speed (static) . . . . . 80 mph

MAXIMUM RIDE WEIGHT (empty) . . . . . 126,000 lbs.

DRIVE . . . . . DC electric

POWER REQUIREMENTS

Total . . . . . 150 kW
Drive . . . . . 125 kW
Lights . . . . . 25 kW
Minimum/Maximum line voltage 208/230

DRIVE MOTOR

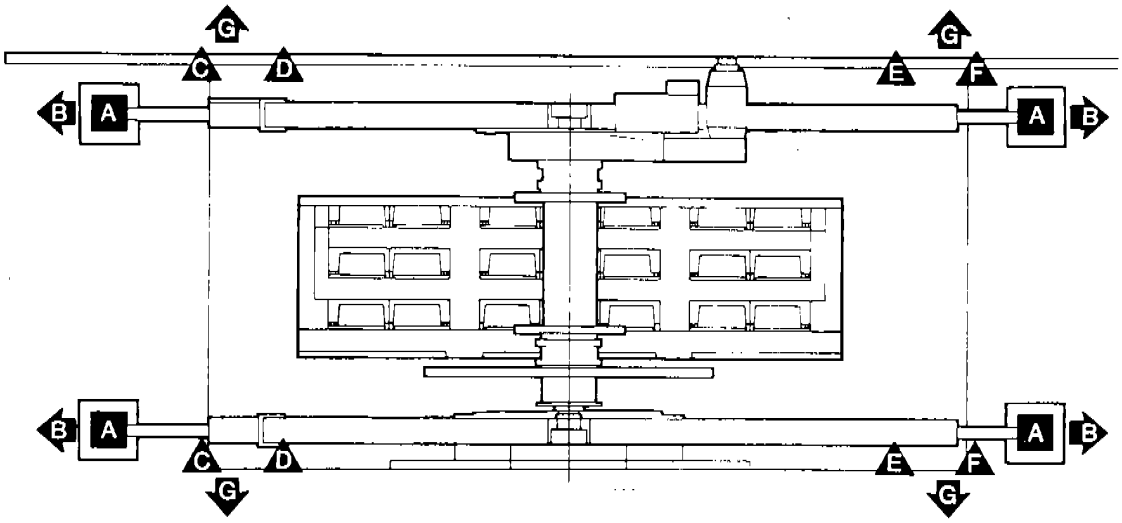
Type . . . . . DC regenerative motor
Horsepower rating 150

LIGHTING . . . . . 110 volt programmed incandescent

MUSIC . . . . . Baptist Model BRD 619

Specifications are effective as of publication date. Because we try to improve every Chance product, these specifications are subject to change without notice.

PARK MODEL **FALLING STAR**



MAXIMUM INDIVIDUAL GROUND LOADS (POUNDS)
REFER TO INSTALLATION DRAWINGS FOR SPECIFIC FOOTING LOCATION & LOADS

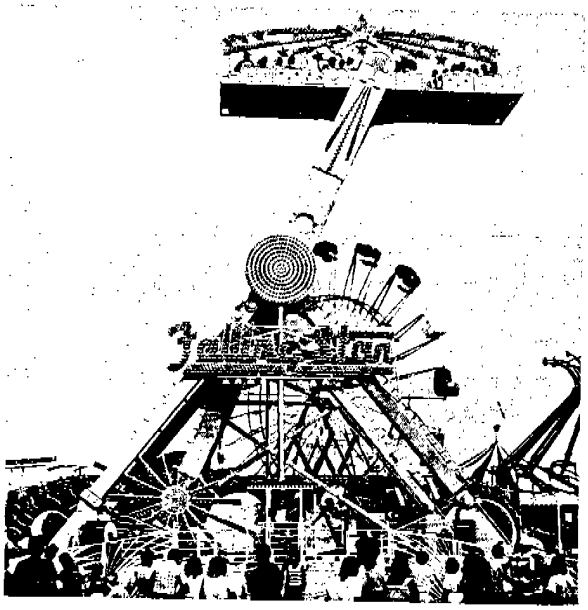
SYMBOL	DESCRIPTION	OPERATING - NO WIND 40 PASSENGERS	ADD FOR 80 MPH WIND
A	OUTRIGGERS	25,000	4,000
B	OUTRIGGER SIDE LOAD	14,000	1,000
C	PARK BASE - LH OUTSIDE TUBES	16,000	9,000
D	PARK BASE - LH INSIDE TUBES	20,000	13,000
E	PARK BASE - RH INSIDE TUBES	22,000	13,000
F	PARK BASE - RH OUTSIDE TUBES	18,000	9,000
G	PARK BASE SIDE LOAD	-0-	5,000

RIDE DIMENSIONS

Height ..... 67 ft.
Depth ..... 35 ft.
Ground Width ..... 59 ft.
Maximum Width (air) ..... 77 ft.

SPECIFICATIONS

This ride conforms with all applicable ASTM amusement ride standards in effect on the date of manufacture.



SEATING

Number of seats 20
Maximum number of passengers per seat ..... 2 adults or 3 children
Maximum total weight per seat ..... 340 lbs.
Maximum total number of passengers ..... 40 adults or 60 children
Maximum total passenger weight ..... 6,800 lbs.
Minimum passenger height ..... 42 inches (unaccompanied by adult)
Loading ..... All seats simultaneously
Maximum unbalance ..... 8 adults (1,360 lbs.)

PERFORMANCE

Direction of travel ..... Clockwise and counter-clockwise
Ride speed ..... 33 ft./sec.
Ride duration (maximum) ..... 2½ min. programmed cycle
Ride duration (recommended) .. 2 min. programmed cycle
Maximum wind speed (operating) ..... 35 mph
Maximum wind speed (static) ..... 80 mph

MAXIMUM RIDE WEIGHT (empty) ..... 183,000 lbs.

DRIVE ..... DC electric

POWER REQUIREMENTS

Total ..... 150 kW
Drive ..... 125 kW
Lights ..... 25 kW
Minimum/Maximum line voltage 208/230

DRIVE MOTOR

Type ..... DC regenerative motor
Horsepower rating 150

LIGHTING ..... 110 volt programmed incandescent

STANDARD LEAD-IN CABLE

Size ..... (2) 4/O
Length ..... (2) 75 ft.

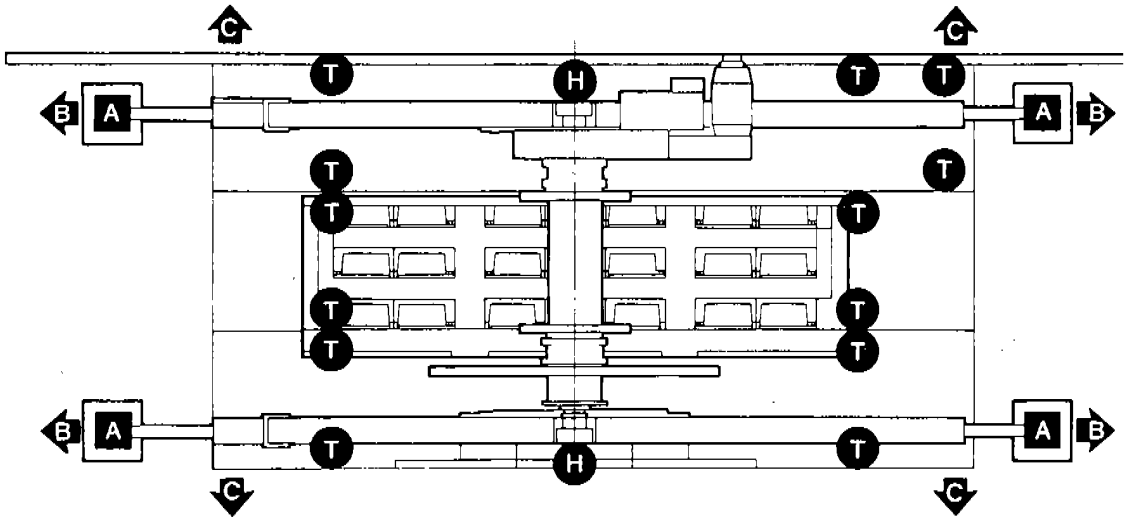
MUSIC ..... Baptist Model BRD 619

TRAILERING

	Front Trailer	Center Trailer	Rear Trailer
Height	13 ft. 6 in.	13 ft. 6 in.	13 ft. 6 in.
Width	8 ft. 0 in.	8 ft. 0 in.	8 ft. 6 in.
Length	40 ft. 0 in.	42 ft. 0 in.	40 ft. 0 in.
Rear axle weight	34,000 lbs.	34,000 lbs.	39,000 lbs.
Kingpin weight	26,000 lbs.	24,000 lbs.	26,000 lbs.
Total weight	60,000 lbs.	58,000 lbs.	65,000 lbs.
Tire size	10:00 x 20 (12-Ply)	10:00 x 20 (12-Ply)	10:00 x 20 (14-Ply)

Specifications are effective as of publication date. Because we try to improve every Chance product, these specifications are subject to change without notice.

PORTABLE MODEL **FALLING STAR**



MAXIMUM INDIVIDUAL GROUND LOADS (POUNDS)
REFER TO INSTALLATION DRAWINGS FOR SPECIFIC FOOTING LOCATION & LOADS

SYMBOL	DESCRIPTION	OPERATING - NO WIND 40 PASSENGERS	ADD FOR 80 MPH WIND
A	OUTRIGGERS	25,000	4,000
B	OUTRIGGER SIDE LOAD	14,000	1,000
C	JACKS - SIDE LOAD	-0-	5,000
H	TRAILER JACKS - ERECTION ONLY	51,000	-0-
T	TRAILER JACKS	14,000	4,000

RIDE DIMENSIONS

Height ..... 67 ft.
Depth ..... 35 ft.
Ground Width ..... 59 ft.
Maximum Width (air) ..... 77 ft.

FALLING STAR

Ride Serial Number _____ Owner _____ Date _____

FIELD INSPECTION POINTS

1. ( ) Inspect blocking and leveling on portable model. Inspect lock nuts on leveling jacks.

2. ( ) Inspect trailer-to-trailer connections (ball and socket joints and pins on portable model).

2A. ( ) Inspect park base capscrews for tightness on park model (Bulletin B90-0148-0C).

3. ( ) Inspect trusses and braces on trailers or park base.

4. ( ) Inspect the load sharing of the trailer jacks or park base, and the outriggers as described on the ride identification plate.

5. ( ) Inspect the hydraulic system for the leveling jacks, erection and material handling on portable models.

6. ( ) Inspect cable leads, electrical connections and grounding per local code.

7. ( ) Inspect fences and other crowd control devices.

8. ( ) Inspect the tightness of tower cross brace adjustment and safety pins in clevis adjuster to prevent turning.

9. ( ) Inspect tower erection and spread cylinder ears on portable model.

10. ( ) Inspect pins in all places for safety pins.

11. ( ) Inspect electrical jumpers at tower, axles, sweeps, counterweight arms and vehicle.

12. ( ) Check the air pressure in the brake air system (100 psi at reservoir, 40 psi at regulator). Check operation of low air pressure warning devices.

13. ( ) Inspect trailers or park base, towers, axles, sweeps, counterweight arms and vehicle structures for visible cracks (Bulletins B75-0334-00 and B391R1087-0).

14. ( ) Inspect capscrews for torque and grade (ASTM A325) on vehicle, towers, sweeps, axles and counterweight arms (Bulletin B090R1075-0).

14A.( ) Inspect vehicle mounting plate for cracks and deflection (Bulletin B75-0312-00).

14B.( ) Inspect sweeps for cracks (Bulletins A75-0343-00, B75-0346-00 and B391R1087-0).

14c.( ) Check installation of vehicle frame doublers (Bulletin B391R1086-0).

15. ( ) Inspect operation and locking of lap bars and lap bar interlock system. Check air pressure in vehicle air system (100 psi at reservoir, 40 psi at each regulator). Check sector teeth for wear (Bulletin B391R1084-0).

16. ( ) Check condition of lap bars, seats and flooring. Check anti-slip material on seat bottoms (Bulletin B391R1084-0).

16A.( ) Check installation of seat guard rail (Bulletin B75-0336-00).

17. ( ) Inspect pins and capscrews for excessive wear.

18. ( ) Inspect drive chain and stabilizer chain for tension and lubrication. Check drive belt tension (See procedure and specifications in operator's manual). Check drive sprocket fasteners for correct torque (Bulletin B75-0334-00).

19. ( ) Inspect gearbox and chain case for leakage.

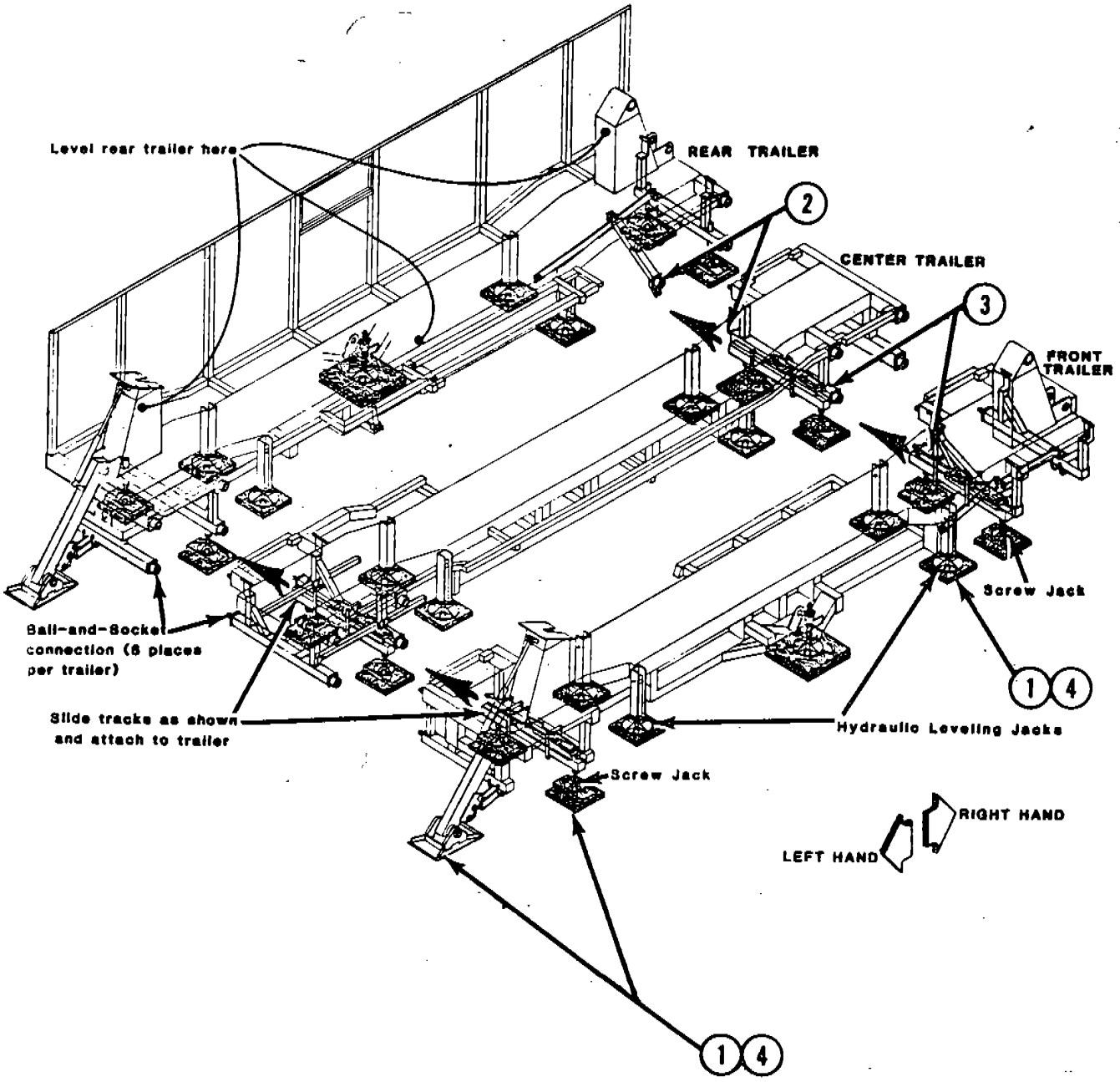
20. ( ) Inspect parking brake for correct operation (Bulletin B75-0272-00).

21. ( ) Check ride profile for correct operation

22. ( ) Inspect lap bar controls.

23. ( ) Inspect operating controls. Check operation of operator presence switch and emergency stop button (Bulletin B391R1084-0).

24. ( ) Inspect overall appearance of ride for cleanliness and general overall upkeep.

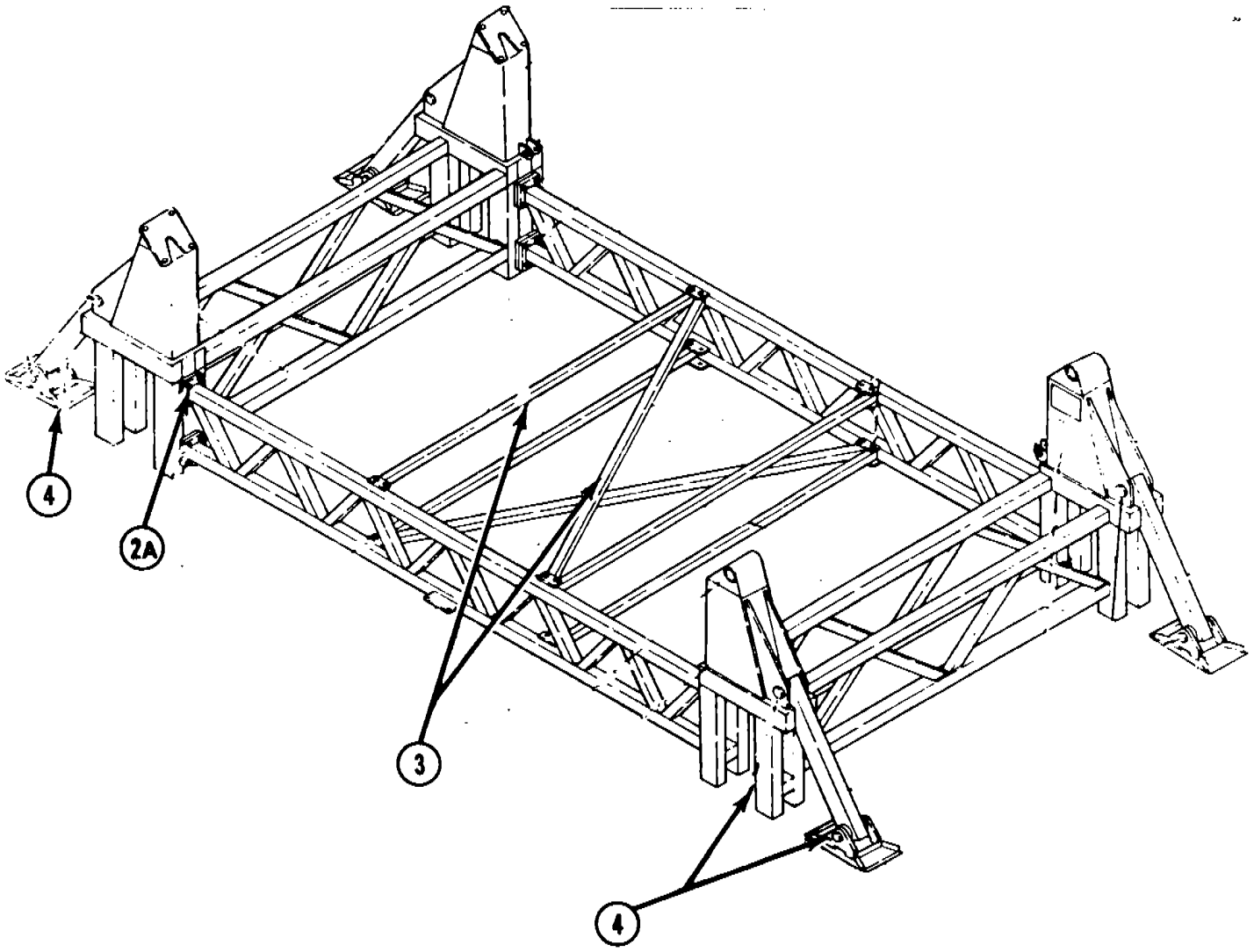


1. ( ) Inspect blocking and leveling on portable model. Inspect lock nuts on leveling jacks.

2. ( ) Inspect trailer-to-trailer connections (ball and socket joints and pins on portable model).

3. ( ) Inspect trusses and braces on trailers or park base.

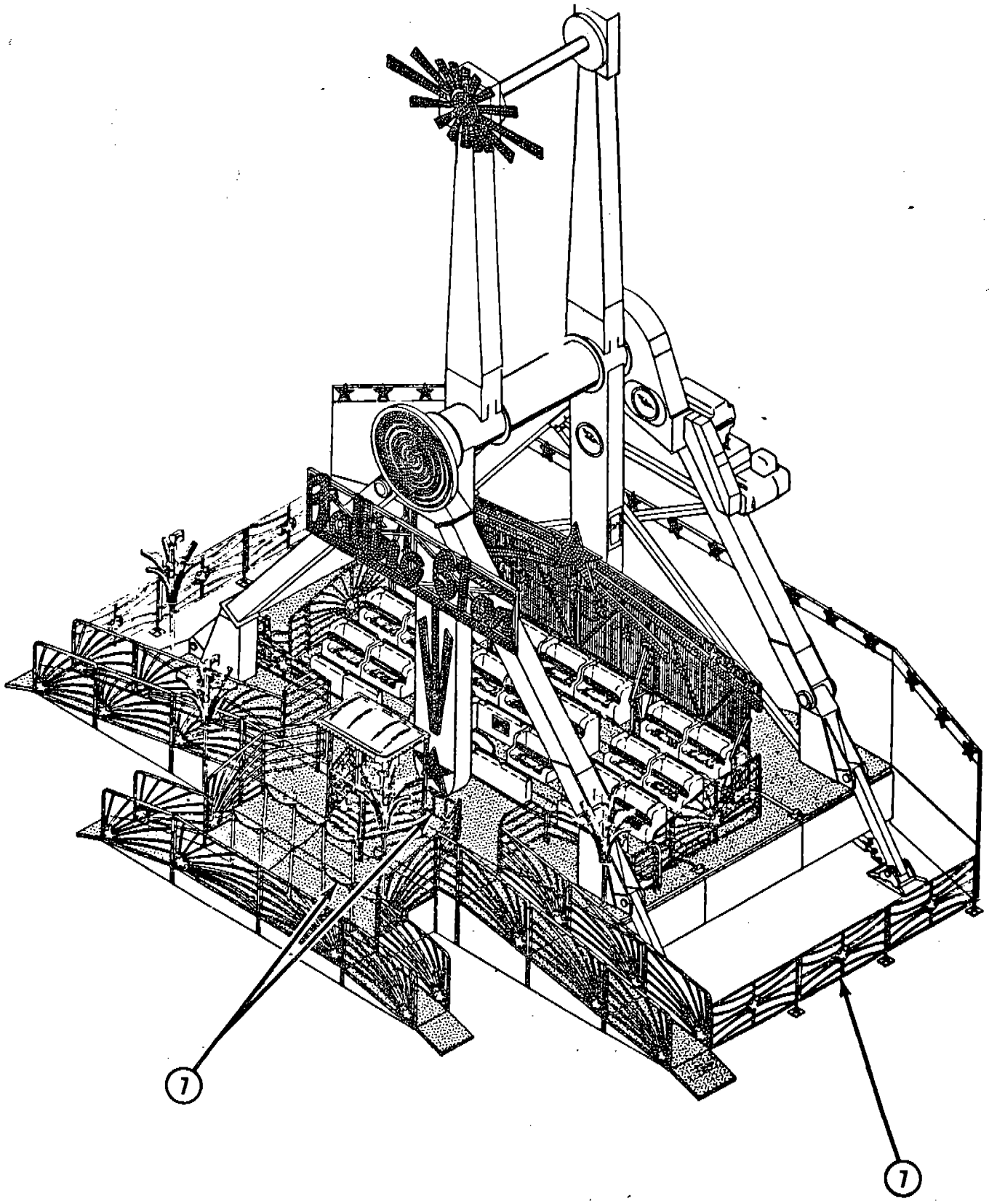
4. ( ) Inspect the load sharing of the trailer jacks or park base, and the outriggers as described on the ride identification plate.



2A. ( ) Inspect the park base capscrews for tightness on park model (Bulletin B90-0148-0C).

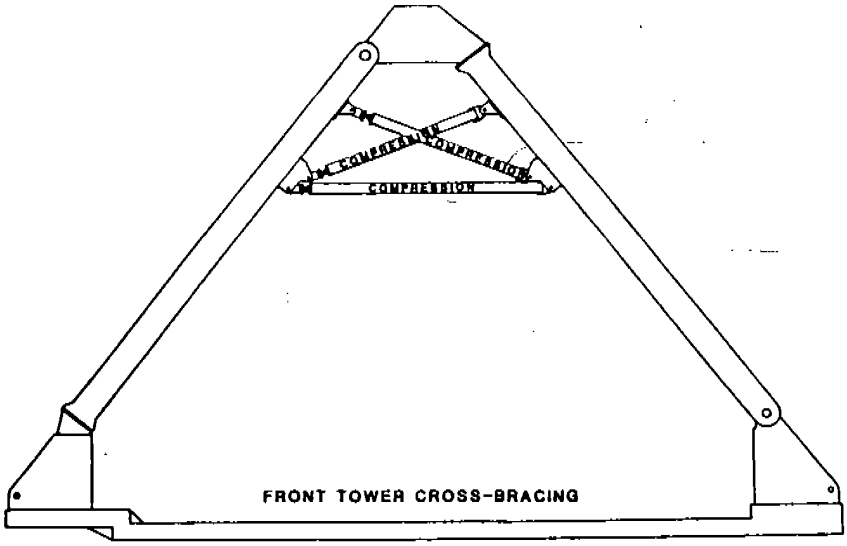
3. ( ) Inspect trusses and braces on trailers or park base.

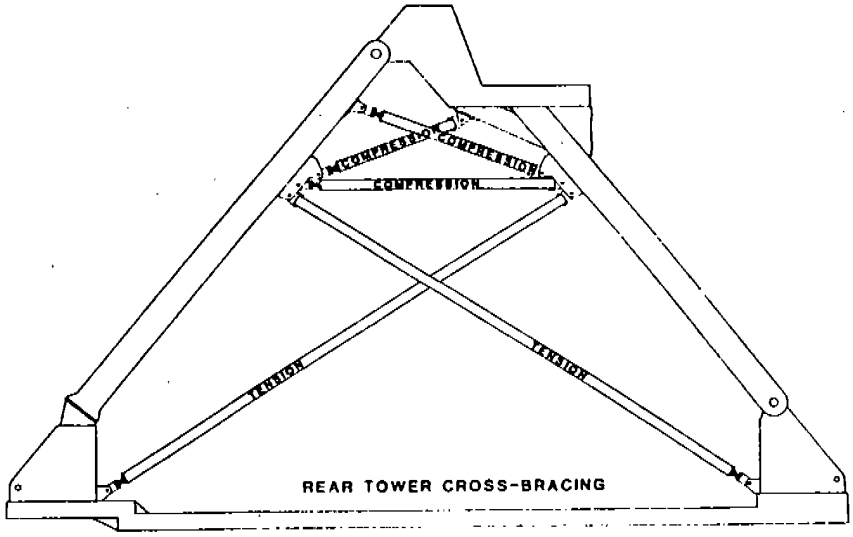
4. ( ) Inspect the load sharing of the trailer jacks or park base, and the outriggers as described on the ride identification plate.

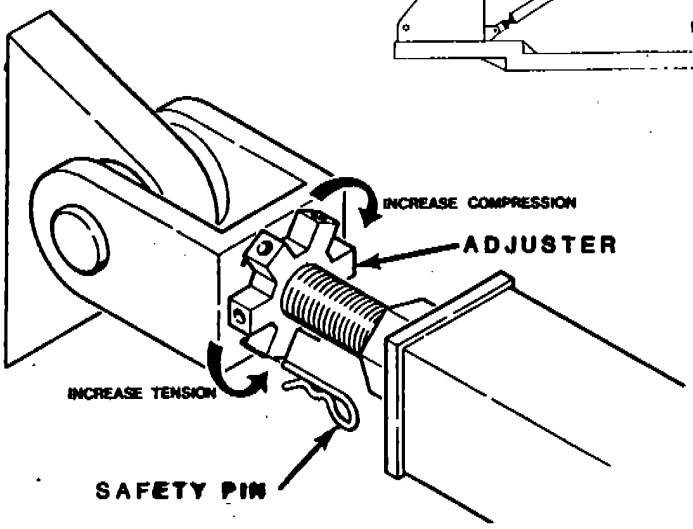


7. ( ) Inspect fences and other crowd control devices.

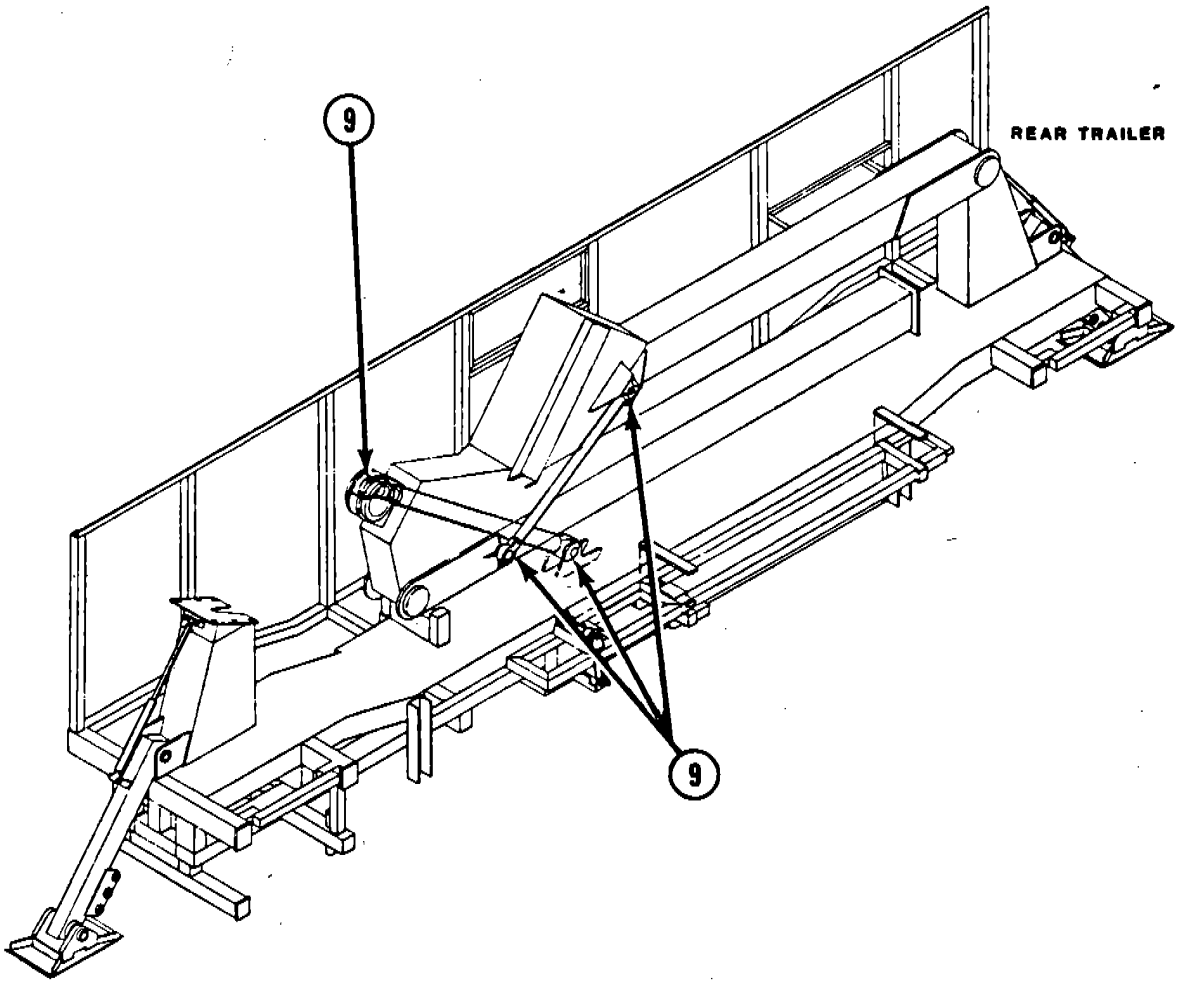
24. ( ) Inspect overall appearance of ride for cleanliness and general overall upkeep.



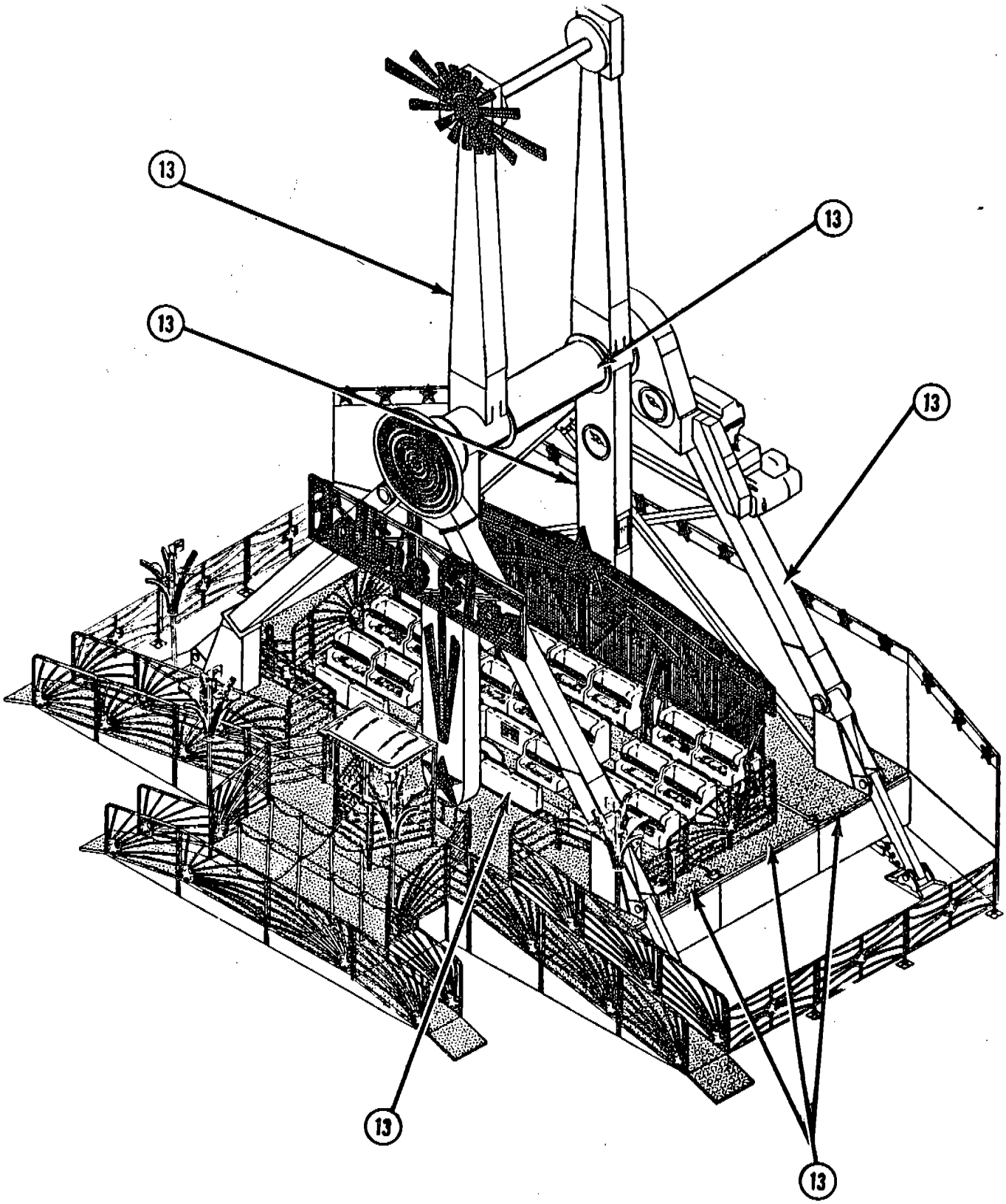




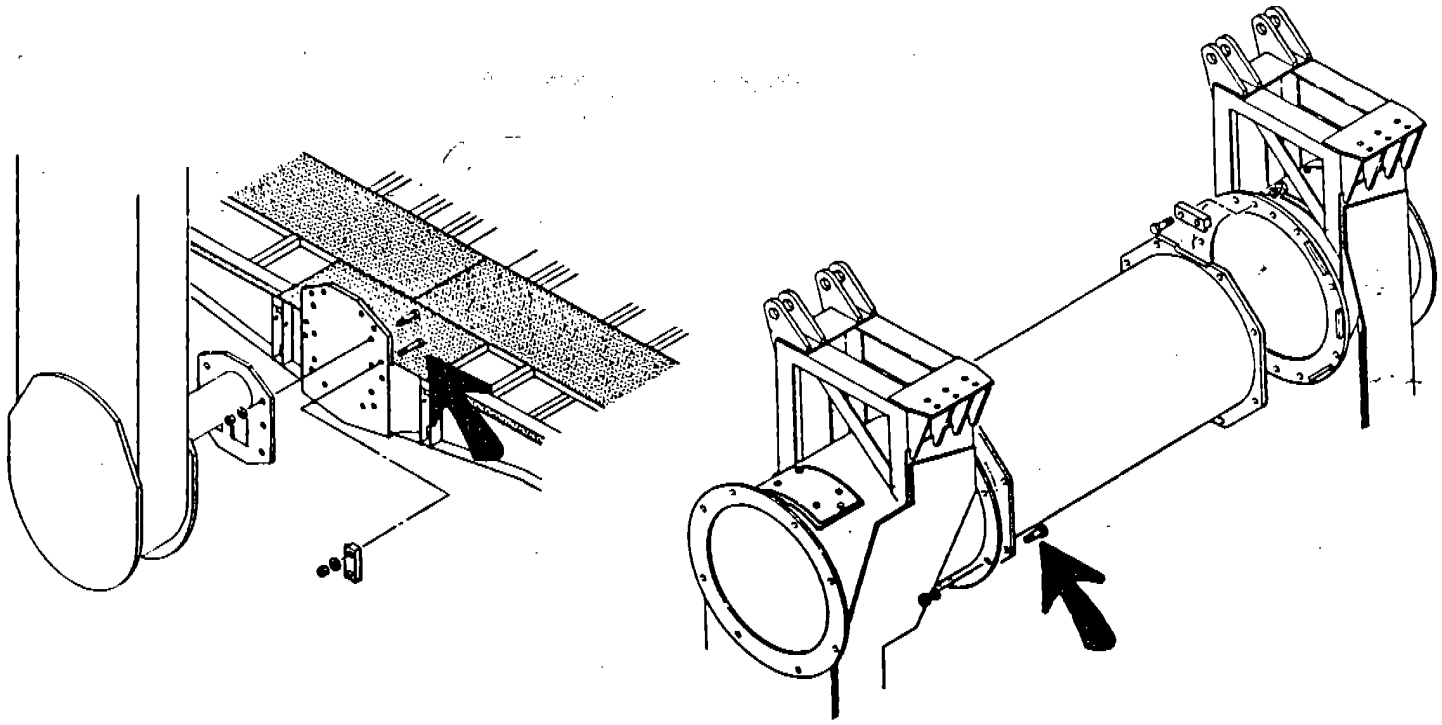
8. ( ) Inspect the tightness of tower cross brace adjustment and safety pins in clevis adjuster to prevent turning.

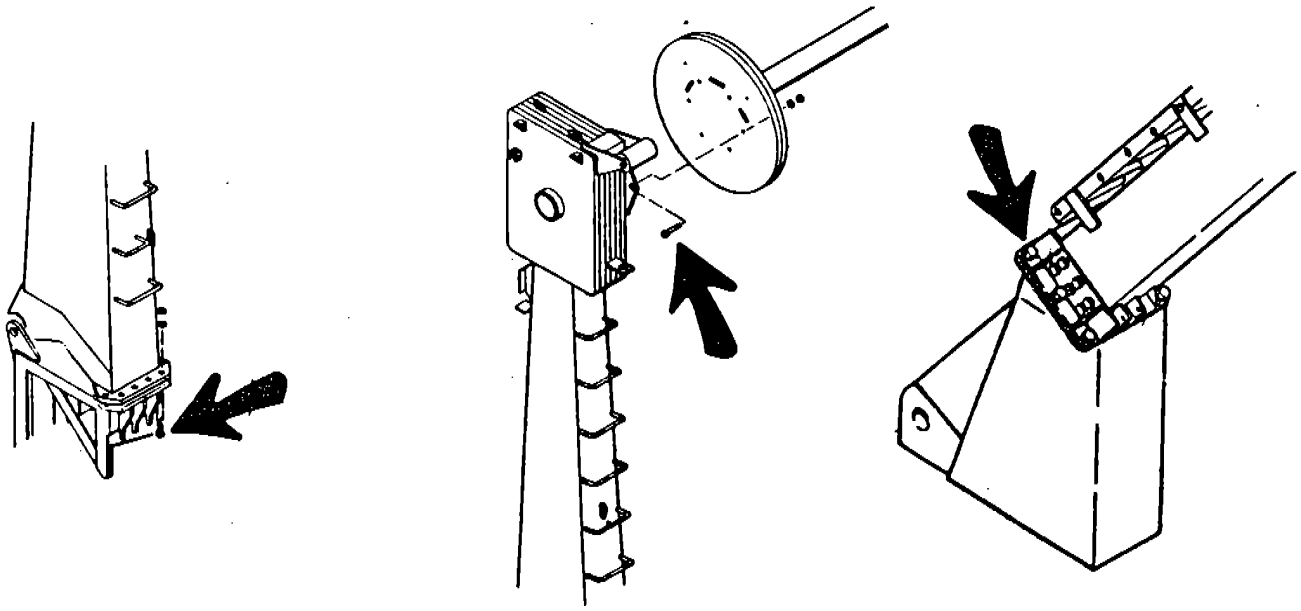


9. ( ) Inspect tower erection and ~~spread cylinder~~ ears on portable model.

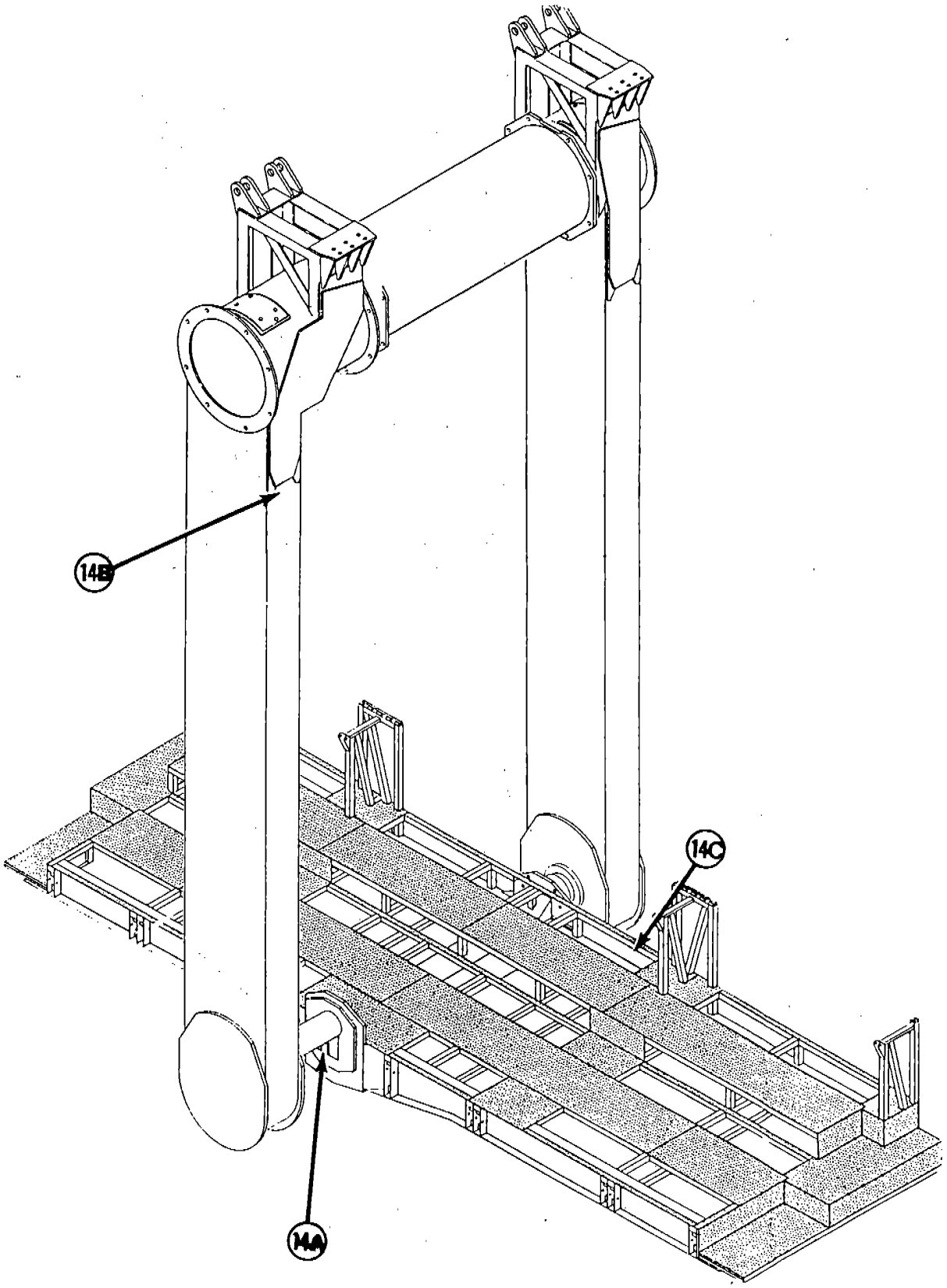


13. ( ) Inspect trailers or park base, towers, axles, sweeps, counterweight arms and vehicle structures for visible cracks (Bulletins B75-0334-00 and B391R1087-0).





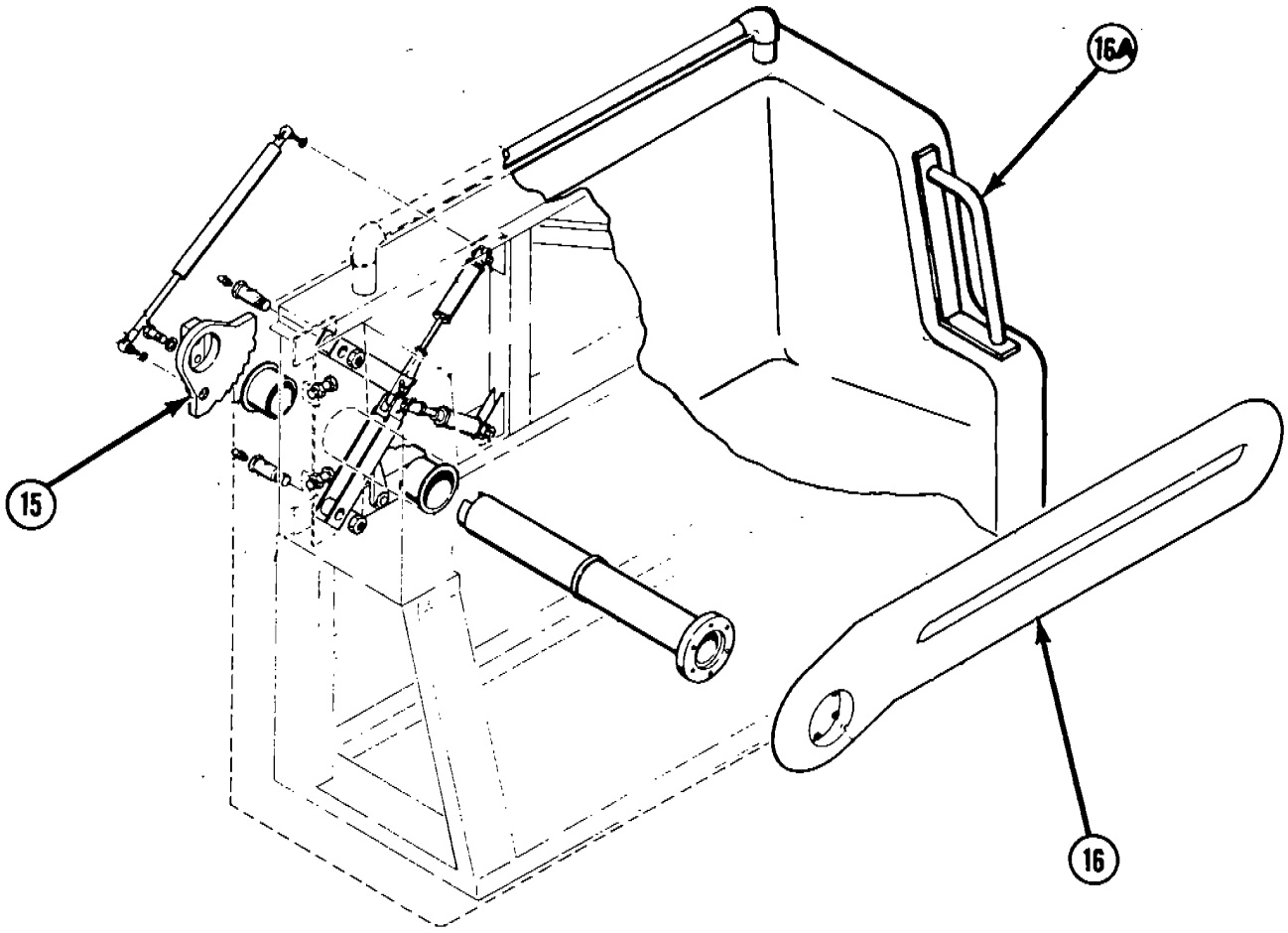
14. ( ) Inspect capscrews for torque and grade (ASTM A325) on vehicle, towers, sweeps, axles and counterweight arms (Bulletin B090R1075-0).



14A.( ) Inspect vehicle mounting plate for cracks and deflection (Bulletin B75-0312-00).

14B.( ) Inspect sweeps for cracks (Bulletins A75-0343-00, B75-0346-00 and B391R1087-0).

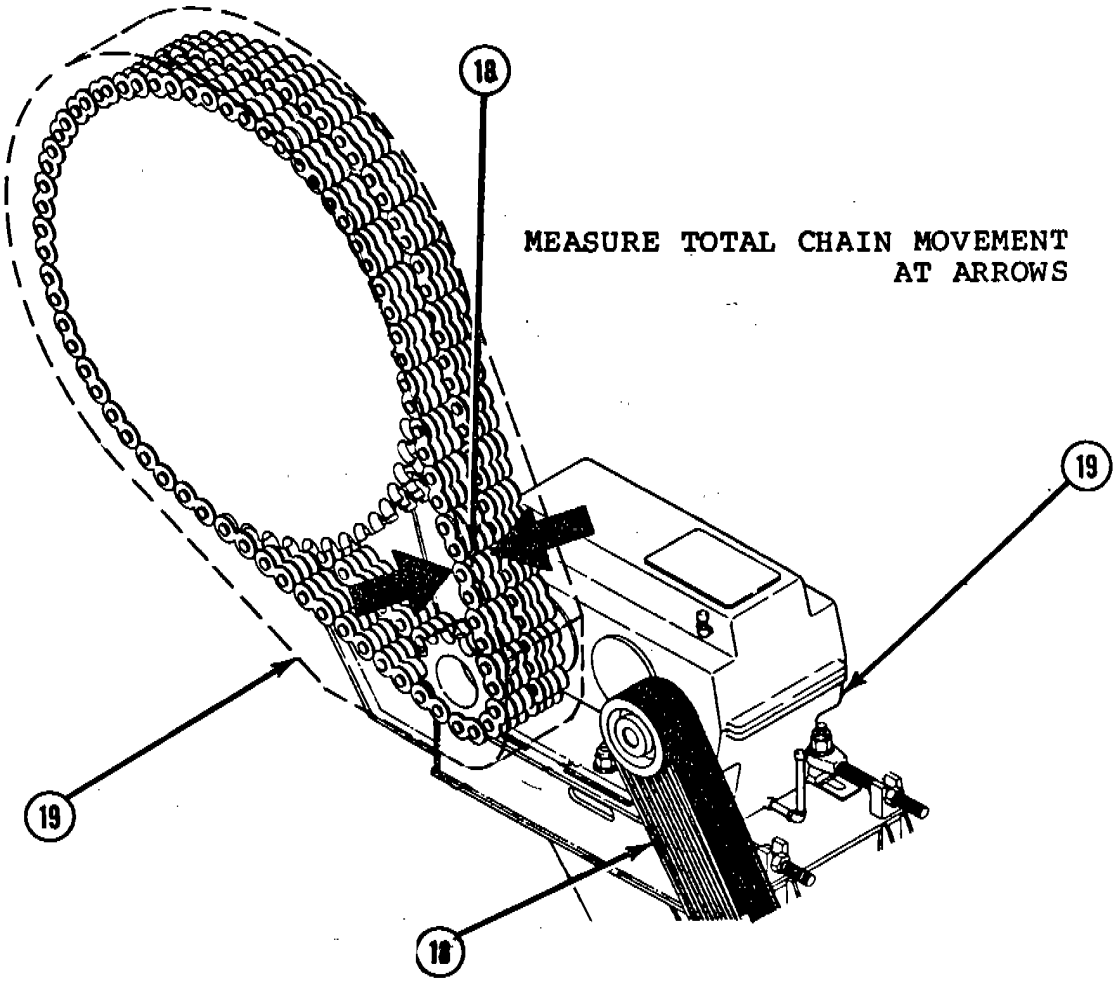
14C.( ) Check for installation of vehicle frame doublers (Bulletin B391R1086-0).



15. ( ) Inspect operation and locking of lap bars and lap bar interlock system. Check air pressure in vehicle air system (100 psi at reservoir, 40 psi at each regulator). Check sector teeth for wear (Bulletin B391R1084-0).

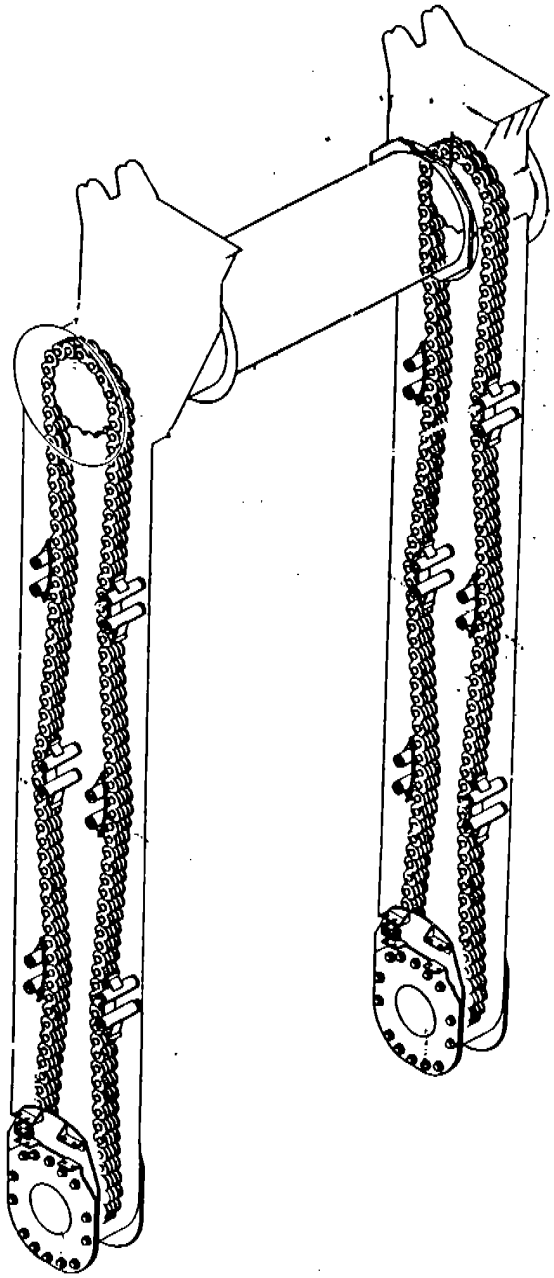
16. ( ) Check condition of lap bars, seats and flooring. Check anti-slip material on seat bottoms (Bulletin B391R1084-0).

16A.( ) Check installation of seat guard rails (Bulletin B75-0336-00).

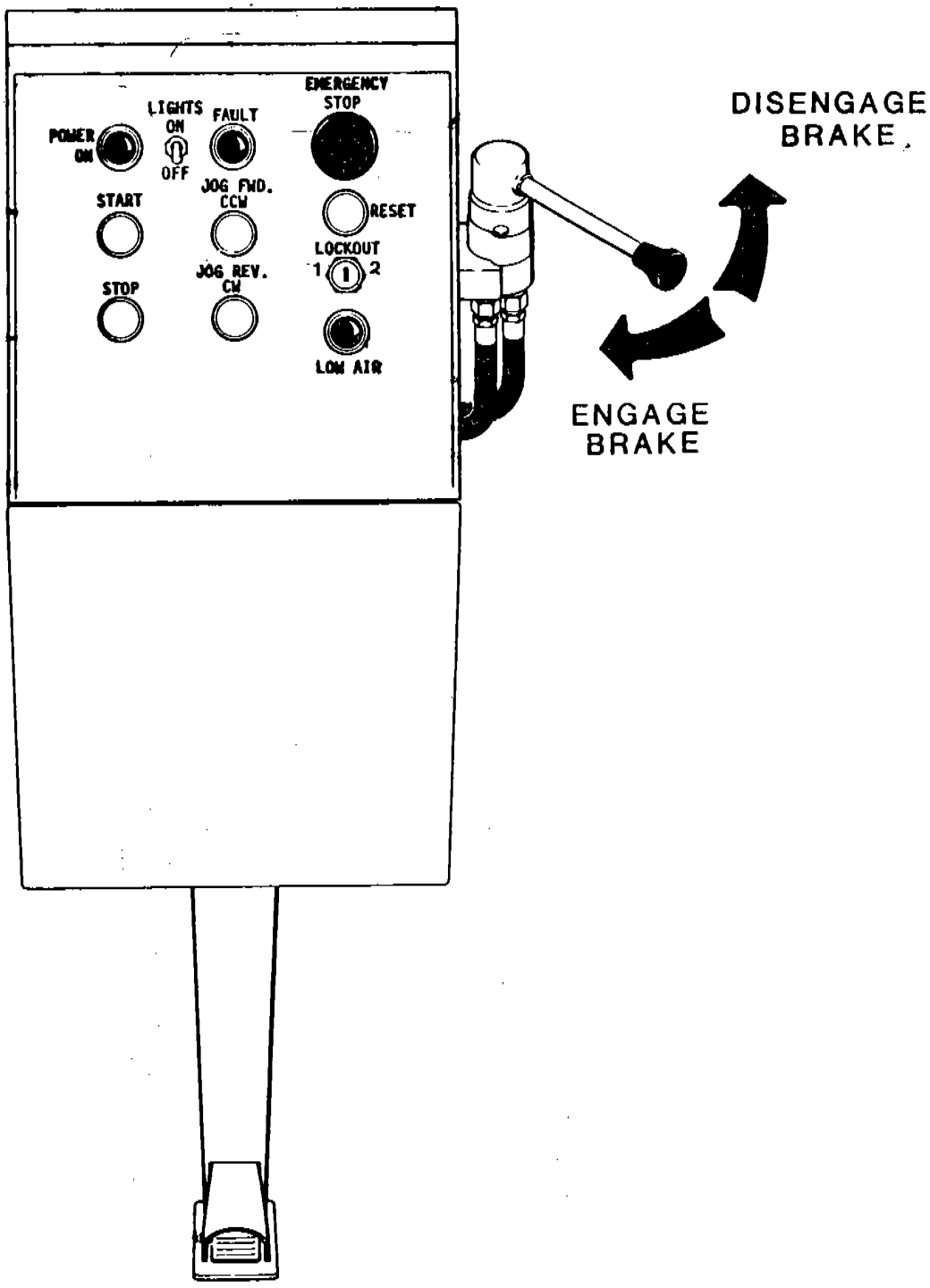


18. ( ) Inspect drive chain and stabilizer chain for tension and lubrication. Check drive belt tension (See procedure and specifications in operator's manual). Check drive sprocket fasteners for correct torque (Bulletin B75-0334-00).

19. ( ) Inspect gearbox and chain case for leakage.

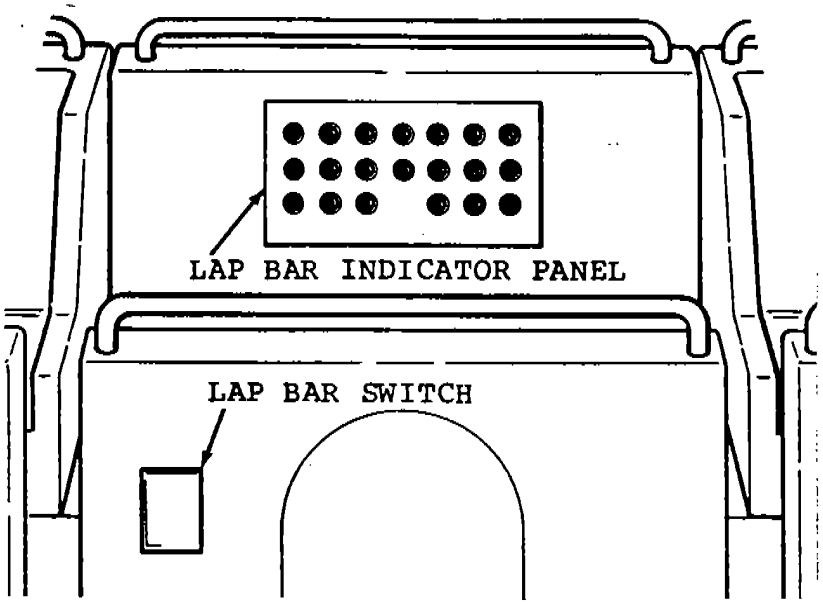


18. ( ) Inspect drive chain and stabilizer chain for tension and lubrication. Check drive belt tension (See procedure and specifications in operator's manual). Check drive sprocket fasteners for correct torque (Bulletin B75-03334-00).



20. ( ) Inspect parking brake for correct operation (Bulletin B75-0272-00).

23. ( ) Inspect operating controls. Check operation of operator presence switch and emergency stop button (Bulletin B391R1084-0).



22. ( ) Inspect lap bar controls.

NUMBER: B391R1100-0

DATE: MAY 10, 1991

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Portable Units - Chance Rides, Inc.

Ride: FALLING STAR

Subject: Warning Decal/Tape

Chance Rides, Inc. has added decals and tape to the FALLING STAR to alert individuals of the possible pinch points between the trailers as they are drawn together during set-up. Chance Rides, Inc. requires all owners of portable FALLING STAR amusement rides to order and install these warning items as outlined in this bulletin. Failure to comply with this bulletin could result in injury to personnel. All personnel must be made aware of potential pinch points and instructed to stay clear of these areas.

All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation.

NOTICE

Use only those components authorized, specified or provided by Chance Rides, Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with any unauthorized alterations and/or modifications or additions and installations of unauthorized components.

Factory and Sales Office: 4219 Irving · P.O. Box 12328 · Wichita, Kansas 67277-2328 · (316) 942-7411 · FAX: (316) 942-7416

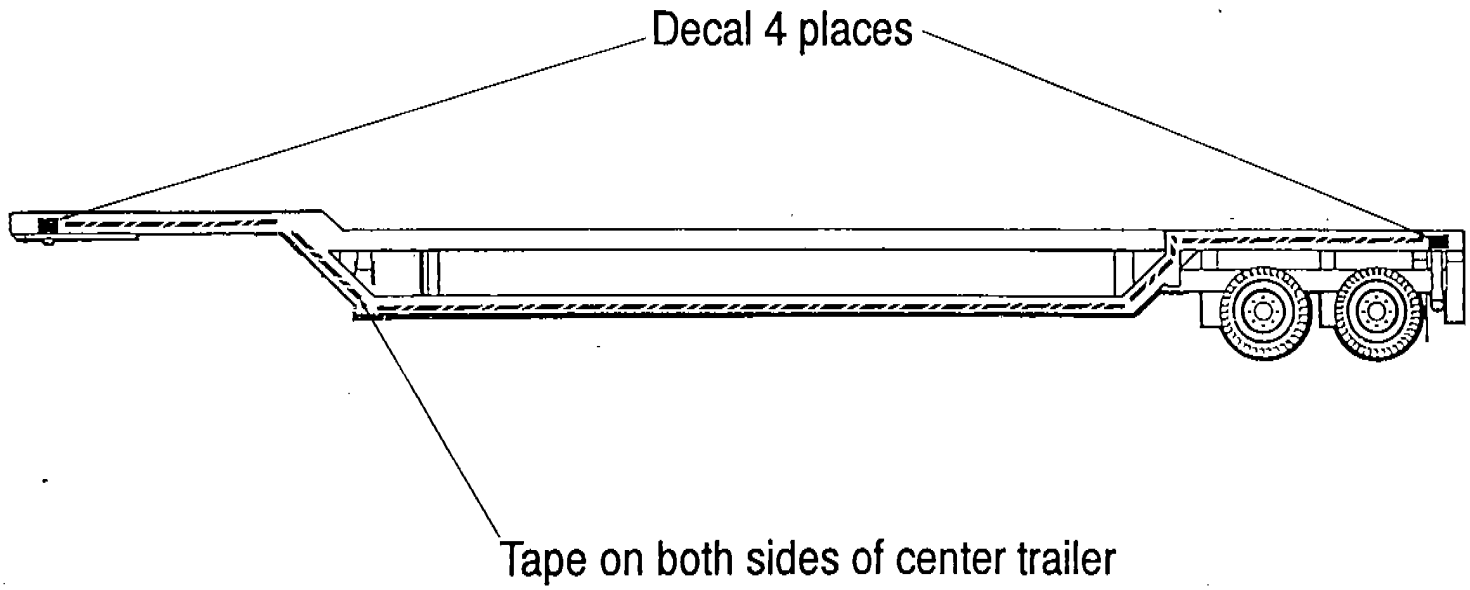
PARTS LIST

Item	Part Number	Description	Quantity
1.	26762500	Decal	8
2.	45001500	Tape	4 rolls

INSTALLATION INSTRUCTIONS

1. Apply one decal (item #1) to each of the four inside corners of the center trailer.

2. Apply tape (item #2) to both sides of the center trailer at areas where trailers come together.



NUMBER: B391R1087-0

DATE: OCT. 12, 1990

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Units - Chance Rides, Inc.

All Units - Chance Manufacturing Co., Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with rides produced by Chance Manufacturing Company, Inc.

Ride: FALLING STAR

Subject: Inspection of Front Sweep Arm

Chance Rides, Inc. has become aware that it is possible for cracks to propagate from the corners of the inspection port which is located at the top of the front sweep arm on the FALLING STAR amusement ride. Chance Rides, Inc. requires all owners/operators to perform the following inspection at each set-up, or weekly, whichever occurs first.

Inspection Procedure:

1. Remove the cover from the inspection port.
2. Visually inspect around all four corners.
3. Using an inspection mirror and a flashlight, inspect around the inside of all four corners.
4. If any cracks are found, DO NOT ATTEMPT TO WELD OR REPAIR THE RIDE, contact Chance Rides Customer Service immediately. DO NOT OPERATE THE RIDE UNTIL CHANCE RIDES CUSTOMER SERVICE HAS BEEN NOTIFIED AND THE APPROVED REWORK COMPLETED.

All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instruction of this inspection, contact the Chance Rides Customer Service Department.

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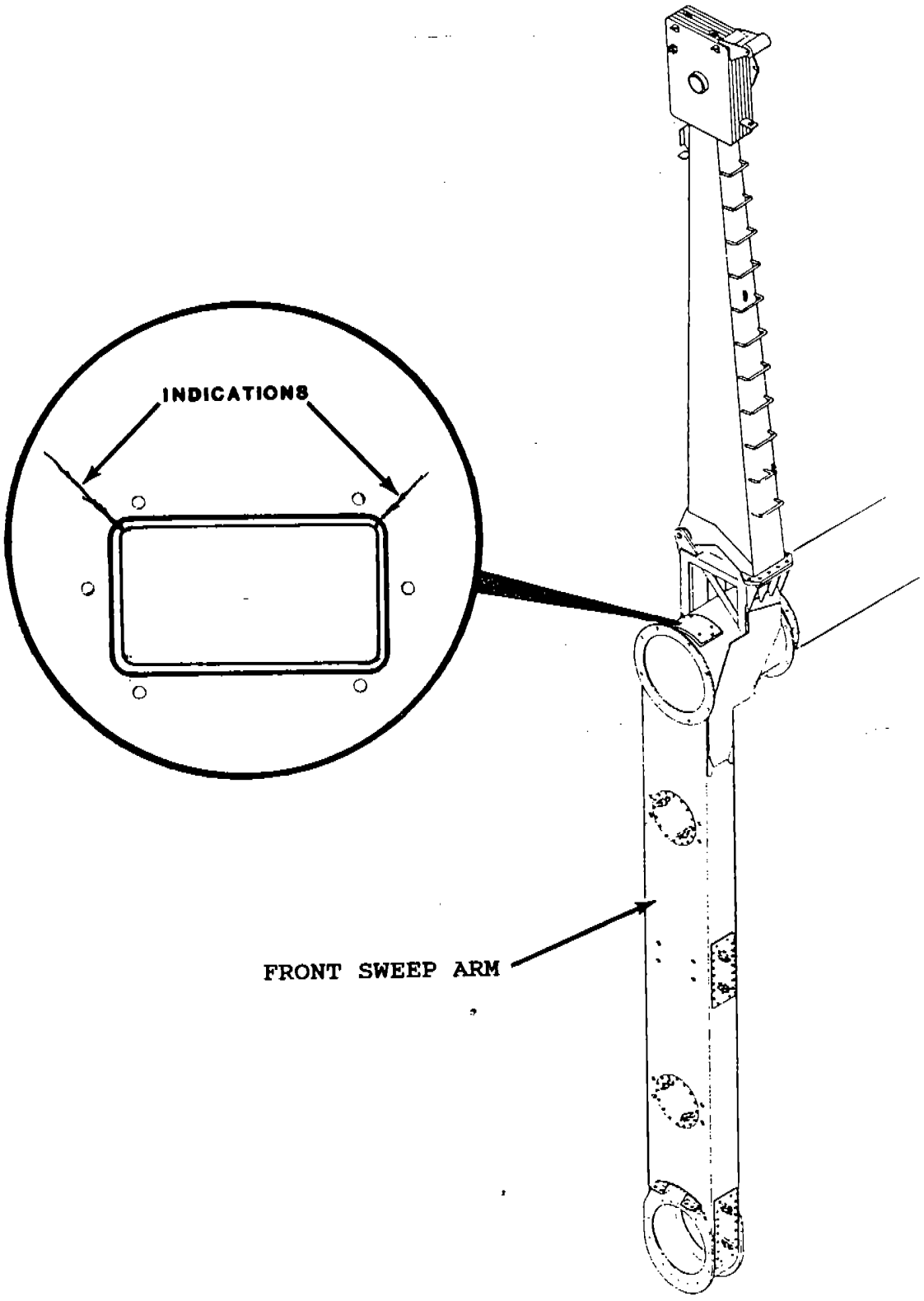

INDICATIONS
FRONT SWEEP ARM

NUMBER: B391R1086-0

DATE: OCT. 12, 1990

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Units - Chance Rides, Inc.

All Units - Chance Manufacturing Co., Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with rides produced by Chance Manufacturing Company, Inc.

Ride: FALLING STAR

Subject: Vehicle Doubler Kit

Chance Rides, Inc. has developed two kits for the FALLING STAR amusement ride. These kits reinforce the vehicle frame. Chance Rides, Inc. requires all owners of FALLING STARS to install these kits.

Order Kit #K391R1086-0 and Kit #K391R1088-0, which includes the parts necessary to modify one ride. Install the parts using the instructions provided with the kits and return the attached Certification Of Compliance within 15 days after receipt of the kits.

PARTS LISTS

KIT NUMBER K391R1086-0

Part Number	Description	Quantity
391-120-096	Doubler Plate	8
K391R1086-0	Drawing	1

KIT NUMBER K391R1088-0

Part Number	Description	Quantity
391-124-016	Doubler Plate	2
K391R1088-0	Drawing	1

All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation.

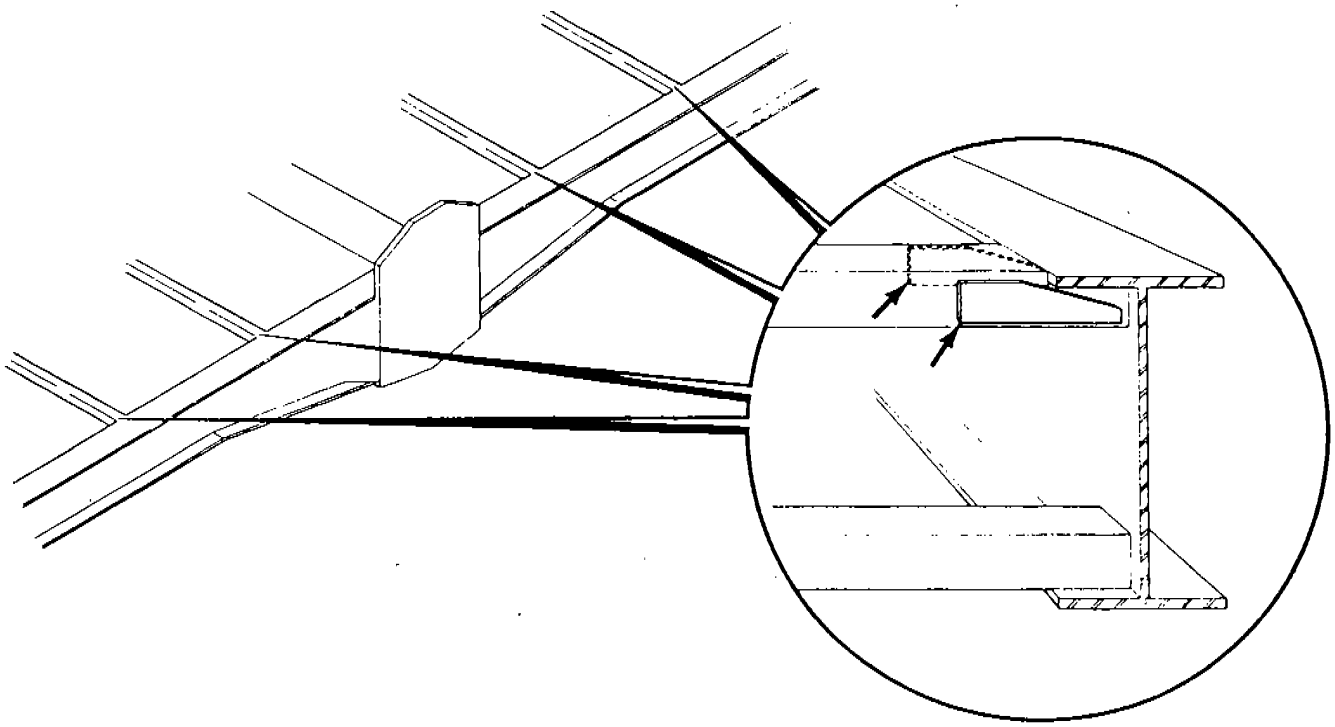
Factory and Sales Office: 4219 Irving · P.O. Box 12328 · Wichita, Kansas 67277-2328 · (316) 942-7411 · FAX: (316) 942-7416

NOTICE

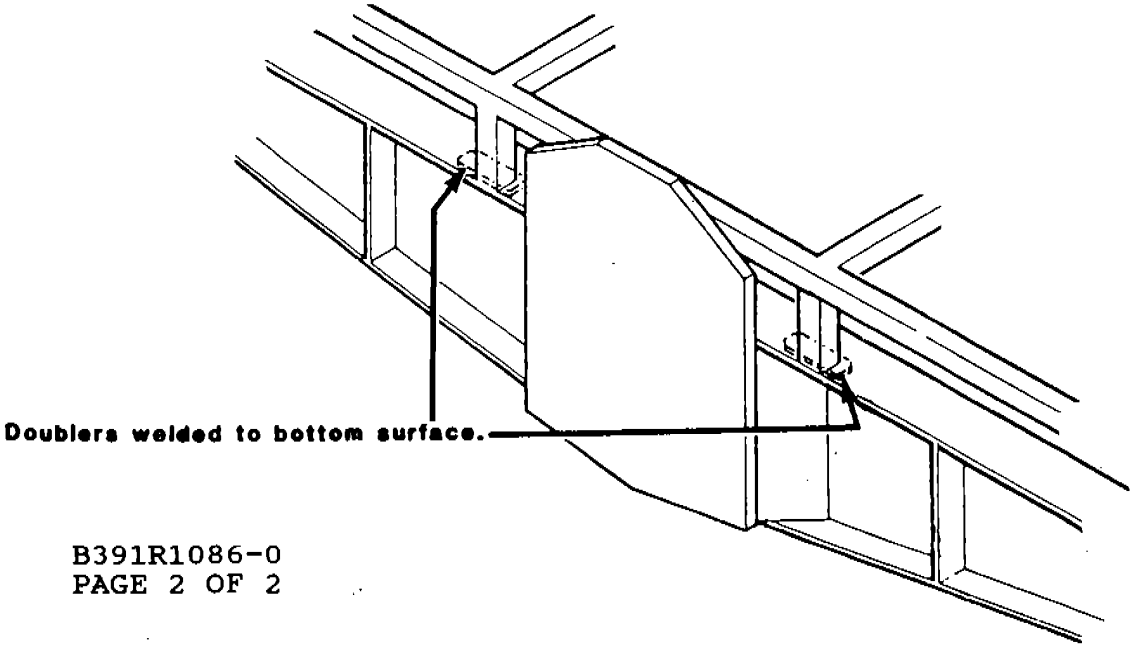
Use only those components authorized, specified or provided by Chance Rides, Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with any unauthorized alterations and/or modifications or additions and installations of unauthorized components.

Kit No. K391R1086-0 (Installed on rear of vehicle frame)



Kit No. K391R1088 (Installed on rear of vehicle frame)



NUMBER: B391R1084-0

DATE: AUGUST 20, 1990

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Units - Chance Rides, Inc.

All Units - Chance Manufacturing Co., Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with rides produced by Chance Manufacturing Company, Inc.

Ride: FALLING STAR Subject: Safe Operating Procedures

For the safety of all ride personnel and ride passengers, Chance Rides, Inc. requires all owners of FALLING STAR amusement rides to know and enforce the safety and inspection points listed in Chance Service Bulletins number B090R1002-0 (Field Performance Testing of Amusement Rides) and number B090R1049-0 (Crowd Control), the Chance Field Inspection Guide, and the Operation/Maintenance Manual. These points would include but not be limited to the following items.

1. Anti-slip material on seat bottoms

2. Lap bar interlock system

3. Lap bar locking mechanism

4. Operator present switch and the emergency stop button.

The selection and training of ride operators is extremely important in maintaining a safe operation. Select only competent mature operators who are capable of understanding and adhering to all safety requirements. These requirements include but are not limited to the following items.

1. Do not allow any person who is under 42" in height to ride, unless accompanied by an adult in the same seat.

2. Do not allow any passenger on the ride who cannot be properly secured because of passenger size or condition.

3. Never allow a pregnant woman or a passenger who is visually ill or under the influence of drugs or alcohol on the ride.

4. Before starting the ride, make sure there are no people around the ride structure, behind the vehicle, close to any exposed electrical components, or any other area where there is a possibility of personal injury.

5. Give full attention to the ride of the passengers at all times.

6. Never leave the operating console while the ride is in operation.

7. Stop the ride immediately if any passenger is observed tampering with any restraining device or behaving dangerously.

Number: B391R1044-0

Date: June 22, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 391-00586 through 391-01089

Ride: FALLING STAR

Subject: Sweep Rework

WARNING: FAILURE TO COMPLY WITH THIS SERVICE BULLETIN CAN RESULT IN FAILURE OF THE SWEEP STRUCTURE, CAUSING INJURY TO PASSENGERS, AND/OR BYSTANDERS.

On May 10, 1989, CHANCE RIDES, INC. issued Safety Alert Bulletin number A391R1039-0. This bulletin required inspection of the sweeps on the above noted FALLING STAR amusement rides. Based on the results of these inspections, CHANCE RIDES, INC. has determined that cracks can develop in FALLING STAR sweep arm weldments. A design improvement rework kit has been developed for these rides.

OWNERS OF THE ABOVE NOTED FALLING STAR AMUSEMENT RIDES ARE REQUIRED TO REWORK THEIR RIDES TO INCORPORATE THIS DESIGN IMPROVEMENT. This rework program is to be implemented in the following manner:

- Perform the inspection described in bulletin number A391R1039-0 DAILY. If cracks are found, DO NOT OPERATE THE RIDE. Order kit number K75-0343-01, and install it using the instructions provided with the kit. Return the Certification Of Compliance within 15 days from receipt of the kit.

- All rides must have the rework kit installed by December 1, 1989, regardless of whether or not cracks are found. Inspect reworked sweeps on a continuing basis, along with other major structural components.

All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this rework, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

Number: A391R1039-0

Date: May 10, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SAFETY ALERT

Effective Serial Numbers: 391-00586 through 391-01089

Ride: FALLING STAR

Subject: Inspection of Sweeps

WARNING: FAILURE TO COMPLY WITH THIS SERVICE BULLETIN CAN RESULT IN FAILURE OF THE SWEEP STRUCTURE, CAUSING INJURY TO PASSENGERS, AND/OR BYSTANDERS.

It has been determined by CHANCE RIDES, INC. that cracks can develop in FALLING STAR sweep arm weldments.

The owners of the above noted FALLING STAR amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within 15 days from receipt of the bulletin.

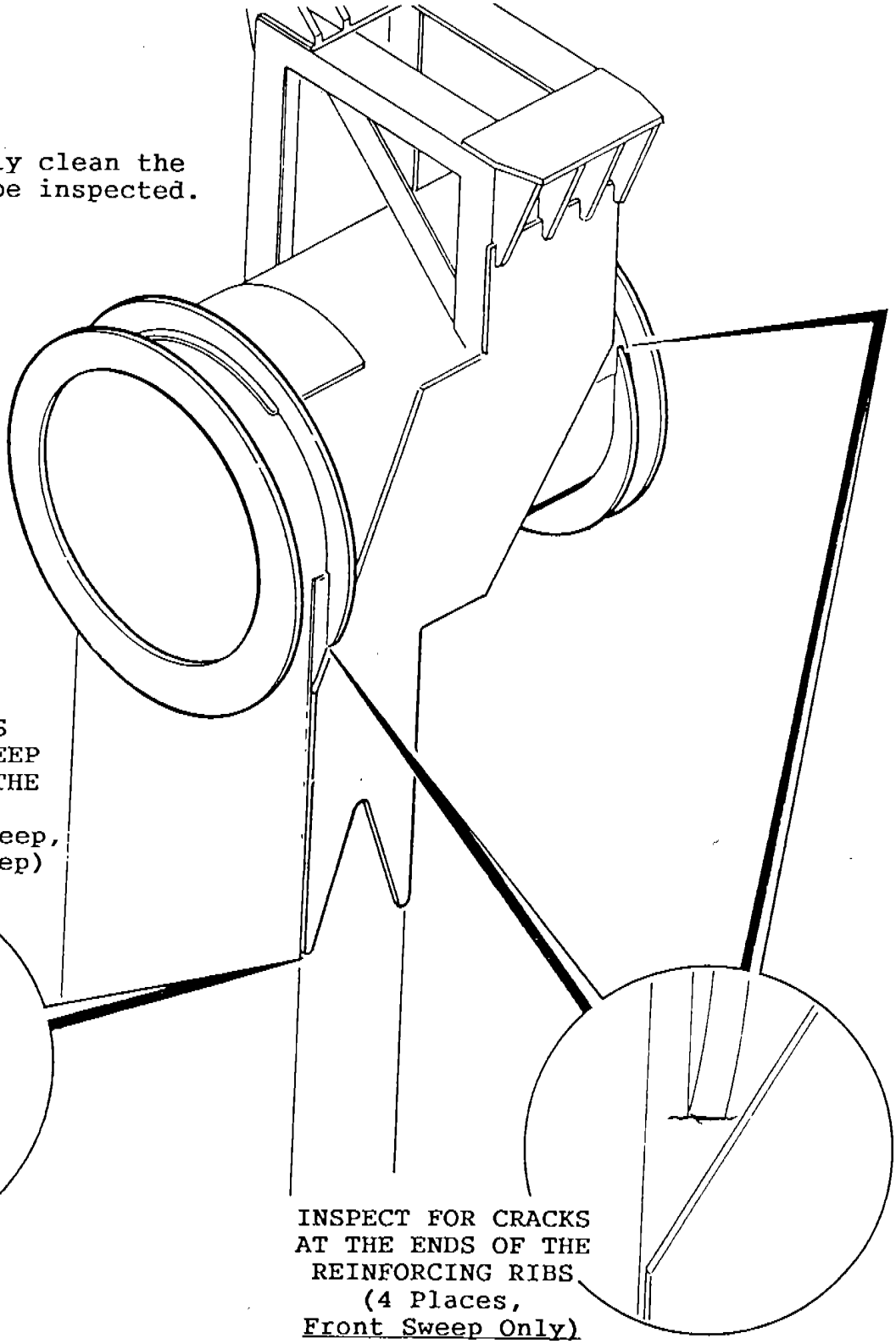
The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSPECTION PROCEDURE

Check the front and rear sweep arm weldments for cracks as shown in the following illustration. Inspect the weld and the parent metal at the toe of the weld.

If cracks or any unusual condition exist in any of the areas noted, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately. DO NOT OPERATE THE RIDE.

IMPORTANT: Thoroughly clean the area to be inspected.



INSPECT FOR CRACKS PERPENDICULAR TO SWEEP ARM AT THE ENDS OF THE DOUBLER PLATE (4 Places On Front Sweep, 4 Places On Rear Sweep)

INSPECT FOR CRACKS AT THE ENDS OF THE REINFORCING RIBS (4 Places, Front Sweep Only)

Number: B391R1033-0

Date: March 22,1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 391-005-86 and 391-006-86

Ride: FALLING STAR

Subject: Seat Guard Rail

A modification kit has been developed to decrease the clearance between the lap bar and the seat, increasing the security of the passenger restraint system. The modification consists of mounting a guard rail to the seat.

As a safety precaution, CHANCE RIDES, INC. requires that all FALLING STAR amusement rides be equipped with this guard rail. Owners of FALLING STAR amusement rides with the above noted serial numbers are required to perform the modification described in this bulletin.

Order kit number K75-0336-00, which includes the parts necessary to modify one ride. Install the parts using the instructions provided on the following pages of this bulletin. Fill out the attached Certification Of Compliance for the modification within 15 days of receipt of the kit.

PARTS LIST - Seat Hand Rail Kit No. K75-0336-00
(consists of the following parts)

Item	Part No.	Description	Qty.
1	375-3162300	HAND RAIL (391-153-001)	20
2	686-1144200	CAPSCREW - Truss Head (1/4-20 x 1)	60
3	691-4780800	LOCK NUT (1/4-20)	60
4	696-8530000	WROUGHT WASHER (1/4)	60
5	681-6141000	POP RIVET - AD56ABS 5/32 Dome Head	40

All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this rework, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSTALLATION INSTRUCTIONS

1. Position the guard rail on a seat as shown Mark the aluminum seat trim flush with each end of the guard rail.

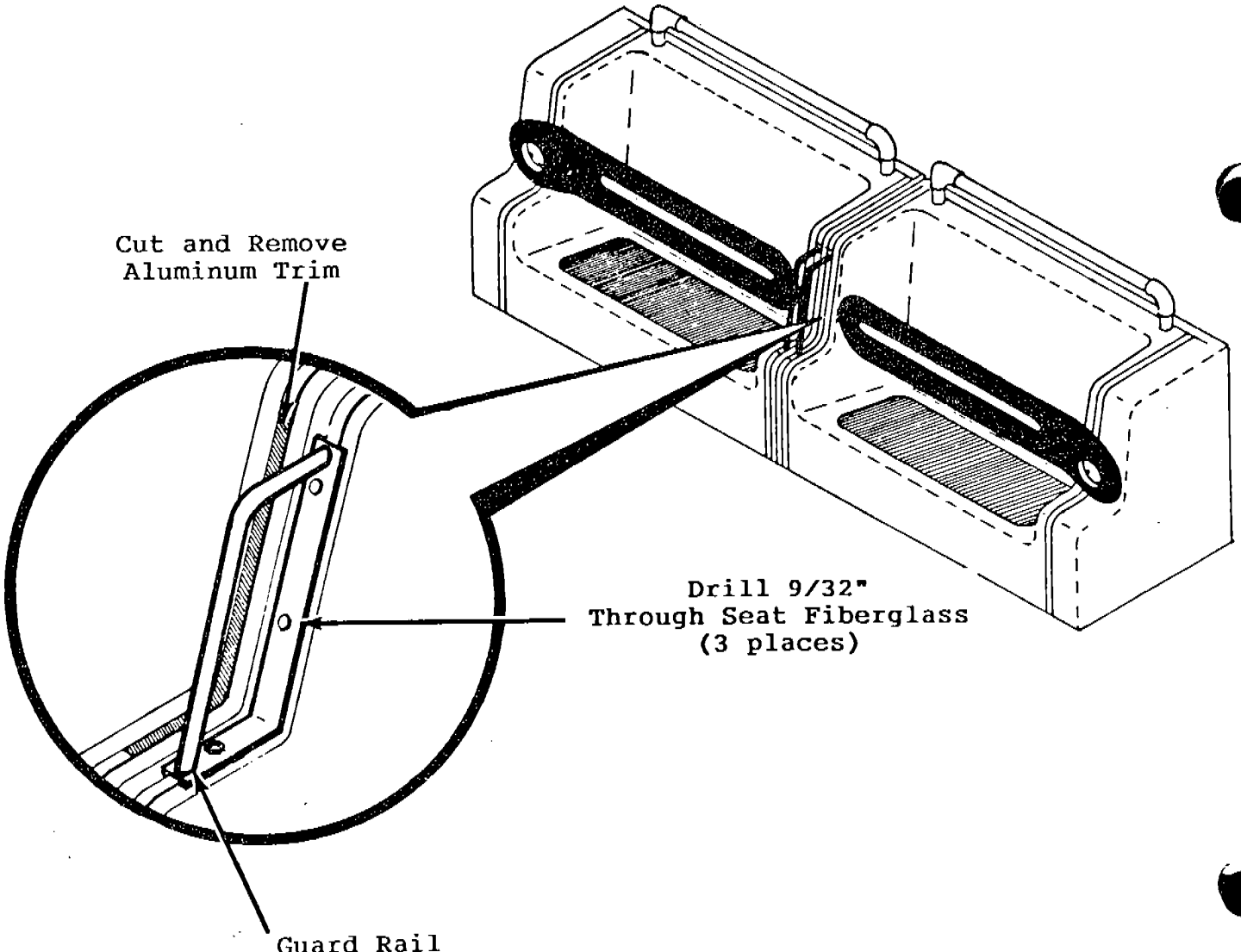
2. Cut the aluminum trim at both marks. Drill out the rivets and remove the section of trim.

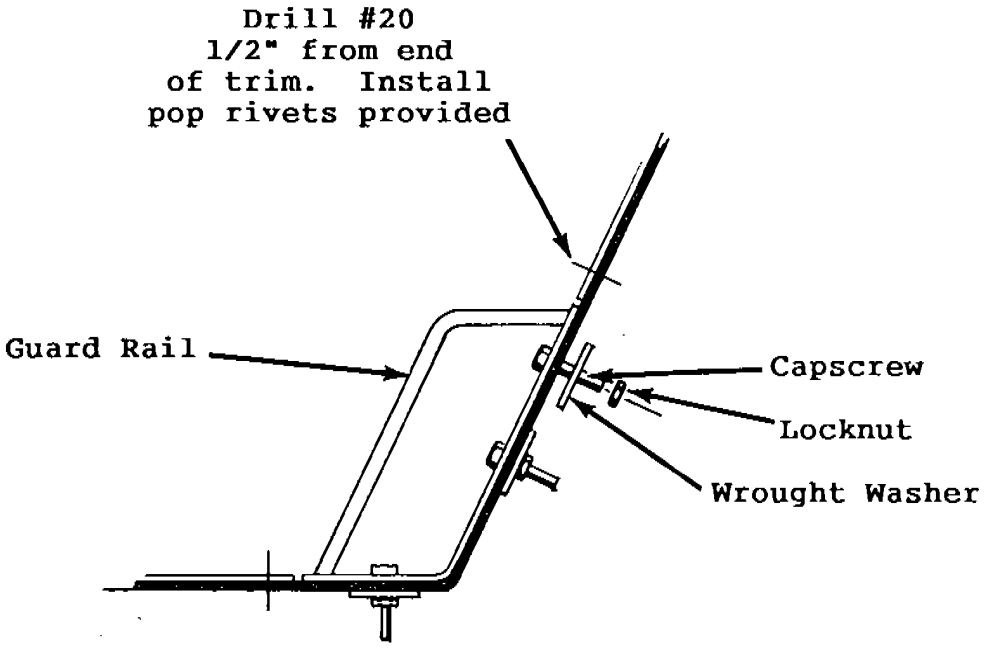
3. Use the guard rail (Item #1) to mark the hole locations on the seat. Drill 9/32" through the seat fiberglass three places.

4. Mount the guard rail using the capscrews, wrought washers and locknuts (Items #2, #3 and #4) as shown.

5. Secure the ends of the aluminum trim with pop rivets (Item #5) as shown.

6. Repeat the procedure on the remaining 19 seats.




Drill #20
1/2" from end
of trim. Install
pop rivets provided
Guard Rail
Capscrew
Locknut
Wrought Washer

Number: B391R1029-0

Date: Nov. 17, 1988

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: **FALLING STAR**

Subject: Drive Sprocket Fastener Inspection

It has been determined by CHANCE RIDES, INC. that the fasteners between the drive hub and the large drive sprocket on the FALLING STAR must be checked for tightness on a regular basis. If the fasteners become loose, the sprocket can rotate out of alignment, resulting in serious damage to structural and drive components.

The owners of the above noted **FALLING STAR** amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within fifteen (15) days from receipt of the bulletin.

The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

Factory and Sales Office: 4219 Irving · P.O. Box 12328 · Wichita, Kansas 67277-2328 · (316) 942-7411 · Telex: 910 997-6518 (CHANCE WIC)

INSPECTION PROCEDURE

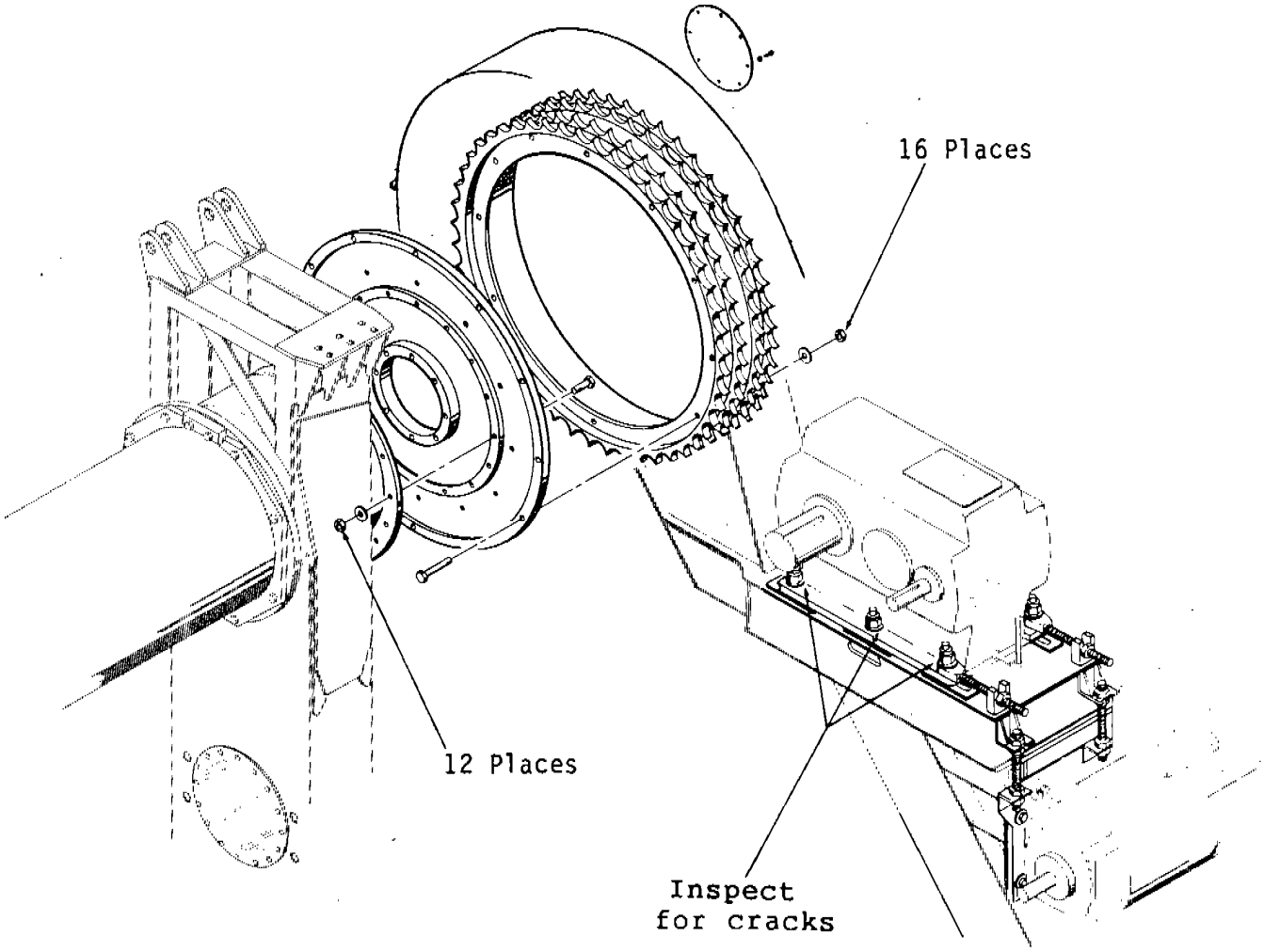
This procedure must be performed while the ride is erected and fully operable.

1. Use a torque wrench to check the tightness of ALL fasteners indicated in the illustration below. The correct torque of the fasteners must be 760 ft-lb if checked at the nut, or 840 ft-lb if checked at the capscrew head.

NOTE: The fasteners can be checked by removing the access covers from the chain case. However, the chain case must be removed to properly tighten loose fasteners.

2. Inspect the base plate of the gearbox for cracks in the area around the attaching capscrews.

3. Perform this inspection twice every operating season.



If loose fasteners, cracks or any unusual condition exists, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately.

Number: B391R1018-0

Date: Oct. 26, 1987

Supersedes:

America's Largest Manufacturer of Amusement Rides

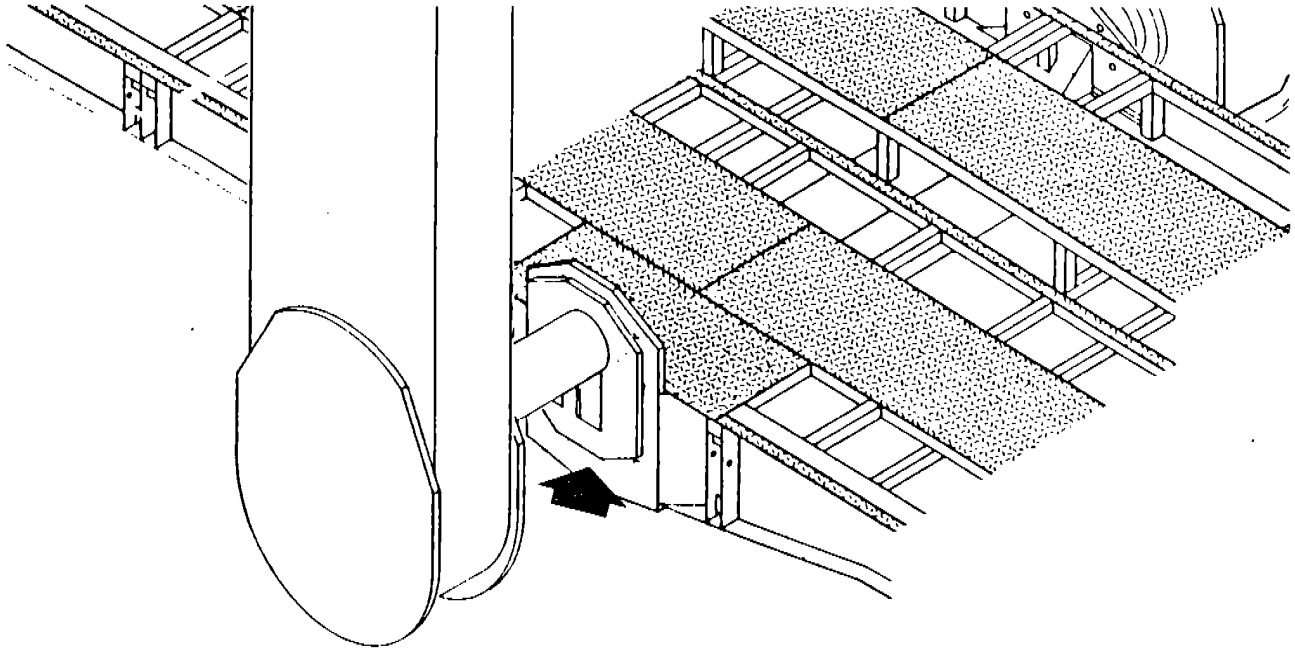
SERVICE BULLETIN

Effective Serial Numbers: 391-00586 through 391-00887

Ride: FALLING STAR

Subject: Inspection Of Vehicle Mounting Plate

It has been determined by CHANCE RIDES, INC. that the joint between the vehicle and the front stub shaft on the FALLING STAR can deflect under certain conditions.



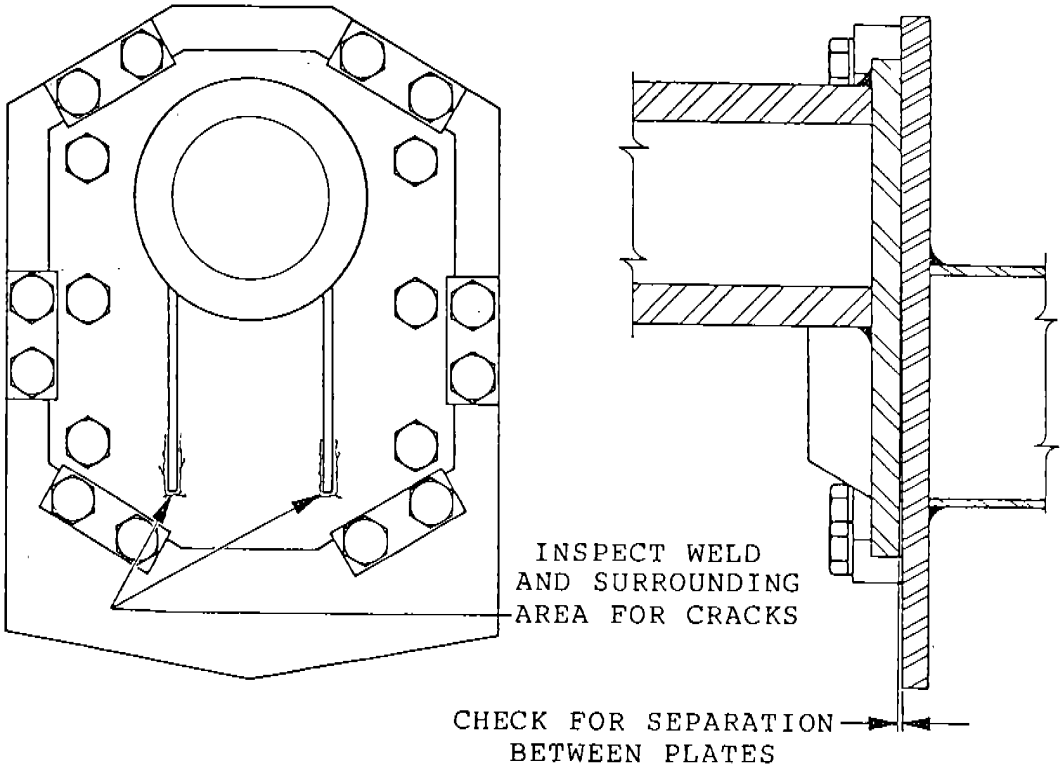
The owners of the above noted FALLING STAR amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within fifteen (15) days from receipt of the bulletin.

The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

Factory and Sales Office: 4219 Irving · P.O. Box 12328 · Wichita, Kansas 67277-2328 · (316) 942-7411 · Telex: 910 997-6518 (CHANCE WIC)

INSPECTION PROCEDURE

With the vehicle installed on the sweeps and the capscrews tightened to 700-840 ft-lb., inspect the front stub shaft as shown in the illustration below.



Inspect the weld and the parent metal surrounding the weld. Also, make sure there is no separation between the two plates as shown.

If cracks, separation or any unusual condition exist, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately. DO NOT OPERATE THE RIDE.

CHANCE MANUFACTURING CO., Inc.

Number: B75-0346-00

Date: June 22, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 84-5201 through 85-5204

Ride: FALLING STAR

Subject: Sweep Rework

WARNING: FAILURE TO COMPLY WITH THIS SERVICE BULLETIN CAN RESULT IN FAILURE OF THE SWEEP STRUCTURE, CAUSING INJURY TO PASSENGERS, AND/OR BYSTANDERS.

On May 10, 1989, CHANCE MANUFACTURING CO., INC. issued Safety Alert Bulletin number A75-0343-00. This bulletin required inspection of the sweeps on the above noted FALLING STAR amusement rides. Based on the results of these inspections, CHANCE MANUFACTURING CO., INC. has determined that cracks can develop in FALLING STAR sweep arm weldments. A design improvement rework kit has been developed for these rides.

OWNERS OF THE ABOVE NOTED FALLING STAR AMUSEMENT RIDES ARE REQUIRED TO REWORK THEIR RIDES TO INCORPORATE THIS DESIGN IMPROVEMENT. This rework program is to be implemented in the following manner:

- Perform the inspection described in bulletin number A75-0343-00 DAILY. If cracks are found, DO NOT OPERATE THE RIDE. Order kit number K75-0343-01, and install it using the instructions provided with the kit. Return the Certification Of Compliance within 15 days from receipt of the kit.

- All rides must have the rework kit installed by December 1, 1989, regardless of whether or not cracks are found. Inspect reworked sweeps on a continuing basis, along with other major structural components.

All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this rework, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

Number: A75-0343-00

Date: May 10, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SAFETY ALERT

Effective Serial Numbers: 84-5201 through 84-5204

Ride: FALLING STAR

Subject: Inspection of Sweeps

WARNING: FAILURE TO COMPLY WITH THIS SERVICE BULLETIN CAN RESULT IN FAILURE OF THE SWEEP STRUCTURE, CAUSING INJURY TO PASSENGERS, AND/OR BYSTANDERS.

It has been determined by CHANCE MANUFACTURING CO, INC. that cracks can develop in FALLING STAR sweep arm weldments.

The owners of the above noted FALLING STAR amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within 15 days from receipt of the bulletin.

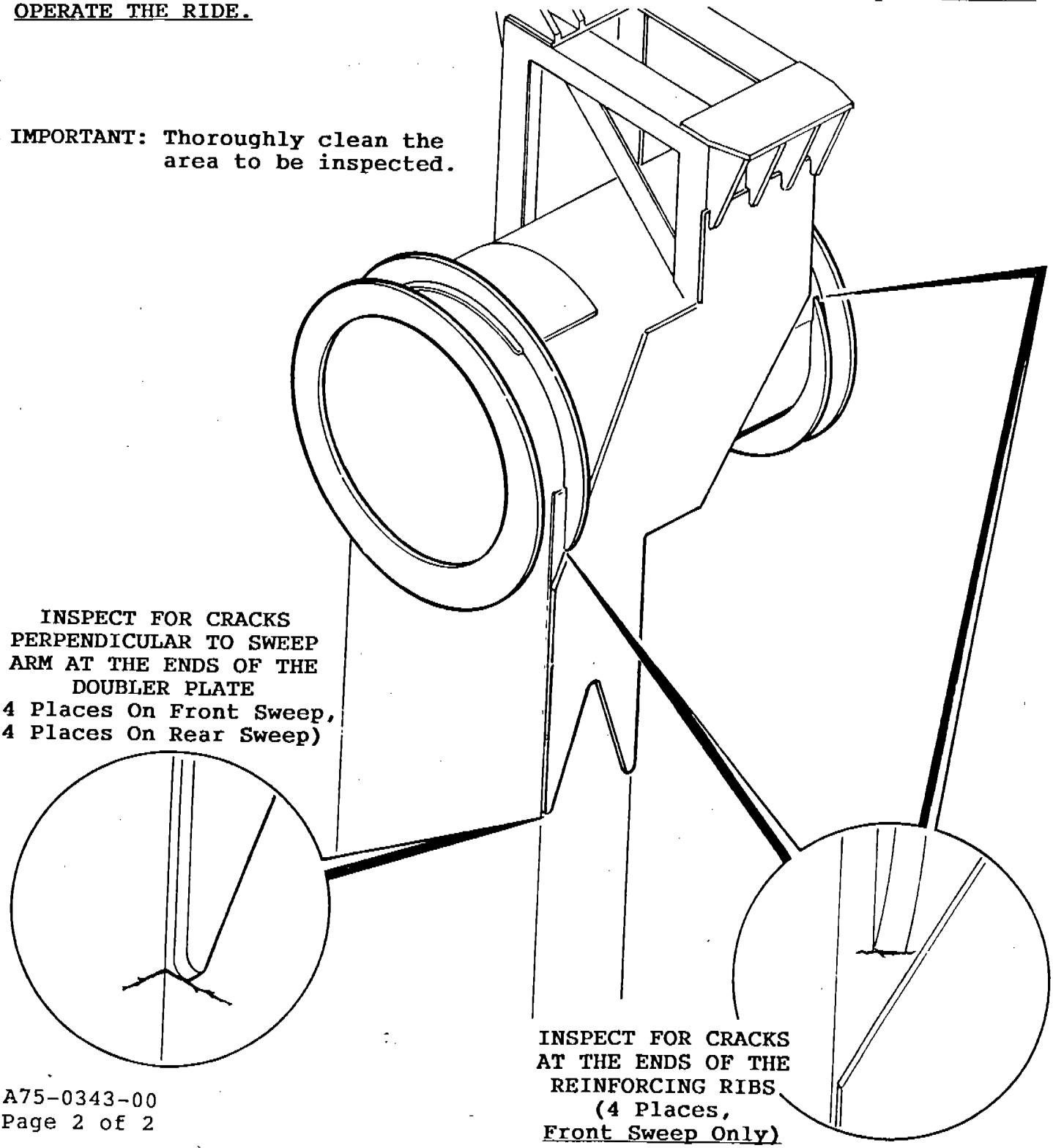
The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSPECTION PROCEDURE

Check the front and rear sweep arm weldments for cracks as shown in the following illustration. Inspect the weld and the parent metal at the toe of the weld.

If cracks or any unusual condition exist in any of the areas noted, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately. DO NOT OPERATE THE RIDE.

IMPORTANT: Thoroughly clean the area to be inspected.



CHANCE MANUFACTURING CO., Inc.

Number: B75-0336-00

Date: March 22,1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 84-5201 through 85-5204

Ride: FALLING STAR

Subject: Seat Guard Rail

A modification kit has been developed to decrease the clearance between the lap bar and the seat, increasing the security of the passenger restraint system. The modification consists of mounting a guard rail to the seat.

As a safety precaution, CHANCE MANUFACTURING CO., INC. requires that all FALLING STAR amusement rides be equipped with this guard rail. Owners of FALLING STAR amusement rides with the above noted serial numbers are required to perform the modification described in this bulletin.

Order kit number K75-0336-00, which includes the parts necessary to modify one ride. Install the parts using the instructions provided on the following pages of this bulletin. Fill out the attached Certification Of Compliance for the modification within 15 days of receipt of the kit.

PARTS LIST - Seat Hand Rail Kit No. K75-0336-00
(consists of the following parts)

Item	Part No.	Description	Qty.
1	375-3162300	HAND RAIL (391-153-001)	20
2	686-1144200	CAPSCREW - Truss Head (1/4-20 x 1)	60
3	691-4780800	LOCK NUT (1/4-20)	60
4	696-8530000	WROUGHT WASHER (1/4)	60
5	681-6141000	POP RIVET - AD56ABS 5/32 Dome Head	40

All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this rework, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSTALLATION INSTRUCTIONS

1. Position the guard rail on a seat as shown Mark the aluminum seat trim flush with each end of the guard rail.

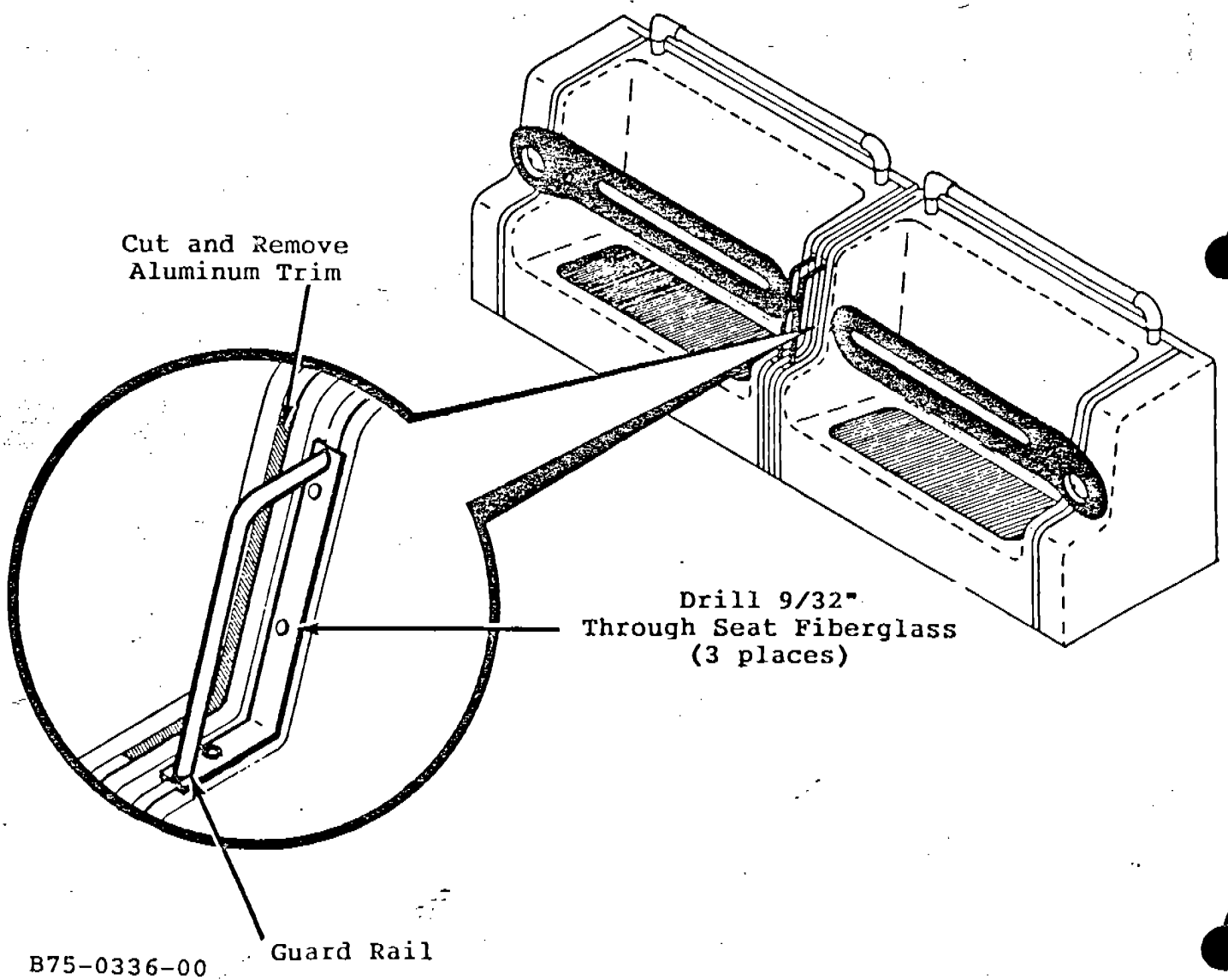
2. Cut the aluminum trim at both marks. Drill out the rivets and remove the section of trim.

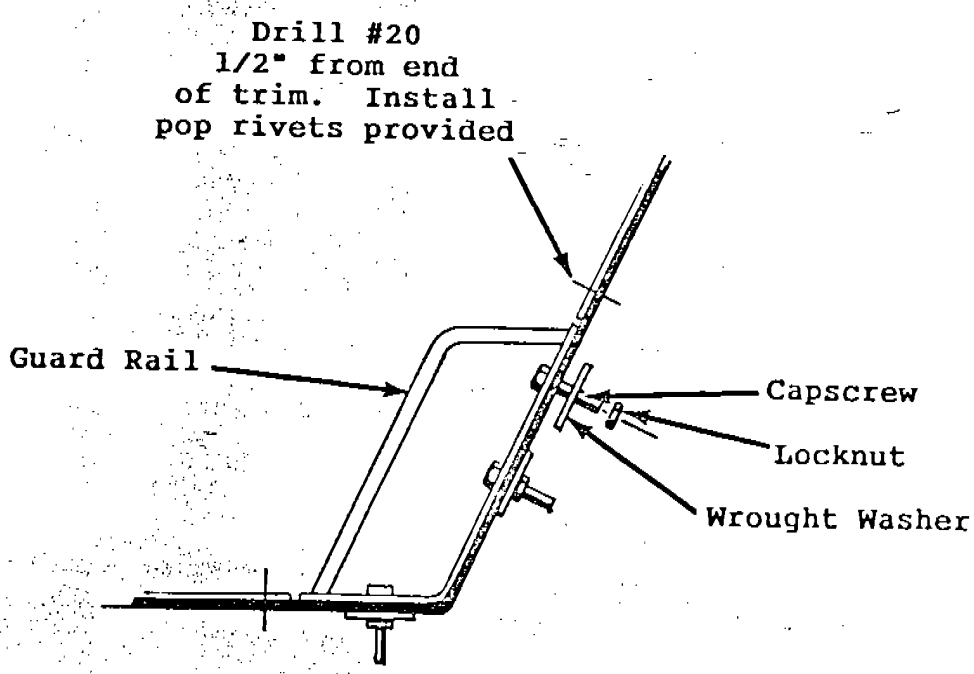
3. Use the guard rail (Item #1) to mark the hole locations on the seat. Drill 9/32" through the seat fiberglass three places.

4. Mount the guard rail using the capscrews, wrought washers and locknuts (Items #2, #3 and #4) as shown.

5. Secure the ends of the aluminum trim with pop rivets (Item #5) as shown.

6. Repeat the procedure on the remaining 19 seats.




Drill #20
1/2" from end
of trim. Install
pop rivets provided
Guard Rail
Capscrew
Locknut
Wrought Washer

CHANCE MANUFACTURING CO., Inc.

Number: B75-0334-00

Date: Nov. 17, 1988

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: **All Units**

Ride: **FALLING STAR**

Subject: Drive Sprocket Fastener Inspection

It has been determined by CHANCE MANUFACTURING CO., INC. that the fasteners between the drive hub and the large drive sprocket on the FALLING STAR must be checked for tightness on a regular basis. If the fasteners become loose, the sprocket can rotate out of alignment, resulting in serious damage to structural and drive components.

The owners of the above noted **FALLING STAR** amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within fifteen (15) days from receipt of the bulletin.

The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSPECTION PROCEDURE

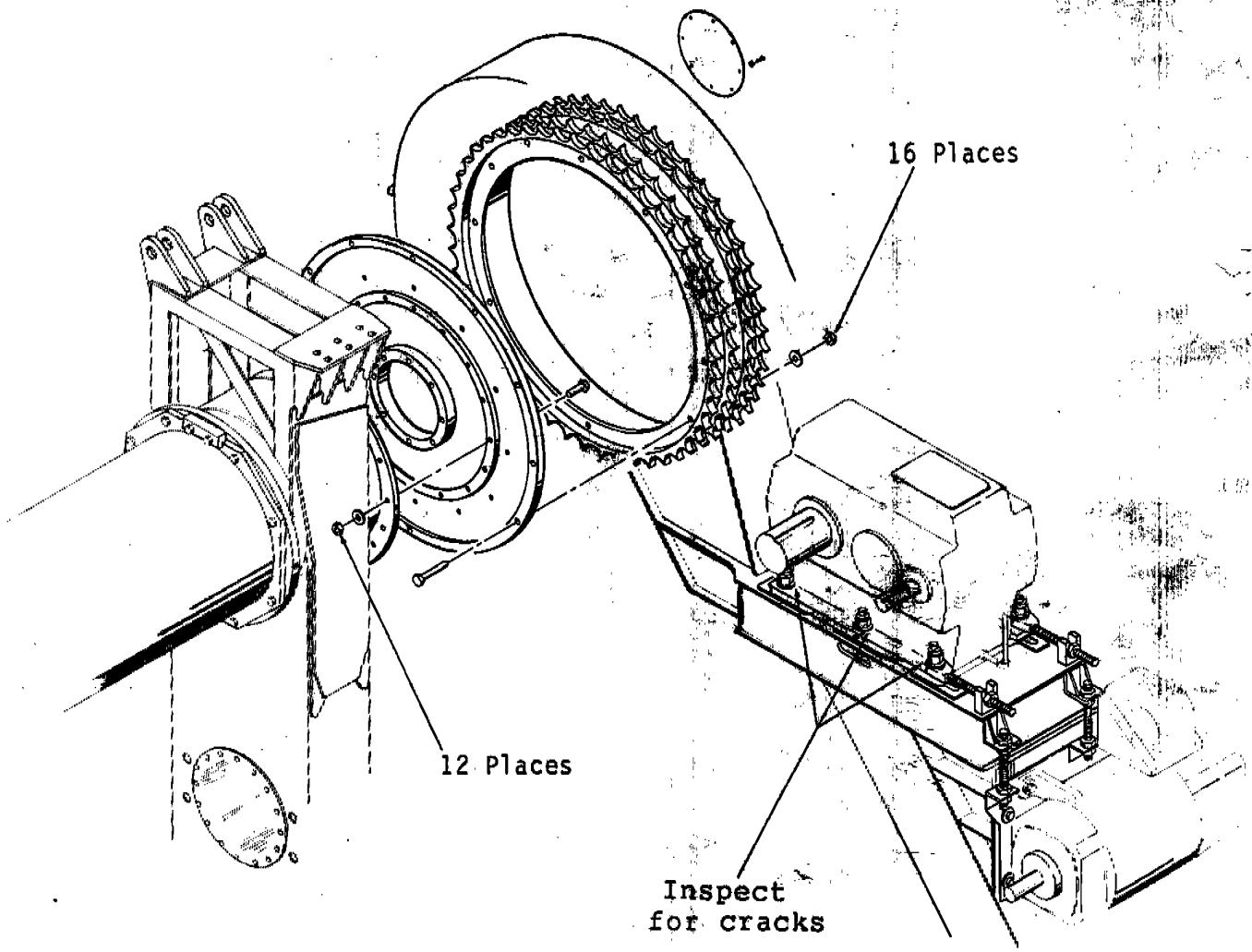
This procedure must be performed while the ride is erected and fully operable.

1. Use a torque wrench to check the tightness of ALL fasteners indicated in the illustration below. The correct torque of the fasteners must be 760 ft-lb if checked at the nut, or 840 ft-lb if checked at the capscrew head.

> **NOTE: The fasteners can be checked by removing the access covers from the chain case. However, the chain case must be removed to properly tighten loose fasteners.**

2. Inspect the base plate of the gearbox for cracks in the area around the attaching capscrews.

3. Perform this inspection twice every operating season.



If loose fasteners, cracks or any unusual condition exists, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately.

Number: B75-0312-00

Date: Oct. 26, 1987

Supersedes:

America's Largest Manufacturer of Amusement Rides

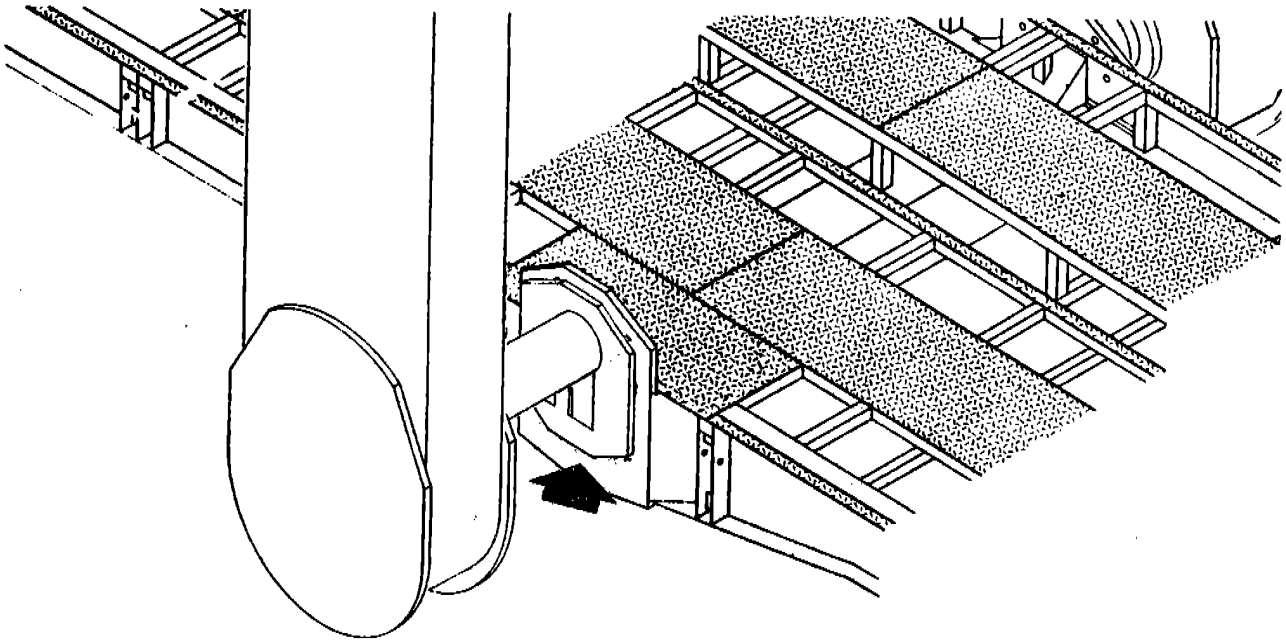
SERVICE BULLETIN

Effective Serial Numbers: 84-5201 through 84-5204

Ride: FALLING STAR

Subject: Inspection Of Vehicle Mounting Plate

It has been determined by CHANCE MANUFACTURING COMPANY, INC. that the joint between the vehicle and the front stub shaft on the FALLING STAR can deflect under certain conditions.

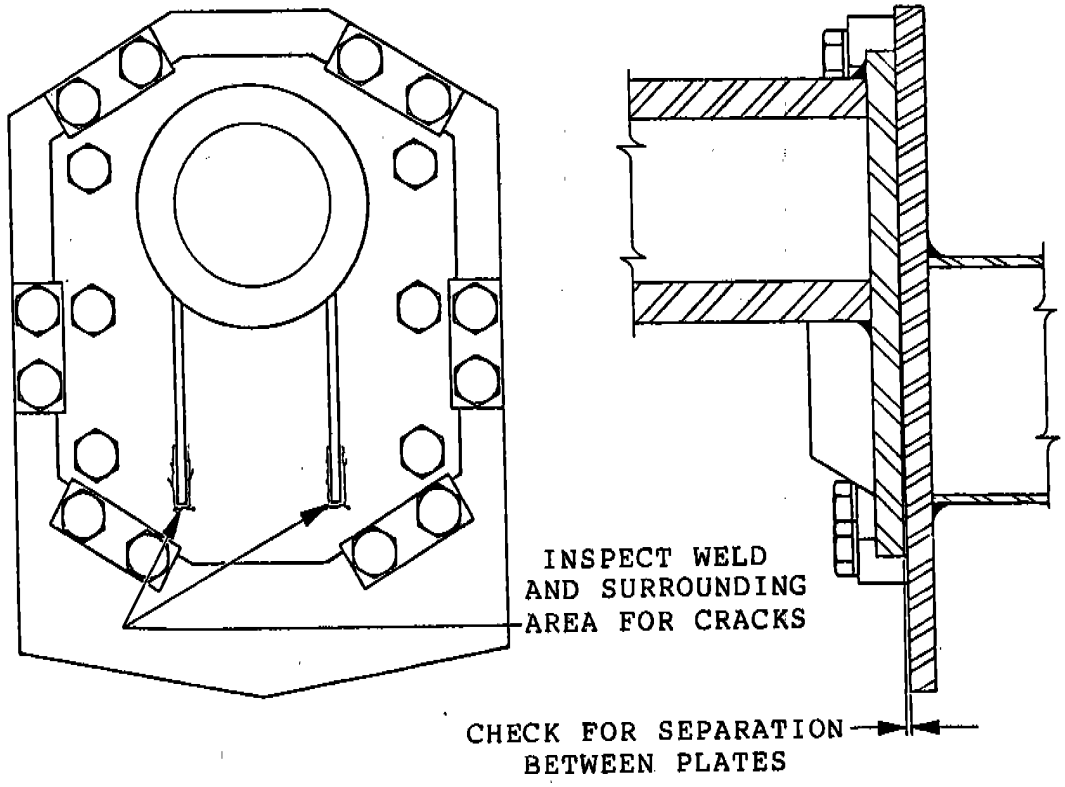


The owners of the above noted FALLING STAR amusement rides are therefore required to inspect their rides as described in this bulletin. Perform the inspection using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within fifteen (15) days from receipt of the bulletin.

The inspection must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation. If there are any questions regarding the instructions or this inspection, contact the CHANCE CUSTOMER SERVICE DEPARTMENT.

INSPECTION PROCEDURE

With the vehicle installed on the sweeps and the capscrews tightened to 700-840 ft-lb., inspect the front stub shaft as shown in the illustration below.



Inspect the weld and the parent metal surrounding the weld. Also, make sure there is no separation between the two plates as shown.

If cracks, separation or any unusual condition exist, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately. DO NOT OPERATE THE RIDE.

Number: B75-0272-00

Date: 10-18-85

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: ALL UNITS

Ride: FALLING STAR - PORTABLE MODELS ONLY Subject: PARKING BRAKE/AUXILIARY AIR PRESSURE SETTING

IMPORTANT

All owner/operators of FALLING STAR portable amusement rides are cautioned to check the air pressure in the parking brake/auxiliary air system BEFORE ERECTING THE RIDE. If the air pressure is too low, loss of control of the sweeps and/or counterweight arms can result.

During erection, the brake air line must be installed in the FULL AIR PRESSURE fitting. This is the quick-disconnect fitting directly off the air reservoir on the rear trailer. The reservoir pressure must be set so that the compressor turns on at 75 psi and turns off at 100 psi.

Cycle the parking brake control lever two or three times and listen for the sound of air exhausting at the lever.

If the correct air pressure cannot be maintained, contact CHANCE MANUFACTURING immediately.

NUMBER: B391R1144-0

DATE: JAN. 7, 1994

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Units

Ride: FALLING STAR Subject: Drive Sprocket/NDT

Chance Rides, Inc. has become aware that cracks can develop in the large chain drive sprocket on the FALLING STAR amusement ride. The cracks have appeared on the back side of the sprocket in the radius where the horizontal part of the sprocket is welded to the vertical part of the sprocket.

All owner/operators of the above noted rides are required to test the drive sprocket annually as described in this bulletin. All work must be performed by Level II or III persons who are certified in magnetic particle inspection. Testing can be done through the side inspection port without removing the chain case. Inspect a small portion at a time, rotating the ride after each inspection, until the entire circumference of the sprocket has been inspected.

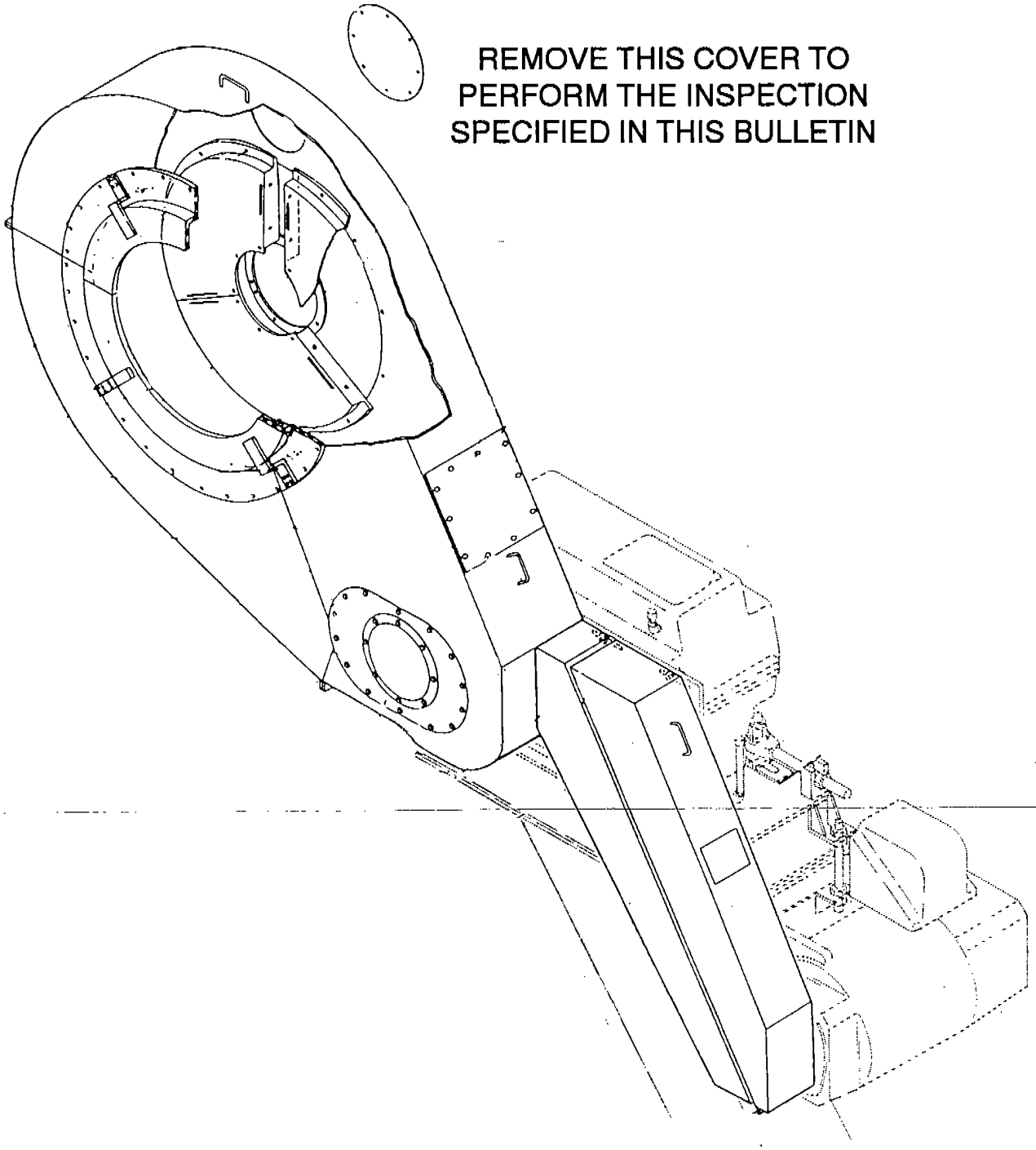
The following magnetic particle inspection technique meets the requirements of ASTM E709.

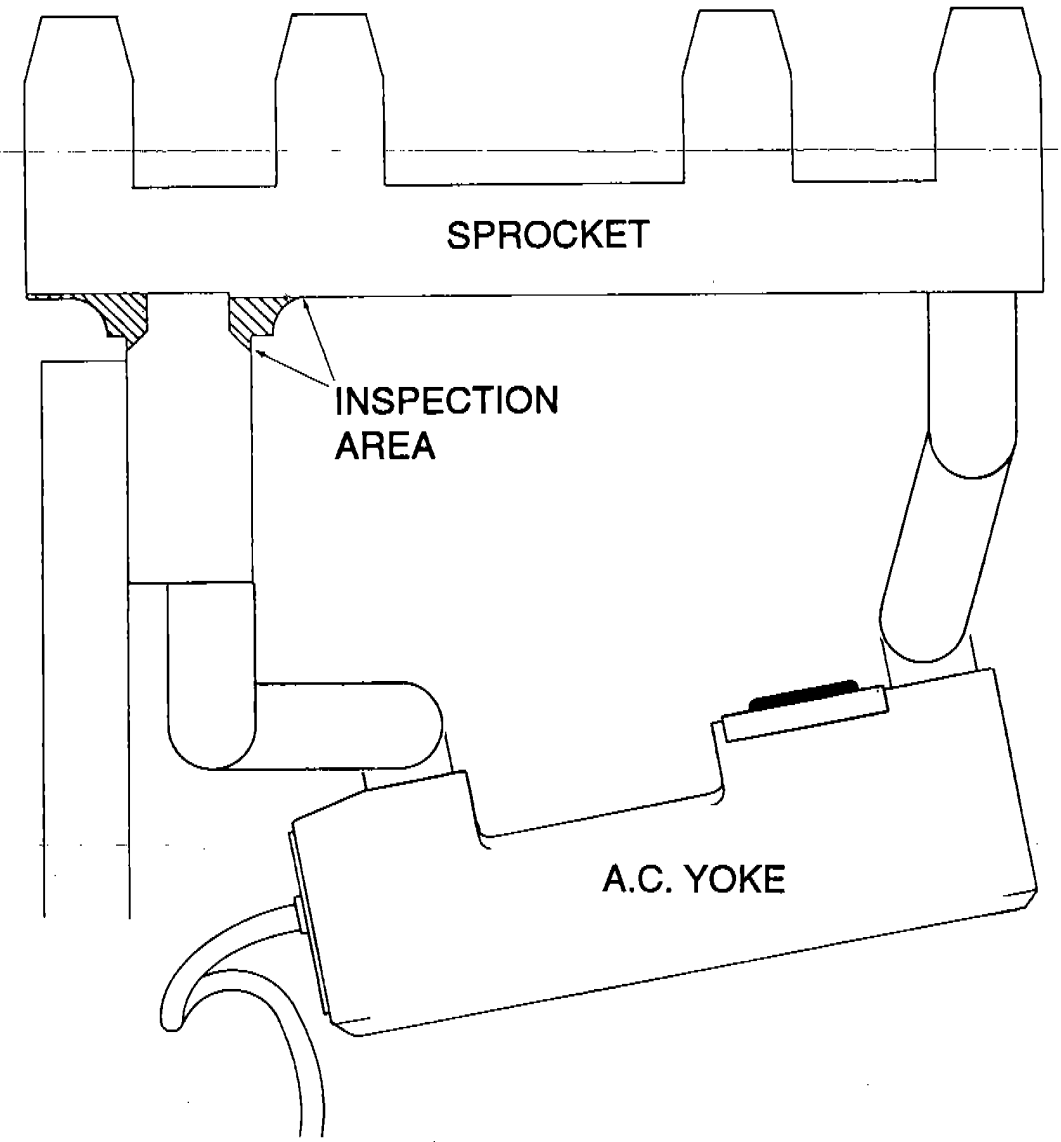
1. PRE-CLEAN:
   * Clean the weld radius area of the drive sprocket as shown in the illustrations in this bulletin to remove oils and other contaminates.

2. MAGNETIZATION PROCESS:
   * Using an A.C. yoke with articulating legs, position yoke over weld so flux field is 90° to weld as shown in illustration.
   * Use continuous method for applying particles and current.

3. INSPECTION:
   * Thoroughly inspect all weld areas for linear indications.
   * If any linear indications are found, **do not operate the ride,** contact the Chance Rides, Inc. Customer Service Department.
   * Fill out test report with results and send a copy to Chance Rides, Inc.

4. POST-CLEAN:
   * Remove magnetic particles from weld area.


REMOVE THIS COVER TO
PERFORM THE INSPECTION
SPECIFIED IN THIS BULLETIN


SPROCKET
INSPECTION
AREA
A.C. YOKE

NUMBER: B391R1145-0

DATE: JAN. 7, 1994

SUPERSEDES:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Number: All Units

Ride: FALLING STAR

Subject: Gearbox Inspection

Chance Rides, Inc. has become aware that some gears in the gearboxes on the above noted amusement rides have shown wear after having been in service for five years or more. Chance Rides, Inc. has established an exchange program for gearboxes that exhibit excessive wear and require replacing.

All owner/operators of the above noted FALLING STAR rides are required to inspect the gearboxes as outline in this bulletin.

Inspection Procedure:

1. Remove inspection plate from top of gearbox.
2. Slowly rotate gears while visually inspecting gears for pitting, broken teeth, and/or uneven wear.
3. Identify large output shaft style, see illustration.

In an effort to better serve all FALLING STAR owners, Chance Rides, Inc. requires all FALLING STAR owners to complete and return the attached Certificate Of Compliance, within fifteen (15) days from receipt of this bulletin, including the gearbox serial number and output shaft style.

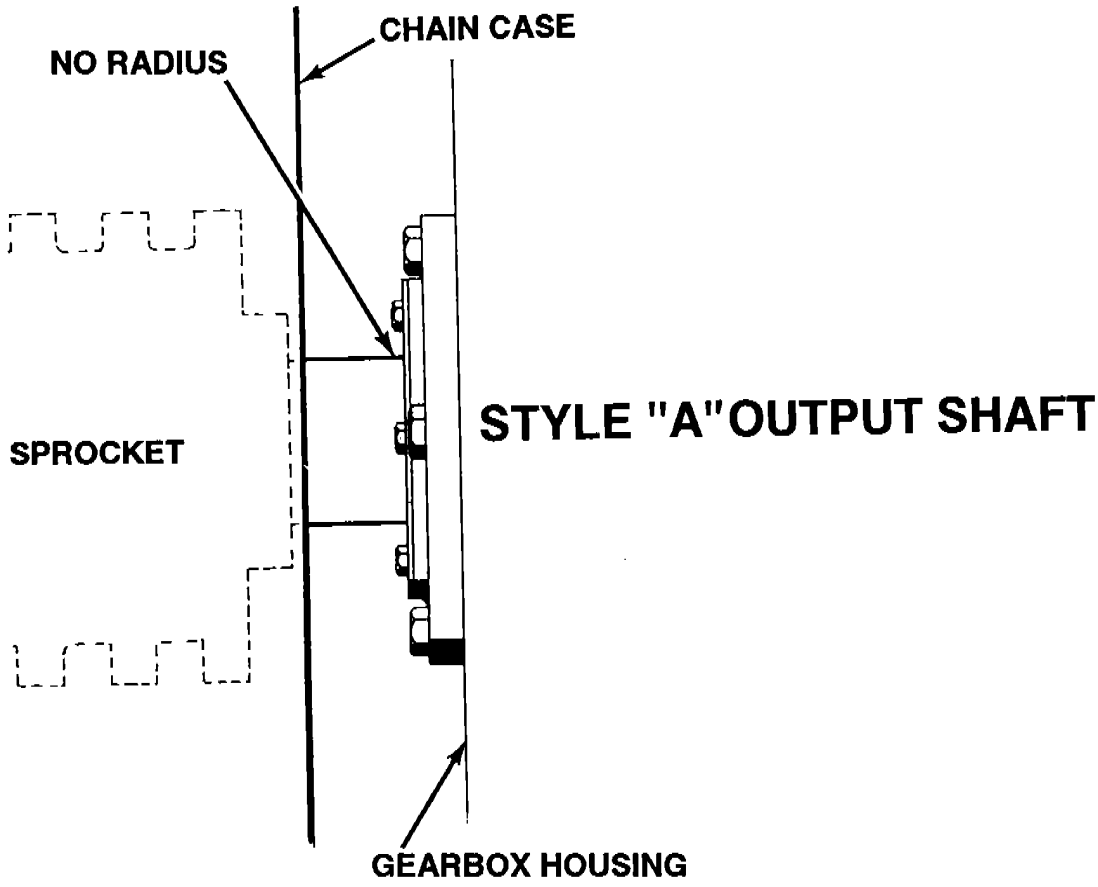
All work must be performed by qualified personnel, capable of understanding the function of the parts and their proper installation.

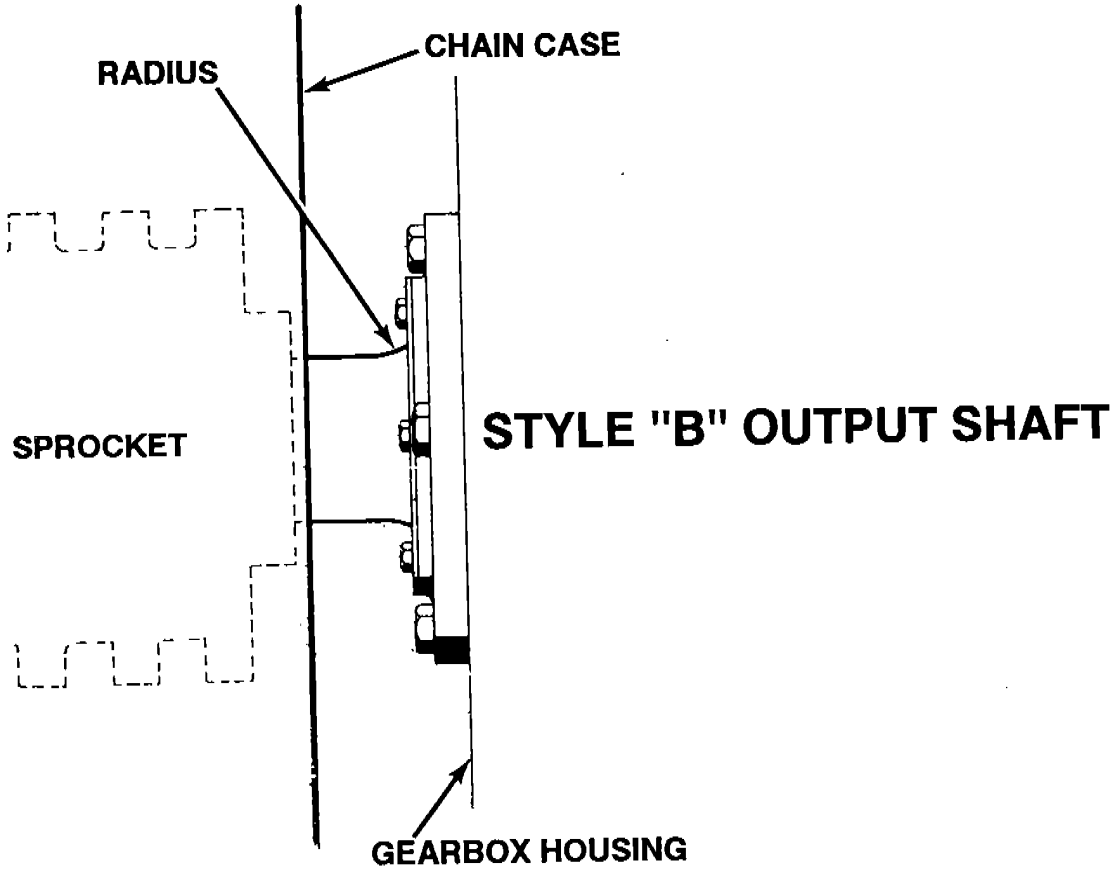
NOTICE

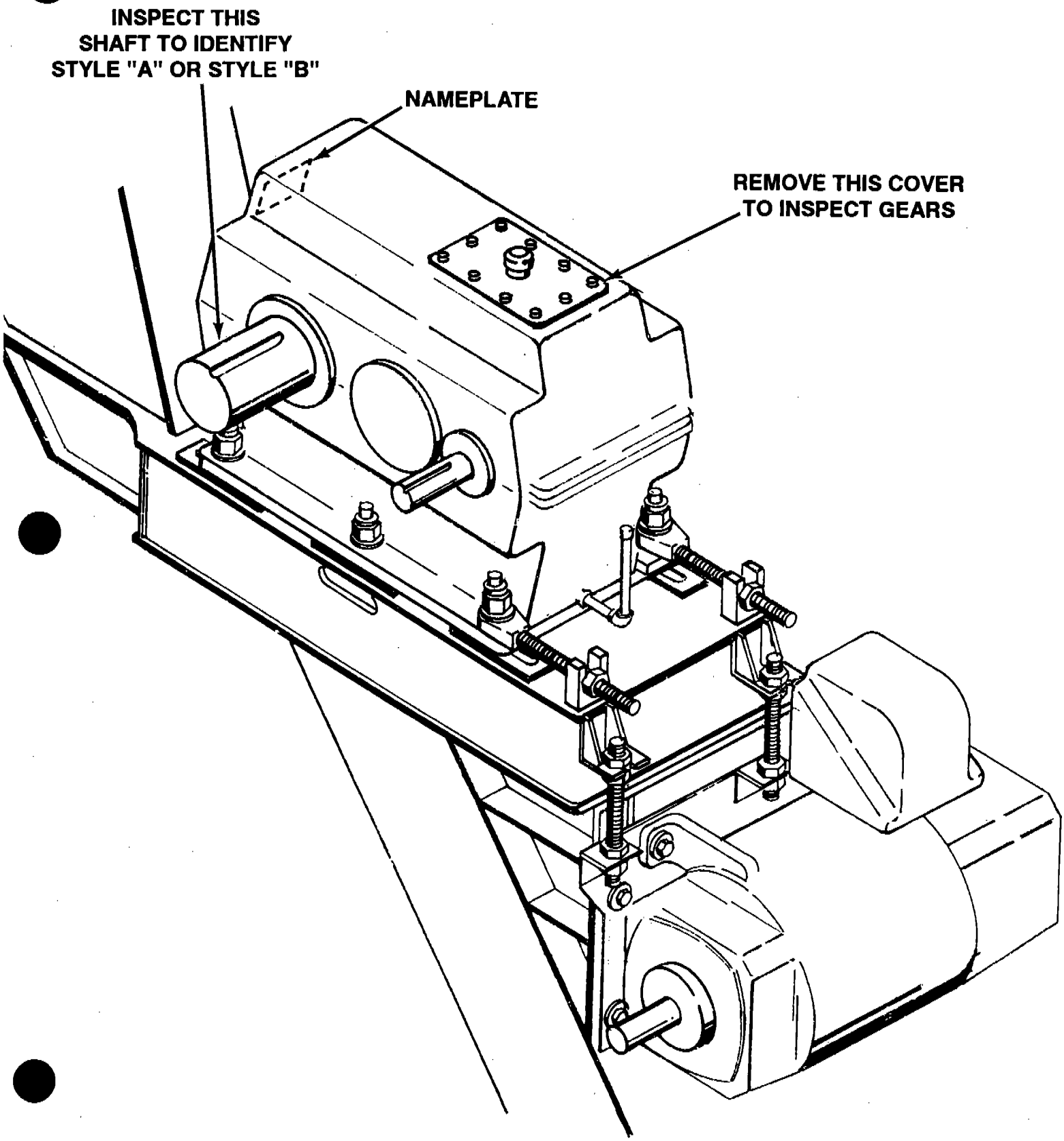
Use only those components authorized, specified or provided by Chance Rides, Inc.

Chance Rides, Inc. SPECIFICALLY DISCLAIMS ANY LIABILITY for losses associated with any unauthorized alterations and/or modifications or additions and installations of unauthorized components.

Factory and Sales Office: 4219 Irving · P.O. Box 12328 · Wichita, Kansas 67277-2328 · (316) 942-7411 · FAX: (316) 942-7416


CHAIN CASE
NO RADIUS
SPROCKET
STYLE "A"OUTPUT SHAFT
GEARBOX HOUSING


CHAIN CASE
RADIUS
SPROCKET
STYLE "B" OUTPUT SHAFT
GEARBOX HOUSING


INSPECT THIS
SHAFT TO IDENTIFY
STYLE "A" OR STYLE "B"
NAMEPLATE
REMOVE THIS COVER
TO INSPECT GEARS

CERTIFICATE OF COMPLIANCE

FOR

SERVICE BULLETIN

B391R1145-0

We hereby certify the procedure outlined in the above-mentioned service bulletin has been performed on the FALLING STAR, Serial Number _____, in accordance with the instructions and specifications supplied by Chance Rides, Inc.

Date Bulletin Received _____

Date Procedure Performed _____

Name and Address of Person Performing Procedure:

_____

_____

Attested:

Owner _____ Maintenance Supervisor _____

Address _____ Address _____

City _____ State _____ City _____ State _____

By _____

Date _____ Date _____

Results: Gearbox Serial Number _____

Output Shaft Style _____

Wear _____

This certification must be completed and returned to **CHANCE RIDES, INC., P.O. BOX 12328, WICHITA, KS 67277-2328**, within fifteen (15) days of receipt of parts.

FALLING STAR

Field inspection and test guide

Manual number 24329303

FALLING STAR

Field inspection and test guide

Contents

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).

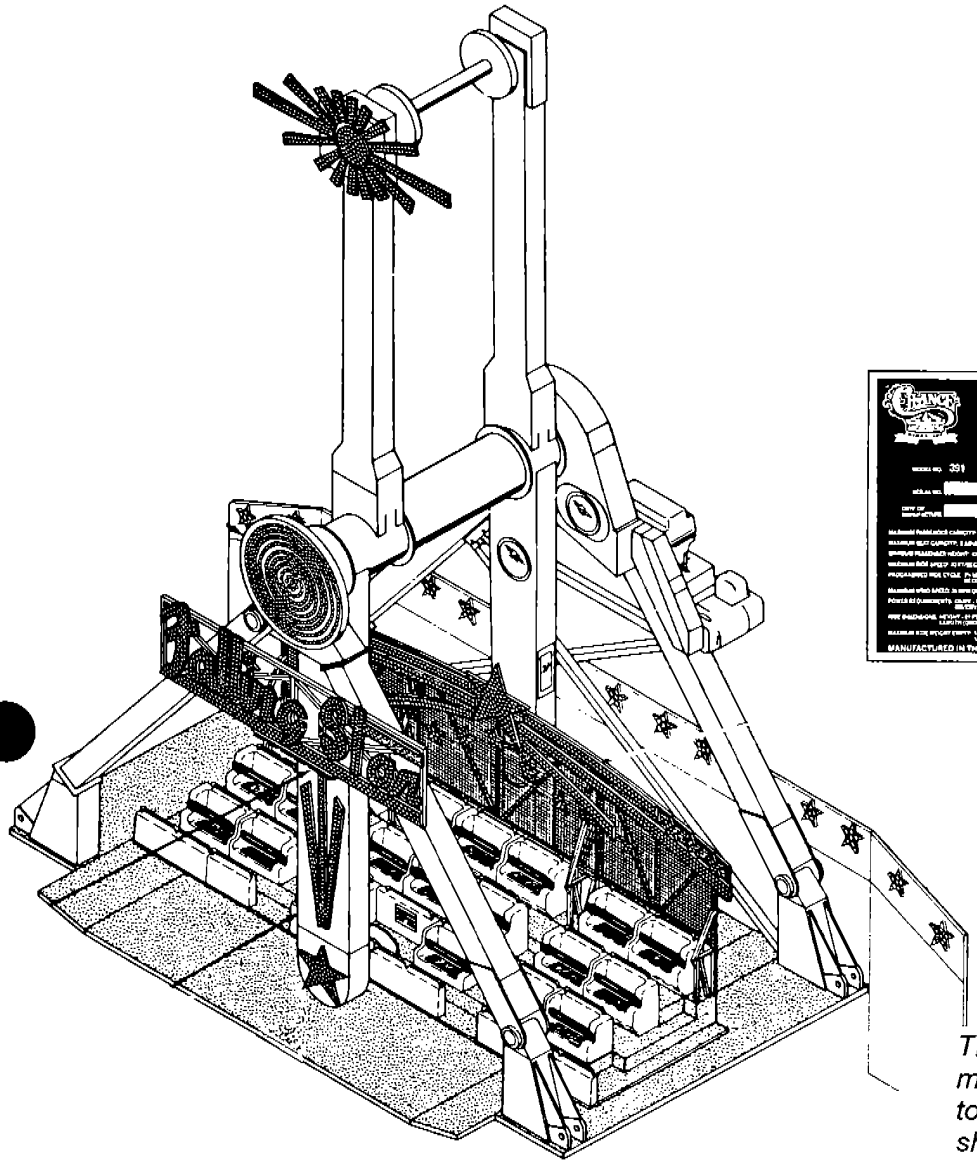
Information in this field inspection and testing guide applies only to products manufactured by CHANCE RIDES INC. built after January 1, 1986 (**Falling Star** serial number 391-00586 and on).

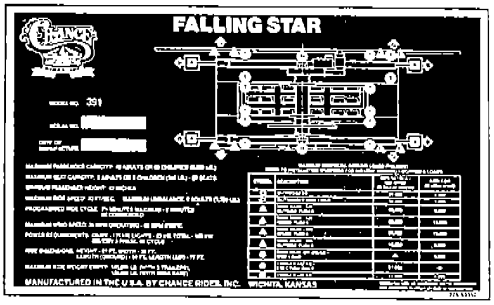
CHANCE RIDES INC., reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to such changes.

Ride description

The **Falling Star** is mounted on a three trailers (portable model) or a stationary base, anchored to the ground (park model). The ride has a programmed d.c. electric drive system with an air brake.

The ride information plaque is mounted to the right hand rear stub tower. It lists specifications, operating dimensions, ground loads, as well as model and serial number and date of manufacture.





The ride information plaque is mounted to the right hand rear stub 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.

Detailed operation and maintenance information is available in the *Falling Star Operation And Maintenance Manual* (manual number 24326900). For more information, or to order manuals, contact CHANCE RIDES, INC.

Operation

Operating controls

1. Power indicator light - This green light is on when the main power circuit breaker is on.

2. Fault indicator light - If this red light is on, a fault is indicated and the ride will not operate.

3. Program switch - This key-operated switch selects the short (Program 1) or long (Program 2) ride program. The ride will not run with the switch in the center "Lockout" position. Do not change the program switch after the ride is started.

4. Operator presence switch[12] - This foot switch must be depressed to operate the start or jog switches. If the switch is released, the drive program is interrupted and the ride will swing to a stop. The hand brake can be used to help stop the vehicle.

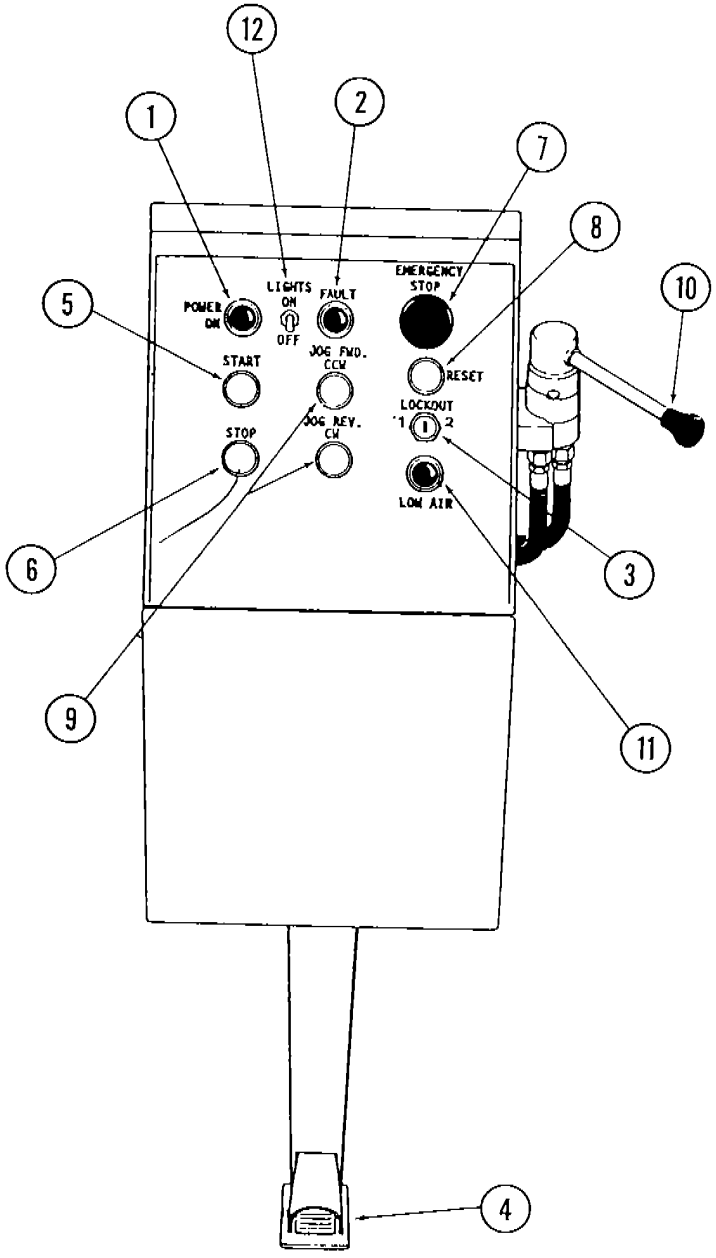
5. Start switch - Push this switch to start the programmed ride cycle. The following conditions must exist for the ride to operate:

- Power indicator light must be on.
- Fault indicator light must be off.
- All lap bars must be down and all lap bar indicator lights must be off.
- Vehicle must be a 0 degrees. Use the jog switches to center the vehicle.
- Operator presence switch must be depressed.

6. Stop switch (main power) - This switch interrupts the drive program. The ride will swing to a stop. The hand brake can be used to help stop the vehicle.

7. Emergency stop switch[12] - This switch interrupts the drive program. The ride will swing to a stop. The hand brake can be used to help stop the vehicle.

8. Reset switch - Push this switch if the fault indicator light comes on.



Operator's control panel

1. Power indicator light
2. Fault indicator light
3. Program switch
4. Operator's presence switch
5. Start switch
6. Stop switch (main power)
7. Emergency stop switch
8. Reset switch
9. Jog forward and reverse switch
10. Hand brake
11. Low air indicator light
12. Lights switch

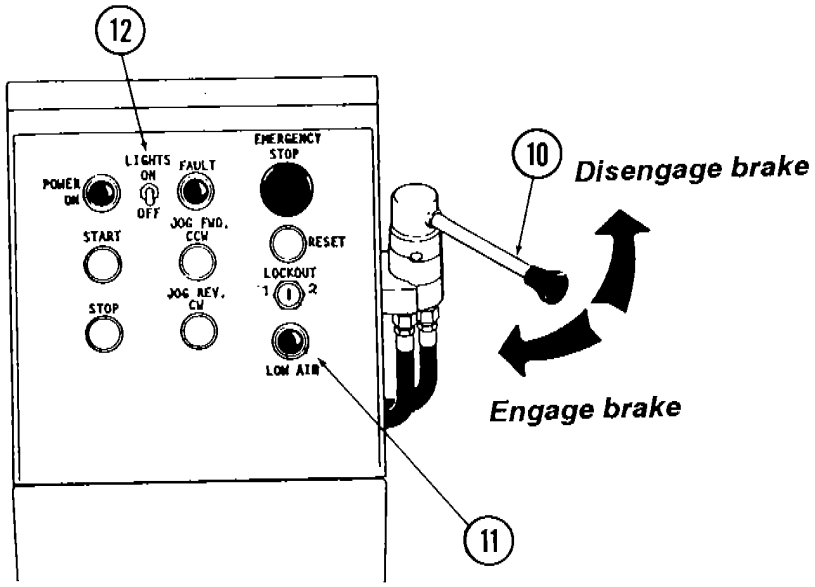
9. Jog forward (clockwise) and Jog reverse (counter-clockwise) switches - These switches allow the operator to slowly move the vehicle to any position for erecting the ride or loading passengers. The operator presence switch must also be depressed. The hand brake can also be used with the jog switches for precise control of vehicle position.

10. Hand brake - Use the hand brake with the jog buttons to precisely control vehicle position while erecting the ride or loading passengers. It can also be used to help stop the vehicle after pushing either the stop or emergency stop switches.

11. Low air indicator light - This red light comes on when air pressure for the brake is too low. Do not operate the ride when this light is on.

12. Lights switch - This switch controls all decorative lighting on the ride.

Operator's control panel
10. Hand brake
11. Low air indicator light
12. Light switch



Operating the ride (Test cycle)

The operating procedure is provided in the *Falling Star Operation Manual and Parts Catalog*. Make sure that a copy of the manual is readily available. Test the operation of all controls, including the operator presence switch and the emergency stop switch[12]. Also check the operation of the hand brake after pushing the stop or emergency stop switches. As the ride runs through the programmed cycle, check the ride profile for correct operation sequence.

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 rides[1]

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.

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 testing[3]

REFERENCE STANDARD *1. ASTM-F24 Standard On 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 requirements[10]

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.

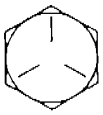
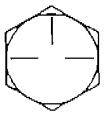
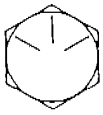
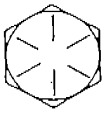
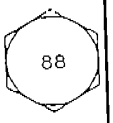
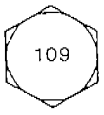
Capscrew grades

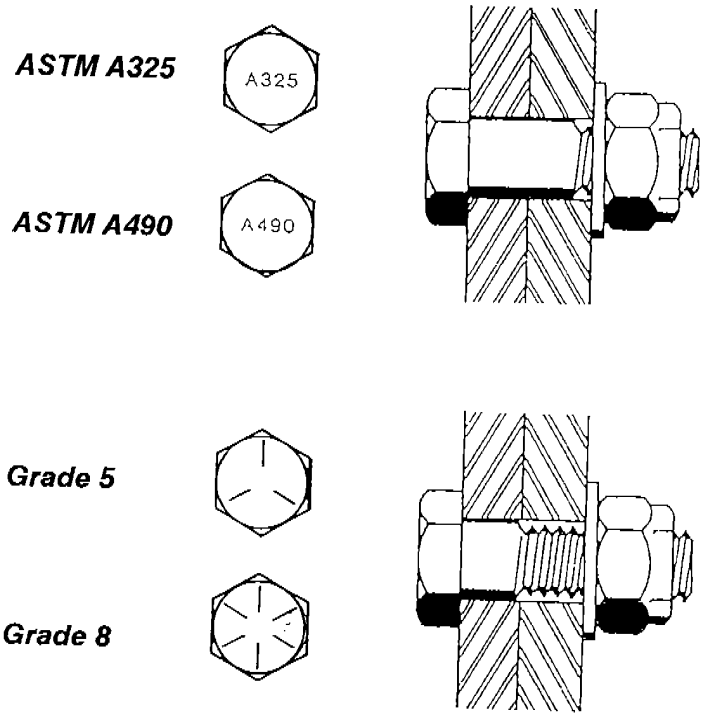
CHANCE RIDES, INC.uses only grade 5 or better capscrews and grade 8 locknuts, with A325 hardened washers for functional loads. The *Grade markings chart* shows the capscrew markings to be found on CHANCE rides. The manufacturer's identification symbols must be present on all functional load carrying 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
SAE J429 Grade 5 Medium carbon 81,000 yield 	 **Grade 5.1** Low carbon  **Grade 5.2** 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 81,00 yield 	 **ASTM A325 Type 2** Low carbon martensitic
SAE J429 Grade 8 Medium carbon 130,00 yield 	 **ISO R898** Class 8.8 Medium carbon 92,000 yield 
ASTM A490 Alloy steel Longer shank and shorter thread length than Grade 8 130,00 yield 	 **ISO R898** Class 10.9 Alloy steel 130,000 yield 



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.

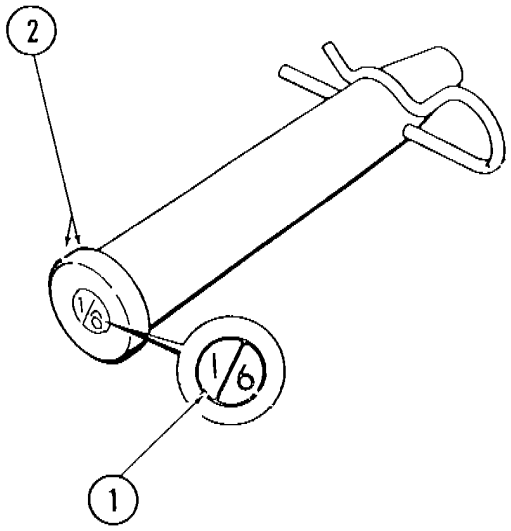
Capscrews and locknuts which are frequently disassembled for portability must be replaced each operating season. If the capscrews and locknuts become damaged, corroded or require excessive torque for removal, they must be replaced. If a torque wrench is not used to measure excessive removal torques,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

Pins[8]

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

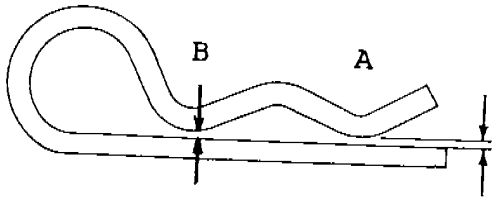


Use care when installing and removing tapered pins. Since these pins are hardened (as are hammers and punches) care must be taken to strike the pin straight on. Striking a pin at an angle can cause the pin to chip, resulting in personal injury. For this reason APPROVED SAFETY GLASSES OR GOGGLES MUST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

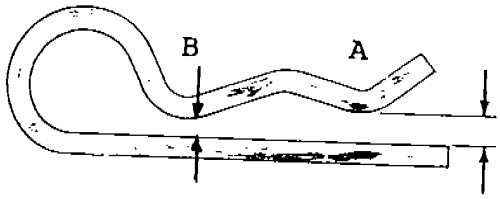
Pin keepers

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.



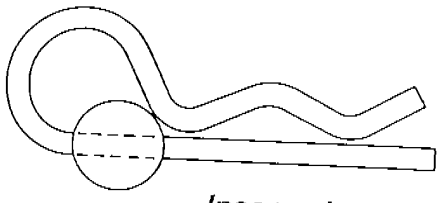
Acceptable hair pins
Dimension "A" equals dimension "B" in a relaxed position



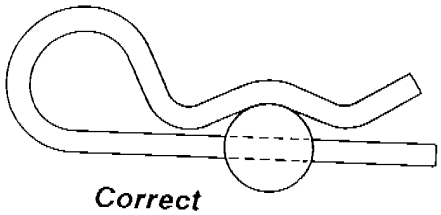
Unacceptable hair pins
Dimension "A" is greater than dimension "B" in a relaxed position

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.



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.*

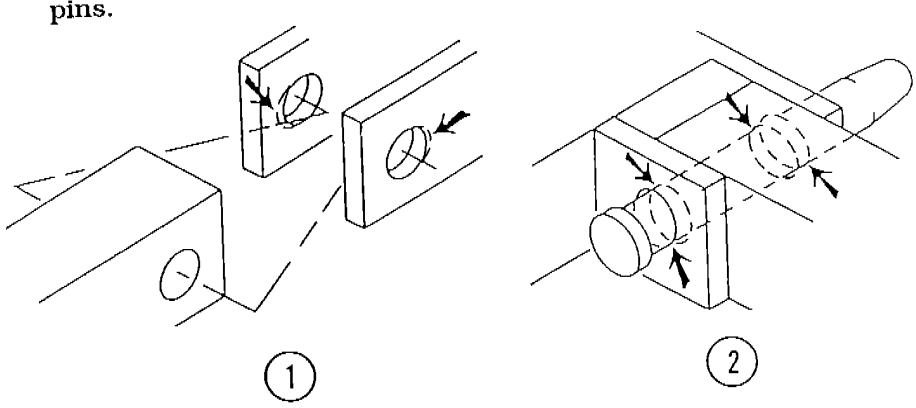
Inspection

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.

1. Stationary joint wear
2. 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[19]

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".

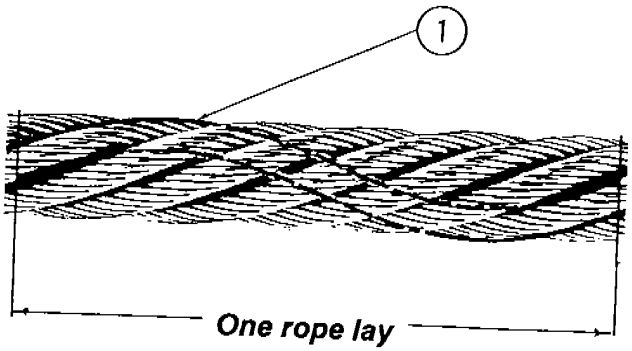
Kinking

Crushing

Bird caging

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

1. One strand

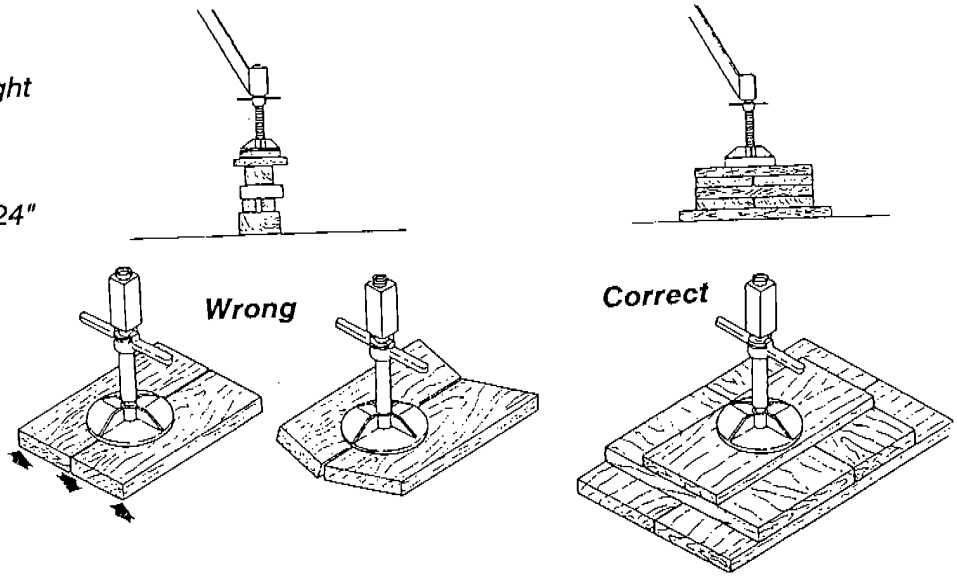
Leveling and blocking (portable models)

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.

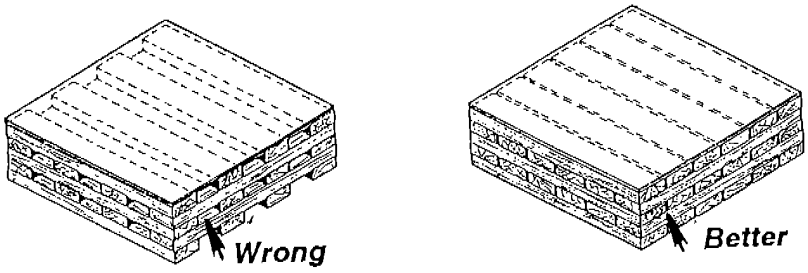
Always cross block
Cross blocking distributes weight evenly.

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



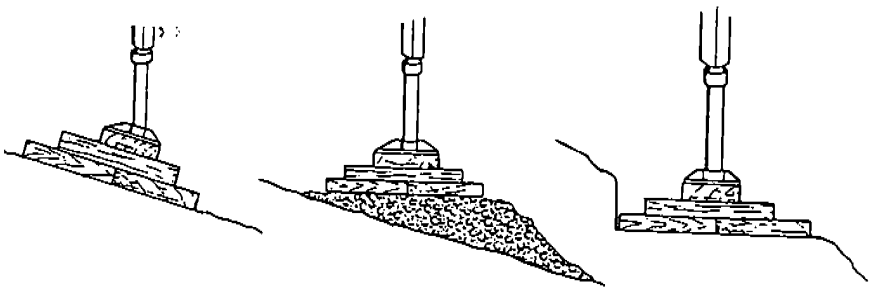
To avoid crushing under load "crib" blocking should be spaced no more than 1/4" for drainage.

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



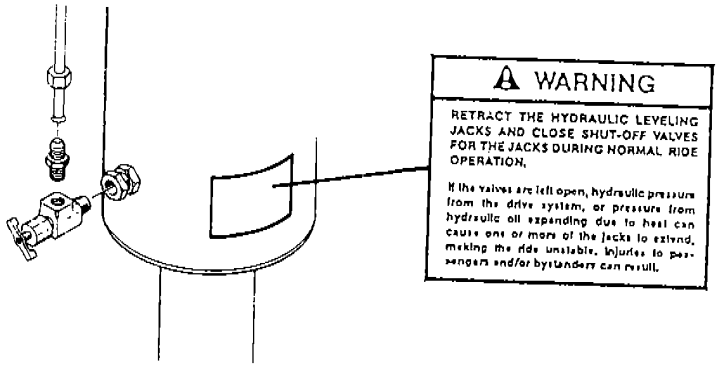
3. Inspect blocking for proper contact with ground.

4. Level ground under blocking.by digging where possible, instead of filling. Fill dirt will be soft and allow settling.

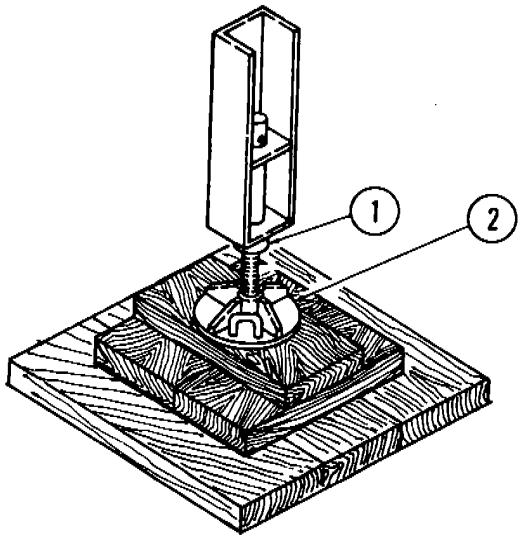


Blocking on a slope
Level the ground beneath blocking by digging where possible. Don't fill, the fill dirt will be soft allowing the ride to tilt

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.



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



1. Screw jack
2. Lock ring

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.

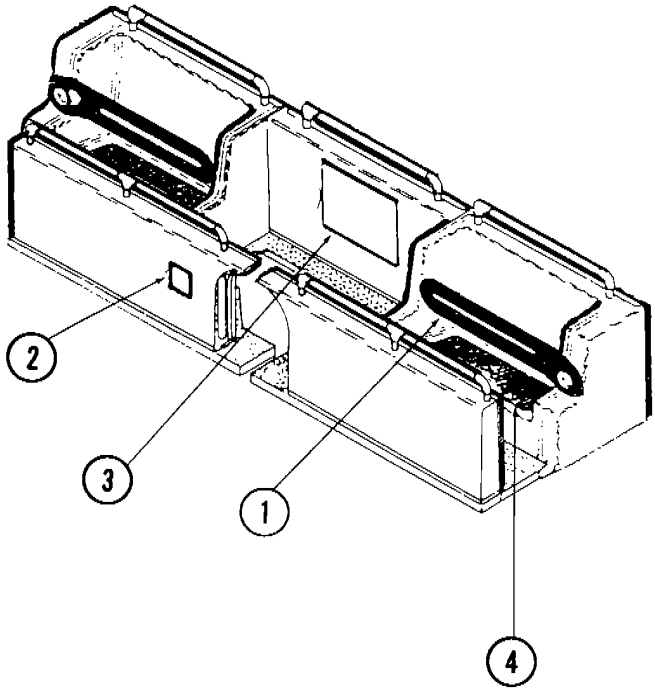
12. Clean up after each job, disposing of surplus materials.

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.

Vehicle inspection

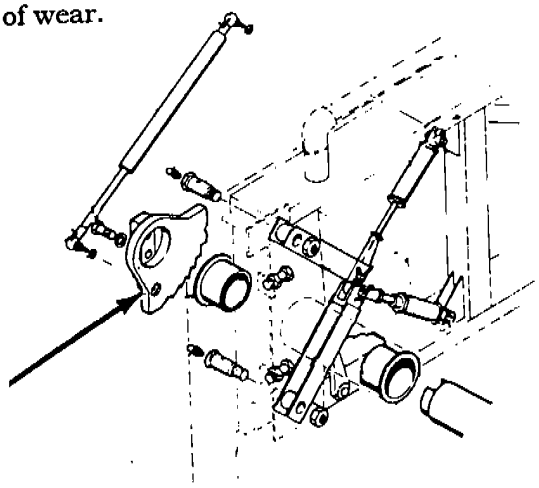
1. Check the operation and locking of all lap bars[12]. When the lap bar "Close" switch is pushed, the lap bars will lower. The lap bar must then be manually pushed down to the locked position. Push the lap bar "Open" switch to release all lap bars.



1. Lap bar
2. Lap bar switch
3. Indicator light panel
4. Anti-slip material

2. Check the sector teeth on the lap bar latching mechanisms for signs of wear.

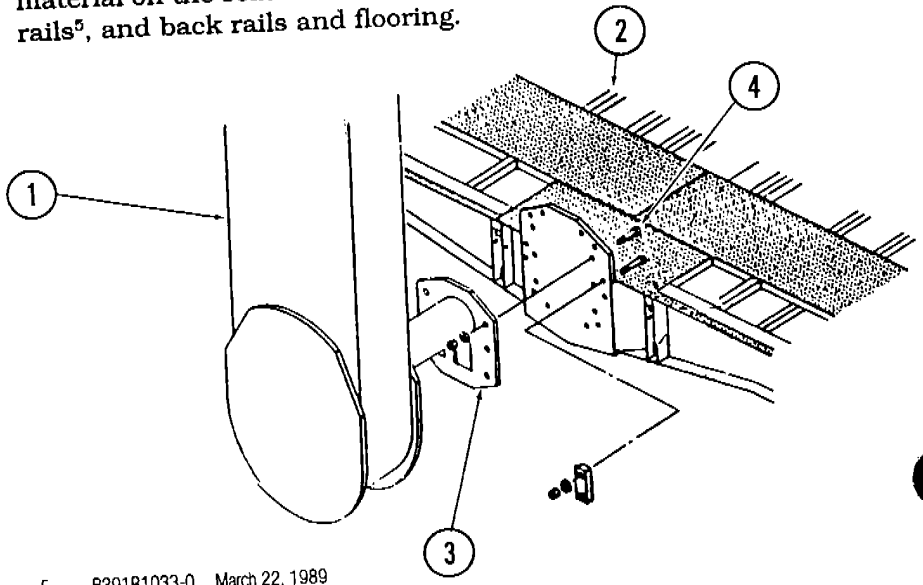
Sector teeth



3. Inspect the lap bar indicator panel. When all lap bars are up, all indicator lights must be lit. As each lap bar is pushed into the locked position, a corresponding indicator light will go out. When all lap bars are down and locked, all indicator lights must be out.

4. Check the operation of the lap bar interlock system[12]. The programmed ride cycle must not operate unless all lap bars are down and locked. Test each lap bar separately by using the procedure begining on pg 24.

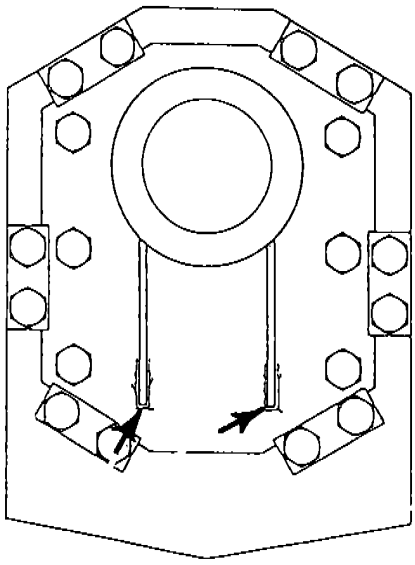
5. Check the overall condition of the vehicle and seats. Inspection points include, but are not limited to, anti-slip material on the seats bottoms[12], lap bar padding, seat guard rails[5], and back rails and flooring.

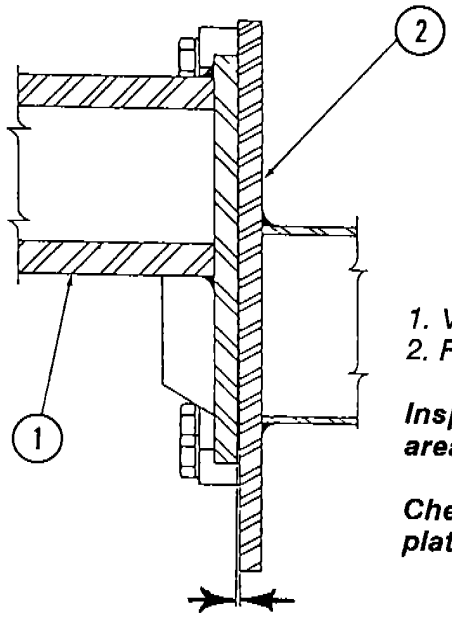


1. *Sweep*
2. *Vehicle*
3. *Vehicle attachment plate*
4. *ASTM A325 capscrews*

6. Inspect the vehicle attaching plates at the front and rear of the vehicle. Check the ASTM A325 capscrews for proper torque of 700-840 ft-lbs.

7. With the capscrews tight, inspect the front stub shaft as shown. Inspect the weld and the parent metal surrounding the weld. Make sure there is no separation of the plates[2].





1. Vehicle attaching plate
2. Front stub shaft

Inspect weld and surrounding area for cracks

Check for seperation between plates

Lap bar operational check

A lap bar interlock system prevents the ride from being started if any lap bar is not down and locked. Check the interlock system and the operation of every lap bar daily.

> **WARNING: Checking the lap bar interlock system requires two people. Extreme care must be taken during the procedure, in the event that the ride starts with the lap bar unlocked. Serious personal injury can result.**

1. Move the lap bar switch to "Close" to lower the lap bars. Manually lower and lock each lap bar. All lap bar indicator lights on the panel must go off.

2. Start the ride. It should start and run normally.

3. Stop the ride and push the lap bar "Open" to release the lap bars. The lap bars can then be manually raised. All indicator lights should come on.

4. Have a helper sit in a seat and hold the lap bar just high enough that it will not lock.

> **WARNING: The helper must be prepared to immediately push the lap bar down into its locked position, in the event the ride starts. Serious personal injury can result.**

5. Push and hold lap bar "Close" button until all lap bars are

down, except the one being tested. The indicator should stay on for the unlocked bar.

6. Depress the operator presence switch and push the jog button. The ride MUST NOT START OR RUN when the lap bar is not down and locked.

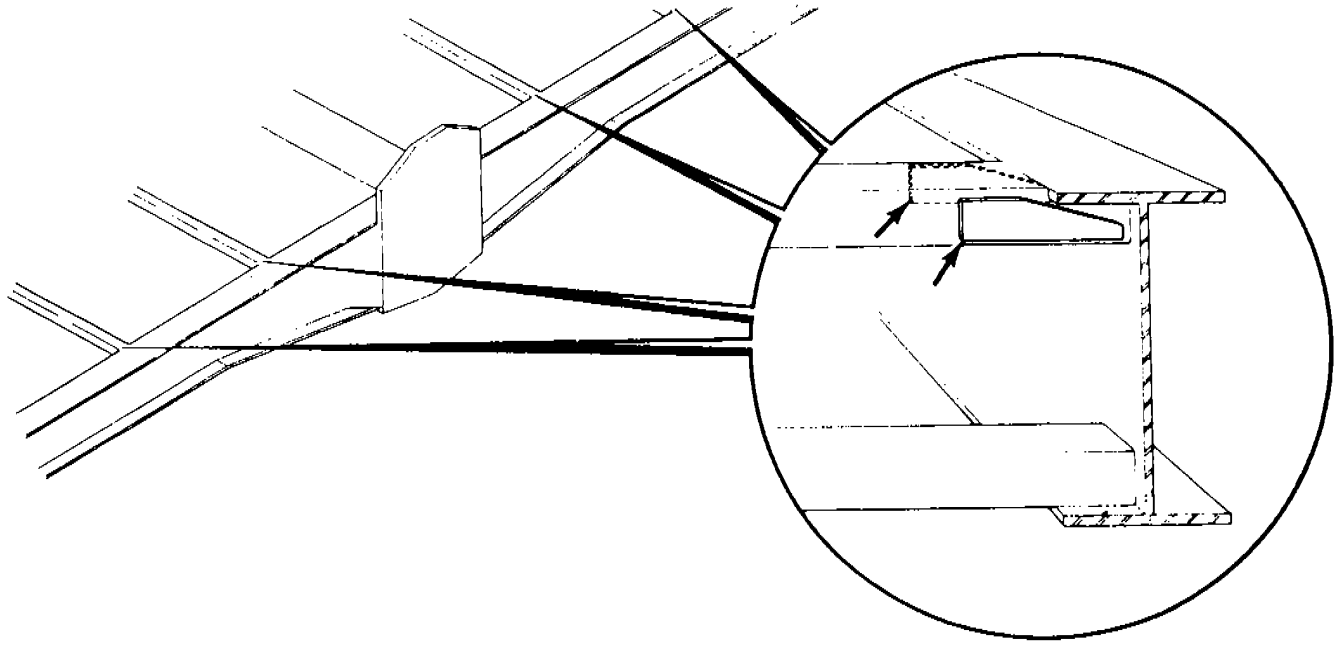
WARNING: When testing the lap bar interlock system, use only the JOG button. If the ride starts with the lap bar up, STOP THE RIDE IMMEDIATELY to avoid serious injury to the passenger.

7. If the ride starts, adjustment or repair of the lap bar interlock system is necessary. DO NOT OPERATE THE RIDE UNTIL REPAIRS ARE MADE.

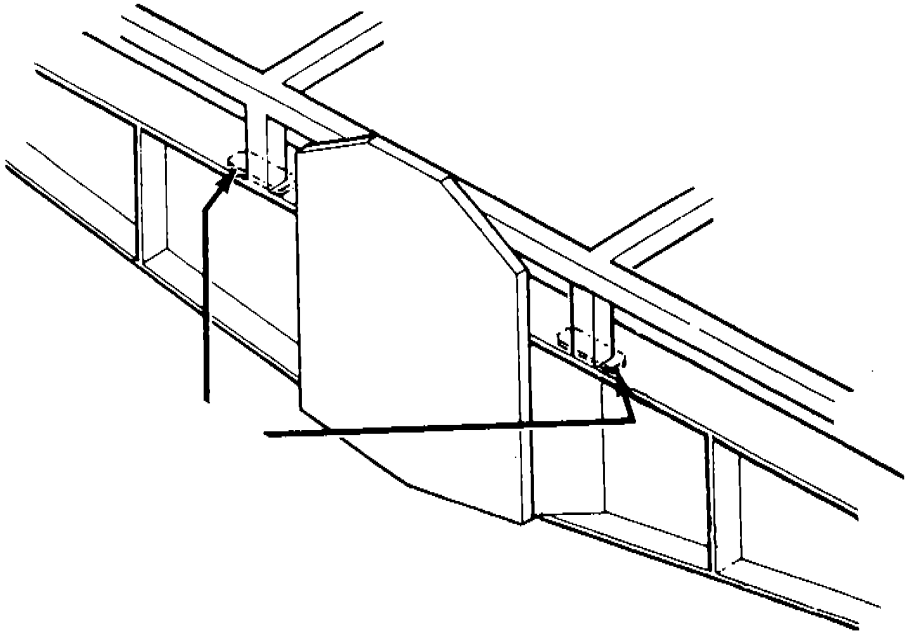
If the ride does not start, the lap bar interlock for that seat is working properly. Lower and lock the lap bar after the helper exits the seat.

8. Proceed to the next seat and repeat Steps 4, 5, 6 and 7 until all the lap bars have been tested, one at a time.

8. Inspect the vehicle frame structure for cracks, bends and other damage. Check for installation of vehicle frame doublers as shown[13].

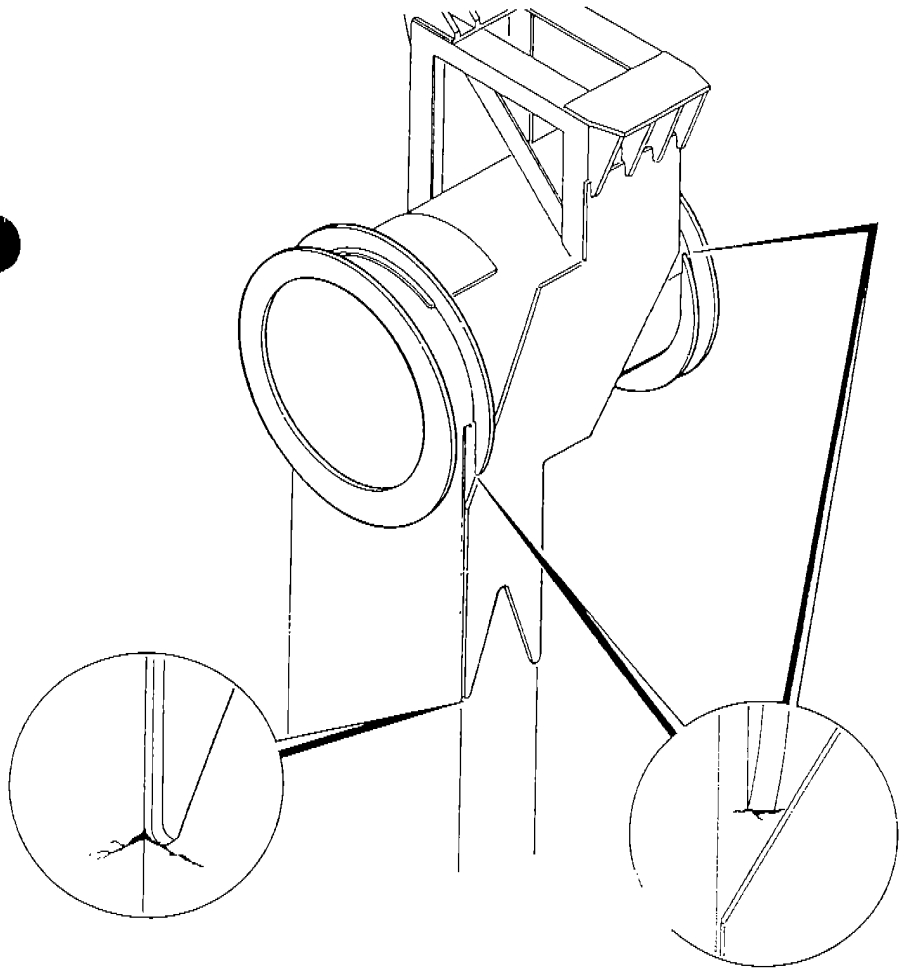


Doublers welded to bottom surface



Sweep and counterweight inspection

1. Inspect the front and rear sweep arm weldments for cracks[6]. Inspect the weld and the parent metal at the toe of the weld.



Inspect for cracks perpendicular to sweep arm at the ends of the doubler plate

Inspect for cracks at the ends of the reinforcing ribs (front sweep only)

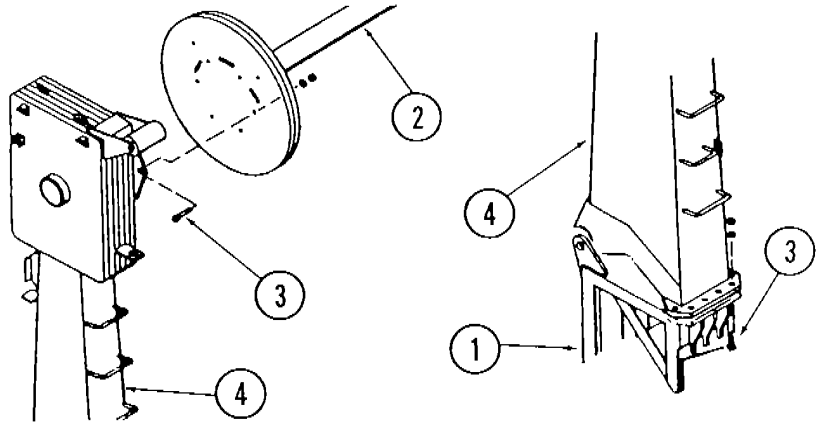
1. Reinforcement

NOTE: *All rides must be equipped with the reinforcements shown[7].*

6 A391R1039-0 May 10, 1989
7 B391R1044-0 June 22, 1989

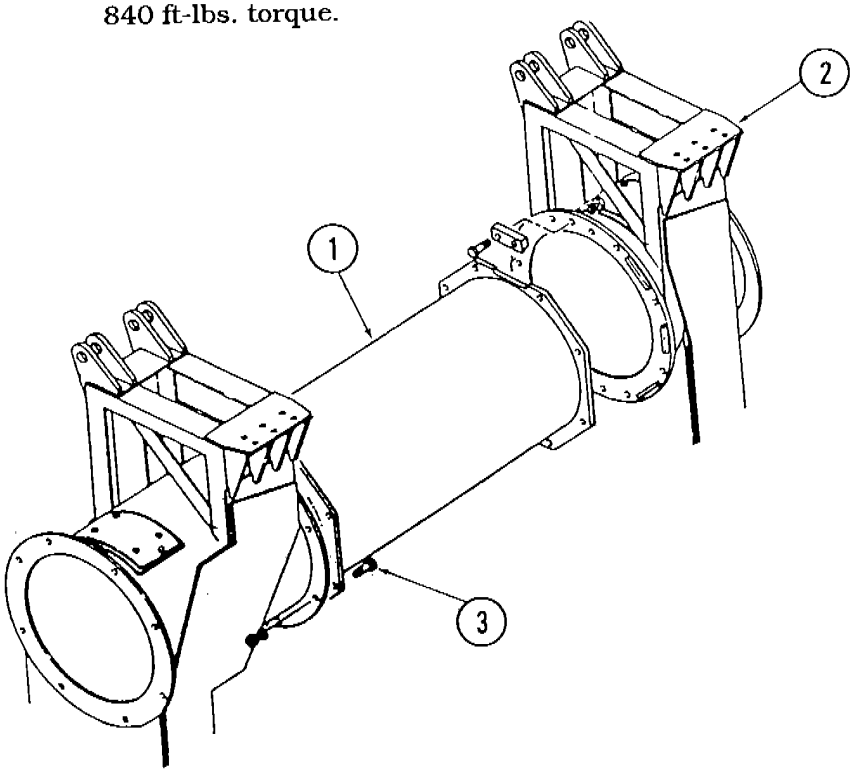
2. Check the capscrews at the sweep-to-counterweight mounting flange. These are ASTM A325 capscrews, tightened to 700-840 ft-lbs. torque.

3. Check the capscrews which attach the counterweight to the counterweight arms. These are ASTM A325 capscrews and must be tightened to 700-840 ft-lbs torque.



1. Sweep
2. Counterweight
3. ASTM A325 capscrews
4. Counterweight arm

4. Check the capscrews which attach the torque tube to the sweeps. These are ASTM A325 capscrews, tightened to 700-840 ft-lbs. torque.

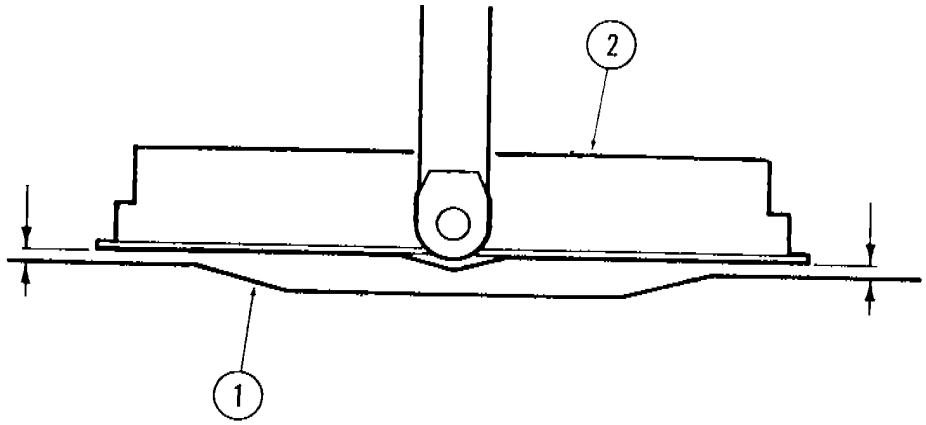


1. Torque tube
2. Sweep
3. ASTM A325 capscrews

5. Check the stabilizer chain adjustment using the following procedure:

a. With the vehicle unloaded and centered, measure the distance from the outer edge of the vehicle to the floor on both the right and left sides of the vehicle.

b. Use the jog switches to rotate the ride eight revolutions in the same direction, stopping the vehicle at 0 degrees after each revolution to measure the height on both sides.

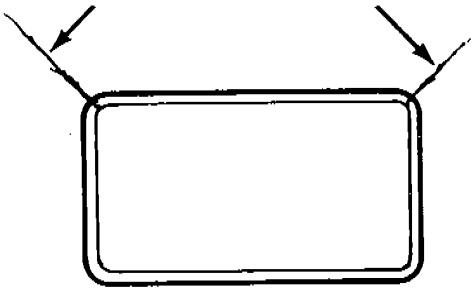


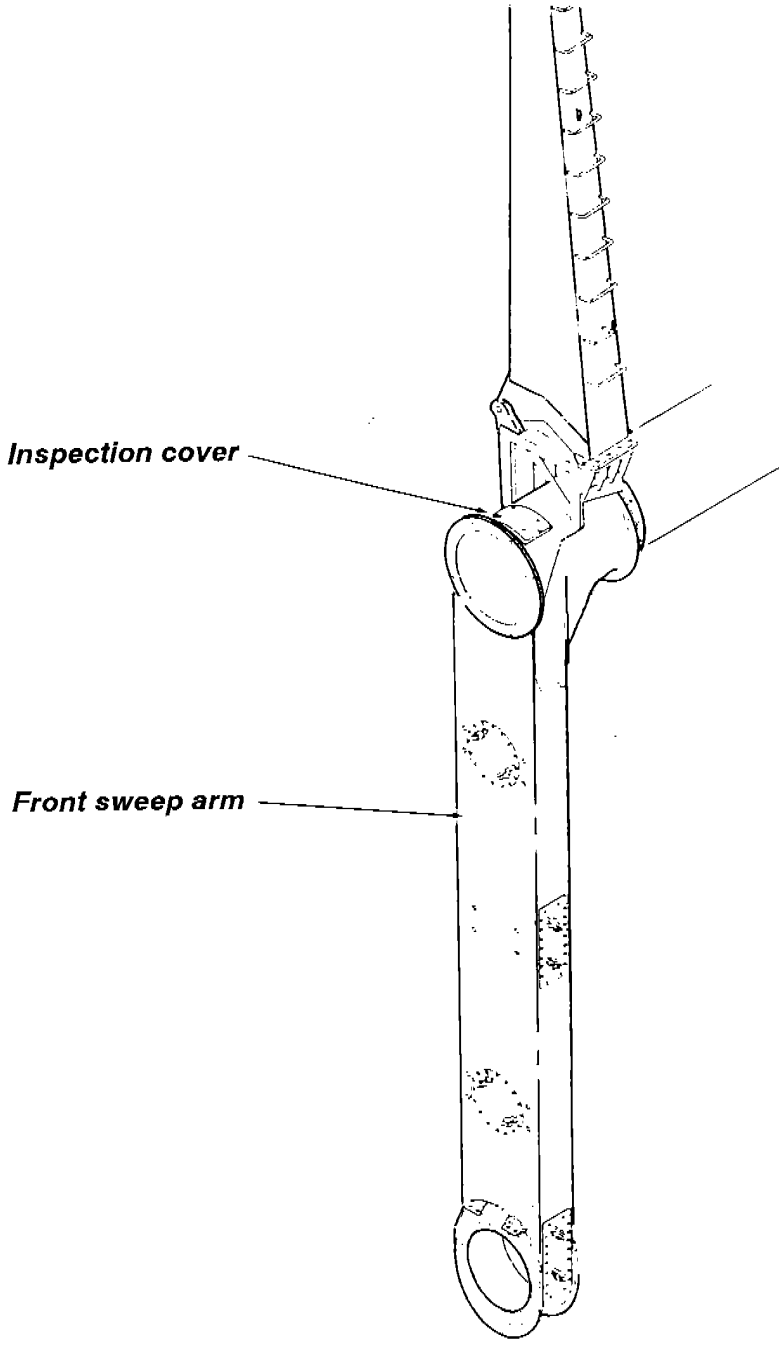
The difference between measurements must not be more than five inches after any revolution.

1. Floor
2. Unloaded vehicle at 0 degees

c. The difference between the left and right side measurements must not be more than five inches after any revolution of the vehicle.

6. Inspect the sweep arms and counterweight arms for visible cracks or damage. Remove the inspection cover on the front sweep arm and inspect for cracks as shown[14].





Electrical and lighting inspection

1. Inspect cable leads, electrical connections and grounding per local code.

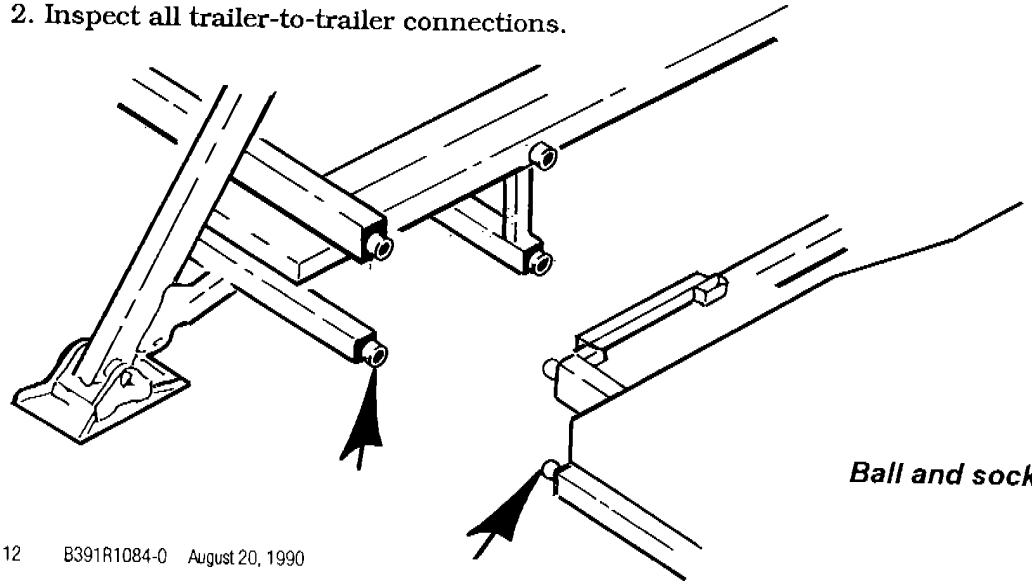
2. Test the operator controls, including emergency stop switch, operator presence switch and power switch[12].

3. Check the electrical jumpers at the towers, axle, sweeps, counterweight arms and vehicle.

Trailer and base inspection

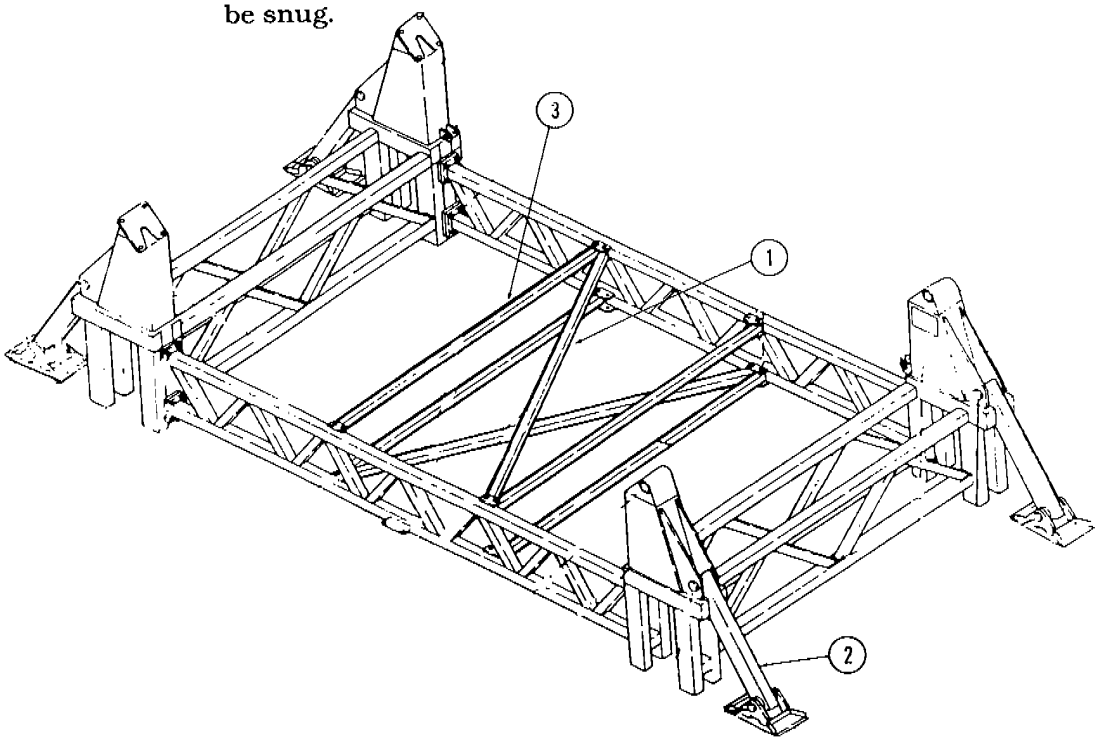
1. Inspect mounting locations on park model rides at regular service intervals.

2. Inspect all trailer-to-trailer connections.



Ball and socket connection

3. Inspect trailer or park base outriggers. Turnbuckles must be snug.



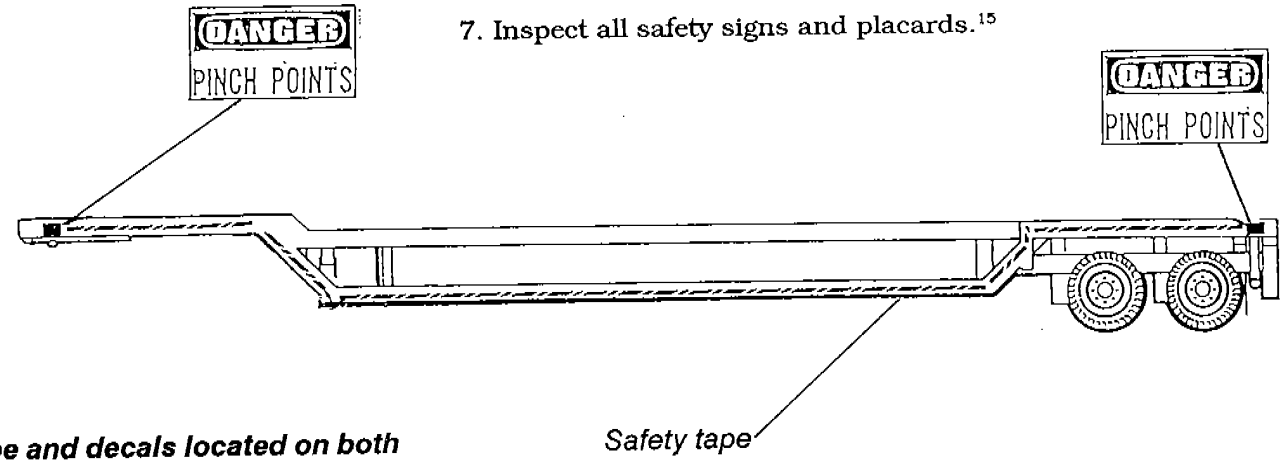
Park base
1. Trusses
2. Outriggers
3. Braces

4. Inspect the trusses and braces on trailers or park base.

5. Check the capscrews in the park base for tightness.

6. Inspect the trailer or park base structures for visible cracks or damage.

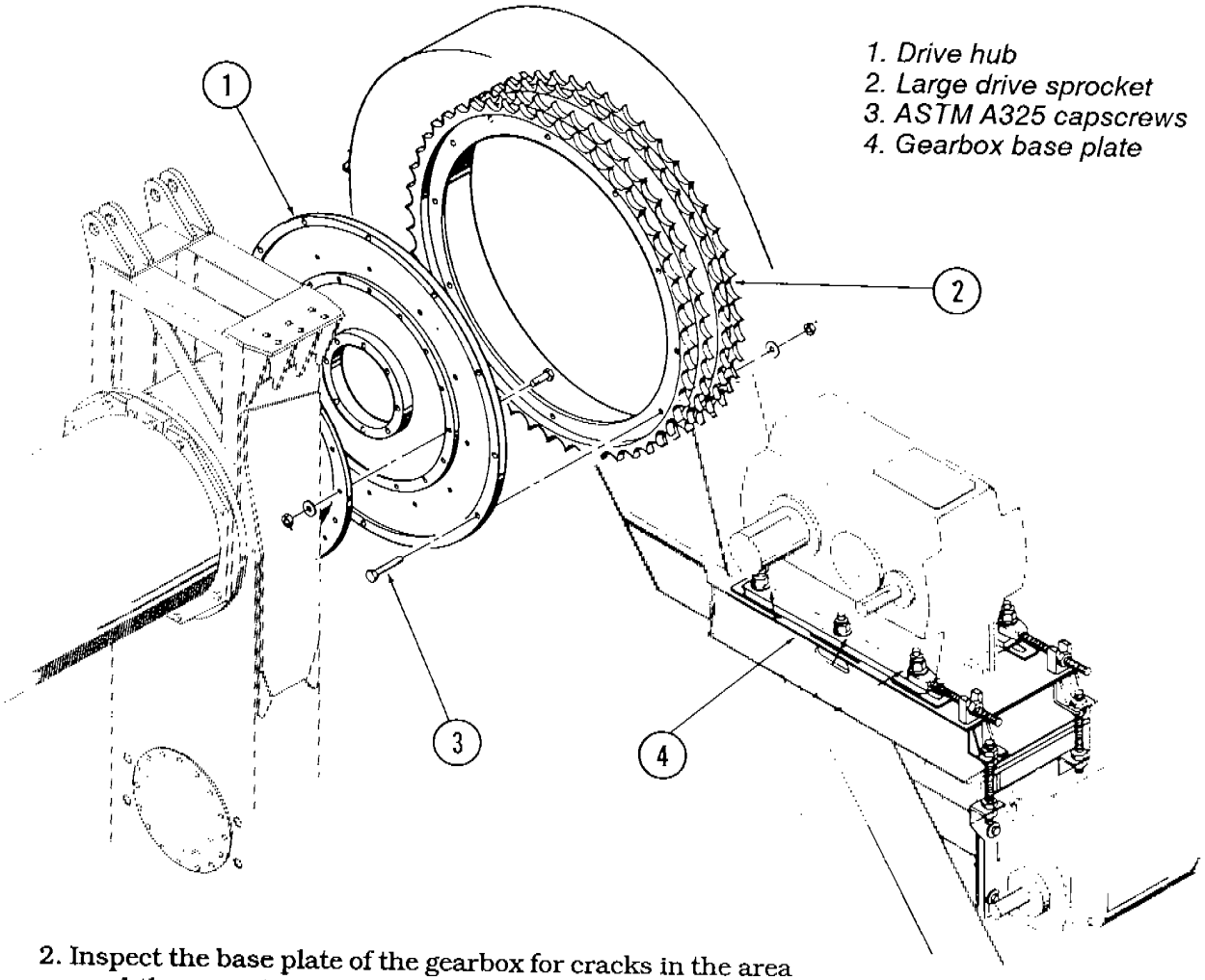
7. Inspect all safety signs and placards.[15]



Tape and decals located on both sides of center trailer only

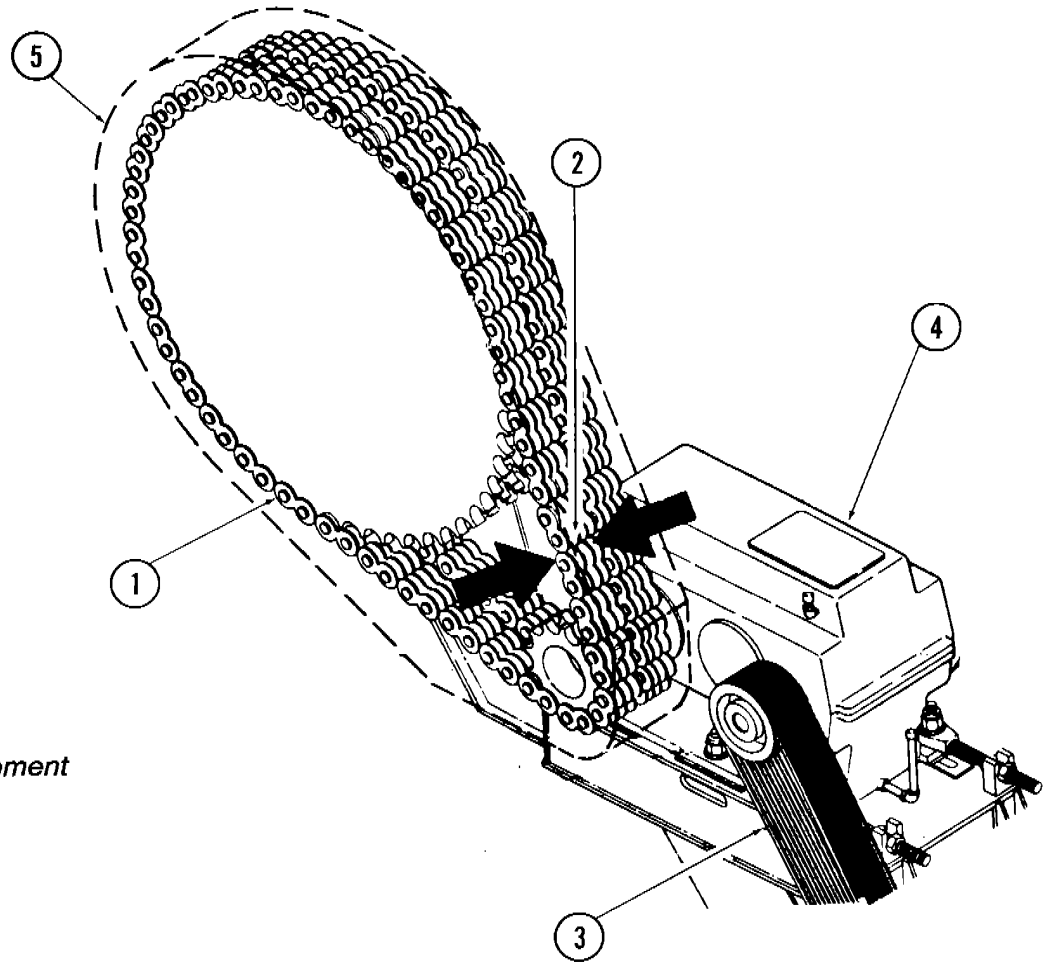
Drive inspection

1. Inspect the fasteners between the drive hub and the large drive sprocket[4] when the ride is erected and fully operable. These are ASTM A325 capscrews and must be tightened to 760 ft-lbs. if checked at the nut, or 840 ft-lbs. if checked at the capscrew head.



1. Drive hub
2. Large drive sprocket
3. ASTM A325 capscrews
4. Gearbox base plate

2. Inspect the base plate of the gearbox for cracks in the area around the mounting capscrews[4].



1. Drive chain
2. 1-3" of chain movement
3. Drive belts
4. Gear box
5. Chain case

3. Check the drive chain adjustment using the following procedure:

a. Rotate the vehicle counterclockwise 15 degrees so that the bottom spans of the drive chain are tight and the upper spans are slack.

b. Through the inspection cover opening, check for one to three inches of total chain movement on the slack side of the chain. Slack should be equal between each length of double row chain.

4. Check the drive belt adjustment using the following procedure:

a. Use the belt tension gage provided with the ride to check for 7/8 inch deflection at 12-16 pounds of force.

b. At least six drive belts must be within the correct tension range.

5. Inspect gearbox and chain case for leaks.

Air system inspection

The **Falling Star** has two separate air systems, one for the vehicle lap bars, and one for the brake. A separate compressor and one or more regulators are provided for each air system

1. Check the air pressure in the vehicle air system. Pressure must be 100 psi at the reservoir and 40 psi at each of the three regulators[12]. The air system is accessible from the underside of the vehicle.

2. Inspect the vehicle air system for leaks.

3. Check the air pressure in the brake air system. Pressure must be 100 psi at the reservoir and 40 psi at the regulator[12].

4. Check the operation of the low air pressure indicator light.

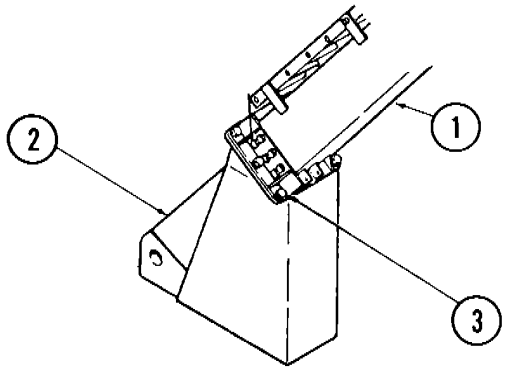
5. Inspect the brake air system for leaks.

Hydraulic system inspection

1. The hydraulic system operates the leveling jacks, erection cylinders and material handling on portable models. Inspect the entire hydraulic system including hoses, tubes, fittings and other components for leaks.

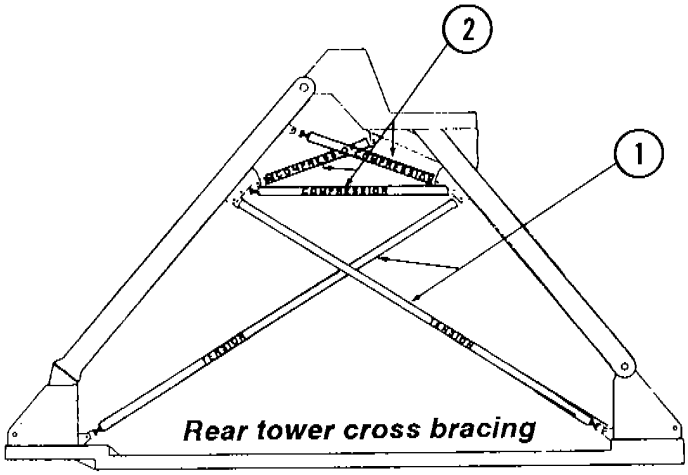
Tower inspection

1. Check the capscrews which attach the tower legs to the stub towers. These are ASTM A325 capscrews and must be tightened to 700-840 ft-lbs.

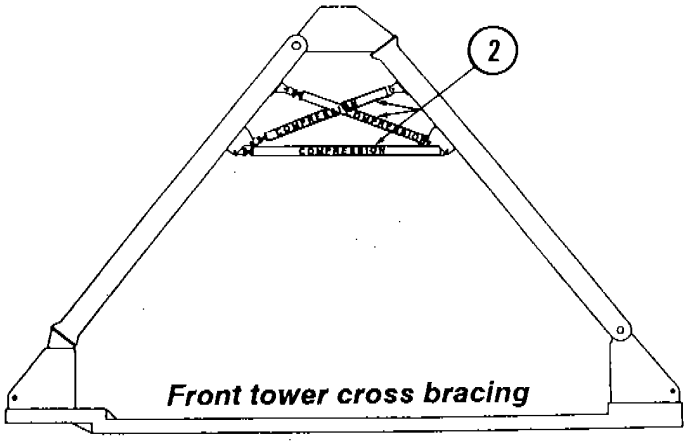


1. Tower leg
2. Stub tower
3. ASTM A325 capscrews tighten to 700-800 ft-lbs.

2. Check for tension or compression in tower cross braces as shown.



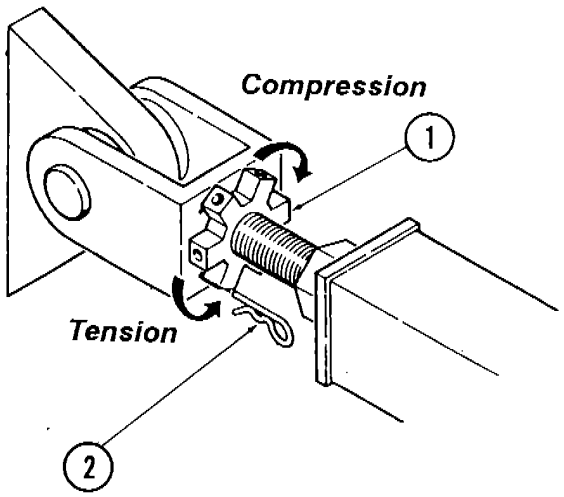
Rear tower cross bracing



Front tower cross bracing

1. Tension
2. Compression

3. Check for safety pin in clevis adjuster to prevent turning.



1. Clevis adjuster
2. Safety pin

Compression
Tension

4. Inspect the ears for the tower erection cylinder and spread cylinder on portable models.

5. Inspect tower legs structures for visible cracks or damage.

Platform and fence inspection

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

2. Inspect all gates and queue line chains. Self-closing gates must operate properly.

3. Inspect floors and jackstands for proper installation and leveling.

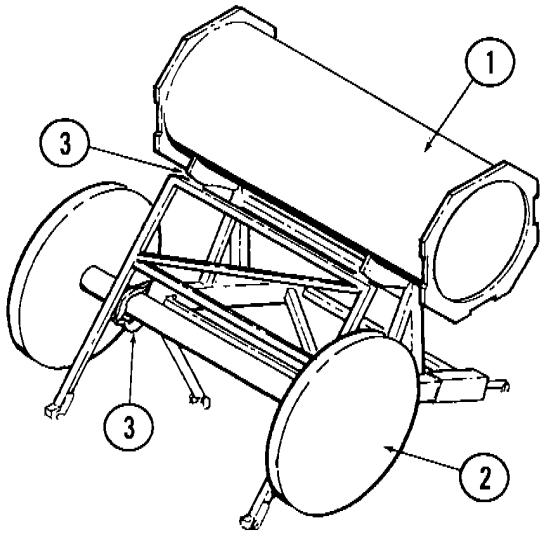
Material handling equipment inspection (portable model)

1. Inspect the general condition of all chains, winches and rigging. Look for broken, worn or missing parts.

2. Inspect the block and tackle used for erection of cross braces and sign. The rope must not be cut or frayed.

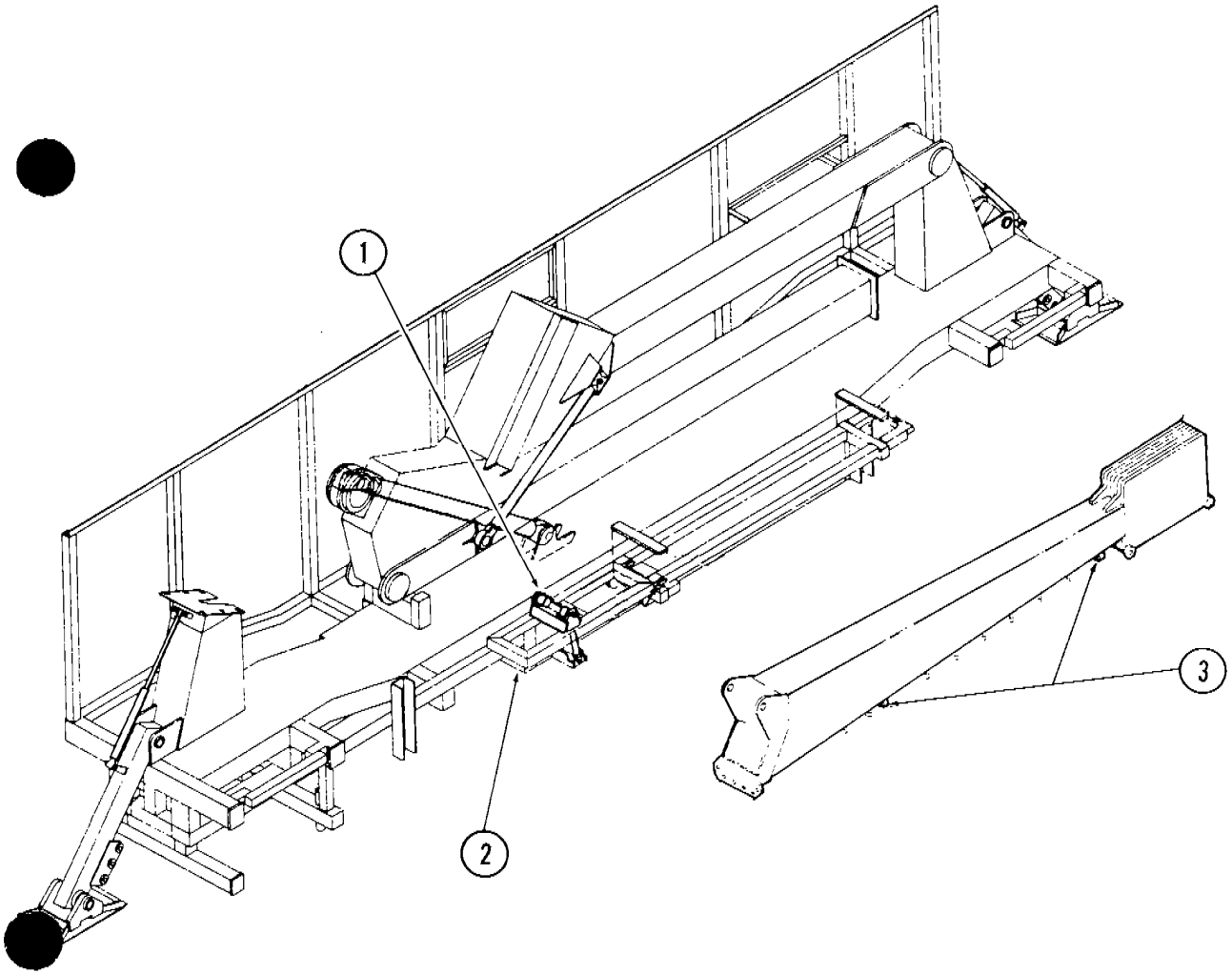
3. Check the operation of the torque tube and counterweight handling arms

1. Torque tube
2. Counterweight
3. Handling arms



4. Check condition and operation of the counterweight arms tracks and rollers.

1. Track rollers
2. Hydraulic track section
3. Counterweight roller



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.

Falling Star Operation And Maintenance Manual
24326900
March, 1986

1. *Field Performance Testing Of Amusement Rides*
   B090R1002-0
   May 14, 1986

2. *Inspection Of Vehicle Mounting Plate*
   B391R1018-0
   October 26, 1987

3. *Non-destructive Testing*
   B090R1022-0
   March 21, 1988

4. *Drive Sprocket Fastener Inspection*
   B391R1029-0
   November 17, 1988

5. *Seat Guard Rail*
   B391R1033-0
   March 22, 1989

6. *Inspection Of Sweeps*
   A391R1039-0
   May 10, 1989

7. *Sweep Rework*
   B391R1044-0
   June 22, 1989

8. *General Safety - Taper Pins*
   B090R1056-0
   February 9, 1990

9. *Cable Inspection*
   B090R1071-0
   May 25, 1990

10. *Replacement And Torque Requirements For Functional Load Carrying Capscrews*
    B090R1075-0
    May 25, 1990

11. *Safety Decal*
    B090R1083-0
    August 17, 1990

12. *Safe Operating Procedures*
    B391R1084-0
    August 20, 1990

13. *Vehicle Doubler Kit*
    B391R1086-0
    October 12, 1990

14. *Inspection Of Front Sweep Arm*
    B391R1087-0
    October 12, 1990

15. *Warning Decal/Tape*
    B391R1100-0
    May 10, 1991