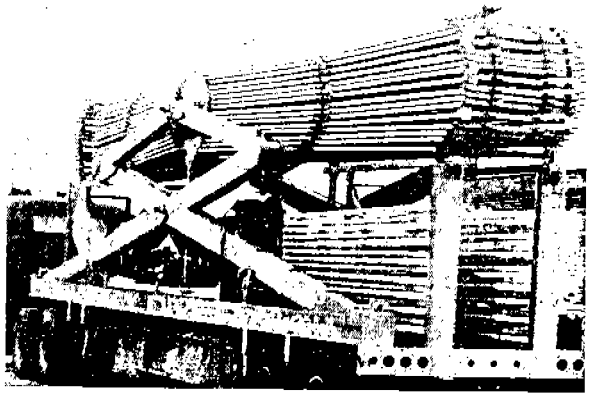
SPECIFICATION

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

MFG: CHANCE RIDES, INC.
NAME: SKY DIVER
TYPE: NON-KIDDIE

SKY DIVER



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

SEATING

Number of cars	16
Maximum number of passengers per car	2 adults or 3 chilrden
Maximum passenger weight per car	340 lbs.
Maximum total number of passengers	32 adults or 48 children
Maximum total passenger weight	5,440 lbs.
Minimum passenger height	42 inches (unaccompanied by adult)
Loading	3 cars simultaneously
Maximum unbalance	6 adults (1,020 lbs.)

PERFORMANCE

Direction of travel	clockwise or counter-clockwise
Ride speed (maximum)	8 rpm
Ride duration (maximum)	2½ min.
Ride duration (recommended)	2 min.
Maximum wind speed (operating)	35 mph
Maximum wind speed (static)	80 mph

MAXIMUM RIDE WEIGHT (empty) ..... 60,000 lb. (with trailer and van)

DRIVE ..... Electro-Hydraulic

POWER REQUIREMENTS

Total	50 kW
Motor	30 kW
Lights	20 kW
Minimum/Maximum line voltage	208/230

MOTOR

Type	208 Y/460 volt, 3 phase, 60 Hz
Horsepower rating	40

LIGHTING ..... 110 volt incandescent and fluorescent

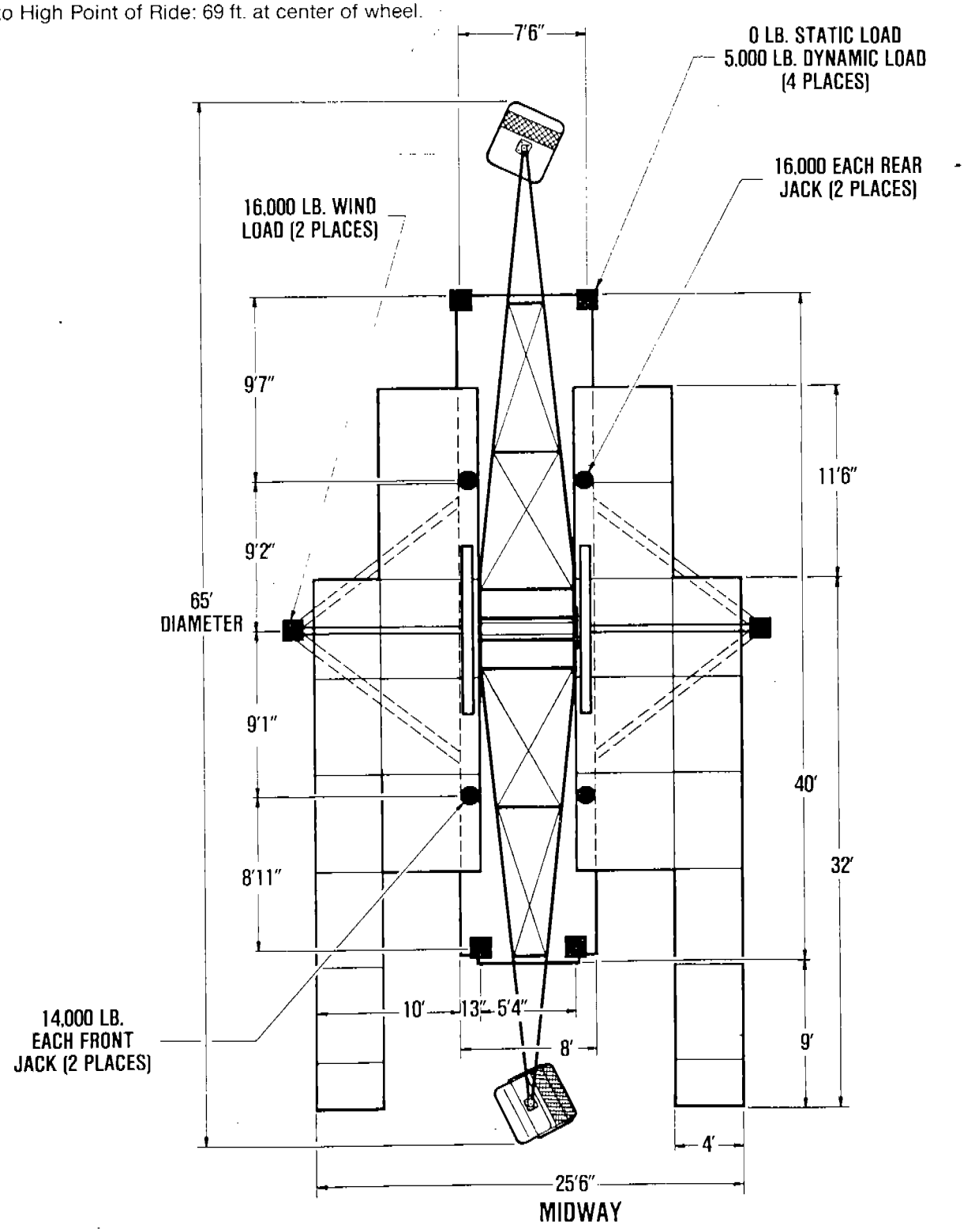
STANDARD LEAD-IN CABLE Size ..... 2/4 type G
Length ..... 90 ft.

TRAILERING	**Main Trailer**	**Auxiliary Trailer**
Height	13 ft. 6 in.	13 ft. 6 in.
Width	8 ft.	8 ft.
Length	40 ft.	40 ft.
Total weight	40,000 lbs.	20,000 lbs.
Rear axle weight	26,600 lbs.	14,900 lbs.
Kingpin weight	13,400 lbs.	5,100 lbs.
Tire size	10:00 x 20 (12-Ply)	10:00 x 20 (12-Ply)

OPTIONS

- Used 40 ft. van type trailer (required for portable operation)
- Complete racking installed in van
- Addition of possum belly to van
- Installation of side door only in van
- Power plant (Includes radiator, electric start, shut-off alarm, gauges and controls)
- Installation of power plant in van (Includes 500 gal. fuel tank, side door, exhaust stacks, controls, warning buzzer)

Ground to High Point of Ride: 69 ft. at center of wheel.



RIDE CLEARANCE DIMENSIONS

Frontage width	38 ft.
Ground depth	51 ft.
Depth	67 ft. at center of wheel
Height	72 ft.

SKYDIVER

Ride Serial Number _____ Owner _____ Date _____

FIELD INSPECTION POINTS

1. ( ) Inspect blocking, leveling and tie-downs (Bulletin B03-0321-00).

2. ( ) Inspect lock nuts on leveling jacks.

3. ( ) Inspect hydraulic valves for leveling jacks.

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

5. ( ) Inspect floors, fences and ramps for proper installation (Bulletin B03-0349-00).

6. ( ) Check alignment of wheel relative to towers.

7. ( ) Inspect tower lock-up bolts and nuts.

8. ( ) Inspect outriggers and their attachments.

8A. ( ) Inspect for solid outrigger brace on rides with new style wind braces (Bulletin B03-0313-00).

9. ( ) Inspect wind braces and knee brace assemblies.

10. ( ) Inspect for proper installation of spreader bars with proper size pins.

11. ( ) Inspect A-frame attach pins and condition of A-frame.

12. ( ) Inspect A-frame guy rod installation and attach points.

13. ( ) Inspect condition of fiberglass and screening on cars. Check lap bars for condition and proper installation (Bulletin B03-0342-00).

14. ( ) Inspect condition of car canopy and its attach points through the inspection holes.

15. ( ) Inspect hatch pivot bolts and safety catch (Bulletin B03-0188-00).

16. ( ) Inspect steering wheel guards and grab rails (Bulletin B108R1052-0).

17. ( ) Inspect steering mechanism of cars (Bulletin 03-163A).

18. ( ) Inspect seat spindle bearings, bearing housings and housing supports (Bulletin 101A).

19. ( ) Inspect latching and locking mechanisms of car hatch. Check expiration date on springs in hatch latch. Check latch engagement into slot in A-frame (Bulletins B03-0252-00 and B03-0331-00).

19A. ( ) Inspect condition of 1/4" diameter hairpins in car latch.

20. ( ) Check ride speed in both directions - 8 rpm maximum. Check ride brake operation.

21. ( ) Inspect jack stands.

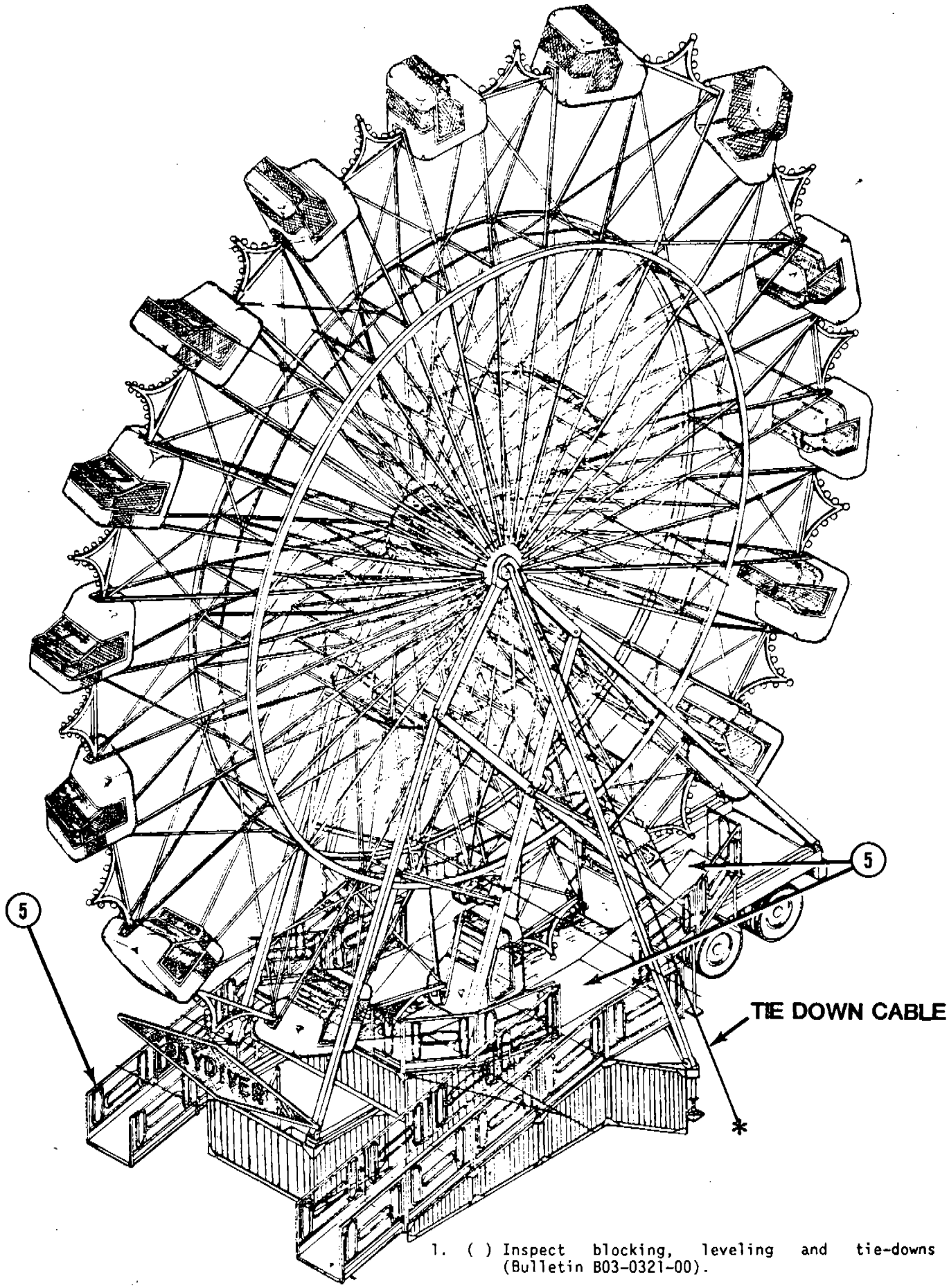
22. ( ) Check ride operation for excessive vibration.

23. ( ) Inspect structure for cracks, bad welds, etc.

24. ( ) Inspect electrical wiring for short circuits, bad wires, etc.

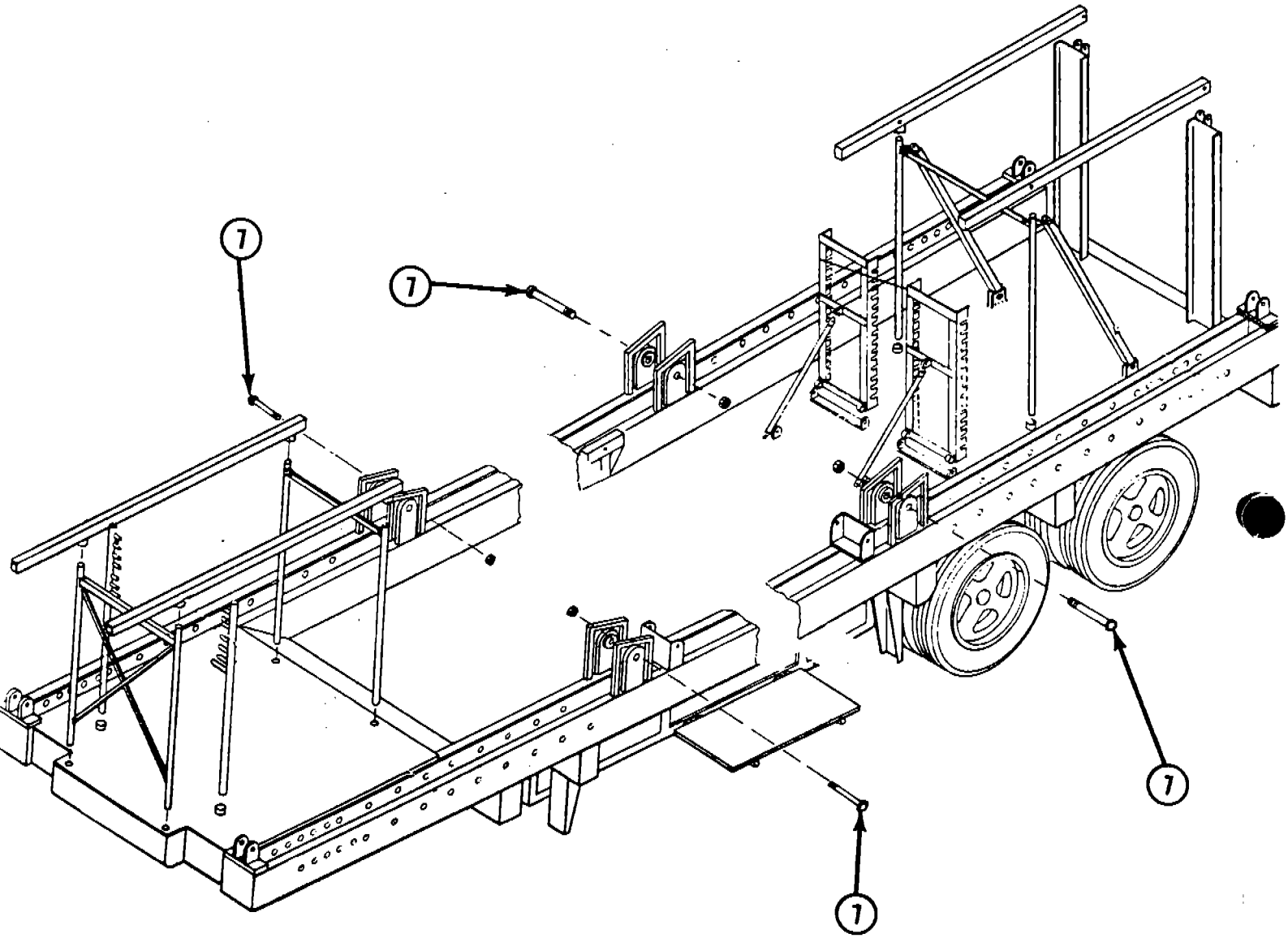
25. ( ) Inspect for hydraulic leaks.

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

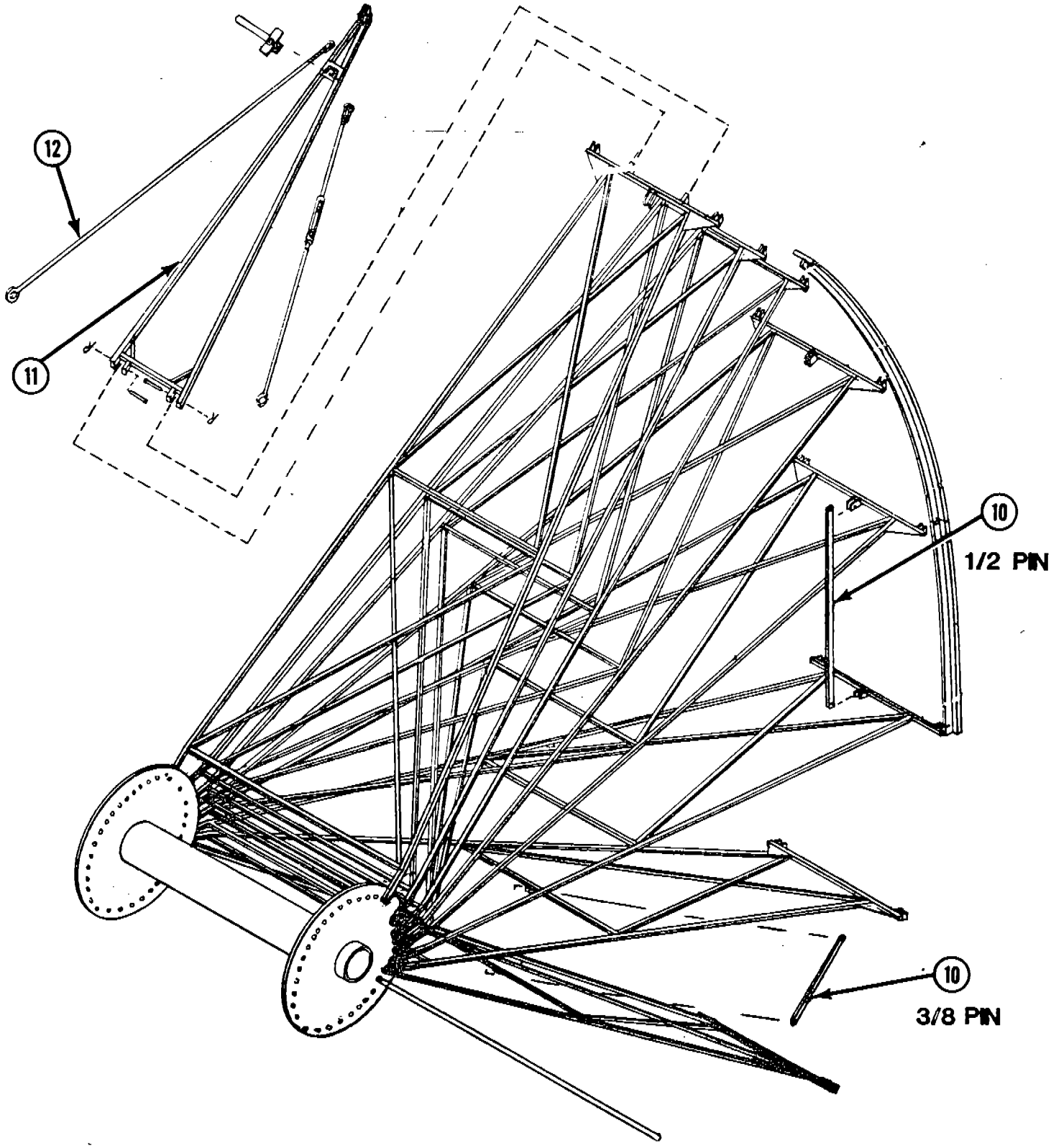


1. ( ) Inspect blocking, leveling and tie-downs (Bulletin B03-0321-00).

5. ( ) Inspect floors, fences and ramps for proper installation (Bulletin B03-0349-00).



7. ( ) Inspect tower lock-up bolts and nuts.

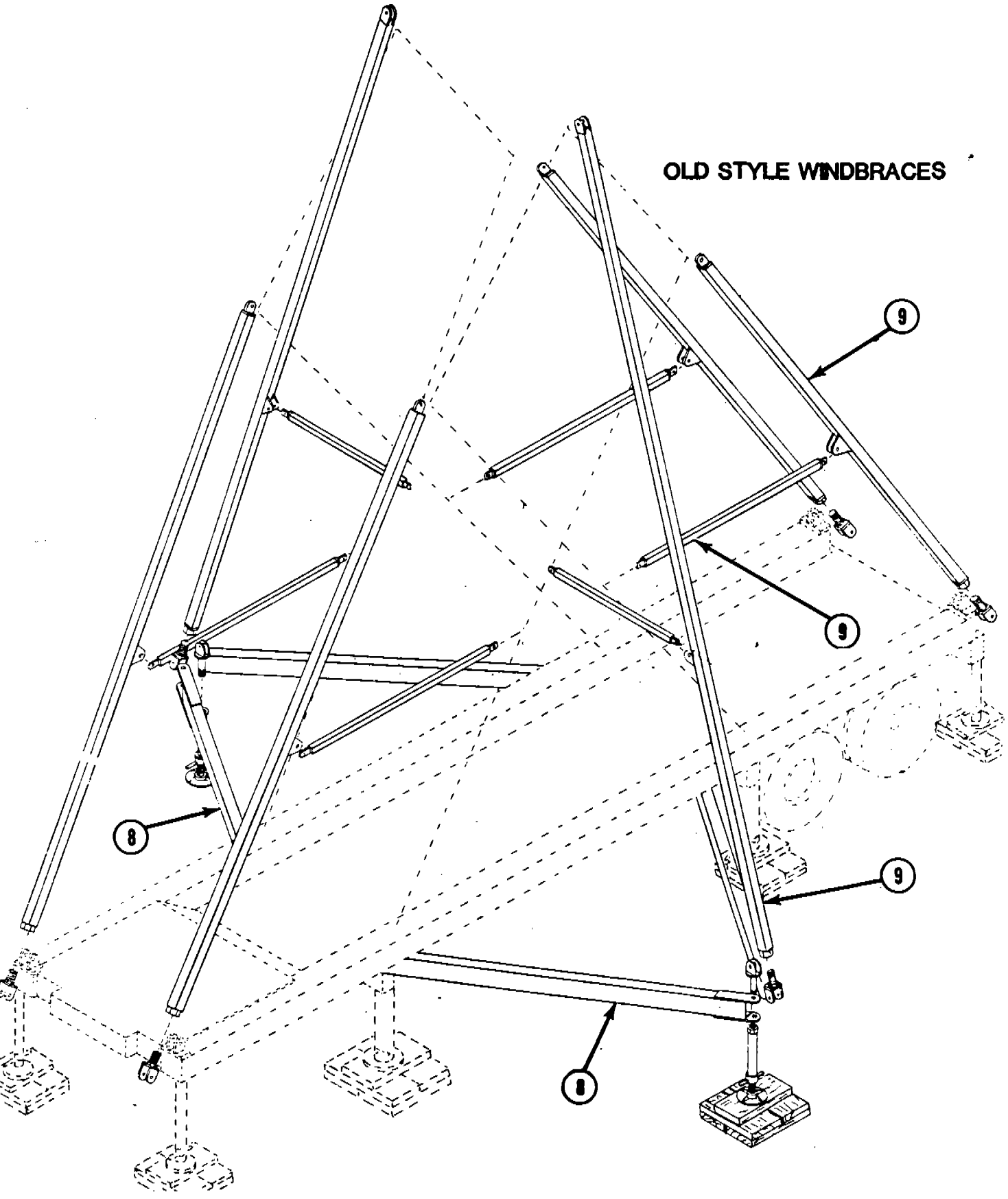


10. ( ) Inspect for proper installation of spreader bars with proper size pins.

11. ( ) Inspect A-frame attach pins and condition of A-frame.

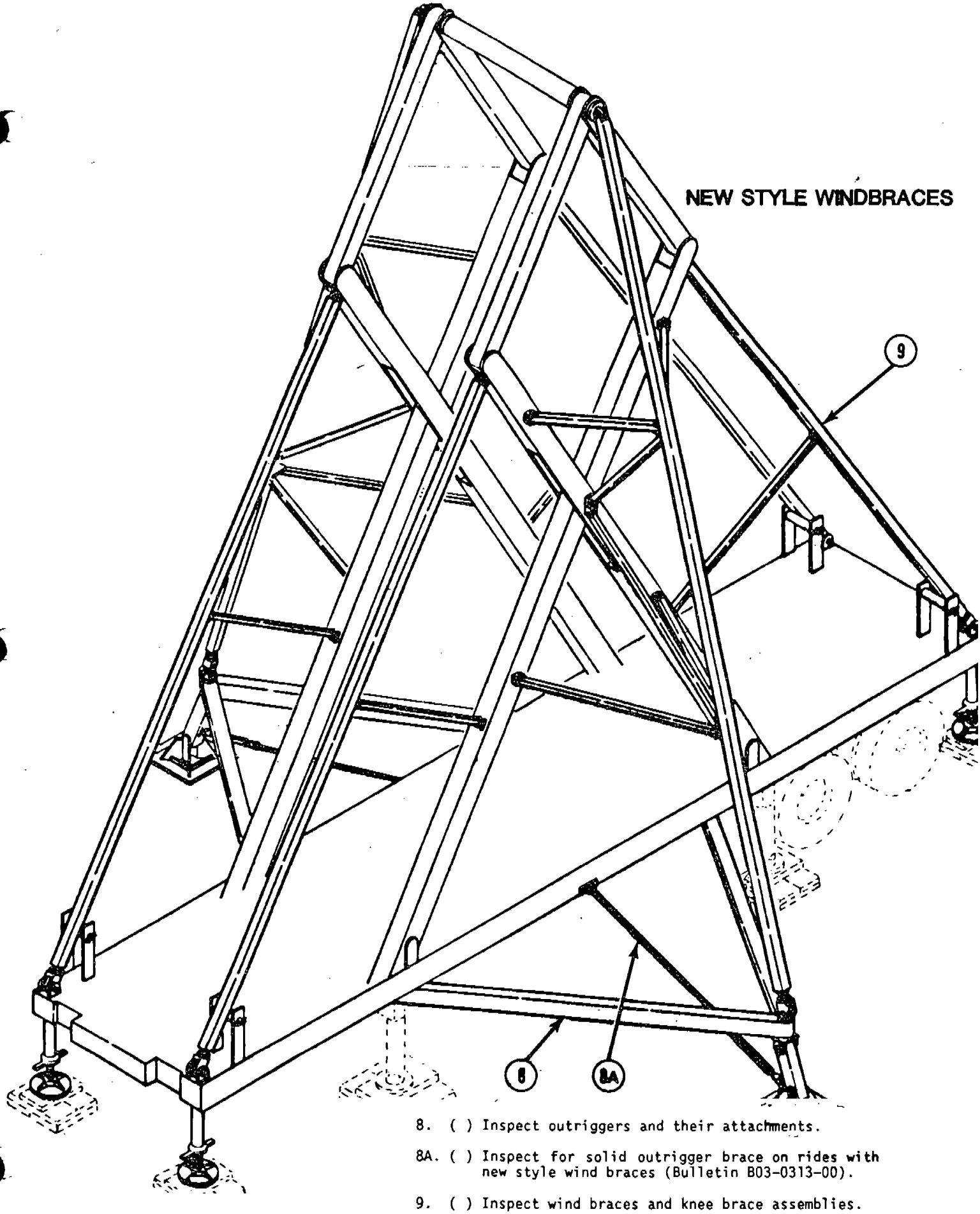
12. ( ) Inspect A-frame guy rod installation and attach points.

OLD STYLE WINDBRACES



8. ( ) Inspect outriggers and their attachments.

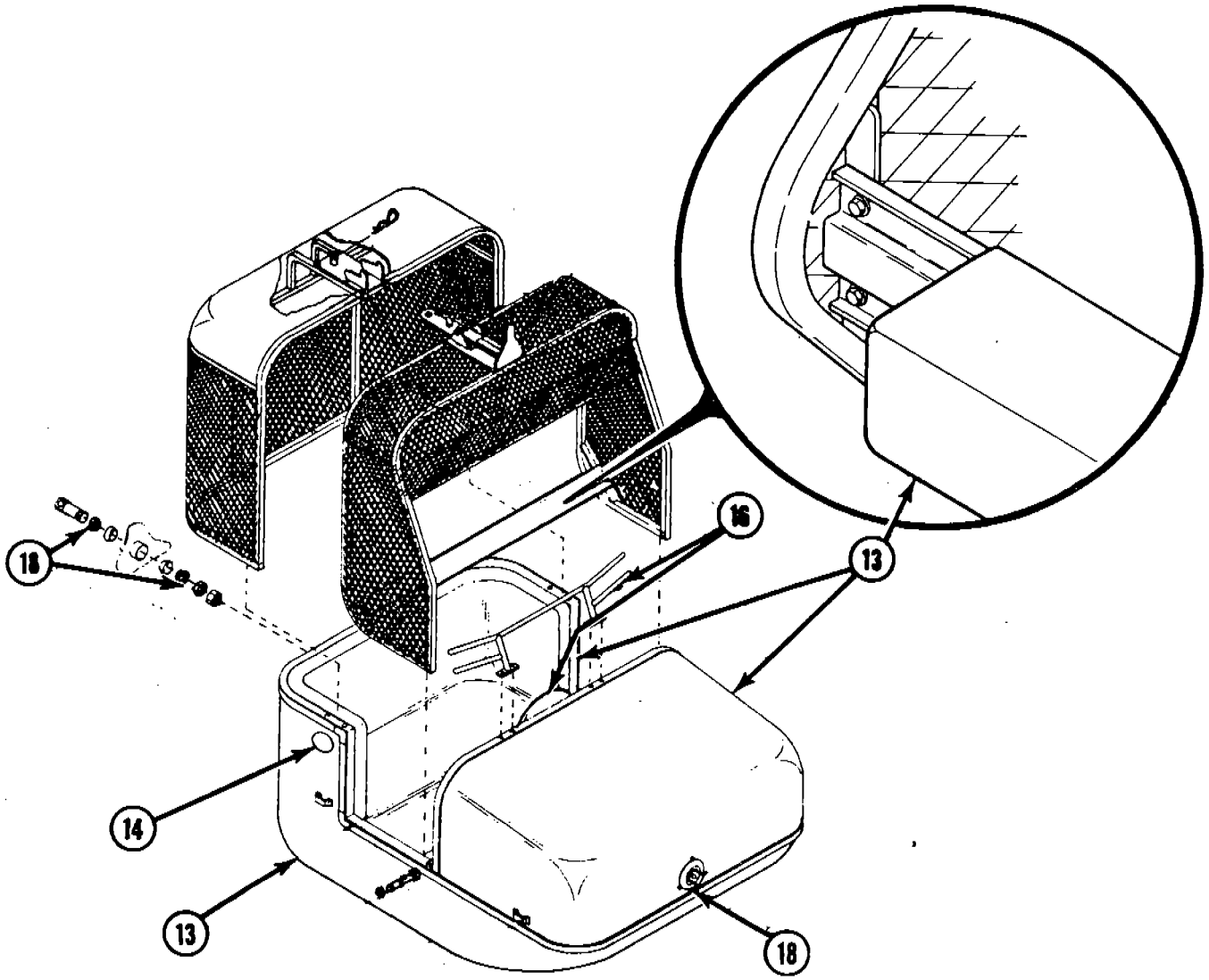
9. ( ) Inspect wind braces and knee brace assemblies.

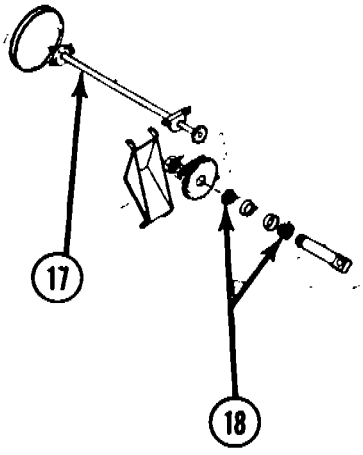


8. ( ) Inspect outriggers and their attachments.

8A. ( ) Inspect for solid outrigger brace on rides with new style wind braces (Bulletin B03-0313-00).

9. ( ) Inspect wind braces and knee brace assemblies.





NOTE: Solid steering wheel only.
Spoked wheels are not permited.

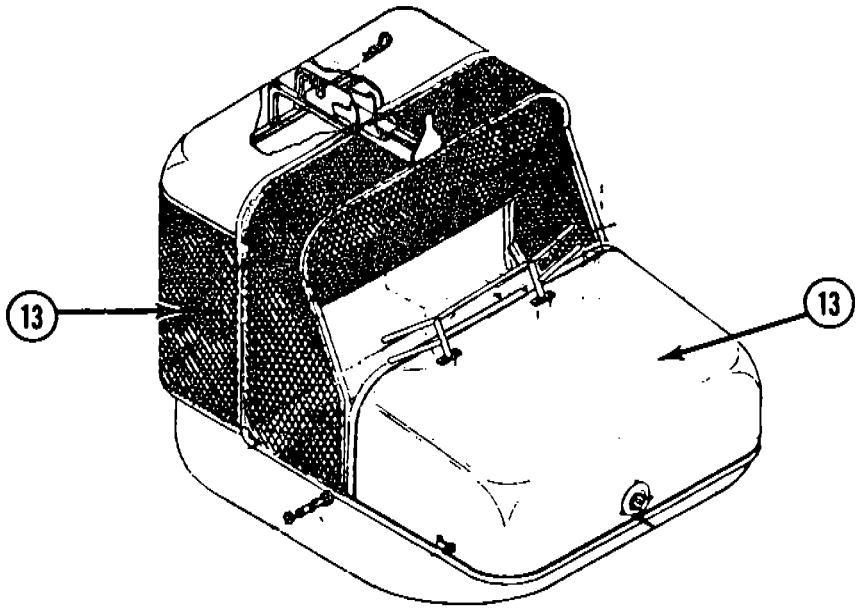
13. ( ) Inspect condition of fiberglass and screening on cars. Check lap bars for condition and proper installation (Bulletin B03-0342-00).

14. ( ) Inspect condition of car canopy and its attach points through the inspection holes.

16. ( ) Inspect steering wheel guards and grab rails (Bulletin B108R1052-0).

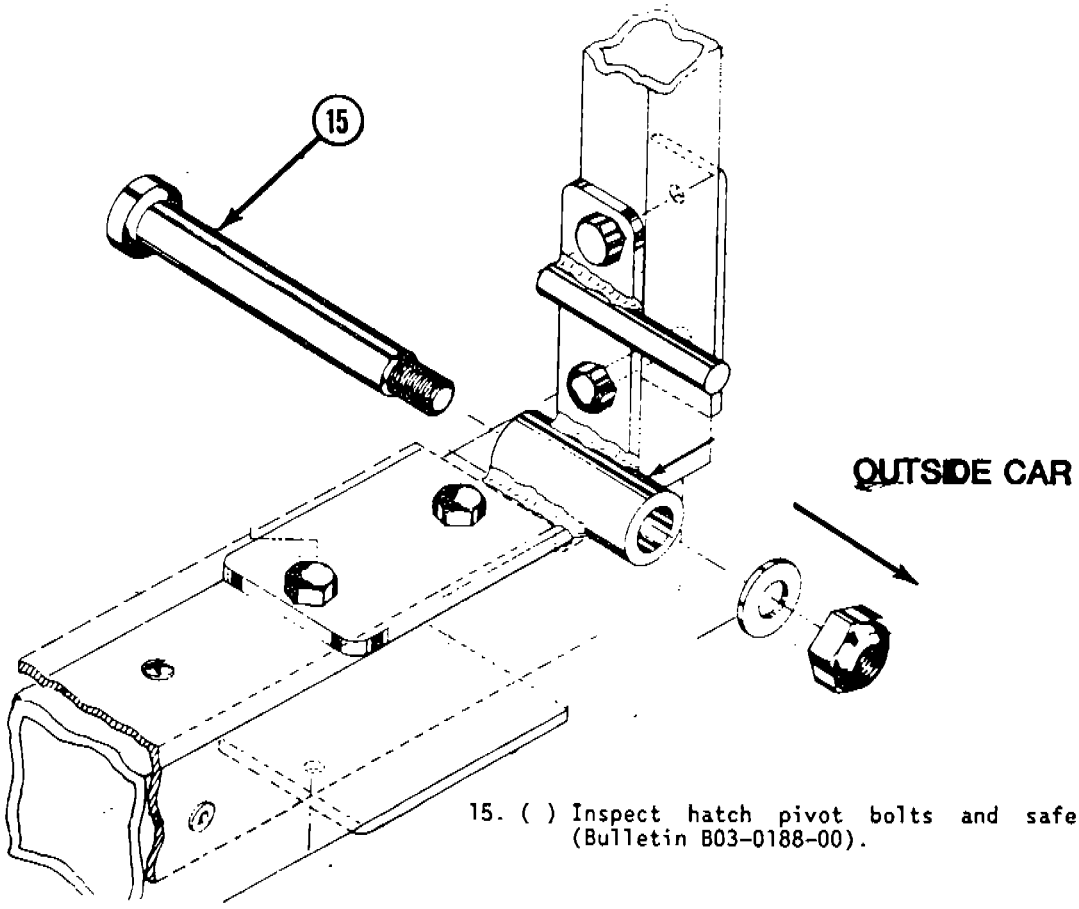
17. ( ) Inspect steering mechanism of cars (Bulletin 03-163A).

18. ( ) Inspect seat spindle bearings, bearing housings and housing supports (Bulletin 101A).



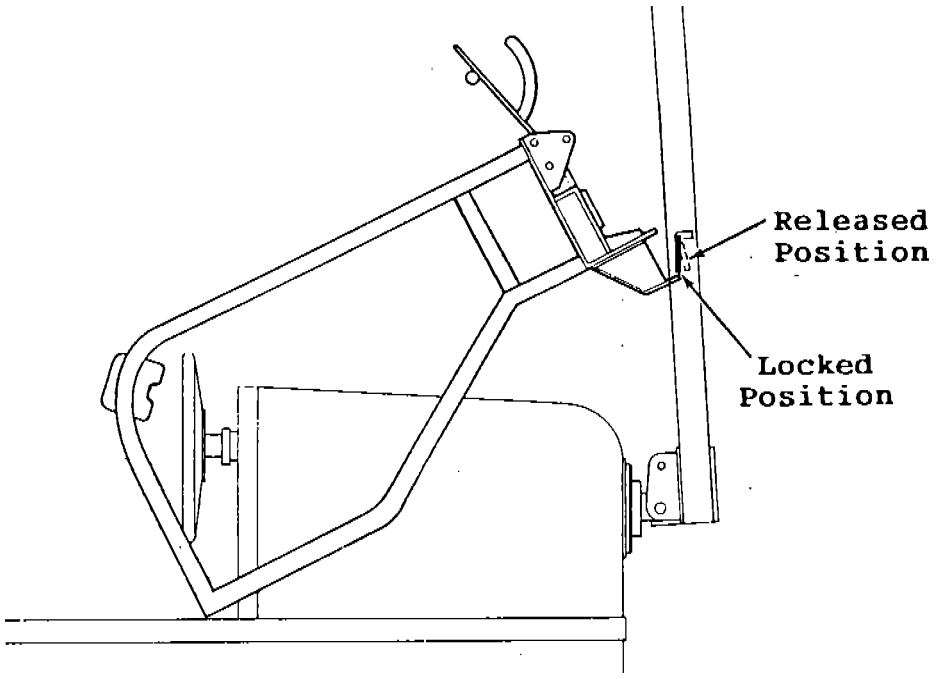
13. ( ) Inspect condition of fiberglass and screening on cars. Check lap bars for condition and proper installation (Bulletin B03-0342-00).

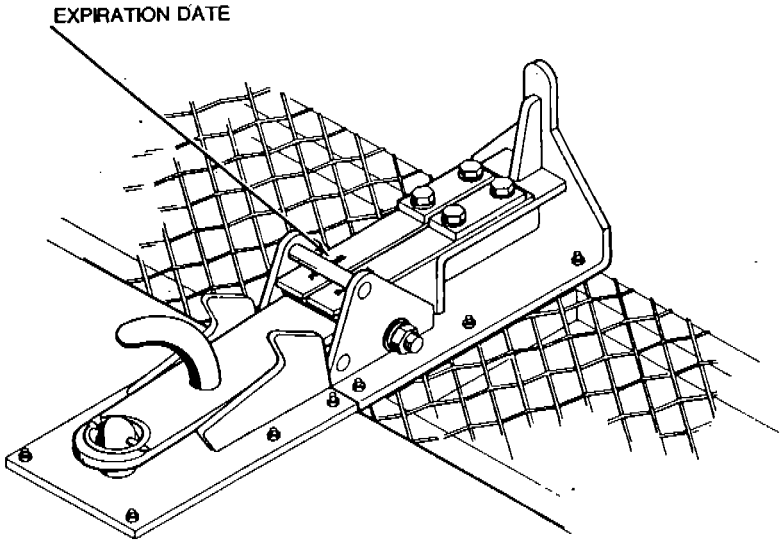
NOTE: Wooden lap bars are not permitted.



15. ( ) Inspect hatch pivot bolts and safety catch (Bulletin B03-0188-00).

Latch Engaged In Slot In A-Frame





19. ( ) Inspect latching and locking mechanisms of car hatch. Check expiration date on springs in hatch latch. Check latch engagement into slot in A-frame (Bulletins B03-0252-00 and B03-0331-00).

CHANCE RIDES INC.

Jun 1, 1994

RECEIVED
JUN 0 6 1994
BUREAU OF
FAIR RIDES INSPECTION

Ron Safford
Bureau of Public Fairs & Expositions
State of Florida
Room 103, The Capitol
Tallahassee, Fl. 32399-0810

Ron;

Chance Rides, Inc. recognizes the problems that state inspectors have in the field and will continue to work with them by supplying manufacturing specifications. Keeping the lines of communication open between the operator, inspector and the manufacturer is essential for the industry. The following is based on that idea and is in response to your letter dated April 12, 1994.

No matter how well designed or manufactured a piece of equipment is, depending on usage and general maintenance, there may come a time when repair work is needed. This repair work may include, but may not be limited to welding. Welding procedures vary, depending on the type and thickness of material. However, if performed by a qualified person who understands the nature of the parts, the material and the different welding processes, repairs can be made so that the part is adequate for its intended use.

The ability of the inspector,who sees the same type of equipment on a regular basis, goes back to how ASTM F-24 defines an inspector. It is for that reason that Chance Rides, Inc. has repeatedly stated that "it is the responsibility of the individual inspector to thoroughly inspect the ride as deemed necessary, based on his knowledge and field experience to determine that the ride meets the manufacturer's specifications and/or is safe for operation", refer to Chance Rides, Inc. service bulletin B090R1126-0.

Although Chance Rides, Inc. has some concern about welding on the A-frames of the SKYDIVER amusement ride, it can be done. The question is not so much as to whether or not it can be done, but rather the quality of the work after it has been done.

Sincerely,

Steven Laycock

Steven Laycock
Product Safety Manager

P.O. Box 12328 · Wichita, Kansas 67277-2328 U.S.A.
For No. 1 in Customer Service Call 1-800 CHANCE-1 (1-800-242-6231)
Telephone 316-942-7411 · FAX 316-942-7416

Number: B108R1052-0

Date: March 23, 1990

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 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: SKY DIVER

Subject: Steering Wheel Guard and Grab Rail Replacement

A modification kit has been developed to increase the clearance between the steering wheel and the grab rail, reducing the possibility of injuries due to pinched hands and/or fingers. Additionally, a guard plate installed behind the steering wheel eliminates a potential pinch point at the steering wheel bearing mount.

As a safety precaution, CHANCE RIDES, INC. requires that the owners of all SKY DIVER amusement rides perform the modification described in this bulletin.

Order kit number K108R1052-0, 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.

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.

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.

PARTS LIST

STEERING WHEEL GUARD AND GRAB RAIL REPLACEMENT KIT
(Kit Number K108R1052-0 consists of the following parts)

Item	Part No.	Description	Qty.
1	3-3163100	GRAB RAIL (108-1124-001)	16
2	6-0750200	CAPSCREW - Hex Head (5/16-18 x 2)	64
3	6-4781200	LOCK NUT (5/16-18)	64
4	6-8530600	FLAT WASHER (5/16)	64
5	3-5358547	GUARD PLATE (108-1183-001)	16
6	6-1144600	SCREW - Round Head (1/4-20 x 1-3/4)	32
7	6-1119400	SCREW - Round Head (1/4-20 x 3/4)	32
8	6-8530200	FLAT WASHER (1/4)	64
9	6-4780800	LOCK NUT (1/4-20)	64
10		DRILL BIT 9/32	1
11		DRILL BIT 11/32	1

INSTALLATION INSTRUCTIONS

1. With vehicle hatch in the open position, remove and discard the existing grab rail (Illustration A) and fasteners. Do not install the new grab rail at this time.

2. Remove the steering wheel from the shaft (Illustration B). Save the acorn nut and key.

3. Place the guard plate (Item #5) over the steering wheel bearing. Use the plate as a pattern to locate and drill mounting holes. See Illustration B for hole sizes and locations.

4. Install the guard plate using the fasteners provided (Items #6, #7, #8 and #9).

5. Install the steering wheel using the existing key and acorn nut. The acorn nut should be secured with a liquid locking material.

6. Install the new grab rail (Item #1) using the fasteners provided (Items #2, #3 and #4). Install the capscrews going down through grab rail.

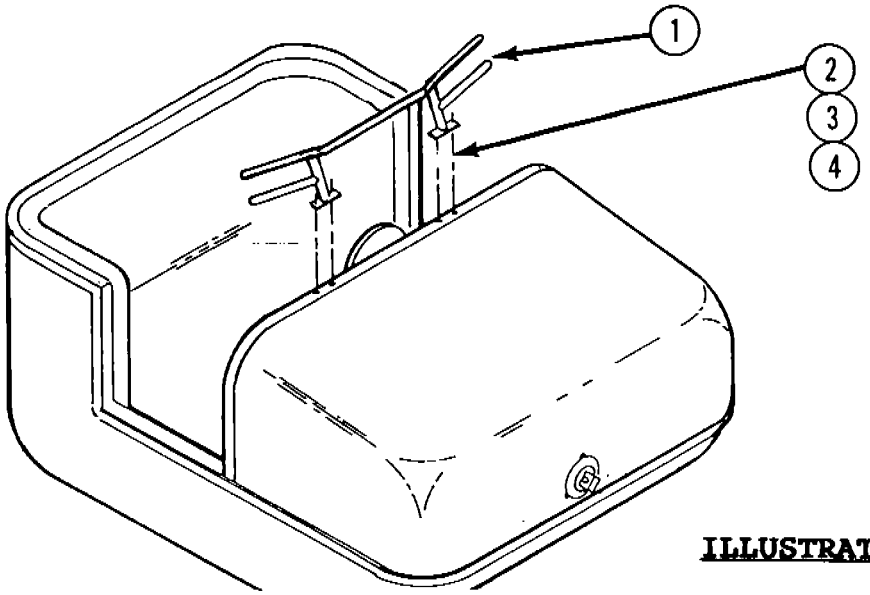
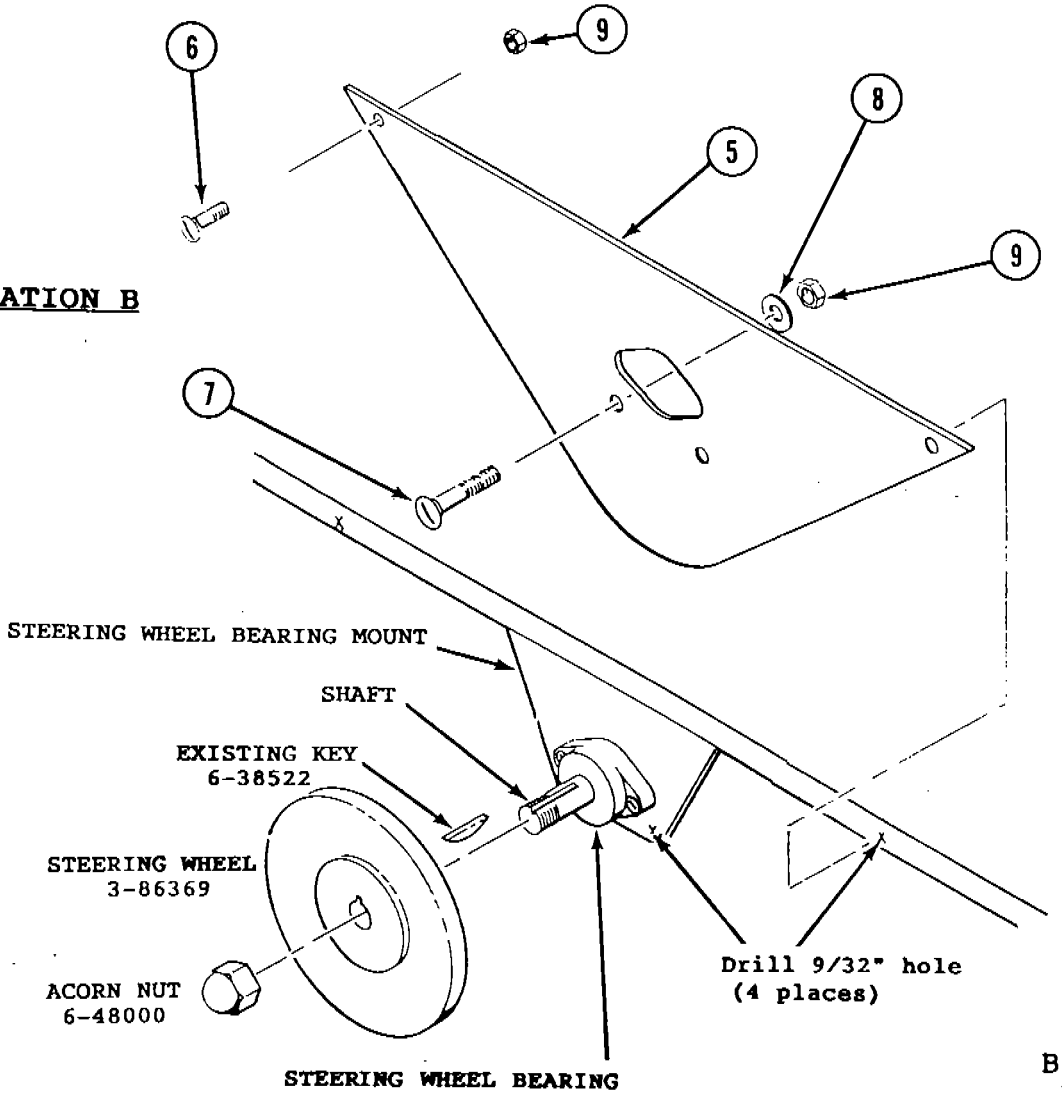


ILLUSTRATION A

CAUTION

AFTER HOLES HAVE BEEN DRILLED, USING A VACUUM, CLEAN INSIDE FLOOR OF CAR TO REMOVE METAL FILINGS. FAILURE TO DO THIS COULD RESULT IN INJURY TO PASSENGERS.

ILLUSTRATION B



Number: B108R1050-0

Date: Oct. 25, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: SKY DIVER

Subject: Floor Retainer Pins

Recent field inspections have found SKY DIVER amusement rides with platforms improperly installed. The platforms must be properly secured to maintain the safety of the ride and avoid personal injury.

CHANCE RIDES, INC. requires that the owners of SKY DIVER amusement rides inspect the platform retainer pins using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within 15 days from receipt of this 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 this inspection or these instructions, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately.

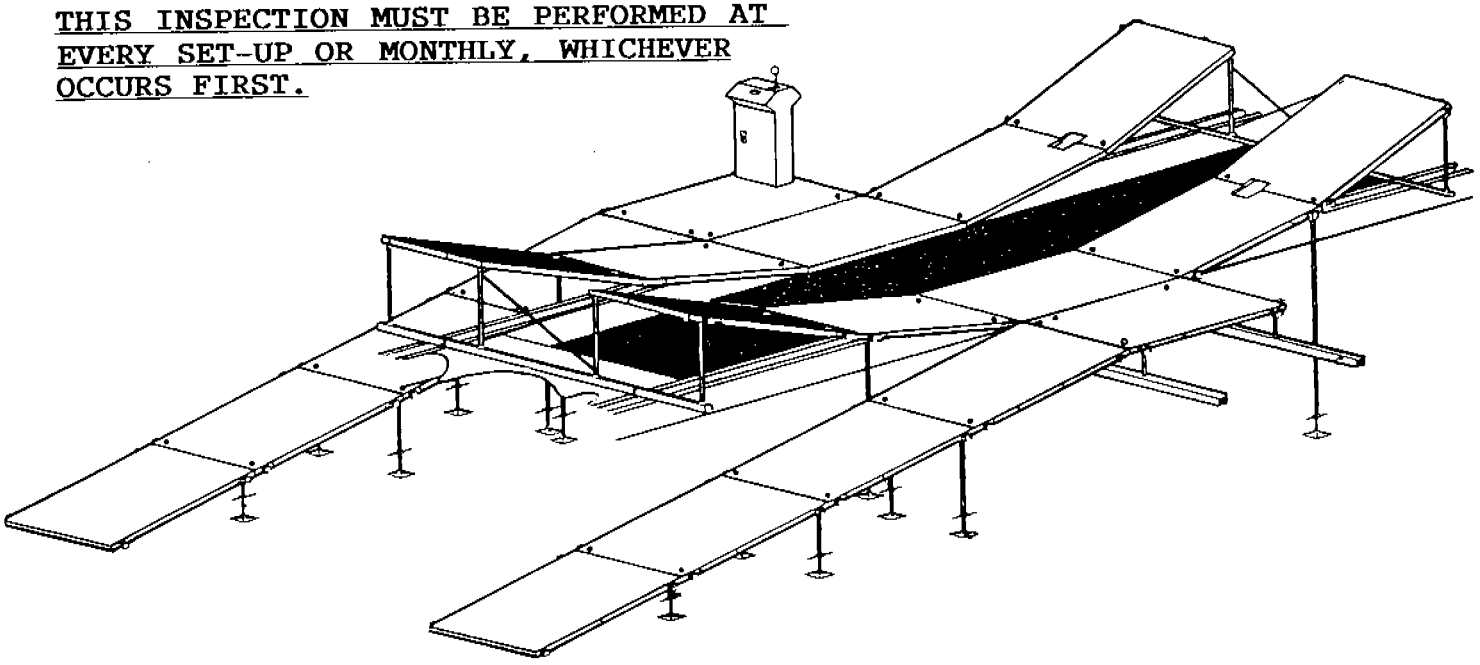
NOTICE

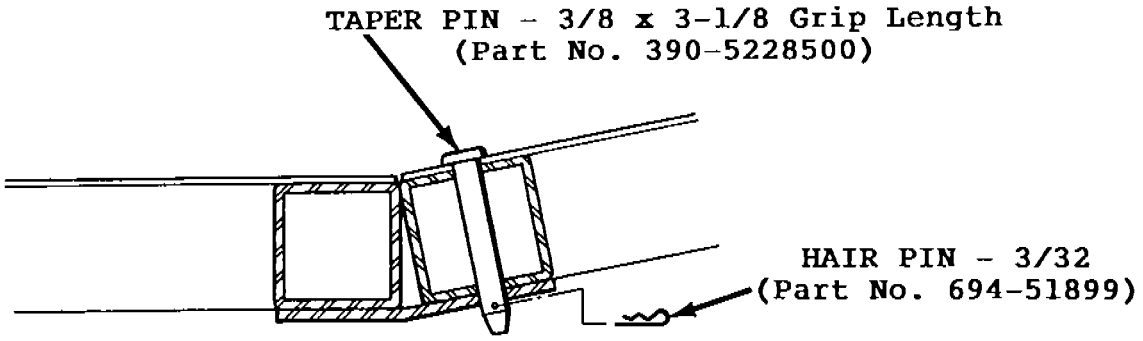
USE ONLY THOSE COMPONENTS AUTHORIZED, SPECIFIED OR PROVIDED BY THE MANUFACTURER. IF ANY ALTERATIONS AND/OR MODIFICATIONS OR ADDITIONS AND INSTALLATION OF UNAUTHORIZED COMPONENTS ARE MADE TO THE ORIGINAL DESIGN WITHOUT THE MANUFACTURER'S EXPLICIT WRITTEN CONSENT OR WITHOUT DIRECT SUPERVISION BY A MANUFACTURER'S REPRESENTATIVE, CHANCE MANUFACTURING CO., INC. MAKES NO CLAIMS AS TO THE INTEGRITY OF THE ALTERED OR MODIFIED RIDE.

INSPECTION PROCEDURE

Inspect for proper installation of platforms and retainer pins as shown in the following illustrations. Each platform must be attached to the adjoining platforms with the taper pins and hair pins as originally provided from the factory. Never allow the platforms to simply lie in place. Likewise, do not use fasteners other than the pins originally specified.

THIS INSPECTION MUST BE PERFORMED AT EVERY SET-UP OR MONTHLY, WHICHEVER OCCURS FIRST.





DETAIL OF TYPICAL PLATFORM
WITH TAPER PIN AND HAIR PIN
CORRECTLY INSTALLED

NOTE: IF HOLES HAVE WORN TO A DIMENSION OF 7/16" OR GREATER AT ANY POINT, DRILL OVERSIZE TO 17/32" AND USE THE TAPER PINS AND HAIR PINS SHOWN IN THE FOLLOWING CHART:	
TAPER PIN 1/2 x 2-1/2 Grip Length (Part No. 390-5228800)	HAIR PIN - 1/8 (Part No. 694-5190000)

Number: B108R1037-0

Date: May 15, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: SKYDIVER

Subject: Lap Bar Inspection

Lap bars on the SKY DIVER are essential to passenger safety, and must be maintained properly. Operating the ride with worn or damaged lap bars, incorrect lap bars, wooden lap bars, or incorrectly mounted lap bars can result in injury to passengers.

CHANCE RIDES, INC. therefore requires the inspection of lap bars on all SKYDIVER amusement rides, to ensure that all rides are equipped with the specified lap bars, and that the lap bars are properly installed.

Perform the inspection, using the instructions on the following pages of this bulletin. Return the attached Certification Of Compliance for the inspection within fifteen (15) days from receipt of this bulletin.

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.

NOTE: Insert this bulletin into your Operation & Maintenance Manual for future reference.

PARTS LIST

(Use this parts list to order any necessary parts)

Item	Part No.	Description	Qty. Reqd. Per Seat
1	303-0387800	LAP BAR ASSEMBLY-Complete (1081152-001) . .	1
	203-2079000	..REPLACEMENT PAD ONLY (1081153-001)	1
2	686-0700200	CAPSCREW - Hex Head (1/4-20 x 3/4)	4
3	691-4780800	LOCK NUT (1/4-20)	4
4	696-8530200	FLAT WASHER (1/4)	4

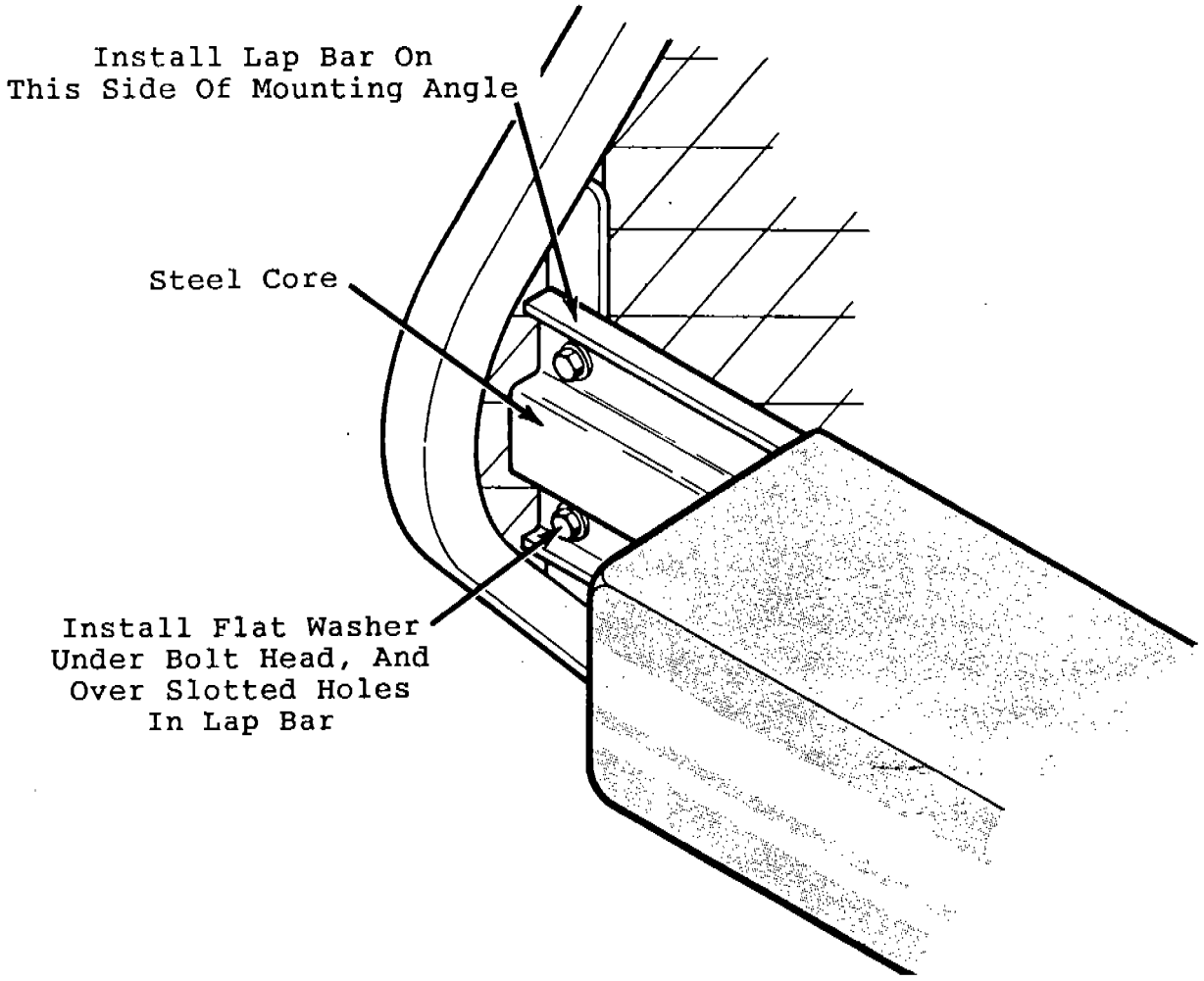
INSPECTION INSTRUCTIONS

Inspect the lap bar on every vehicle for the following:

1. The lap bar must be identical to the lap bar shown below. The core must be formed steel. WOOD LAP BARS ARE NOT ALLOWED.

2. The lap bar must be installed exactly as shown. Tighten the mounting bolts to 5-6 ft-lbs.

3. Lap bar padding must be in good repair. Minor repairs to the factory padding are permissible, if its original size and shape are not altered.



Number: B108R1032-0

Date: March 22,1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

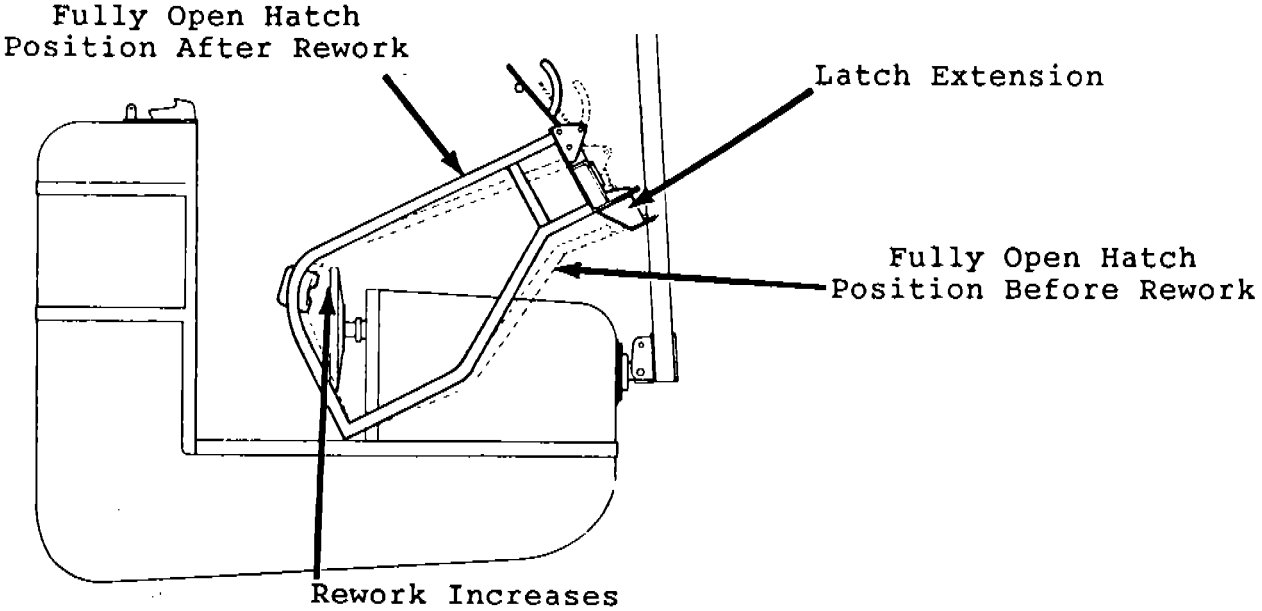
Ride: SKY DIVER

Subject: Latch Rework

The latch for the SKYDIVER vehicle hatch serves two purposes:

- When the hatch is closed, the latch securely holds it closed for safe operation.
- When the hatch is fully opened for loading, a tang on the latch engages in a slot on the A-frame, preventing rotation of the vehicle. This limits the travel of the hatch, thereby maintaining clearance between the lap bar and the control wheel.

A modification kit has been developed to increase the clearance between the lap bar and the control wheel, reducing the possibility of injuries due to pinched hands and/or fingers.



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

As a safety precaution, CHANCE RIDES, INC. requires that the owners of all SKY DIVER amusement rides perform the modification described in this bulletin.

Order kit number K03-0331-00, 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

LATCH REWORK KIT No. K03-0331-01
(consists of the following parts)

Item	Part No.	Description	Qty.
1	303-7422400	LATCH EXTENSION (1081178-001)	16
2	686-0700400	CAPSCREW (1/4-20 x 1)	70*
3	696-8530200	FLAT WASHER (1/4)	70*
4	691-4780800	LOCKNUT (1/4-20)	70*

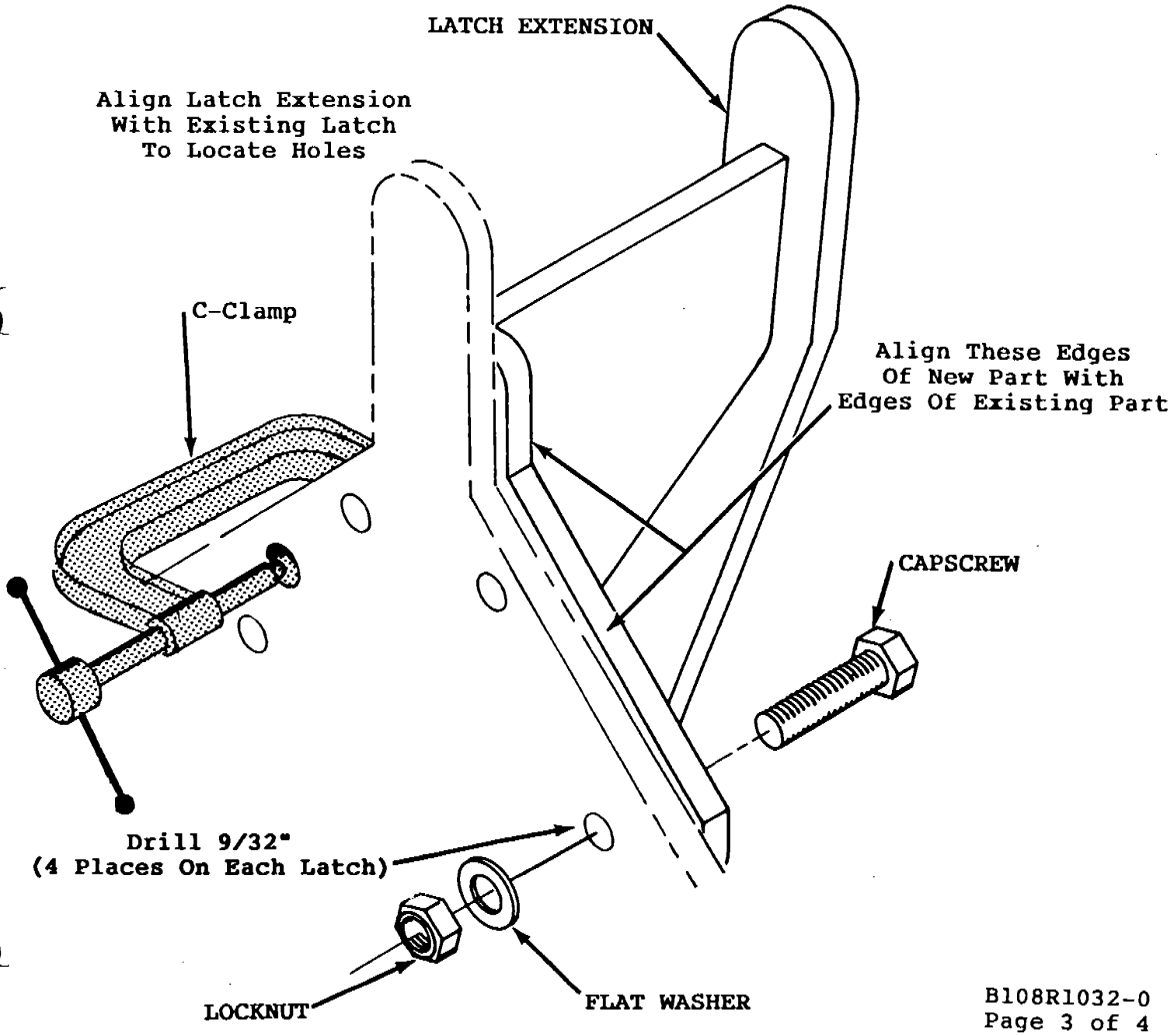
* Extra Parts Are Provided In Kit

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.

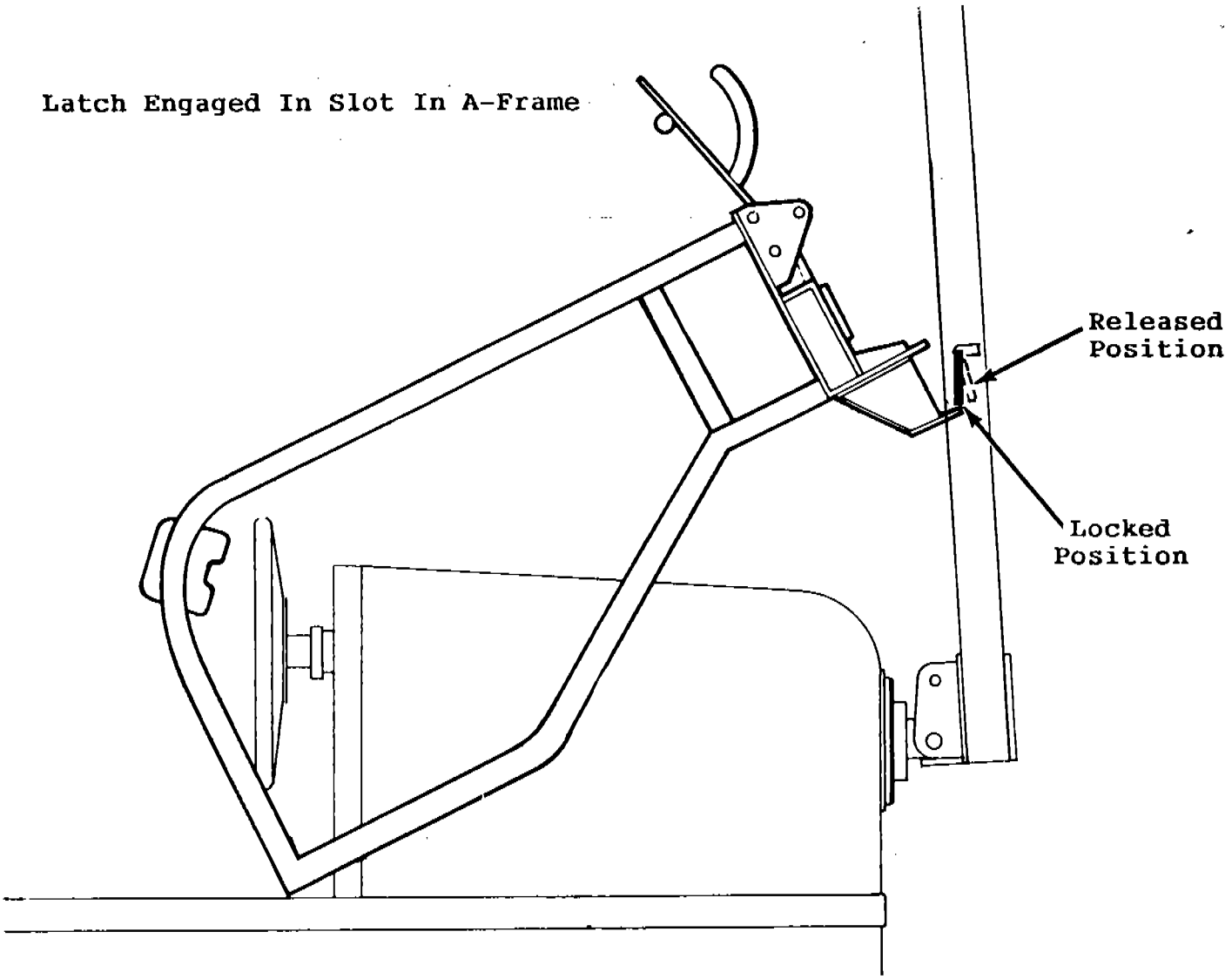
INSTALLATION INSTRUCTIONS

1. Align the edges of latch extension (Item #1) with the edges of the existing latch as shown in the illustration below.

2. Use a C-clamp to hold the latch extension in place as shown.



Latch Engaged In Slot In A-Frame



3. Rotate the hatch to the open position as shown and check to make sure that:

- The latch securely engages in the A-frame slot for loading and unloading (Locked Position).
- The latch will release properly when the latch release is disengaged (Released Position).

NOTE: **If necessary, adjust the latch extension position slightly to obtain the correct engagement into the A-frame slot. Also, the tang of the latch extension can be ground shorter to allow the correct release from the latch.**

5. Use latch extension as a template to locate four holes in the existing latch as shown. Drill four 9/32" holes.

6. Attach the extension to the existing latch using the 1/4" capscrews, flat washers and locknuts (Items #2, #3 and #4) provided.

7. Repeat the procedure on the remaining 15 vehicles.

Number: B108R1021-0

Date: June 7, 1988

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: SKY DIVER

Subject: Trailer Blocking And Tie-Down Instructions

As a safety precaution, CHANCE RIDES,, INC. requires that the owners of all SKY DIVER amusement rides perform the modification described in this bulletin. Additionally, their employees must be instructed on the proper blocking and tie-down procedures contained in this bulletin.

The modification consists of welding links to the ride towers, to be used as anchors for tie-down cables if required by wind conditions. After the modification is performed, always follow the recommended blocking and tie-down procedures.

Order kit number K03-0321-00, which includes parts 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.

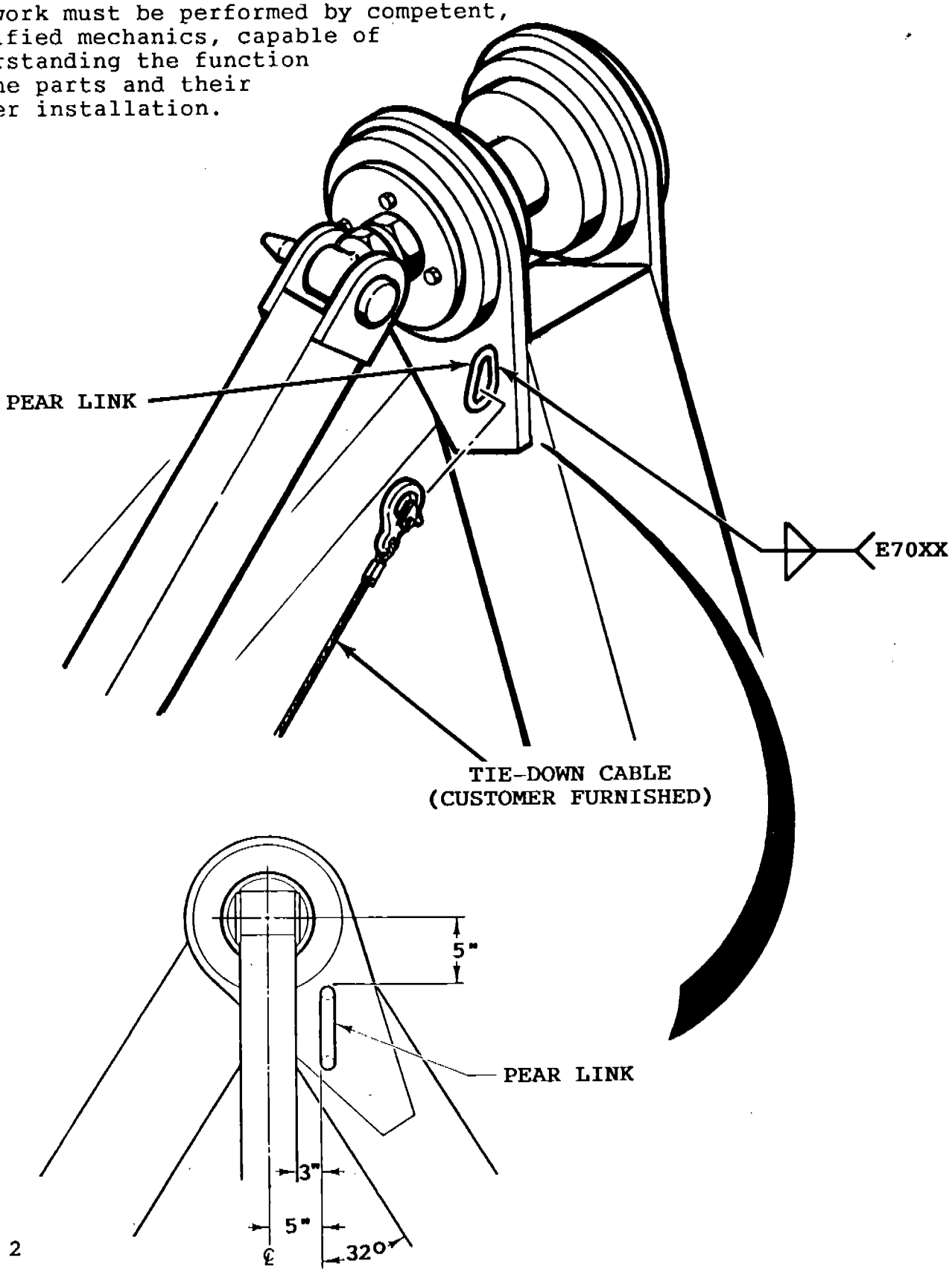
PARTS LIST

Kit No. K03-0321-00 Tie-Down Kit

Quantity	Part Number	Description
2	290-4164600	Pear Link (3/4")

INSTALLATION INSTRUCTIONS

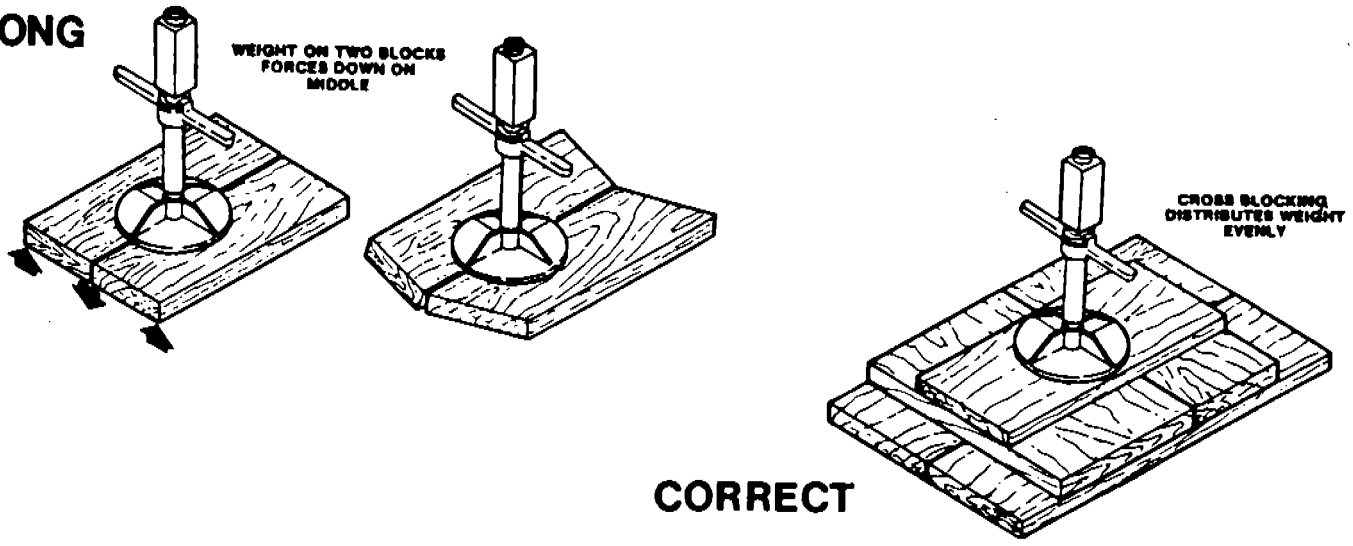
Locate and weld the pear links on each tower leg as shown in the following illustration. All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation.



BLOCKING PROCEDURE

Always perform the following procedure before operating the ride.

1. Inspect the blocking under each of the four trailer leveling jacks, the four screw jacks and the two outrigger jacks. Good, solid blocking, preferably wooden 3 x 12's, must be placed under each jack point. As blocks are stacked, criss-cross each layer, ending the stack with a single block as shown in the following illustrations.



2. Make sure the lock rings on the leveling jacks are tight up against the bottom of the jack. All needle valves and the hand pump valve must be OPEN to relieve hydraulic pressure in the leveling jacks. This is important, because hydraulic oil in the jacks can expand when exposed to heat, such as direct sunlight, causing the jack to extend.

3. The outrigger jacks must be extended down against the blocking until snug. DO NOT OVER-TIGHTEN THE OUTRIGGER JACKS TO AVOID A PRE-LOADING CONDITION IN THE OUTRIGGERS.

TIE-DOWN PROCEDURE

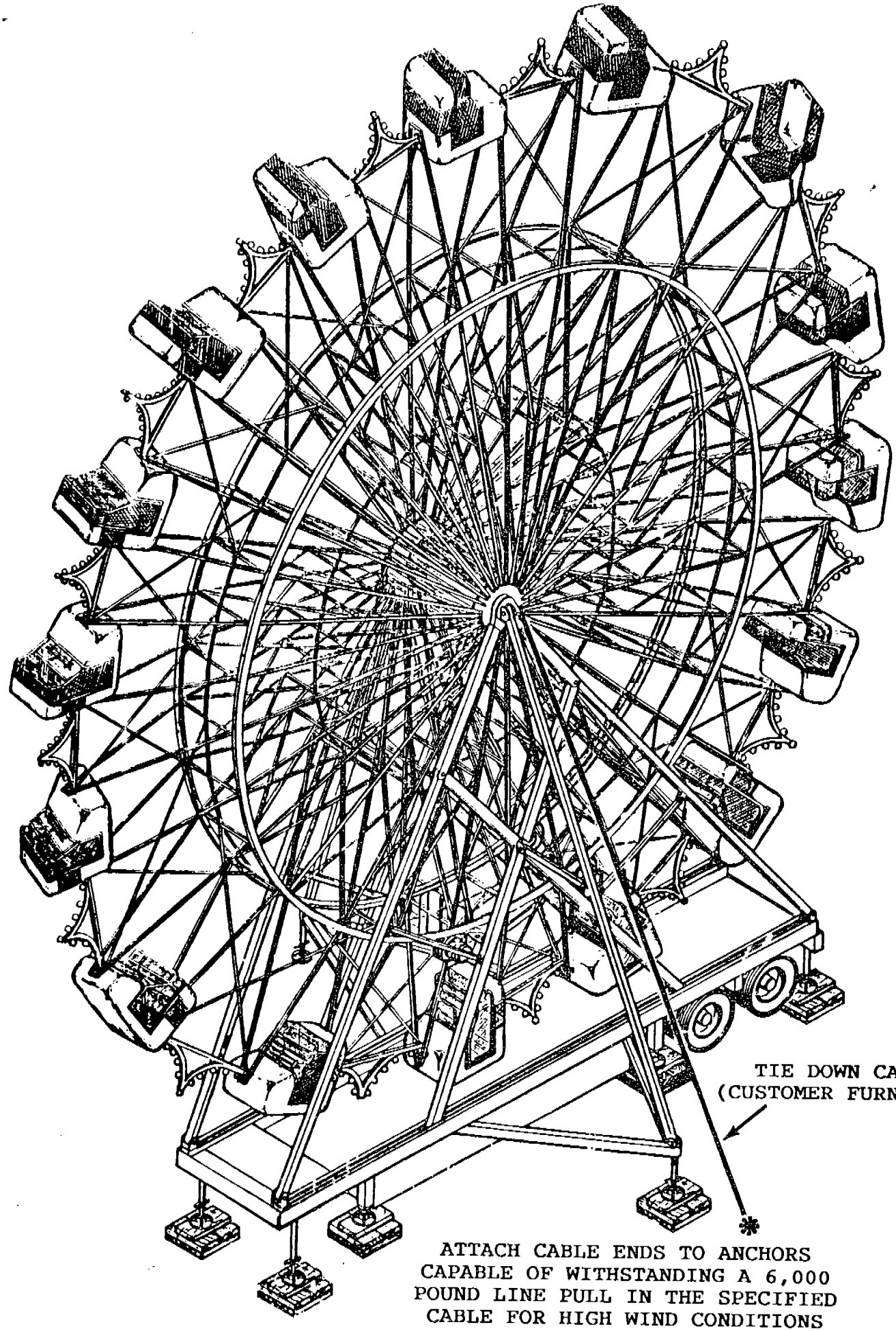
WARNING: DUE TO UNPREDICTABLE CONDITIONS GENERATED BY HIGH WINDS, SUCH AS MICRO-BURSTS, THE MANUFACTURER CANNOT GUARANTEE THE STABILITY OF THE RIDE IN HIGH WINDS. ALWAYS OBSERVE THE FOLLOWING PRECAUTIONS TO HELP PREVENT DAMAGE TO EQUIPMENT, AND INJURIES TO PASSENGERS AND/OR BYSTANDERS:

- NEVER OPERATE THE RIDE WITH PASSENGERS IN WINDS EXCEEDING 35 MPH.
- IT IS RECOMMENDED THAT THE RIDE BE TIED DOWN AS DESCRIBED IN THIS BULLETIN IF WINDS OVER 50 MPH ARE ANTICIPATED.
- TIE-DOWNS ARE REQUIRED TO ASSIST IN STABILIZING THE RIDE DURING HIGH WINDS.

When high wind conditions are anticipated, use the following procedure to tie-down the ride. Use **1/2" Extra Improved Plow Steel Cable.**

1. Attach cables to the pear links on the tower legs. Attach the other end of each cable to anchors capable of withstanding a 6,000 pound line pull in the specified cable. (See illustration on next page).

2. Tighten the cables until snug.


TIE DOWN CABLE
(CUSTOMER FURNISHED)
*
ATTACH CABLE ENDS TO ANCHORS
CAPABLE OF WITHSTANDING A 6,000
POUND LINE PULL IN THE SPECIFIED
CABLE FOR HIGH WIND CONDITIONS

Number: B108R1019-0

Date: Nov. 18, 1987

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

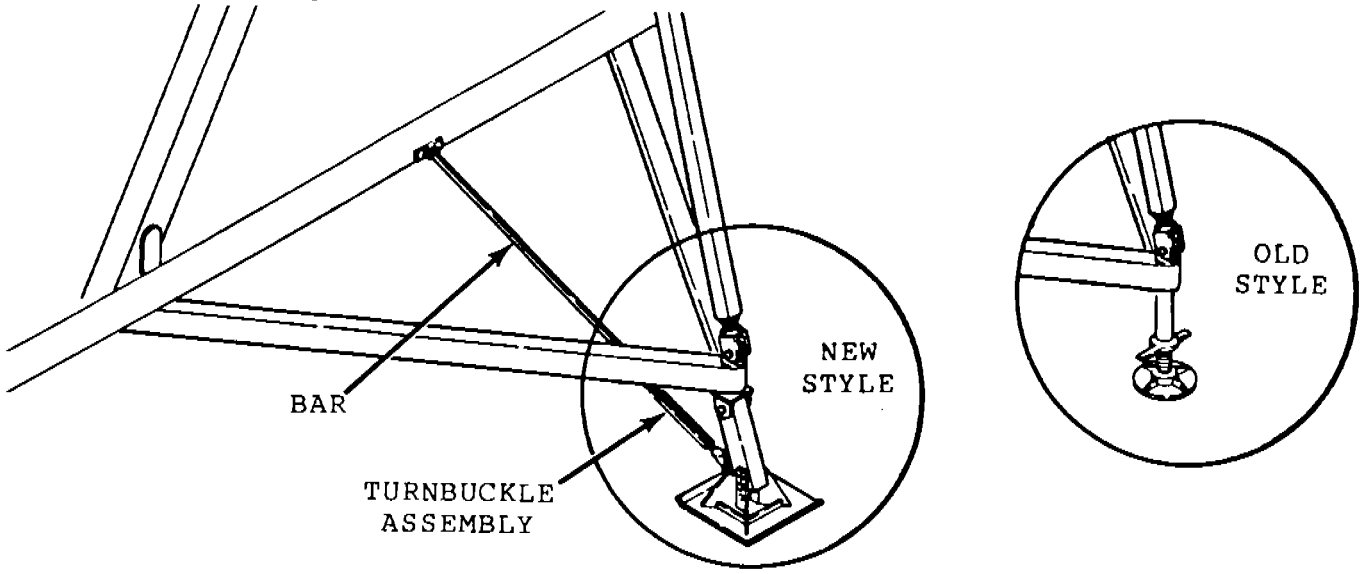
Effective Serial Numbers: See Text

Ride: SKY DIVER & ASTRO WHEEL

Subject: Outrigger Support Brace Rework

CHANCE RIDES, INC. has developed a rigid brace to replace the existing bar and turnbuckle brace on the new style outrigger supports on SKY DIVERS and ASTRO WHEELS. This rigid brace will further increase the stability of the outriggers.

NOTE: If your ride does not have the new style outrigger supports, this bulletin does not apply and can be disregarded.

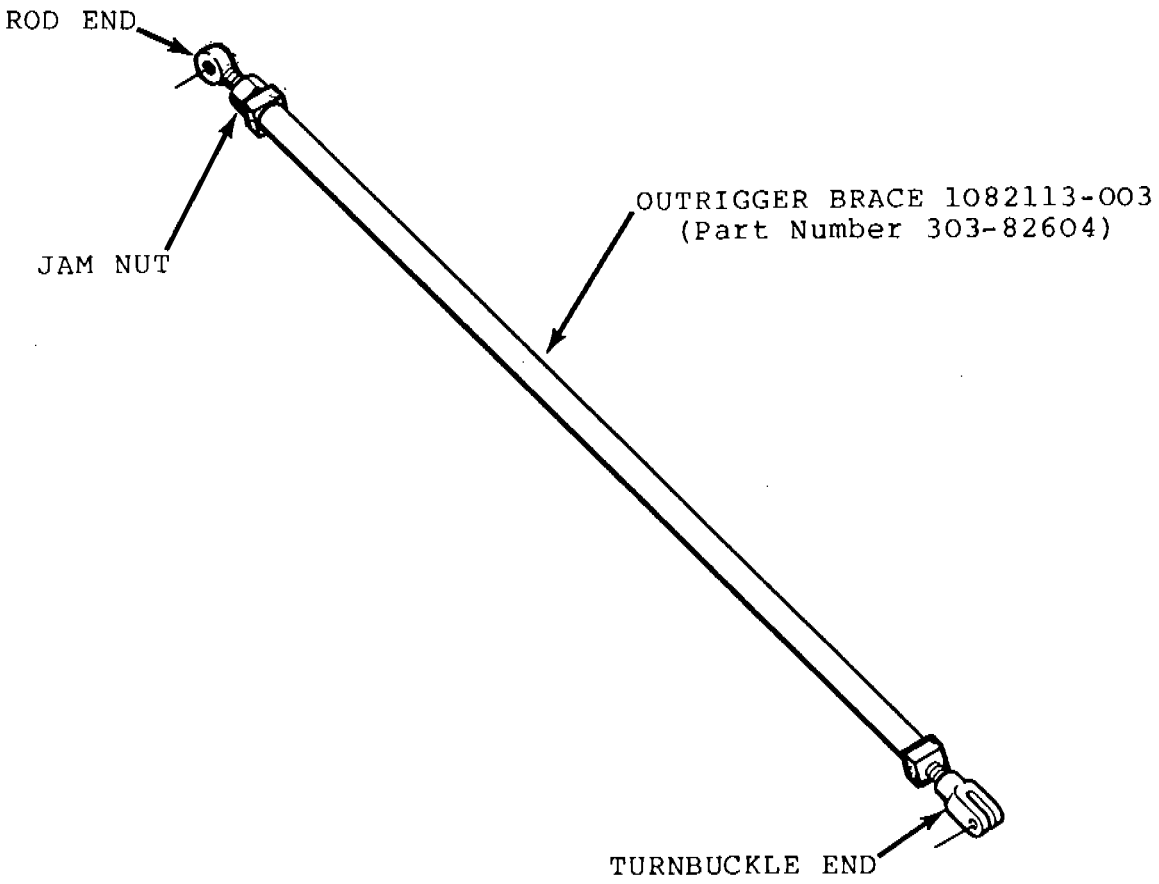


CHANCE RIDES, INC. requires that owners of all SKY DIVER and ASTRO WHEEL amusement rides with new style outrigger supports, perform the rework described in this bulletin. Use the instructions on the reverse side of this bulletin and the parts provided. Return the Certification Of Compliance within fifteen (15) days from receipt of this bulletin.

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.

Order Kit Number KO3-0313-00, which consists of the following parts:

Part No.	Description	Quantity
303-82604	OUTRIGGER BRACE (1082113-003)	2



INSTALLATION INSTRUCTIONS

> ⚠ CAUTION: THE TOWER LEGS MUST BE FULLY LOWERED BEFORE THE OUTRIGGER SUPPORTS ARE DISASSEMBLED, TO PREVENT THE RIDE FROM TIPPING.

1. Remove the bar and turnbuckle assembly from one side of the ride.
2. Install the new outrigger brace using the existing hardware.

   NOTE: Turn the rod end and the turnbuckle end into outrigger brace an equal number of turns.

3. Adjust the outrigger brace until tight. Tighten the jam nut.
4. Repeat the procedure for the other side of the ride.

CHANCE MANUFACTURING CO., Inc.

Number: B03-0349-00

Date: Oct. 25, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: SKY DIVER / ASTRO WHEEL Subject: Floor Retainer Pins

Recent field inspections have found SKY DIVER and ASTRO WHEEL amusement rides with platforms improperly installed. The platforms must be properly secured to maintain the safety of the ride and avoid personal injury.

CHANCE MANUFACTURING CO., INC. requires that the owners of SKY DIVER and ASTRO WHEEL amusement rides inspect the platform retainer pins using the instructions on the reverse side of this bulletin. Return the Certification Of Compliance within 15 days from receipt of this 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 this inspection or these instructions, contact the CHANCE CUSTOMER SERVICE DEPARTMENT immediately.

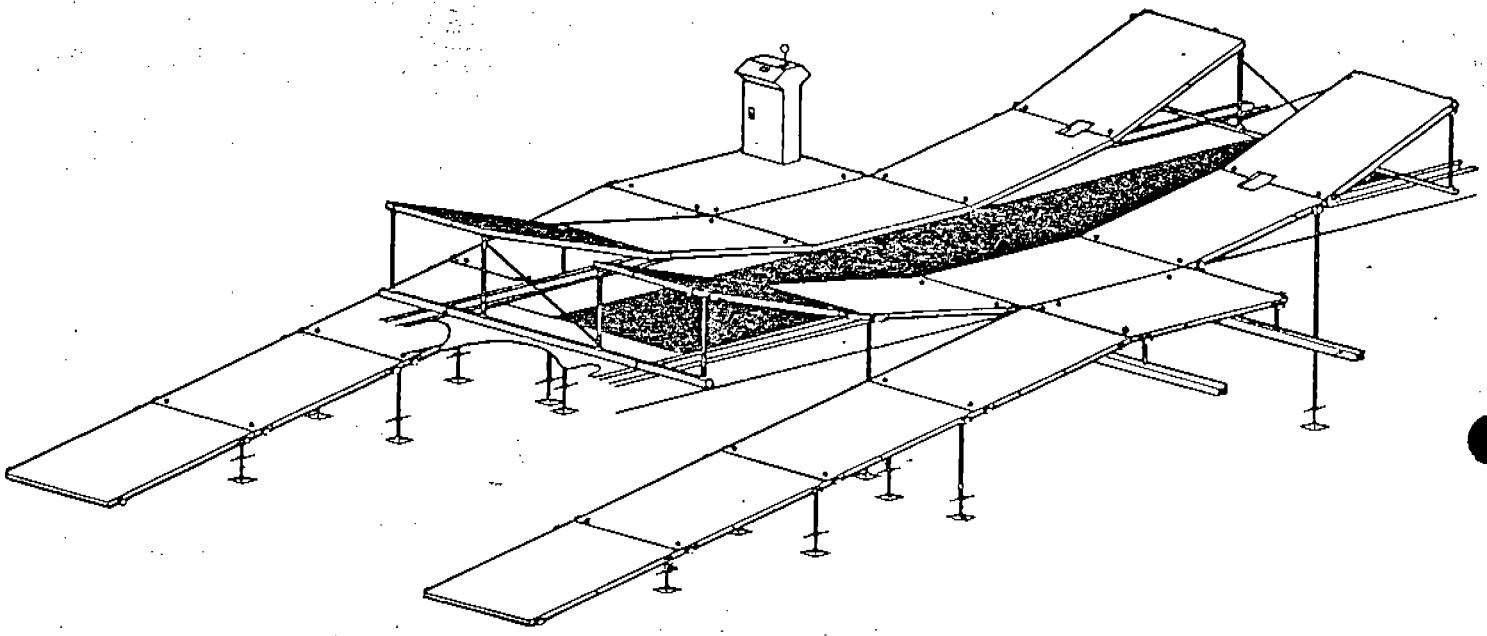
NOTICE

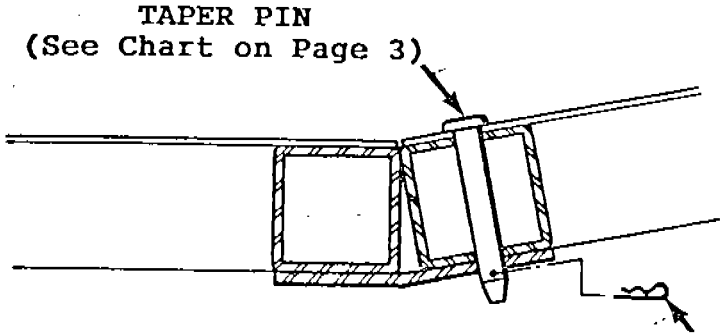
USE ONLY THOSE COMPONENTS AUTHORIZED, SPECIFIED OR PROVIDED BY THE MANUFACTURER. IF ANY ALTERATIONS AND/OR MODIFICATIONS OR ADDITIONS AND INSTALLATION OF UNAUTHORIZED COMPONENTS ARE MADE TO THE ORIGINAL DESIGN WITHOUT THE MANUFACTURER'S EXPLICIT WRITTEN CONSENT OR WITHOUT DIRECT SUPERVISION BY A MANUFACTURER'S REPRESENTATIVE, CHANCE MANUFACTURING CO., INC. MAKES NO CLAIMS AS TO THE INTEGRITY OF THE ALTERED OR MODIFIED RIDE.

INSPECTION PROCEDURE

Inspect for proper installation of platforms and retainer pins as shown in the following illustrations. Each platform must be attached to the adjoining platforms with the taper pins and hair pins as originally provided from the factory. Never allow the platforms to simply lie in place. Likewise, do not use fasteners other than the pins originally specified.

THIS INSPECTION MUST BE PERFORMED AT EVERY SET-UP OR MONTHLY, WHICHEVER OCCURS FIRST.





DETAIL OF TYPICAL PLATFORM
WITH TAPER PIN AND HAIR PIN
CORRECTLY INSTALLED

FOR RIDES WITH EXTRUDED ALUMINUM FLOORING USE THE FOLLOWING PARTS	FOR RIDES WITH ALUMINUM TREADPLATE FLOORING USE THE FOLLOWING PARTS
TAPER PIN 3/8 x 2-1/16 Grip Length (Part No. 390-5228400) & HAIR PIN - 3/32 (Part No. 694-5189900)	TAPER PIN 3/8 x 3-1/8 Grip Length (Part No. 390-5228500) & HAIR PIN - 3/32 (Part No. 694-5189900)

NOTE: IF HOLES HAVE WORN TO A DIMENSION OF 7/16" OR GREATER AT ANY POINT, DRILL OVERSIZE TO 17/32" AND USE THE TAPER PINS AND HAIR PINS SHOWN IN THE FOLLOWING CHART:

FOR RIDES WITH EXTRUDED ALUMINUM FLOORING USE THE FOLLOWING PARTS	FOR RIDES WITH ALUMINUM TREADPLATE FLOORING USE THE FOLLOWING PARTS
TAPER PIN 1/2 x 2-1/2 Grip Length (Part No. 390-5228800) & HAIR PIN - 1/8 (Part No. 694-5190000)	TAPER PIN 1/2 x 2-11/16 Grip Length (Part No. 390-5228900) & HAIR PIN - 1/8 (Part No. 694-5190000)

Number: B03-0342-00

Date: May 15, 1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

Ride: SKYDIVER

Subject: Lap Bar Inspection

Lap bars on the SKY DIVER are essential to passenger safety, and must be maintained properly. Operating the ride with worn or damaged lap bars, incorrect lap bars, wooden lap bars, or incorrectly mounted lap bars can result in injury to passengers.

CHANCE MANUFACTURING CO., INC. therefore requires the inspection of lap bars on all SKYDIVER amusement rides, to ensure that all rides are equipped with the specified lap bars, and that the lap bars are properly installed.

Perform the inspection, using the instructions on the following pages of this bulletin. Return the attached Certification Of Compliance for the inspection within fifteen (15) days from receipt of this bulletin.

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.

NOTE: Insert this bulletin into your Operation & Maintenance Manual for future reference.

PARTS LIST

(Use this parts list to order any necessary parts)

Item	Part No.	Description	Qty. Reqd Per Seat
1	303-0387800	LAP BAR ASSEMBLY-Complete (1081152-001) . .	1
	203-2079000	..REPLACEMENT PAD ONLY (1081153-001)	1
2	686-0700200	CAPSCREW - Hex Head (1/4-20 x 3/4)	4
3	691-4780800	LOCK NUT (1/4-20)	4
4	696-8530200	FLAT WASHER (1/4)	4

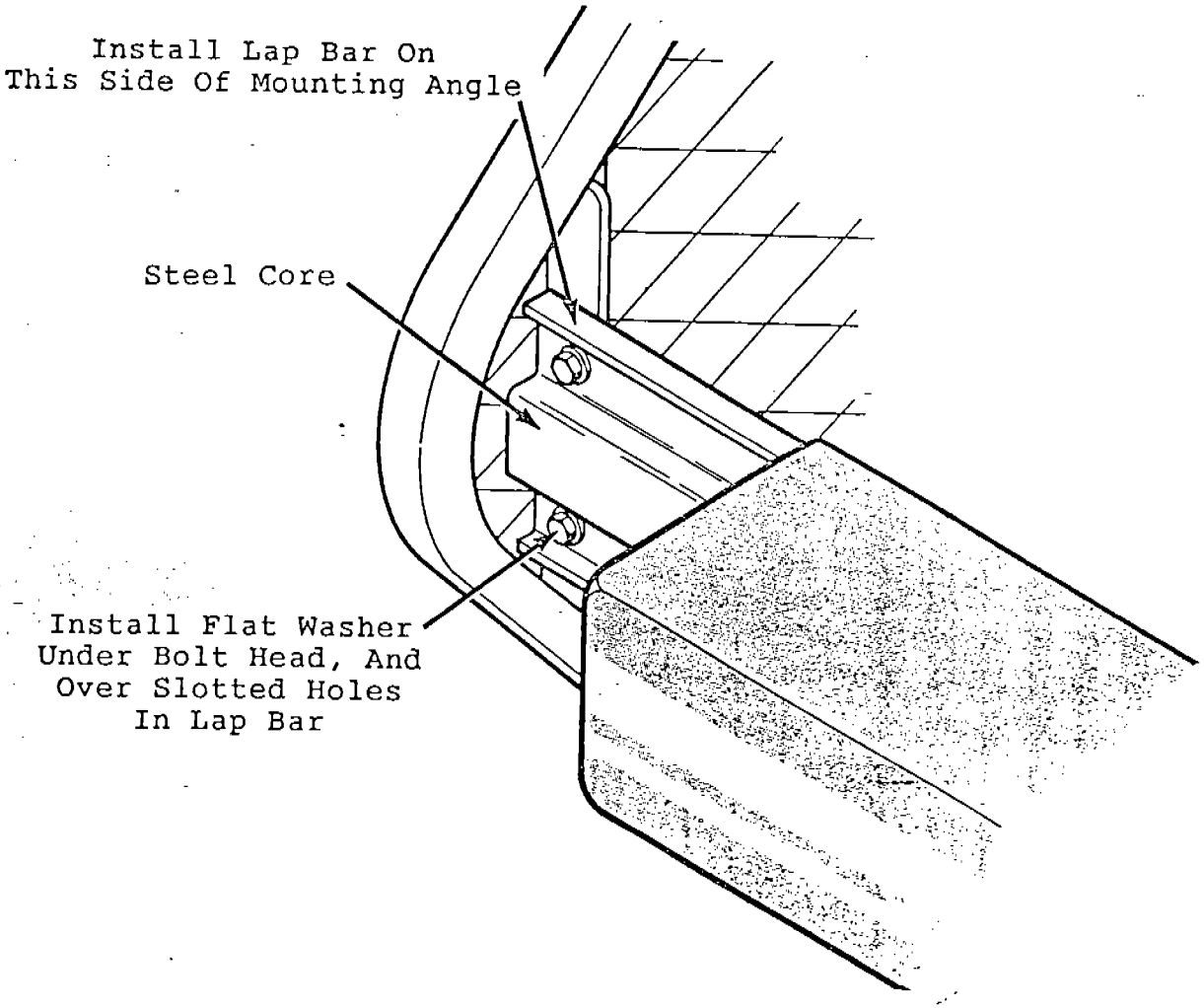
INSPECTION INSTRUCTIONS

Inspect the lap bar on every vehicle for the following:

1. The lap bar must be identical to the lap bar shown below. The core must be formed steel. WOOD LAP BARS ARE NOT ALLOWED.

2. The lap bar must be installed exactly as shown. Tighten the mounting bolts to 5-6 ft-lbs.

3. Lap bar padding must be in good repair. Minor repairs to the factory padding are permissible, if its original size and shape are not altered.



Number: B03-0331-00

Date: March 22,1989

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: All Units

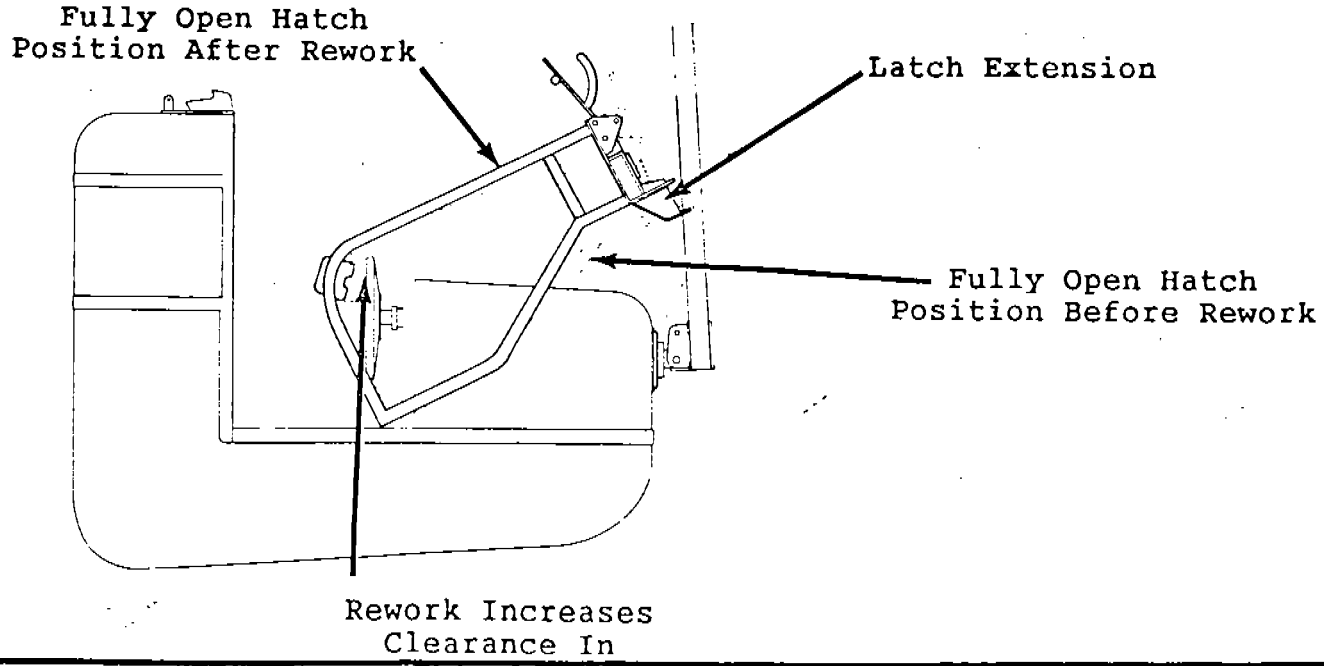
Ride: SKY DIVER

Subject: Latch Rework

The latch for the SKYDIVER vehicle hatch serves two purposes:

- When the hatch is closed, the latch securely holds it closed for safe operation.
- When the hatch is fully opened for loading, a tang on the latch engages in a slot on the A-frame, preventing rotation of the vehicle. This limits the travel of the hatch, thereby maintaining clearance between the lap bar and the control wheel.

A modification kit has been developed to increase the clearance between the lap bar and the control wheel, reducing the possibility of injuries due to pinched hands and/or fingers.



As a safety precaution, CHANCE MANUFACTURING CO., INC. requires that the owners of all SKY DIVER amusement rides perform the modification described in this bulletin.

Order kit number K03-0331-00, 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

LATCH REWORK KIT No. K03-0331-01
(consists of the following parts)

Item	Part No.	Description	Qty.
1	303-7422400	LATCH EXTENSION (1081178-001)	16
2	686-0700400	CAPSCREW (1/4-20 x 1)	70*
3	696-8530200	FLAT WASHER (1/4)	70*
4	691-4780800	LOCKNUT (1/4-20)	70*

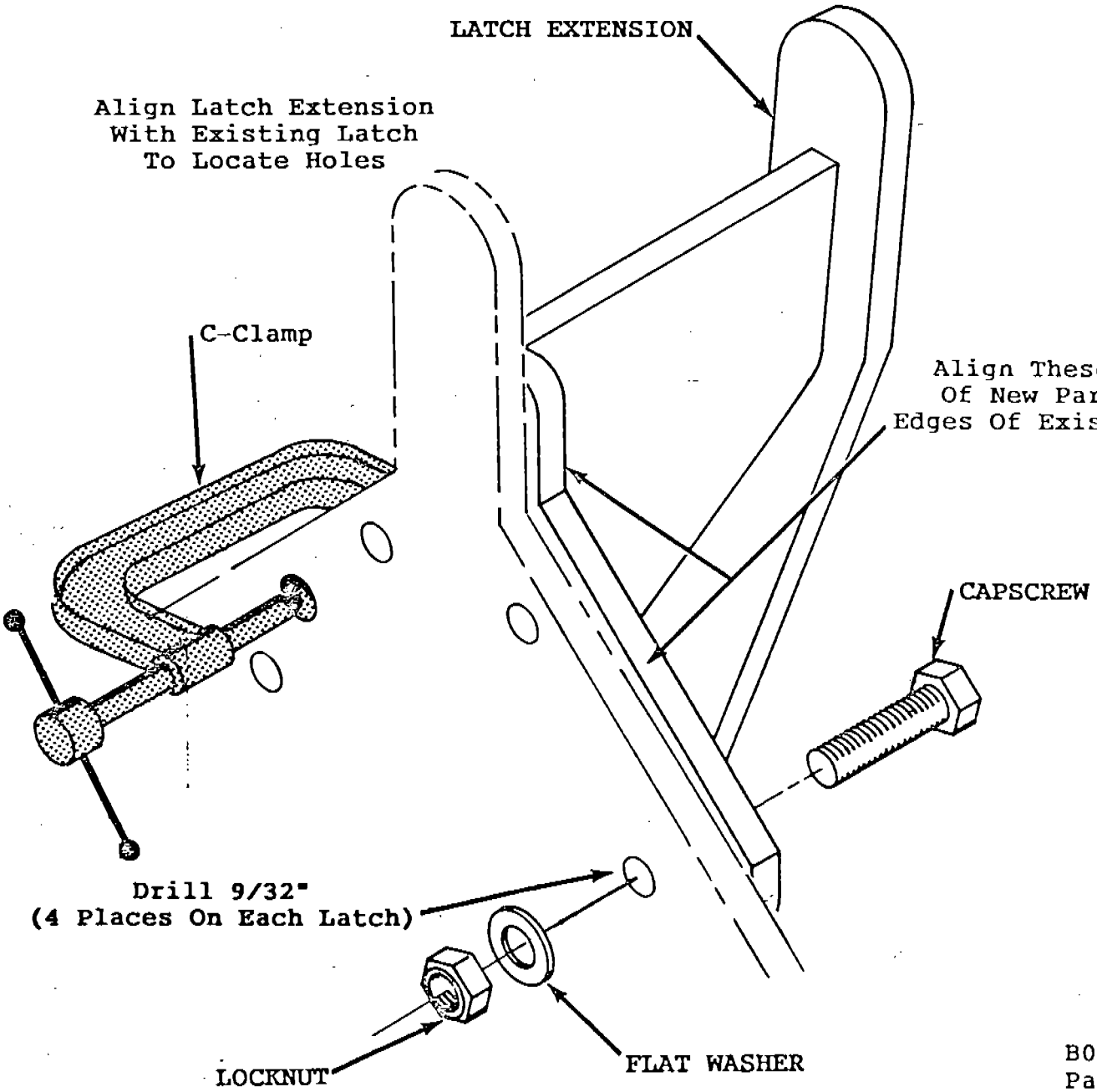
* Extra Parts Are Provided In Kit

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.

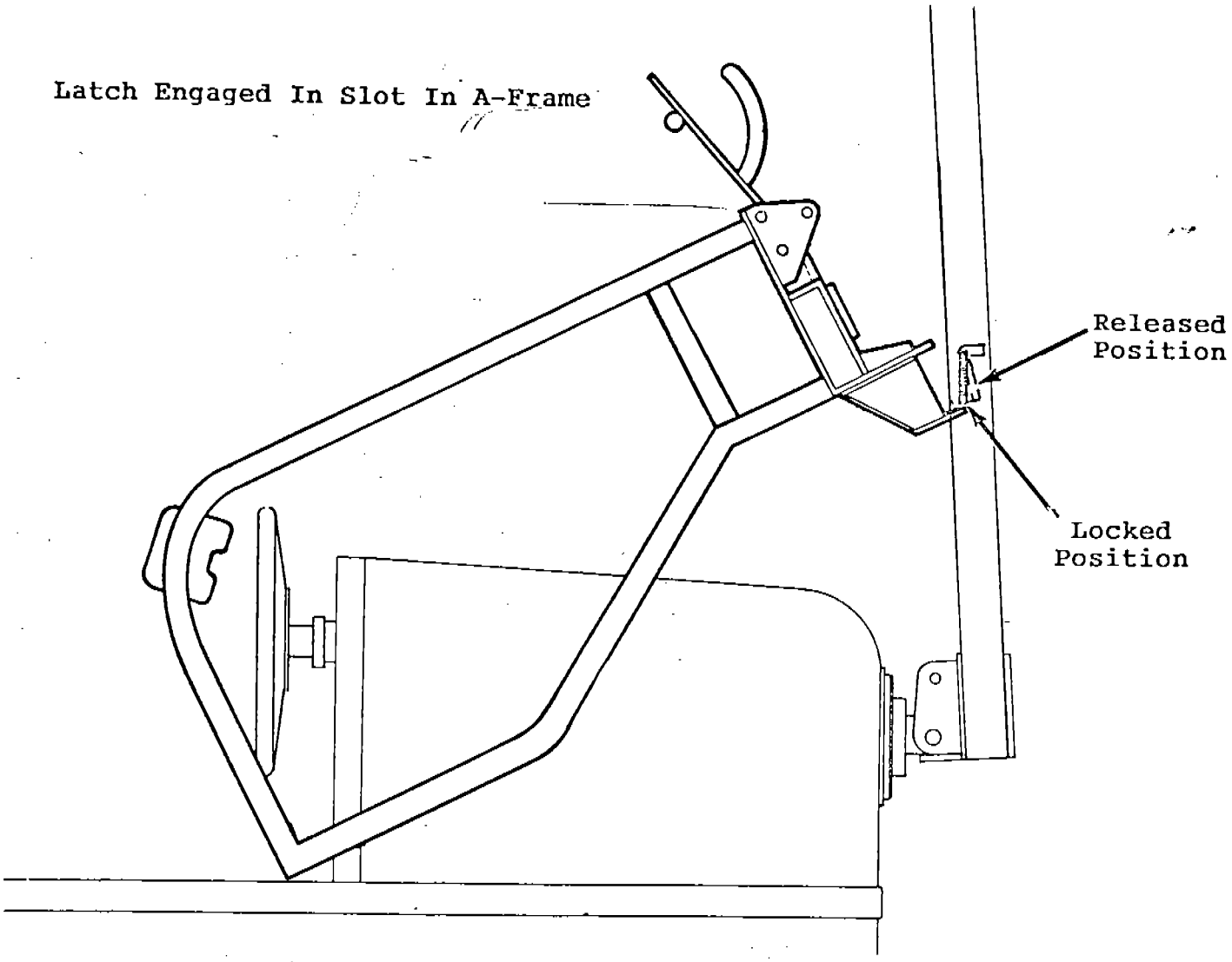
INSTALLATION INSTRUCTIONS

1. Align the edges of latch extension (Item #1) with the edges of th existing latch as shown in the illustration below.

2. Use a C-clamp to hold the latch extension in place as shown.



Latch Engaged In Slot In A-Frame



3. Rotate the hatch to the open position as shown and check to make sure that:

- The latch securely engages in the A-frame slot for loading and unloading (Locked Position).
- The latch will release properly when the latch release is disengaged (Released Position).

NOTE: If necessary, adjust the latch extension position slightly to obtain the correct engagement into the A-frame slot. Also, the tang of the latch extension can be ground shorter to allow the correct release from the latch.

5. Use latch extension as a template to locate four holes in the existing latch as shown. Drill four 9/32" holes.

6. Attach the extension to the existing latch using the 1/4" capscrews, flat washers and locknuts (Items #2, #3 and #4) provided.

7. Repeat the procedure on the remaining 15 vehicles.

Number: B03-0321-00

Date: June 7, 1988

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: **All Units**

Ride: **SKY DIVER / ASTRO WHEEL**

Subject: **Trailer Blocking And Tie-Down Instructions**

As a safety precaution, CHANCE MANUFACTURING CO., INC. requires that the owners of all SKY DIVER and ASTRO WHEEL amusement rides perform the modification described in this bulletin. Additionally, their employees must be instructed on the proper blocking and tie-down procedures contained in this bulletin.

The modification consists of welding links to the ride towers, to be used as anchors for tie-down cables if required by wind conditions. After the modification is performed, always follow the recommended blocking and tie-down procedures.

Order kit number K03-0321-00, which includes parts 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.

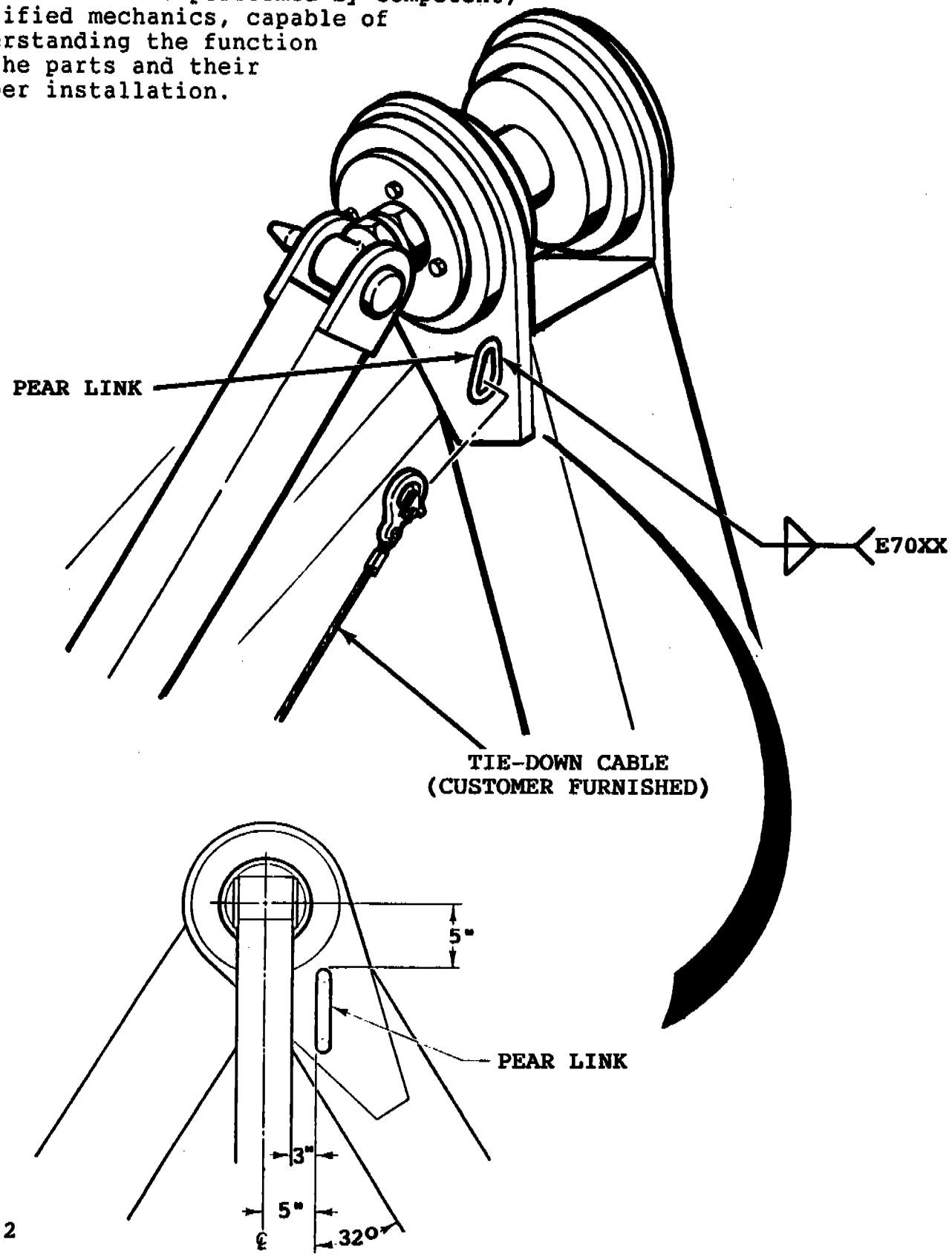
PARTS LIST

Kit No. K03-0321-00 Tie-Down Kit

Quantity	Part Number	Description
2	290-4164600	Pear Link (3/4")

INSTALLATION INSTRUCTIONS

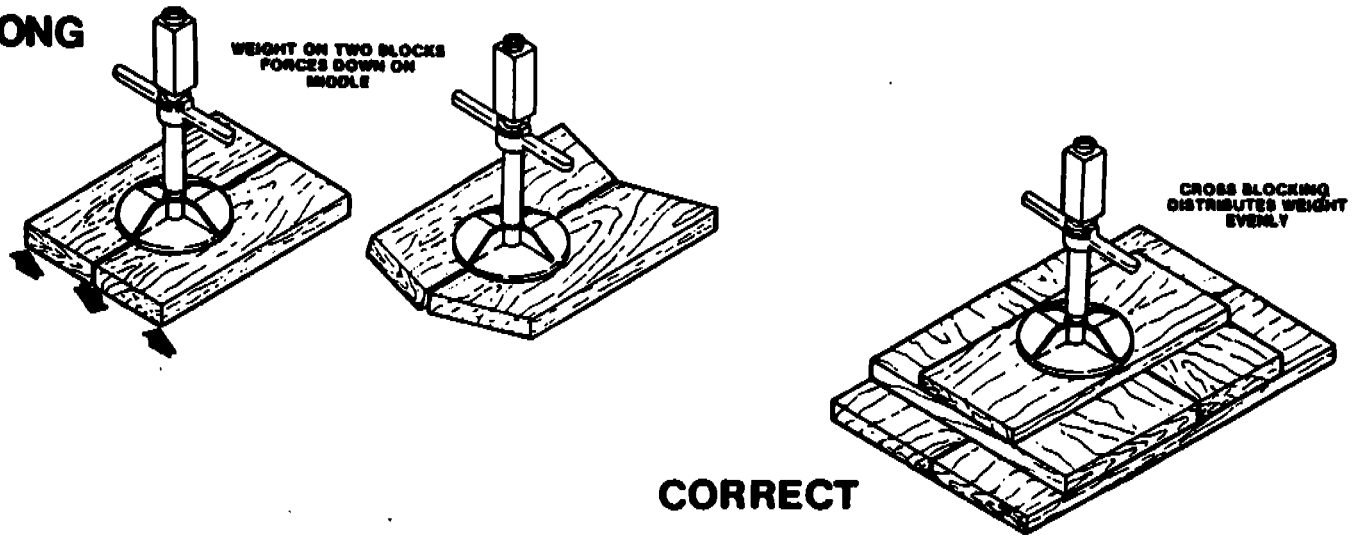
Locate and weld the pear links on each tower leg as shown in the following illustration. All work must be performed by competent, qualified mechanics, capable of understanding the function of the parts and their proper installation.



BLOCKING PROCEDURE

Always perform the following procedure before operating the ride.

1. Inspect the blocking under each of the four trailer leveling jacks, the four screw jacks and the two outrigger jacks. Good, solid blocking, preferably wooden 3 x 12's, must be placed under each jack point. As blocks are stacked, criss-cross each layer, ending the stack with a single block as shown in the following illustrations.



2. Make sure the lock rings on the leveling jacks are tight up against the bottom of the jack. All needle valves and the hand pump valve must be OPEN to relieve hydraulic pressure in the leveling jacks. This is important, because hydraulic oil in the jacks can expand when exposed to heat, such as direct sunlight, causing the jack to extend.

3. The outrigger jacks must be extended down against the blocking until snug. DO NOT OVER-TIGHTEN THE OUTRIGGER JACKS TO AVOID A PRE-LOADING CONDITION IN THE OUTRIGGERS.

TIE-DOWN PROCEDURE

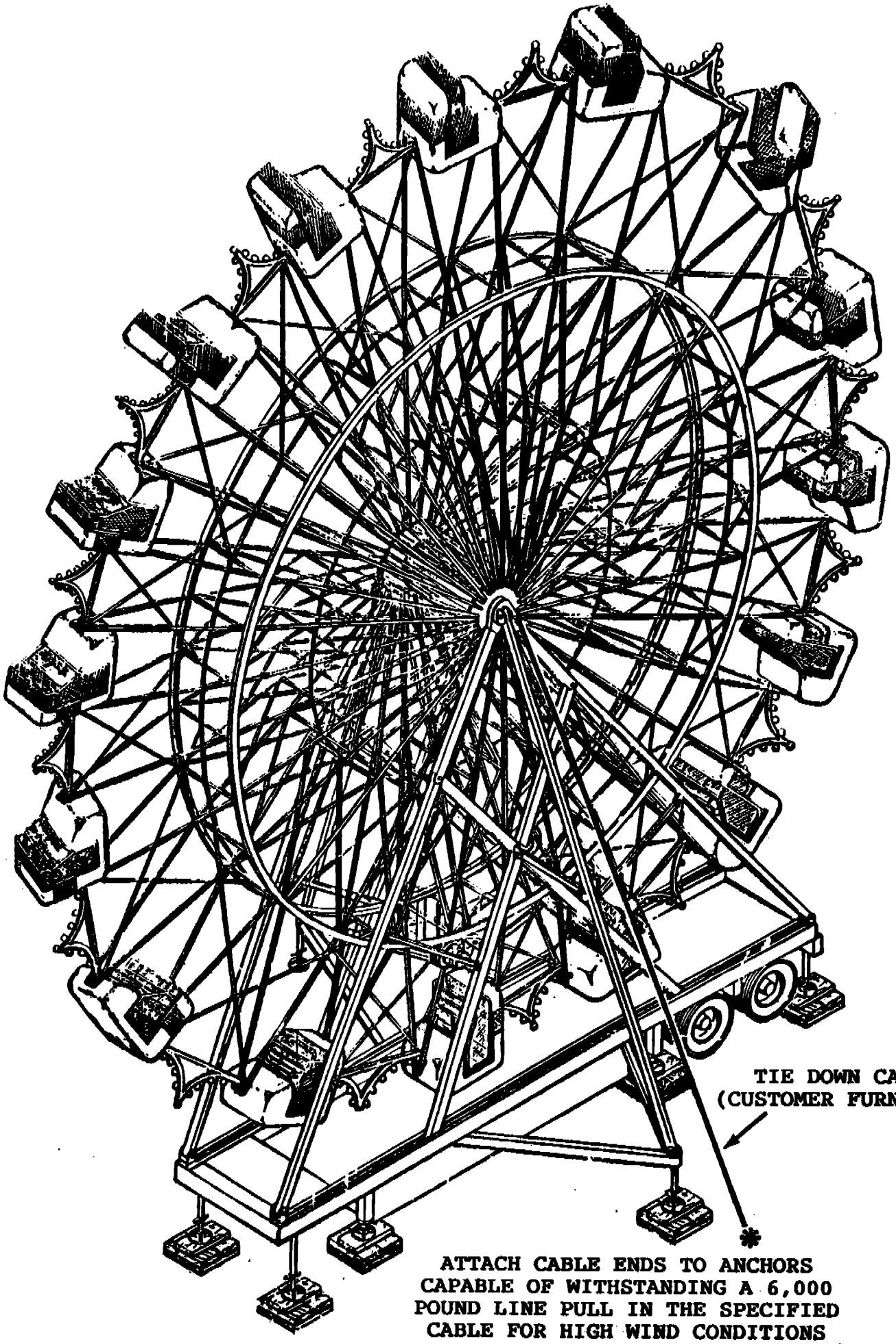
WARNING: DUE TO UNPREDICTABLE CONDITIONS GENERATED BY HIGH WINDS, SUCH AS MICRO-BURSTS, THE MANUFACTURER CANNOT GUARANTEE THE STABILITY OF THE RIDE IN HIGH WINDS. ALWAYS OBSERVE THE FOLLOWING PRECAUTIONS TO HELP PREVENT DAMAGE TO EQUIPMENT, AND INJURIES TO PASSENGERS AND/OR BYSTANDERS:

- **NEVER OPERATE THE RIDE WITH PASSENGERS IN WINDS EXCEEDING 35 MPH.**
- **IT IS RECOMMENDED THAT THE RIDE BE TIED DOWN AS DESCRIBED IN THIS BULLETIN IF WINDS OVER 50 MPH ARE ANTICIPATED.**
- **TIE-DOWNS ARE REQUIRED TO ASSIST IN STABILIZING THE RIDE DURING HIGH WINDS.**

When high wind conditions are anticipated, use the following procedure to tie-down the ride. Use **1/2" Extra Improved Plow Steel Cable.**

1. Attach cables to the pear links on the tower legs. Attach the other end of each cable to anchors capable of withstanding a 6,000 pound line pull in the specified cable. (See illustration on next page).

2. Tighten the cables until snug.



ATTACH CABLE ENDS TO ANCHORS CAPABLE OF WITHSTANDING A 6,000 POUND LINE PULL IN THE SPECIFIED CABLE FOR HIGH WIND CONDITIONS

Number: B03-0313-00

Date: Nov. 18, 1987

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

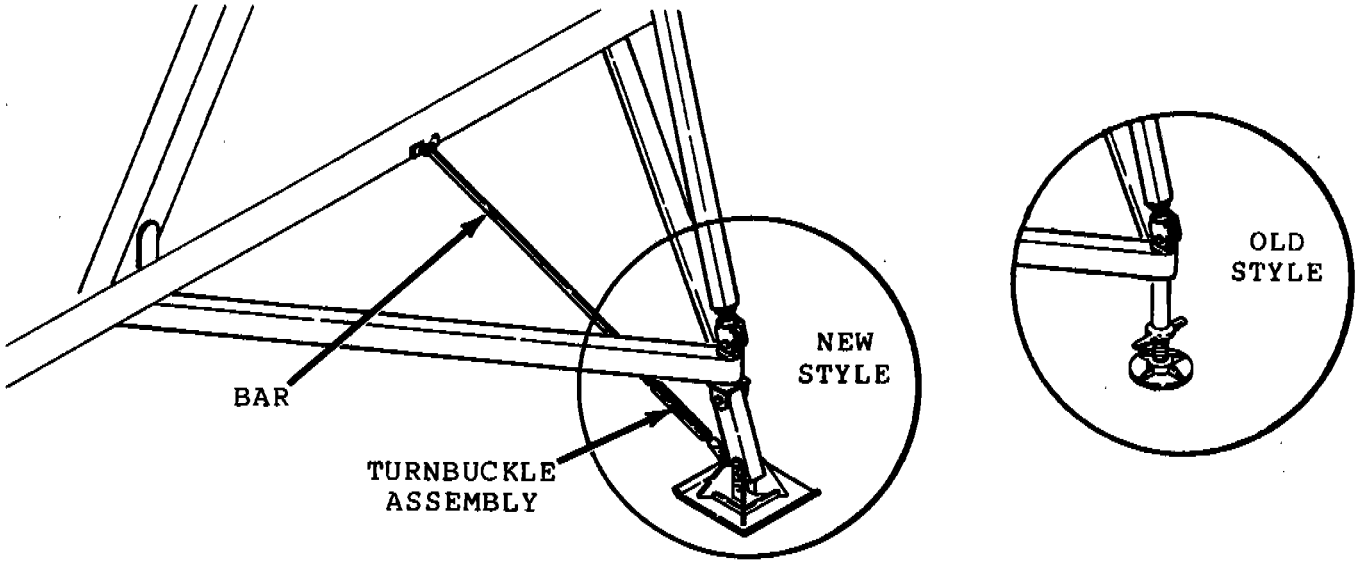
Effective Serial Numbers: See Text

Ride: SKY DIVER & ASTRO WHEEL

Subject: Outrigger Support Brace Rework

CHANCE MANUFACTURING COMPANY, INC. has developed a rigid brace to replace the existing bar and turnbuckle brace on the new style outrigger supports on SKY DIVERS and ASTRO WHEELS. This rigid brace will further increase the stability of the outriggers.

NOTE: If your ride does not have the new style outrigger supports, this bulletin does not apply and can be disregarded.

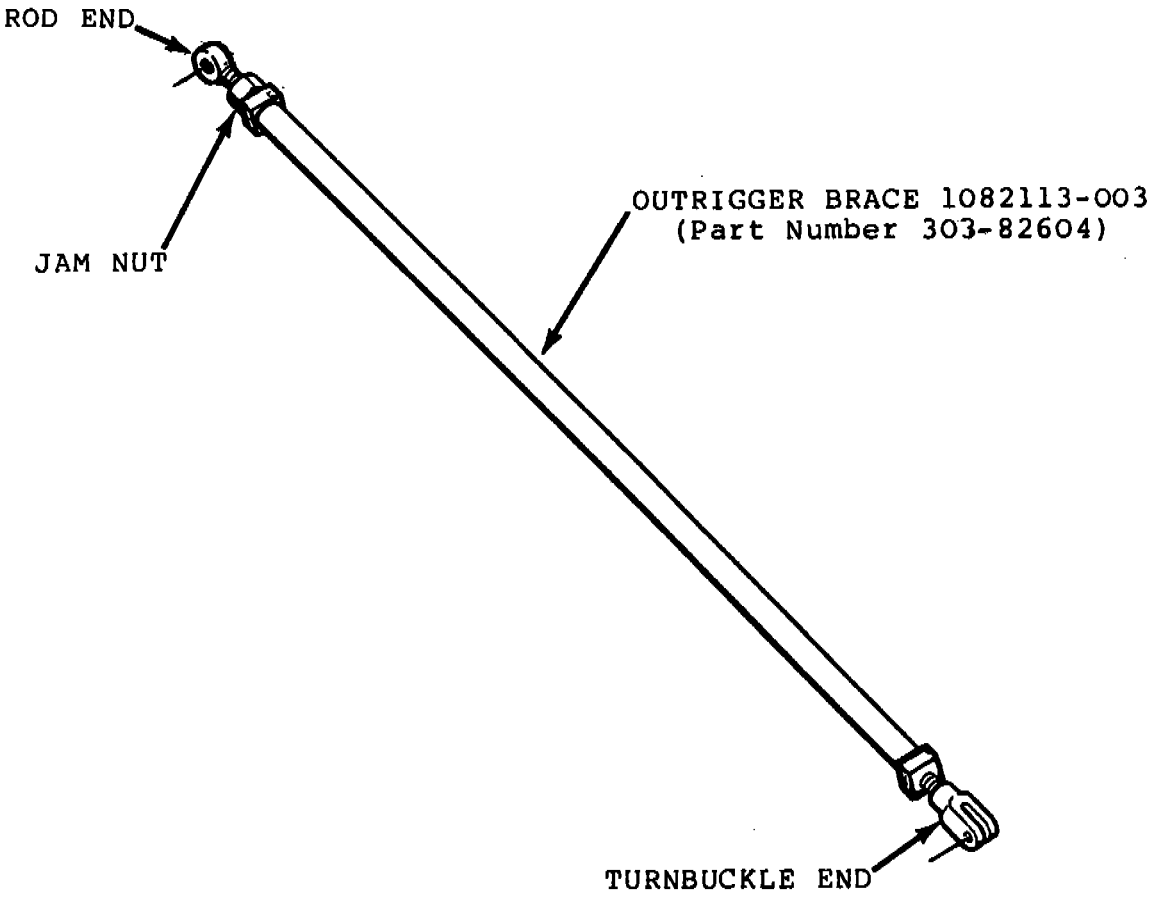


CHANCE MANUFACTURING CO., INC. requires that owners of all SKY DIVER and ASTRO WHEEL amusement rides with new style outrigger supports, perform the rework described in this bulletin. Use the instructions on the reverse side of this bulletin and the parts provided. Return the Certification Of Compliance within fifteen (15) days from receipt of this bulletin.

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.

Order Kit Number K03-0313-00, which consists of the following parts:

Part No.	Description	Quantity
303-82604	OUTRIGGER BRACE (1082113-003)	2



INSTALLATION INSTRUCTIONS

> ⚠ CAUTION: THE TOWER LEGS MUST BE FULLY LOWERED BEFORE THE OUTRIGGER SUPPORTS ARE DISASSEMBLED, TO PREVENT THE RIDE FROM TIPPING.

1. Remove the bar and turnbuckle assembly from one side of the ride.
2. Install the new outrigger brace using the existing hardware.

   NOTE: Turn the rod end and the turnbuckle end into outrigger brace an equal number of turns.

3. Adjust the outrigger brace until tight. Tighten the jam nut.
4. Repeat the procedure for the other side of the ride.

Number: B03-0252-00

Date: June 20, 1984

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

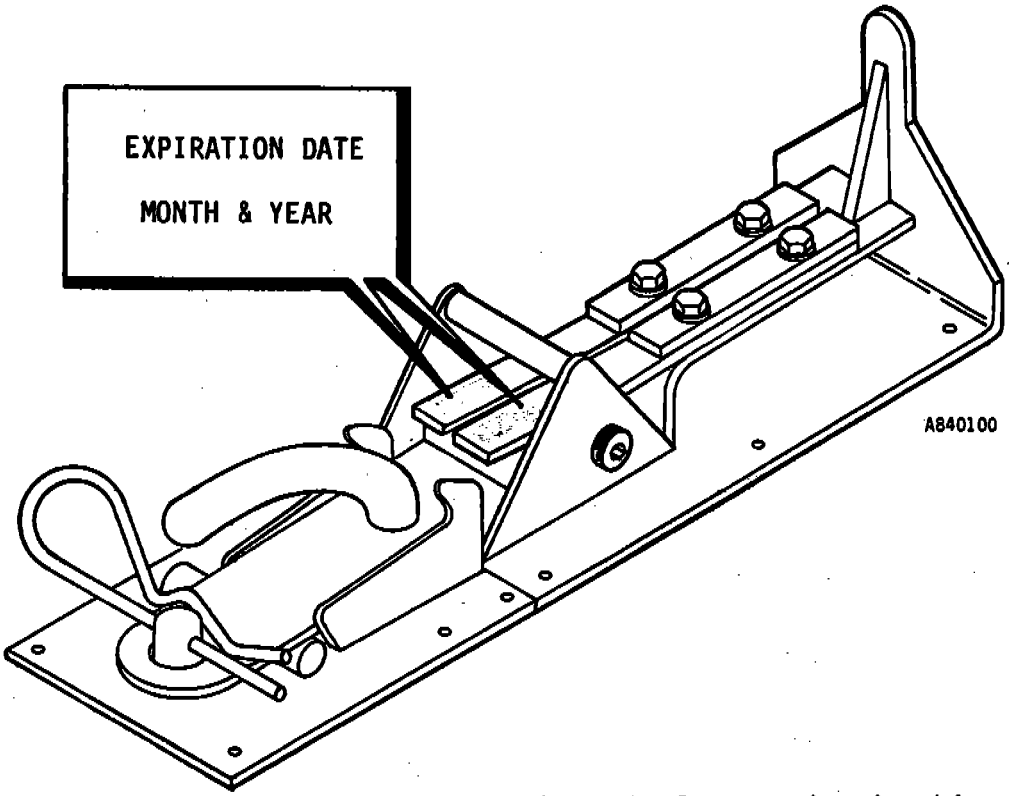
Effective Serial Numbers: All Units

Ride: SKY DIVER

Subject: Replacement of Leaf Springs in Seat Hatch Latch

CHANCE MANUFACTURING CO., INC. wishes to emphasize the importance of yearly replacement of the leaf springs on all seat hatch latches.

An expiration date is electrically etched into each leaf spring in the location shown below.



The expiration date is one year from the date the leaf spring is shipped from CHANCE MANUFACTURING CO., INC. ALL LEAF SPRINGS MUST BE REPLACED ON OR BEFORE THE EXPIRATION DATE. DO NOT OPERATE THE RIDE UNTIL ALL LEAF SPRINGS HAVE BEEN REPLACED. Destroy the old leaf springs immediately after removal.

(over)

IMPORTANT: If the expiration date has been altered, painted over, or is illegible, the leaf spring must be replaced.

Order new leaf springs each year as follows:

Quantity Reqd. Per Ride	D.P. Number	Description
32 (2 per seat)	303-72053	Leaf Spring (1081179)

CHANCE MANUFACTURING CO., Inc.

Number: B03-0202-00

Date: 7-24-80

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 65-1201 thru 73-1256

Ride: SKYDIVER & ASTRO WHEEL Subject: BRAKE KIT

This is to inform Skydiver owners that a brake replacement kit is available to change the existing air over hydraulic brakes to straight air brakes.

THIS IS NOT A MANDATORY CHANGE. The kit (#K03-0202-00) was developed due to inaccessability of parts for air over hydraulic systems.

If this kit is ordered, all brake units on the Skydiver must be changed, as air over hydraulic and straight air systems do not operate using the same system components.

If you have any questions concerning this brake kit, contact Chance Manufacturing Co., Inc. for assistance.

PARTS LIST

QUANTITY	DESCRIPTION	PART NUMBER
4	MOUNTING PLATES	303-55055
4	BRAKE HUBS	303-35311
1	AIR LINE MANIFOLD ASSEMBLY	303-43251
4	BRAKE ELEMENT (#8CB250)	290-24649
32	5/16-18 x 3/4" CAPSCREWS	686-07492
32	5/16 LOCKWASHERS	696-85372
4	1/4-18 NPT PIPE PLUG	688-27808
4	1/4 TO 1/8 NPT REDUCER BUSHING	688-27000
4	90° SWIVEL ADAPTER	685-00680
1	DRAWING # K03-0202-00	SHEET 1

Number: B03-0188-00

Date: 3-29-79

Supersedes:

America's Largest Manufacturer of Amusement Rides

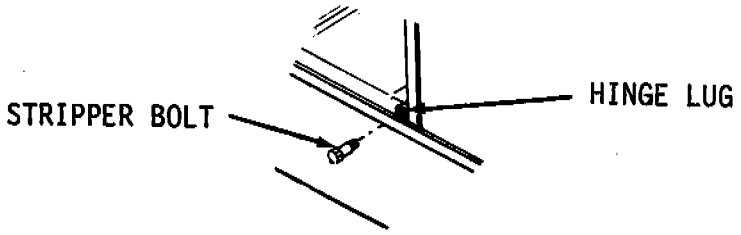
SERVICE BULLETIN

Effective Serial Numbers: ALL RIDES

Ride: SKYDIVER Subject: HATCH SAFETY CATCH

If you no longer own this ride, please advise Chance Manufacturing of the new owners name and address.

Chance Manufacturing is requiring all Skydiver owners to inspect each hatch hinge point on their ride. If any cracked hatch hinge lugs or excessively worn stripper bolts are found, the hinge must be replaced.



Chance Manufacturing has available a new bolt on hatch hinge which has a safety catch as an integral part. You must order either right or left hand hinges (looking from rear of car) as required.

If no excessively worn or cracked hinges are found, Chance Manufacturing is requiring owners to install a hatch safety catch. This will prevent the hatch from coming loose if the hatch hinge should break.

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

Before installing this kit, read the instructions completely and familiarize yourself with the parts listed. Make certain all parts have been received. If any parts are missing, notify Chance Manufacturing Co. immediately. Do not substitute an inferior grade of material or part. Remove and discard all parts replaced by this kit.

The attached Certification of Compliance must be completed and returned to Chance Manufacturing Co., Inc. within seven (7) days of receipt of this bulletin.

If you have any questions concerning this installation bulletin, please contact Chance Manufacturing for assistance.

PARTS LIST

QTY.	PART DESCRIPTION	PART NUMBER
1	COMPLETE KIT	K03-0188-01
1	SERVICE BULLETIN	B03-0188-00
2	HATCH SAFETY CATCH	303-60168
2	1" BACK-UP PLATES	303-60167
4	1/4-20x2" HEX HEAD BOLTS	686-07012
4	1/4-20 LOCK NUTS	691-47808
1	CERTIFICATION OF COMPLIANCE	

INSTALLATION INSTRUCTIONS

1. Clamp hatch safety catch on 1" tube above hatch hinge with bottom of safety catch resting against the weld of the hatch hinge point and the bar pointing to the outside of the car. (See FIGURE A)

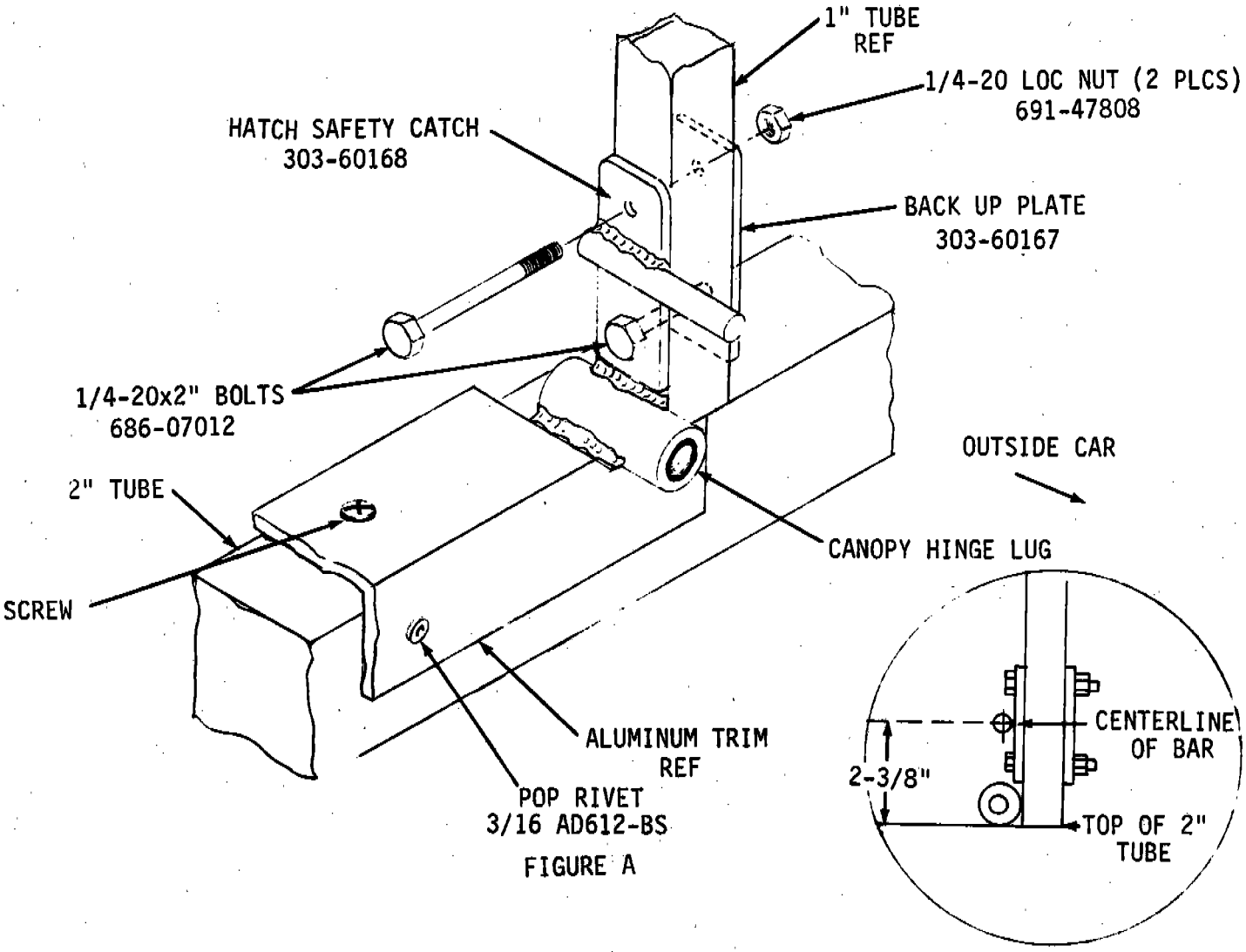


FIGURE A

2. Using safety catch as a guide and a 9/32" drill bit, drill two (2) holes through the 1" tube. Unclamp safety catch.

3. Install safety catch to tube, and back-up plate behind tube using two (2) 1/4-20x2" bolts and 1/4-20 loc nuts. Tighten nuts using 7/16" wrench.

INSTALLATION COMPLETE KIT K03-0188-02

PARTS LIST

QTY.	PART DESCRIPTION	PART NUMBER
1	CANOPY HINGE (LH)	303-08736
1	CANOPY HINGE (RH)	303-08735
1	2" BACK UP PLATE	303-49438
1	1" BACK UP PLATE	303-49437
2	1/4-20x2" HEX HEAD BOLTS	686-07012
2	1/4-20x3" HEX HEAD BOLTS	686-07020
4	1/4-20 LOCK NUTS	691-47808
1	5/8x3-1/2" STRIPPER BOLT	686-32229
1	1/2" FLAT WASHER	696-85530
1	1/2-13 FLEX LOCK NUT	691-48050

INSTALLATION INSTRUCTIONS

1. Remove canopy.

2. Remove screws and drill out pop rivets (using 3/16" or #11 drill bit) holding aluminum trim. Remove trim.

3. Use hack saw to remove damaged canopy hinge and grind remainder flush with steel tube.

CAUTION: DO NOT USE CUTTING TORCH TO REMOVE HINGE AS FIBERGLASS AND TUBING COULD BE DAMAGED BY THE HEAT.

4. Install new hinge to canopy using 5/8x3-1/2" Stripper bolt with flat washer and flex loc nut to the outside of the canopy. (Lubricate stripper bolt, but do not tighten at this time.) (See FIGURE B)

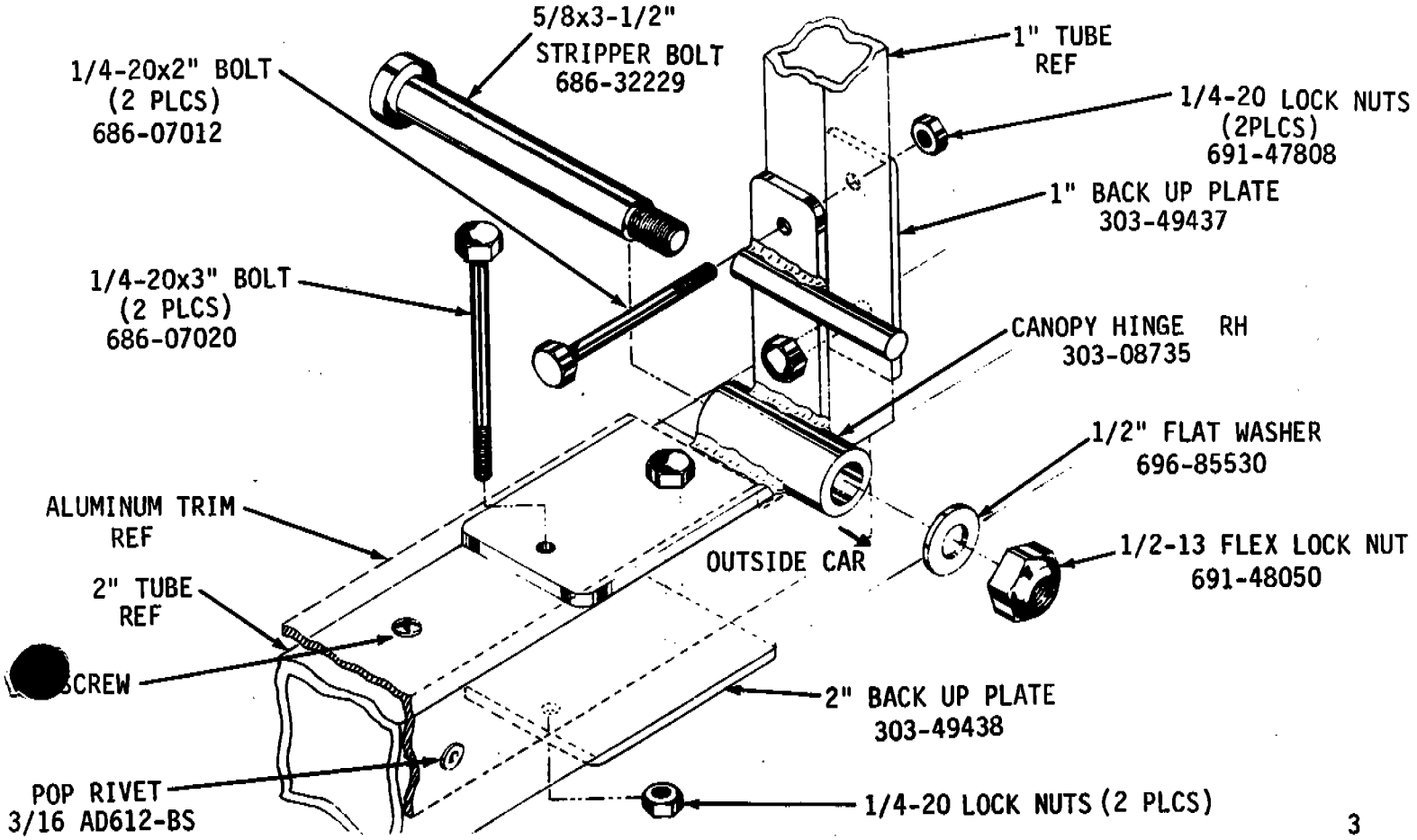


FIGURE B

5. With someone inside car, set canopy in place and clamp hinge to car frame (2" plate) with canopy in closed and locked position.

6. Open canopy and using 9/32" drill bit, drill two (2) holes in 1" tube using safety catch as a guide. Install back up plate behind tube, secure safety catch and back up plate to tube using 1/4-20x2" bolts and 1/4-20 loc nuts. Tighten nuts using 7/16" wrench.

7. Remove clamp. Clamp aluminum trim in place. A small amount of the aluminum trim may have to be removed to facillitate installation.

8. Using 2" back up plate as a guide and a 9/32" drill bit, drill two (2) holes through aluminum trim and 2" steel tube.

9. Install 2" back up plate underneath tube and secure safety catch and back up plate to tube using two (2) 1/4-20x3" bolts and 1/4-20 loc nuts. Tighten nuts with 7/16" wrench.

10. Re-drill screw holes to align using a 9/32" drill bit and re-install screw to hold down aluminum trim.

11. Re-drill pop rivet holes using #11 drill bit and install pop rivets (3/16 AD612-BS).

12. Re-check tightness on all bolts.

13. Tighten stripper bolt using 5/16" hex wrench and 3/4" wrench.

CHANCE MANUFACTURING CO., Inc.

Number: B03-0185-00

Date: 3-20-79

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 65-1201 THRU 73-1707

Ride: SKYDIVER & ASTRO WHEEL Subject: MOTOR MOUNT INSTALLATION

If you no longer own this ride, please notify Chance Manufacturing Co. of new owners name and address and serial number of ride.

Chance Manufacturing has been made aware of the fact that drive motors used on some early models of the SKYDIVER have become obsolete or that parts for those motors are no longer available. Chance Manufacturing is making available a replacement motor conversion kit. All four motors must be changed at the time of this conversion. Kits should be ordered from our parts department and installed on rides as required.
All work must be performed by competent, qualified mechanics capable of understanding the function of the parts and their proper installation.

Before installing this kit, read the instructions completely and familiarize yourself with the parts listed. Make certain all parts have been received. If any parts are missing, notify Chance Mfg. immediately. Do not substitute an inferior grade of material or part.

If you have any questions concerning this installation bulletin, please contact Chance Manufacturing for assistance.

PARTS LIST

QUANTITY	PART DESCRIPTION	PART NUMBER
1	COMPLETE KIT	K03-0185-00
1	SERVICE BULLETIN	B03-0185-00
4	(PRE ASSEMBLED) MOTOR ASSEMBLIES CONSISTING OF:	303-44901
	(1) 25M42A-11-C-20 MOTOR	203-44610
	(2) W43-20-20 FLANGE FITTING	290-27600
	(2) 1¼" TO 1" NPT REDUCER BUSHING	688-27208
	(8) 7/16-14 x 1-3/4 LG SOC HD CAPSCREW	686-10957
	(8) 7/16 HI COLLAR LOCK WASHER	686-85517

4	(PRE ASSEMBLED) MOTOR MOUNT ASSEMBLY	303-45180
	CONSISTING OF:	
	(1) #41286 BEARING CUP	290-05057
	(1) #50127 SEAL	290-64524
	(1) MOTOR MOUNT	303-53750
4	1/4x1/4x1-1/8 LG STD KEYSTOCK	490-90520
8	½-13x1¼ LG HEX HD CAPSCREWS	686-08418
	½" LOOK WASHERS	696-85378
24	3/8-16x1¼ LG HEX HD CAPSCREWS	686-07668
	3/8" LOCK WASHERS	696-85374
4	#41126 BEARING CONE	290-05078
16	CSN55-2, -1 GASKET	290-29909
4	#200 COUPLINGS	203-20228
1	#923446 CARTRIDGE KIT	203-38856.
1	M-2300-S Vickers Service Manual	
1	M-2304-S Vickers Parts Manual	
1	M-2740-S Vickers Service Manual	
1	M-2741-S Vickers Parts Manual	
1	Cone Drive Lubrication Manual	
1	Cone Drive Assembly Manual	
8	CSN55-2, -2 GASKET	290-29910
8	CSN55-2, -3 GASKET	290-29911

TO CONVERT TO NEW DRIVE MOTORS, MAKE THE FOLLOWING CHANGES:

1. Pump Change

   Replace the cover end pump cartridge of existing 3520V pump (located on end of electric motor with #923446 cartridge kit, following instructions given in Vickers Service Manual #M-2300-S. Restamp pump to 3520V35A8 (was previously 3520V35A11). (SEE FIGURE A)

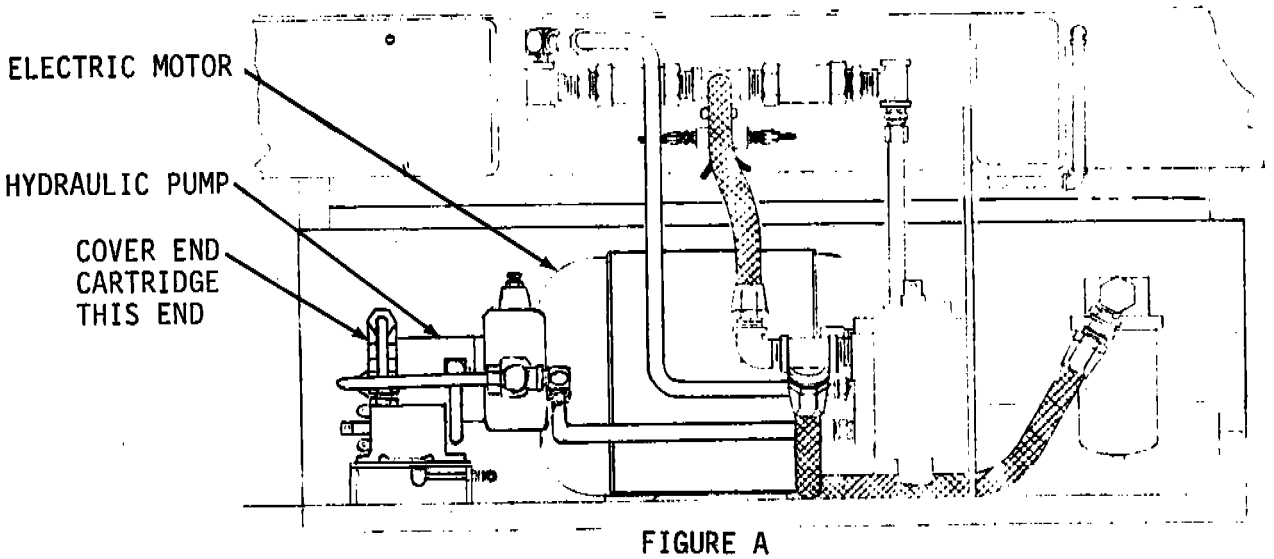
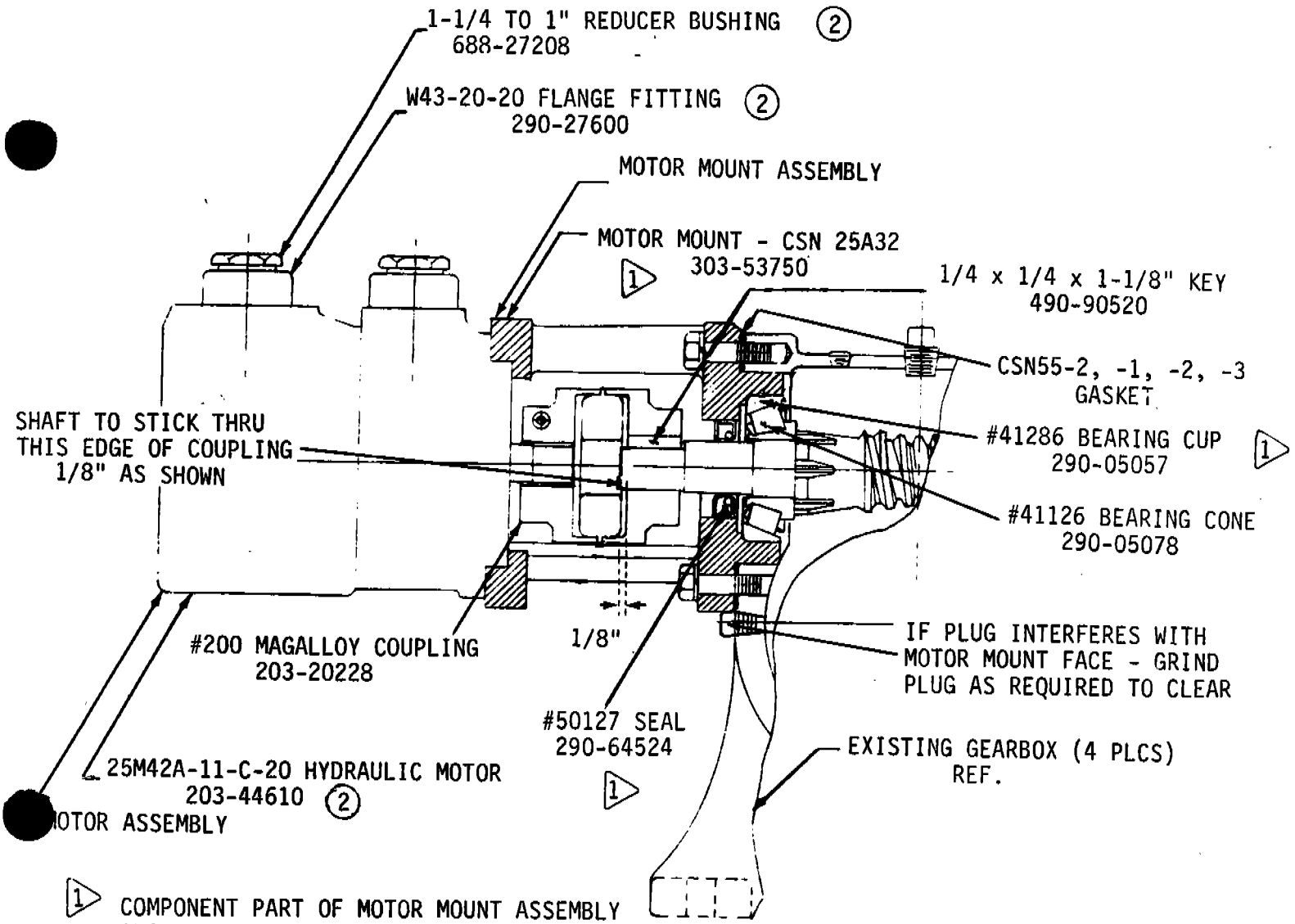


FIGURE A

2. Remove existing hydraulic motor, motor mount, couplings, bearing and gaskets from input side of drive gearbox. (SEE FIGURE B)

3. Install new bearing #41126 on input shaft and shim as required between motor mount and gearbox with CSN55-2, -1, -2 and -3 gaskets to adjust input shaft bearings. Use shim thickness of .030 for initial setting. Refer to Cone Drive Assembly Manual for proper adjustment.



1 COMPONENT PART OF MOTOR MOUNT ASSEMBLY SHOWN FOR REFERENCE ONLY

(2) COMPONENT PART OF MOTOR ASSEMBLY SHOWN FOR REFERENCE ONLY

FIGURE B

NOTE: Index motor mount assembly as required to locate hydraulic motor ports in proper alignment when hydraulic motor is installed.

4. Install straight bore section of #200 Magalloy coupling onto input shaft until end of shaft sticks thru coupling inside face by 1/8". Install 1/4x1/4x1-1/8" long key and lock in place with setscrew. Slip rubber insert into place in coupling.

5. Install splined section of coupling on #25M motor shaft. Mount motor on end of mount assembly rotating properly to match existing hydraulic lines. Slip hydraulic motor half of coupling forward rotating as required to slip tangs into rubber insert until both halves are nested together. Tighten socket head capscrew, provided with coupling, on motor half of coupling on motor shaft.

NOTE: All four drive units must be altered at this time.

6. Before use, replace oil in gearbox with clean oil. See Cone Drive Lubrication Manual for correct oil type. (Recommended Gear Oil MIL-L-205B - SAE 90-140).

7. Please return old hydraulic motors to Chance Manufacturing for a credit adjustment. Credit will be issued only if motors can be rebuilt.

Number: B03-0182-00

Date: 3-9-79

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: 65-1201 thru 78-1272

Ride: SKYDIVER

Subject: SEAT HATCH LATCH

If you no longer own this ride, please notify Chance Manufacturing Co. of new owners name and address and serial number of ride.

To help prevent improper maintenance and misuse of the seat hatch latch, Chance Manufacturing is making a new latch available to all Skydiver owners. Owners should order the kits from our parts department and install them on their rides immediately. Chance Manufacturing is offering these kits at bare manufacturing cost.

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

Before installing this kit, read the instructions completely and familiarize yourself with the parts listed. Make certain all parts have been received. If any parts are missing, notify Chance Manufacturing Co. immediately. Do not substitute an inferior grade of material or part. Remove and discard all parts replaced by this kit.

The attached Certification of Compliance must be completed and returned to Chance Manufacturing Co. within seven (7) days of receipt of kit.

If you have any questions concerning this installation bulletin, please contact Chance Manufacturing for assistance.

QUANTITY	PART DESCRIPTION	PART NUMBER
1	COMPLETE KIT	K03-0182-00
1	SERVICE BULLETIN	B03-0182-00
1	LATCH ASSEMBLY	303-39680
2	SPACER	303-70000
1	LATCH PLATE	303-54045
1	LATCH BRACE	303-08418
1	HAIR PIN (1/4")	694-51905
8	GRADE 5 HEX HD BOLTS (1/4-20x1-3/4")	686-07010
2	GRADE 5 HEX HD BOLTS (1/4-20x1")	686-07004
2	GRADE 5 HEX HD BOLTS (1/4-20x2")	686-07012
2	GRADE 5 HEX HD BOLTS (1/4-20x2-1/4")	686-07014
4	1/4" FLATWASHER	696-85302
14	LOCK NUTS (1/4-20)	691-47808
1	1/2" DRILL BIT (1/4" SHANK)	
1	CERTIFICATION OF COMPLIANCE	

* ITEMS SHOWN IN BRACKET IS QUANTITY REQUIRED FOR ONE (1) CAR LATCH INSTALLATION. FOR FULL RIDE REWORK, MULTIPLY BRACKETED QUANTITY BY 16.

TOOLS YOU WILL NEED FOR THIS INSTALLATION: 1/4" DRILL MOTOR, HACKSAW, 9/32" DRILL BIT, 7/16" SOCKET OR WRENCH, 6" C-CLAMP

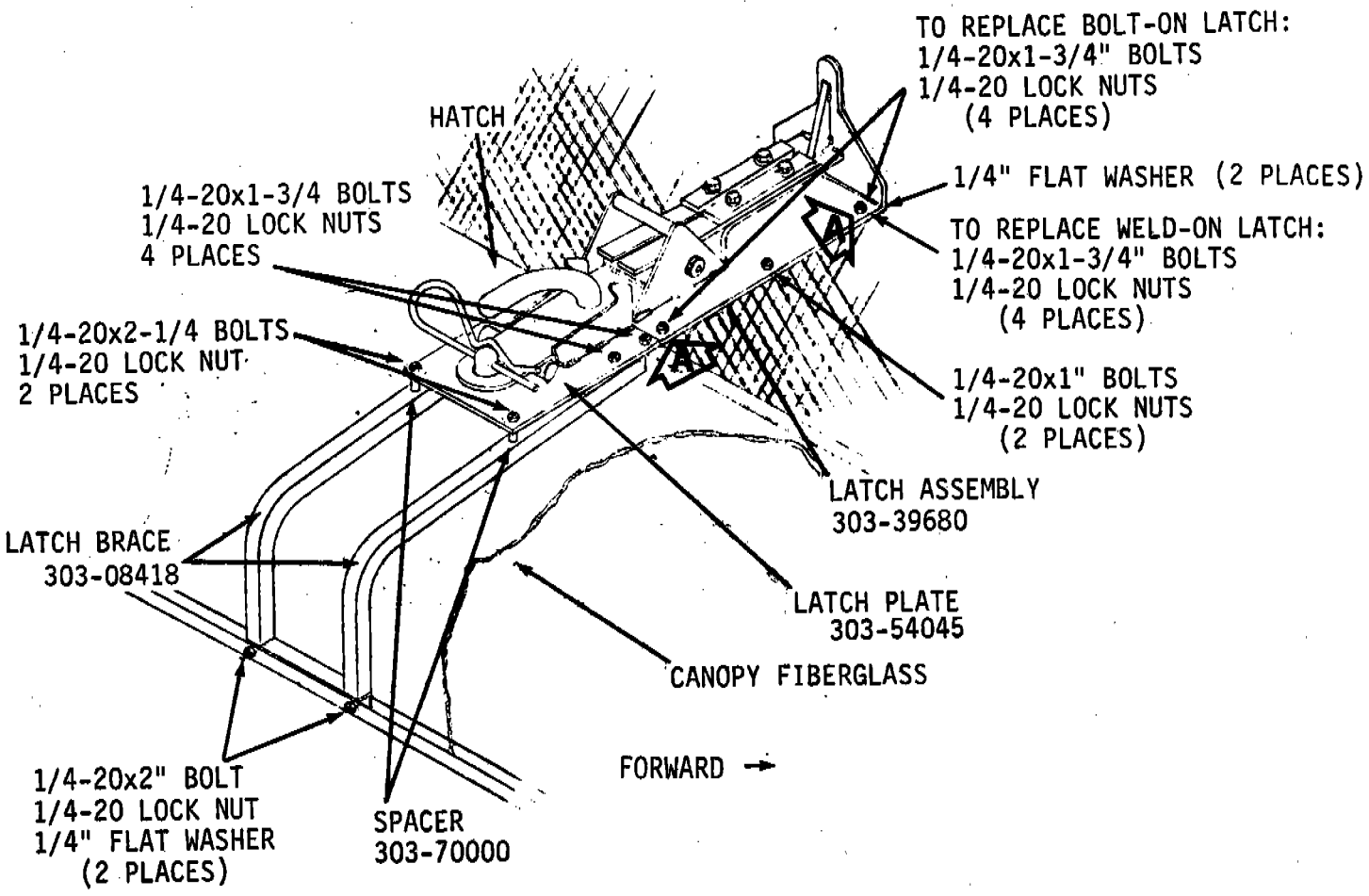


FIGURE A

INSTALLATION INSTRUCTIONS

A. To install latch assembly (303-39680) to hatch.

NOTE: There are two different models of hatch assemblies. Earlier models (Serial Numbers 65-1202 THRU 74-1259) have latch components that are welded to the hatch. Later models (Serial Numbers 65-1201, 75-1260 THRU 78-1272) have latch components that are bolted to hatch. Each type will be covered in this bulletin.

1. Weld on type (65-1202 THRU 74-1259) - Cut old latch off of hatch as shown in Figure B and grind remainder of latch level with top of screening. Position new latch assembly as shown in Figure A and drill four (4) 9/32" mounting holes through hatch frame (Arrow A). Attach latch to hatch frame using four (4) Grade 5, 1/4-20x1-3/4 bolts and 1/4-20 lock nuts. Heads of bolts must be on the inside of the car.

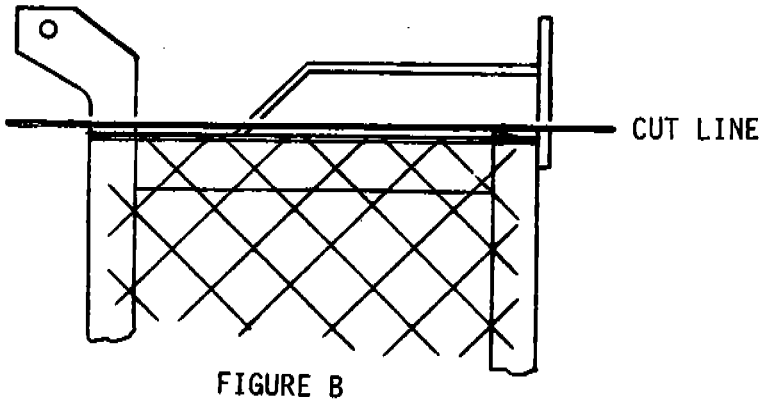


FIGURE B

2. Bolt on type (65-1201, 75-1260 THRU 78-1272) - Remove old latch. Use four (4) Grade 5, 1/4-20x1-3/4 bolts and two (2) Grade 5, 1/4-20x1" bolts and six 1/4-20 locknuts to secure new latch assembly to hatch. Heads of bolts must be inside car.

B. To install latch plate (303-54045) to canopy. (All Units)

1. Remove old latch catch from canopy. Remove approximately 5" of aluminum trim with a hack saw from the canopy to clear new latch plate. (See Figure C).

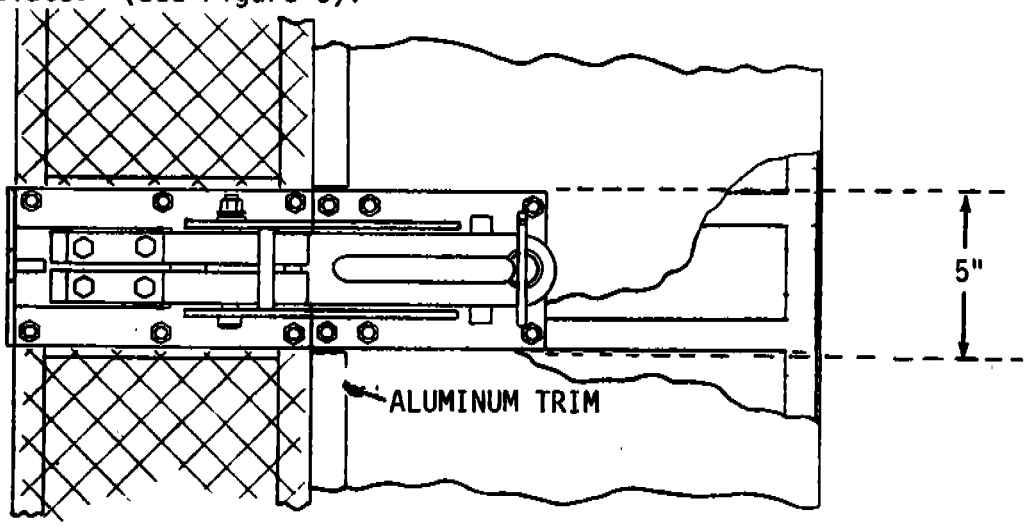


FIGURE C TOP VIEW

2. Position latch plate on canopy and align with front half of latch assembly. Set edge of latch assembly flush with edge of canopy. Make sure alignment between the latch plate and latch assembly is as level as possible, allowing latch plate to be no more than 1/8" above or below plate of latch assembly. (See Figure E).

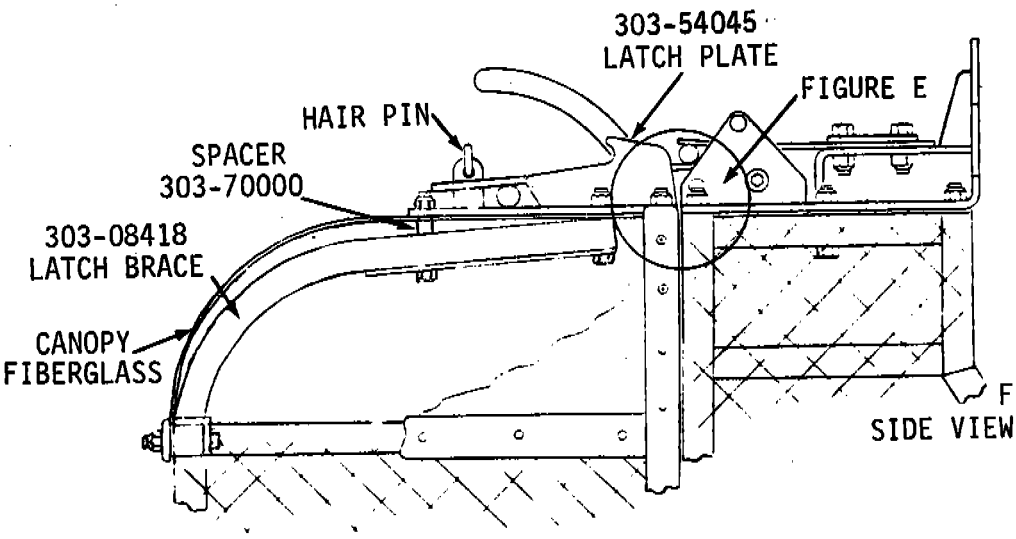


FIGURE D
SIDE VIEW - EARLY MODELS

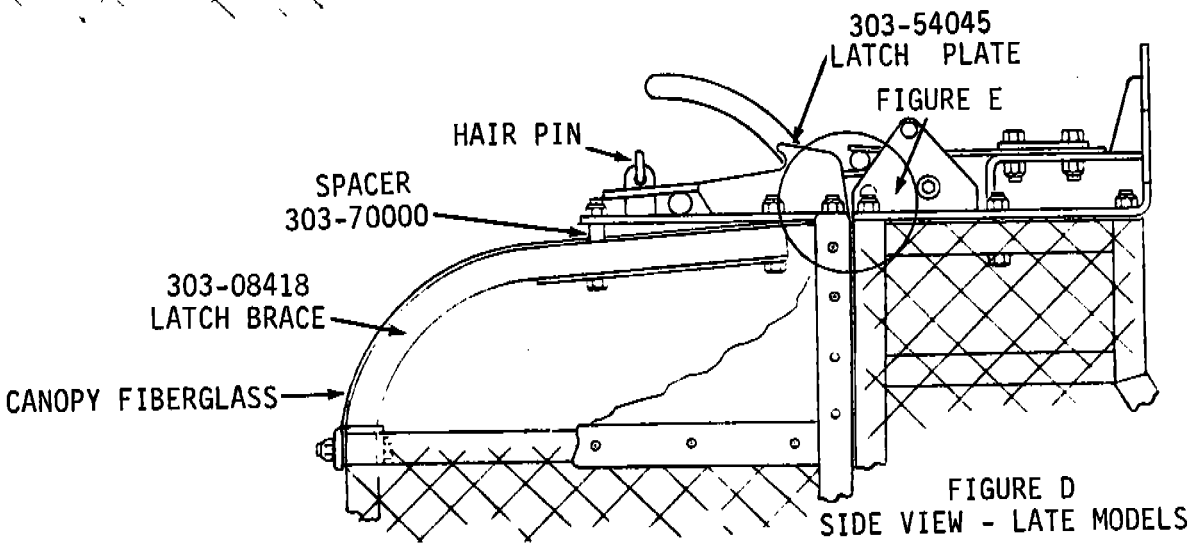


FIGURE D
SIDE VIEW - LATE MODELS

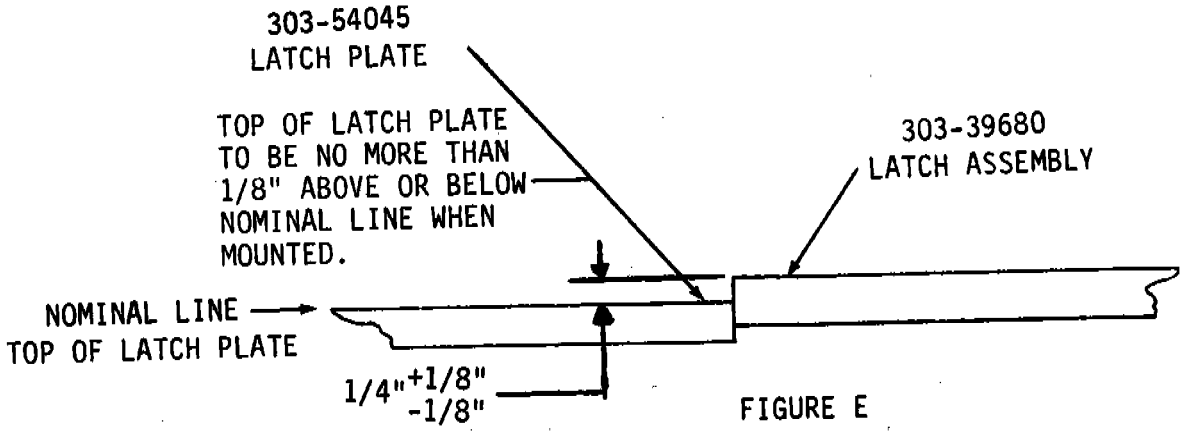


FIGURE E

3. Drill six 9/32" holes in canopy fibergalss to match holes in latch plate. Remove latch plate and using the two (2) rear holes as pilot holes and using a 1/2" drill bit, drill out holes to 1/2" diameter. (Clearance holes for spacers). Secure latch plate to canopy frame with two (2) Grade 5, 1/4-20x1-3/4" bolts and 1/4-20 lock nuts at front of canopy. Heads of bolts must be on inside of car.

4. Use holes drilled in canopy fibergalss to align latch brace on inside of canopy as shown in Figures A and C. Using C-clamp, clamp foot of latch brace to frame tube at rear of canopy. Drill four (4) 9/32" holes in latch brace to match holes in latch plate. Install two (2) spacers between latch brace and latch plate, thru fiberglass. Secure latch brace to latch plate with two (2) Grade 5, 1/4-20x1-3/4" bolts, two (2) Grade 5, 1/4-20x2-1/4" bolts and 1/4-20 lock nuts. Heads of bolts must be on inside of car.

5. Drill two 9/32" holes out through canopy frame tube to match holes in foot of latch brace. Secure latch brace to canopy frame tube with two (2) Grade 5, 1/4-20x1-3/4" bolts and 1/4-20 lock nuts. Heads of bolts must be on inside of car.

CAUTION: TORQUE ALL BOLTS TO APPROXIMATELY 54 INCH POUNDS (LUBRICATED TORQUE) BEING CAREFUL TO NOT OVER TORQUE.

OPERATION OF LATCH

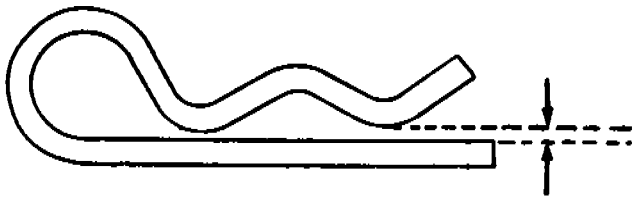
After latch assemblies are completely installed, check and inspect the operation of each latch assembly.

Close hatch engaging first catch (approximately 3" before car is closed). Close hatch further engaging second catch (car completely closed) and latch assembly closes over safety knob and hair pin can be inserted.

HAIR PINS

Hair pins must be inserted and removed from the latch by hand only. If hair pin cannot be inserted by hand correct the misalignment condition.

All hairpins are expendable items and will become sprung after repeated use. Clearance at the outer lobe of the hairpin must always be at least 1/16" less than the edge of hole to edge of safety knob thickness or be replaced. This ensures a reasonable amount of force will be required to insert or remove the hairpin. A hairpin that is easily inserted and removed must not be used under any condition.



MUST BE AT LEAST 1/16" LESS THAN EDGE OF HOLE TO EDGE OF SAFETY KNOB THICKNESS

Number: 03-163A

Date: 9-19-78

Supersedes: 03-163

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers: **ALL UNITS**

Ride: SKYDIVER

Subject: MAINTENANCE INSPECTION

THIS BULLETIN SUPERCEDES 03-163 WHICH MAY HAVE CONTAINED MISLEADING OR ERRONEOUS INFORMATION. DESTROY ALL COPIES OF 03-163 IMMEDIATELY.

This bulletin is being issued to point out in detail several operating and maintenance practices on the Skydiver that are necessary to maintain the safety of the ride. These items should be checked daily along with the remainder of the FIELD INSPECTION POINTS listed at the end of this bulletin.

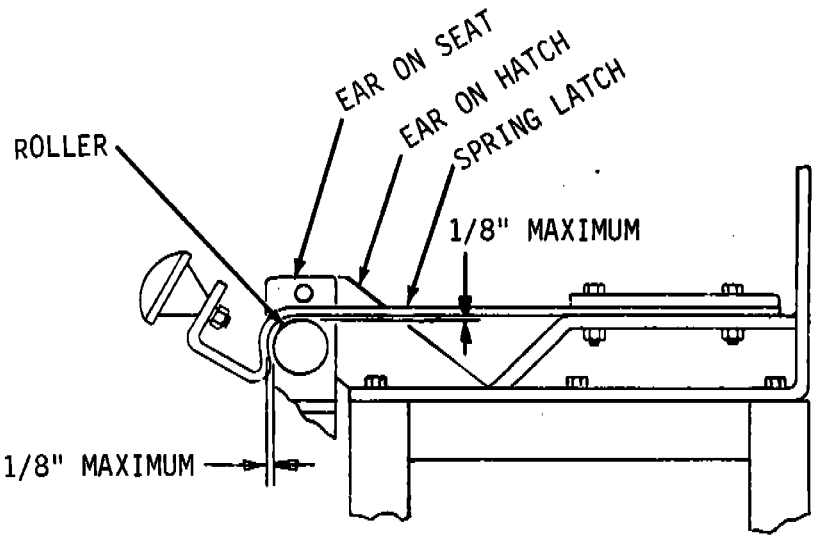
Inspection of the ride must be performed by competent, qualified mechanics capable of understanding the function of the parts and their proper installation.

LATCH MECHANISMS

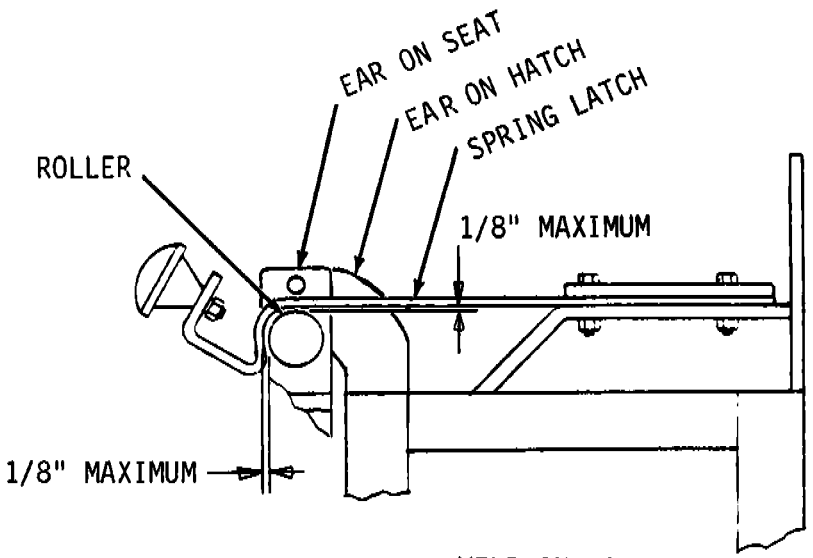
The spring latch is used as the primary latch and the hair pins are used as secondary safety pins on the latch mechanism for the seat hatch. Both the spring latch and hair pin latch must be in good working order before the ride can be operated. In no event should the ride be operated if either one of the latches is not in good working order.

SPRING LATCH

The spring latch must lie flat when the hatch is fully closed and not be forced to curve up by the height of the roller. There must be no more than 1/8" clearance between the spring latch and the roller. (See Figure A) If spring latch does not fit properly contact Chance Manufacturing Co., for proper repair procedures or replacement parts.



BOLT ON LATCH



WELD ON LATCH

FIGURE A

Do not attempt to straighten or repair the spring latch in any way. Each spring latch must be replaced annually and on or before the expiration date (month and year) etched at the knob end. Replace all spring latches that are not dated.

HAIR PIN

Hair pins must be inserted and removed from the latch by hand only. If hair pin cannot be inserted by hand correct the misalignment condition.

A new hairpin, inserted in a latch having maximum 1/4" edge of hole to edge of ear thickness, (See Figure C), will require the maximum force to insert and remove.

A hairpin inserted in a latch having a worn or notched condition that reduces the edge of hole to edge of ear thickness to a minimum allowable of 3/16" (See Figure C), will require less force to insert.

All hairpins are expendable items and will become sprung after repeated use. Clearance at the inner lobe of the hairpin, Figure B, must always be at least 1/16" less than the edge of hole to edge of ear thickness or be replaced. This ensures a reasonable amount of force (approximately 8 pounds or more) will be required to insert or remove the hairpin. A hairpin that is easily inserted and removed must not be used under any condition.

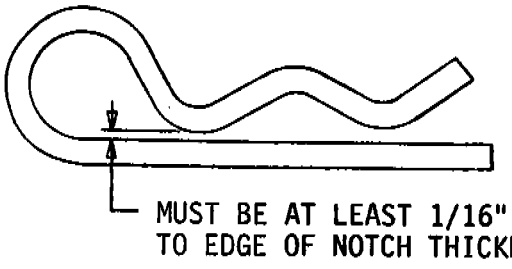


FIGURE B

Do not use a hammer to insert or remove the hair pins. Using a hammer may cause the hairpin to turn to one side and be forced over the ear in a position where the material thickness is greater than the hair pin is designed for. This can cause the hair pin to be sprung beyond its usable dimensions.

LATCH

The amount of material between the top of the pin hole and the top of the ear must fall within the tolerances shown in Figure C. Replacements should be ordered for latches that cannot be maintained or repaired.

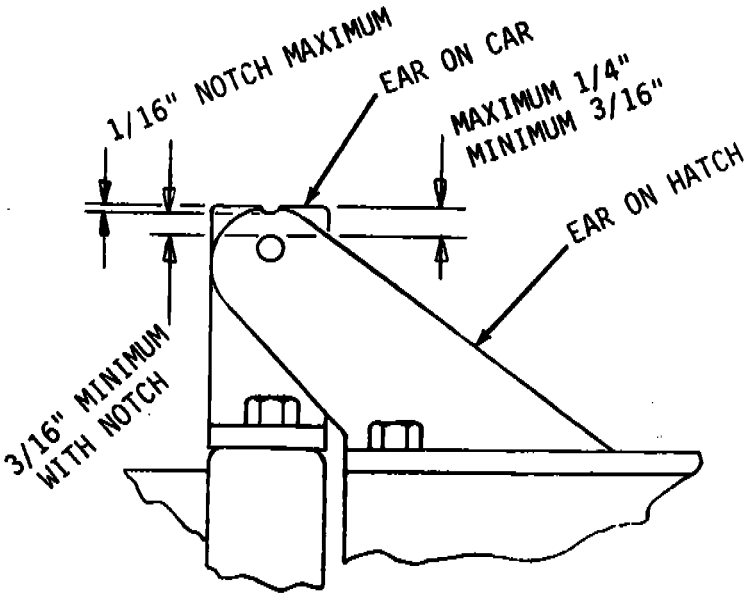


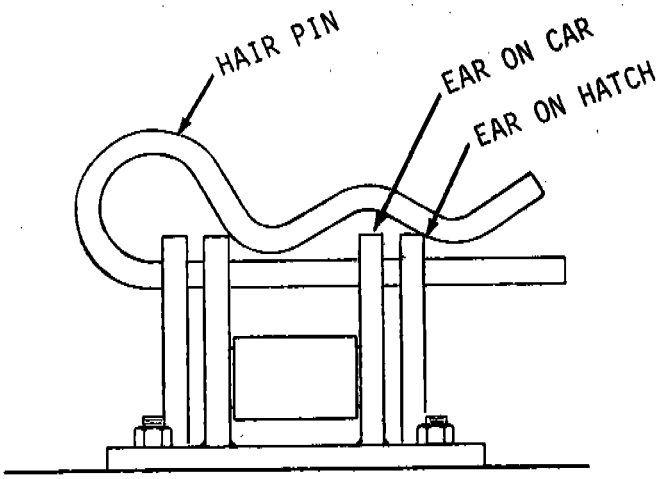
FIGURE C

If the tops of the ears become worn beyond the allowable tolerance they may be built up by welding and then ground down to the allowable tolerance.

All welding must be performed by a welder that is certified under the American Welding Society Structural Welding Code DI. 1-75 or the equivalent.

The holes for the hair pin in the ears must match so that they are aligned when the hatch is fully closed. If the hatch has been sprung or the ears forced out of position they should be realigned.

All four ears must be the same height. Under no circumstances should the outer ears be higher than the inner ears. (See Figure D).



ALL FOUR EARS MUST BE THE SAME HEIGHT

FIGURE D

HATCH

Check to see that hinge bolts are tight and in good working order. Hatch must open and close without binding. Inspect car and hatch to see that there are no restrictions that will keep the hatch from closing properly. Do not fasten hair pin to car or hatch. Chain may fall in opening and restrict hatch from closing properly.

STEERING WHEEL

Steering wheels must be kept operable. If steering wheel continually becomes loose check steering wheel shaft and nut for wear or damage. Check steering column for worn or damaged mounting brackets or bearings. Replace any worn or damaged parts. Loctite may be used on steering wheel acorn nut. Old style spoke type steering wheels must not be used. Replace with new disc type wheel.

STEERING GEAR COVER

Check to see that the cover over the steering gears inside the front of the car is in place.

DRIVE

All four drive motors must be operable at all times. If less than four drive motors are connected to the pump, the amount of torque will be decreased and the hydraulic oil flow will increase to each motor. The loss of torque will make the ride harder to start and the increase in hydraulic oil flow to each motor will cause the ride to run faster.

The ride must never be operated faster than the maximum 8 RPM. A slight increase in speed greatly increases the centrifugal forces on the ride beyond the safety limits.

If you have any questions concerning this bulletin, please contact Chance Manufacturing for assistance.

DAILY INSPECTION

SUMMARY OF INSPECTION POINTS COVERED IN DETAIL

1. Check operation of each spring latch and see that it is not sprung.
2. Check clearance between spring latch and roller.
3. Check hair pin to see that it is not sprung.
4. Check alignment of holes in latch ears with hair pin.
5. Check material thickness on latch ears.
6. Check operation of hatch. Hinge bolts must be tight and hatch must open and close without binding.
7. Check for restrictions that would prevent hatch from closing properly.
8. Check steering wheel shaft and mounting brackets to see that they are not loose.
9. Check steering gear cover to see that it is in place.
10. Check the ride speed. Speed must not be more than 8 RPM.

THE FOLLOWING FIELD INSPECTION POINTS MUST ALSO BE CHECKED DAILY

11. Inspect blocking and leveling.
12. Inspect lock nuts on leveling jacks.
13. Inspect hydraulic valves for leveling jacks. Valves should be open to tank when lock nut is tightened.
14. Inspect for proper grounding.

15. Inspect fence and ramps for proper installation.
16. Inspect alignment of wheel relative to towers.
17. Inspect tower lock up pins.
18. Inspect outriggers and their attachments.
19. Inspect wind braces and knee brace assemblies.
20. Inspect for proper installation of spreader bars.
21. Inspect "A" frame attach pins.
22. Inspect "A" frame guy rod installation and attach points.
23. Inspect condition of fiberglass on cars.
24. Inspect condition of and attach points of car canopy assembly.
25. Inspect car hood guard assembly and attach points.
26. Inspect seat spindle bearings.
27. Inspect jack stands.
28. Inspect ride for excessive vibration.
29. Inspect structure for cracks, bad welds, etc.
30. Inspect electrical circuit for shorts, bad wires, etc.
31. Inspect for hydraulic leaks.
32. Inspect ride's overall appearance for cleanliness and general external upkeep.

CHANCE MANUFACTURING CO., Inc.

Number: 101A

Date: 6-12-75

Supersedes:

America's Largest Manufacturer of Amusement Rides

SERVICE BULLETIN

Effective Serial Numbers:

Ride: **SKYDIVER** Subject: **REPAIR OF CAR FRAME**

The repair work on the SKYDIVER Cars can be accomplished with ordinary tools, the only exception being the need of a Pneumatic Riveting gun. These guns can be rented, but be sure you specify that it be capable of pulling 3/16 diameter blind steel rivets. This type of gun is generally classed as Heavy Duty.

Tools Required for Repair

Mat or padding to protect fiberglass
Drill motor - #11 drill bits
(#12 or 3/16 will work if #11 not available)
Set of mechanics hand tools
A furniture clamp 42" capacity, or small load binder and short piece of chain
Welder and E7014XX rod 1/8 diameter
"C" clamps

NOTE

Some older cars may use sheet metal screws in place of pop rivets. Screws may be reused or replaced with pop rivets if desired.

PARTS REQUIRED (PER CAR)

Quantity	Part Number	Description
1	1081103-9	Doubler
2	1081103-6	Brace
1	2 x 2 x 1/4 x 26" lg.	Angle
6 oz.	#621	CSK Alum. Pop Rivet
10 oz.	#612	Steel Pop Rivet

REPAIR PROCEDURE

1. Remove the door hinge bolts and set door assembly aside.

2. Unbolt the skid channels from bottom of car.

3. Remove two of the carrying sockets from rear sides of car only. The front sockets do not have to be removed.

4. Remove trim around the rear spindle housing.

5. Drill out the rivets in the aluminum trim running around the mid-section, seat opening and rear of car. Do not remove trim around front of seat opening.

   If doing several cars, keep the trim, etc., with each respective car.

6. Drill out the rivets securing fiberglass to frame and remove glass.

7. Remove canopy hood, six bolts.

8. Drill out rivets securing seat and remove.

9. Inspect entire frame for cracks or fatiguing. If anything is found besides the area already diagnosed, consult the factory.

10. Weld all cracks and grind smooth where necessary.

11. Clamp the doubler tube and weld every three to four inches top and bottom.

12. Position side braces and weld both sides.

13. Position 2 x 2 angle and weld.

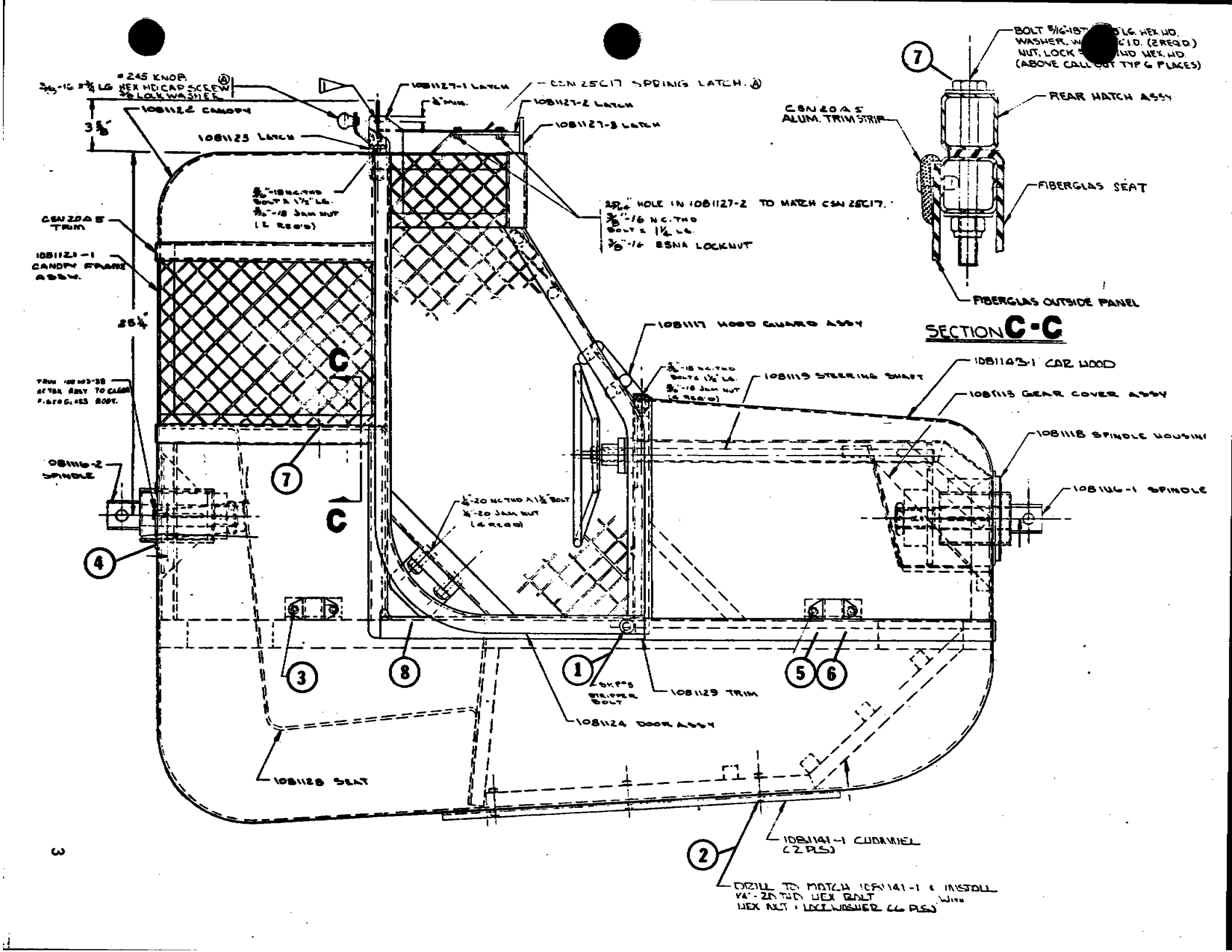
14. Paint all areas necessary and assemble in reverse order.

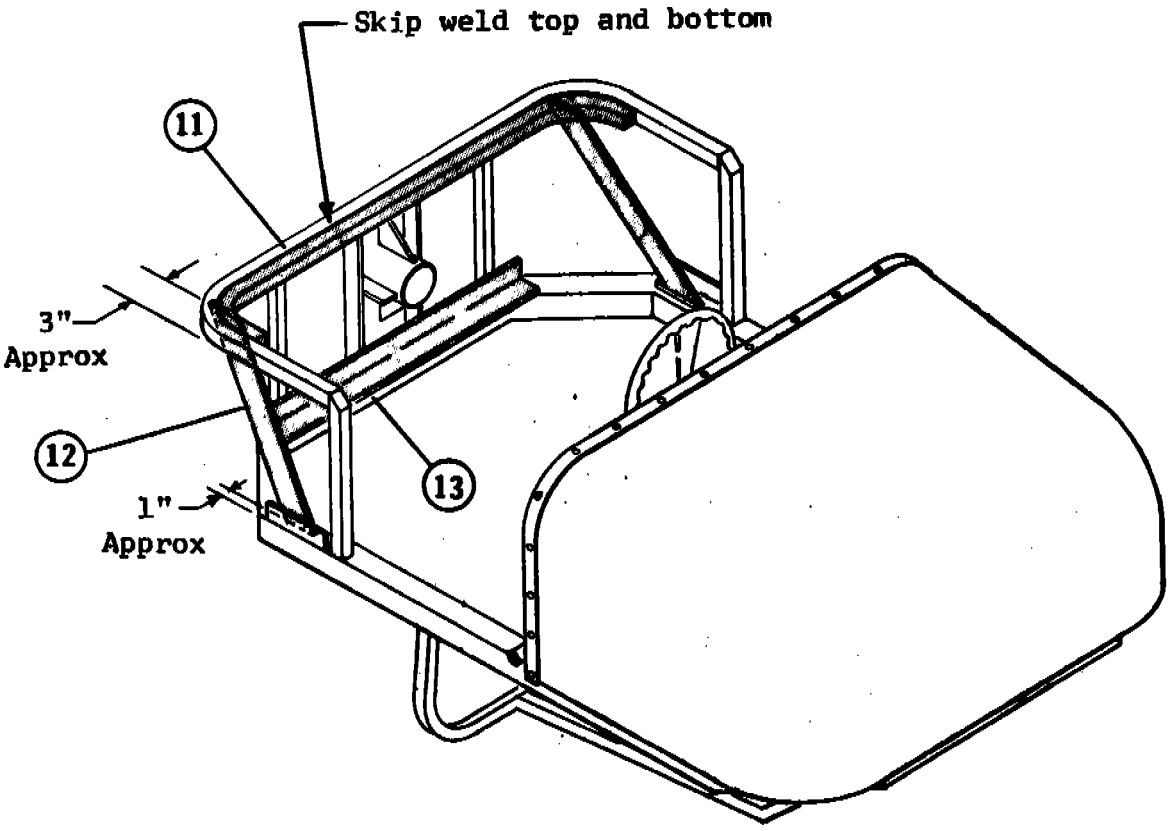
    When installing Canopy, it may be necessary to use a furniture clamp to align Canopy with holes in frame.

Operation and Inspection

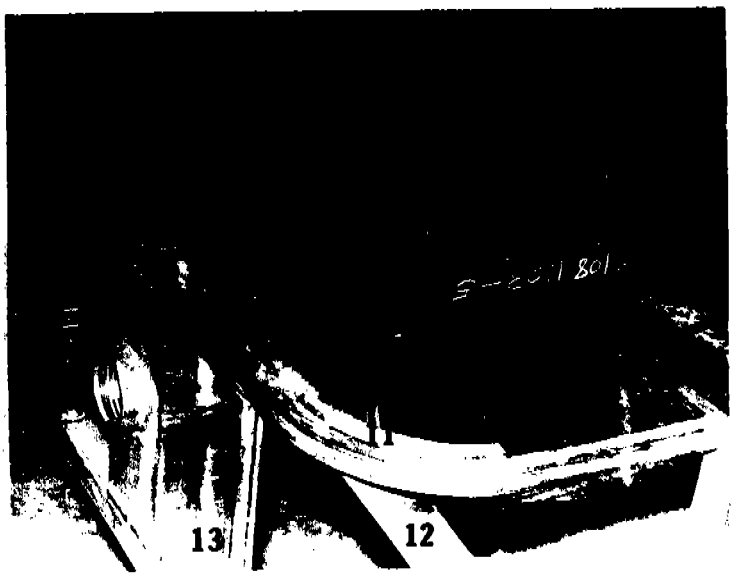
When erecting the SKYDIVER, do not tighten the guy rods between the "A" frames too tightly. All they need to be is good and snug.

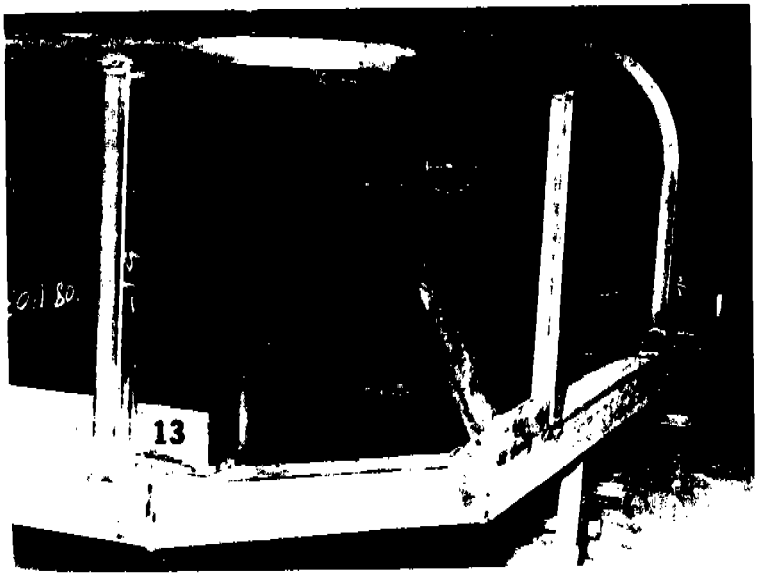
Inspect all cars at least every other week as described in Service Bulletin 101.


#245 KNOB
HEX HD CAP SCREW
LOCK WASHER
1081122 CANOPY
1081125 LATCH
1081127-1 LATCH
1081127-2 LATCH
1081127-3 LATCH
CSN 25C17 SPRING LATCH
CSN 20A5 TRIM
1081121-1 CANOPY FRAME ASSY.
1081116-2 SPINDLE
1081128 SEAT
1081124 DOOR ASSY
1081129 TRIM
1081117 HOOD GUARD ASSY
1081119 STEERING SHAFT
1081115 GEAR COVER ASSY
1081118 SPINDLE HOUSING
1081116-1 SPINDLE
1081143-1 CAR HOOD
REAR HATCH ASSY
FIBERGLAS SEAT
FIBERGLAS OUTSIDE PANEL
CSN 20A5 ALUM. TRIM STRIP
SECTION C-C
1081141-1 CHANNEL (2 PLS)
DRILL TO MATCH 1081141-1 & INSTALL
HEX NUT & LOCKWASHER (6 PLS)



Clamp all parts before welding





SKY DIVER

Field inspection and test guide

Manual number 24329306

SKY DIVER

Field inspection and test guide

Contents

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Introduction

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

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

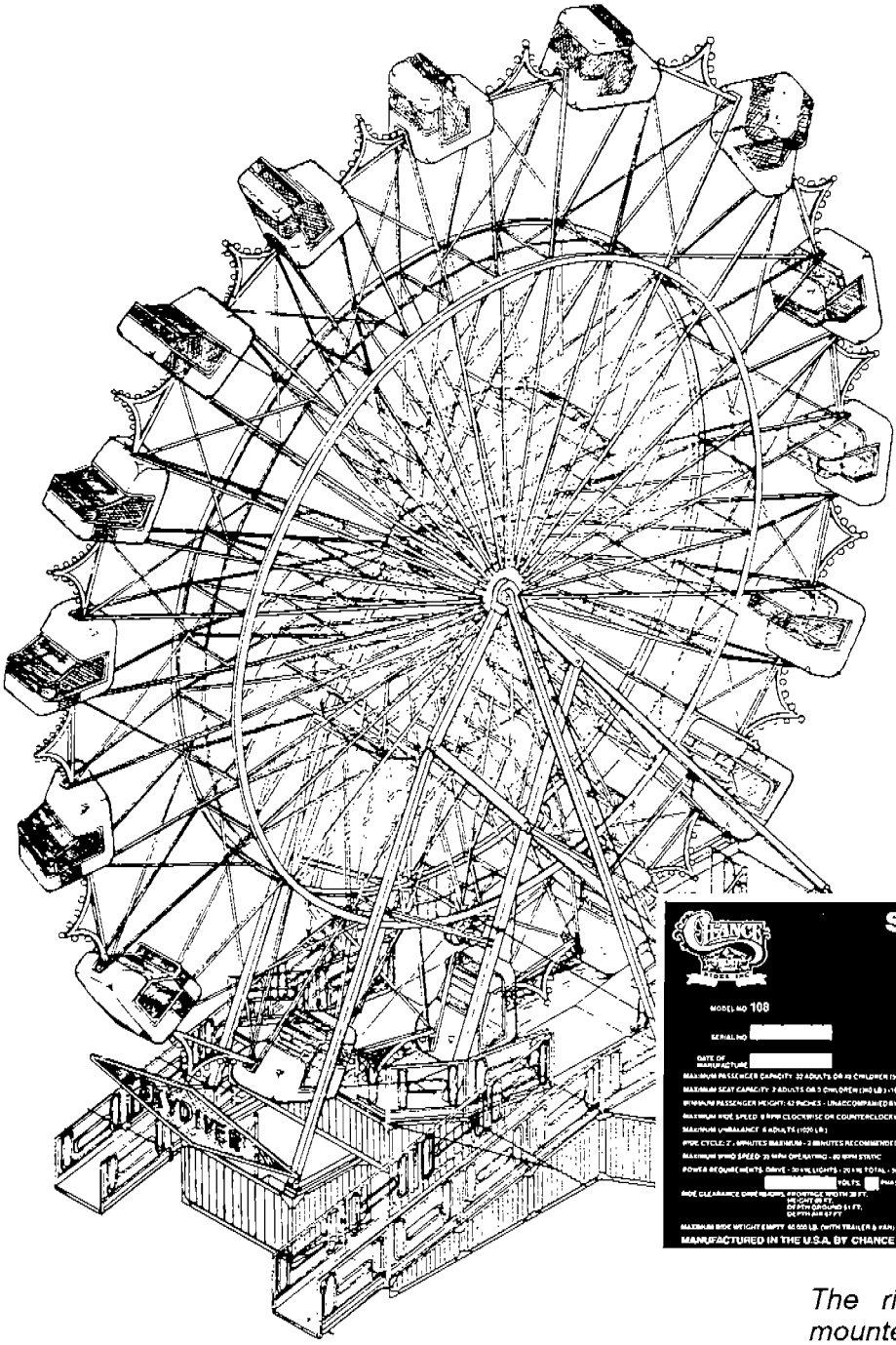
Information in this field inspection and testing guide applies only to products manufactured by CHANCE RIDES INC. built after January 1, 1986 (**Sky Diver** serial number 108-08186 and on).

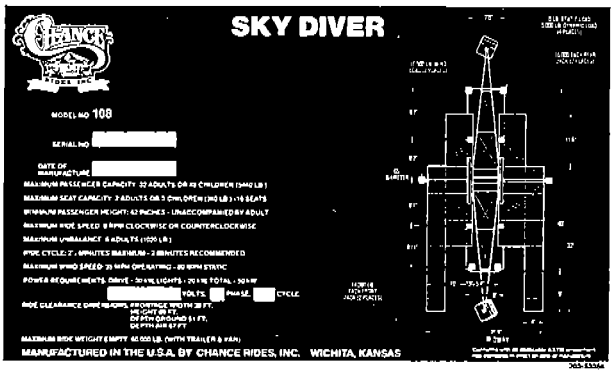
CHANCE RIDES INC., reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to such changes.

Ride description

The **Sky Diver** is mounted on a single trailer, with an auxiliary trailer providing additional racking provisions for portability. The ride has an electro-hydraulic drive system. Braking is provided hydraulically through the rim drive tires.

The ride information plaque is mounted to the front left hand tower leg. 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 front left hand tower leg.

Detailed operation and maintenance information is available in the *Sky Diver Operation And Maintenance Manual* (manual number 24328900). For more information, or to order manuals, contact CHANCE RIDES, INC.

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

Operation

Operating controls

1. Main control lever - Push and hold the lever forward (clockwise rotation) or back (counter-clockwise rotation). Move the lever to the center position to apply the brakes and stop the ride.

NOTE: Return springs will return the lever to the center position when released. Never reverse the direction of rotation until the ride is completely stopped.

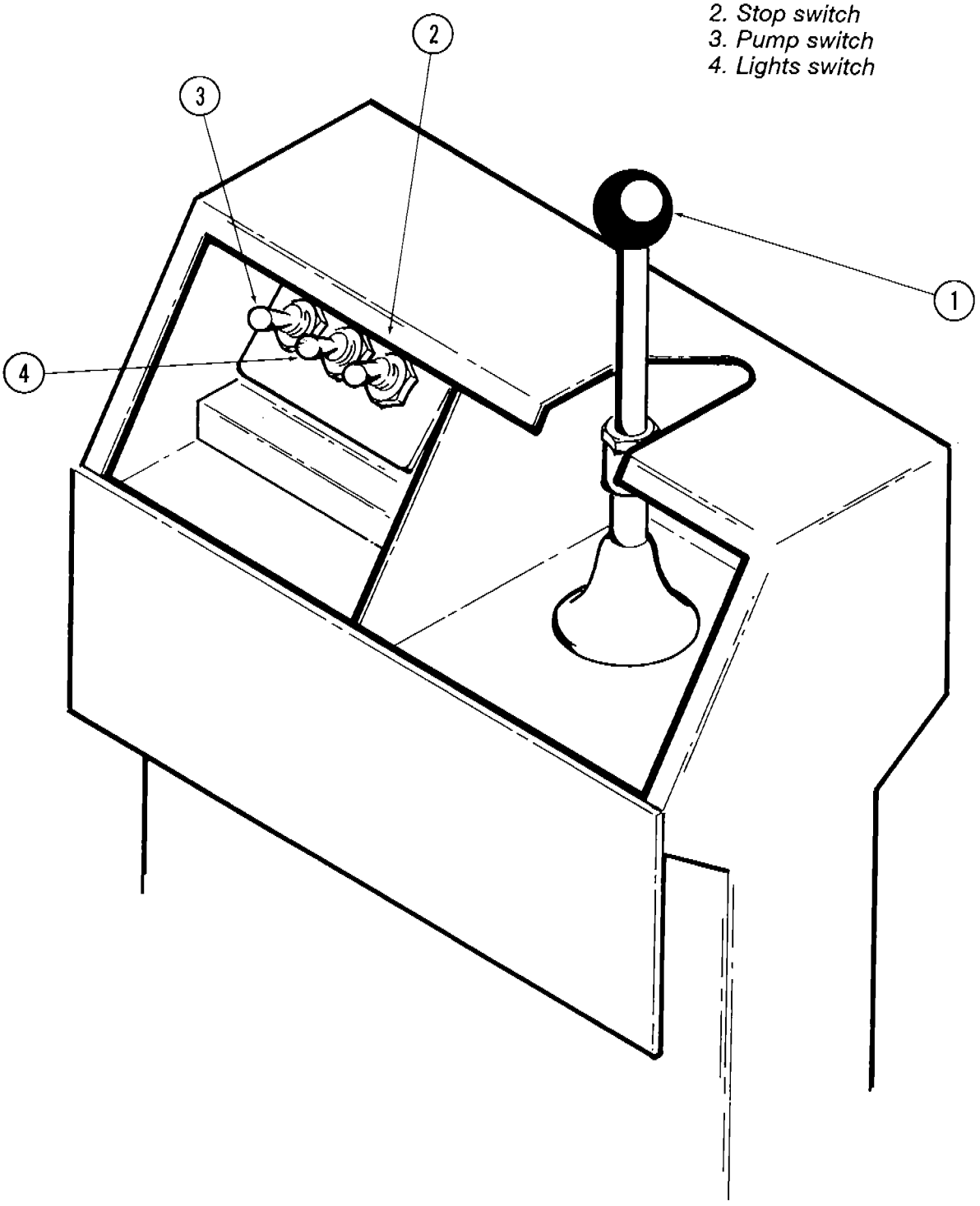
2. Stop switch - This switch turns off the main circuit breaker.

NOTE: Do not use this switch to stop the ride under normal operating conditions.

3. Pump switch - This switch controls the hydraulic pump. Turn the switch off before leaving the control console. Do not stop the ride by turning off the pump.

4. Lights switch - This switch controls the decorative lighting on the ride.

Operator's controls
1. Main control lever
2. Stop switch
3. Pump switch
4. Lights switch



Operating the ride (test cycle)

The operating procedure is provided in the *Sky Diver Operation Manual and Parts Catalog.* Make sure that a copy of the manual is readily available.

Test the operation of all controls. While the ride runs, check for correct speed and proper brake operation. 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[4]

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,

4 B090R1022-0 March 21, 1988

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[11]

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.

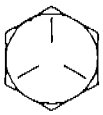
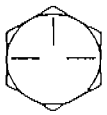
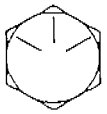
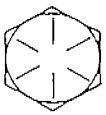
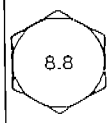
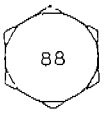
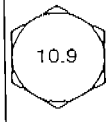
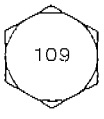
Capscrew grades

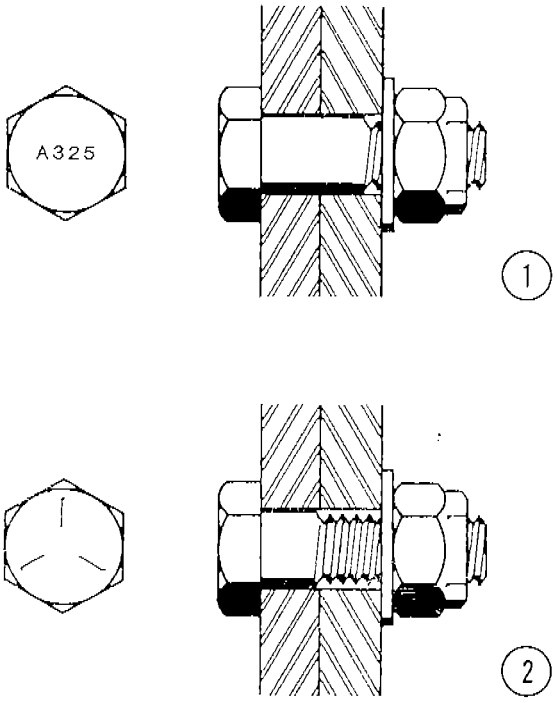
CHANCE RIDES, INC. uses only grade 5 or better capscrews and grade 8 locknuts, with A325 hardened washers for functional loads. The *Grade markings chart* shows the capscrew markings to be found on CHANCE rides. The manufacturer's identification symbols must be present on all functional load carrying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

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.

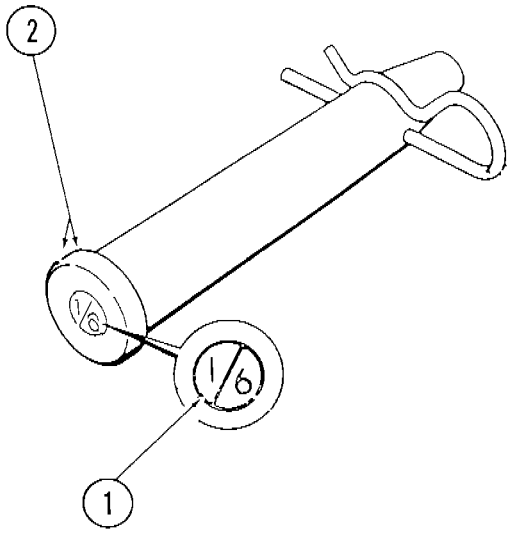
Pins[9]

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.

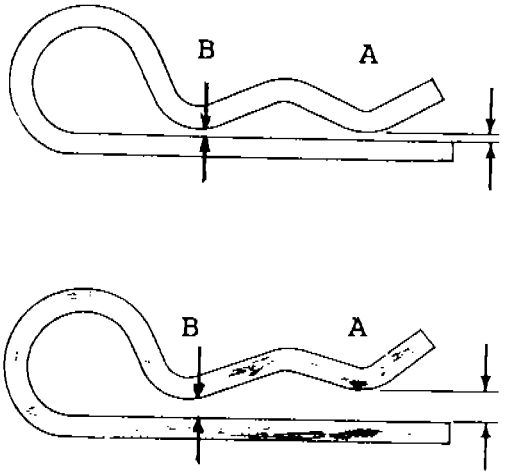
Pin identification
1. Date of manufacture
2. Rounded edges



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.

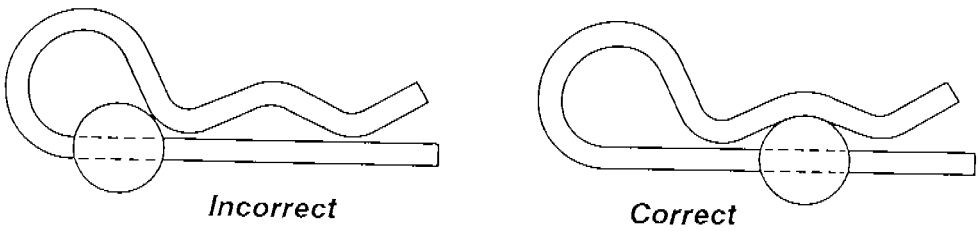


Acceptable hair pins
Dimension "A" equals dimension "B" in a relaxed position

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

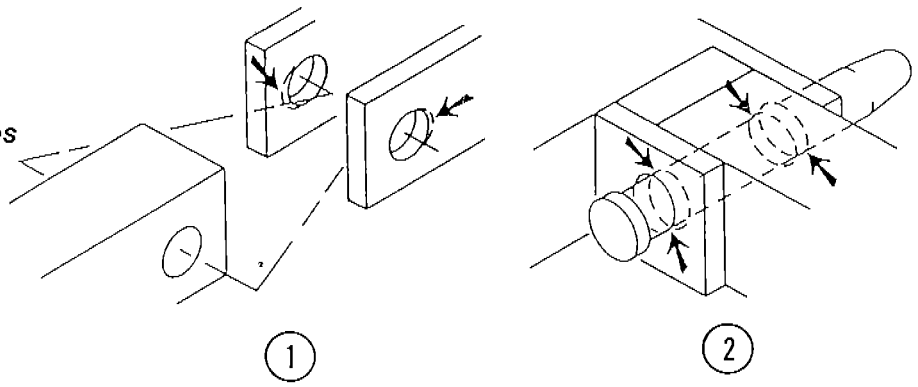
Joint inspection

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[10]

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".

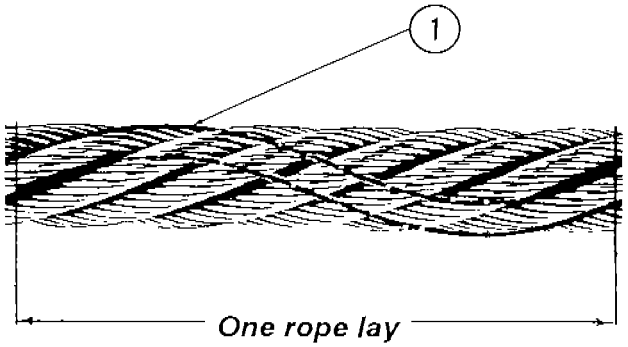
Kinking

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

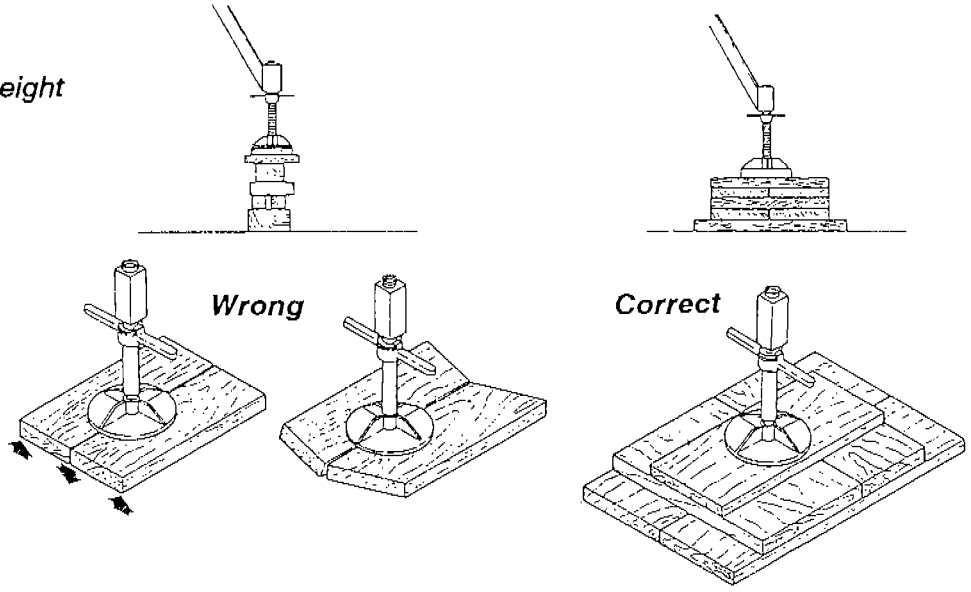
1. One strand

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)[3].

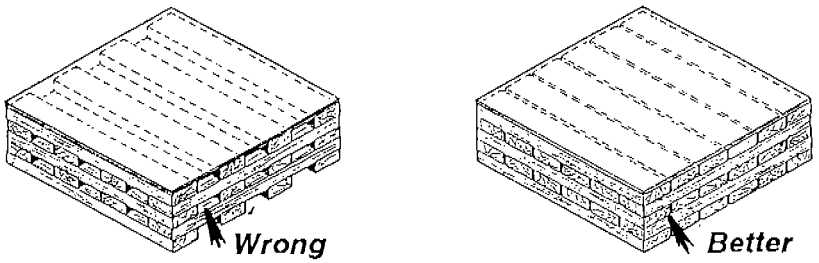
2. Inspect for proper cross blocking or crib blocking. Cross blocking distributes weight evenly[3].

Always cross block
Cross blocking distributes weight evenly.



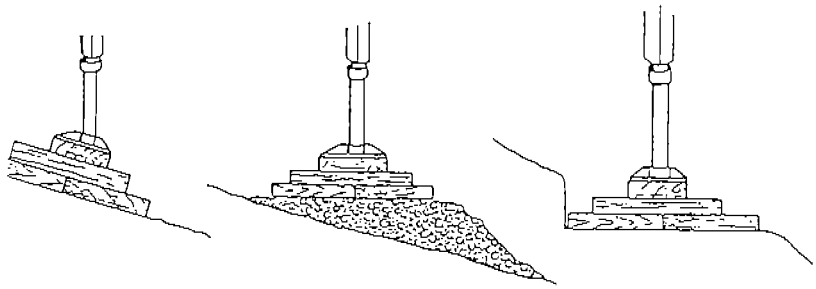
To avoid crushing under load "crib" blocking should be spaced no more than 1/4" for drainage.

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



3. Inspect blocking for proper contact with ground.

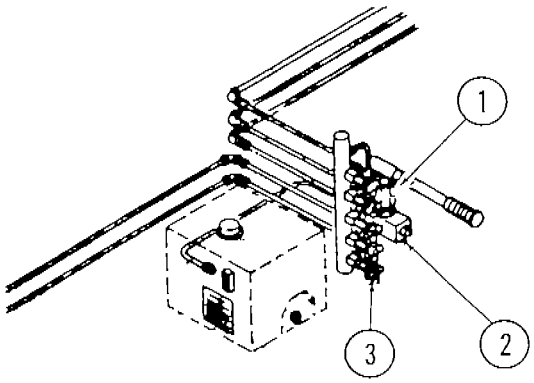
4. Level ground under blocking.by digging where possible, instead of filling. Fill dirt will be soft and allow settling.



No ! Poor Better

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

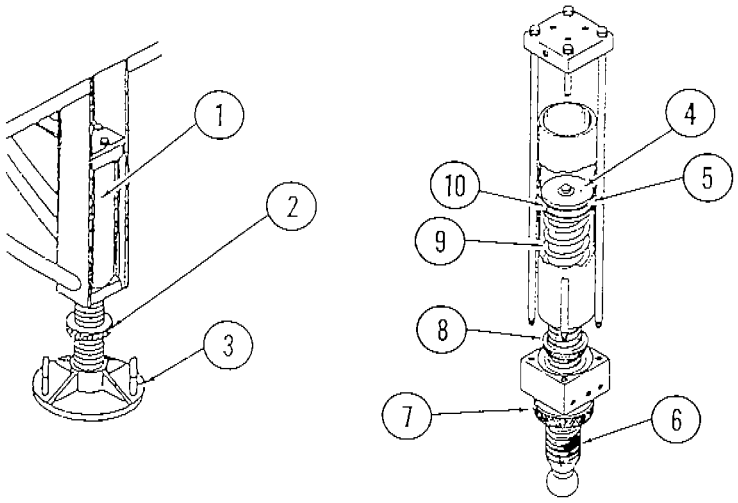
5. Inspect hydraulic leveling jacks for leaks at every set-up. The hydraulic jacks are for leveling purposes only. After the ride is leveled and all locking rings have been tightened, open the needle valves and the hand pump valve to relieve hydraulic pressure on the leveling jacks.[3]



Open shut-off valve to release pressure

1. Hand pump
2. Hand pump valve
3. Needle valve

6. Check the lock rings on all screw jacks for tightness[3].



1. Leveling cylinder
2. Locking ring
3. Base
4. Piston
5. Block vee packing
6. Ram
7. Lock nut
8. Nut
9. Ram spring
10. Back up washer

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. 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.

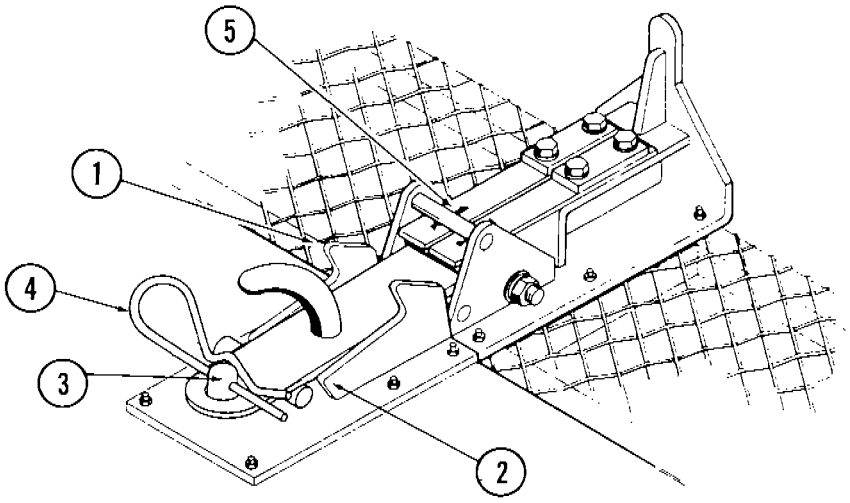
13. Keep a record of parts replaced and the date of replacement. Inform the manufacturer of any replacement requirements which are frequent or cause unsafe conditions.

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

Vehicle inspection

1. Close each vehicle hatch and check the operation of the latch as follows:

- The first catch must engage approximately 3" before the hatch is closed.
- Close the hatch further, engaging the second catch when the hatch is completely closed. The latch must close over the safety knob, allowing the hair pin to be installed.



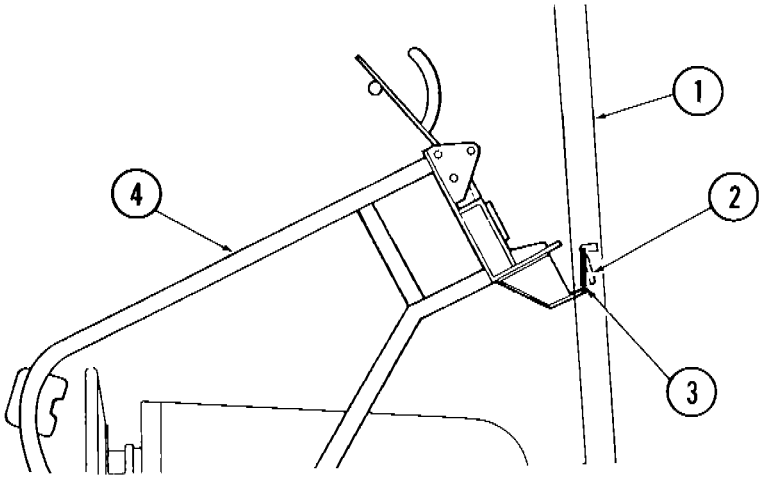
1. First catch
2. Second catch
3. Safety knob
4. Hairpin
5. Leaf springs

2. Inspect the leaf springs in each latch for bends, wear or damage. Check the expiration date on each spring. The springs must be replaced before the expiration date, or if the date has been altered, painted over or it otherwise illegible.

3. Check the condition of all 1/4" hairpins for latches.

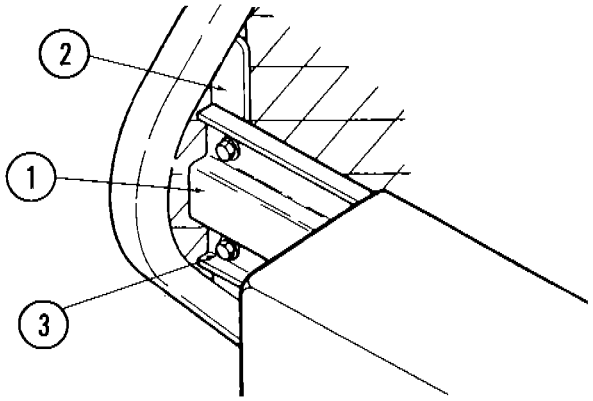
4. Open each vehicle hatch completely and inspect the following[5]:
   - The tang on the latch must engage in the slot on the A-frame, preventing the vehicle from rotating.
   - The latch must release properly from the A-frame slot.

1. A-frame
2. Released position
3. Locked position
4. Hatch



5. Check all latches for installation of latch extension[5].

Lap bar
1. Steel core
2. Mounting angle
3. Bolt head and flat washer



6. Inspect the condition of all lap bars as follows[6]:
   - All lap bars must be identical to that shown. The core must be formed steel. WOODEN LAP BARS ARE NOT ALLOWED.
   - The lap bar must be installed exactly as shown.
   - Inspect the mounting hardware. These are grade 5 capscrews and must be tightened to 5-6 ft-lbs.
   - Inspect the lap bar padding. Minor repairs to the factory padding are permissible, if the original size and shape are not altered.

5 B108R1032-0 March 22, 1989
6 B108R1037-0 May 15,1989

7. Inspect the condition of all hatch hinges. Look for cracked hinge lugs, loose or worn shoulder bolts, or other visible damage. Inspection holes are provided on the outside of the vehicle.

8. Check the installation of steering wheel guard and grab rail on all vehicles[8].

9. Inspect the steering mechanism on all vehicles. Look for loose steering wheels, worn or damaged mounting brackets, and worn bearings. SPOKED STEERING WHEELS ARE NOT ALLOWED.

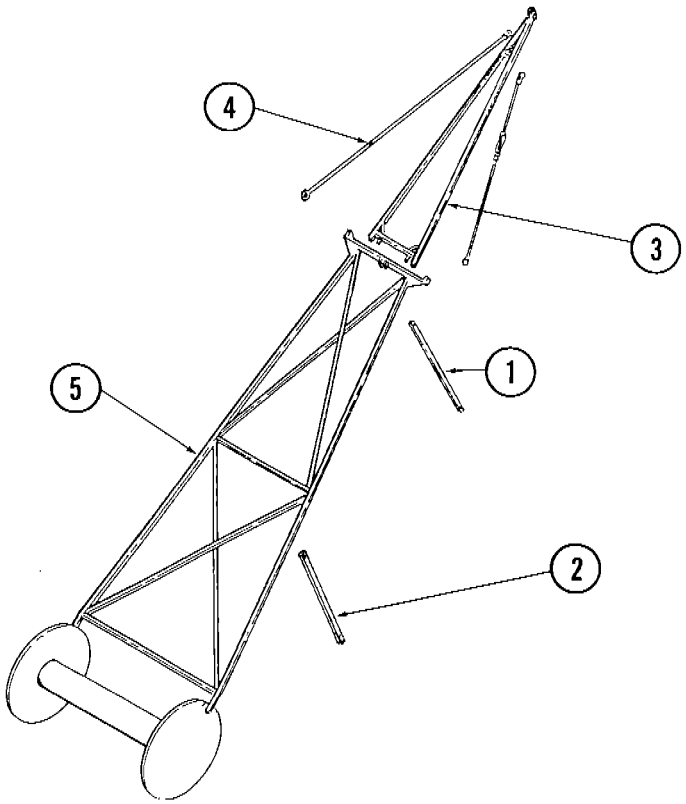
10. Check for smooth operation of the spindle bearings.

11. Inspect the overall condition of the vehicle fiberglass and screening.

12. Inspect the vehicle frames for visible cracks or damage, including the spindle bearing mounts, hatch hinge areas and hatch frame.

Sweep and A-frame inspection

1. Inspect spreader bars for proper installation with correct size pins.



1. Outer spreader bar (use 1/2" pin)
2. Inner spreader bar (use 3/8" pin)
3. A-frame
4. A-frame guy rod
5. Sweep

2. Inspect all A-frame attaching points and pins.

3. Inspect A-frame guy rod installation and attaching points.

4. Inspect sweep and A-frame structures for visible cracks or damage.

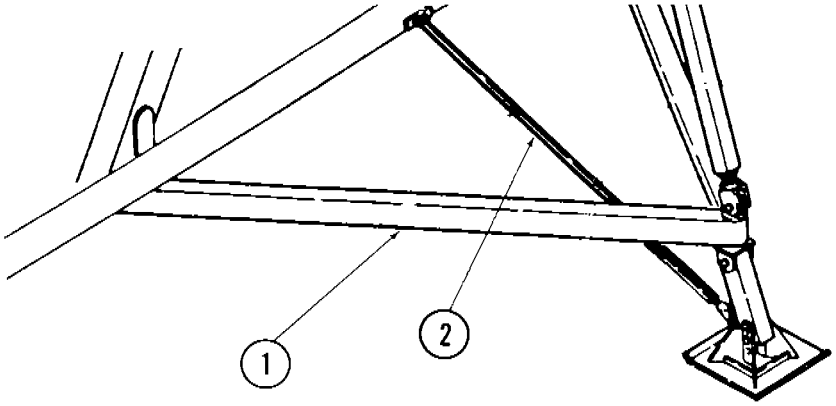
Electrical and lighting inspection

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

2. Test the operator controls.

Trailer inspection

1. Inspect outriggers for proper installation of solid outrigger brace[2]. This brace must not have a turnbuckle.



1. Outrigger
2. Solid outrigger brace

2. The outriggers must be extended down against blocking, and the braces tightened until just snug[3].

3. Inspect the trailer frame structures for visible cracks or damage.

2 B108R1019-0 November 18, 1987
3 B108R1021-0 June 7, 1988

Drive inspection

1. Check the operation of all four drive motors. If one or more drive motors is disconnected from the circuit, the ride will run too fast.

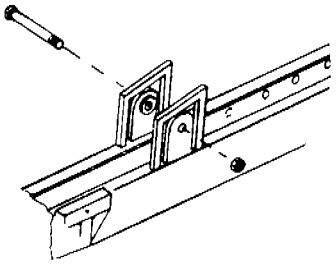
2. Inspect the drive tires for wear, proper inflation (45 psi) and lug bolt tightness (19-24 ft-lbs). Each tire must have a contact area of 5+ inches on the drive rim.

3. Inspect the entire hydraulic system including hoses, tubes, fittings and other components for leaks.

Tower inspection

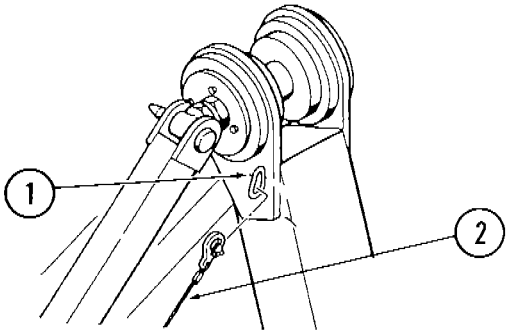
1. Inspect the tower lock-up bolts and nuts. Pins are not allowed.

Tower lock-up bolts



2. Inspect the alignment of the wheel in relation to the towers. Clearance must be consistent from wheel to tower.

3. Inspect for installation of tie down cables when high wind conditions are expected. Tie downs must be installed as shown if winds over 50 mph are expected[3].



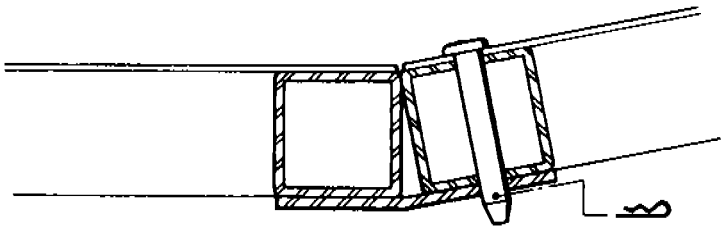
1. Pear link
2. Tie-down cable

4. Inspect tower wind braces for proper installation.

5. Inspect tower structures for visible cracks or damage.

Platform, fence and floor inspection

1. Inspect the floor retainer pins for correct size and length[7].



Floor retainer pins
3/8 x 3 1/8 taper pin with 3/32 hairpin
or
1/2 x 2 1/2 taper pin with 1/8 hairpin

2. Inspect floors, fences and ramps for proper installation.

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

3 B108R1021-0 June 7, 1988
8 B108R1052-0 March 23, 1990

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.

CHANCE RIDES, INC.
4219 Irving
P.O. Box 12328
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Sky Diver Operation And Maintenance Manual
24328900
August, 1979

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

2. *Outrigger Support Brace Rework*
   B108R1019-0
   November 18, 1987

3. *Trailer Blocking And Tie-down Instructions*
   B108R1021-0
   June 7, 1988

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

5. *Latch Rework*
   B108R1032-0
   March 22, 1989

6. *Lap Bar Inspection*
   B108R1037-0
   May 15, 1989

7. *Floor Retainer Pins*
   B108R1050-0
   October 25, 1989

8. *Steering Wheel Guard And Grab Rail Replacement*
   B108R1052-0
   March 23, 1990

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

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

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