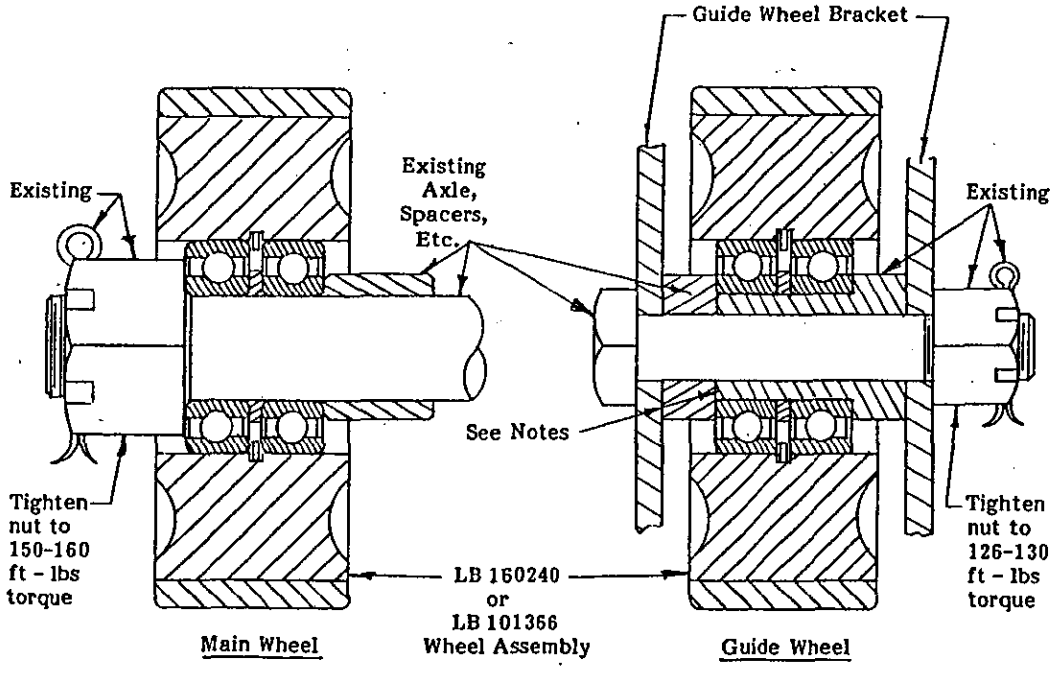
May 24, 1989

SERVICE BULLETIN 89-1

SUPER LOOPS

Starting immediately, replacement wheels for Super Loops will be either aluminum wheels with molded urethane tires, Part No. LB160240, or nylon wheels, Part No. LB101366. These wheels will come assembled with sealed ball bearings and internal spacers. This is a direct replacement for wheels with tapered roller bearings (Timken). These wheels are sold only as assemblies to insure proper installation of the bearings, retainer rings and spacer. Installation of the bearing is shown below and uses the existing spacer(s), axle and nut. Since these bearings are prelubricated and sealed, no further lubrication is required resulting in less maintenance and a cleaner ride.



Notes:
1. Two piece spacer must make up solid to prevent bolt from turning in brackets.
2. Check holes in brackets for wear if bolts have been allowed to spin. Repair if necessary.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214
FAX (806) 293-5915
P.O. Box 1968

NOTICE
OWNERS AND OPERATORS

This ride is designed to give a thrill to even the most experienced rider. As such, it is recommended that young children, the infirm or physically handicapped, or the mentally retarded should not be permitted to ride.

The duration of this ride should be kept to a minimum with only two or three loops in each direction and with only a momentary stop in the uppermost, inverted position. Anything beyond this should be avoided, as it may make some riders ill. If that happens, that rider and possibly the rider's party will not repeat the ride and may leave the park or fair completely, in which case, everyone loses.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214

June 1989

TO WHOM IT MAY CONCERN:

The Hi-Roller Company has acquired the rights to amusement rides known as Super Loops. These rides were previously manufactured by LMC, Inc. which is no longer in existence.

It has come to our attention that when a Super Loops amusement ride moves into a state, the approval for operation has been delayed because it carries a Mark number different than a previous Super Loop or the sign name calls the ride something other than Super Loops. Be advised that the Super Loops ride has not been changed structurally from those manufactured since January 1974. The one exception was the addition of some structural members in 1977 to strengthen the unit for erection purposes. From the Mark II Series (1974) on, changes were primarily cosmetic (lighting systems) and the addition of safety devices.

The sign on the ride is an operator's choice. Most carry the Super Loops name but some have chosen names as Mega Loop, Ring-O-Fire, Ring of Fire, Space Rader and Scream Machine. Examination of the serial number plate will positively identify the ride to be "Super Loops". Further identification can be found in the serial number itself. With only two exceptions, the serial number will start with a two digit number (75 or higher number) followed by a letter "K" OR "P". The last three digits designate the number of the unit. Please note that there can be other letters and numbers between those discussed above.

For Super Loops having serial numbers which are not as shown above, contact The Hi-Roller Company at the address shown below.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214

June 22, 1989

TO WHOM IT MAY CONCERN:

The Hi-Roller Company is now supplying parts and service for the Super Loops built by the old LMC, Inc. company which is no longer in existence. From time to time we will be issuing Service Bulletins on these old rides as experience dictates. This is so that you may provide your customers as safe a ride as possible and to comply with your insurance company's requirements.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214
P.O. Box 1968

June 30, 1989

SERVICE BULLETIN 89-2

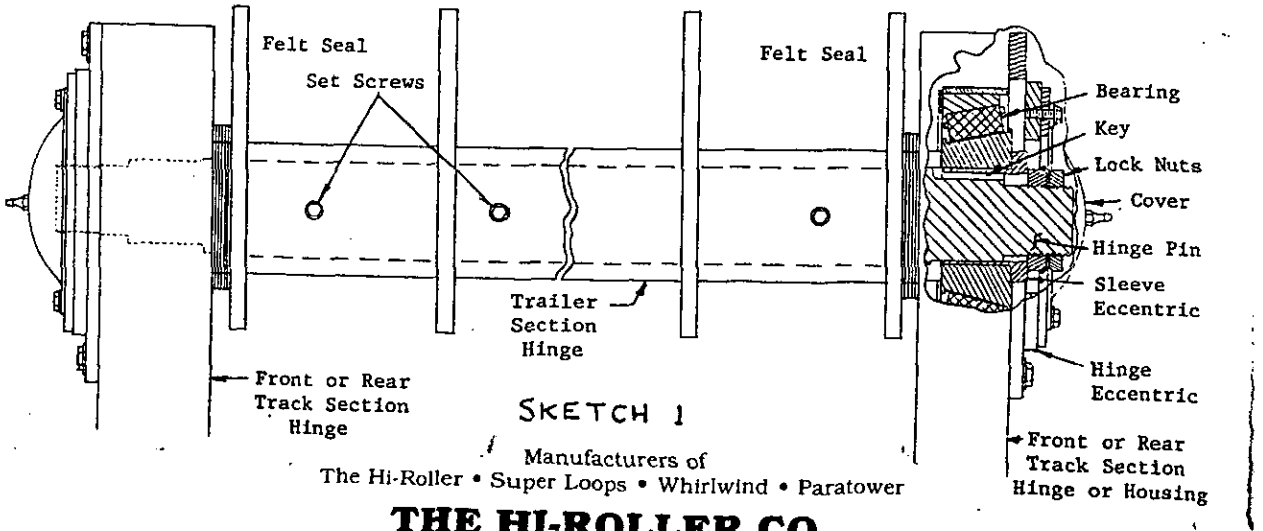
SUPER LOOPS

Fatigue cracks have been found in the hinge pins on some of the older Super Loops Amusement Rides. This fatigue could be caused by a number of factors. The two most obvious are: 1) the continual loading and unloading of the pin due to erection and lowering of the track and 2) improper support of the track during transport, allowing the hinge to take the majority of the bouncing load. With this in mind and in order to maintain a safe ride, the main hinge pins on the Super Loops must be inspected when the ride has been in operation for five (5) years and at five (5) year intervals thereafter. This inspection is to be a magnaflux inspection performed by an inspector certified in the use of magnaflux. Be sure and obtain a written copy of this inspection and keep it with your Super Loops manuals.

The ride must be in the folded or transport position to remove the hinge pin. It is necessary to support the track section at both ends to reduce the load from the pin.

CAUTION: IT IS ABSOLUTELY necessary to replace the original or a new hinge pin in exactly the same position as the original pin was installed. If this is not done properly the track will not align and a very dangerous situation will be created.

Remove the cover from each end of the hinge. See Sketch 1. Mark the position of the hinge pin, sleeve eccentric, hinge eccentric, and the hinge housings. Mark both ends and use different markings on each end so that the parts will not get mixed. A number stamp works well so that each pin and each end of each pin will have a different number. These markings must be oriented so that the parts will be replaced in the same place and direction as their original position.



SKETCH 1

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214

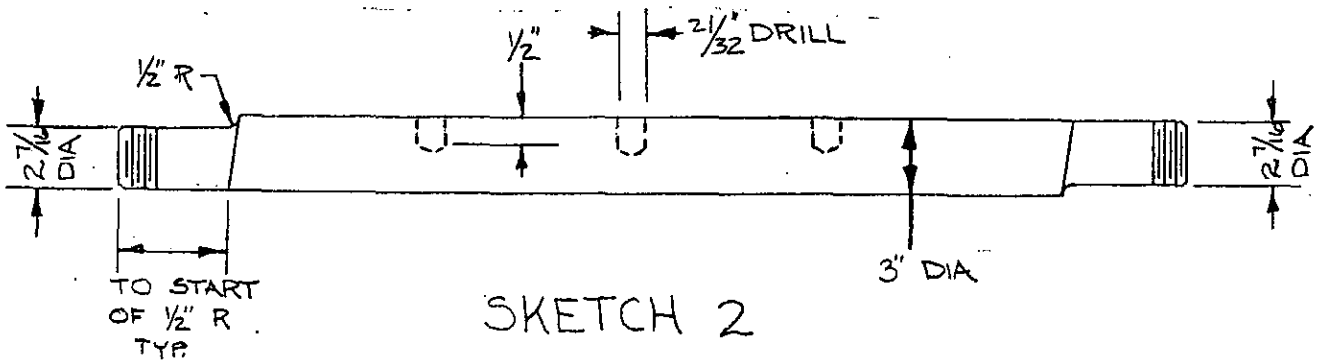
P.O. Box 1068

Note: Some hinge pins are not eccentric. These can be identified by looking at the pin ends. The eccentric pin will be 2 7/16 inch diameter on both ends. The concentric pin will be 2 7/16 inch diameter on one end and 3 inch diameter on the other. On the concentric pin, only the position of the hinge pin needs to be marked.

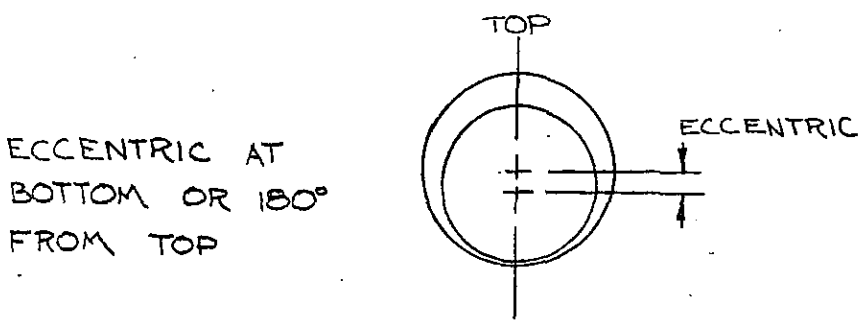
After marking the parts, remove the lock nuts on each end and the three set screws located in the trailer section hinge. Remove the hinge eccentric, sleeve eccentric, key, and bearing from each end. Note: keys are not used on concentric pins. Remove the hinge pin. Concentric hinge pins must be removed with the large end being removed first. In some cases, the pin will have to be driven out, in which case, the threads must be protected.

After the pin is removed, it must either be replaced or inspected by an inspector certified in the use of magnaflux. The primary areas of inspection are the shoulders located near each end. This shoulder is the piont where the shaft changed diameter from 2 7/16 inches to 3 inches. If there is evidence of a crack, the pin must be replaced.

To reuse a pin that has been found free of cracks, it must be remachined as shown in Sketch 2. This increases the corner radius, reducing the stress concentration of that area. Reuse of a pin without this change is not permitted.



SKETCH 2



SKETCH 3

Note: Most rides, Serial No. 44 and up do not use an eccentric hinge pin and have the large shoulder radii. These pins must be inspected at the five (5) year intervals, but do not require further machining.

If a new hinge pin(s) is ordered, place the old pin next to its replacement so that both are oriented the same. Mark the new one the same as the old. The three (3) set screws holes are not predrilled. This is to be done at assembly to insure proper position of the holes. Install the pin into the hinge housing. The pin should protrude equally out each end of the hinge housing. Align marks as previously set during disassembly. With the three setscrews removed, mark the positions of the setscrew holes on the hinge pin with a center or prick punch. Remove the pin and drill each center with a 21/32 inch diameter drill with the full diameter going 1/2 inch deep as shown in Sketch 2.

Note: If the parts were not marked during disassembly, hinge pin is placed in the hinge housing as stated above. Set the eccentric at the bottom or 180 degrees from the uppermost of the pin as viewed when looking down on the pin. See Sketch 3. Mark the position of the setscrew holes, remove the pin and drill as stated above. During assembly, it will be required to realign the tracks.

To reassemble, put the hinge pin into the housing, aligning the setscrew holes. When setscrew holes are aligned, replace the setscrews. Install the bearing cups in the main hinge eccentric and assemble the main hinge eccentrics to the front (or rear) section housing, being sure to align markings. If markings were omitted, place both top and bottom main hinge eccentrics in the same orientation.

Pack the bearing cone with a multipurpose grease and install the bearing cone on the eccentric sleeve and install this assembly onto the hinge pin, aligning the keyway and the previous markings. Drive in the key. If markings were not made previous to disassembly, align the sleeve with the pin so that the total effect of the eccentric is zero (0). (In other words, the thick part of the sleeve should match the high side of the pin shoulder.)

Replace the bearing nuts and washers, locking the nuts in place. Replace the covers and the felt packing. Grease the bearings.

<u>After replacing the pins, carefully erect the ride, paying particular attention to the track on the folding section as it needs to be centered on the trailer track section. There should be no mis-alignment or binding as it may damage the dowel pins.</u>

If the marking was omitted or ride is out of alignment, the ride must be erected and aligned. To accomplish this, normal erection

procedures are followed, being sure that the trailer is properly leveled in all directions before starting. After erection, if one track is high, the other low, bring the ride down. DO NOT ATTEMPT TO ADJUST IN THE RAISED POSITION. Adjust the bearing sleeves to raise or lower the proper track. These sleeves may be rotated 180 degrees. Erect the ride again and recheck position. If the sleeves will not give enough adjustment, it will be necessary to remove one or both hinge pins, turning the pin(s) 180 degrees, redrilling the setscrew holes, and repeating the alignment procedure.

To help prevent fatigue cracks, all Super Loops were provided with transport carriers, Figure 4. When the track is lowered to the trailer for transport, a set of wheels mounted on the track engage a ramp, lifting the free end of the track onto the transport carrier. When the track is completely down, this carrier, through a parallelogram linkage, further lifts and supports the free end of the track. At this point, the ramp wheels should have some clearance (1/16 to 1/4 inch) with the ramp. If the ramp, ramp wheels, and/or the transport carriers are damaged or missing, they must be repaired or replaced. If the transport carrier does not lift the ramp wheels off the ramp, shim or modify as necessary.

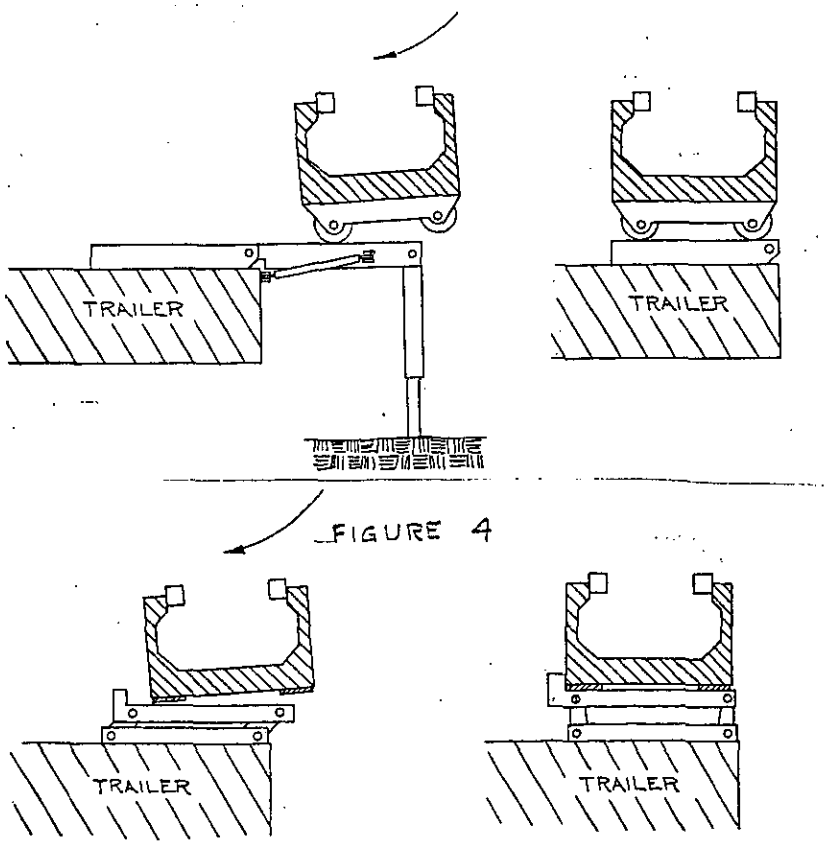


FIGURE 4

This bulletin should be complied with as soon as possible but no later than December 31, 1989.

June 30, 1989

SERVICE BULLETIN 89-3

SUPER LOOPS

Several incidents of severe damage have been reported due to failure of the brass worm gear in the jactuator box. This is due primarily to wear in the threads. The jactuator gear box should be disassembled and inspected at least once each season paying particular attention to the thickness of the square thread remaining inside the brass worm gear. If the threads are less than 3/16 inch thick, the gear must be replaced. Abnormal wear and load is created by allowing dirt to accumulate on the screw shaft or lack of lubrication. The screw should be cleaned after moving the ride and prior to erection and a good coating of multi-purpose grease applied to lubricate the threads.

When inspecting the jactuator assembly pay close attention to the eye ends of the screw shaft to see that there is no evidence of bending or hairline cracks.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214

October 3, 1989

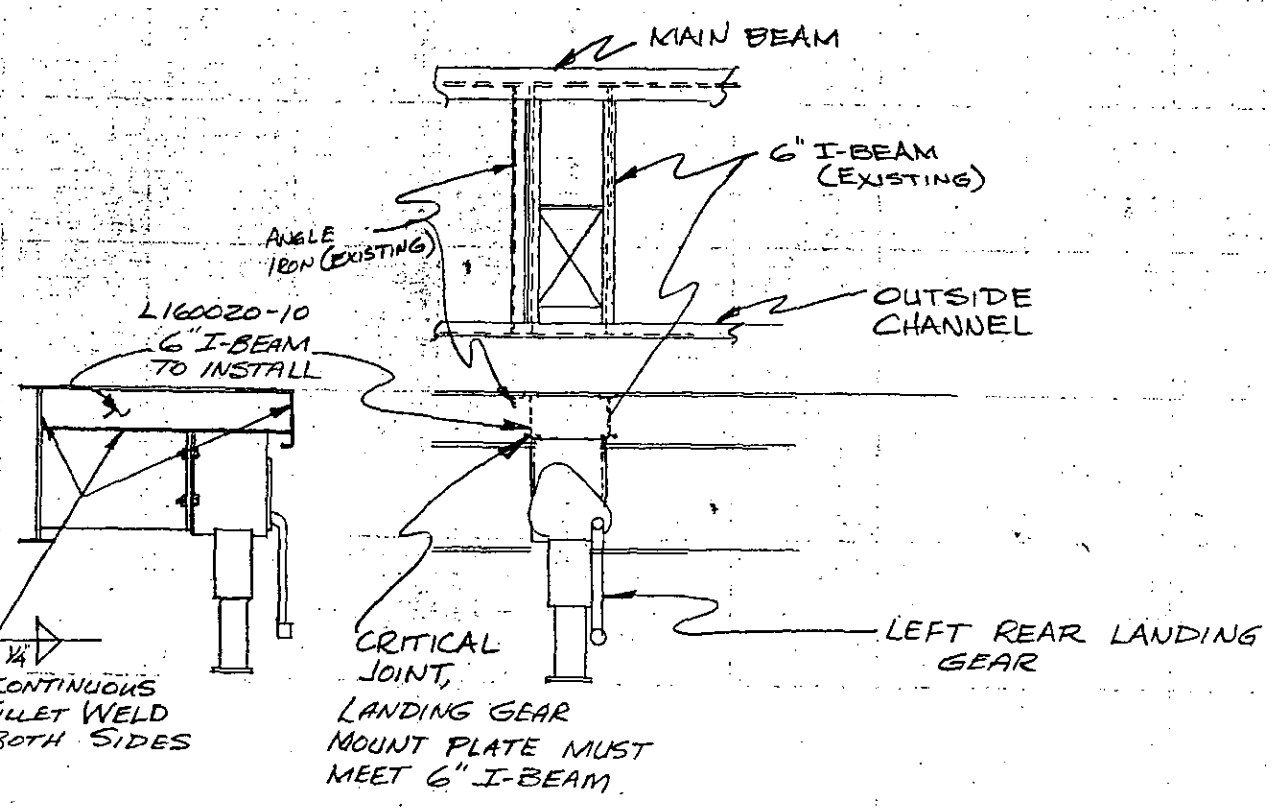
SERVICE BULLETIN 89-4

SUPER LOOPS

It has been brought to our attention that the landing gear on the left rear of the trailer may lack proper support. This situation should be investigated immediately. It involves Serial Numbers 44 through 50 trailers only.

SEE SKETCH BELOW. The landing gear should be tied into two (2) 6" I-beams. If the front I-beam is missing, there may be only an angle iron brace in its place, but will not be tied in to landing gear mount plate.

Please advise the manufacturer so that we can supply the ride operator with a 6" I-beam to repair the situation. If, upon inspection, there is no problem found, please let us know so it can be filed in our records.



Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214

SERVICE BULLETIN

November 14, 1989

SERVICE BULLETIN 89-3A

SUPER LOOPS - JACTUATOR GEAR BOX

Several incidents of severe damage have been reported due to failure of the brass worm gear in the jactuator box. When the threads in the brass gear fail this allows the top section to drop, severely damaging the main section as well as the top section. This failure is due primarily to the wear in the threads of the brass gear. The jactuator gear box should be disassembled and inspected at least once each season paying particular attention to the thickness of the square thread remaining inside the brass worm gear. If the threads are approaching 3/16 inch thickness, the gear must be inspected after each erection and tear-down; less than 3/16 inch thickness, the gear must be replaced. Abnormal wear and load is created by allowing dirt and foreign objects to accumulate on the screw shaft or from lack of lubrication. The screw should be cleaned after moving the ride and prior to erection, and a good coating of multi-purpose grease applied to lubricate the threads.

Indications of jactuator problems are pressures above 1700 to 1800 lbs. during erection, stalling of the hydraulic motor, jerkiness, or any other abnormal conditions. Should any of these symptoms occur, do not attempt to complete the erection. Bring the top section back down in the stowed position and inspect both the screw and brass gear.

When inspecting the jactuator assembly pay close attention to the eye ends of the screw shaft to see that there is no evidence of bending or hairline cracks.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214
P.O. Box 1968

SERVICE BULLETIN

November 14, 1989

SERVICE BULLETIN 89-5

SUPER LOOPS - HINGE PINS

This bulletin supersedes Service Bulletin 89-2.

Fatigue cracks have been found in the hinge pins on some of the older Super Loops Amusement Rides. This fatigue could be caused by a number of factors. The two most obvious are: 1) the continual loading and unloading of the pin due to erection and lowering of the track and 2) improper support of the track during transport, allowing the hinge to take the majority of the bouncing load. With this in mind and in order to maintain a safe ride, the main hinge pins on the Super Loops must be inspected when the ride has been in operation for five (5) years and at five (5) year intervals thereafter.

Field experience has shown that most operators are not qualified to comply with Service Bulletin 89-2 in the field, and in some cases have created dangerous situations. Therefore it will be necessary to have a factory technician supervise the inspection and/or replacement of the hinge pins in the field or that the ride be brought to the factory to have this done. To save the customers' cost, the technician will supervise the customers' own people in complying with the bulletin and at the same time provide a free inspection of the overall condition of the customer's ride and free training on the operation and maintenance of the ride.

You may call the factory at 806-293-5214 to make arrangements to have this bulletin complied with and discuss the charges.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214

SERVICE BULLETIN

June 8, 1990

SERVICE BULLETIN 89-3A <u>AMENDMENT</u>

SUPER LOOPS - JACTUATOR GEAR BOX

Paragraph 2 amended to read as follows:

Indications of jactuator problems are pressures above 1900 to 2100 lbs. during erection, stalling of the hydraulic motor, jerkiness, or any other abnormal conditions. Should any of these symptoms occur, do not attempt to complete the erection. Bring the top section back down in the stowed position and inspect both the screw and brass gear.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower
THE HI-ROLLER CO.
(806) 293-5214

June 12, 1990

NOTICE TO OWNERS/OPERATORS OF SUPER LOOPS

The Hi-Roller Company has issued the following Service Bulletins:

	Service Bulletin 89-1	May 24, 1989
	Service Bulletin 89-2	June 30, 1989
	Service Bulletin 89-3	June 30, 1989
	Service Bulletin 89-3A	November 14, 1989
*	Service Bulletin 89-3A Amendment	June 8, 1990
**	Service Bulletin 89-4	October 3, 1989
	Service Bulletin 89-5	November 14, 1989

*Service Bulletin 89-3A Amendment enclosed with this notice.

**Service Bulletin 89-4 applies to Super Loops, Serial #'s 44 through 50 inclusive.

If you have not received the above bulletins, please advise the Hi-Roller Company so that they may be forwarded to you.

~~~~~~

Please send me the following Service Bulletins:

_____ Service Bulletin 89-1
_____ Service Bulletin 89-2
_____ Service Bulletin 89-3
_____ Service Bulletin 89-3A
_____ Service Bulletin 89-4
_____ Service Bulletin 89-5

Name: ______________________________

Mail Address: ______________________________

City, State, Zip: ______________________________

Super Loop Serial #: ______________________________

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214

P.O. Box 1968
~~~~~~

SERVICE BULLETIN

ADDITIONAL CAPSCREWS REQUIRED FOR CLAMPING WINDSHIELD
S/N 3 thru 7

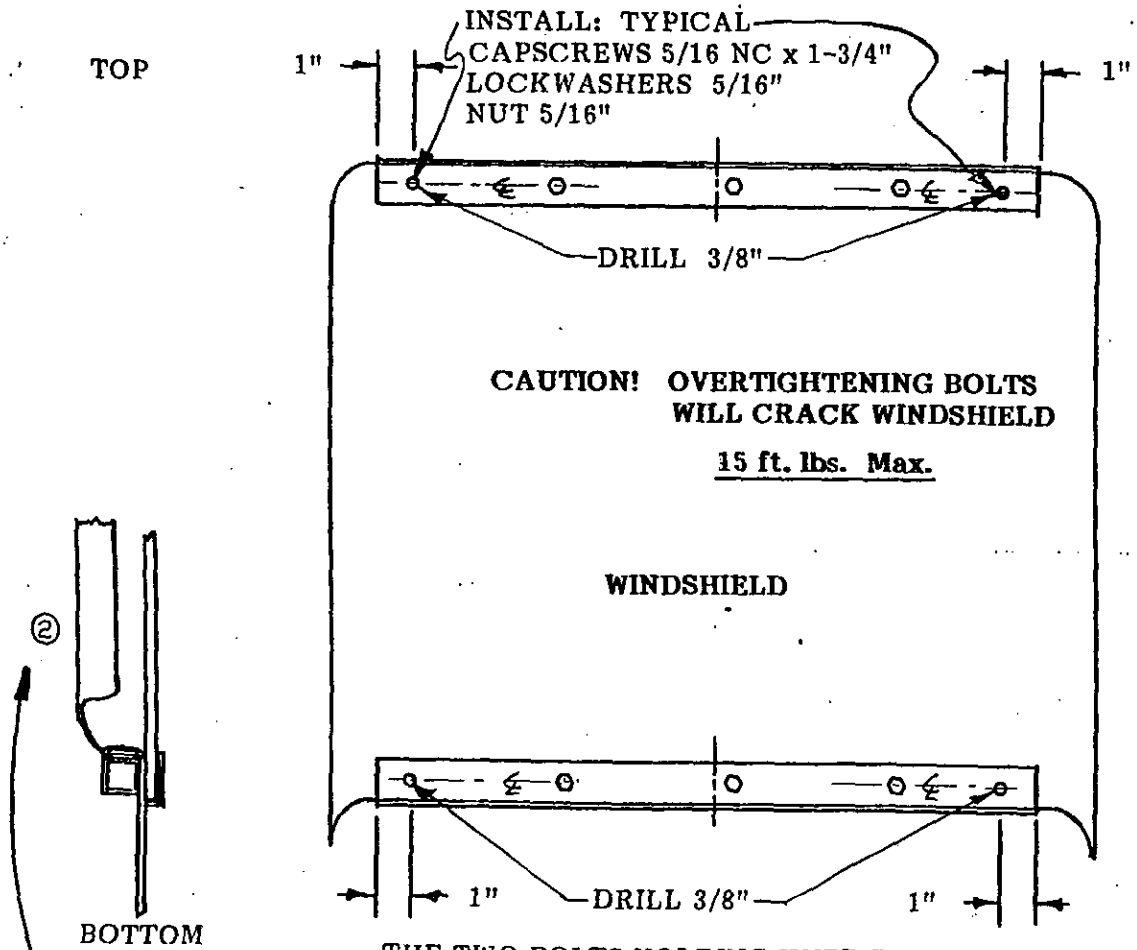
June 3, 1991

SERVICE BULLETIN 91-1

HI-ROLLER - WINDSHIELD

BILL LIST

40 EA H101250 CAPSCREWS 5/16" NC x 1-3/4"
40 EA H300030 LOCKWASHERS 5/16"
40 EA H200030 HEX NUT 5/16" NC
2 EA DRILL BITS 3/8"



THE TWO BOLTS HOLDING KNEE PAD ALONG THE BOTTOM SHOULD BE REMOVED① AND KNEE PAD POSITIONED② SO THAT WHILE DRILLING THE TWO NEW HOLES THE PAD WILL NOT BE DAMAGED.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214
FAX (806) 293-5215

P.O. Box 1968
Plainview, TX 79073-1968

LARSON INTERNATIONAL INC.

P.O. Box 638, Plainview, TX 79073-0638

Phone 806-293-1383 Fax 806-293-6215

DATE: JANUARY 3, 1994

OF PAGES: __6__

TO: JOE E. BIXLER
INTERNATIONAL LEISURE CONSULTING
206-778-2552

FROM: WALTER F. LARSON, PRESIDENT
LARSON INTERNATIONAL, INC.

Re: NDT Requirements

Dear Mr. Bixler:

The only NDT requirement that we have at the present time is concerning the hinge pin on the old model Super Loops. Later models after Serial #43 are not affected. There are no other NDT testing requirements on any of our rides.

We have enclosed a bulletin on the hinge pin of the Super Loops for your information.

Sincerely,

Walter F. Larson

Walter F. Larson
President

WFL/pg

Encl.

June 30, 1989

SERVICE BULLETIN 89-2

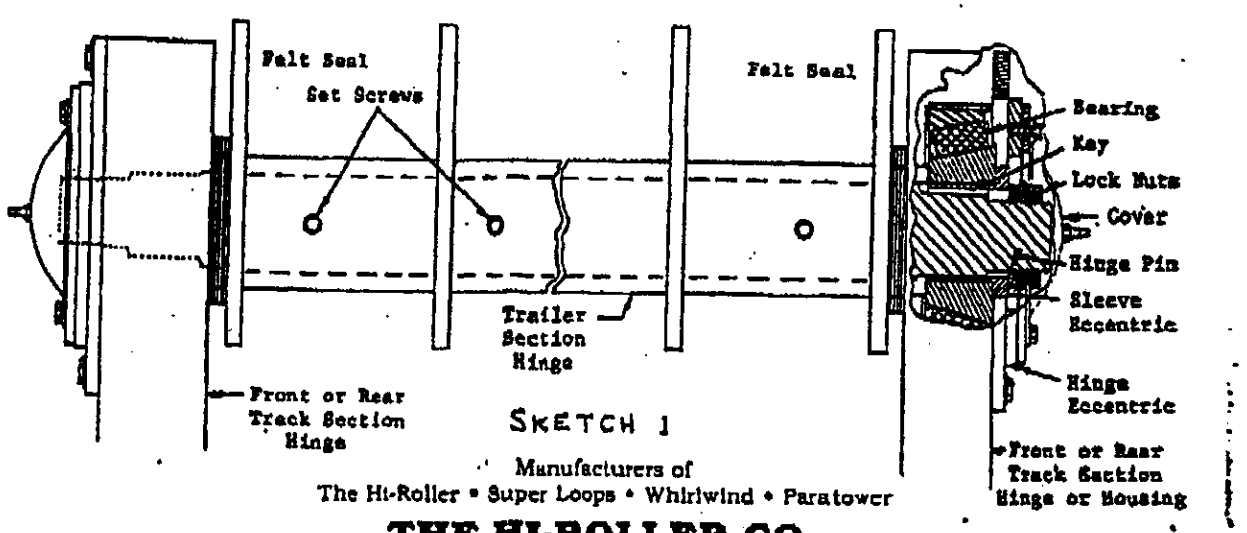
SUPER LOOPS

Fatigue cracks have been found in the hinge pins on some of the older Super Loops Amusement Rides. This fatigue could be caused by a number of factors. The two most obvious are: 1) the continual loading and unloading of the pin due to erection and lowering of the track and 2) improper support of the track during transport, allowing the hinge to take the majority of the bouncing load. With this in mind and in order to maintain a safe ride, the main hinge pins on the Super Loops must be inspected when the ride has been in operation for five (5) years and at five (5) year intervals thereafter. This inspection is to be a magnaflux inspection performed by an inspector certified in the use of magnaflux. Be sure and obtain a written copy of this inspection and keep it with your Super Loops manuals.

The ride must be in the folded or transport position to remove the hinge pin. It is necessary to support the track section at both ends to reduce the load from the pin.

CAUTION: IT IS ABSOLUTELY necessary to replace the original or a new hinge pin in exactly the same position as the original pin was installed. If this is not done properly the track will not align and a very dangerous situation will be created.

Remove the cover from each end of the hinge. See Sketch 1. Mark the position of the hinge pin, sleeve eccentric, hinge eccentric, and the hinge housings. Mark both ends and use different markings on each end so that the parts will not get mixed. A number stamp works well so that each pin and each end of each pin will have a different number. These markings must be oriented so that the parts will be replaced in the same place and direction as their original position.



SKETCH 1

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214
FAX (806) 293-5215

P.O. Box 1968
Plainview, TX 79073-19

LARSON INTERNATIONAL INC.

SERVICE BULLETIN

P.O. Box 638, Plainview, TX 79073-0638

Phone 806-293-1353 Fax 806-293-5215

June 30, 1994

SERVICE BULLETIN 89-2A

SUPER LOOPS (RING OF FIRE) - HINGE PINS

This bulletin is issued to cancel the requirements to magnaflux the main hinge pins (previously issued on Bulletin 89-2), for SERIAL NUMBERS #89PA50045 and up. The serial number can be found on the nameplate, on the front (king pin end) of the ride.

Bulletin 89-2 is stil in effect on all other Super Loops.

SERVICE BULLETIN

LARSON INTERNATIONAL INC.

P.O. Box 638, Plainview, TX 79073-0638

Phone 806-293-1353 Fax 806-293-5215

July 18, 1994

SERVICE BULLETIN 94-1

SUPER LOOPS (*RING OF FIRE*) - *HINGE PINS*

The purpose of this bulletin is to rescind Bulletins 89-2A, 89-5 and 89-2, in their entirety; however, the following is the latest direction concerning hinge pins.

Only Super Loops (Ring of Fire), Serial Numbers 89PA50044 and down are affected. Serial numbers 89PA50045 and up are <u>not</u> affected.

Fatigue cracks have been found in the hinge pins on some of the older Super Loops Amusement Rides. This fatigue could be caused by a number of factors. The two most obvious are: 1) the continual loading and unloading of the pin due to erection and lowering of the track and 2) improper support of the track during transport, allowing the hinge to take the majority of the bouncing load. With this in mind and in order to maintain a safe ride, the main hinge pins on the Super Loops must be inspected when the ride has been in operation for five (5) years and at (5) year intervals thereafter. This inspection is to be a magnaflux inspection performed by an inspector certified in the use of magnaflux. Be sure and obtain a written copy of this inspection and keep it with your Super Loops manuals.

Field experience has shown that many operators are not qualified to comply with this bulletin and in some cases have created dangerous situations. It is suggested that a factory technician is called to supervise the inspection and/or replacement of the hinge pin or that the ride is brought back to the factory.

If the ride operator decides to perform the inspection, he should call the factory at (806) 293-1353 for detailed instructions.

LARSON INTERNATIONAL INC.

P.O. Box 638, Plainview, TX 79073-0638

Phone 806-293-1353 Fax 806-293-5215

SERVICE BULLETIN

November 15, 1994

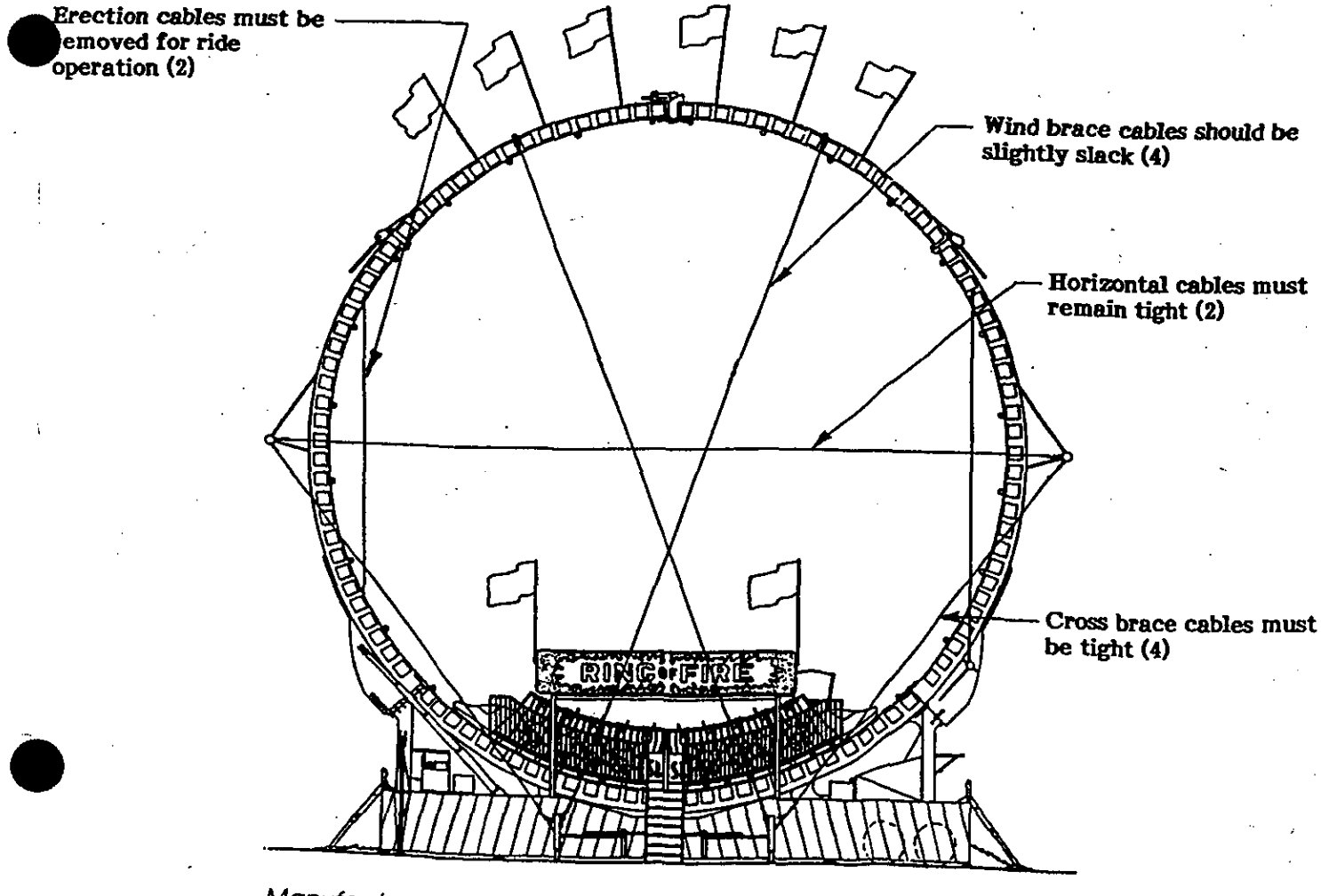
SERVICE BULLETIN 94-2

SUPER LOOPS (RING OF FIRE)

The purpose of this bulletin is to alert ride operators/ride inspectors of the proper cable tensions for Super Loops (Ring of Fire). The illustration below depicts the proper cable tensions on the horizontal and cross brace cables. The two (2) erection cables shown, for illustration ONLY, must be removed before any passengers are allowed on this ride. The reason the erection cables must be removed is so passengers cannot reach hands and arms outside the train and grab the cables.

The reason the wind brace cables must not be tight is to keep the track a true circle. These cables, when overtightened, will crush the circle into an elliptical shape. This causes extreme pressures on the jactuators and the train axles during operation.

CAUTION: THE ERECTION CABLES MUST ABSOLUTELY BE REMOVED FROM RIDE BEFORE PASSENGER OPERATION. DO NOT TIE ERECTION CABLES TO TRACK DURING OPERATION - REMOVE CABLES FROM RIDE!

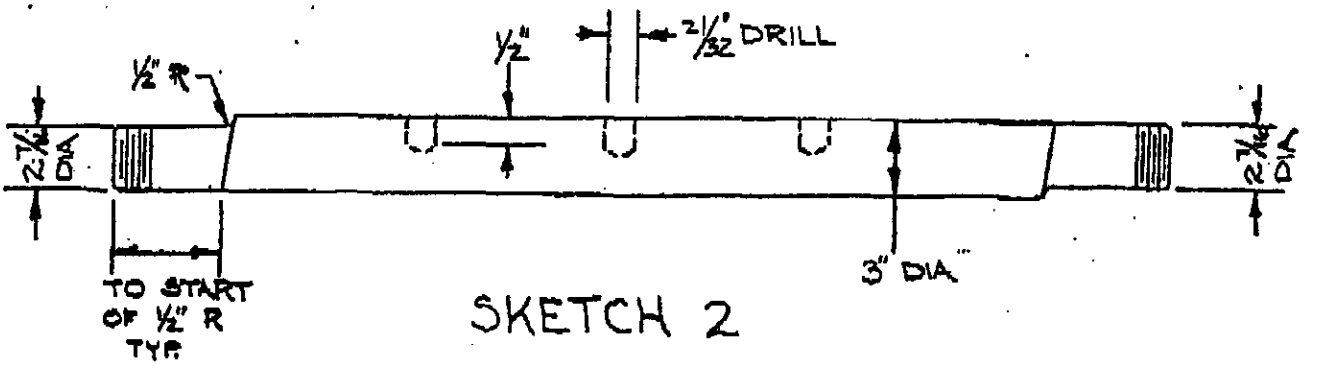


Note: Some hinge pins are not eccentric. These can be identified by looking at the pin ends. The eccentric pin will be 2 7/16 inch diameter on both ends. The concentric pin will be 2 7/16 inch diameter on one end and 3 inch diameter on the other. On the concentric pin, only the position of the hinge pin needs to be marked.

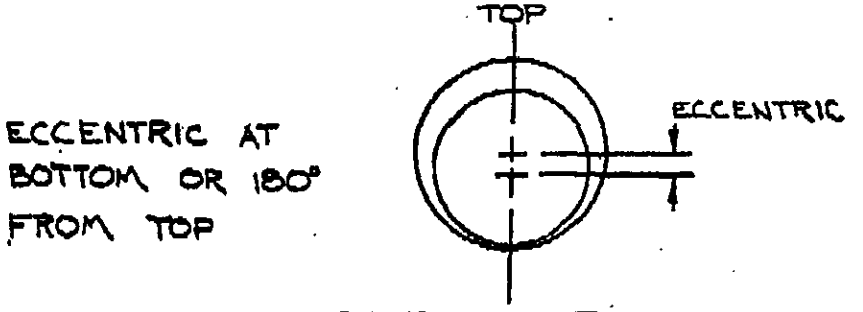
After marking the parts, remove the lock nuts on each end and the three set screws located in the trailer section hinge. Remove the hinge eccentric, sleeve eccentric, key, and bearing from each end. Note: keys are not used on concentric pins. Remove the hinge pin. Concentric hinge pins must be removed with the large end being removed first. In some cases, the pin will have to be driven out, in which case, the threads must be protected.

After the pin is removed, it must either be replaced or inspected by an inspector certified in the use of magnaflux. The primary areas of inspection are the shoulders located near each end. This shoulder is the piont where the shaft changed diameter from 2 7/16 inches to 3 inches. If there is evidence of a crack, the pin must be replaced.

To reuse a pin that has been found free of cracks, it must be remachined as shown in Sketch 2. This increases the corner radius, reducing the stress concentration of that area. Reuse of a pin without this change is not permitted.



SKETCH 2



SKETCH 3

Note: Most rides, Serial No. 44 and up do not use an eccentric hinge pin and have the large shoulder radii. These pins must be inspected at the five (5) year intervals, but do not require further machining.

If a new hinge pin(s) is ordered, place the old pin next to its replacement so that both are oriented the same. Mark the new one the same as the old. The three (3) set screws holes are not predrilled. This is to be done at assembly to insure proper position of the holes. Install the pin into the hinge housing. The pin should protrude equally out each end of the hinge housing. Align marks as previously set during disassembly. With the three setscrews removed, mark the positions of the setscrew holes on the hinge pin with a center or prick punch. Remove the pin and drill each center with a 21/32 inch diameter drill with the full diameter going 1/2 inch deep as shown in Sketch 2.

Note: If the parts were not marked during disassembly, hinge pin is placed in the hinge housing as stated above. Set the eccentric at the bottom or 180 degrees from the uppermost of the pin as viewed when looking down on the pin. See Sketch 3. Mark the position of the setscrew holes, remove the pin and drill as stated above. During assembly, it will be required to realign the tracks.

To reassemble, put the hinge pin into the housing, aligning the setscrew holes. When setscrew holes are aligned, replace the setscrews. Install the bearing cups in the main hinge eccentric and assemble the main hinge eccentrics to the front (or rear) section housing, being sure to align markings. If markings were omitted, place both top and bottom main hinge eccentrics in the same orientation.

Pack the bearing cone with a multipurpose grease and install the bearing cone on the eccentric sleeve and install this assembly onto the hinge pin, aligning the keyway and the previous markings. Drive in the key. If markings were not made previous to disassembly, align the sleeve with the pin so that the total effect of the eccentric is zero (0). (In other words, the thick part of the sleeve should match the high side of the pin shoulder.)

Replace the bearing nuts and washers, locking the nuts in place. Replace the covers and the felt packing. Grease the bearings.

<u>After replacing the pins, carefully erect the ride, paying particular attention to the track on the folding section as it needs to be centered on the trailer track section. There should be no mis-alignment or binding as it may damage the dowel pins.</u>

If the marking was omitted or ride is out of alignment, the ride must be erected and aligned. To accomplish this, normal erection

procedures are followed, being sure that the trailer is properly leveled in all directions before starting. After erection, if one track is high, the other low, bring the ride down. DO NOT ATTEMPT TO ADJUST IN THE RAISED POSITION. Adjust the bearing sleeves to raise or lower the proper track. These sleeves may be rotated 180 degrees. Erect the ride again and recheck position. If the sleeves will not give enough adjustment, it will be necessary to remove one or both hinge pins, turning the pin(s) 180 degrees, redrilling the setscrew holes, and repeating the alignment procedure.

To help prevent fatigue cracks, all Super Loops were provided with transport carriers, Figure 4. When the track is lowered to the trailer for transport, a set of wheels mounted on the track engage a ramp, lifting the free end of the track onto the transport carrier. When the track is completely down, this carrier, through a parallelogram linkage, further lifts and supports the free end of the track. At this point, the ramp wheels should have some clearance (1/16 to 1/4 inch) with the ramp. If the ramp, ramp wheels, and/or the transport carriers are damaged or missing, they must be repaired or replaced. If the transport carrier does not lift the ramp wheels off the ramp, shim or modify as necessary.

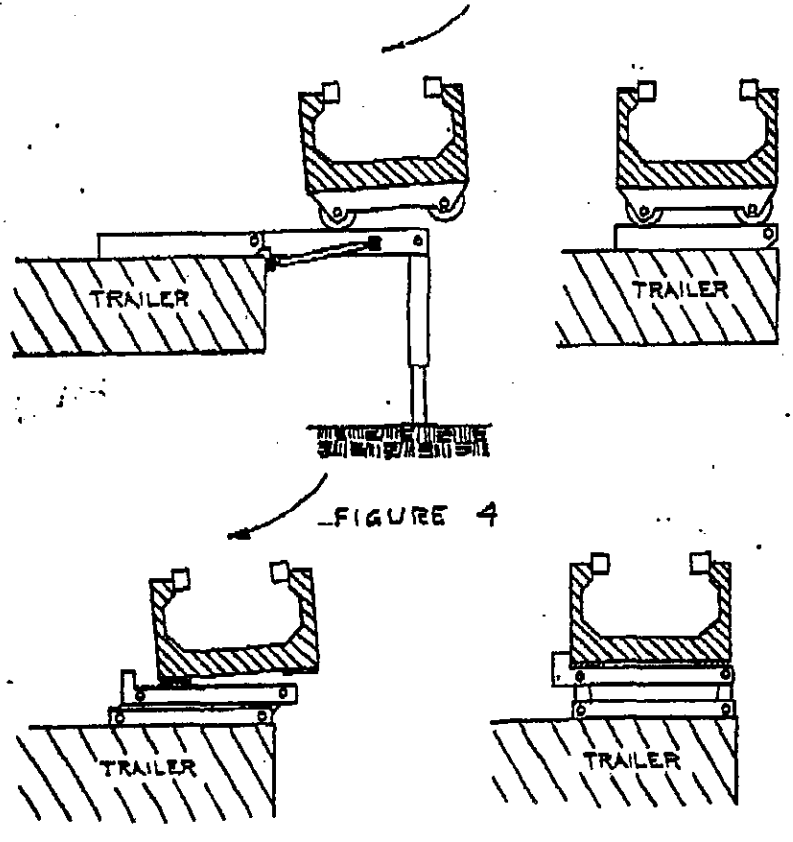


FIGURE 4

This bulletin should be complied with as soon as possible but no later than December 31, 1989.

SERVICE BULLETIN

November 14, 1989

SERVICE BULLETIN 89-5

SUPER LOOPS - HINGE PINS

This bulletin supersedes Service Bulletin 89-2.

Fatigue cracks have been found in the hinge pins on some of the older Super Loops Amusement Rides. This fatigue could be caused by a number of factors. The two most obvious are: 1) the continual loading and unloading of the pin due to erection and lowering of the track and 2) improper support of the track during transport, allowing the hinge to take the majority of the bouncing load. With this in mind and in order to maintain a safe ride, the main hinge pins on the Super Loops must be inspected when the ride has been in operation for five (5) years and at five (5) year intervals thereafter.

Field experience has shown that most operators are not qualified to comply with Service Bulletin 89-2 in the field, and in some cases have created dangerous situations. Therefore it will be necessary to have a factory technician supervise the inspection and/or replacement of the hinge pins in the field or that the ride be brought to the factory to have this done. To save the customers' cost, the technician will supervise the customers' own people in complying with the bulletin and at the same time provide a free inspection of the overall condition of the customer's ride and free training on the operation and maintenance of the ride.

You may call the factory at 806-293-5214 to make arrangements to have this bulletin complied with and discuss the charges.

Manufacturers of
The Hi-Roller • Super Loops • Whirlwind • Paratower

THE HI-ROLLER CO.

(806) 293-5214
FAX (806) 293-5215

P.O. Box 1968
Plainview, TX 79073-196

LARSON INTERNATIONAL INC.
October 22, 1996

ADVISORY BULLETIN

Ride: Ring of Fire and Super Loops manufactured by Larson International Inc., Hi-Roller Co., and LMC, Inc.
Subject: TOP HOOK BREAKAGE
Bulletin describes top hook breakage apparently caused by incorrect tear down procedures. Larson suggests retraining ride help on proper erection and teardown. For more information contact manufacturer at (806) 293-1353.

Go Back to Bulletin Page

ADVISORY BULLETIN

LARSON INTERNATIONAL INC.

P.O. Box 638, Plainview, TX 79073-0638

Phone 806-293-1353 Fax 806-293-5215

October 22, 1996

ADVISORY BULLETIN

RING OF FIRE (SUPER LOOPS)
Manufactured by Larson International & Hi-Roller Company

SUPER LOOPS
Manufactured by LMC, Inc.

SUBJECT: TOP HOOK BREAKAGE

Recently there have been several incidents of breaking the top hook. THERE IS NO WAY THE TOP HOOK CAN BE BROKEN UNLESS IT IS BY IMPROPER TEAR DOWN PROCEDURES. It is apparent that untrained personnel are being allowed to erect and tear down the Ring of Fire (Super Loops). It is imperative that all owners re-check the erection/tear down procedures and follow the instructions in the owners manual, on the decal at the control valves, and as shown in the erection video tape.

The only way the top hook can be broken is by extending it past the limits as marked by red paint and the operator trying to bring both sections down at the same time or bring the front section down first. The top hook should be extended only far enough to clear the guide rollers (See Figure B). The operator should then be able to lower the rear track section allowing the roller to come out of the top hook through the gap provided (See Figure C) . If the roller remains at the outer end of the slot in the hook, then the leveling jacks must be adjusted so that the roller is at the back of the slot and free to come out of the gap when the track section is lowered, i.e. the hook should push the rear track section back thus opening the track and clearing the dowel pins. Roller must rotate freely and should have a coat of wheel bearing grease.

Note: Illustrations shown without top safety lock turnbuckles for simplicity purposes only. These turnbuckles must be in place before operating with passengers.

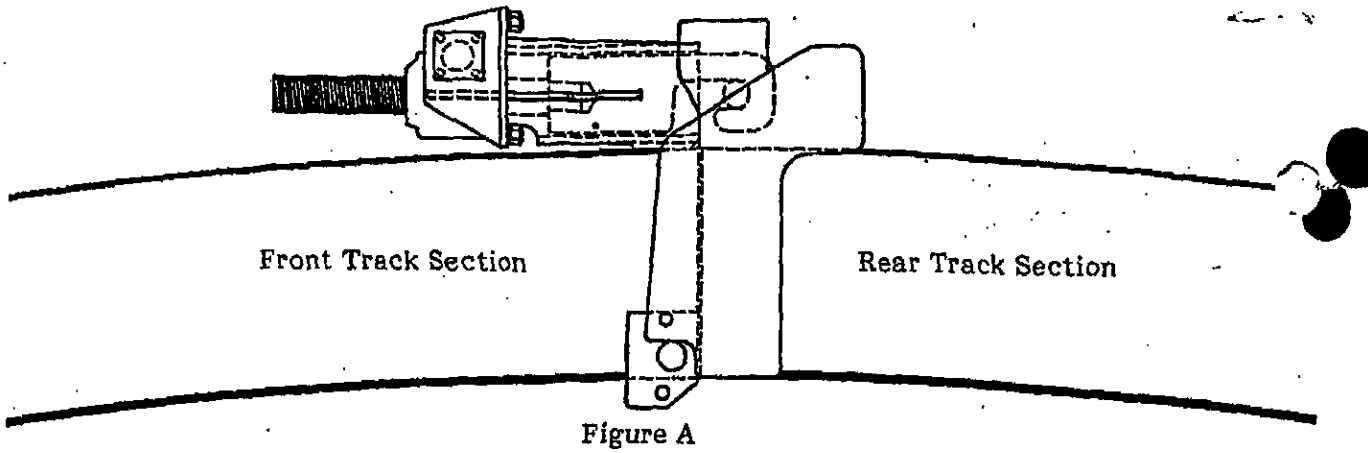


Figure A

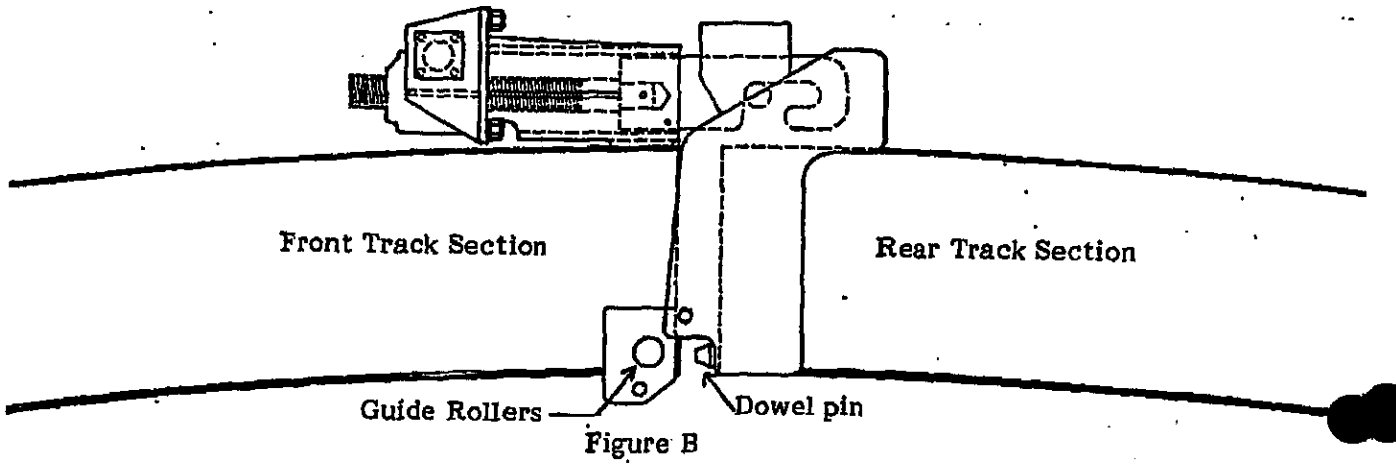


Figure B

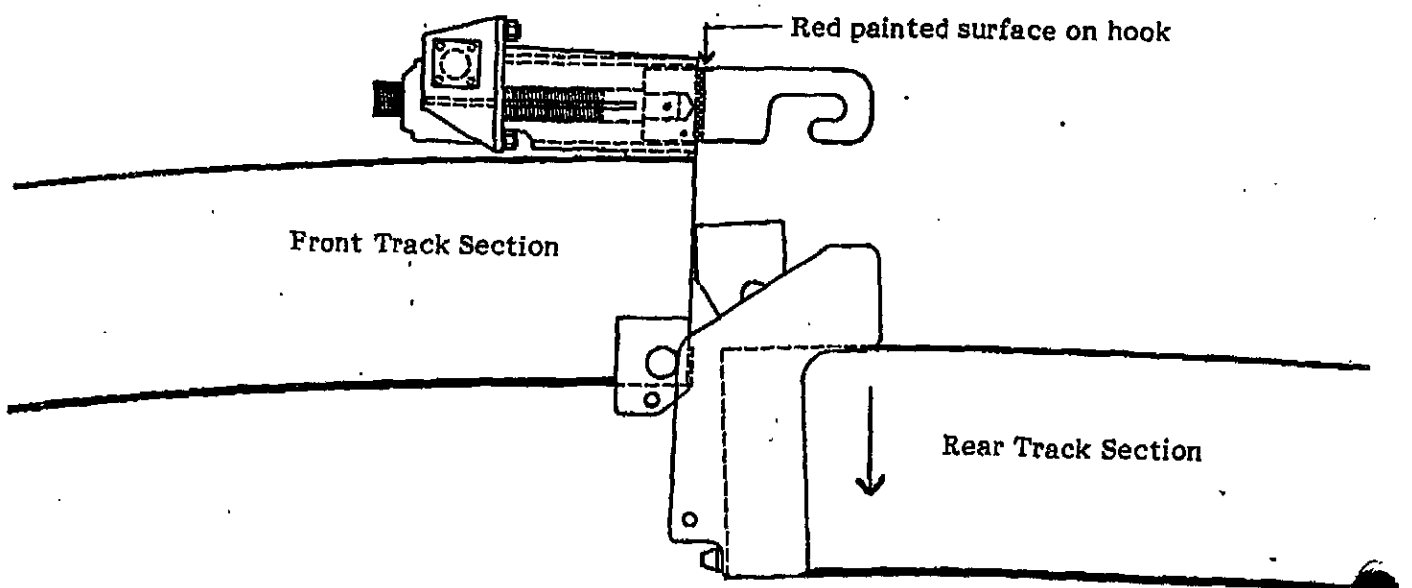


Figure C

	Issuing Entity: Larson International Inc. P.O. Box 638 Plainview, TX 79073-0638 U.S.A. Phone 806-293-1353 Fax 806-293-5215 www.larsonintl.com	Bulletin No.: L03-001 Release Date: 02/24/03 Effective Date: Immediately Supercedes: N/A Completion Date: 03/31/03 Page: 1 of 4

SERVICE BULLETIN

Ride Manufacturer: Larson International, Inc. **Affected Production Dates: All**
Ride Name: Ring of Fire & Fire Ball **Affected Serial Nos.: All units**

Ride Manufacturer: Hi Roller Company **Affected Production Dates: All**
Ride Name: Ring of Fire **Affected Serial Nos.: All units**

Ride Manufacturer: LMC, Inc. **Affected Production Dates: All**
Ride Name: Super Loops **Affected Serial Nos.: All units**

Abstract Of Issue:
Addition of a positive lock to secure the train in an inverted position in order to increase safety during the inspection process.

Reason for Release:
In order to properly inspect and maintain the ride, the train needs to be stopped in an inverted position. Movement of the train during inspection may result in serious injury or death. This method to positively lock the train increases safety during required inspection and maintenance.

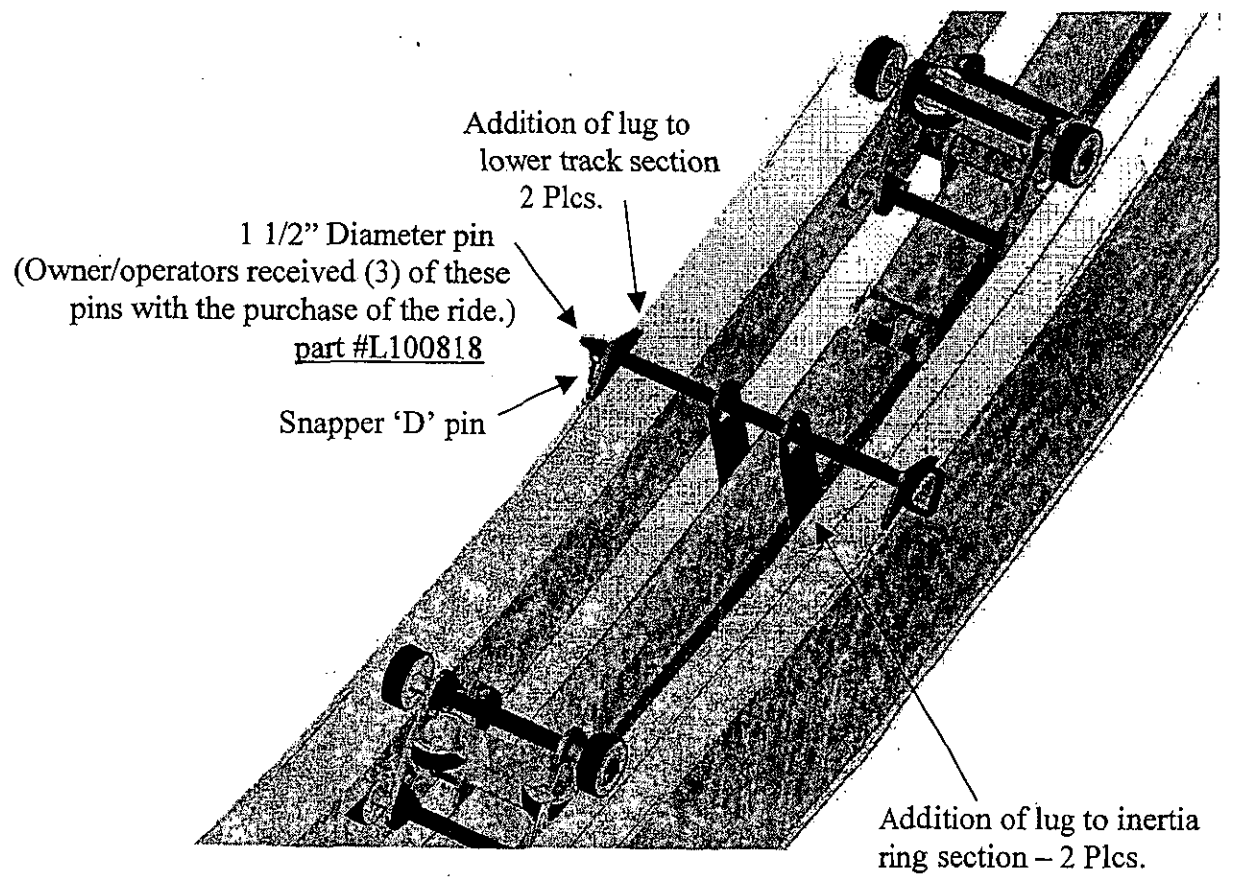
Action To Be Taken:
Add inverted positive lock.
Larson International, Inc. requires that the following procedure be completed within 60 days from the date of this release.
Components for this inverted positive lock may be purchased from Larson International, Inc. or may be manufactured by the owner/operator in compliance with the following drawing specifications.

A certified welder must complete all welds.
Caution: Inertia section contains 1/2 quart of oil. Welder must be aware of this condition.
Caution: Ensure inverted train is centered at top of track and secured, such as with chains, before attempting this procedure.

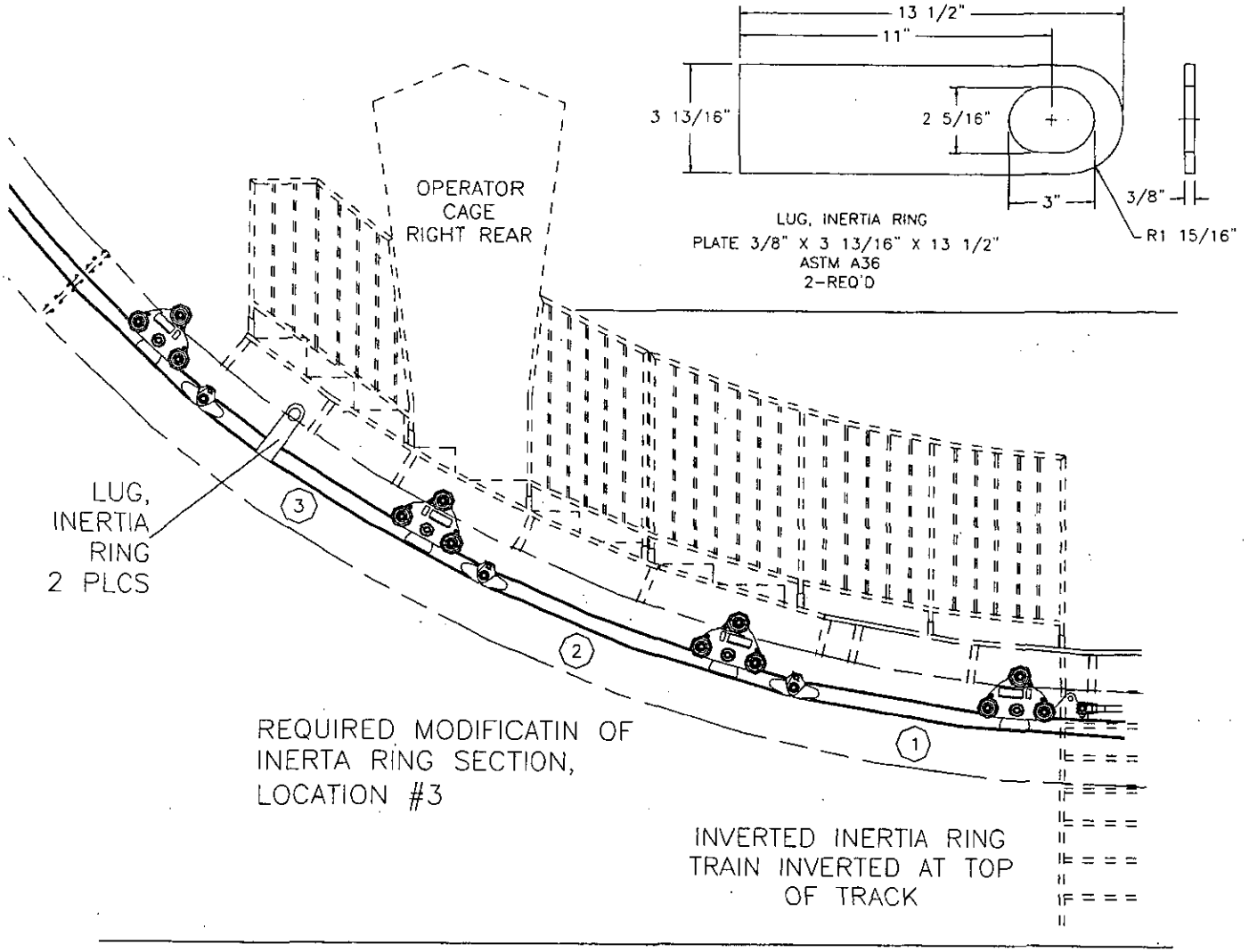
See Detail of Issue below.

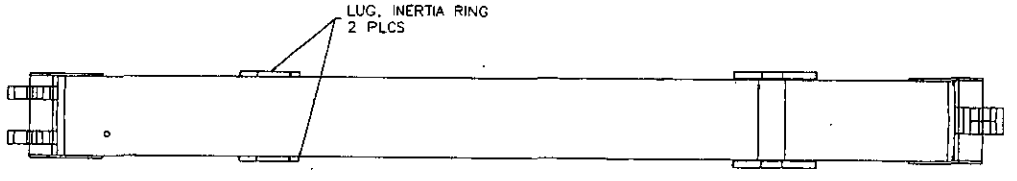
Detail Of Issue:
(Text/Drawings/Schematics)

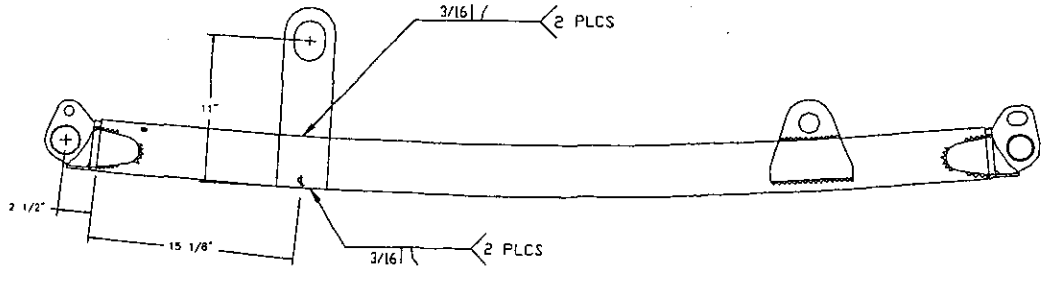
RENDERING



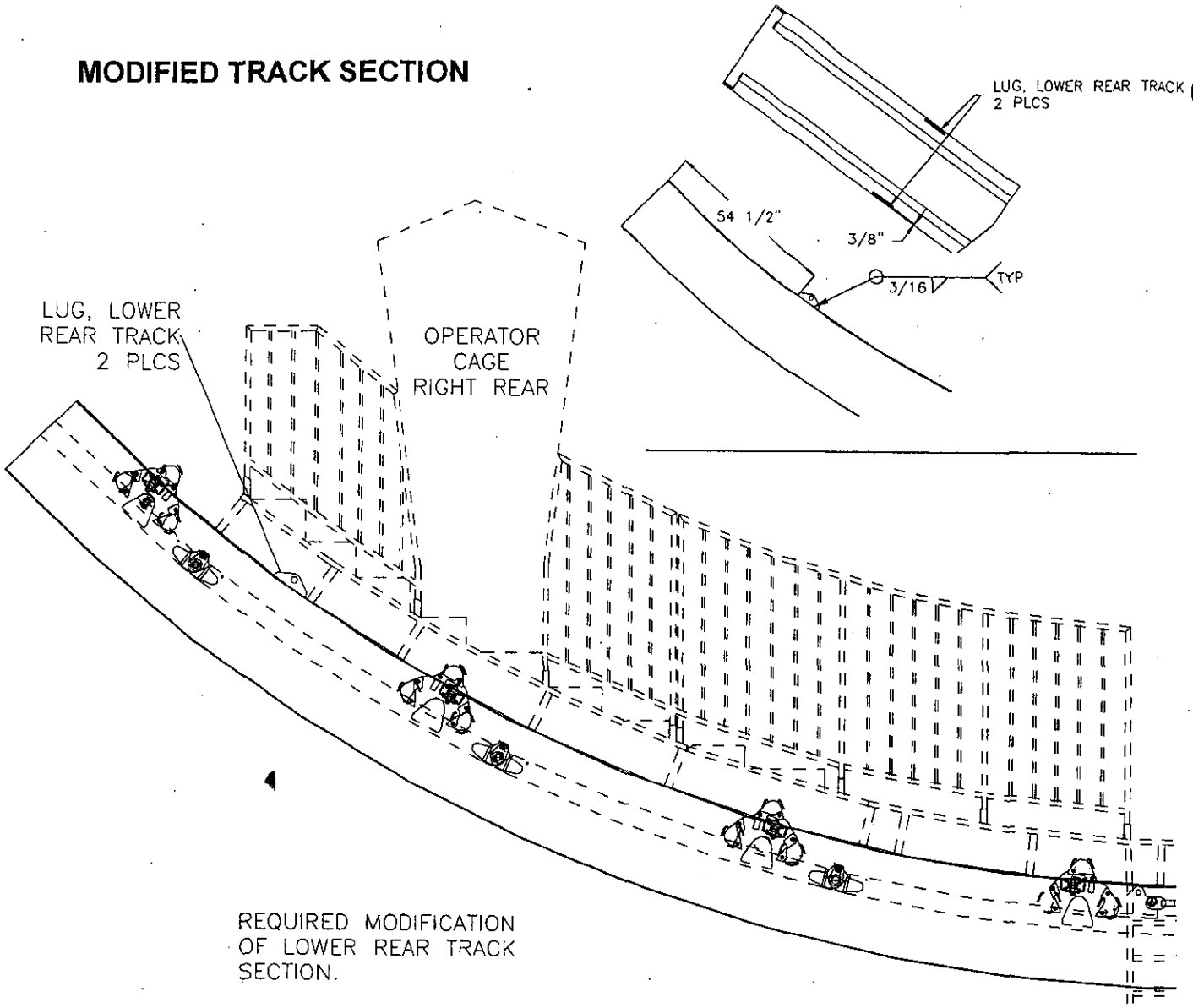
MODIFIED INERTIA SECTION





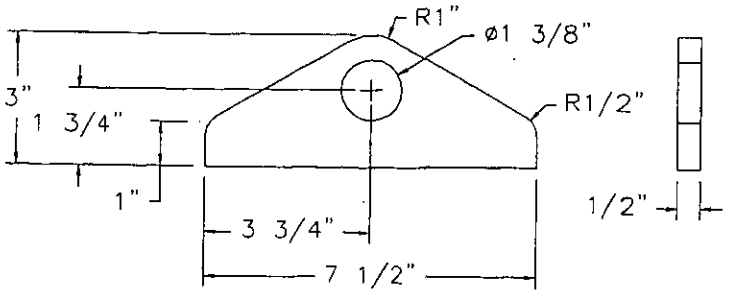


MODIFIED TRACK SECTION



REQUIRED MODIFICATION OF LOWER REAR TRACK SECTION.

LUG, LOWER REAR TRACK
PLATE 1/2" X 3" X 7 1/2"
ASTM A36
2-REQ'D



	Issuing Entity: Larson International Inc. P.O. Box 638 Plainview, TX 79073-0638 U.S.A. Phone 806-293-1353 Fax 806-293-5215 www.larsonintl.com	Bulletin No.: L03-002 Release Date: 02/24/03 Effective Date: Immediately Supercedes: N/A Completion Date: N/A Page: 1 of 2

SERVICE BULLETIN

Ride Manufacturer: Larson International, Inc. **Affected Production Dates: All**
Ride Name: Ring of Fire & Crazy Train **Affected Serial Nos.: All units**

Ride Manufacturer: Hi Roller Company **Affected Production Dates: All**
Ride Name: Hi roller & Ring of Fire **Affected Serial Nos.: All units**

Ride Manufacturer: LMC, Inc. **Affected Production Dates: All**
Ride Name: Super Loops **Affected Serial Nos.: All units**

Abstract Of Issue:
Mandatory daily inspection of lap bar padding.

Reason for Release:
Certain operators have allowed rides to operate despite severely worn lap bar padding. This poses a threat of injury or death if the riders are not properly restrained due to worn padding.

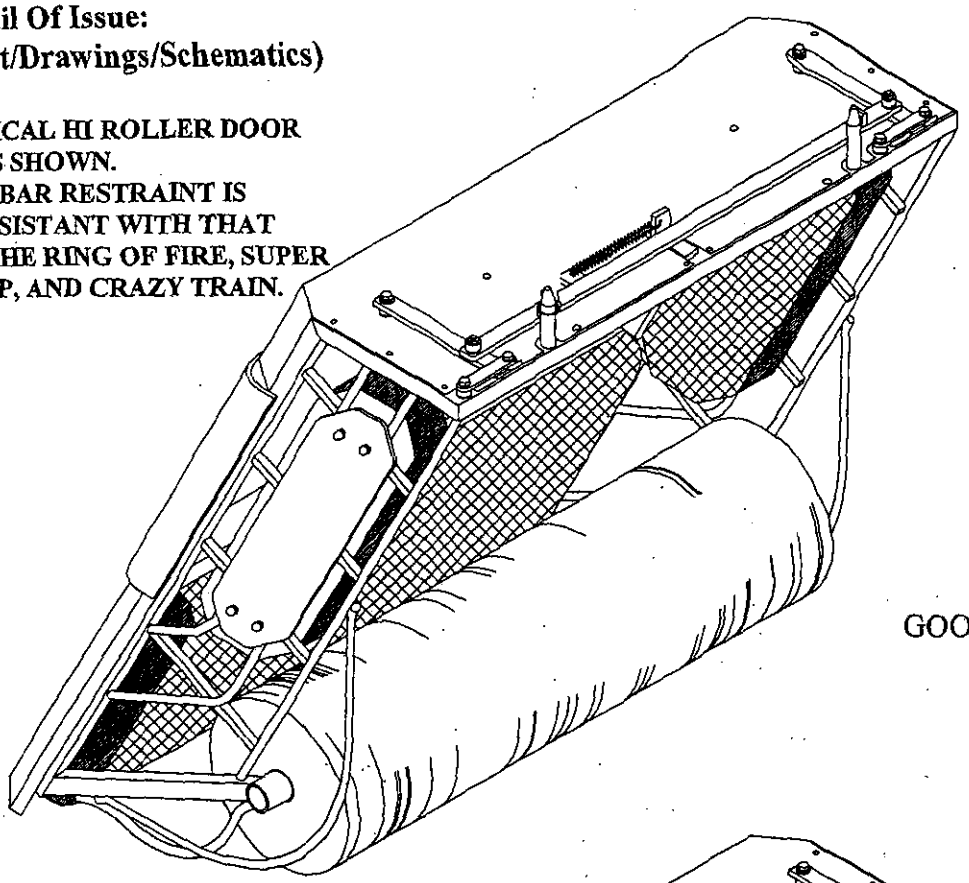
Action To Be Taken:
Inspect lap bar padding on a daily basis. Replace padding if:

1. **The foam padding does not hold its memory.**
2. **The foam padding is worn or torn to the point it will not hold a passenger in their seat firmly.**
3. **The foam padding is torn internally such that the padding hangs or sags from the shaft that is to run through the center of the padding.**
4. **The foam padding is egg-shaped or sagging and is no longer cylindrical in shape.**

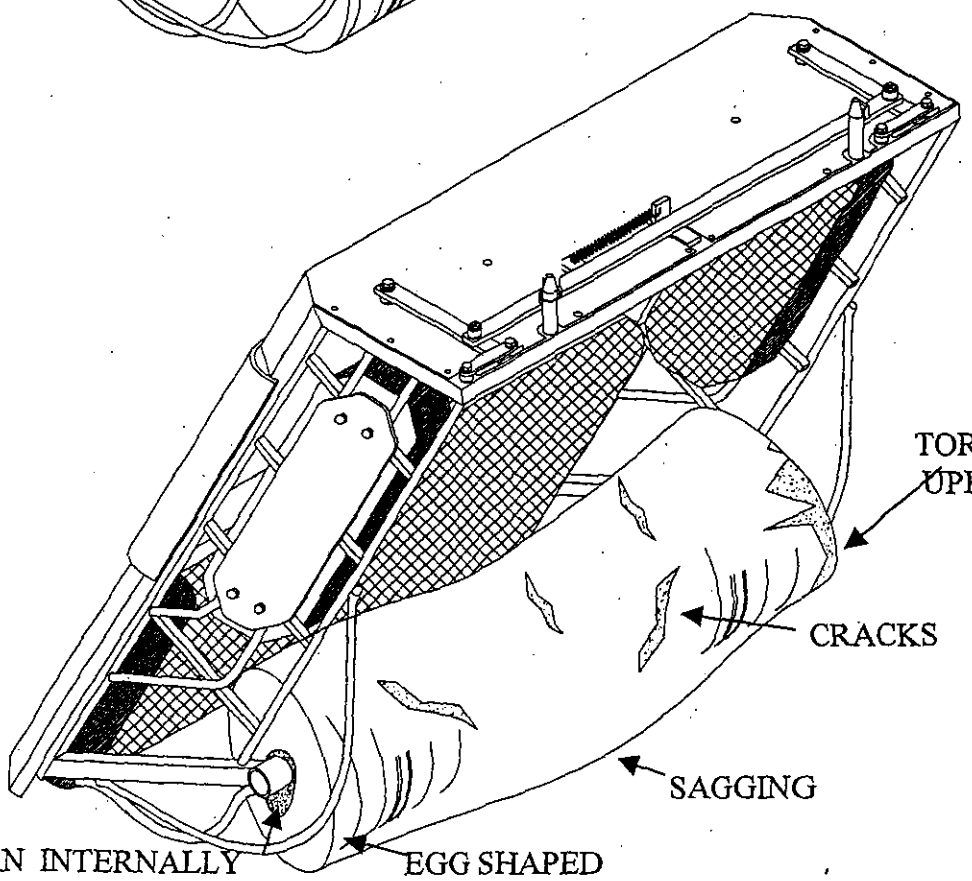
Minor damage to the upholstery cover is permissible as long as it does not pose a threat to passenger safety.

Detail Of Issue:
(Text/Drawings/Schematics)

TYPICAL HI ROLLER DOOR IS AS SHOWN.
LAP BAR RESTRAINT IS CONSISTANT WITH THAT OF THE RING OF FIRE, SUPER LOOP, AND CRAZY TRAIN.



GOOD CONDITION



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Bulletin No.: L03-003
Release Date: 02/24/03
Effective Date: Immediately

Supercedes: N/A
Completion Date: N/A

SERVICE BULLETIN

Ride Manufacturer: Larson International Inc. **Affected Production Dates: All**
Ride Name: Ring of Fire & Crazy Train **Affected Serial Nos.: All units**

Ride Manufacturer: Hi Roller Company **Affected Production Dates: All**
Ride Name: Hi Roller & Ring of Fire **Affected Serial Nos.: All units**

Ride Manufacturer: LMC, Inc. **Affected Production Dates: All**
Ride Name: Super Loops **Affected Serial Nos.: All units**

Abstract Of Issue:
Clarification of rider restrictions

Reason for Release:
Larson International Inc. has learned that some operators are not following proper guidelines for rider restrictions. This Bulletin is intended to clarify those issues.

Action To Be Taken:
Larson International Inc. requires all owner/operators of the above-named rides to enforce the following rider restrictions:

1. **Each rider is to be at least 48" tall.**
2. **No single riders are allowed. There must be 2 riders in each seat.**
3. **Patrons must be of the height, weight and shape to properly fit in the passenger seats. The restraint must properly and fully engage.**
4. **The patron must have upper body strength in order to properly sit in the seat, thighs and upper leg strength to allow the lap bar to engage and retain the patron in the seat.**

Issuing Entity:
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Fax 806-293-5215
www.larsonintl.com

Bulletin No.: L03-005
Release Date: 02/24/03
Effective Date: Immediately

Supercedes: N/A
Completion Date: N/A

SERVICE BULLETIN

Ride Manufacturer: Larson International Inc. **Affected Production Dates: All**
Ride Name: Ring of Fire & Fire Ball **Affected Serial Nos.: All units**

Ride Manufacturer: Hi Roller Company **Affected Production Dates: All**
Ride Name: Ring of Fire **Affected Serial Nos.: All units**

Ride Manufacturer: LMC, Inc. **Affected Production Dates: All**
Ride Name: Super Loops **Affected Serial Nos.: All units**

Abstract Of Issue:

Mandatory inspection requirements for actuator brass gear and actuator operating pressures. Some manuals refer to this assembly as "jactuator".

Reason for Release:

Larson International Inc. has learned that some operators are not following the service requirements supplied in the manual for the ride. As a result, they are failing to properly conduct annual inspections of the actuator brass gear threads. Failure to properly inspect and maintain the actuator brass gear threads, both internal and external, can cause failure of the actuator. Failure of the actuator poses a risk of serious injury or death and damage to the ride. When the threads in the brass gear fail this allows the top section of the ride to fall during erection or disassembly causing severe damage to the main section as well as the top section. Abnormal wear and load is created by allowing dirt and foreign objects to accumulate on the screw shaft or from lack of lubrication.

Caution: Actuator assembly should never be run without proper lubrication.

Action To Be Taken:

ANNUAL ACTUATOR INSPECTION:

1. **Remove actuator brass gear from actuator assembly and degrease.**
2. **Visually inspect threads of actuator brass gear to verify that there is no uneven wear, chipping, or cracks.**

3. Measure the face of the internal threads of the actuator brass gear in order to verify that the threads measure not less than 3/16". (See Step 9 of Detail Of Issue)
4. Should the components fail to meet the inspection criteria, the actuator brass gear must be replaced.
5. Reassemble and pack actuator assembly with Texaco EP #1 or equivalent. Apply a thick uniform coating of multiple-purpose grease to lubricate the actuator screw.

ERECTION OF RIDE:

1. The actuator screw should be cleaned and re-greased each time after moving the ride and prior to erection. This reduces wear on the actuator assembly.
2. Caution: Never run actuator pressures above 2100 psi. The actuator should operate smoothly at pressures below 1900 psi. If at any time during use of the actuator there is jerkiness or uneven movement do not attempt to complete erection of the ride. Carefully bring the top section back down to the stowed position and inspect both the actuator screw and brass gear.

Detail Of Issue:
(Text/Drawings/Schematics)

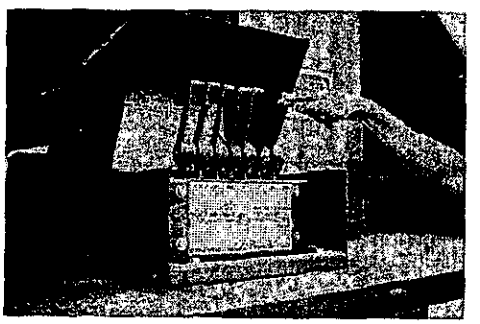
The following procedure is to be done while the ride is in transport position.

STEP ONE

Remove cotter keys from actuator screw.

STEP TWO

Relieve pressure from pin by moving hydraulic levers.

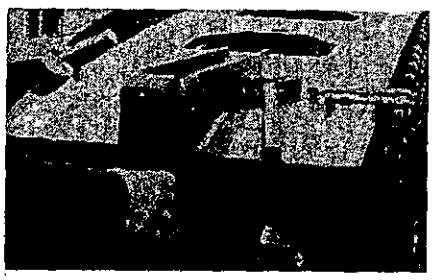


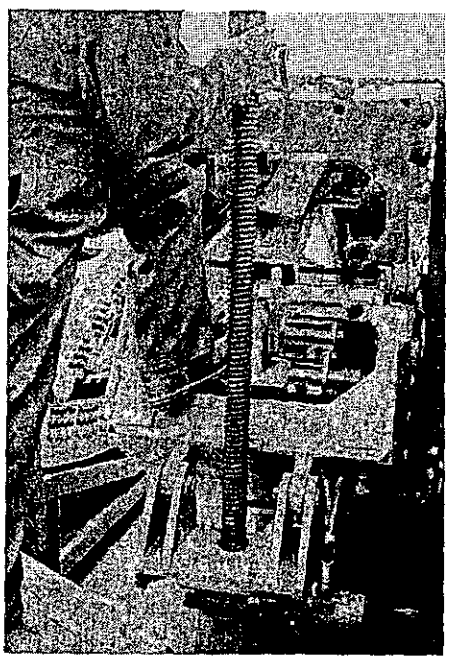
STEP THREE

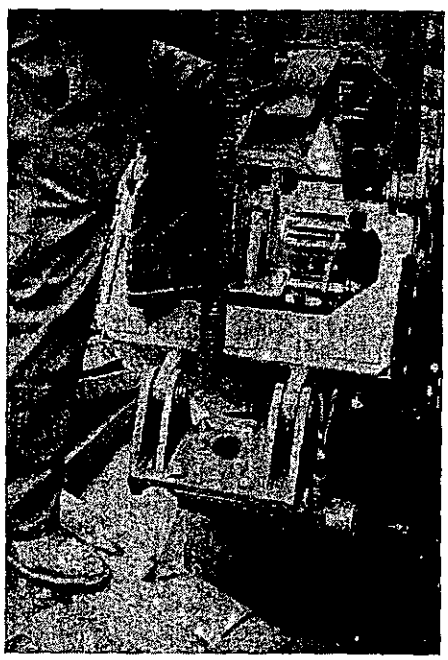
Remove pin.

STEP FOUR

Remove actuator screw.

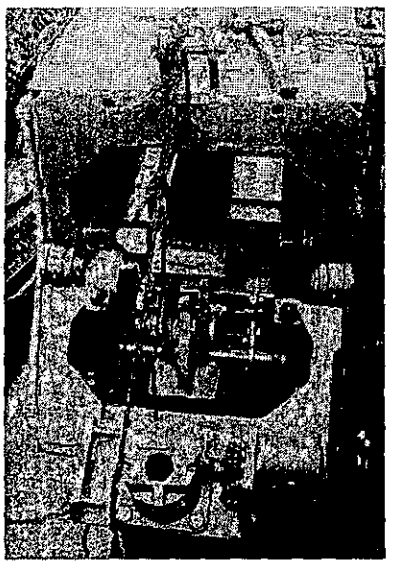






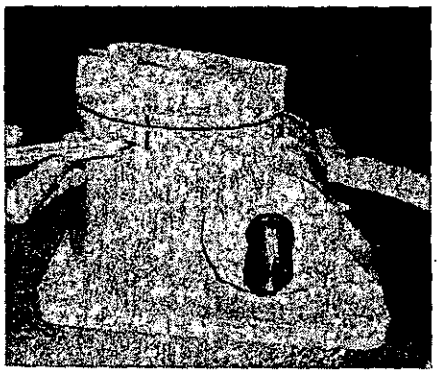
STEP FIVE

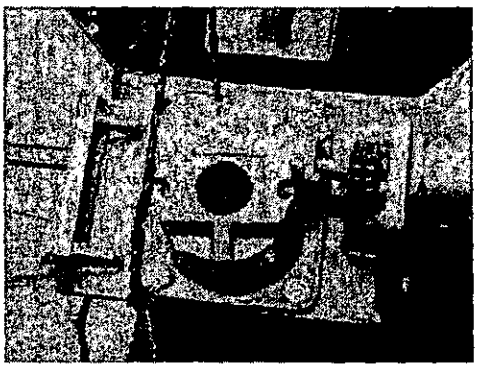
Tie up actuator mounting assembly for ease of work



STEP SIX

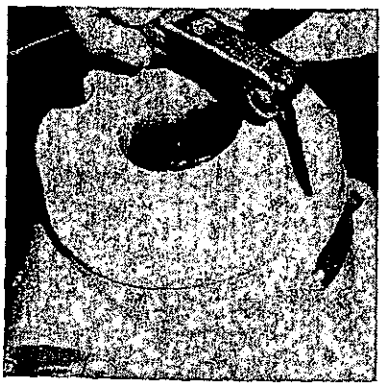
Mark actuator gearbox assembly and cap before removing. (Work can be performed without removing gearbox actuator assembly from ride.)

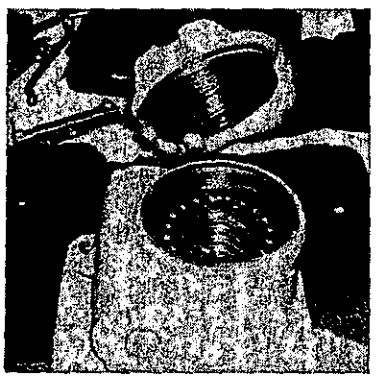




STEP SEVEN

Remove cap on actuator gearbox by removing screws, tapping with hammer, and unscrewing cap.

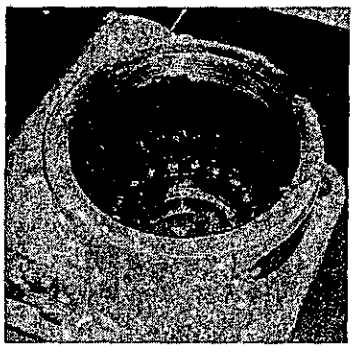




STEP EIGHT

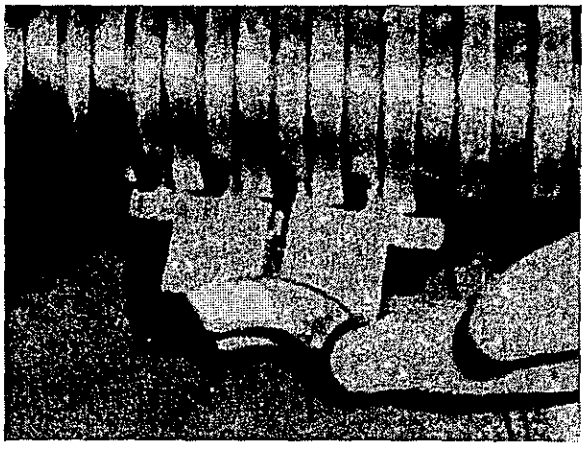
Remove bearing and actuator brass gear and inspect threads on gear. Degrease and inspect brass gear and bearing.

WARNING: Replace brass gear if threads are less than 3/16".

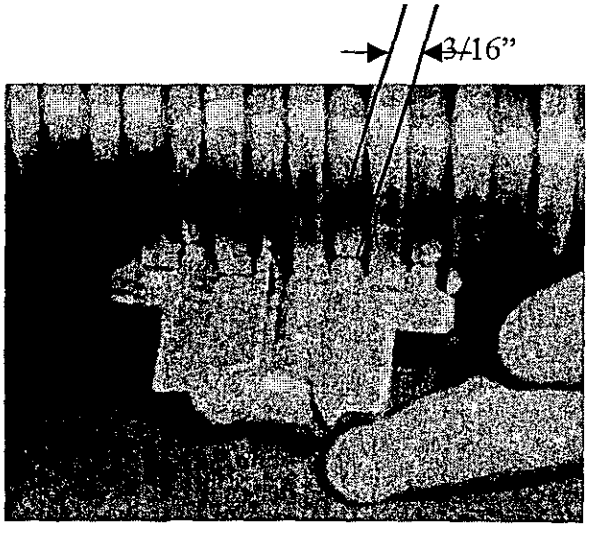


STEP NINE

If brass gear threads are less than 3/16", install new brass gear. If threads are acceptable, reinstall.



UNACCEPTABLE



ACCEPTABLE

STEP TEN

Reassemble the entire actuator gearbox assembly.

ATTENTION: Ensure bearings are in proper position and pack with Texaco EP #1 or equivalent lubricant.

Align marks on cap and gearbox by tapping with hammer.

ATTENTION: The bearings have moved out of position if, after hand screwing and tapping, the marks do not align.

WARNING: Do not over tighten and get actuator gearbox in a bind.

STEP ELEVEN

Reassemble unit on ride utilizing new cotter pins. Grease screw and zerk fittings.