

DATE: JANUARY 4, 1988

TO: OPERATORS OF CORKSCREW, LOOP, AND SUSPENDED COASTERS

SUBJECT: CHASSIS SPINDLE INSPECTION AND INSTALLATION PROCEDURE

TYPE OF ACTION: RECOMMENDED AS PART OF NEXT ANNUAL N.D.T. INSPECTION AND THEREAFTER.

DISCUSSION: THE CHASSIS SPINDLE IS TO BE INSPECTED FOR CORROSION AT THE SEAT FILLETS. SPINDLES WITH PITTING CORROSION ARE TO BE REPLACED. THE SPINDLE AND CHASSIS HOUSING ARE TO BE COATED WITH A CORROSION INHIBITOR FOR INSTALLATION.

**ACTION REQUIRED:**

1. REMOVE THE CHASSIS-AXLE SPINDLE  
SUSPENDED COASTER - PART NO. C54849  
CORKSCREW COASTER - PART NO. C33639
2. CLEAN SPINDLE AND BORE OF CHASSIS HOUSING WITH SOLVENT (METHYL ETHYL KETONE, NAPHTHA, 1, 1, 1 - TRICHLOROETHANE).
3. DRY SPINDLE AND BORE OF CHASSIS HOUSING.
4. INSPECT SPINDLE FOR PITTING CORROSION, AT FILLET RADIUS, ON BOTH SIDES OF THE SHAFT "SEAT" (SEAT IS LARGEST SHAFT DIAMETER).
5. IF SURFACE PITTING IS OBSERVED, REPLACE WITH NEW SPINDLE.
6. INSTALL SPINDLE USING ONE OF THE FOLLOWING SEALANTS: RHONE - POULENC RHODORSIL CAF 440F OR GENERAL ELECTRIC N-SIL RTV 128.
7. APPLY TWO (2) 1/4 INCH BEADS OF SEALANT TO TOP INSIDE OF BORE IN CHASSIS HOUSING AROUND ENTIRE CIRCUMFERENCE. APPLY SMALL BEAD ON TOP OF CHASSIS HOUSING.
8. APPLY 3/16 INCH BEAD OF SEALANT TO THE SPINDLE, 1/2 INCH BELOW THE BOTTOM OF THE SEAT.
9. SLIDE SPINDLE INTO CHASSIS HOUSING. EXCESS SEALANT SHOULD BE VISIBLE AT THE TOP AND BOTTOM OF THE CHASSIS HOUSING. IF NOT, REMOVE SPINDLE AND REPEAT STEPS 7 AND 8.
10. REMOVE EXCESS SEALANT. ALLOW TO CURE FOR 12 HOURS BEFORE USE.
11. THE REMOVAL OF SEALANTS DURING FUTURE N.D.T. INSPECTIONS CAN BE ACCOMPLISHED USING TOLUENE OR XYLENE. THEN FOLLOW PROCEDURES 1 THROUGH 10 FOR INSTALLATION.

ARROW CONTACT: ENGINEERING DEPARTMENT

ENCLOSURES: DRAWING C54849 - CHASSIS SPINDLE, DRAWING C33639-SPINDLE, CENTER AXLE.





**TECHNICAL BULLETIN 99-1**  
**Revision A      Date: April 2000**

**Roller Coaster Track and Structure Inspection and Maintenance**

**PURPOSE:**

Arrow has many coasters in operation today, with several of them now reaching the age of at least 25 years. The most important factor in the safety of any steel coaster regardless of its age is the diligence of the inspection and repair. If proper inspection and repair techniques are performed, the overall safety of the ride should not be in question.

**SCOPE:**

The following inspection procedures for track and structure are intended to be the minimum required in order to safely operate the ride. If problems are found while performing the inspections, more diligent inspections shall be performed at the location of the problem and at similar locations throughout the ride as described in Section 5.0, Increased Inspection based upon Indication.

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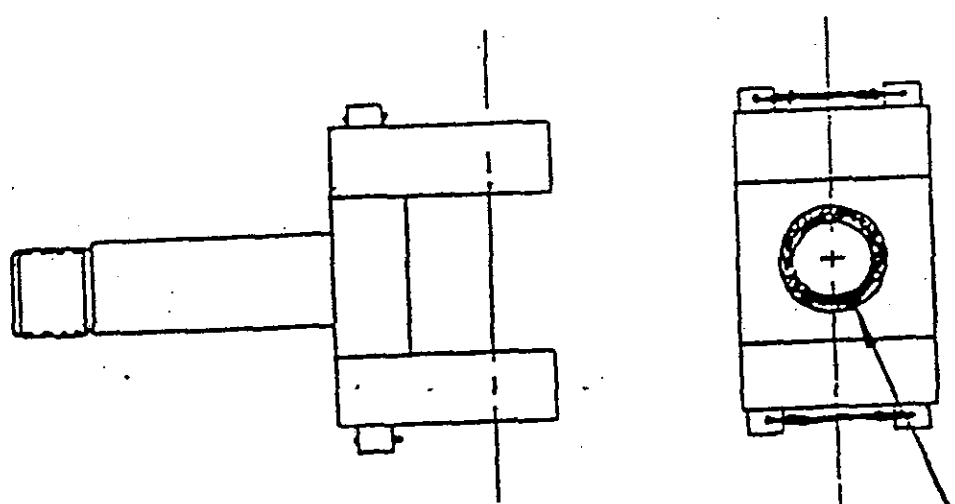
ARROW HUSS INC.

DATE: NOVEMBER 17, 1981  
TO: ALL CORKSCREW AND LOOP OPERATORS  
SUBJECT: NON-DESTRUCTIVE TESTING

GENTLEMEN:

During the past season, we were notified of one failure of a hitch yoke (C-32408) and one failure of an axle housing (D-31458). Although we do not think that there is a general problem, we do feel that a complete inspection of these two items is necessary before the next operating season.

A review of the Corkscrew owner's manual will show that an annual inspection of ALL hitch yokes is recommended. The hitch yokes must be removed from the coaches in order to inspect them properly. The entire yoke assembly must be subjected to a magnetic particle or dye penetrant inspection with particular attention given to the weld area shown in Fig. 1.



SPECIAL ATTENTION TO  
THIS WELD

FIG. 1

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If any cracks are found, the yoke assembly should be replaced. The axle housing must be removed from the chassis in order to make a proper examination.

The axle housing must be subjected to a magnetic particle or dye penetrant inspection over the area shown in Fig. 2, with special attention given to the weld around the top and bottom of the central hub area.

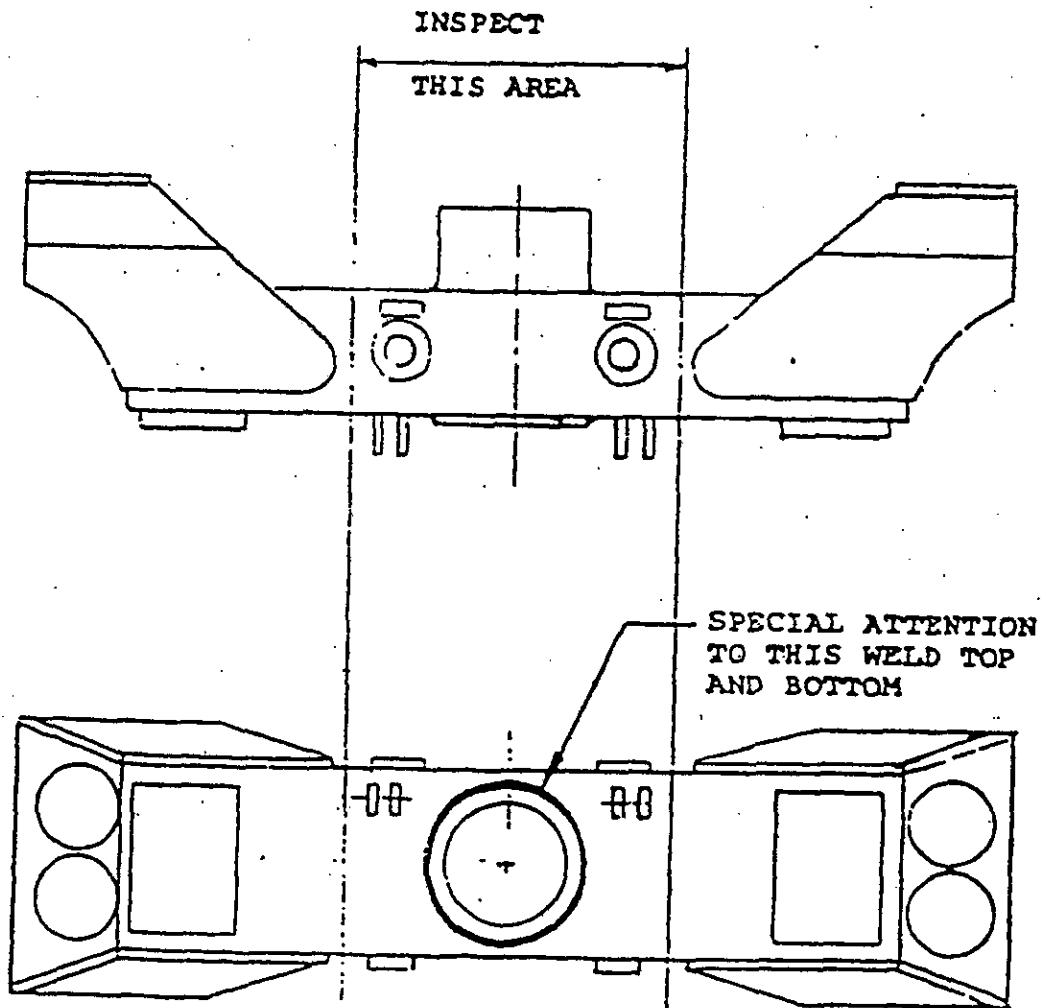


FIG. 2

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If any cracks are found, please contact the Engineering Department at Arrow-Huss for repair or replacement information.

It is very important to perform daily visual inspection of all chassis assemblies as called out in the owner's manual. Many problems including cracks can be located long before they cause trouble if someone with proper light only looks each day at the various parts on each chassis such as hitch yokes, axle housing, wheel carriers, chain and anti roll back dogs and chassis frames.

If there are any questions, regarding these recommendations, please contact Arrow Huss, (408) 438-4100.

Very truly yours,



Ronald V. Toomer  
Director of Engineering

RVT:wc