



Phillip Castellano
Manager, Technical Services

Where Fantasies Come True!

VIA CERTIFIED MAIL

March 20, 2002

P & R Amusements
3501 Boardwalk
Wildwood, NJ 08260
Attention: Maintenance/Technical Director

RE: Jumpin Star Ride
Serial Number JS06F005US99

Enclosed is Service Bulletin 2002 JS1 addressing need for inspection on the Jumpin Star 6 ride.

If you have any questions, please call.

Regards,

A handwritten signature in cursive script that reads "Phil Castellano".

Phil Castellano
Technical Services Manager

PC:lm

Enclosure

NJ# 3225

MP:
Abuse Bites!

3-26-02
Copy to: Paul Ankn
Scott Moore
file

ZAMPERLA INC. 49 Fanny Road Parsippany, New Jersey 07054-6545 USA Phone: 973 334 8133 Fax: 973 334 6880	Bulletin No: 2002 JS1
	Release Date: March 20, 2002
	Effective Date: March 20, 2002
	Supersedes:
	Completion Date: As soon as possible
Page: 1 of 11	

SERVICE BULLETIN

Ride Manufacturer: Zamperla Inc.	Affected Production Dates: All
Ride Name: Jumpin Star 6	Affected Serial Nos.: All
Model Number: Jumpin Star 6	

Abstract Of Issue:

A crack has been detected in the gondola trolley tubing.

Reason For Release:

Same

Action To Be Taken:

Follow the attached inspection procedure.

Detail Of Issue:

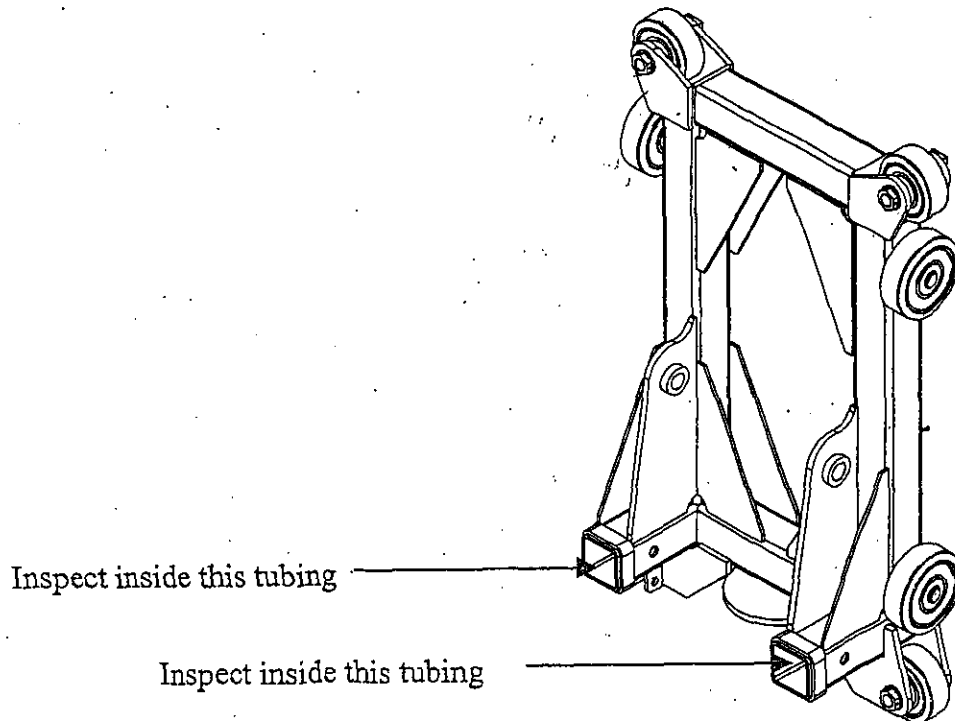
Trolley diagram & inspection procedure (page 2), MT 89005 (page 3-11)

Future Action To Be Taken:

Contact Zamperla Inc. for a repair procedure if a crack is detected.

Trolley Inspection Procedure (page 2)

1. Remove the gondola from the trolley assembly.
2. Visually inspect the square tubing of the trolley that accepts the square gondola tubing.
3. Special attention should be given to the inside corners of the tubing.
4. If there is a suspicious appearance during the visual inspection, perform a magnetic particle test (MT 89005).
5. If a crack has been detected during the magnetic particle test, Contact Zamperla for the repair procedure.





MAGNETIC PARTICLE TEST

1. OBJECT

This procedure can be applied to every iron material used at Antonio Zamperla Spa, in the different shapes, such as tubes, solids, plats, rolled, beams etc.

1.1 The same procedure can be extended to those circumstances where it's necessary the control of magnetic material, such as welding, chamferings, etc.

1.2 This specification is in accordance with:

- ASME V
- ASTM E 709
- EN 1290

2. PURPOSE

This procedures provides some criteria and their operating ways regarding tests with magnetic particles.

3. LIMITATIONS

3.1 Such specification does not exclude any other NDT.

3.2 This procedure must be applied before every superficial treatment of the material.

3.3 Considering the peculiar characteristic of the test, based on the magnetization of metallic material and on the subsequent application of magnetic powders, follows that:

3.3.1 the material must be magnetizable;

REV	DATE	REMARKS ANNOTAZIONI	PREPARED EMESSO	REVIEWED CONROLLATO	APPROVED APPROVATO
-	27-04-89	ISSUE	<i>Quero</i>	<i>Chel</i>	<i>Chel</i>
A	18-04-91	TOTAL REVISION	<i>Quero</i>	<i>Chel</i>	<i>Chel</i>
B	24-01-01	ADDED PARAGRAPH 1.2	<i>Quero</i>	<i>Chel</i>	<i>Chel</i>



3.3.2 The capacity of underlining the defects is maximum for those superficial and it decreases with respect to the depth of the defect.

3.4 This test is not allowed if the superficial temperature is over to 300 °C (500 °F) using as testing system dry powders, and over to 60°C (135°F) if suspended or fluorescent powders are used for the test.

4. APPLICATION CRITERIA

The MT is based on the principle that, when the current passes through two points of a magnetizable metallic surface, magnetic flux lines are generated on the same surface (or magnetic field). If defects are present in such field, this should create deflections of the field lines with consequent bunching of these lines of force in the areas near to the lacking of materials. Placing a metallic powder on the surface (which is now magnetized), it will arrange itself along the lines of force showing in this way the present discontinuity.

4.1 The kind of defects will be characterised by the shape assumed by the metallic particles when arranged along the magnetized surface.

5. OPERATING CRITERIA

In order to have good results, it's necessary to operate with precision and accuracy.

5.1 CLEANING

The surface can be raw (welding, rolling, forging) or machined (chamferings, holes, etc.); in any case it's necessary to check that the surface is:

5.1.1 without oil, grease, flux etc. or any other that can prevent the free movement of the metallic powders on the examined surface;

5.1.2 without flashes, flakes, spatters, etc. which can alter the magnetic field.
If the surface is not clean, it's necessary to:

5.1.3 Wash the surface with special solvent (see Materials) using both the paint-brush, the spray and airless, and then wait for the drying.

5.1.4 Expose the surface to sand-blasting, taking care of washing out its residuals.

5.2 MAGNETIZATION

The metallic surface can be magnetized either with push-rods or with a yoke.

5.2.1 When push-rods are used, it's necessary to push them against the surface to be examined. The intensity of the lines of force is in function either of the amperage or of the distance between the push-rods, according to the following table:

PUSH-RODS DISTANCE	THICKNESS	
	UP TO 20mm	OVER 20mm
UP TO 50	N.A.	N.A.
FROM 51 TO 100 mm	200 - 300 A	300 - 500 A
FROM 101 TO 150 mm	300 - 400 A	500 - 700 A
FROM 151 TO 200 mm	400 - 600 A	700 - 900 A

5.2.2 When magnetic yokes are used, they can be:

5.2.3 Alternating current, assuming a minimum lifting capacity of 4.5 Kg (10 lb) at a maximum distance of 150 mm (6 in).

5.2.2.2 Direct current, assuming a minimum lifting capacity of 18 Kg (40 lb) at a maximum distance of 150 mm (6 in).



5.3 DIRECTION OF MAGNETIZATION

It's necessary to operate so that the surface of control is run through two magnetic fields which are mutually orthogonal.

- 5.3.1 This comes from the consideration that there will be highest sensitivity for longitudinal developed defects which are perpendicular to the flux lines, and the same sensitivity will decrease for longitudinal developed defects which are parallel to the flux lines.

5.4 EXTENSION OF MAGNETIZATION

Every test will be carried out (in accordance with item 5.3) so that the subsequent points of application of the magnetic field are partially overlapped in order to guarantee the control on the 100 % of the surface in object.

5.5 POWDERS APPLICATION

Apart from the considerations which will be specified in the following items dedicated to the powders, these can be applied as follows:

- 5.5.1 Dry-application; spreading small quantity of them on the metallic surface kept in a steady magnetic field, and working with light draught in order to give mobility to the powders and remove the exceeding parts;
- 5.5.2 Wet-application; spraying the suspended powders on the surface kept in a steady magnetic field.

5.6 DEMAGNETIZATION

The demagnetization shall be provided every time the remaining magnetism can interfere with the following procedures.

- 5.6.1 The demagnetization is obtained by giving to the piece a decreasing intensity of alternating current, starting from a maximum equal to the maximum value used for the magnetization.

5.7 CLEANING

After testing in accordance with the technologies used, it will be necessary to remove the powders as follows:

- 5.7.1 with compressed air, if dry powders have been used;
- 5.7.2 with a special solvent, if suspended or fluorescent powders have been used.

6. ACCEPTABILITY CRITERIA

- 6.1 A welding in order to be accepted should be:
- 6.2 As far as possible continuous, homogeneous, without section and/or dimensions alterations; it will comply as far as possible with the geometry of the piece.
- 6.3 Without failure, i.e.:
 - craters
 - cracks
 - lack of melting
 - cuts
- 6.4 Show linear indication in the maximum measure of 1 (one) every 100 mm, provided that:
 - 6.4.1 The maximum measurable dimension does not exceed 2 (two) mm;
 - 6.4.2 Show rounded indication having dimension bigger than 4.8 mm.
- 6.5 Without superficial porosities in case of head/head welding;
- 7.1 Sheet, drawn, plate, rolled section, forging, are considered acceptable, if they are:
 - 7.1.1 Without bendings, cracks, splitting, flaking, etc;

7.1.2 Without linear indications or, if existing, these indications must be comply with the following limits:

1.6 mm ; for thickness up to 16 mm
3.2 mm - for thickness up to 50 mm
4.8 mm for thickness over 50 mm.

7.1.3 Without rounded indications (round, elliptic, etc.) or, if present, they must comply with the following limits:

3.2 mm for thickness up to 16 mm
4.8 mm for thickness over 16 mm.

7.1.3.1 This restriction is applied to the bigger dimension that can be noticed on the defect;

7.1.4 They have not to present indications on their edges;

7.1.5 There isn't any section 50x50 mm which contains more than 6 roundish indications.

7.2 Chalking, preparation to welding and sheet edges, complying with the requirements mentioned at item 6.1 and following, are considered acceptable.

8. POWDERS

With this term we represent any different kind of particles of ferromagnetic material, used as testing means.
They are divided into:

8.1 DRY POWDERS

Constituted by high permeability magnetic material and low residual induction, with rounded shape, with a dimensions between 50 and 300 mm and having a colour contrasting with the tested surface. The defect is normally shown when the powders are placed.
These powders require a suitable lighting system.



8.2 SUSPENDED POWDERS

They are constituted by magnetic material with high permeability and low residual induction, rounded shape and contrasting colour. They can be only used in liquid suspension. The following two kinds of suspension are allowed:

8.2.1 FLUORESCENT

Their size goes from 1 to 5 μm and they are covered by a dye evidencing the contrast in particular lighting conditions (WOOD lamp); they allow a good determination of the defects, even if they are small.

8.2.1.1 If this solution is selected, it's necessary to work in dark and dimmed place, with at least 100 Watts lamps and wavelength included between 3300 and 3900 A, being careful to allow the necessary pre-heating of the lamps.

8.2.2 MAGNETIC

They allow a good location using the usual white light; their size goes from 10 to 20 μm and they are usually black or red.

9. EQUIPMENTS

The following equipments are used to perform this test:

9.1 Magiscop. 2500/3000 and Magiscop. 6000, with push-rods, produced by C.M.G. with a maximum outlet amperage of 3000 and 6000 A;

9.2 Magnaflux yoke Y6, produced by C.M.G., with a yoke distance of 150 mm (6 inches).

9.3 The suitable field indicator is allowed just to point out the force and the direction of the magnetic field on the tested surface and therefore with no quantitative value.



10. DEFECTS REMOVAL AND REPAIRING

10.1 All the indications which are not acceptable (defects) will be removed in accordance with the approved procedure. After repairing, a new inspection will be done using the same method used for the first test.

11. SPECIFICATION OF REFERENCE

ASME V	last issue
ASME VIII DIV. I	last issue
ASNT - SNT TC IA.	

12. PERSONNEL

The staff will be qualified in accordance with item 9., at the 1st level for the execution, and at IIInd level for the evaluation of the results.

13. CERTIFICATION

The certification will be done on the enclosed form according to item 9.