VEKOMA
RIDES PARTS & SERVICES B.V.

Issuing Entity:
Vekoma Rides Parts & Services B.V.
Schaapweg 18
6063 BA VLODROP
The Netherlands

Bulletin No: 0301-0912-0201-050406
Release Date: 05-04-2006
Effective Date: 10-04-2006
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file Stats

Service Bulletin

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: SLC MK 1201	248-1

Abstract of issue:

This Service bulletin gives additional information to the monthly and yearly inspection items of the seat pan and the shoulder restraint of the Suspended Looping Coaster train

Reason for release:

During rehab cracks are found in the seat pan and corrosion was found on the shoulder restraint.

Action to be taken: (inspection, modification, replacement, NDT, order parts, manual revision, procedural change, etc.)

Additional inspection and maintenance procedures on seat pan and shoulder restraint

table 1: Affected serial nos.

IB-nr.	Name	Project number
32001	SLC	92604
32002	SLC	93144
32003	SLC	93137
32004	SLC	94103
32005	SLC	94117
32007	SLC	94119
32008	SLC	94124
32009	SLC	94133
32010	SLC	94136

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

IB-nr	Name	Project number
32011	SLC	95107
32012	SLC	96398
32013	SLC	95164
32014	SLC	95170
32015	SLC	96350
32016	SLC	96362
32017	SLC	96344
32018	SLC	96356
32019	SLC	96289
32020	SLC	97119
32021	SLC	97103
32022	SLC	97163
32023	SLC	97330
32024	SLC	97154
32025	SLC	97197
32026	SLC	97332
32027	SLC	97331
32028	SLC	97123
32029	SLC	98130
32030	SLC	99262
32031	SLC	98182
32032	SLC	99272

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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue:

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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Detail of issue continued:

1.1 Why this information bulletin

This information bulletin has been prepared to inform you about additional inspection and maintenance of the seats and the shoulder restraints of an SLC train.

On an SLC train, cracks in the seat pan were found on the position, shown in figure 1 and corrosion was found on the shoulder restraint on the position shown in figure 2.

Please check all seat pans and shoulder restraints before opening of season 2006. After this major inspection, the inspection can be carried out according to this document.

1.2 Safety items

To avoid material failures, do not stand on the seat pan of the suspended seat.

Shoulder restraints of an empty seat may not be opened with force (using knee or foot).

Shoulder restraints may not be closed with great force when using dummies or sand bags.

Shoulder restraints shall be fully closed before starting a new ride cycle

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

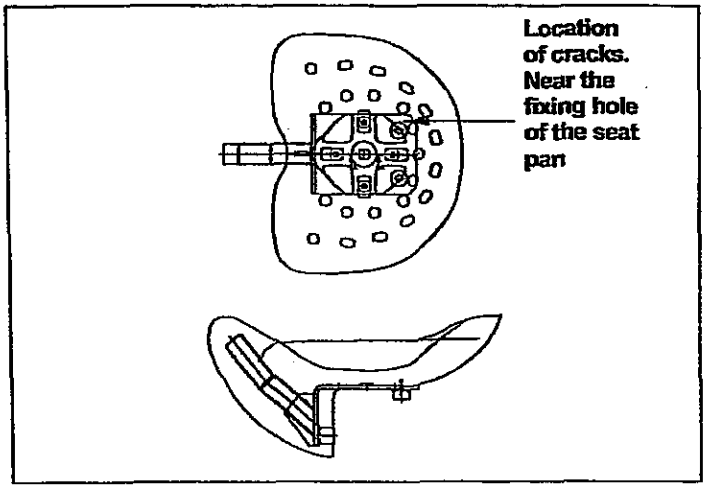

figure 1: Seat pan, mounted onto the suspended seat

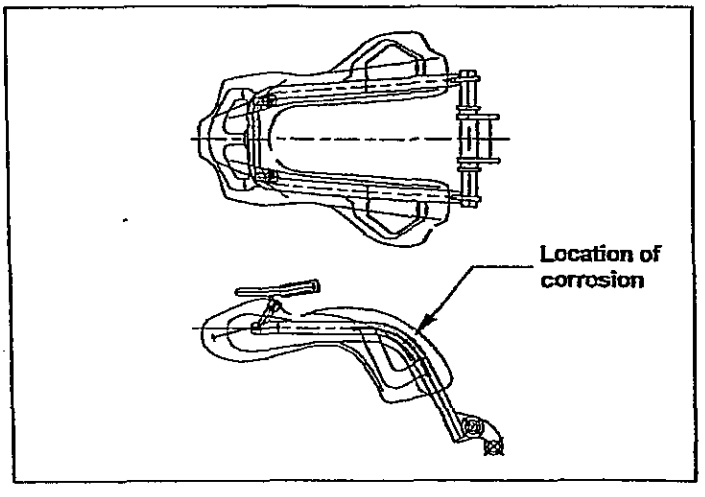

figure 2: Shoulder restraint

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

1.3 Maintenance items

In this section you will find additional information for the seat and shoulder restraint.

1.3.1 Monthly maintenance

▼ **Proceed as follows:**

1 Visually check the seat (figure 3) for cracks. Pay special attention to possible rust formations (figure 3/arrows) at the transition area between the PUR part and the steel part. (For your information, at this location no cracks were found).

2 Take the seat with both hands and check by means of tilting it if the seat is still correctly fastened onto the suspended seat.

3 Visually check the shoulder restraint (figure 4) for cracks. Pay special attention to possible rust formations (figure 4/arrows) at the transition area between the PUR part and steel part. (For your information, at this location no cracks were found).

4 Check the PUR parts for damage.

When the PUR is damaged, moisture and rain can easily penetrate into the PUR and reach the steel inserts. This results in a higher risk of corrosion.

When cracks are found, or when you have any doubt, check the seat and / or the shoulder restraint, by means of NDT Examination.

See section 1.4 "NDT Examination".

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

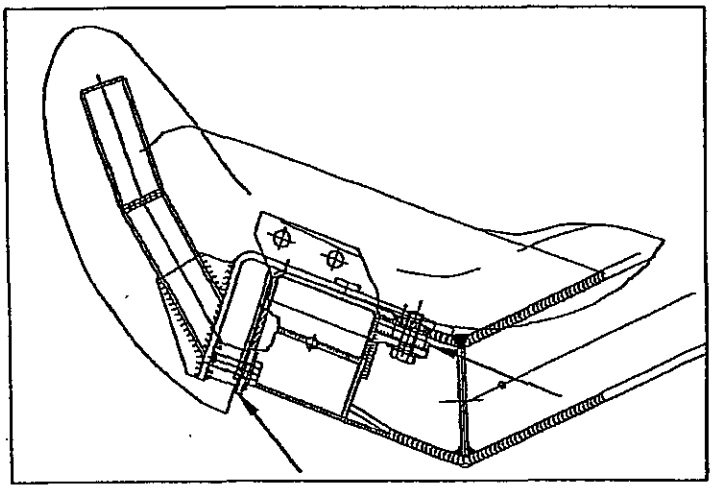

figure 3: Seat pan, mounted on the suspended seat

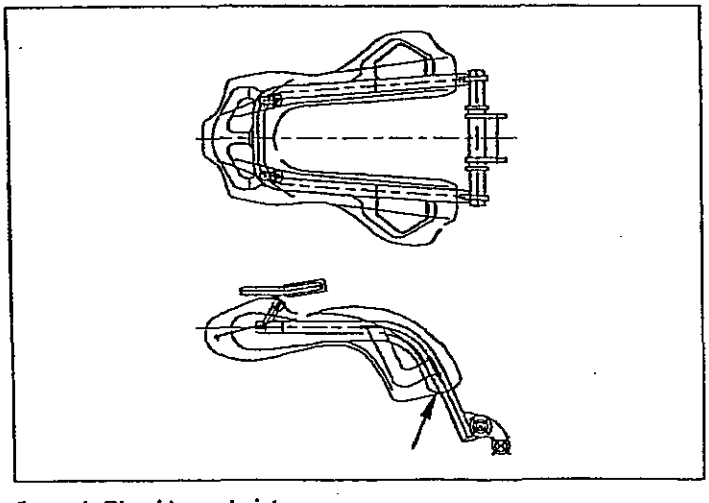

figure 4: Shoulder restraint

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

1.3.2 Yearly maintenance

▼ **Proceed as follows.**

1 Remove five (5) seats per train and check the seats for indications of cracks.

Check the seats at random but in such a way that all seats are examined within a period of four years.

2 Check five (5) shoulder restraints per train for indications of corrosion / cracks, by means of NDT Examination.

Check the shoulder restraints at random but in such a way that all shoulder restraints are examined within a period of four years.

When corrosion or cracks are found, remove the PUR and examine for furthermore possible corrosion / cracks.

If cracks are found, ALL seats and / or shoulder restraints must be checked by means of NDT Examination.

See section 1.4 "NDT Examination".

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

1.4 NDT Examination

According to the annual inspection (in some cases monthly inspection), parts of the train and track must be examinated by means of a NDT testing (Non Destructive Testing).

This section gives general information on how to handle when NDT inspection is required, in a way that:

- all activities relating to NDT examination, will be executed in such a way that this contributes to a uniform performance and,
- the judgments of the results of the NDT testing will be all equal.

1.4.1 Related codes and standards

Parts should be inspected according valid codes and standards.

For example:

Codes	Section / article
ASME V	Article 7
ASME VIII	Division 1 Appendix 6
EN 10228	Part 1 Magnetic particle inspection
EN 10228	Part 2 Penetrant testing

table 2: Related codes and standards

Vekoma Rides Parts & Services B.V. inspect parts according the mentioned related codes and standards mentioned in table 2.

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

1.4.2 NDT Personnel

▼ **To be sure about correct testing and evaluation, NDT personnel must be:**

- Instructed and trained, by an independent and recognized inspection authority,
- Qualified and certificated to the EN 473 and SNTC-TC-1A, level II.

1.4.3 Inspection procedure

▼ **In order to check and evaluate track parts or train parts, proceed as follows:**

1 Remove the paint, moisture, oil or grease and dirt.

Remove the paint by e.g. sand blast or a liquid paint remover.

Note:
Do not use steel grid blast.

2 Remove any slag and spatter work (if still present) from welded joints.

If cracks are found, contact an experienced party, for example Vekoma Rides Parts & Services B.V.

1.4.4 Results of entity

Fill out all the inspections and repairs that are made to the parts of the ride.

For this purpose use the inspection list and repair list, both added in the logbook.

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6063 BA VLODROP
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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster	Affected Serial Nos: See table 1
Model No: MK 1201	248-1

Details of issue continued:

For additional information contact the Vekoma Rides Parts & Services B.V.:

P.O. Box 8006, 6060 AA Posterholt
Schaapweg 18, 6063 BA Vlodrop,
The Netherlands

Tel: +31 (0) 475-409222 (office hours)
Tel: +31 (0) 6-10917506 (outside office hours)
Fax: +31 (0) 475-403415

Email: service@vekoma.com

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RIDES PARTS & SERVICES B.V.

Issuing Entity:
Vekoma Rides Parts & Services B.V.
Schaapweg 18
6063 BA VLODROP
The Netherlands

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Service Bulletin

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Abstract of issue:

This Service bulletin gives additional information to the monthly and yearly inspection items of the seat pan (seat pan inserts) and the shoulder restraint (insert) of the Suspended Looping Coaster train, Air Jumper and Invertigo.

Reason for release:

During rehab cracks are found in the seat pan insert and corrosion and cracks were found on the shoulder restraint insert.

The seat pan inserts and shoulder restraint insert must be checked by means of X-ray examination. Anyother NDT examination is not reliable.

Action to be taken: (inspection, modification, replacement, NDT, order parts, manual revision, procedural change, etc.)

Additional inspection and maintenance procedures on seat pan and shoulder restraint.

Department:	Controlled by:	Signature:
Manager Engineering	Hr. Har Kupers	
Vekoma Rides Parts & Services B.V.	Hr. Chris Peeters i.o.	

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Issuing Entity:
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6063 BA VLODROP
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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

IB-nr.	Name	Project number
32001	SLC	92604
32002	SLC	93144
32003	SLC	93137
32004	SLC	94103
32005	SLC	94117
32007	SLC	94119
32008	SLC	94124
32009	SLC	94133
32010	SLC	94136
32011	SLC	95107
32012	SLC	96398
32013	SLC	95164
32014	SLC	95170
32015	SLC	96350
32016	SLC	96362
32017	SLC	96344
32018	SLC	96356
32019	SLC	96289
32020	SLC	97119
32021	SLC	97103
32022	SLC	97163
32023	SLC	97330
32024	SLC	97154

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Vekoma Rides Parts & Services B.V.
Schaapweg 18
6063 BA VLODROP
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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

IB-nr	Name	Project number
32025	SLC	97197
32026	SLC	97332
32027	SLC	97331
32028	SLC	97123
32029	SLC	98130
32030	SLC	99262
32031	SLC	98182
32032	SLC	99272
10001	Air Jumper	95501
10002	Air Jumper	97168
31501	Invertigo	96590
31502	Invertigo	97137
31503	Invertigo	97160
31504	Invertigo	98158

table 1: Affected serial nos.

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Completion Date: 23-06-2006

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Detail of issue continued:

1.1 Why this information bulletin

This information bulletin has been prepared to inform you about additional inspection and maintenance of the seats and the shoulder restraints of an SLC train.

On an SLC train, cracks in the seat pan insert were found on the position, shown in figure 1 and corrosion and cracks were found on the shoulder restraint on the position shown in figure 2.

Please check all seat pan inserts and shoulder restraints insert within a period of two month by means of X-ray examination.

After this major inspection, the inspection can be carried out according to this document.

1.2 Safety items

To avoid material failures, do not stand on the seats of the suspended seat.

Shoulder restraints of an empty seat may not be opened with force (using knee or foot).

Shoulder restraints may not be closed with great force when using dummies or sand bags.

All shoulder restraints shall be fully closed before starting a new ride cycle

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Completion Date: 23-06-2006

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

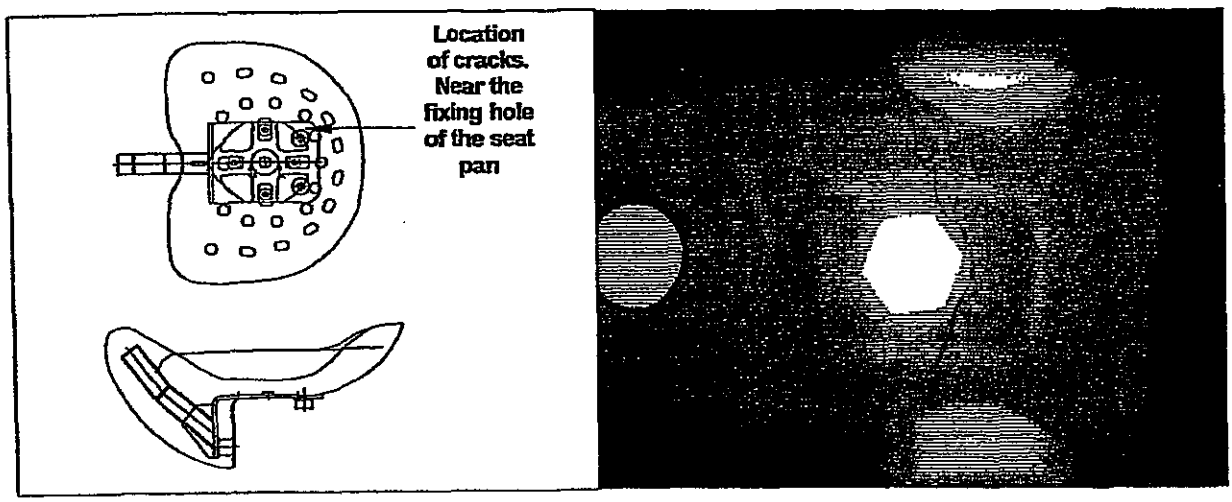

figure 1: (Left): Seat pan insert, mounted onto the suspended seat. (Right) X-ray picture.

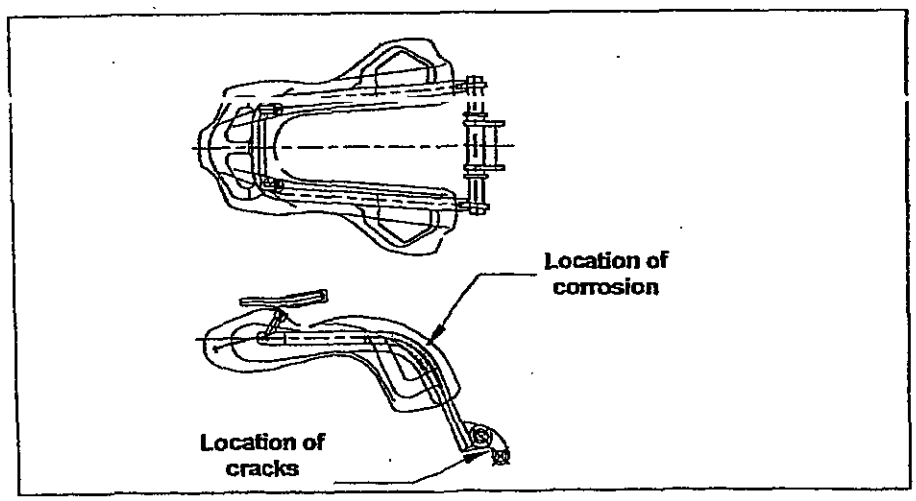

figure 2: Shoulder restraint

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-082001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

1.3 Maintenance items

In this section you will find additional information for the seat pan insert and shoulder restraint insert.

1.3.1 Monthly maintenance

▼ **Proceed as follows:**

1 Visually check the seat (figure 3) for cracks. Pay special attention to possible rust formations (figure 3/arrows) at the transition area between the PUR part and the (insert) steel part. (For your information, at this location no cracks were found).

2 Take the seat with both hands and check by means of tilting it if the seat is still correctly fastened onto the suspended seat.

3 Visually check the shoulder restraint (figure 4) for cracks. Pay special attention to possible rust formations (figure 4/arrows) at the transition area between the PUR part and steel part.

4 Check the PUR parts for damage.

When the PUR is damaged, moisture and rain can easily penetrate into the PUR and reach the steel inserts. This results in a higher risk of corrosion.

When cracks are found, or when you have any doubt, check the seat pan insert and / or the shoulder restraint insert, by means of X-ray Examination.

See also section 1.4 "NDT Examination".

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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

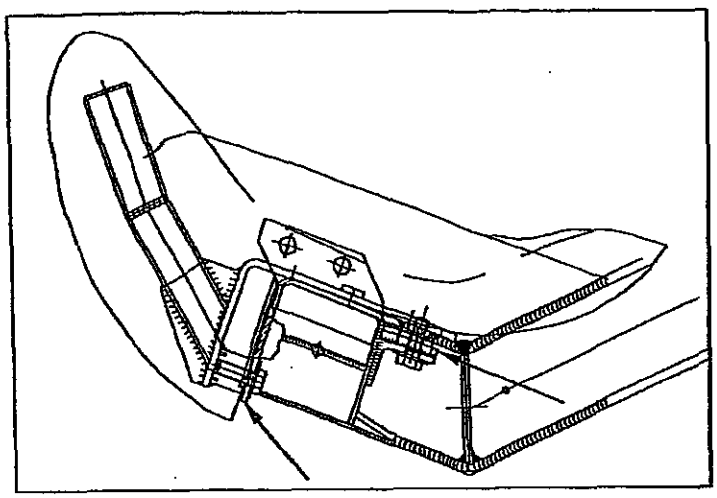

figure 3: Seat pan, mounted on the suspended seat

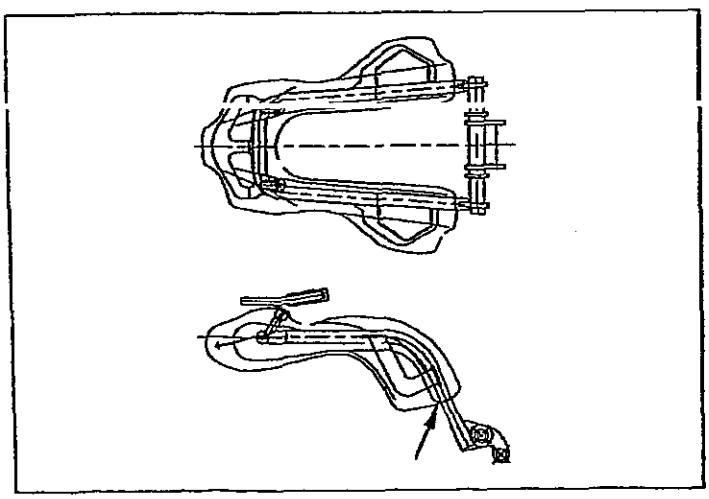

figure 4: Shoulder restraint

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

1.3.2 Yearly maintenance

▼ **Proceed as follows.**

1 Remove five (5) seats per train and check the seats pan inserts for indications of corrosion / cracks, by means of X-ray examination.

Check the seats at random but in such a way that all seats are examined within a period of four years.

2 Check five (5) shoulder restraint inserts per train for indications of corrosion / cracks, by means of X-ray Examination.

Check the shoulder restraints at random but in such a way that all shoulder restraints are examined within a period of four years.

When corrosion or cracks are found, remove the PUR and examine for furthermore possible corrosion / cracks.

When cracks are found, or when you have any doubt, check all the seat pan insert and / or all the shoulder restraint, by means of X-ray Examination.

See also section 1.4 "NDT Examination".

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of Issue continued:

1.4 NDT Examination

According to the annual inspection (in some cases monthly inspection), parts of the train and track must be examinated by means of a NDT testing (Non Destructive Testing).

This section gives general information on how to handle when NDT inspection is required, in a way that:

- all activities relating to NDT examination, will be executed in such a way that this contributes to a uniform performance and,
- the judgments of the results of the NDT testing will be all equal.

1.4.1 Related codes and standards

Parts should be inspected according valid codes and standards.

For example:

Codes	Section / article
ASME V	Article 7
ASME VIII	Division I Appendix 6
EN 10228	Part 1 Magnetic particle inspection
EN 10228	Part 2 Penetrant testing

table 2: Related codes and standards

Vekoma Rides Parts & Services B.V. inspect parts according the mentioned related codes and standards mentioned in table 2.

Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

1.4.2 NDT Personnel

▼ ***To be sure about correct testing and evaluation, NDT personnel must be:***

- Instructed and trained, by an independent and recognized inspection authority,
- Qualified and certificated to the EN 473 and SNTC-TC-1A, level II.

1.4.3 Inspection procedure

▼ **In order to check and evaluate track parts or train parts, proceed as follows:**

1 Remove the paint, moisture, oil or grease and dirt.

Remove the paint by e.g. sand blast or a liquid paint remover.

Note:

Do not use steel grid blast.

2 Remove any slag and spatter work (if still present) from welded joints.

If cracks are found, contact an experienced party, for example Vekoma Rides Parts & Services B.V.

1.4.4 Results of entity

Fill out all the inspections and repairs that are made to the parts of the ride.

For this purpose use the inspection list and repair list, both added in the logbook.

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Original Ride Manufacturer: Vekoma Manufacturing B.V. Vekoma International B.V.	Affected Production Dates: Between 1992 till 24-08-2001
Ride Name: Suspended Looping Coaster Air Jumper and Invertigo	Affected Serial Nos: See table 1
Model No: SLC MK 1201, Air Jumper and Invertigo	248-1

Details of issue continued:

For additional information contact the Vekoma Rides Parts & Services B.V.:

P.O. Box 8006, 6060 AA Posterholt
Schaapweg 18, 6063 BA Vlodrop,
The Netherlands

Tel: +31 (0) 475-409222 (office hours)
Tel: +31 (0) 6-10917506 (outside office hours)
Fax: +31 (0) 475-403415

Email: service@vekoma.com

Issuing Entity:
Vekoma Rides Parts & Services B.V.
Schaapweg 18
6063 BA VLODROP
The Netherlands
CoC Number: 12049585

Bulletin No.: 1-SB-006-14052009
Release Date: 20-May-2009
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Supersedes: -
Completion Date: 03-July-2009

Service Bulletin

Original Ride Manufacturer: Vekoma International BV Vekoma Manufacturing BV	Affected Production Dates: 1999 and earlier
Ride Name: Suspended Looping Coaster	Affected Serial Nos: see table 1
Model No: 01201	688-1

Abstract of issue:

Reason for release:

Components of the first generation SLC train systems are subject to fatigue after more than 10 years of operation. The theoretical life time of Suspended Looping Coaster has exceeded for the systems produced earlier than 1999.

Actions to be taken:

Extensive examination and repairs when indications are discovered. The extensive examination will be described in this document.

Keep in mind that we advise to examine the sections vehicle by vehicle, so that the ride can still be in operation, however this will be with reduced capacity. The vehicle which should be examined first, will be the vehicle with the highest number of rides cycles.

IB-nr.	Project number	IB-nr.	Project number
32002	93144	32014	95170
32004	94103	32015	96362
32005	94117	32016	96350
32007	94119	32017	96344
32008	94124	32018	96356
32009	94133	32020	96275
32010	94136	32021	97103
32011	95107	32022	97163
32012	96398	32026	97332
32013	95164		

Table 1 Affected serial Nos.

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Introduction

The Vekoma Suspended Looping Coaster (SLC) has been produced since 1994. Worldwide there are 40 SLC ride systems in operation. The theoretical lifetime of train components for all SLC rides is 10 years (unless otherwise stated, for example wear parts).

In the last period of time some owners encountered fatigue cracks in the suspended frame. The trains in which the fatigue cracks occurred are the first generation SLC trains and older than 10 years. The cracks were examined by an external material laboratory. The cracks are a result of fatigue. The theoretical lifetime of 10 years has exceeded for the systems in which the cracks occurred. Because these are fatigue cracks the cracks announce the end of lifetime for the specific train components in which they have propagated. In case the cracks are not noticed in time this could result in fracture of the components and thus in dangerous situations. This Bulletin describes the actions that need to be taken to prevent dangerous situations.

Some owners have already replaced parts by upgraded designs. In case of any doubt or uncertainty about the history of components Vekoma Rides Parts and Services B.V. (VRP&S) can be contacted for support. For each specific main component there are upgraded designs available based on the latest technology and according to the latest EN – ASTM standard.

This bulletin is written because Vekoma Rides Parts & Services B.V. wants to inform our customers in a proper way to prevent serious incidents.

How to proceed?

In response to the situation as described in the introduction Vekoma Rides Parts & Services B.V. strongly recommends performing NDT examinations according to the inspection plan as presented in this chapter. Vekoma Rides Parts & Services B.V. strongly recommends that all welds will be examined before the Completion Date as mentioned in the header of this document. The outcome of this inspection plan gives a good reflection of the condition of the train construction in relation to fatigue.

Keep in mind that we advise to examine the sections vehicle by vehicle, so that the ride can still be in operation, however this will be with reduced capacity. The vehicle which should be examined first, will be the vehicle with the highest number of rides cycles.

The design calculations show that the Suspended seat frame (01201-66-0132) becomes critical after 10 years of operation. The drawing number has to match with the information as provided by the original ride manufacturer at installation of the ride.

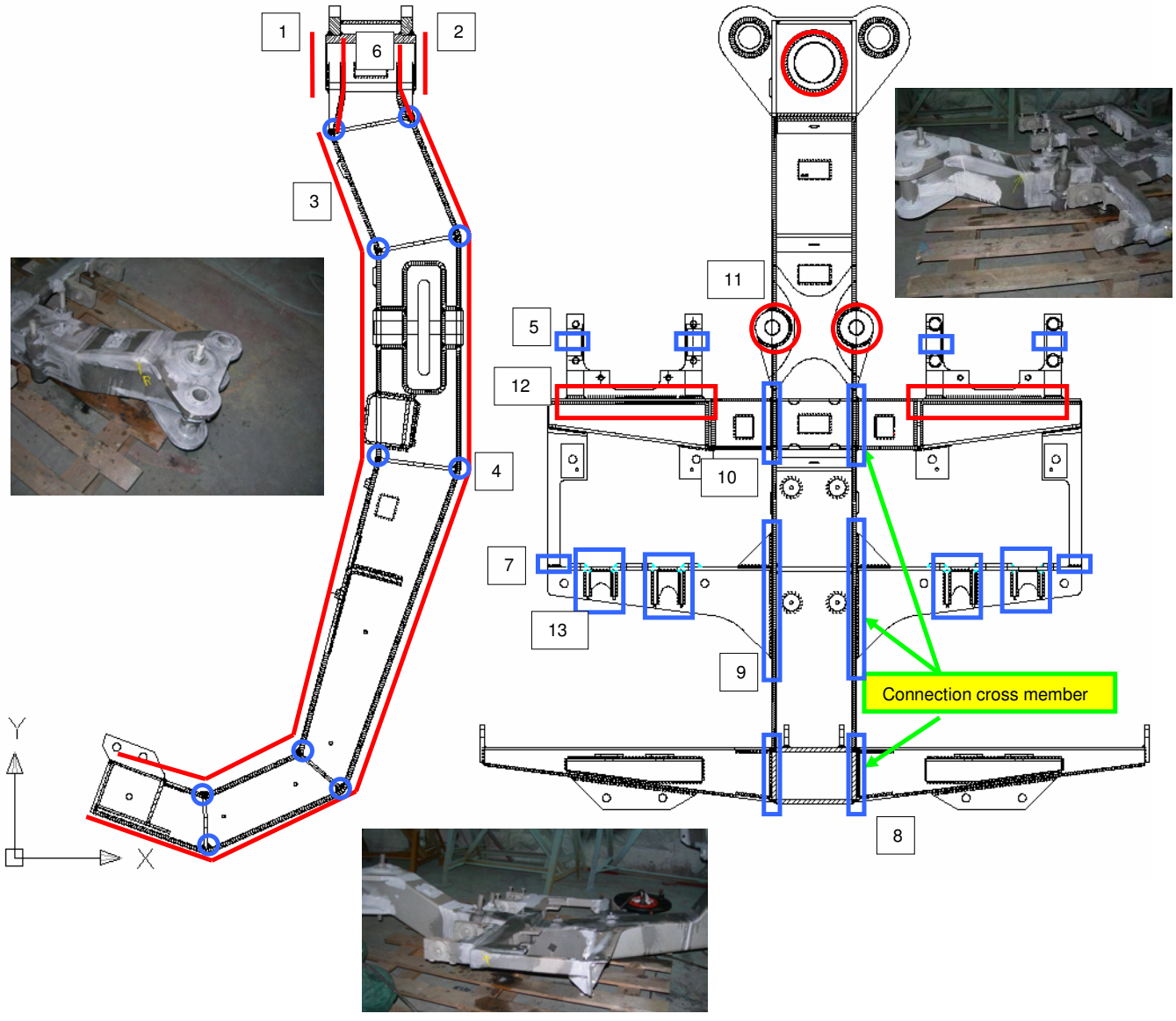
For the Suspended seat frame the critical locations are determined. The construction of a SLC (first design) mainly consists out of welded plates. Weld seams are more sensitive to fatigue loading than solid “unaffected” material. Therefore the inspection plan will only consist out of NDT weld inspections. 100 % of the critical sections pointed out need to be investigated for all trains.

As testing method for the NDT inspections magnetic testing (MT) and ultrasonic testing (UT) will be used. Table 3 shows the procedures including the rejection criteria (Acceptance Level) for Magnetic Testing (MT) and for Ultrasonic Testing (UT).

The next paragraphs give a schematic illustration of the weld seams to be tested. The weld seams which are marked in blue symbols need to be tested using MT. The weld seams which are marked in red symbols need to be tested using UT.

1.1 Suspended Seat (01201-66-0132)

In this section a schematic illustration of the suspended seat with the sections to be tested is presented.



No	Description	Test Method
1	Bush hanger pivot point PP (front)	UT (check weld depth with welding dwg)
2	Bush hanger pivot point PP (rear)	UT (check weld depth with welding dwg)
3	V-welds total hanger main beam FP (4x)	UT
4	Horizontal welds in main beam hanger FP	MT
5	Ratchet blocks	MT
6	Weld seam op Vertical plates Top part FP	UT
7	Weld seams stiffener (square profile – stiffener plate)	MT
8	Connection welds lower horizontal bars FP (L+R)	MT
9	Connection welds middle horizontal bars FP (L+R)	MT
10	Connection welds top horizontal bars FP (L+R)	MT
11	Weld seams damper connection bushing FP	UT
12	Weld seam ratchet block PP (L+R)	UT (check weld depth with welding dwg)
13	Weld seam stiffener geometry ratchet connection PP	MT

Table 2: Examination of weld seams

1.2 Related codes and standards

Vekoma Rides Parts & Services B.V. recommends the NDT examination codes and standards, as mentioned in table 3. Equivalent NDT procedures or standards can be used as well.

NDT Methode	Codes (Examination)	Codes (Acceptance level)	Acceptance Level	Procedure
MT	ISO 17638	EN 1291	Level 1	MT 21203 (RTD)
MT	ASME Code Section V Art. 7, edition 2007	ASME Code Section VIII Div. 1, app 6, edition 2007	-	MT 21203 (RTD)
UT	ISO 17640 or EN 1713	EN 1712	Level 2	UT 21112 (RTD)
UT	ASME Code Section V Art. 5	ASME Code Section VIII Div. 1, app 12	-	

Table 3: Related codes and standards

1.3 NDT Personnel

▼ **To be sure about correct testing and evaluation, NDT personnel shall be:**

- Qualified and in the possession of a valid certificate of competence, in accordance with EN 473 or SNTC-TC-1A, level II, like mentioned in the NDT procedures as referenced in table 3.

The certificate number of the person who has carried out NDT must be filled out on the written report.

1.4 Inspection procedure

▼ **In order to check and evaluate train parts, proceed as follows:**

1 Remove the paint, moisture, oil or grease and dirt.

Remove the paint by means of e.g. sand blast or a liquid paint remover.

Note:
Do not use steel grid blast.

2 Remove any slag and spatter work (if still present) from welded joints.

3 Carry out the required inspection to the sections as mentioned in paragraph 1.1 of this Service Bulletin.

If cracks are found, contact an experienced party and / or Vekoma Rides Parts & Services B.V.

According to the ASTM F853-04 standard:

Supplemental bulletins delivered by the manufacturer to the owner / operator that were not provided at the time of hand over of the attraction and contain new information or newly recommended inspections or testing, or both, will be released as a Safety Alert, Service Bulletin or an Notification, with the following criteria in order to carry the force and effect of this practice:

"Safety Alert" For notifications that recommend immediate action.

"Service Bulletin" For notifications that do not recommend immediate action but do recommend future action, pay attention to the completion date. Before the completion date has expired the future recommendation needs to be completed.

"Notification" For notifications that do not necessarily recommend future action but are promulgation of information.

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NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Committee

TECHNICAL BULLETIN — JULY 2008

355. Vekoma SLC Coaster

A member of the committee, during an annual inspection of a Suspended Looping Coaster (SLC) manufactured by Vekoma, Holland; found several areas of porosity in the welds of the track structure.

The structure was manufactured in China and it appears that the defects were not identified during the original fabrication process.

The manufacturer was informed and immediately implemented weld repairs to the areas identified and have promised to investigate the reasons for the problems.

In addition, defects were identified in the welds on the main axle fabrication initially using magnetic particle inspection, further investigation using ultrasonic testing revealed internal defects in the welds.

The manufacturer witnessed the testing and implemented weld repairs to the affected areas. The welding was identified to have been undertaken by Vekoma's own welders in Europe.

It is important that all the welds on the main axle fabrication are subjected to NDT; however, care must be taken when applying ultrasonic testing to the welds on the top of the axle fabrication due to the fact that the construction consists of two overlapping plates sealed with fillet welds rather than the usual butt weld type construction.