ANNEX 3 / APPENDIX 10
EUROPEAN VISUAL INSPECTION CATALOGUE (EVIC) FOR WHEELSETS

Notice
In comparison with the previous version, from this version, coming into force as from 01/01/2015, all parts regarding reporting were removed.

Preamble

1. The documents contained in this annex are the procedure about the visual inspection of wagon axles.

   Chapter A:
   European visual inspection catalogue (EVIC) for wagon axles

   Chapter B:
   Implementation guide for the European visual inspection catalogue (EVIC) for wagon axles

2. Axles requiring removal following EVIC must be marked in a clearly visible and indelible manner with “EVIC”, the defect code and the number of the corresponding wheelset. This data must be noted on Form HR (Appendix 7 of the GCU) when placing an order for replacement wheelsets from the wagon keeper.

3. If a wagon is sent to the workshop because of axle damage according to Appendix 9 of the GCU, the axles of the wheelsets concerned shall not be subjected to visual inspection. Only the provisions of Appendix 10 of the GCU on corrective and preventive maintenance shall be applicable to these wheelsets.

4. The cost of the visual inspection of axles according to Chapters A and B of the present Appendix shall be borne by the keeper of the wagon inspected.

A European visual inspection catalogue (EVIC)

The following pages represent the complete catalogue

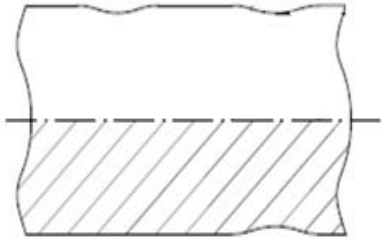
EUROPEAN VISUAL INSPECTION CATALOGUE (EVIC) FOR FREIGHT WAGON AXLES

DAMAGE CATEGORY

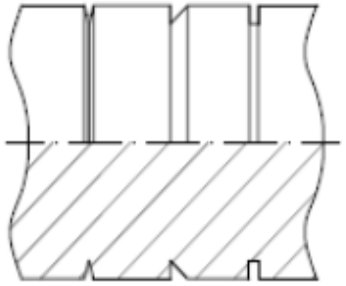
	Painted axles	
30	No defects	OK
31	Mechanical damage sharp edged circumferential fluting	X (not ok)
32	Mechanical damage smooth edged circumferential groove	X (not ok)
33	Mechanical damage sharp edged notching	X (not ok)
34	Mechanical damage cracks	X (not ok)
35	Surface damage large and heavily corroded areas	X (not ok)
36	Surface damage single, deeply pitted corrosion scars	X (not ok)
37	Coating damage with or without corrosion	C
	Unpainted axles	
40	No defects	OK
41	Mechanical damage sharp edged circumferential fluting	X (not ok)
42	Mechanical damage smooth edged circumferential groove	X (not ok)
43	Mechanical damage sharp edged notching	X (not ok)
44	Mechanical damage cracks	X (not ok)
45	Surface damage very heavy, deep and large corrosion	X (not ok)
46	Surface damage single, deeply pitted corrosion scars	X (not ok)
	All axles	
50	Abutment area	X (not ok)

CRITERIA FOR PAINTED AXLES

30 No or admissible defects found on the axle surface - smooth pitting		Painted axles
Salient information:		
	Pitting may occur either round the entire perimeter or intermittently and is characterised by smoothly rounded contours with no sharp transitions. This type of pitting may arise in the course of maintenance work. The anti-corrosion coating is undamaged.	
Decision:		
	Pitted axles whose coating is nevertheless undamaged may remain on the vehicle	
		OK

Pictorial representation:			
			

31 Mechanical damage – sharp edged circumferential fluting		Painted axles
Salient information:		
	Flutes are characterised by sharp edged circumferential sharp-edged transitions.	
	Mechanical damage to the base material in the form of fluting is inadmissible.	
Decision:		
	Check on the wagon why this damage could have occurred and repair accordingly	
	Remove from service according	**Case A**
		X

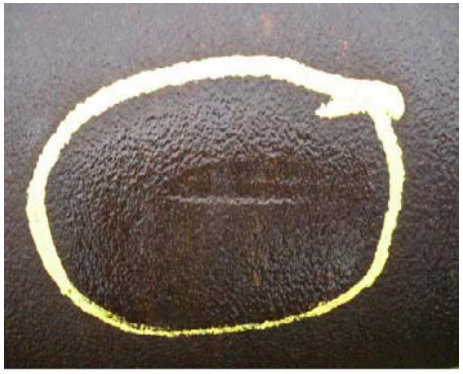
Pictorial representation:			
			

32 Mechanical damage – smooth edged circumferential grooves		Painted axles
Salient information:		
	Characterised by smooth transitions in the edges (GCU Annex 9, 1.6.2). Pitting that arises during operation (caused e.g. by brake lever connectors dragging) involves damaged anti-corrosion coating	
Decision:		
	Check on the wagon why this damage could have occurred and repair accordingly	
	Remove from service	**Case B**
	if there is damage to the base material > 1mm: (acc. GCU)	**Case A**
		X

Pictorial representation:

33 Mechanical damage – sharp edged notching		Painted axles
Salient information:		
	Sharp edged notches occur locally and are characterised by sharp-edged transitions.	
	Mechanical damage to the base material in the form of notching is inadmissible.	
Decision:		
	Remove from service (according to GCU criteria)	**Case A**
		X

Pictorial representation:



34 Mechanical damage – cracks		Painted axles
Salient information:		
	Cracks occur locally on the shaft material (not on the painting) and are characterised and visible by fine lines.	
	Mechanical damage to the base material in the form of cracks is inadmissible.	
Decision:		
	Remove from service	**Case A**
		X

Pictorial representation:			
			

35 Surface damage – large and heavily corroded areas		Painted axles
Salient information:		
	Surface damage to base material in form of large and heavily corroded areas (old corrosion protection) is inadmissible.	
Decision:		
	Remove from service	**Case B**
		X

Pictorial representation:			
			

36 Surface damage – single, deeply pitted corrosion scars		Painted axles
Salient information:		
	Surface damage to the base material in the form of marked, local corrosion scars (resulting e.g. from chemical effects) is inadmissible.	
Decision:		
	Remove from service	**Case B**
		X

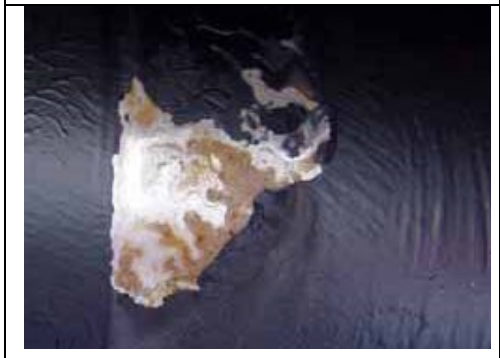
Pictorial representation:			
			

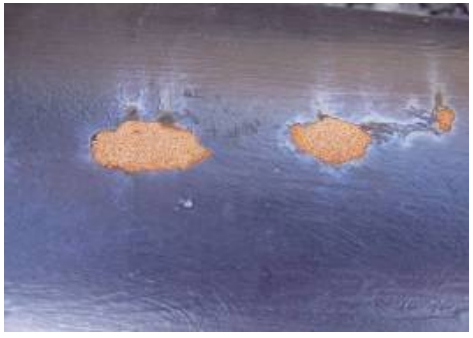
37 Coating damage – with or without corrosion		Painted axles
Salient information:		
	Minor lack of an anti-corrosion coating, whether corrosion is involved or not.	
Decision:		
	Leave in service acc. case C and/or repair the damage in situ on the wheelset	**Case C**
		C

Pictorial representation:







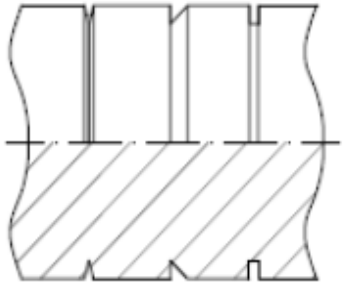



CRITERIA FOR UNPAINTED AXLES

40 No defect - admissible surface appearance		Unpainted axles
Salient information:		
	There exist maintenance rules that do not require any anti-corrosion protection. Axles and wheels stay unpainted in such cases and show a thin and uniform layer of rust on their surfaces in service.	
Decision:		
	Deep corrosion is not accepted.	
	Leave in service wheelset “as new”, “very good”, “good” and “acceptable”	
		OK

Pictorial representation:			
As new	**Very good**	**Good**	**Acceptable**
			

41 Mechanical damage – sharp edged circumferential fluting		Unpainted axles
Salient information:		
	Flutes are characterised by sharp edged circumferential sharp-edged transitions.	
	Mechanical damage to the base material in the form of fluting is inadmissible.	
Decision:		
	Check on the wagon why this damage could have occurred and repair accordingly	
	Remove from service according	**Case A**
		X

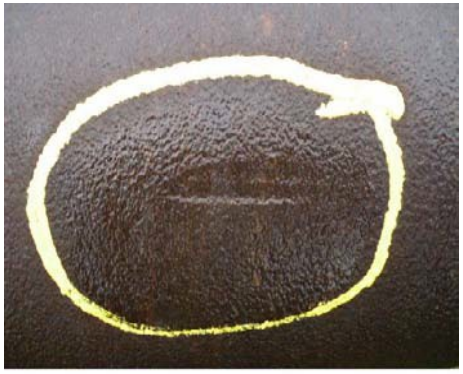
Pictorial representation:			
			

42 Mechanical damage – smooth edged circumferential grooves		Unpainted axles
Salient information:		
	Characterised by smooth transitions in the egdes (GCU Annex 9, 1.6.2). Pitting that arises during operation (caused e.g. by brake lever connectors dragging) involves damaged anti-corrosion coating	
Decision:		
	Check on the wagon why this damage could have occurred and repair accordingly	
	Remove from service	**Case B**
	if there is damage to the base material > 1mm: (acc. GCU)	**Case A**
		X

	Pictorial representation:		
			

43 Mechanical damage – sharp edged notching		Unpainted axles
Salient information:		
	Sharp edged notches occur locally and are characterised by sharp-edged transitions.	
	Mechanical damage to the base material in the form of notching is inadmissible.	
Decision:		
	Remove from service (according to GCU criteria)	**Case A**
		X

Pictorial representation:



44 Mechanical damage – cracks		Unpainted axles
Salient information:		
	Cracks occur locally and are characterised and visible by fine lines.	
	Mechanical damage to the base material in the form of cracks is inadmissible.	
Decision:		
	Remove from service	**Case A**
		X

Pictorial representation:			
			

45 Surface damage – large and heavily corroded areas		Unpainted axles
Salient information:		
	Surface damage to base material in form of large and heavily corroded areas (old corrosion protection) is inadmissible.	
Decision:		
	Remove from service	**Case B**
		X

Pictorial representation:

46 Surface damage – single, deeply pitted corrosion scars		Unpainted axles
Salient information:		
	Surface damage to the base material in the form of marked, local corrosion scars (resulting e.g. from chemical effects) is inadmissible.	
Decision:		
	Remove from service	**Case B**
		X

Pictorial representation:			
			

ABUTMENT AREA

50 Abutment area		All axles
Situation:		
	Normally, the abutment area cannot be inspected sufficiently for wheelsets mounted in the wagon	
Recommendation:		
Only if there is a clear indication on mechanical or corrosion damages		
	Take wheelset out	**Case A**
		X
If not judgeable		
	Leave wheelset in service	
		OK

Pictorial representation:

Not acceptable

Not jugeable

B Implementation guide

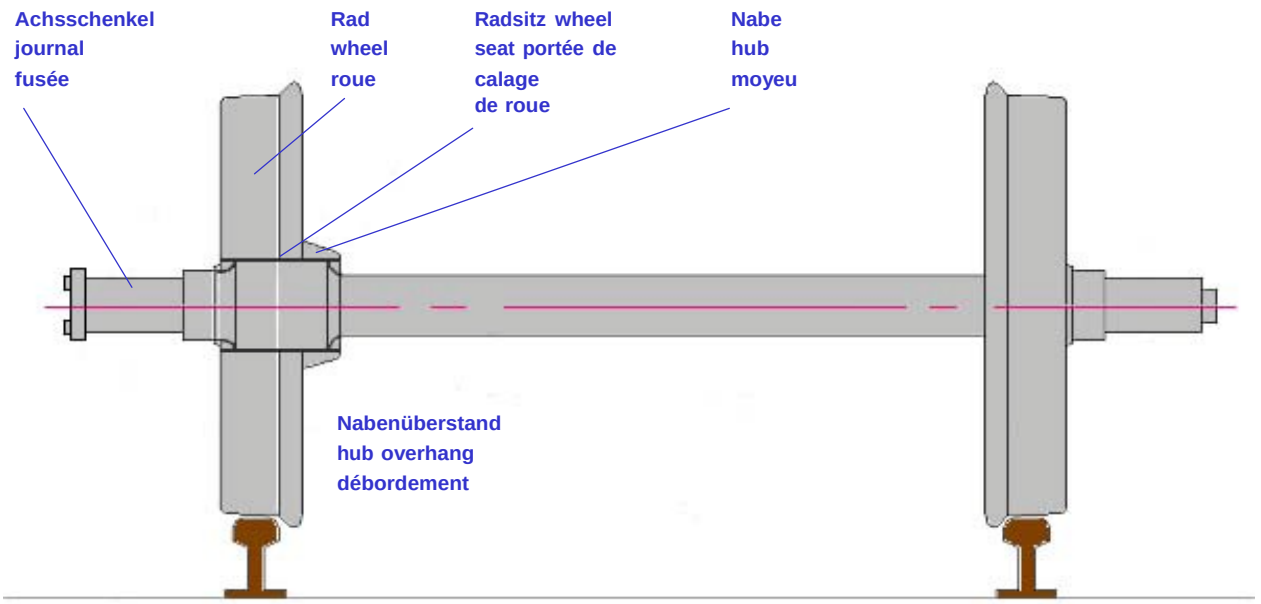
The following pages represent the complete implementation guide

IMPLEMENTATION GUIDE FOR THE

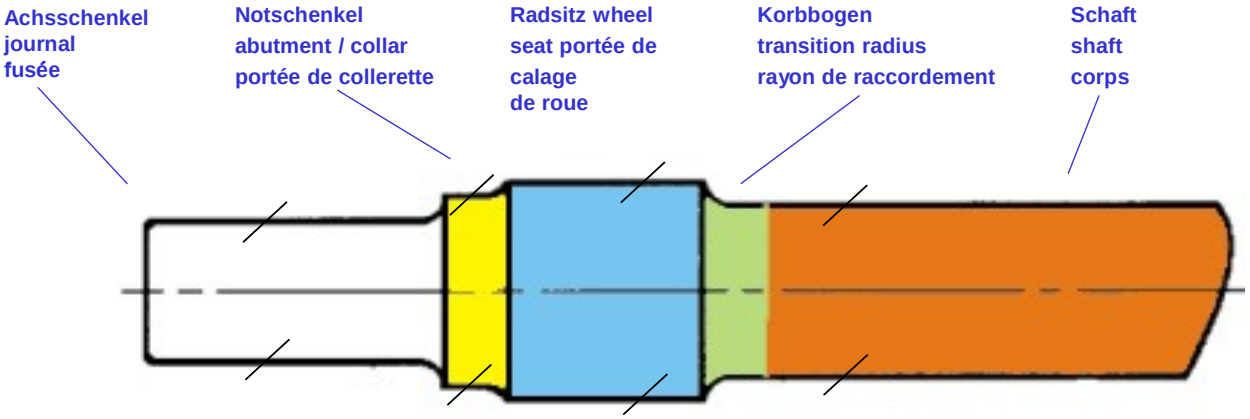
EUROPEAN VISUAL INSPECTION CATALOGUE (EVIC) FOR FREIGHT WAGON AXLES

Table of Contents

1. Definitions



Radsatz
Wheelset
Essieu monté



Radsatzwelle
Axle
Essieu-axe

In the EVIC procedure instructions, the meaning of several expressions is as follows:

Replace = take the wheelset out of the wagon (and repair it in a suitably competent workshop, if possible)

Repair = repair the damage in situ (wheelset mounted) according to the relevant rules

Remove from service = replace or repair (in situ if possible) according to the criteria

2. Basics

2.1 Mandating and invoicing the EVIC inspection

The keeper must take over the costs for executing the EVIC and potentially for a required change of the wheelset.

The workshops must give the confirmation of the execution of the EVIC to the keeper (maximum after one month)

- with the corresponding invoice or
- with an intervention report

In case of a replacement of “EVIC failed” wheelset, workshop and keeper need to communicate according to appendix 7 (Model H_R).

2.2 Staff qualifications

The inspections have to be conducted by staff qualified in application of this Visual Inspection Catalogue.

It is not necessary for the operatives conducting such visual inspections to be qualified as NDT visual inspectors pursuant to EN 473.

The staff involved in this inspection should be trained one day for the correct use of this procedure.

It is under the responsibility of the workshop to update a list of trained workers for the use of the present procedure.

3. Conducting the Visual Inspections

3.1 Execution of the Visual Inspections

The Visual Inspection of the freight wagon’s axle shafts for damage to material and coating (if existing) is mandatory

- during light maintenance
- each time the wagon is in a workshop (not mobile team)

and if one of the following conditions is fulfilled:

- the wagon is on a pit or
- the wagon is lifted

In case of non judgeable defects (not sufficiently detailed by the descriptions in the EVIC), the executor of the EVIC inspection must contact the keeper for further instructions.

A replacing wheelset for a sorted out axle must be in an “EVIC ok” status.

The EVIC doesn't replace existing maintenance rules. First, existing maintenance rules must be applied, then the EVIC check. If an axle is sorted out with current maintenance rules, it is not necessary to apply the EVIC

The visual inspection covers the complete area of the axle-shaft surface between the wheels.
See special instructions for the abutment area in the EVIC.

The inspection area is to be examined for

- mechanical damage (fluting, pitting and notching, cracks)
- surface damage (areas eaten away, corrosion scars)
- coating damage (with and without corrosion) *if coating system existing*

Reference images in EVIC (typical damage features) are used for identifying inadmissible forms of damage.

It is not foreseen to clean the axle. In case of doubt, clean axle (locally) to allow examination

If natural light intensity is too poor, a supplementary white light source must be used in order to obtain an adequate visibility on the axle.

Axle shafts with inadmissible forms of damage are to be repaired according to the prescriptions, if possible. Otherwise, the axles must be replaced.

An example for an adequate position for the staff conducting the visual inspection is given in the figure below.

If the wheelset cannot rotate (if the wagon is not lifted up), the visibility of the full surface of the axle must be assured in a different way.

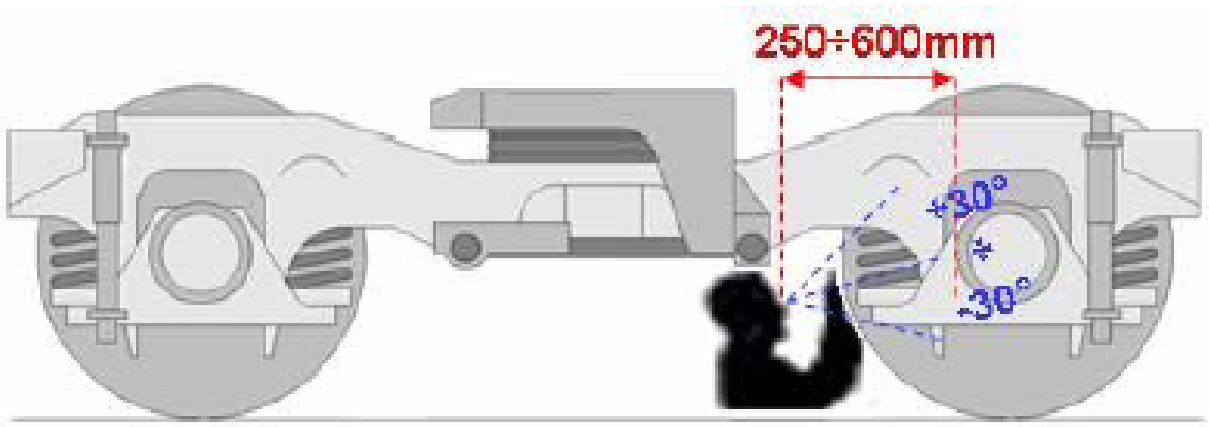


Figure 2 – Inspection angle and distance

3.2 Actions to be taken after inspection (cases)

The following cases describe the actions to be taken after a Visual Inspection of the axle:

A Remove the wheelset from service without delay

B Remove the wheelset from service after unloading the wagon and/or sending back to home workshop

C Leave wheelset in service until the next revision/overhaul of the wagon or repair the damage in situ on the wheelset.
In the next revision/overhaul, the remove from service is mandatory

Remove from service = replace or repair (in situ if possible) according to the criteria