

# SVENSK STANDARD

## SS-EN 15313:2016



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### **Järnväg – Drift- och underhållskrav för hjulpar**

### **Railway applications – In-service wheelset operation requirements – In-service and off-vehicle wheelset maintenance**

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Denna standard ersätter SS-EN 15313:2010, utgåva 1.

The European Standard EN 15313:2016 has the status of a Swedish Standard. This document contains the official English version of EN 15313:2016.

This standard supersedes the Swedish Standard SS-EN 15313:2010, edition 1.

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EUROPEAN STANDARD

**EN 15313**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2016

ICS 45.040

Supersedes EN 15313:2010

English Version

## Railway applications - In-service wheelset operation requirements - In-service and off-vehicle wheelset maintenance

Application ferroviaires - Exploitation des essieux en service - Maintenance des essieux en exploitation ou déposés

Bahnanwendungen - Radsätze und Drehgestelle - Radsatzinstandhaltung

This European Standard was approved by CEN on 3 December 2015.

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## Contents

Page

European foreword .....	6
Introduction .....	7
<b>1 Scope .....</b>	<b>8</b>
<b>2 Normative references .....</b>	<b>9</b>
<b>3 Terms and definitions .....</b>	<b>9</b>
<b>4 Maintenance .....</b>	<b>10</b>
4.1 General.....	10
4.2 Maintenance organization.....	11
4.2.1 Maintenance organization plan .....	11
4.2.2 Maintenance plan.....	11
4.2.3 Service experience .....	12
4.2.4 Traceability – storage – transportation .....	12
4.3 Equipment and systems .....	14
4.4 Staff certification and competence .....	14
4.5 Qualification of an undertaking for the maintenance of in-service or off-vehicle wheelsets .....	14
<b>5 Definition and illustrations of a boxed wheelset, its associated components and defects .....</b>	<b>16</b>
5.1 Definition and illustrations of a wheelset.....	16
5.1.1 Wheelset .....	16
5.1.2 Axle .....	18
5.1.3 Wheel .....	19
5.1.4 Axle box .....	21
5.2 Functional references of the rail-wheel interface.....	21
5.2.1 Wheelset functional references.....	21
5.2.2 Wheel functional references.....	22
5.3 Definition and illustrations of defects .....	23
<b>6 Requirements and operations .....</b>	<b>23</b>
6.1 General.....	23
6.2 Requirements.....	24
6.2.1 In-service limit dimensions and positions .....	24
6.2.2 Special maintenance action for freight wagon axles according to axle load.....	27
6.2.3 Maintenance decision criteria for in-service wheels for all types of wheel.....	28
6.2.4 Maintenance decision criteria for in-service wheels for specific wheel types.....	31
6.2.5 Damage acceptance limits for axle bodies .....	31
6.2.6 Criteria for axle box (Annex C.5).....	32
6.2.7 Criteria on boxed wheelsets .....	32
6.2.8 Specific requirements for tyred wheels and resilient wheels .....	33
6.2.9 Limit value for axle wheel seat diameter.....	34
6.3 Reprofilng operation .....	34
6.4 Dimensions and conditions after reprofiling or an operation on the rim .....	35
6.4.1 Front-to-front dimension "a <sub>2</sub> " .....	35
6.4.2 Diameter difference between wheels on the same axle.....	35
6.4.3 Limit values of radial run-out as a function of the maximum operating speed authorized for the vehicle.....	35
6.4.4 Wheel axial run-out as a function of the maximum operating speed authorized for the vehicle.....	35
6.4.5 Parts of the tread that are not re-profiled.....	35
6.4.6 Radial traces and radial defects on the internal side of the rim .....	36
6.5 Operations, examinations and inspections .....	36
6.5.1 General.....	36
6.5.2 Detection of tread defects.....	36

6.5.3	Detection of thermal damage on the wheel rim or tyre .....	37
6.5.4	Detection of wheel tread roll-over .....	37
6.5.5	Detection of damage to chamfered corner and flange .....	37
6.5.6	Detection of damage resulting from identification markings .....	37
6.5.7	Detection of defects on the external and internal face of the rim .....	37
6.5.8	Verification of web integrity .....	37
6.5.9	Verification of hub integrity .....	38
6.5.10	Verification of rim integrity - Detection of deep sub-surface tread defects .....	38
6.5.11	Detection of thermal defects on the web of a wheel used as a braking surface .....	38
6.5.12	Detection of overheating affecting the wheel rim-web transition on monobloc wheels .....	38
6.5.13	Verification of axle surface integrity .....	38
6.5.14	Detection of damage caused by corrosion .....	40
6.5.15	Detection of circumferential defects around the whole circumference .....	40
6.5.16	Detection of circumferential defects in a singular section of the circumference .....	40
6.5.17	Detection of notches and impact damage .....	41
6.5.18	Detection of longitudinal defects on axles .....	41
6.5.19	Detection of damage in interference fit zones .....	41
6.5.20	Verification after rectification .....	41
6.5.21	Verification of residual magnetism .....	41
6.5.22	Lubrication operation .....	41
6.5.23	Checking for axle box defects .....	41
6.5.24	Verification of wheelset electrical resistance after heavy maintenance of boxed wheelsets .....	41
6.6	Requirements for additional maintenance equipment and operations .....	42
7	In-service boxed wheelset maintenance .....	42
7.1	Maintenance plan .....	42
7.2	Wheelset protection during vehicle and bogie cleaning .....	42
8	Off-vehicle wheelset maintenance .....	42
8.1	Maintenance plan .....	42
8.2	Key operations for off-vehicle wheelset maintenance .....	43
8.3	Off-vehicle boxed wheelset cleaning .....	43
8.4	NDT Interval .....	43
9	Action to be taken on any wheelset after an incident in service or when not covered by the maintenance plan .....	44
9.1	Wheelset bearings subject to water ingress .....	44
9.2	Wheelsets having been subjected to a short circuit current (e.g. from falling overhead line equipment, etc.) .....	44
9.3	Detection by a trackside facility of a wheel circularity defect .....	44
9.4	Wheelsets loaded over the allowed limit .....	44
9.5	Hot axle box detection .....	45
9.5.1	General .....	45
9.5.2	Technical procedure .....	45
9.6	Derailment .....	45
9.7	Head-on collision .....	45
9.8	Lubricant leakage or loss from the axle box .....	46
9.9	Brake incident (detection of seized brake or discoloration) .....	46
9.10	Reporting after detection of a wheelset irregularity outside the maintenance plan .....	46
10	Equipment not subject to Directive 2008/57/EC .....	46
11	Summary table of requirements of this standard .....	46
Annex A	(normative) Minimum database content for freight wagon wheelset traceability .....	47
A.1	Data categories for storage time .....	47
A.2	Minimum data to be collected .....	47
A.2.1	Boxed wheelset .....	47
A.2.2	Wheelset axle .....	49
A.2.3	Wheels .....	50
A.2.4	Bearings .....	51
A.2.5	Medium and heavy wheelset maintenance .....	51

A.2.6	Vehicle in which the boxed wheelset is mounted (not applicable for bogies with variable gauge) and in-service incidents (since applying traceability system).....	52
A.3	Measures to be applied resulting from lack of traceability .....	52
Annex B	(informative) Database content for the tractability of wheelsets of vehicles in the scope of TSI “Rolling stock - Locomotive and passenger rated vehicles” (TSI Loc & Pas).....	54
B.1	Data categories for storage time.....	54
B.2	Minimum data to be collected .....	54
B.2.1	Boxed wheelset.....	54
B.2.2	Axle .....	56
B.2.3	Wheels .....	57
B.2.4	Bearings.....	58
B.2.5	Medium and heavy wheelset maintenance .....	58
B.2.6	Vehicle in which the boxed wheelset is mounted (not applicable for bogies with variable gauge) and in-service incidents (since applying traceability system).....	59
B.3	Measures to be applied resulting from lack of traceability .....	60
Annex C	(normative) Definition and illustration of defects .....	61
C.1	General.....	61
C.2	Defects for all types of wheel .....	61
C.2.1	Wheel flat .....	61
C.2.2	Metal build-up.....	62
C.2.3	Shelling, cavities.....	63
C.2.4	Scaling .....	63
C.2.5	Tread indentation.....	64
C.2.6	Isolated transverse cracking .....	64
C.2.7	Circularity defect.....	65
C.2.8	Spalling (thermal effects due to tread braking) .....	67
C.2.9	Rolling contact fatigue .....	68
C.2.10	Thermal cracks.....	68
C.2.11	Wheel tread roll-over .....	70
C.2.12	Damage to chamfered corner.....	70
C.2.13	Wheel tread – grooves and channels (or smooth edged circumferential grooves and sharp edged circumferential fluting) .....	71
C.2.14	False flange .....	72
C.2.15	Damage on the flange .....	74
C.2.16	Sharp-edged radial marks and radial defects on the internal face of the rim (FIJ) .....	75
C.2.17	Damage resulting from identification markings .....	76
C.2.18	Damage from lathe driving tools.....	77
C.2.19	Sharp-edged circumferential defects on the web or wheel centre.....	77
C.2.20	Sharp-edged radial defect on the web.....	78
C.2.21	Wheel web hole defects .....	78
C.2.22	Cracks in the wheel hub.....	79
C.3	Defects specific to wheel types.....	79
C.3.1	Deep sub-surface tread defect on monobloc wheels .....	79
C.3.2	Wheel web defects on monobloc wheels.....	80
C.3.3	Exceptional thermomechanical stressing in tyred wheels .....	82
C.4	Axle defects .....	82
C.4.1	Axle protection defect – Damage on the painting/coating .....	82
C.4.2	Corrosion.....	83
C.4.3	Circumferential defects.....	84
C.4.4	Notches and impact damage .....	86
C.4.5	Longitudinal defects.....	87
C.4.6	Damage in the interference fit zones .....	87
C.5	Axle box defects .....	88
C.6	Wheelset defects.....	89
C.6.1	General.....	89
C.6.2	Wheel distortion.....	89
C.6.3	In service axial or angular movement of a wheel or of one of the other components .....	90
C.6.4	Bent axle .....	91



<b>Annex D (normative) Freight stock.....</b>	<b>92</b>
<b>Annex E (informative) Rim size without roll-over for equipment not subject to Directive 2008/57/EC.....</b>	<b>93</b>
<b>Annex F (normative) Definitions of Type A and B axles .....</b>	<b>94</b>
<b>Annex G (informative) Permissible circularity defects.....</b>	<b>97</b>
<b>Annex H (informative) Tyred wheels and resilient wheels.....</b>	<b>98</b>
H.1 General .....	98
H.2 Marking of tyred wheels and resilient wheels .....	98
H.2.1 General .....	98
H.2.2 Tyre thickness of tyred wheels .....	99
H.3 Defects specific to tyred wheels.....	100
H.4 Verification of the electrical resistance during medium and heavy maintenance .....	101
<b>Annex I (normative) Reference images for axle surface condition limits for off vehicle wheelset maintenance.....</b>	<b>102</b>
I.1 General .....	102
I.2 Local and severe defect.....	102
I.3 Large and heavily corroded areas, strongly and uniformly pitted surface .....	103
I.4 Corrosion defects in abutment area and transition radii .....	104
<b>Annex J (informative) NDT interval .....</b>	<b>105</b>
J.1 General .....	105
J.2 Axle .....	105
J.3 Wheel .....	105
<b>Annex K (informative) Summary of the requirements of this standard for in-service boxed wheelsets.....</b>	<b>106</b>
<b>Annex L (informative) Characteristics of narrow gauge wheelsets.....</b>	<b>108</b>
<b>Annex M (informative) Characteristics of Spanish and Portuguese gauge wheelsets.....</b>	<b>109</b>
<b>Annex N (informative) Characteristics of Finnish and Baltic Country Gauge Wheelsets .....</b>	<b>110</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC aimed to be covered.....</b>	<b>111</b>
<b>Bibliography.....</b>	<b>114</b>

## European foreword

This document (EN 15313:2016) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, by October 2016 at the latest, and conflicting national standards shall be withdrawn at the latest by October 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of intellectual property or similar rights. CEN and CENELEC shall not be held responsible for not having identified such property rights and notifying of their existence.

This document supersedes EN 15313:2010.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

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## Introduction

The objectives of this amendment to EN 15313:2010 are to:

- Incorporate the appropriate results of the ERA TF “Maintenance of freight wagons” established following the Viareggio accident of June 2009:
  - Common criteria for the inspection of freight wagon axles (European Visual Inspection Catalogue) (see 6.5.13.2);
  - A system to ensure the traceability of in-service wagon axles (see 4.2.4.3.2 and Annex A);
  - Specific maintenance action according to axle load (see 6.2.2);
- Improve the standard in the light of experience acquired during its application;
- Resolve the outstanding issues from the “Comments Resolution Meeting” and the Formal Voting process, and in particular the maintenance action to be taken for axles loaded over the allowed limit (see 9.4);
- Recommend the use of a traceability system for in-service locomotive and passenger vehicle axles based on that for freight wagons (see 4.2.4.3.3 and Annex B);
- Provide requirements for tired wheels and resilient wheels (see 6.2.8).

## 1 Scope

To ensure safety and interoperability, this Standard gives:

- the limits for in-service and off-vehicle wheelsets;
- the operations to be carried out for which the specific values (and/or criteria) remain to be defined in the maintenance plan.

This European Standard applies to wheelsets and axle boxes complying with the following European Standards:

- EN 13103, EN 13104;
- EN 13260, EN 13261, EN 13262;
- EN 13979-1;
- EN 13715;
- EN 13749.

that comprise:

- the axle mounted with wheel diameters greater than or equal to 330 mm;
- axle boxes with bearings and grease.

This European Standard is also applicable to wheelsets:

- fitted with brake discs, final drive, transmission or noise-damping systems, as appropriate;
- not complying with the above European Standards, but complying with the international requirements in force, for example in UIC leaflets, before the approval of these standards;
- with tyred wheels;
- with resilient wheels.

For equipment not covered by Directive 2008/57/EC, this European Standard may be applied, noting that different values may be used.

All dimensions in this Standard are in millimetres (mm).

It is necessary to describe in a specific document the tasks to be performed in order to maintain wheelsets within the limits defined therein.

NOTE The specific values and criteria are defined in an appropriate maintenance plan.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13260, *Railway applications — Wheelsets and bogies — Wheelsets — Product requirements*

EN 13261, *Railway applications — Wheelsets and bogies — Axles — Product requirements*

EN 13262, *Railway applications — Wheelsets and bogies — Wheels — Product requirements*

EN 13715, *Railway applications — Wheelsets and bogies — Wheels — Tread profile*

EN 13979-1:2003+A2:2011, *Railway applications — Wheelsets and bogies — Monobloc wheels — Technical approval procedure — Part 1: Forged and rolled wheels*

EN 15085-2, *Railway applications. Welding of railway vehicles and components — Part 2: Quality requirements and certification of welding manufacturer*

EN ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712)*

EN ISO 9934-1, *Non-destructive testing — Magnetic particle testing — Part 1: General principles (ISO 9934-1:)*

EN ISO 9934-2, *Non-destructive testing — Magnetic particle testing — Part 2: Detection media (ISO 9934-2:)*

EN ISO 9934-3, *Non-destructive testing — Magnetic particle testing — Part 3: Equipment. (ISO 9934-3:)*

NOTE A standard relating to NDT in railway applications is currently being prepared and may be used as a reference in NDT performed on wheelsets following its publication.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **operation**

normal use of wheelsets in service on the track or during routine planned maintenance

NOTE 1 to entry This term also includes any in-service problems and their treatment.

### 3.2

#### **competent technical department**

department having experience in the wheelset maintenance field having already written the rules

### 3.3

#### **technical expert**

technical expert competent in the maintenance of wheelsets

### 3.4

#### **ECM**

Entity in Charge of Maintenance

- 3.5**  
**reprofiling only level**  
in or off-vehicle boxed wheelset maintenance with only reprofiling
- 3.6**  
**maintenance plan**  
structured and documented set of tasks comprising the activities, instructions, resources and the length of time necessary in order to perform the maintenance (EN 13306; Maintenance — Maintenance terminology)
- 3.7**  
**medium boxed wheelset maintenance**  
off-vehicle boxed wheelset maintenance without change of wheels, combined with bearing overhaul
- 3.8**  
**heavy wheelset box in-service maintenance**  
maintenance of in-service boxed wheelsets comprises all of the operations which are performed on boxed wheelsets between intermediate and/or major maintenance levels
- 3.9**  
**major boxed wheelset maintenance**  
off-vehicle boxed wheelset maintenance with change of wheels, combined with bearing overhaul
- 3.10**  
**NDT**  
non-destructive testing
- 3.11**  
**MT**  
magnetic particle testing
- 3.12**  
**US Testing**  
ultrasonic testing
- 3.13**  
**VT**  
visual testing
- 3.14**  
**resilient wheels**  
wheels that contain rubber elements between the tyre and the web
- 3.15**  
**witness mark**  
area of unmachined material which can remain after reprofiling to demonstrate that the minimum of material has been removed
- 3.16**  
**wagon overhaul**  
planned major maintenance operation on a wagon

## **4 Maintenance**

### **4.1 General**

Maintenance involves:

- maintenance of in-service wheelsets/axle boxes;

- maintenance of off-vehicle wheelsets/axle boxes;
- special maintenance attention after in-service incidents (e.g. overloads, hot axle box detection, wheelset bearings subject to water ingress, etc.).

An in-service boxed wheelset shall be maintained by a maintenance undertaking competent in this type of wheelset.

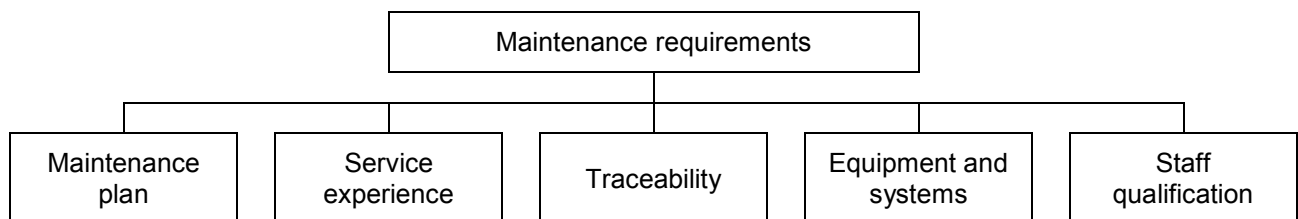
For maintenance of wheelsets, as a minimum, the following shall be utilized:

- a maintenance plan;
- service experience;
- an organization for component and production management;
- specific wheelset maintenance tools;
- qualified staff for non-destructive testing and welding.

## 4.2 Maintenance organization

### 4.2.1 Maintenance organization plan

The general maintenance of the wheelsets is organized as shown in Figure 1.



**Figure 1 — General maintenance organization**

### 4.2.2 Maintenance plan

For wheelset maintenance, it is necessary to have a maintenance plan for the wheelsets when in-service and off-vehicle.

The maintenance plan shall specify:

- the actions to be performed to meet the requirements and mandatory operations listed in this standard;
- the maintenance intervals;
- any specific measures to be implemented.

The maintenance plan shall be written by a competent technical department in the railway field and approved by the technical expert for the owner undertaking.

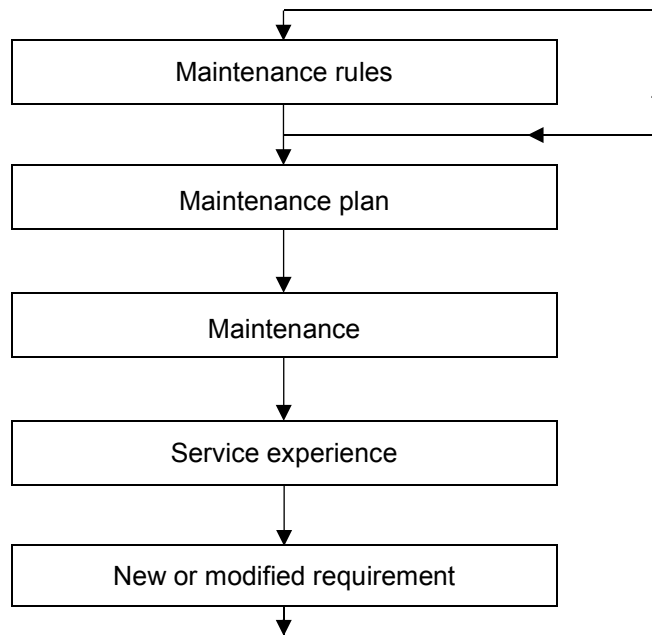
NOTE An ECM is an example of a competent technical department.

### 4.2.3 Service experience

The maintenance plan shall be reviewed to include:

- the service experience based on the performance of parts in service;
- the corrective actions necessary for dealing with defects:
- detected outside the limits specified in the maintenance plan;
- established based on data from in-line monitoring devices.

The principle for revising the maintenance plan based on service experience is presented in Figure 2.



**Figure 2 — Service experience**

### 4.2.4 Traceability – storage – transportation

#### 4.2.4.1 Wheelset identification

In order to ensure traceability, in-service boxed wheelsets shall have marks complying with the requirements of EN 13260, EN 13261 and EN 13262.

It is recommended to have:

- the keeper’s mark on the wheel (e.g. on the hub, with the same requirement as for the other marks, as specified in EN 13262; painted on the web, etc.);
- external identification on boxed wheelset with axle boxes mounted (e.g. tag or metal plate on the axle box, collar on the axle, radiofrequency identification (RFID) etc.).

None of the external identification marks shall adversely affect the axle or its components.



All the identification marks shall be described in a specific document to support the management of the wheelsets during their service lives.

The markings are to be applied to the wheelsets when the latter are subject to medium and heavy maintenance.

NOTE 1 It is recommended, where possible, for these markings to be applied retrospectively, even when the boxed wheelset components were not manufactured in accordance with EN 13261 or EN 13262.

NOTE 2 When transponders are used for identification, the procedures and instructions are given in Chapter 4 "Guideline for MRO identification" of the document "RFID in RAIL – European Guideline for the Identification of Railway Assets using GS1 Standards".

#### **4.2.4.2 Traceability of operations and transfers**

The traceability shall be ensured throughout the life of the in-service boxed wheelset and its components by recording its maintenance life history (e.g. various operations and property transfers).

#### **4.2.4.3 Database**

##### **4.2.4.3.1 General**

The traceability of the original data and maintenance life history shall be recorded in a database.

The contents of the database and process for capturing information shall be described in a specific procedure.

The consistency of the records shall be checked on a regular basis.

##### **4.2.4.3.2 Freight wagons**

For freight wagon boxed wheelsets, the minimum content of the database, the time period to store the data and the measures resulting from lack of traceability are given in Annex A. The data shall be recorded in an electronic database.

For new freight wagon boxed wheelsets, the data in Tables A.1 to A.6 shall be collected before the boxed wheelset is placed in service.

For in service freight wagon boxed wheelsets, the data shall be collected at the earliest opportunity according to the maintenance plan (see clause 7.1).

Collected maintenance data is identified in categories I, II and III in Annex A, according to the minimum time for retaining the information.

In the event of a change of owner and/or ECM, all available wheelset data shall be transferred to the new owner and/or ECM.

##### **4.2.4.3.3 Non-freight vehicles**

For non-freight vehicles, the content of Annex B may be taken into consideration in ensuring adequate traceability.

#### **4.2.4.4 Storage**

Component parts, equipment, consumables etc. are to be protected against damage, as well as against environmental degradation according to manufacturer's recommendations, if applicable.

For in-vehicle boxed wheelsets stored for at least 24 months, the need for rotation of boxed wheelsets shall be based on service experience

#### 4.2.4.5 Handling and transportation conditions for new or maintained wheelsets

The processes and means of handling, transporting and storing shall not be the cause of damage to wheelsets, their components and their protective covers. The handling, transportation and storage shall not damage the most restricted areas, such as the wheel seat transitions.

The bearings, journals and other exposed equipment shall be protected against corrosion and mechanical damage.

Written procedures specifying how these objectives will be reached shall be available.

### 4.3 Equipment and systems

All railway-specific tools, gauges and systems for wheelset maintenance (e.g. checking for circularity defect, stresses in the wheel rim, non-destructive testing, etc.) shall be qualified to ensure that requirements of this standard are met.

A reference file shall be created for all railway-specific equipment in order to ensure that it meets the specifications.

This file shall indicate that the equipment or railway-specific system has the appropriate levels of sensitivity and repeatability in line with the desired objective. Performance sustainability shall be demonstrated by means of calibrated reference equipment.

In addition, when new methods are used, it shall be ensured that the results achieved with the new equipment or system are at least equivalent to those obtained with the former (e.g. differentiation between parts with or without defects, etc.).

### 4.4 Staff certification and competence

Certification is necessary for staff carrying out:

a) non-destructive testing:

the staff shall be qualified according to EN ISO 9712 (Industrial Sector: Railway Maintenance) or equivalent and authorized to work on specific processes;

b) welding operations:

the staff shall be qualified according to EN 15085-2 or equivalent for components where welding is authorized.

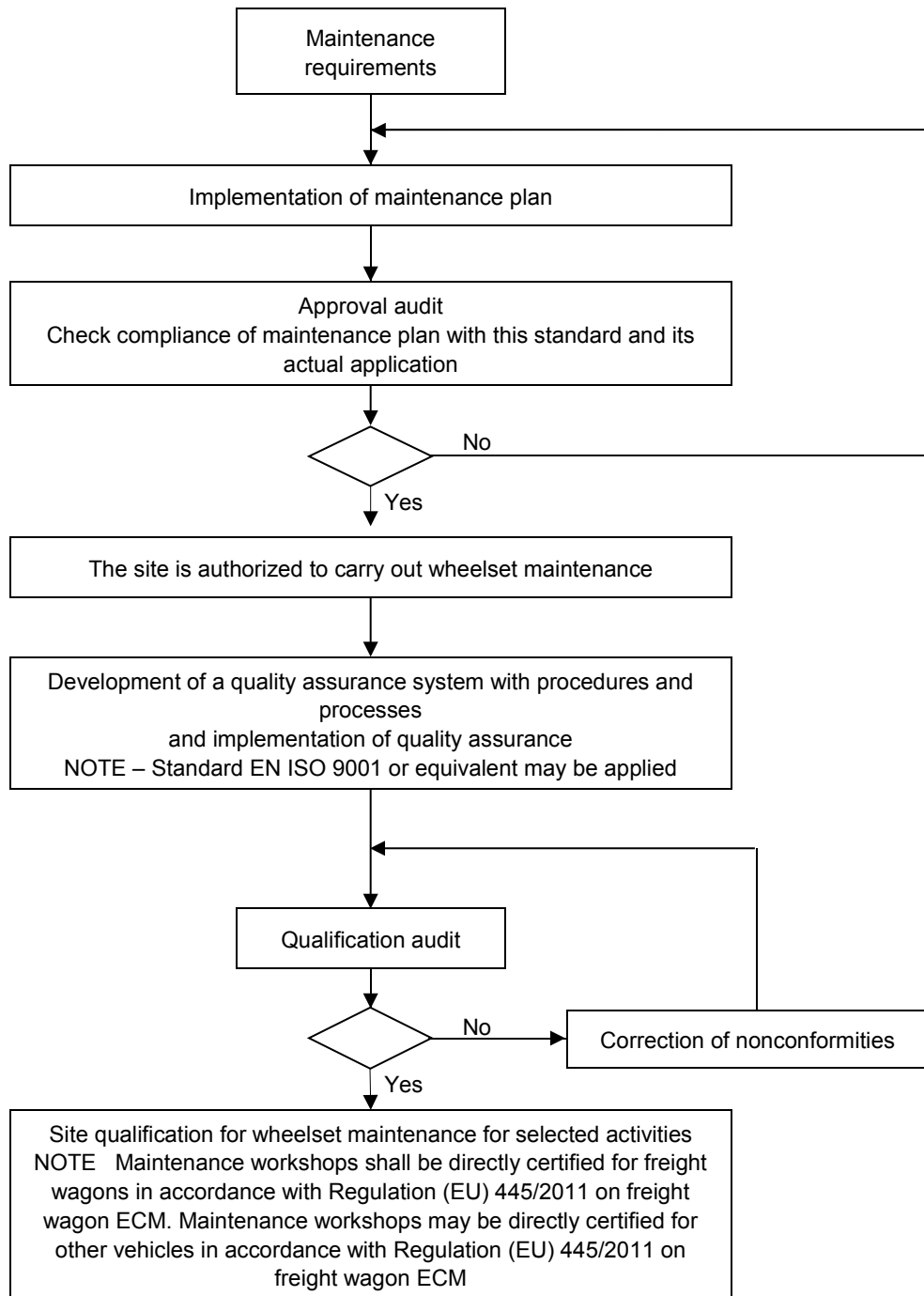
NOTE An EN standard relating to the use of NDT in wheelset maintenance is currently being prepared and may be used as a reference for the training of operators following its publication.

### 4.5 Qualification of an undertaking for the maintenance of in-service or off-vehicle wheelsets

The qualification principle shown in Figure 3 applies to each of the following activities:

- a) maintenance of in-service boxed wheelsets;
- b) maintenance of off-vehicle boxed wheelsets;
- c) maintenance activity component (example: reprofiling).

The qualification shall be reviewed before its extension to a new type of wheelset/axle box.



**Figure 3 – Flow chart for qualification of an undertaking**