



RECOMMENDATION FOR USE

NB-RAIL COORDINATION GROUP
INTEROPERABILITY DIRECTIVE AND SUBSEQUENT
AMENDMENTS ON THE INTEROPERABILITY OF THE
RAIL SYSTEM WITHIN THE UNION

RFU-INF-101

Issue 02
Date 13/06/2018
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TITLE

TEST RESULTS ON FASTENING SYSTEMS

ORIGINATOR

RINA

SUBJECT RELATED TO

INF TSI 1299/2014

AMENDMENT RECORD:

ISSUE 02 TAKES INTO ACCOUNT THE RELATED ERA OPINION AND THE LIMITS SET ABOUT THE LONGITUDINAL RAIL RESTRAINT TEST

DESCRIPTION AND BACKGROUND EXPLANATION

In TSI point 5.3.2(2)(b) the sentence "*is not degraded by more than 20%*" (or 25%, depending on the test) has been chosen to describe the maximum performances change admitted after the fatigue cycles.

Reference norm in this field is the EN 13481-2; this EN standard, as well as the same ERA INF TSI Application Guide, uses the wording "*change*" instead of the term "*degraded*". §5.5 of EN13481-2 states that the clamping force should be limited to 20%.

The fact is that, after (for example) having reported an increase of +30% in a clamping force test after fatigue cycles, some applicant may argue that the TSI just says "*degraded*", let's say that the 20% limit only applies to negative changes; since the TSI is the only legal reference text, the test should be considered as passed.

RFU PROPOSAL

After the issuing of Issue 01 of this RFU, ERA further analyzed this topic. After a technical review within the INF Working party, ERA agreed in the Technical opinion ERA/OPI/2017-7 that the wording "*change in performance*" would have been more appropriate than "*not degraded by more than*". Nevertheless, ERA also came to the decision that for the longitudinal rail restraint there should be no limitation to a positive change, since the positive change of this parameter would be beneficial in terms of track stability. By consequence, point 5.3.2.2 (b) of INF TSI 1299/2014 should be read as follows:

the rail fastening shall resist application of 3 000 000 cycles of the typical load applied in a sharp curve, such that the change in the performance of the fastening system shall not exceed:

- *20% in terms of clamping force*
- *25% in terms of vertical stiffness*
- *a reduction of more than 20% in terms of longitudinal restraint*

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THIS RFU WAS AGREED ON

PLENARY MEETING 53

THIS RFU ENTERS INTO FORCE ON

DATE OF PUBLICATION: 13/06/2018

RFU APPLICATION IS MANDATORY STARTING FROM

01/07/2018

AT THIS DATE ANY PREVIOUS VERSIONS OF THIS RFU WILL BE WITHDRAWN.

ERA COMMENTS

ERA ERA/OPI/2017-7 DATED 29/01/2018

PLENARY MEETING 53 – 23/05/2018: NO COMMENTS

Making the railway system
work better for society.

OPINION

ERA/OPI/2017-7

OF THE EUROPEAN UNION AGENCY FOR RAILWAYS

for

European Commission

regarding

a possible revision of INF TSI - rail fastening systems

Disclaimer:

The present document is a non-legally binding opinion of the European Union Agency for Railways. It does not represent the view of other EU institutions and bodies, and is without prejudice to the decision-making processes foreseen by the applicable EU legislation. Furthermore, a binding interpretation of EU law is the sole competence of the Court of Justice of the European Union.

1. General context

The European Commission requested ERA to prepare a technical opinion regarding a possible amendment of Regulation (EU) 1299/2014 ('INF TSI')¹ in order to improve the clarity of the requirements on rail fastening systems set out in Point 5.3.2 of the Annex, in a letter referenced as Ares(2017)5971984 and dated 6 December 2017.

The European Commission envisages a reformulation of point 5.3.2 mentioned above as the requirements on rail fastening systems are not sufficiently clear and may be interpreted either as concerning only negative changes or as concerning both positive and negative changes to the performances of the fastening systems.

2. Legal background

The Commission Regulation (EU) 1299/2014 ('INF TSI') was adopted on the basis of the 'old' interoperability directive (Directive 2008/57/EC), which was replaced as of June 2016 by the Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system² (Interoperability Directive). All references to the 'old' interoperability directive are now construed as references to the current one.

According to the provisions of Article 10(2) of the Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004³ (Agency Regulation), ERA issues opinions, at the request of the Commission, on possible amendments to any act adopted on the basis of the Interoperability Directive, such as the INF TSI.

3. Analysis

Point 5.3.2 of the INF TSI defines performances and specifications of the Interoperability Constituents "rail fastening systems".

In detail, point 5.3.2(b) states:

"the rail fastening shall resist application of 3 000 000 cycles of the typical load applied in a sharp curve, such that the performance of the fastening in terms of clamping force and longitudinal restraint is not degraded by more than 20 % and vertical stiffness is not degraded by more than 25 %. The typical load shall be appropriate to:

- the maximum axle load the rail fastening system is designed to accommodate,*
- the combination of rail, rail inclination, rail pad and type of sleepers with which the fastening system may be used."*

The wording "*.....the performance of the fastening systems.....is not degraded by more than.....*" is creating uncertainty on its interpretation, as the sentence "*not degraded by more than*" may be interpreted as limiting to negative only the acceptable changes in performances of the fastening systems described in point 5.3.2(b), allowing therefore any positive changes in performances after the test of repeated loading.

A "fastening system" can be defined as "*an assembly of component which secures a rail to the supporting structure and retains it in the required position whilst permitting any necessary vertical, lateral and longitudinal movement*".

¹ OJ L 356, 26.5.2016, p. 1.

² OJ L138, 26.5.2016, p 44

³ OJ L138, 26.5.2016, p 1

The [INF TSI Application Guide](#) (page 30) also indicates that the acceptable limits in points 5.3.2(b) after the test of repeated loading were to be interpreted as a change in performance, defining therefore a minimum and a maximum acceptable limit.

Similarly, the requirements in point 5.3.2(b) of INF TSI have a correspondence in the voluntary harmonised standard EN 13481-2:2012 "Railway applications - Track - Performance requirements for fastening systems - Part 2: Fastening systems for concrete sleepers". In its point 5.5 "Effect of repeated loading", the EN standard defines, for the same parameters clamping force, longitudinal rail restraint and vertical stiffness, the acceptable changes in performance after the test of repeated loading, defining therefore a minimum and a maximum acceptable limit.

A recommendation for use (RFU) has been published on the NB rail website ([link](#)), in line with the INF TSI Application Guide and the EN standard mentioned above.

The issue was submitted to the attention of the Infrastructure Working Party and an agreement was reached that the wording "*change in performance*" would be more appropriate than "*not degraded by more than...*", although for the longitudinal rail restraint there should be no limitation in the INF TSI to a positive change in performance, as this positive change after repeated loading would only be beneficial in terms of track stability.

Consequently, the Agency has already issued, on 9 October 2017, a Recommendation to the European Commission ([ERA-REC-127](#)) for the closure of open points and additional modifications to the INF TSI, reflecting, among others, the changes to point 5.3.2(b) agreed within the Infrastructure Working Party. The Impact Assessment carried out by the Agency in preparing the above mentioned Recommendation also covers the revision of point 5.3.2(b).

This opinion reflects the changes proposed in [ERA-REC-127](#) to point 5.3.2(b) of the INF TSI.

4. The opinion

The Agency is of the opinion that point 5.3.2(b) of the INF TSI should read as follows:

(b) the rail fastening shall resist application of 3 000 000 cycles of the typical load applied in a sharp curve, such that the change in performance of the fastening system shall not exceed:

- *20 % in terms of clamping force,*
- *25 % in terms of vertical stiffness,*
- *a reduction of more than 20% in terms of longitudinal restraint.*

The typical load shall be appropriate to:

- *the maximum axle load the rail fastening system is designed to accommodate,*
- *the combination of rail, rail inclination, rail pad and type of sleepers with which the fastening system may be used.*

Valenciennes, 29.01.2018


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