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Requirements on Spark Arresters for freight wagons fitted with tread brakes

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	<i>Drafted by</i>	<i>Reviewed by</i>	<i>Reviewed by</i>
<i>Name</i>	Dietmar GILLIAM	Andreas SCHIRMER Rudolph SPANHOFF	Oscar MARTOS
<i>Position</i>	expert and member of the JNS TF	ERA Coordinator ERA Project Officer	ERA Project Officer
<i>Date</i>	24/01/2024	04/04/2024	05/12/2024
<i>Signature</i>	[Signed]	[Signed]	[Signed]

Document history

<i>Version</i>	<i>Date</i>	<i>Comments</i>
0.1	05/01/2024	First draft - Conversion from the UIC 543:2018, set up for Task 6 of the ERA JNS NP TF "Consequences of unintended brake applications..."
0.2	08/01/2024	Text re-arranged: Definition of units which shall be equipped with spark arresters in WAG TSI. Requirements on spark arresters in ERA TD. Introduction of legislative writing structure from general case (common requirements) to specific case (RID wagons).
0.3	24/01/2024	Text revised, figures all put at the end of the text.
0.4	04/04/2024	ERA review: Further alignment of the proposed text with the TSI and proofreading.
0.5	27/11/2024	ERA review: Further alignment with the TSI and consideration of changes suggested by several stakeholders in WP meeting n.28
1.0	03/12/2024	ERA review: consideration of final comments after RID Standing Group meeting – <ul style="list-style-type: none"> - Deletion of the requirement for maintenance - Deletion of the minimum thickness of spark arresters – figures amended accordingly Additional minor changes introduced in the titles of section 2 and the scope
1.1	05/12/2024	Feedback from RID experts included after a dedicated bilateral meeting (small mistake correction)

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1 DEFINITION OF ASPECT/SCOPE

1.1 General

The present ERA Technical Document contains requirements on spark arresters and is largely based on the UIC 543:2018, point 3 and Annexes A, B and C. The WAG TSI refers to this ERA Technical document in its clause 4.2.6.1.2.1 “Barriers and spark arresters” related to “Fire safety” and “Functional and technical specifications”.

The relevant parts of UIC 543 have been integrated with the permission of UIC.

The scope of this technical document is limited to freight wagons fitted with wheel tread brakes (i.e., brake blocks).

1.2 Reference documents

Acronym	Name	Reference
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail	Regulations concerning the International Carriage of Dangerous Goods by Rail, as defined in Article 2 (2) of Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods.
WAG TSI	Technical specification for interoperability relating to freight wagons	Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem rolling stock — freight wagons of the rail system in the European Union and repealing Decision 2006/861/EC

2 REQUIREMENTS ON SPARK ARRESTERS

2.1 Provisions common to single-axle units and bogie units

Spark arresters shall have a length of at least the diameter of the maximum permissible running tread plus 200 mm. They shall be placed symmetrically in relation to the centreline of the axle.

The distance between the underside of the spark arresters and the wheel flange shall not be less than 15 mm when the body of the wagon has dropped completely (broken spring).

The above distance may only be less than 15 mm when passing over a train ferry ramp. However, in this case a minimum distance of 5 mm shall be observed, the unit being at a standstill and loaded up to the maximum payload as specified in the load table of the unit.

If it is not possible to comply with the layout and dimensions described above because of the way the underframe is built, the spark arresters may be shortened, folded, or cut when underframe parts are near to them, provided a floor protection which is at least equivalent is ensured.

For flat wagons with no floor or with gaps in the floor where the wheels are housed, the distance between the spark arresters and the inflammable parts of the vehicle or its load shall not be less than 80 mm. In addition,

these spark arresters shall be reinforced so that they can withstand the weight of a railway staff person without this causing permanent bending.

In accordance with EN 15663:2017, the weight of a railway staff person shall be considered as 80 kg.

2.2 Additional requirements for single-axle units

2.2.1 Single-axle units required to comply with 7.1.2.1.2 of RID

Spark arresters of single-axle units required to comply with 7.1.2.1.2 of RID shall be designed and positioned in accordance with the provisions of figure 1, including in case of products carried in large containers.

The upper part of these spark arresters is usually curved and shall be 300 mm wide. The distance between the inside edges of spark arresters positioned over the wheels of the same axle shall measure 1120 mm.

These spark arresters shall have a 250 mm-high vertical part towards the external side of the unit, with a 50 mm overlapping lower edge sloping outwards at a 45° angle.

If the upper part is curved, there shall be a minimum distance of 20 mm between the uppermost part of the spark arrester and the unit floor, and a minimum distance of 180 mm between spark arrester ends and floor.

If the upper part is flat, this minimum distance shall be 80 mm over the whole width of the spark arrester.

2.2.2 Single-axle units not intended to comply with 7.1.2.1.2 of RID

Spark arresters of single axle units shall be designed and positioned in accordance with figure 1 or figure 2.

The upper part of these spark arresters is usually curved and shall be 315 mm in width. The distance between the inside edges of spark arresters positioned above the wheels of the same axle shall measure 1120 mm.

These spark arresters shall have a vertical part measuring 110 ± 5 mm in height towards the external side of the unit, with an overlapping 32 mm long lower edge sloping outwards at a 30° angle.

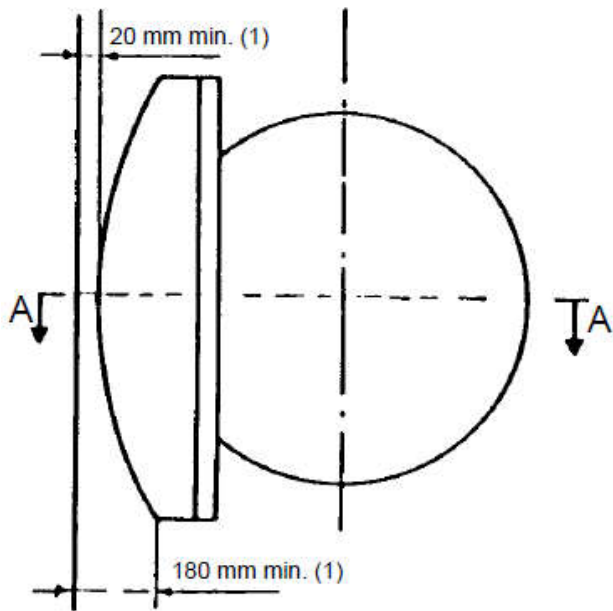
If the upper part is curved, there shall be a minimum distance of 20 mm between the uppermost part of the spark arrester and the unit floor, and a minimum of 180 mm between spark arrester ends and floor. If the upper part is flat, this minimum distance shall be 80 mm over the whole length of the spark arrester.

2.3 Additional requirements for units with bogies

Spark arresters of units with bogies shall be designed and positioned in accordance with figure 3.

The spark arresters shall be flat and measure 425 mm in width, the distance between their inside edges shall be 1100 ± 10 mm and the space between the spark arrester and the floor shall be at least of 80 mm.

Figure 1: Spark arresters for single-axle units required to comply with 7.1.2.1.2 of RID



(1) Remark:
If a minimum distance of 80 mm can be complied with over the whole length of the plate, the upper part of the plate can be flat.

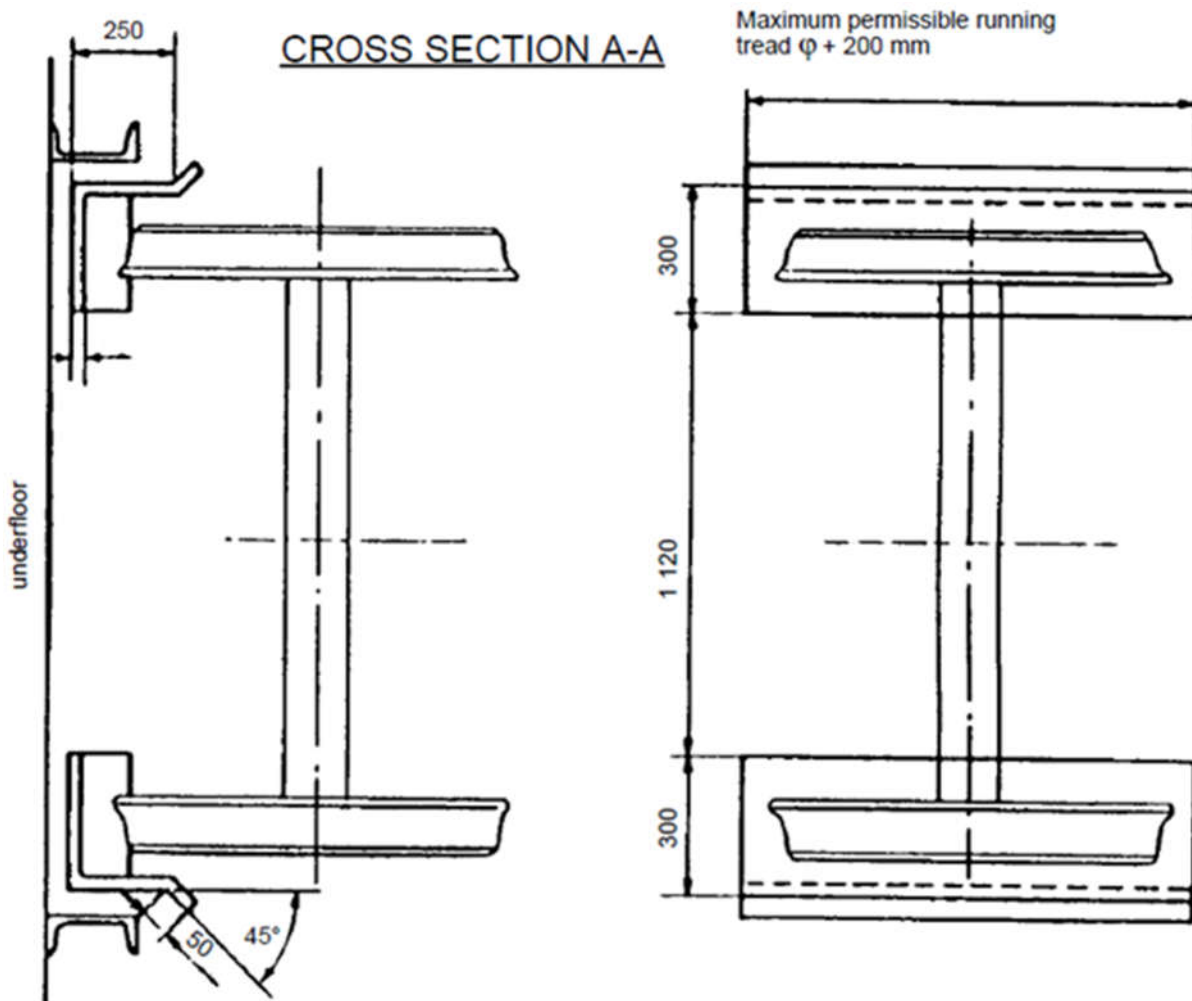


Figure 2: Spark arresters for single-axe units not required to comply with 7.1.2.1.2 of RID

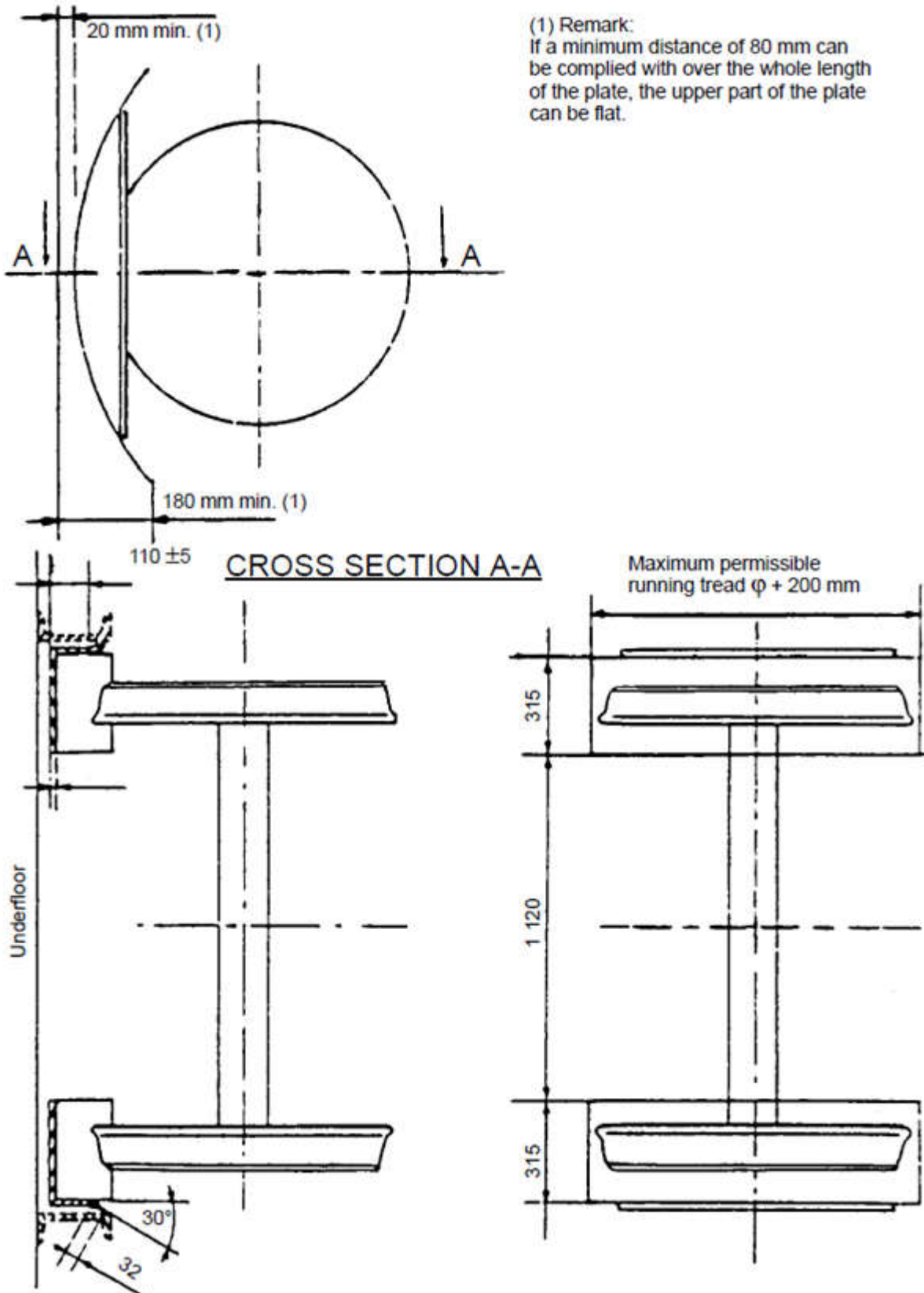
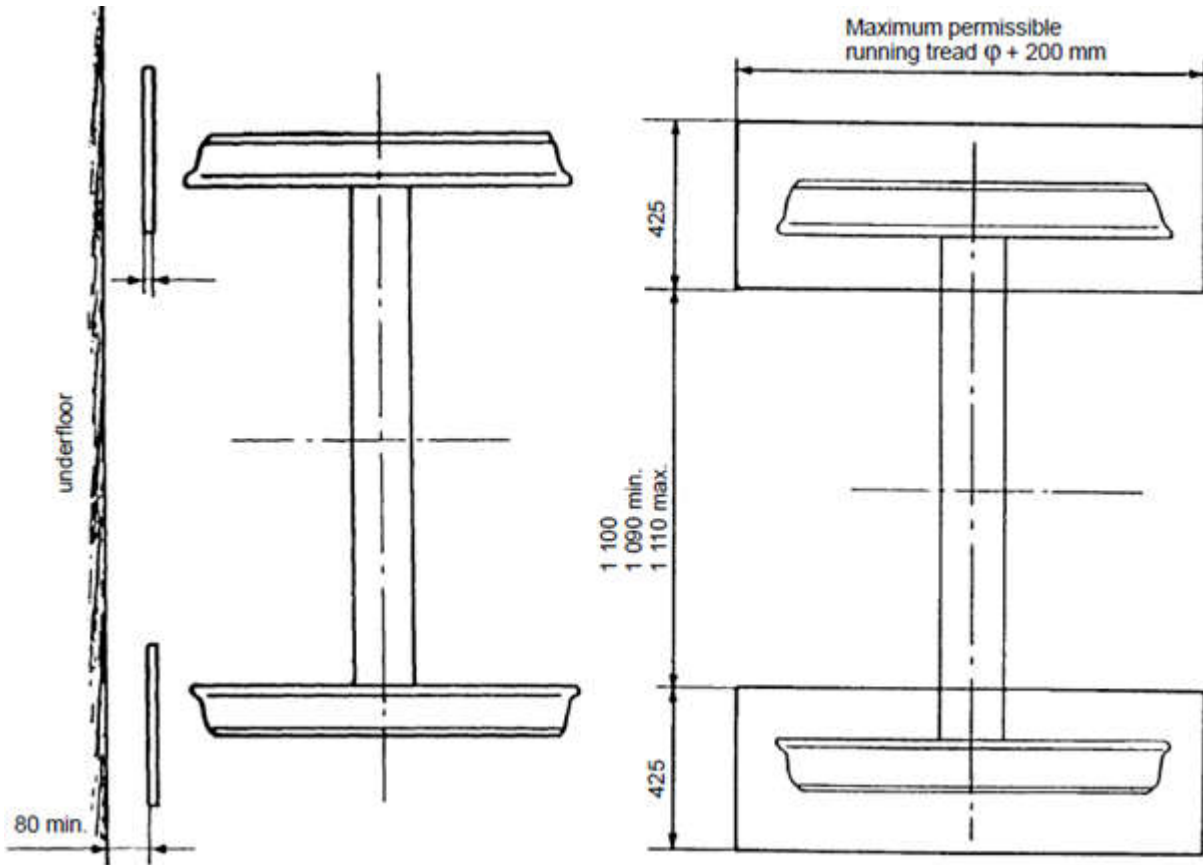


Figure 3: Spark arrester for units with bogies



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The source of technical details and the figures 1, 2 and 3 of this document is:

UIC 543 – 15th edition, 2018-4: “Brake - Regulations governing the equipment of trailing stock.”