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Brakes

Regulations governing the equipment of trailing stock



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Introduction of Appendix F.

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Foreword

An International Railway Solution (IRS) is a document drawn up by consensus and applied on a voluntary basis which aims to facilitate and harmonise railway operation.

IRSs are gradually replacing UIC Leaflets.

Members of the International Union of Railways (UIC) participate in the creation of IRSs, of which they benefit in full. Furthermore, marketing to railway stakeholders contributes to the sharing and harmonisation of good practices, in accordance with UIC's primary goal.

While IRSs do not have the force of law, they are created and published in a professional manner and with technical approval on the basis of UIC procedures, and have full technical legitimacy in the railway sector.

The "General application" section constitutes the heart of the IRS and contains the working group's expertise applicable in the broadest manner. The addition of a "Specific application" aims to cover factors specific to a region, a type of service, etc.

Some provisions shall be implemented in all cases to ensure correct application and maintain the system's cohesiveness. Certain operational circumstances require that specific provisions be systematically applied by all users of the document.

For the purposes of understanding, the user acknowledges that the expression of:

- obligation indicates requirements to be respected in order to comply with the expertise expressed in the document (usually "shall");
- recommendation indicates options that are favourable but not essential (usually "should");
- permission indicates options that are recognised but without consequence (usually "may");
- capacity indicates possibilities from a technical standpoint and not permissions or probabilities (usually "can").

Obligation, recommendation and capacity can be expressed in the negative to indicate prohibiting, non-recommendation and incapacity.

If applicable, notably for the purposes of compliance with a UIC approval, passages that are recommended or mandatory for the cohesiveness of the system will be accompanied by the letters "R" and "MCS" respectively.

This IRS reflects the following UIC working group expertise:

Rail System Forum - Rolling Stock Sector - SET_07 "Braking"

It integrates in full or in part the following UIC Leaflets:

- 543 - 15th edition, April 2018

It complements the following standards:

- none

The following IRSs constitute a complementary series:

- none

Executive summary

The International Union of Railways (UIC) develops and distributes International Railway Solutions (IRSs) in order to help railway stakeholders, achieve further harmonisation and collaboration.

This IRS sets out the basic provisions and the minimum conditions of equipment for use on new and retrofitted vehicles in general operation in international service. Additional regulations as well as provisions and other details specific to the different types of braking equipment and related components are defined in other IRS/UIC Leaflets in subsection 54.

This IRS integrates the conclusions of the JNS procedure "Broken wheels".

It is made for the Railway Undertakings.

It integrates in full or in part the following UIC Leaflets:

- 543 - 15th edition, April 2018

It complements the following standards:

- none

Field of application

This IRS sets out the basic provisions and the minimum conditions of equipment for use on new and retrofitted vehicles in general operation in international service. Additional regulations as well as provisions and other details specific to the different types of braking equipment and related components are defined in other IRS/UIC Leaflets in subsection 54.

Reference documents

The following documents are cited in this IRS or strongly support its requirements and recommendations:

1. International Railway Solution (IRS)

International Union of Railways (UIC)

- [1] *IRS 50541-04: Brakes - Regulations concerning the manufacture of brake components - Self-adjusting load-proportional braking system and automatic "empty-loaded" control device, 2023*

2. UIC Leaflets

International Union of Railways (UIC)

- [2] *UIC Leaflet 535-3: Equipping of wagons with devices for passing from one to the other and with screw brakes, 1976*
- [3] *UIC Leaflet 540: Brakes - Air Brakes for freight trains and passenger trains, 2016*
- [4] *UIC Leaflet 541-3: Brakes - Disc brakes and their application - General conditions for the certification of brake pads, 2017*
- [5] *UIC Leaflet 541-4: Brakes - Brakes with composite brake blocks - General conditions for certification of composite brake blocks, 2020*
- [6] *UIC Leaflet 543-1: Brakes - A study of minimum standards for maintenance of goods wagon brakes, 2010*
- [7] *UIC Leaflet 544-1: Brakes - Braking performance, 2014*
- [8] *UIC Leaflet 545: Brakes - Inscriptions, marks and signs, 2014*
- [9] *UIC Leaflet 546: Brakes - Specifications for the construction of various brake parts - High power brakes for passenger trains, 2014*
- [10] *UIC Leaflet 572: Wagons composed of permanently-coupled units (multiple wagons) and articulated wagons, 2011*