

UIC CODE

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Translation

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Brakes - Regulations concerning the manufacture of the different brake parts - Derailment detectors for wagons

*Freins - Prescriptions concernant la construction des différents organes de frein - Détecteurs de
déraillement pour wagons*

*Bremsen - Vorschriften für den Bau der verschiedenen Bremsteile - Entgleisungsdetektoren für
Güterwagen*



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2nd edition, August 2001	Approval of derailment detector EDT 100, Amendment to appendix A
3rd edition, November 2006	Publication of the Appendix A on the UIC website.
4th edition, June 2007	New limit values for the accelerations in points 1.1.1.1 and 1.1.1.2

The person responsible for this leaflet is named in the UIC Code

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Summary

The purpose of a derailment detector is to stop the train by activating automatic application of the brakes or to send a signal to the train driver when its triggering threshold has been reached following a wagon derailment.

The derailment detector cannot prevent derailments. Its presence on a vehicle should never be used as an excuse for cutting back or compromising on preventive vehicle maintenance.

The pneumatic derailment detector monitors vertical accelerations at wagon-body level and, when its triggering threshold is reached, opens a large aperture to exhaust the main brake pipe to atmosphere.

The electronic derailment detector does not necessarily cause the main brake pipe of the vehicle concerned to open. If the train is equipped with a train control-command and diagnosis system, the detector can transmit an advance warning and derailment signal to the driver.
(The relevant conditions have not yet been defined in this leaflet).

Accelerations occurring in normal service should not trigger the derailment detector.

It is crucial that, in the event of a derailment, the vertical acceleration occurring at the point where the derailment detector is to be fitted exceeds the triggering threshold of the detector. This applies irrespective of the load conditions and speed of the wagon.

The derailment detector should be designed to operate on lines that meet the quality standards laid down in *UIC Leaflet 518, Appendix D (QN1-QN3)*.

1 - Pneumatic derailment detector

o 1.1 - Functional and technical data

1.1.1 - Triggering threshold (sensitivity)

1.1.1.1 - The derailment detector (see Glossary - page 11) must cut in at vertical accelerations $\geq 11,5$ g in the frequency range of 0-100 Hz (see List of abbreviations - page 12).

1.1.1.2 - The derailment detector should not cut in at vertical accelerations $\leq 6,5$ g in the frequency range of 0-100 Hz.

1.1.1.3 - Horizontal shocks of up to 30 g should not trigger the detector.

1.1.1.4 - The derailment detector must be able to operate in the temperature range of - 40 °C to + 70 °C.

1.1.1.5 - The derailment detector must be able to operate at a nominal pressure of between 4 and 6 bar in the main brake pipe (see Glossary - page 11).

1.1.1.6 - The detector should not be triggered by service and emergency braking (see Glossary - page 11) applications, or by brake release. Filling strokes from the driver's brake valve of up to 10 bar lasting 30 seconds should not accidentally trigger the detector, nor cause damage to it. The subsequent operation of the detector must not be affected.

1.1.1.7 - When the pneumatic derailment detector is triggered, an aperture of at least 19 mm diameter is opened between the main brake pipe and atmosphere, causing an automatic application of the brakes (see Glossary - page 11). The air draining capacity should be such that the pressure contained in a reservoir of 400 litres (connected in place of the main brake pipe) drops by 1.5 bar within a maximum of 3 seconds (see verification model in UIC Leaflet 541-03, Appendix 1 (see Bibliography - page 13)).

1.1.2 - Status indicator device

1.1.2.1 - All derailment detectors should indicate their triggered state with a red light.

1.1.2.2 - This status indicator device must be visible from both sides of the wagon. If this is not possible for design reasons (e.g. articulated vehicle), the derailment detector must be visible from one side of the wagon. The other side of the wagon should carry an appropriate marking which will subsequently be included in UIC Leaflet 545 (see Bibliography - page 13).

1.1.2.3 - The status indicator may only be reset manually and when the main brake pipe pressure is between 0 to 6 bar.

1.1.3 - Isolation

1.1.3.1 - It must be possible to isolate derailment detectors by means of an isolating cock.

1.1.3.2 - When in the "on" position, the handle of the isolating cock must be positioned vertically downwards.

1.1.3.3 - The isolating handle should be coloured yellow.

1.1.4 - Reset

Following triggering of the derailment detector and subsequent activation of automatic application of the brakes, the device must automatically return to its initial position (automatic reset) once the pressure in the main brake pipe has dropped to below 0,5 bar. This can be done by stopping the return air supply to the main brake pipe.

The status indicator device shall remain in the same position and will be manually reset.

1.2 - Fitting instructions

1.2.1 - Quantity

- O 1.2.1.1 -** To ensure all possible derailed axles can be detected, derailment detectors should be fitted to both ends of the wagon.
- R 1.2.1.2 -** When articulated vehicles or permanently-coupled units are used, it is recommended that a further derailment detector be mounted at a suitable point close to the intermediate running gear.

O 1.2.2 - Mounting

1.2.2.1 - Derailment detectors should be mounted on the wagon body (preferably on the headstock between the draw hook and the buffers) by means of a rigid mechanical connection.

1.2.2.2 - The derailment detector should be mounted in such a position that the isolating cock is easily accessible and the status indicator device clearly visible.

1.2.3 - Air volumes

- O 1.2.3.1 -** The connecting pipes should have a clear cross section of at least 19 mm diameter.
- R 1.2.3.2 -** Care should be taken to ensure that the increase in air volume inside the main brake pipe caused by the connecting pipes be kept as low as possible and that there be as few bends as possible.
- R 1.2.3.3 -** The additional air volume generated by each derailment detector should not exceed the following limit values:

- | | |
|-----------------------------------|---------------------------------------|
| - Retrofitting of existing wagons | $V_{\text{total}} = 500 \text{ cm}^3$ |
| - New conventional-design wagons | $V_{\text{total}} = 250 \text{ cm}^3$ |