

2nd edition, August 2010

Translation

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General rules for interoperable rolling stock gauges (without unloading freight or disembarking passengers) in cross-border traffic between UIC and OSJD RUs

*Règles générales pour les gabarits des véhicules interoperables (sans décharger ni débarquer)
en trafic transfrontalier entre les EF de l'UIC et de l'OSJD*

*Allgemeine Regeln für Fahrzeugbegrenzungslinien im interoperablen (umlade-/umsteigefreien)
grenzüberschreitenden Verkehr zwischen den UIC- und OSJD-EVU*



UNION INTERNATIONALE DES CHEMINS DE FER
INTERNATIONALER EISENBAHNVERBAND
INTERNATIONAL UNION OF RAILWAYS

Leaflet to be classified in Volume:

500

Application:

With effect from 1 August 2010

All members of the International Union of Railways.

This leaflet was elaborated by UIC/OSJD joint group and approved on 02/03 February 2010 by the study group "Vehicle-Infrastructure interaction".

Record of updates

1st edition, April 2006

First issue. Unlike OSJD leaflet 500, this leaflet has been structured so as to allow the different methods of calculation to appear in points 3 and 4 and to keep only the explanations of the symbols used in Appendix A.

2nd edition, August 2010

Addition of Appendix B.

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

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Summary

This leaflet:

1. describes acceptance and operating conditions for east-west traffic;
2. defines the UIC kinematic reference profile and the OSJD static reference profile;
3. defines the methods for calculation of vehicle dimensions in relation to the reference profiles of these gauges.

1 - Application

This leaflet is applicable for coaches and wagons and has mandatory status.

The vehicles will be admitted in international traffic on all the UIC and OSJD lines if they meet the requirements of *UIC Leaflet 505-1* regarding the UIC kinematic gauge (see Fig. 1 - page 4) and those of *OSJD Leaflet 500* (see Bibliography - page 37) regarding the OSJD static gauge 03-WM (see Fig. 2 - page 5).

Point 2 - page 4 shows the upper parts of the contours used to determine the widths and the admissible heights of the vehicles. The calculation method for the kinematic gauge is shown in point 3 - page 10 and the calculation method for the static gauge is shown in point 4 - page 28.

The method used to determine the minimum height of the lower parts according to the kinematic gauge is shown in point 3. The lower parts of static gauge is shown in the Fig. 8 and 9 - page 9 and the application rules are shown in point 4.

Free circulation is also granted on the following railways for wagons which conform to the static gauge according to Fig. 3 - page 5 : AZ, BC, GR, KZH, KZD, LDZ, LG, CFM, PKP, RZD, ZSR, UTI, UZ, EVR, HSH, GySEV, BDZ, CFR, CD, JZ, TCDD, DB, ÖBB, CFL, NS, DSB, CFS, IRR, VR, RENFE.

The rolling stock construction gauge must be calculated according to point 4.

NB : Except for JZ : Divica, Sezana, Hrpelje-Kozina, Koper, Kilovce, Ljurska, Bistrica, Sapljane, Jurdani, Opatila-Matulji, Rijeka ; MAV : Budapest - Deli pu, Budapest-Kelenföld.

Wagons which respect the OSJD static gauge 1-WM (Fig. 4 - page 6) or the smaller OSJD gauge 0-WM (*OSJD Leaflet 500*) shall be accepted for East-West-railway traffic on the following routes:

Moscow - Terespol – uków – Warsaw – owicz – Kunowitz – Frankfurt/Oder
– Berlin – Schwerin (Magdeburg, Erfurt, Dresden)

Moscow –Tschop – Debrecen – Budapest – Subotica (Koprivnica)

Moscow –Tschop – Koschice – Zwolen – Bratislava – Kutny

Moscow – Ungeny – Bucharest – Sofia

Moscow – Peking

Moscow – Pyongyang

Kaliningrad – Bogatschewo – Tczew – Kostrzyn – Berlin

Vadul Siret – Vikshani – Pashkani – Ploiesti – Bucharest

Budapest – Arad – Bucharest – Constanta

Saint-Petersburg – Resekne – Daugawpils – Vilnius – Warsaw

Tallinn – Riga – Warsaw

Warsaw – Gdansk, Katowice – Warsaw

Moscow – Kiev – Tschop – Kysak – Zilina (for the 0-WM gauge)

The running conditions of vehicles respecting the 1-WM and 0-WM profiles on the lines indicated are to be approved by each network.

It is planned that the lines below will be prepared for the circulation of vehicles conforming to the GC gauge (*UIC Leaflet 506* (see [Bibliography - page 37](#))) and where the profile of the upper parts conforms to the 2-WM gauge (*OSJD Leaflet 500*).

NB : Accepted in accordance with the minutes of the ECE/UN BVA working groups of 16.-18.10.1995 and the conclusions of UIC working group 57/A/6 in 1976.

Moscow – Minsk – Brest – Warsaw – Katowice

Budapest – Galanta – Zilina – Katowice – Lwow – Kiev – Moscow

Katowice – Warsaw – Gdansk

Tallinn – Riga – Vilnius – Warsaw

Saint-Petersburg – Resekne – Daugawpils – Vilnius – Warsaw

Saint-Petersburg – Lushaika – Helsinki

Warsaw – Frankfurt/Oder – Berlin

Berlin – Magdeburg – Hannover – Dortmund – Düsseldorf – Cologne – Aachen

Cologne – Düsseldorf – Münster

Mainz – Frankfurt/Main – Hannover – Amsterdam – Antwerp – Brussels – Cologne

Stockholm – Copenhagen

Paris – Lyon

Paris – Calais – Dover – London

Madrid – Barcelona

Arad – Bucharest – Constanta

Arad – Sofia – Istanbul

Berlin – Prague – Ceska Trebova – Bratislava – Budapest – Arad

Triest – Ljubljana – Zagreb – Budapest – Zilina – Cadca – Jablunkov

Rieka – Zagreb – Budapest – Bratislava – Warsaw – Gdansk

Drushba – Aktogaj – Mointy – Akmola – Presnogorskowskaja (Zauralje) –
Jekaterinburg – Moscow – Riga

Drushba – Aktogaj – Almaty – Arys – Aralsk – Aktjubinsk – Saratow – Charkow –
Lwow – Tschop – Kosice – Zwolen – Leopoldow – Zilina – Cadca – Ceska Trebova –
Prague – Decin – Dresden – Bonn – Brussels – Paris (London)

2 - Reference profile

2.1 - Reference profile of the UIC kinematic gauge

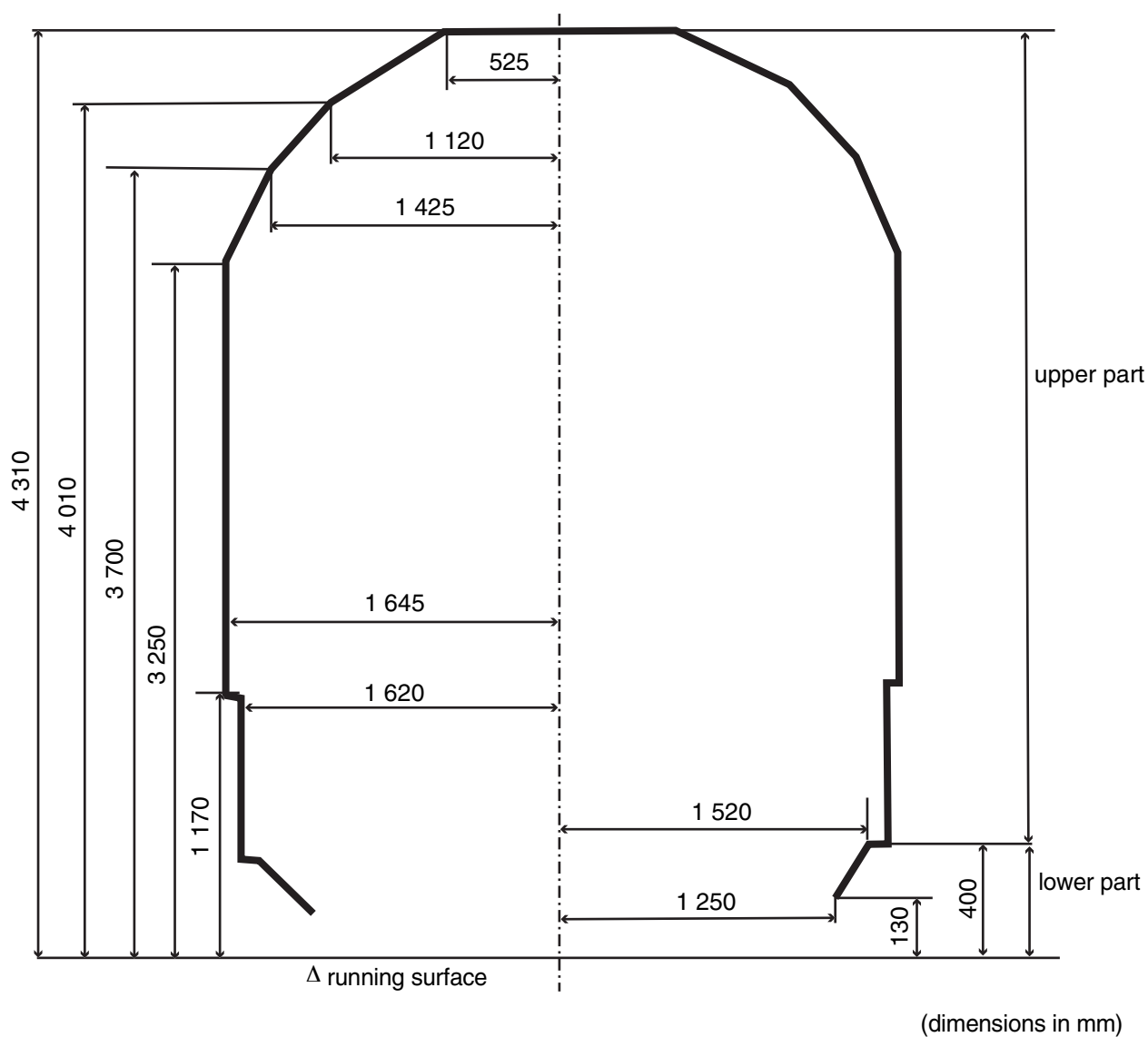


Fig. 1 - Reference profile of the UIC kinematic gauge

2.2 - OSJD static reference profiles

2.2.1 - Upper parts

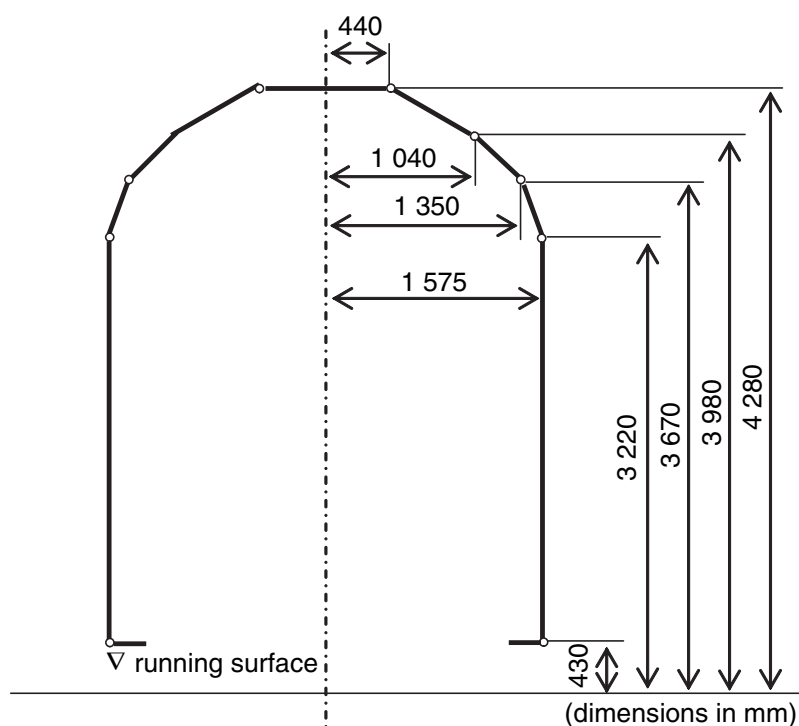


Fig. 2 - Reference profile of the static 03-WM (upper parts)

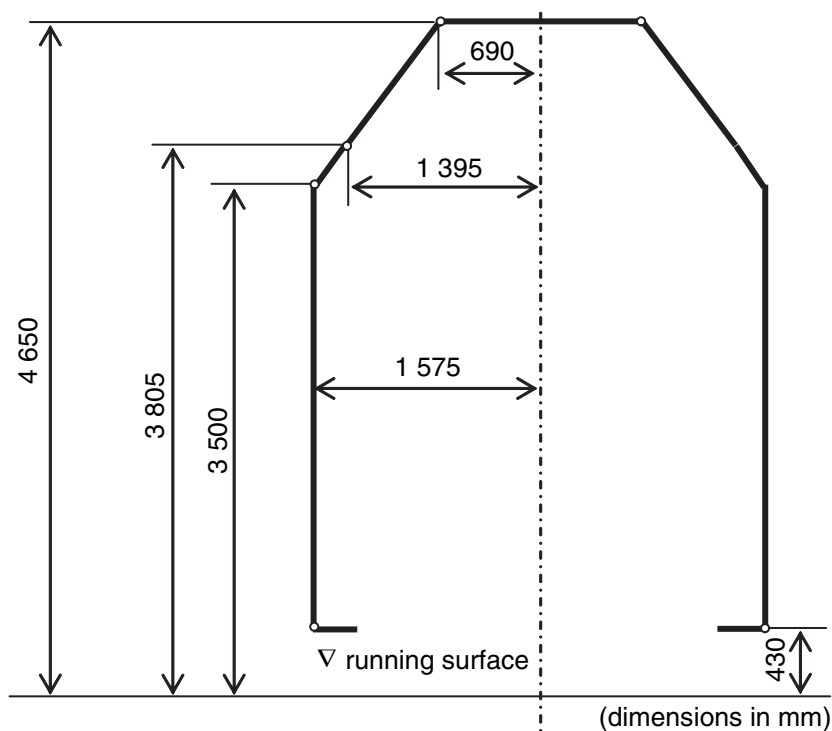


Fig. 3 - Reference profile of the static 02-WM (upper parts)

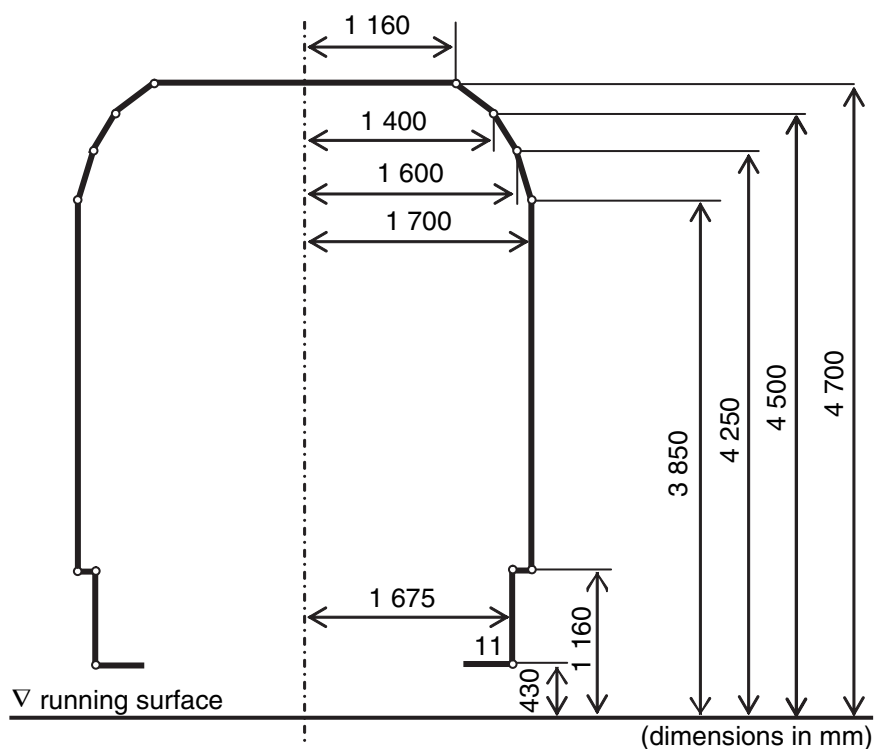


Fig. 4 - Reference profile of the static 1-WM (upper parts)

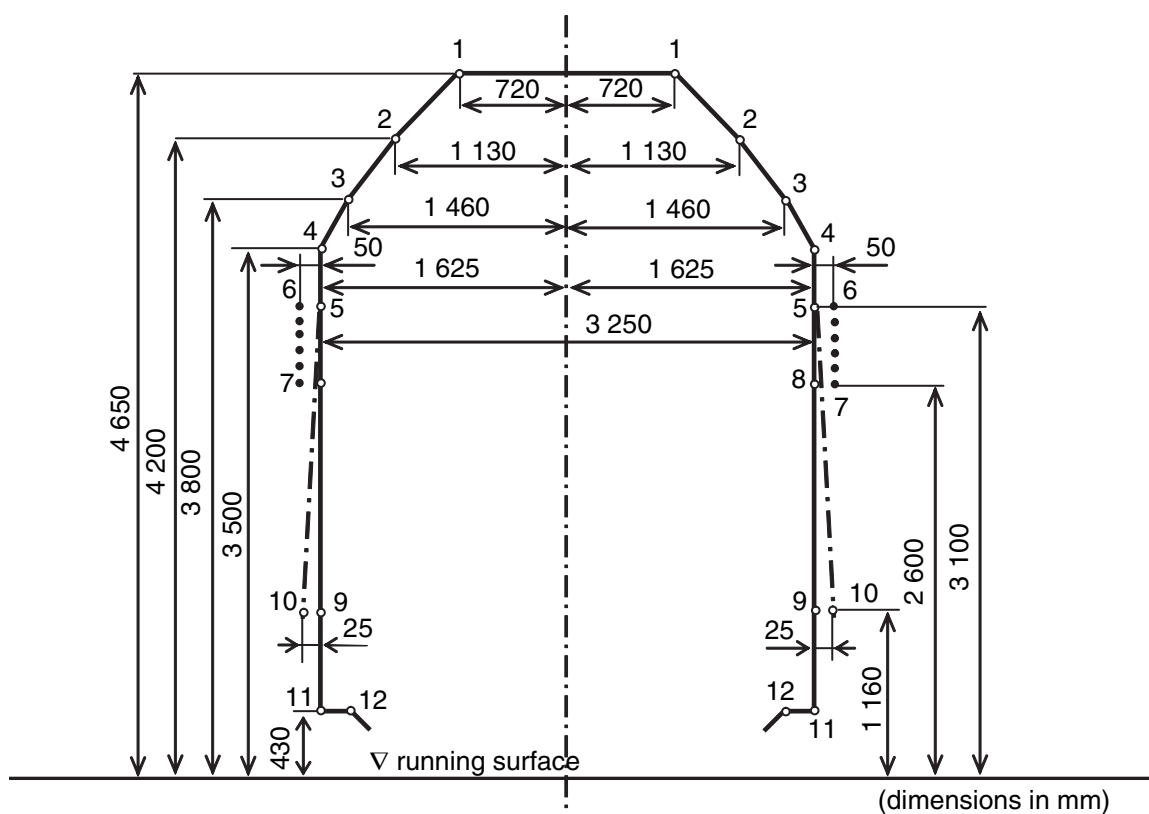


Fig. 5 - Reference profile of the static 0-WM (upper parts)

- only for signals on the vehicles
- . — only for existing vehicles

2.2.2 - Lower part

Certain gauge restrictions are to be observed close to wheelsets when vehicles are placed on an under-floor wheel lathe for wheel reprofiling.

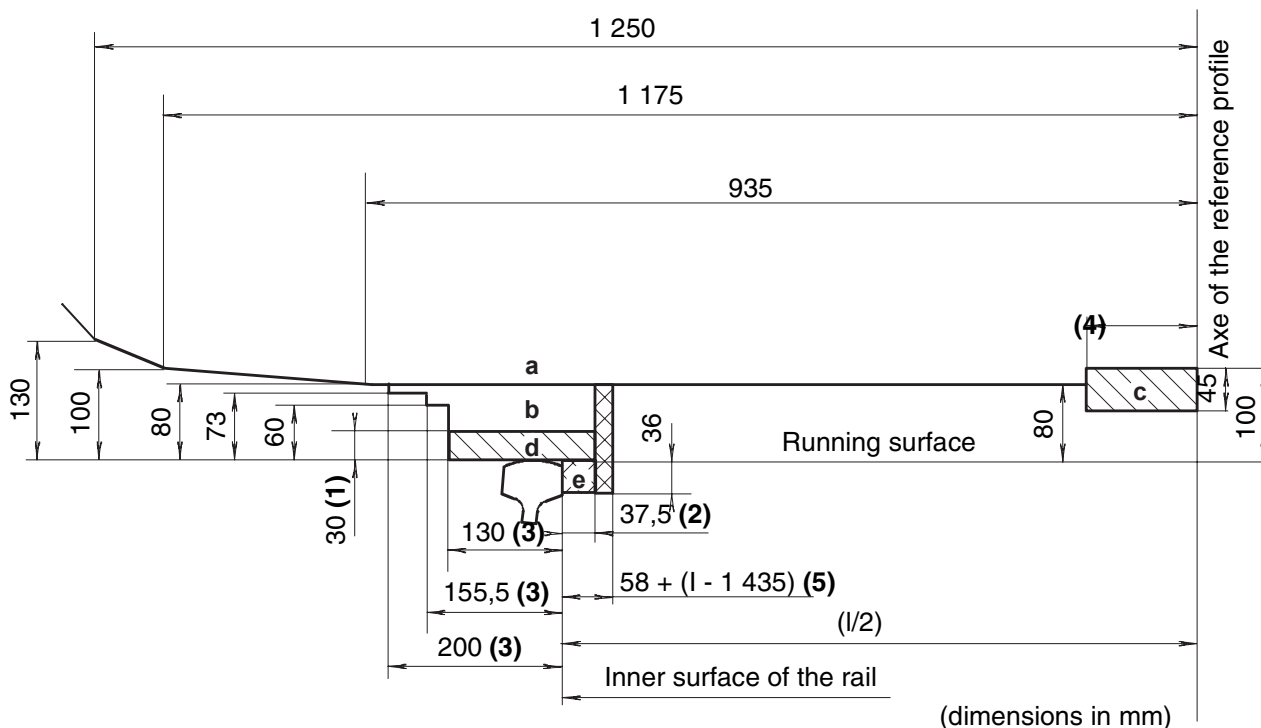


Fig. 6 - Part below 130 mm for vehicles not able to negotiate rail brakes and other activated shunting and stopping devices

- a zone for equipment located away from wheels
 - b zone for equipment in immediate proximity of wheels
 - c zone for contact ramp brushes
 - d zone for wheels and other parts coming into contact with the rails
 - e zone occupied exclusively by the wheels
- (1) Limit not to be exceeded by parts located outside the axle ends (guard irons, sanders, etc.) for running over detonators. This limit may however be disregarded for parts located between the wheels, provided these parts remain within the wheel track.
 - (2) Maximum theoretical width of the flange profile in the case of check-rails (*UIC Leaflet 505-5* - see Bibliography - page 37).
 - (3) Effective limit position of the outside surface of the wheel and of the parts associated with this wheel. Lower parts: see *UIC Leaflet 505-5*.
 - (4) When the vehicle is in any position whatsoever on a curve of radius $R = 250$ m (minimum radius for contact ramp installation) and a track width of 1 465 mm, no part of the vehicle likely to descend to less than 100 mm from the running surface, except for the contact brush, should be less than 125 mm from the track centre. For parts located inside the bogies, this dimension is 150 mm.
 - (5) Effective limit position of the internal surface of the wheel when the axle is against the opposite rail. This dimension varies with gauge widening.

NB : All vehicles must be able to pass over convex or concave transition curves of radius ≥ 500 m, without any part other than the wheel flange descending below the running surface.

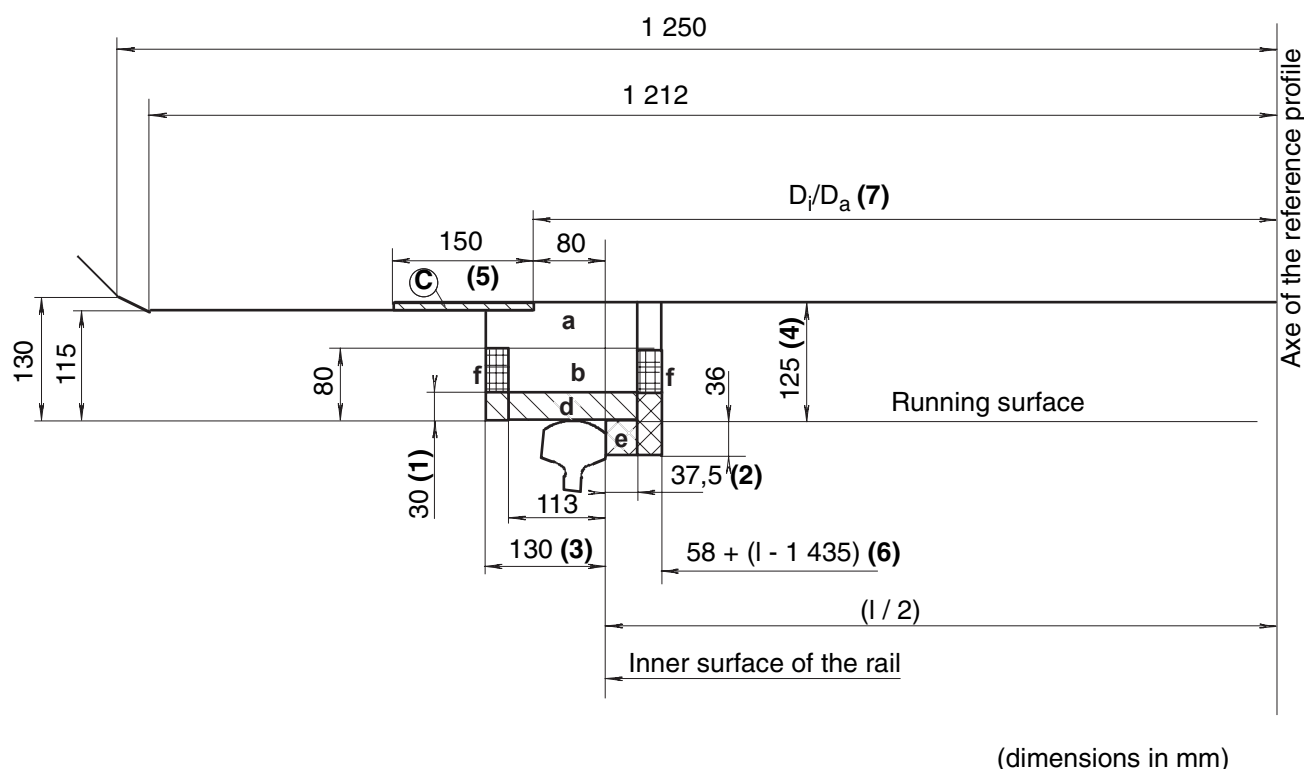
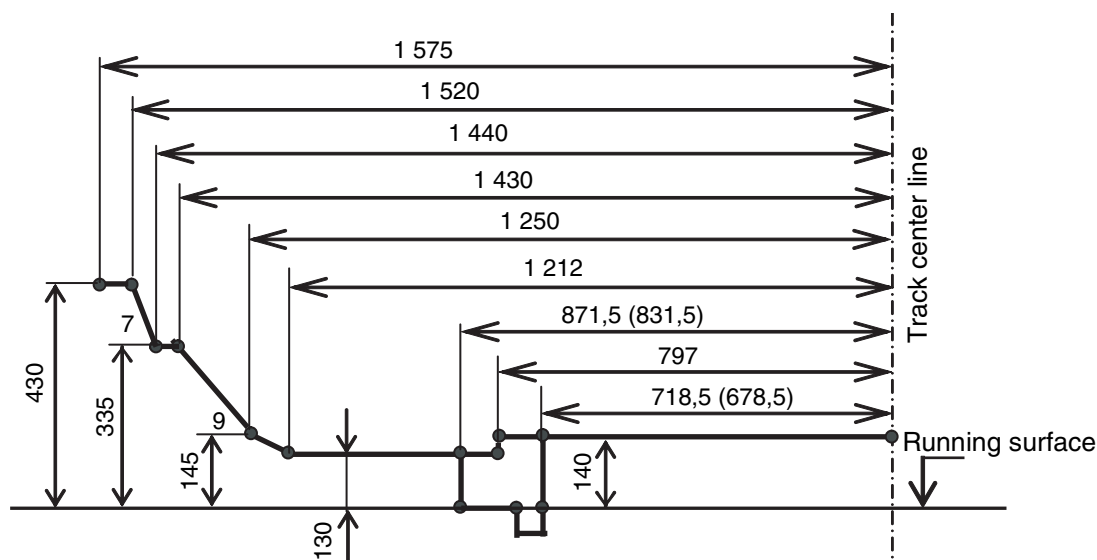


Fig. 7 - Part below 130 mm for vehicles able to negotiate rail brakes and other activated shunting and stopping devices

- a** zone for equipment located away from wheels
 - b** zone for equipment in immediate proximity of wheels
 - c** zone for ejection of standardised drag shoes (see *UIC Leaflet 505-5*).
 - d** zone for wheels and other equipment coming into contact with the rails
 - e** zone occupied exclusively by the wheels
 - f** zone for rail brakes in released position
- (1)** Limit for parts located outside the axle ends (guard-irons, sanders, etc) not to be exceeded for running over detonators.
 - (2)** Maximum fictional width of the flange profiles in the case of check rails.
 - (3)** Effective limit position of the wheel external surface and of the parts associated with the wheel (Lower part : see *UIC Leaflet 505-5*).
 - (4)** This dimension also shows the maximum height of standard drag shoes used for scotching or slowing down the rolling stock.
 - (5)** No rolling stock equipment should penetrate into this area.
 - (6)** Effective limit position of the wheel internal surface when the axle is against the opposite rail. This dimension varies with gauge widening.
 - (7)** See *UIC Leaflet 505-1, point 5.3: Use of shunting devices in curved track sections*.

The lower part of the static reference profile for wagons and coaches for acceptance on all railways including those equipped with rail brakes and other gravity hump devices in all operational modes.



The given dimensions are to be reduced by 15 mm for non-suspended parts

Fig. 8 - For the 03-WM reference profile

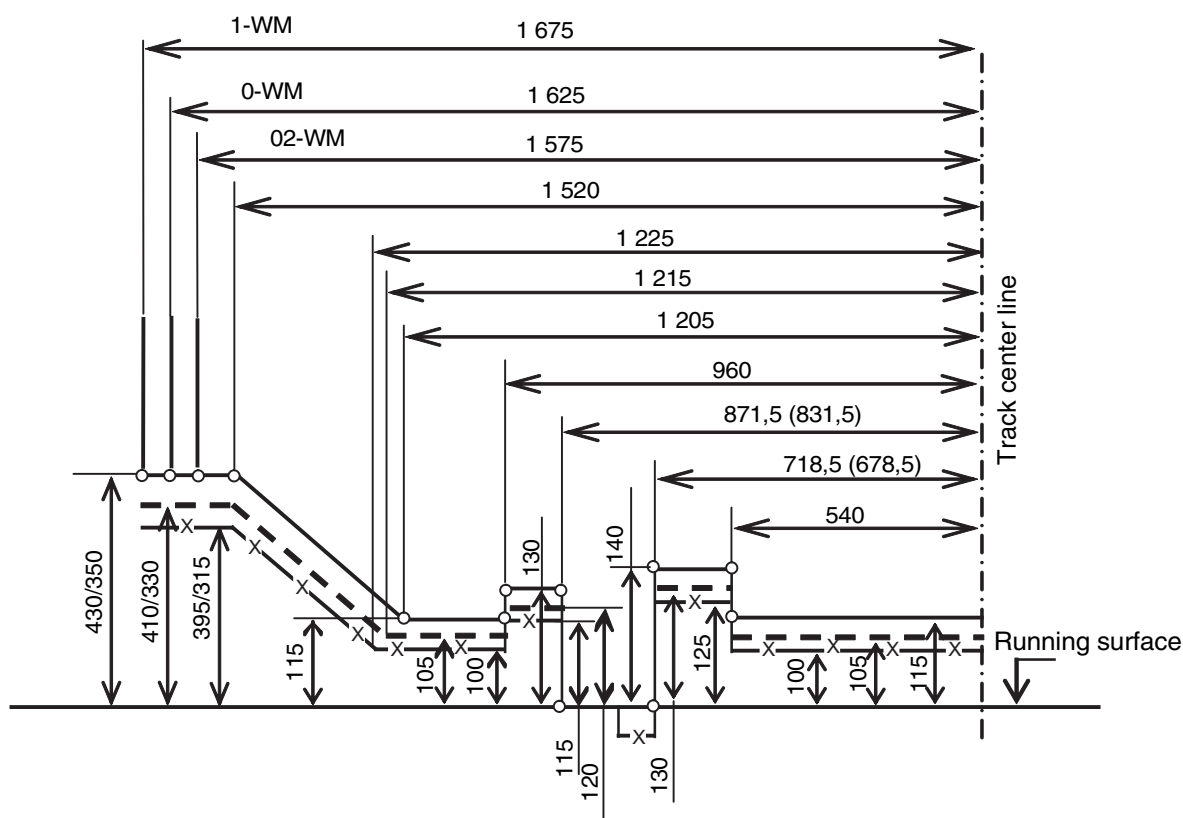


Fig. 9 - For the 1-WM, 02-WM, 0-WM reference profile

- For the suspended parts of the wagon body
- - - - - For the suspended parts of the bogies
- x-x- For non-suspended parts

NB : In order to accept vehicles with a gauge width of 1 520 mm on 1 435 mm gauge tracks, the bogies must respect the lower part of the reference profile in accordance with Fig. 7.

3 - Calculation method for the dimensions of vehicles according to the kinematic gauge described in *UIC Leaflet 505-1*

In order to obtain the admissible width of the wagons, the width of the reference profile by the considered height must be reduced of the value E_i or E_a calculated according to the following rules.

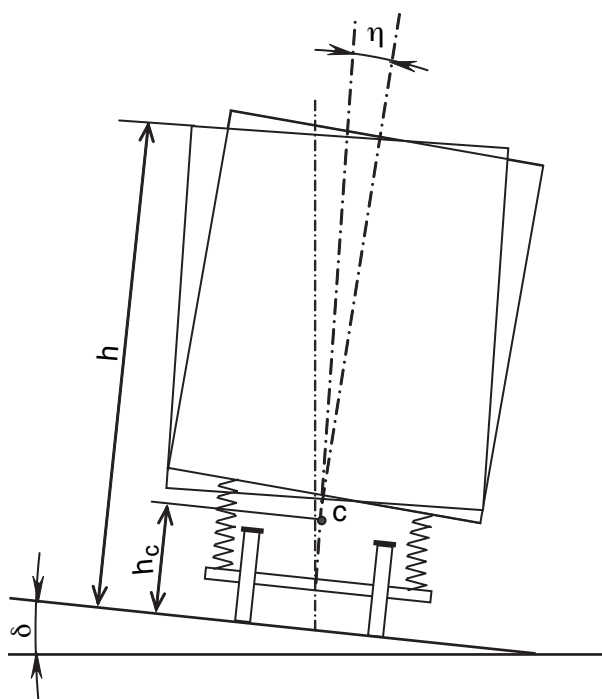
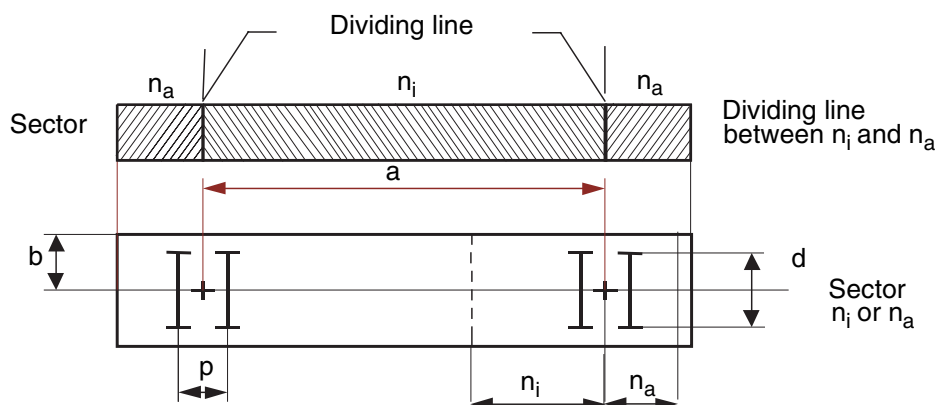


Fig. 10 - General illustration of the parameters of the vehicles

NB : Symbols used in the calculation of the kinematic gauge are listed in Appendix A.