

9th edition, September 2010

Translation

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Brakes - Inscriptions, marks and signs

Frein - Inscriptions, marques et signes

Bremsen - Anschriften, Merk- und Kennzeichen



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

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Summary

This leaflet shows the inscriptions and symbols to be used to indicate:

- the braking equipment fitted to a vehicle,
- the characteristics of that equipment,
- its technical properties.

1 - Inscriptions denoting the type of air brake

The inscriptions showing the types of continuous brake, to be put on vehicles, must comply with the abbreviated descriptions reproduced in Appendix A - page 23.

Vehicles (for example multiple wagon sets) with more than one distributor, shall carry an indication of the number of distributors (for example 2 x KE...).

2 - Distinctive mark showing the fitting of coaches, vans and wagons with a high power R brake

Coaches, vans and wagons fitted with a category R brake shall bear the sign R, with or without rhombus , inscribed in accordance with the provisions of Appendix B - page 25. The rhombus symbol shall be used when the conditions defined in *UIC Leaflet 546, point II* (see Bibliography - page 42) are met.

3 - Inscription of the braked weight on vehicles fitted with the air brake

3.1 - Braked mass/changeover mass

The values of the braked mass and of the changeover mass, determined according to *UIC Leaflet 544-1* must be shown in conformity with the figures shown in point [C.1 - page 26](#) and the following indications. Whenever these indications make reference to the "changeover device", this relates to the "passenger only", "goods-passenger", "empty-loaded" changeovers, referred to in *UIC Leaflet 541-1, point 1.5.2* (see [Bibliography - page 42](#)), whilst the "adjustable-non adjustable" and "plain mountain" changeovers are not taken into account for the inscription of the braked mass and changeover mass.

3.2 - Vehicles not fitted with changeover devices

The braked mass shall be inscribed on the sole bars near the inscription of the braking system, as shown in point [C.2.1, Fig. 1 - page 26](#).

In the case of vehicles fitted with an R or  brake provided with a train pipe emptying accelerator, the braked masses, which are inscribed on the sole bars near the inscription of the braking system as shown in point [C.2.1, Fig. 2](#), shall denote the braked mass, without and with the use of the train pipe emptying accelerator.

The braked mass in the latter case shall be shown in red.

3.3 - Vehicles fitted with an R/P, G/P or R/P/G changeover device

The braked masses must be inscribed on a plate behind the reversing lever and beside the lever position in question (point [C.2.2, fig. 3 - page 27](#), point [C.2.3, Fig. 5 and 6 - page 27](#)).

In the case of vehicles fitted with an R or  brake provided with a train pipe emptying accelerator, the braked masses must be inscribed on a plate placed behind the reversing lever and beside the lever position in question (point [C.2.2, Fig. 4](#) and point [C.2.3, Fig. 7](#)).

The braked mass inscriptions  for the system shall show the braked mass without and with the use of the train pipe emptying accelerator.

The braked mass in the latter case shall be shown in red.

3.4 - Vehicles fitted with an "empty-loaded" changeover device

3.4.1 - The braked masses and changeover masses must be shown on the "empty-loaded" changeover plates. It is forbidden to write simultaneously the braked masses close to the levers of other changeovers.

3.4.2 - If there are only the "empty-loaded" changeover and solely two positions of the reversing lever (the "empty" braking system and one "loaded" braking system, only), the braked masses must be shown on a plate in front of which the lever moves, on the right and left of the plate axis, close to the corresponding position of this lever.

The changeover mass must be shown under the lever axis or between the two braked masses mentioned above (point [C.2.4](#), Fig. 8 - page 28).

3.4.3 - If there is the "empty-loaded" changeover alone and several positions of the lever (the "empty" braking system and several "loaded" braking systems), the braked mass corresponding to each position of the lever is shown in a window, fitted at the top, in the middle of a plate behind which the lever moves (point [C.2.4](#), Fig. 9).

It is also possible to use the device given in fig. 10 in which the braked masses are permanently shown beside each position of the lever.

The changeover masses must be shown on the plate under the lever axis. A pointer fixed on the lever, which moves in front of the plate, shows, for each position of the lever, the corresponding changeover mass (point [C.2.4](#), Fig. 9 and 10).

3.4.4 - On vehicles equipped with a compressed air brake in accordance with *UIC Leaflet 540* and with both the "empty-loaded" and G/P changeover devices, the P and G braked weights as defined in *UIC Leaflet 544-1* (see [Bibliography - page 42](#)) show no difference. Therefore, for a given position of the "empty-loaded" changeover lever, it will be necessary to have the same braked weight, whether it is a P or G braking system.

The braked weights and changeover weights corresponding to the various positions of the "empty-loaded" lever shall be shown under the conditions indicated in points [3.4.2](#) and [3.4.3](#), according to whether there exists a single or several methods of "loaded" braking system.

3.4.5 - On existing vehicles equipped with an "empty-loaded" changeover device, working jointly with a "passenger only" or "goods-passenger" changeover device, the braked weights corresponding to each position of the lever may be shown in windows. The windows shall be placed close to each position of the lever on a plate in front of which the lever moves. The figures shown in the windows shall be changed by the second co-existing changeover system ("passenger only" or "goods-passenger"). If the lever of the "empty-loaded" changeover device has only two positions (the "empty" braking system and only one "loaded" braking system), the two windows shall be placed on the left and on the right of the plate axis, close to the corresponding position of the lever. The changeover weight shall be shown beneath the lever axis (point [C.2.5](#), Fig. 11 - page 29).

3.5 - Vehicles having two or more sets of brake equipment with separate "empty-loaded" devices

On both plates of each "empty-loaded" device will be shown the braked mass relative to the part of the equipment controlled by this device and the changeover mass corresponding to the whole vehicle, according to the regulations of point 3.4 - page 5.

3.6 - Vehicles fitted with a braking device varying automatically and progressively as the load varies

3.6.1 - Apart from the exception defined below, these vehicles must bear an inscription, similar to that shown below, in the vicinity of each lever:

Abbreviated description of the brake
(see Appendix A - page 23)

..... MAX: 00 t

3.6.2 - On vehicles with more than one distributor (e.g. multiple wagons), the braked weight obtained for each distributor should be entered in brackets after the total braked weight (e.g. for three distributors: MAX 203 t (80 t + 43 t + 80 t)).

When the pneumatic brake is in use, each stopcock should carry details of the braked weight obtained for the distributor in question as well as the symbol denoting "pneumatic brake in use" set out in point 11.1 (see page 19).

In addition, the brake axle numbers assigned to the stopcock should also be entered in a frame (¹ and ²).

See examples given in Appendix L - page 40.

3.6.3 - As an exceptional case, for wagons fitted, before 1 January 1951, with a device giving a braking power which varies automatically and progressively as the load varies, and which only includes the "freight" system, the braked mass may be shown as follows.

The braked mass corresponding to various loading positions (a maximum of five) must be shown on the sole-bars, in a table, after the inscription of the braking system. Each column of the table contains two figures:

- above: the value of the braked mass;
- below: minimum mass on rails giving a braked mass at least equal to that value.

Example: BOZIC brake

					t
					t

1. Marking of the corresponding axles: see UIC Leaflet 572.
2. Point 3.6.2 applies to new wagons as of 1.1.2000 and existing wagons as of 1.1.2006.

3.7 - Wagons fitted with devices for the automatic control of the "empty-load" apparatus

3.7.1 - The braked masses and the changeover mass shall be shown on a special panel or on the sole bar:

- at the top, on the left: the braked mass of the empty wagon,
- at the top, on the right: the braked mass of the loaded wagon,
- at the bottom, in the middle: the changeover mass.

3.7.2 - Wagons with identical braked masses in the "freight" position and in the "passenger" position, shall bear the inscriptions as shown in point C.2.6, Fig. 13 - page 29 close to the "G-P" changeover lever.

3.7.3 - Wagons with only the "freight" position or the "passenger" position shall be marked as shown in point C.2.7, Fig. 14 - page 29.

3.8 - Wagons fitted with an brake in conjunction with a braking device varying automatically with the load

3.8.1 - For vehicles with a maximum payload not exceeding 50% of the tare, it is necessary to assume the existence of an agreed mass for the load and to define the braked mass for this mass in running order (vehicle tare + agreed mass). The braked mass must be equal to the mass in running order multiplied by 1,5.

The braked mass and the mass in running order must be shown on each sole-bar of the vehicle.

Vehicles fitted with a brake-pipe emptying accelerator must bear the inscription of the two braked masses which can be attained. The braked mass attained when using the accelerator must be shown in red.

Vehicles fitted with a R/P or R/P/G changeover device must bear the inscription of the braked masses for each braking system, as shown, incidentally, in point 3.3 - page 4.

In all cases, the mass in running order will be the authoritative one for the calculation of the hauled mass and of braked mass percentages.

3.8.2 - As regards vehicles with a maximum payload exceeding 50% of the tare, the braked masses corresponding to the relevant mass in running order shall be shown in a table:

- per 3t-stage on vehicles with a maximum load smaller than or equal to 25 t;
- per 5t-stage on vehicles with a maximum load exceeding 25 t.

Vehicles fitted with a brake-pipe emptying accelerator must bear the inscription of both braked weights which can be attained. The braked weight attained when using the accelerator must be shown in red.

Vehicles fitted with a R/P or a R/P/G changeover device must also bear, in this table, the inscription of the braked weights for each braking system (with the following exception). For the G and P braking systems, only one braked weight shall be shown. If the braked weights are not the same for the two braking systems, only the lowest weight shall be shown. On a vehicle with a maximum load exceeding 25t, this shall be as follows:

- Wagons with a brake-pipe emptying accelerator:

Braking system	Braked weights								
	R	....	....	....	....	....	....	....	.... t ^a
	R	....	....	....	....	....	....	....	.... t
	P / G	....	....	....	....	....	....	....	.... t
Weight in running order		25	30	35	40	45	50	55	60 t

a. Braked weights shown in red in the event of using the brake-pipe emptying accelerator.

- Wagons without a brake-pipe emptying accelerator:

Braking system	Braked mass								
	R	....	....	....	....	....	....	....	.... t
	P / G	....	....	....	....	....	....	....	.... t
Mass in running order		25	30	35	40	45	50	55	60 t

3.9 - Locomotives

3.9.1 - Inscription of brake types, brake positions and other brake-related equipment

3.9.1.1 - The inscription shall be applied on each side of the locomotive. The inscription shall be positioned near an inscription as per point 3.9.2; the required size of the letters (capitals) shall be at least 35 mm.

3.9.1.2 - The inscription shall include at least the type of distributor valve in accordance with the specifications in *UIC Leaflet 543, Appendix E* and the existing brake positions in accordance with Appendix A.2 - page 24 if none of the other brake characteristics mentioned in point 3.9.1.3 apply. Example:

KE - GP

3.9.1.3 - Additional characteristics and brake system components shall be displayed in the sequence shown in the following example:

Key:	1	2	3	4	5	6	7
		KE -	GPR -	E	mZ		

Key:

1. In accordance with *UIC Leaflet 546, point II* the pictogram provided for in Appendix B - page 25 shall be displayed if the effective braking power achieved by the friction brake in brake position R is at least 150 % relative to the total weight of the locomotive.
2. Type of distributor valve as per *UIC Leaflet 543, Appendix E*.
3. Brake positions of the friction brake as per point A.2 - page 24.
4. Information about the dynamic brake installed (E = electro-dynamic brake or H = hydraulic-dynamic brake)
5. The abbreviation "mZ" (= with additional brake) shall be used if the locomotive's friction brake can also be used as a direct brake independently of the indirect brake.
6. If the friction brake is not a cast-iron tread brake, the pictogram of the respective brake shall be displayed. For disc brakes, the pictogram shall be as shown in Appendix G - page 33; for composite brake blocks, as shown in Appendix F - page 32.
7. The pictogram shall be displayed as shown in Appendix H - page 34 or K - page 38 if brake components as described in *UIC Leaflet 541-5 or 541-6* (see Bibliography - page 42) are present.

3.9.2 - Inscription of braked weights and total weight

3.9.2.1 - The inscription of the braked weights and the total weight or operating weight shall be displayed on both sides of the locomotive, next to an access door. The minimum height of the inscription shall be 35 mm for the braked weights and 45 mm for the total weight.

3.9.2.2 - The braked weights for the existing brake positions of the friction brake both with and without the dynamic brake are displayed in tabular form as shown in the following example using the electro-dynamic brake:

Key:	2, 3	R+E160	000 t	4	000 %
	2	R+E	000 t	4	000 %
	2	P+E	000 t	4	000 %
	1	R	000 t	4	000 %
	1	P	000 t	4	000 %
	1	G	000 t	4	000 %

Key:

1. Brake positions and braked weights of the friction brake.
2. Brake positions and braked weights of the friction brake in combination with the dynamic brake if the total braked weight is greater and the dynamic brake can be taken into account in at least one area of application. The braked weight numerals shall be displayed in red.
3. When using the dynamic brake, and in addition to its use for brake assessments as per *UIC Leaflet 544-1*, the braked weight can also be displayed for further speeds prior to braking in accordance with *UIC Leaflet 544-2* (see Bibliography - page 42).
4. A copy of the table of brake positions with the braked weights shall be located in the cab supplemented by the respective effective braking power relative to the total weight of the locomotive.

3.9.2.3 - The brake position designators reflect the effective braking power achieved in accordance with the following rule:

- R, if $\geq 121\%$
- G/P, if $\leq 120\%$

3.9.2.4 - Lower braked weight of a locomotive being moved in its shut-down state: If, when a locomotive is in its shut-down state, the friction brake, which is actuated only by means of the pressure in the main air pipe, generates a lower braking force with the result that the brake assessment as per *UIC Leaflet 544-1*, point 4 yields a lower braked weight in P and thus also in G, then these lower braked weights shall be additionally displayed in brackets in the table of braked weights (see point 3.9.2.2) as shown in the following example:

P 000 t (000 t)
G 000 t (000 t)

3.9.2.5 - If, in the case of multi-system locomotives, the magnitude of the braked weight of the electro-dynamic brake that can be taken into account depends on the network voltage, then the system-dependent braked weights shall be included in the table of braked weights (see point 3.9.2.2 - page 9) as shown in the following example:

	15 kV ~	3 kV -
R+E	000 t	000 t
P+E	000 t	000 t
R	000 t	
P	000 t	
G	000 t	

3.9.2.6 - The parking brake (if a handbrake or spring-loaded brake) shall display the marking provided for in point 10.2 - page 18 and the braked weight either below or beside each table of braked weights (see point 3.9.2.2).

Example for the hand brake:

 000 t

If the locomotive is fitted with more than one handbrake or spring-loaded brake units of equal strength and operating independently of one another, the total braked weight is to be indicated by displaying the braked weight per unit, multiplied by the number of units.

Example for two independent handbrakes :  **2 x 000 t**

In this case, the relevant braked weight must be indicated on each parking brake control in the driver's cab.

3.9.3 - Example of all exterior inscriptions in accordance with points 3.9.1 and 3.9.2 for a specific locomotive

		15 kV ~	3 kV -
83 t	R+E160	160 t	
	R+E	150 t	140 t
	P+E	110 t	100 t
	R	125 t	
	P	90 t	(61 t)
	G	74 t	(50 t)
 KE-GPR-E mZ 		 2 x 40 t	

The numerals relating to the braked weights with the dynamic brake shall be displayed in red.