

Loading Guidelines

Section 1

Principles



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**UIC-Loading Guidelines
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**Section 1
Principles**

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1 Introductory provisions

1.1 Scope of validity

These loading guidelines are valid for train speeds up to and including 120 km/h.

Their application is a guarantee for operating safety and prevents damage to goods and wagons. The consigner/shipper shall be responsible for observance of these guidelines. In the event of non-compliance, the Railway Undertakings (RUs) may refuse to take on the consignment.

For dangerous goods, the additional provisions set out in the RID (Regulations governing the international carriage of dangerous goods by rail) should be adhered to.

The provisions set out in the left-hand column apply to

- individual wagons and groups of wagons subject to normal shunting conditions.

the right-hand column apply to

- wagons not subject to hump and fly shunting in block trains,
- wagons used in combined transport trains with containers, swap bodies, semi-trailers and lorries, where appropriate with trailers;
- wagons fitted with long-stroke shock absorbers (the letter code for these wagons includes the letter "j").

Text printed across the full width of the page is valid in all cases.

Wagons withdrawn from block trains should be:

- conveyed further under special conditions if necessary, **or**
- undergo additional treatment rendering them suitable for normal shunting.

Provisions marked with a vertical line in the margin denote changes introduced on the date shown at the foot of the page.

1.2 Structure

Volume 1 – Principles

Contains the rules to be observed for the loading and securing of goods. These rules are mandatory.

Volume 2 – Goods

Contains loading guidelines for specific types of goods, developed in compliance with the principles set out in volume 1 on the basis of tests in practice. They may include either more relaxed or stricter requirements for securing loads. Other types of loading and load securing are permitted, providing they meet the provisions of volume 1. This also applies when specially-equipped wagons are used to guarantee operating safety in other ways.

The RUs also publish colour-coded loading examples covering other types of loading or wagons fitted with special securing devices. These examples are printed as follows:

- blue = all the conditions of volume 1 are met; example valid for all RUs;
- pink = the example includes derogations from volume 1 and is covered by an agreement between certain RUs;
- yellow = the example includes derogations from volume 1 and is only valid in the domestic traffic of the RU in question.

The blue and pink loading examples are distributed to all RUs and to the UIC Freight Department. These loading examples are presented on the UIC website.

For new loading methods, it may be necessary to demonstrate that the load is sufficiently secured:

- lengthways in the wagon by carrying out buffing tests as per table 4,
- crosswise in the wagon by running tests or tests on the dynamic rig.

Operating safety must in any event be guaranteed.

Line categories

The lines used by RUs are published on the UIC website (LOCA).

1.3 Stresses arising during transit

The stresses to be taken into account during rail transit are as follows:

- lengthways in the wagon,
 - up to four times the weight of the load (4 G) for goods that are rigidly secured,
 - up to once the weight of the load (1 G) for goods that can slide lengthways in the wagon,
- up to once the weight of the load (1 G)
- crosswise in the wagon up to 0.5 times the weight of the load (0.5 G),
- vertically up to 0.3 times the weight of the load (0.3 G) (which encourages the displacement of the goods).

The time for which the above forces are exerted is approx. 1/10 second (acceleration measurements filtered at 15-20 Hz). Where securing devices are dimensioned by calculation, these forces should be considered quasi-static for the purposes of securing goods.

The lateral and vertical forces exerted on the goods during transit are caused by vibrations at 2-8 Hz.

1.4 Goods forming the load

The loading guidelines and examples distinguish between:

- bulk goods (gravel, scrap iron, waste, wood chippings, etc.),
- individual objects (vehicles, crates, machinery, combined transport units¹⁾, etc.),
- objects assembled to form load units and behaving like individual objects during transit (packages, bundles, bales, bound stacks, etc.)

Inside the transport units (wagons, containers, etc.) the goods must be:

- uniformly distributed,
- secured against movement and being blown away or lifted by the wind,
- protected, when fragile, using suitable materials.

The relevant provisions from Volume 1 shall apply by analogy to the loading and securing of goods inside vehicles on wheels or caterpillar tracks and inside combined transport units, which must be properly suited to the type of goods to be carried. An exception to this principle is loading with the possibility of sliding, which is not permitted inside vehicles on wheels or caterpillar tracks or inside combined transport units.

¹⁾ Only approved intermodal transport units may be carried exclusively on carrier wagons used in combined transport.

1.5 Formation of load units

Goods may be assembled to form load units using:

- bindings made of steel strip, iron wire, synthetic or woven straps that must be tensioned, with a breaking strength (straight pull)¹⁾ of at least:
 - 500 daN for palletised goods weighing up to 500 kg,
 - 700 daN for palletised goods weighing over 500 kg, square sawn timber (rough sawn), wooden boards and edge sawn timber, cellulose bales, etc.
 - 1,000 daN for sawn timber (planed wood), wooden sleepers, stone or concrete slabs, etc.
 - 1,400 daN for packages and coils of sheet steel (individual coils), bundles of steel pipes, steel profiles and bars, coils of wire rod, steel strip, steel billets, stacks of plywood and hardboard slabs, blocks of stone, etc.
 - 2,000 daN for binding together several sheet steel coils,
 - 4,000 daN for binding together steel pipes, where a dovetailed layer is resting on a scotched layer.

The number of fastenings – at least 2, uniformly arranged – shall depend on the properties of the goods in question. At least 4 fastenings shall be used to bind several coils of steel sheet together.

The use of steel strips for binding stacked packages of square-sawn timber, wooden boards and edge-sawn timber (formation of stacks) is not permitted on open wagons due to the particular risk of accident posed by the potential tearing of the strips.

- shrink-fit or stretched plastic sheeting (for palletised goods the feet of the pallets must be enclosed in the plastic sheeting) must withstand the mechanical stresses and climatic conditions occurring during carriage by rail. If necessary, it must be ensured that the sheeting can withstand the effects of biological conditions (micro-organisms, insects, etc.).

1.6 Friction

The friction conditions between the load and the loading surface are decisive when securing the load. The decisive parameter to evaluate the securing of the load is the friction coefficient μ_{GL} only; it is calculated for the friction torque formed by the load and the loading surface or between the loads themselves. In the rest of the document this coefficient shall be named friction coefficient μ .

When using anti-skid materials it is advisable to choose the optimum technical solution in order to obtain the highest possible friction coefficient, ideally $\mu \geq 0.7$.

¹⁾ When using polyethylene (PET) straps the securing point must have a strength amounting to at least 80% of the breaking strength (straight pull).

2 Use of wagons and transport units

2.1 General indications

No constructional alterations shall be made to the wagons and transport units, such as boring holes, welding on securing devices, cutting off parts with a blow-torch, etc., without the owner's assent.

Any ice or snow must be removed from the loading surface prior to the loading operation.

After loading and unloading:

- doors, walls, roofs, flaps, hatches, valves, etc. must be closed and secured;
- boards (flaps) should be placed in their upright position and boards that are folded down to accommodate the load should be secured, for example using direct fastenings; for boards that do not foul the loading gauge, see Table 3. Any markings, signs and wagon labels must remain visible.
- other removable and/or movable parts and securing devices (e.g. stanchions) should be immobilised in the equipment or holders provided.
- residue from the load transported, dirt and loose objects (stones, bark, etc.) are to be removed from the wagon.

After unloading any parts used for securing the load (scotches, nails, wire, etc.) are also to be removed and the wagon cleaned.

After loading, stanchions should in principle be placed in the upright position (except for carriage of combined transport load units loaded on flat wagons with spigots).

After unloading, the end board stanchions are always to be placed in the upright position.

When, with the agreement of the forwarding RU, removable or movable wagon parts are exceptionally not placed in their usual position, they must be stowed in such a way that they do not jeopardise operating safety.

2.2 Floor

Goods liable to damage the loading surface because of their small bearing surface, their shape or weight should be loaded on timbers or bolsters. These are required when the load acting on the wagon floor exceeds the following values:

- 10 kg/cm² for wagons with the UIC marking,
- 5 kg/cm² for other wagons.

For road vehicles loaded on flat wagons, 5,000 kg per wheel are permitted without timbers or bolsters.

The maximum permissible load exerted on the floor by industrial handling machines is:

- 3,000 kg per wheel in the case of wagons,
- 2,760 kg per wheel in the case of containers. Any two bearing points of the load must be at least 760 mm apart.

2.3 Walls, sides and doors

Goods that are in contact with the walls and sides must not exert a force that may cause damage to these wagon parts or that may jeopardise operating safety during transit.

Sliding doors and walls, hatches and roofs must not be obstructed by the load. It must be possible to open them without risk. Sliding doors and walls may only be used for load securing purposes within the limits of their strength. The goods in contact with them must not be allowed to tip or roll against them.

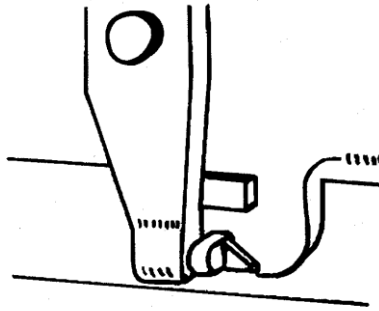
The load may not lie on top of the walls or sides. Only stacked load units that are in contact with the stanchions (logs, etc.) may lie on the walls.

2.4 Sheeting devices

Wagon sheets are used to protect goods against the weather and are not suitable for securing purposes. In order to ensure unobstructed opening and closing of the sheet, it should not be allowed to come into contact with the goods.

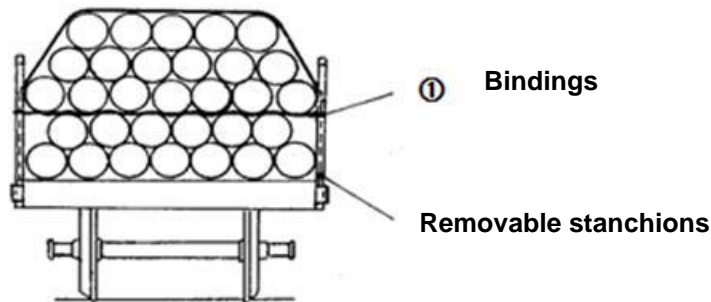
2.5 Stanchions

Goods that rest on the stanchions must not exert a force on either the stanchions or their holders such that permanent deformation results. Stanchions may move from the vertical position because of the play in their holders. Swivelling stanchions should, if necessary, be secured using hardwood chocks before loading wagons.



- ① Where cylindrical goods are loaded in stacks or in dovetailed formation and lean against the removable stanchions so that they protrude by more than half their height, facing stanchion pairs should be joined together with bindings.

The bindings used must have a breaking strength of at least 1,000 daN.



When fastening a load directly or indirectly, the fastenings may only be attached to the stanchions if the stanchions are secured against lifting.

2.6 Securing devices (rings, hooks, eyelets)

For the direct or indirect fastening of goods, use should be made of securing rings, eyelets or hooks made of steel rod with a diameter of at least 16 mm. Direct fastenings may be used between two securing points facing each other for loads of:

- up to 10 t for flat wagons,
- up to 5 t for covered wagons.

The eyelets and rings designed for securing sheets on wagons can also be used as follows:

- for the direct fastening of goods weighing up to 2 t,
- for the indirect fastening of goods weighing up to 4 t.

If there are no conveniently-placed securing points, the fastenings may be attached to suitable parts of the wagon. However, it is not permitted to attach fastenings to parts of the running gear or suspension, nor to the bogies, signal brackets, door closing/locking devices, handrails, steps, etc. Fastenings must not be looped around the buffing and draw gear, the braking gear or the underframe.

2.7 Built-in load securing equipment

Partition walls

Partition walls serve to secure part-loads. Between partition walls, measures to secure the load against tipping lengthways in the wagon can be reduced or even done away with entirely.

In standardised wagons, up to 5 t may be loaded against one partition wall, i.e. in a compartment formed by the partition walls, and up to 7 t may be loaded against 2 partition walls that are locked in place one directly against the other. In this configuration, the load must be in contact with the partition walls over a surface at least 2,400 mm wide and 700 mm high.

Loading cradles

Cradles are generally used for loading coils of steel sheet. They are also suitable for loading similar types of goods such as cable drums. The permissible diameters and weights must be observed for the individual cradles. Existing fittings for lateral scotching (retaining arms) should be placed in active position and as close as possible to the coils once the cradles are loaded.

Indirect fastening equipment

Indirect fastening equipment is generally used for securing pipes, rough logs and square-sawn timber. The straps must be tensioned after loading and unloading or be stowed safely when not in use.

Wheel scotches

Wheel scotches are used to secure vehicles. They are arranged on the loading surface lengthways in the wagon so as to move or lock into position. When vehicles are being secured, the wheel scotches should be applied as close as possible to the tyres. After unloading they should be safely stowed.

3 Wagon loads

3.1 Line categories

The lines of each railway are classified into categories according to the permissible axle-load and mass per linear metre, as follows:

Line category	Maximum axle-load	Maximum mass per linear metre
A	16 t	5.0 t/m
B ₁ B ₂	18 t 18 t	5.0 t/m 6.4 t/m
C ₂ C ₃ C ₄	20 t 20 t 20 t	6.4 t/m 7.2 t/m 8.0 t/m
D ₂ D ₃ D ₄	22.5 t 22.5 t 22.5 t	6.4 t/m 7.2 t/m 8.0 t/m
E ₄ E ₅	25 t 25 t	8.0 t/m 8.0 t/m

Each RU designates a standard line category that corresponds to the majority of its lines open to international traffic¹⁾.

Special agreements may be concluded between RUs for specific traffic flows, lines or wagons. Similarly, the wagon loads for domestic traffic flows can be covered by special rules.

3.2 Load limits

The load limits are marked on the wagon. The load limit to be considered is that resulting from the lowest line category on the route in question. This limit must not be exceeded.

Example

	A	B ₁	B ₂	C ₂	C ₃ C ₄
S	00,0	00,0	00,0	00,0	00,0
SS	00,0				

Example of inter-RU agreement

		C	D
ÖBB	S	00,0	00,0
DB	000	00,0	00,0
SNCF FS CFL	000	00,0	00,0

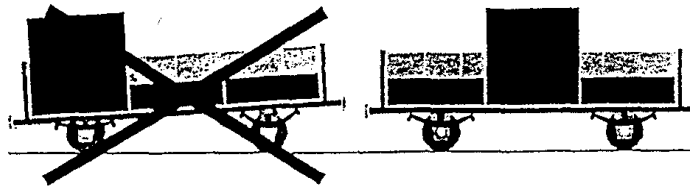
¹⁾ The lines used by RUs are published on the UIC website (LOCA).

3.3 Distribution of the load

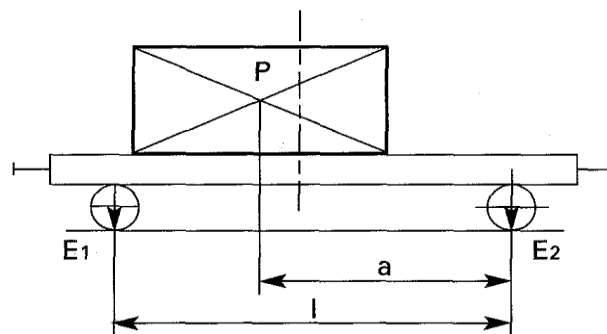
The load should be distributed as evenly as possible on the wagon, without exceeding the maximum axle-load.

The load distribution should be such that the following ratios are not exceeded:

- for 2-axle wagons: ratio of 2:1 between the loads per axle,



Calculation of the ratio of loads per axle:



$$E_1 = \frac{P \cdot a}{l} + \frac{T}{2}$$

$$E_2 = (P + T) - E_1$$

Total gross weight

P = weight of the load unit in t

T = wagon tare in t

E₁, E₂ = weight per axle in t

a, l = distances in m

Example: P = 20 t

T = 12.2 t

a = 4.5 m l = 8 m

$$E_1 = \frac{20 \cdot 4.5}{8} + \frac{12.2}{2}$$

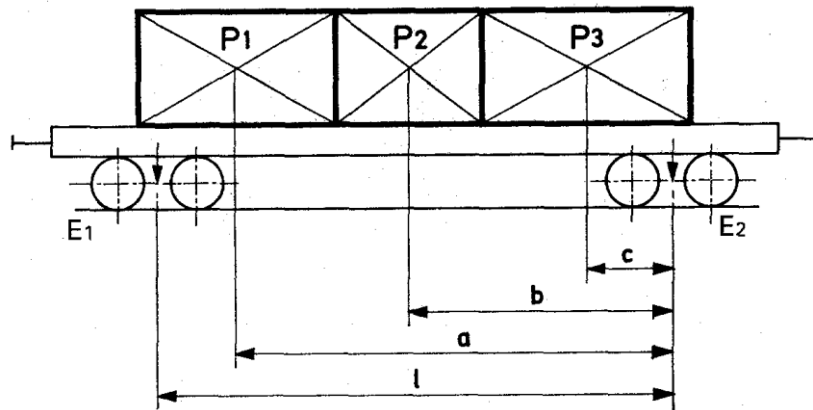
$$E_2 = (20 + 12.2) - 17.35 = 14.85 \text{ t}$$

$$\text{Ratio of loads per axle: } \frac{E_1}{E_2} = \frac{17.35}{14.85} = \frac{1.18}{1} < \frac{2}{1}$$

Conclusion: This consignment can be accepted since the ratio of loads per axle is less than 2:1. However, it cannot be accepted on category A lines, as the axle-load (E₁) is greater than 16 t.

- for bogie wagons: ratio of 3:1 between the loads per bogie,

Calculation of the ratio of loads per bogie:



$$E_1 = \frac{(P_1 * a) + (P_2 * b) + (P_3 * c)}{l} + \frac{T}{2}$$

P_1, P_2, P_3 = weight of each load unit in t
 T = wagon tare in t

$$E_2 = \underbrace{(P_1 + P_2 + P_3 + T)}_{\text{Total gross weight}} - E_1$$

E_1, E_2 = weight per bogie in t
 a, b, c, l = distances in m

Example: $P_1 = 20 \text{ t}$ $P_2 = 8 \text{ t}$ $P_3 = 2 \text{ t}$ $T = 24 \text{ t}$
 $a = 11.5 \text{ m}$ $b = 7 \text{ m}$ $c = 2.5 \text{ m}$ $l = 13 \text{ m}$

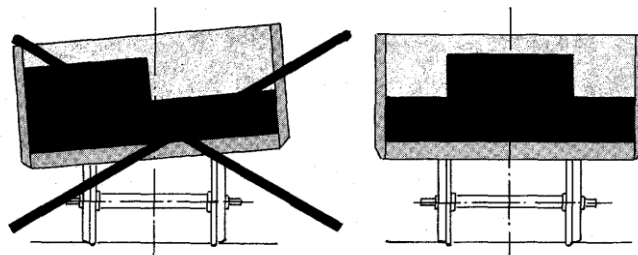
$$E_1 = \frac{20 * 11.5 + 8 * 7 + 2 * 2.5}{13} + \frac{24}{2} = 34.38 \text{ t} \quad \text{or } 17.19 \text{ t per axle}$$

$$E_2 = (20 + 8 + 2 + 24) - 34.38 = 19.62 \text{ t} \quad \text{or } 9.81 \text{ t per axle}$$

$$\text{Ratio of loads per bogie: } \frac{E_1}{E_2} = \frac{34.38}{19.62} = \frac{1.75}{1} < \frac{3}{1}$$

Conclusion: This consignment can be accepted since the ratio of loads per bogie is less than 3:1.
 However, it cannot be accepted on category A lines, as the axle-load (of bogie E_1) exceeds 16 t.

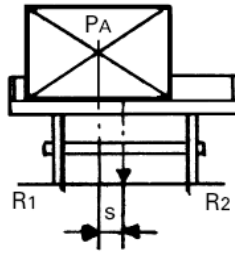
- ratio of 1.25 to 1¹⁾ between the wheels (left/right) of a given axle,



¹⁾ The permitted limit values for the differences between wheel loads are complied with when the centre of gravity of the load is transversally distant from the centre of gravity by no more than

- 10 cm approx. when the wagon is fully loaded,
- 15 cm approx. when the wagon is half loaded,

Calculation of the maximum offset for the centre of gravity of the load across the wagon:



- R_1, R_2 = Load per wheel in t
- E_1, E_2 = Load per axle or per bogie in t (calculate as per case 1 or case 2)
- T = Wagon tare in t
- P_A = Weight of the load on the axle or bogie in question, in t = $E_1, E_2 - \frac{T}{2}$
- s = Distance of the load unit centre of gravity from the wagon's longitudinal centreline, in m
- Q = Load as per table A, B, C for the line category to be considered, in t
- M = Gross weight of the wagon ($T + Q$)

Condition

$$\frac{R_1}{R_2} \leq \frac{10}{8} \quad \boxed{s \leq \frac{1}{12} \left(1 + \frac{T}{2 * P_A} \right)}$$

Sample calculation of the ratio of loads per wheel:

Centre of gravity offset multiple times across the wagon, with a load of steel slabs in 3 layers. The load is correctly centred lengthways.

- Composition of the load: 3 steel slabs of various dimensions:
- 1st layer: 10,850 x 1,700 x 250 mm
 - 2nd layer: 8,950 x 1,100 x 200 mm
 - 3rd layer: 7,900 x 1,000 x 200 mm

Mass of units: $P_1 = 35$ t, $P_2 = 15$ t, $P_3 = 12$ t

For the calculation which follows, we use half of each of these three loads, which we suppose to be centred lengthways in the wagon.

The centre lines for the centres of gravity of each unit in the load must be determined across the wagon in order to obtain the dimensions **a**, **b**, and **c**.

Wagon type: Remms with tare of 22 t

$$R_1 = \frac{T}{8} + \frac{\frac{P_1}{4} * a + \frac{P_2}{4} * b + \frac{P_3}{4} * c}{L}$$

$$R_1 = \frac{22}{8} + \frac{8,75 * 900 + 3,75 * 1200 + 3 * 1250}{1500} \quad R_1 = 13,5 \text{ t}$$

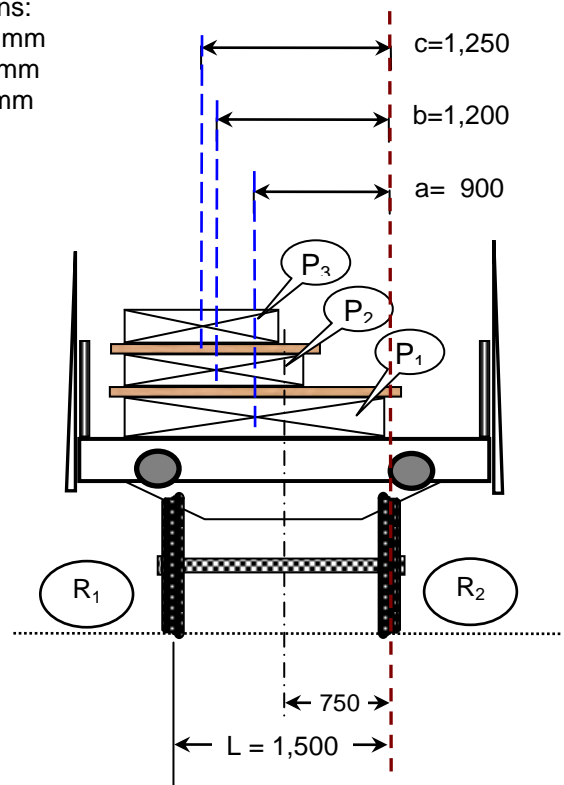
$$R_2 = \frac{P_1}{4} + \frac{P_2}{4} + \frac{P_3}{4} + \frac{T}{4} - R_1$$

$$R_2 = (8,75 + 3,75 + 3 + 5,5) - 13,5$$

$$R_2 = 7,5 \text{ t}$$

$$R_1 / R_2 = 13,5 / 7,5$$

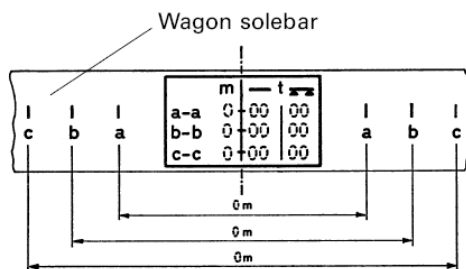
$$R_1 / R_2 = 1,8$$



The R_1 / R_2 ratio is higher than 1:1.25. This consignment is therefore **not acceptable**.

3.4 Concentrated loads

The maximum permissible concentrated loads are marked on a table affixed to the wagon. They are derived from the position and length of the load (on flat wagons in particular).

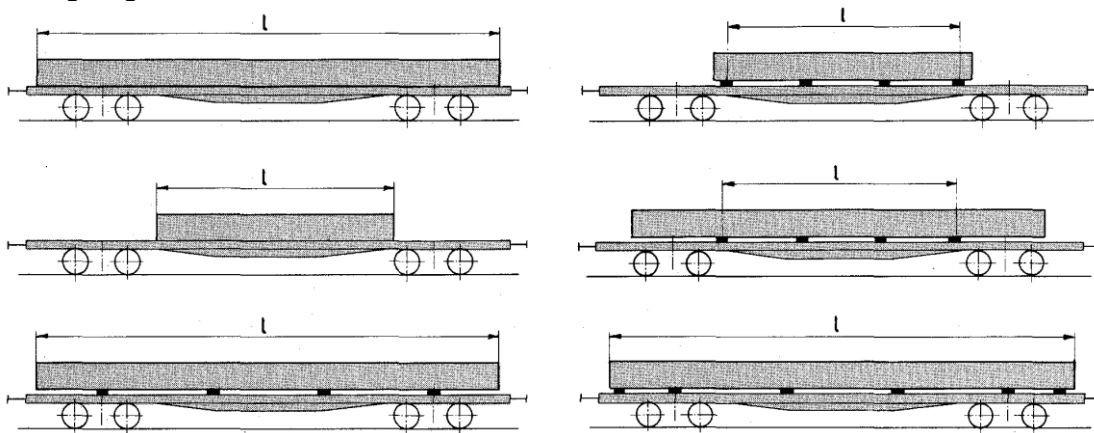


A distinction is made between two types of positioning:

- a) - Load resting on the wagon floor, either directly or on at least 4 timbers placed across the wagon. If the centre lines of the end timbers lie level with or beyond the axles or bogie centres, the bearing length is considered to be the same as the total length of the load.

- The maximum load is indicated under the sign **—** opposite the corresponding distance:

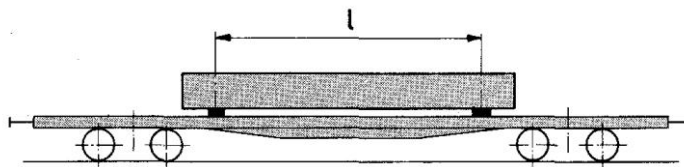
Bearing length = l



- b) - Load resting on only 2 transverse timbers.

- The maximum load is indicated under the sign **▲▲** opposite the corresponding distance:

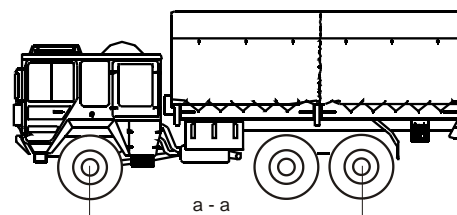
Bearing length = l



A load of this type lying beyond the axles or bogie centres is only acceptable if there are values indicated in the concentrated load table.

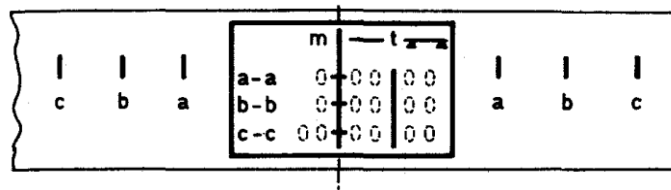
In the absence of the sign **▲▲**, the load may still be placed on 2 transverse timbers provided the values given for the sign **—** are not exceeded.

When loading vehicles on wheels with several axles, the decisive distance "a-a" is always the distance between the axles of the end wheelsets of the vehicles.

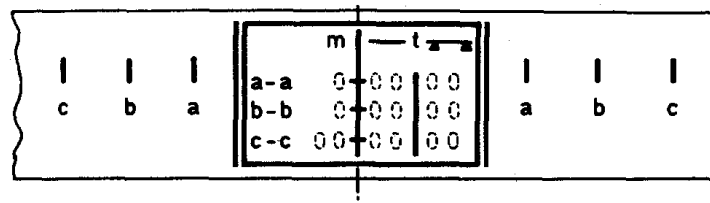


The values indicated in the concentrated load box are calculated for a bearing width of:

- at least 2 m (box with single line border).



- at least 1.2 m (box with double line border);

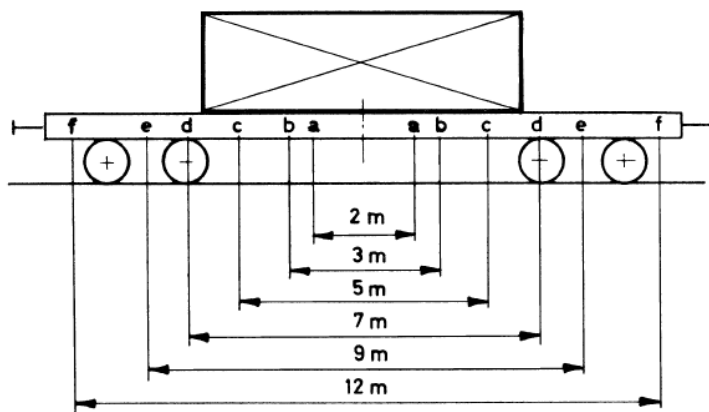


When the ends of the load or the centre line of the end timbers lie between two markers, the permissible load can be calculated by interpolation.

Sample calculation:

Permissible weight of a load with 6.5 m bearing length.

A	B1	B2	C
44 t	50 t	52 t	60



	m	t
a-a	2 + 35	40
b-b	3 + 37	47
c-c	5 + 43	56
d-d	7 + 51	58
e-e	9 + 60	60
f-f	12 + 60	28

Difference in length: $7 \text{ m} - 5 \text{ m} = 2 \text{ m}$

Difference in weight: $51 \text{ t} - 43 \text{ t} = 8 \text{ t}$

If the load extends beyond the marker c-c by 1.5 m, the permissible weight for the projecting section is

$$\frac{8 \text{ t}}{2 \text{ m}} * 1.5 \text{ m} = 6 \text{ t}$$

The load when resting directly on the wagon floor can therefore have a maximum weight of:

$$43 \text{ t} + 6 \text{ t} = 49 \text{ t}$$

Calculation example

Permissible load of a mass centred on the middle of the wagon and resting directly on the floor between points a - a (Fig. 1).

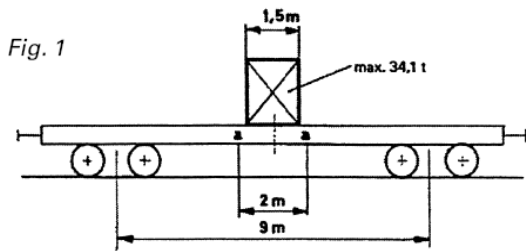


Fig. 2

	m	t	t
a-a	2	35	40
b-b	3	37	47
c-c	5	43	56
d-d	7	51	58
e-e	9	60	60
f-f	12	60	28

As the goods are resting directly on the floor, it is the masses indicated beneath the **—** sign that apply to concentrated masses centred on the middle of the wagon (Fig. 2).

For goods loaded between points a - a, the maximum permissible mass is calculated as follows:

1. Take the theoretical permissible mass at the centre of the wagon. This value is calculated by multiplying the mass indicated under the sign a - a (= 35 t) by the corresponding coefficient from the table below.

a-a	Distance between axles or bogie centres	6m	7m	8m	9m	10m	11 m	12m	13m	14m	15m	16m	17m
		1.5 m	0.88	0.89	0.90	0.92	0.93	0.93	0.94	0.94	0.95	0.95	0.95
2.0 m	0.83	0.86	0.88	0.89	0.90	0.91	0.92	0.92	0.93	0.93	0.94	0.94	
2.5 m	0.79	0.82	0.84	0.86	0.86	0.89	0.90	0.90	0.91	0.92	0.92	0.93	
3.0 m	0.75	0.78	0.81	0.83	0.85	0.86	0.88	0.88	0.89	0.90	0.91	0.91	

This gives the theoretical permissible mass at the centre of the wagon:

$$0.89 \times 35 \text{ t} = 31.15 \text{ t}$$

2. This mass is then incremented by a value which depends on the distance a - a and the length of the goods:
 - distance a - a = 2 m ;
 - length of the goods = 1.5 m ;
 - difference between the mass a - a **—** and the theoretical permissible mass at the wagon centre

$$35 \text{ t} - 31.15 \text{ t} = 3.85 \text{ t}$$

$$\frac{3.85 \text{ t} \times 1.5 \text{ m}}{2 \text{ m}} \approx 2.9 \text{ t}$$

The maximum permitted load for this mass resting directly on the wagon floor is therefore.

$$31.2 \text{ t} + 2.9 \text{ t} = \underline{34.1 \text{ t}}$$

3. In this instance there is no restriction in relation to the line category (Fig. 3).

Fig. 3

	A	B	C
s	44.0	52.0	60.0

Sample calculation:

Permissible load of a mass resting on two supports between points a - a and centred on the wagon's longitudinal axis (Fig. 1).

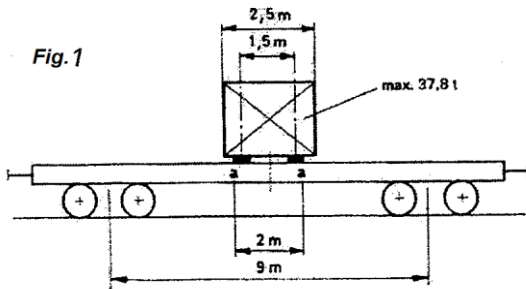


Fig. 2

	m	t	z
a-a	2	35	40
b-b	3	37	47
c-c	5	43	56
d-d	7	51	58
e-e	9	60	60
f-f	12	60	28

- As the goods are resting on two supports, it is the masses indicated beneath the sign $\blacktriangle \blacktriangle$ that apply to concentrated masses centred on the middle of the wagon (Fig. 2)
- The length of the bearing surfaces to be considered is the measured distance between the centre lines of the two supports
- Since the supports are lying between points a - a, the maximum permissible mass is calculated as follows:

- Take the theoretical permissible mass at the centre of the wagon. This value is calculated by multiplying the mass indicated under the sign a - a (= 40 t) by the corresponding coefficient from the table below.

distance between axles or bogie centres	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m	17 m
1.5 m	0.75	0.79	0.81	0.83	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.91
2.0 m	0.67	0.71	0.75	0.78	0.80	0.82	0.83	0.85	0.86	0.87	0.88	0.88
2.5 m	0.58	0.64	0.69	0.72	0.75	0.77	0.79	0.81	0.82	0.83	0.84	0.85
3.0 m	0.50	0.57	0.63	0.67	0.70	0.73	0.75	0.77	0.79	0.80	0.81	0.82

This gives the theoretical permissible mass at the centre of the wagon:

$$0.78 \times 40 \text{ t} = 31.2 \text{ t}$$

- This mass is then incremented by a value which depends on the distance a - a and the length of the loaded goods:

- Distance a - a = 2 m;

- Distance between the supports = 1.5 m;

- Difference between the mass a - a $\blacktriangle \blacktriangle$ and the theoretical permissible mass at the wagon centre

$$40 \text{ t} - 31.2 \text{ t} = 8.8 \text{ t}$$

$$\frac{8.8 \text{ t} \times 1.5 \text{ m}}{2 \text{ m}} = 6.6 \text{ t}$$

The maximum permitted load for this mass resting on two supports is therefore

$$31.2 \text{ t} + 6.6 \text{ t} = \underline{37.8 \text{ t}}$$

- In this instance there is no restriction in relation to the line category (Fig. 3).

Fig. 3

	A	B	C
s	44.0	52.0	60.0

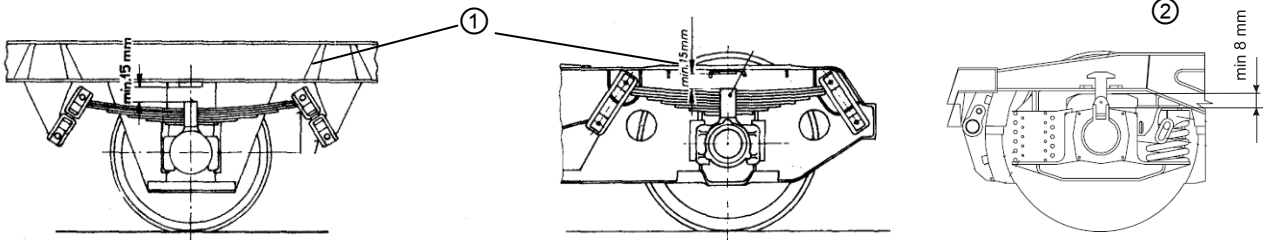
3.5 Verification of load distribution

The distribution of the load can be verified by:

- Calculation (cf. section 3.3),
- Weighing the different axles or bogies of the wagon.

The weight of the load is unevenly distributed if:

- the distance between rail head and the buffer centre line is less than 940 mm or greater than 1065 mm,
- ① • the distance between the spring buckle and the spring stop is less than 15 mm,



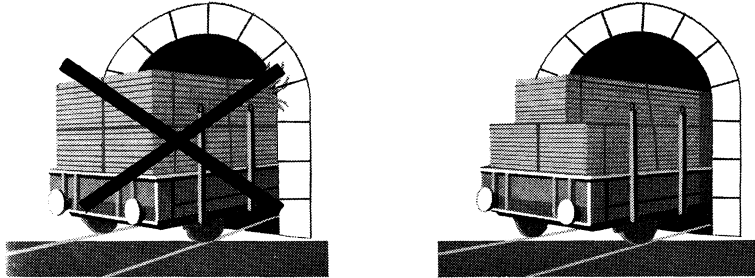
- ② • the distance between the axle box and the bogie frame is < 8 mm.

4 Permissible dimensions of the load

4.1 Loading gauge and restrictions

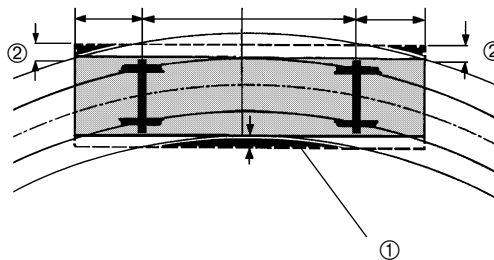
Compliance with loading gauges (Tables 1) is required on the railways' lines.

The load must not exceed the smallest loading gauge over the whole of the route. Compliance with this gauge should be measured from rail level on horizontal track on a straight line.



Account must be taken of any restrictions applicable to the width of the load for negotiating curves (Tables 2)

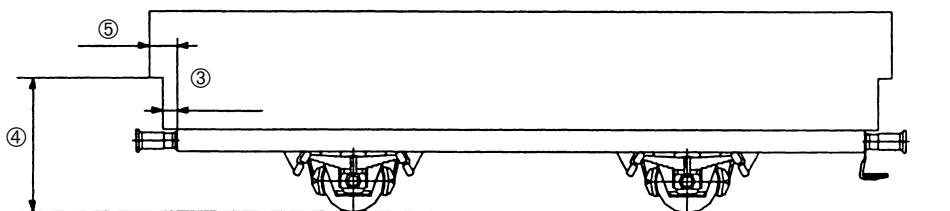
- ① - on the inside of the curve, between the axles or bogie centres and
- ② - on the outside of the curve, as a result of the overhang.



4.2 Protrusion of the wagon headstock

The load length marked on the wagon may be exceeded by the following dimensions, as measured from the buffer fastening plane:

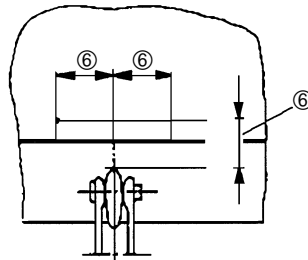
- ③ • by a maximum of 21 cm
 - ④ up to a height of 2 m above rail level
- and
- ⑤ • by a maximum of 41 cm above this height



The following clearances must be observed:

– around the draw hook

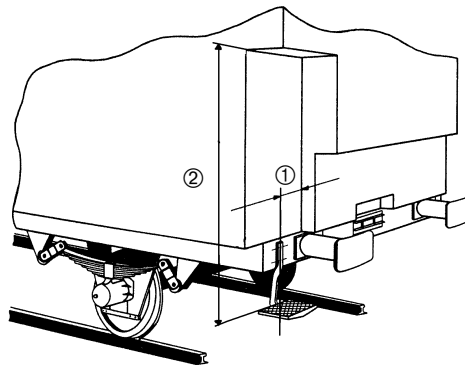
- ⑥ 20 cm on either side of the draw hook and 20 cm above



– over the wagon end step

- ① 20 cm from the centre of the wagon end step
- ② up to a height of 2 m

as measured at the level of the buffer fastenings

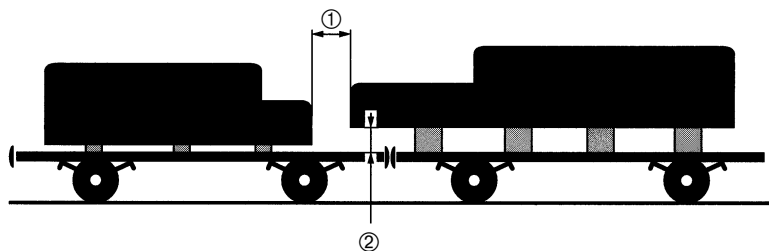


On wagons fitted with shock-absorbers, the areas marked with black and yellow stripes must also remain clear.

4.3 Buffer wagons

A buffer wagon must be used when the load exceeds the prescribed limits set out in section 4.2. The following minimum space should be respected:

- ① - 35 cm between the loads,
- ② - 10 cm between the load and the buffer wagon.



A clearance of 10 cm from the floor should be respected when the load protrudes beyond the end axles or bogie centres of the carrier wagon by no more than 6.5 m.

For loads with larger overhang, the values in the table below apply (basis for calculation: profile I 100); intermediate values should be determined by interpolation).

Overhang up to	Clearance from the floor
7.0 m	13.0 cm
8.0 m	16.0 cm
9.0 m	19.0 cm
10.0 m	23.0 cm

4.4 Permanently-coupled, multiple and articulated wagons

4.4.1 A wagon made up of permanently-coupled units or multiple wagon is a set of several underframes that are operated as one.

A multiple wagon may be formed from axle or bogie vehicles.

4.4.2 An articulated wagon is a wagon made up of distinct elements with an articulated link between the intermediate running gear. It comprises at least 3 axles or 3 bogies.

4.4.3 Each set is considered to be a single vehicle for operating purposes. It has a single identification number and carries the markings of a single vehicle, in particular one single load plate per set.

4.4.4 The load limit for each individual element is equal to the total mass entered on the load plate divided by the number of elements making up the set.

Each element must abide by the same rules as a conventional wagon, particularly with regard to the distribution of the load lengthways and crossways in the wagon (see also paragraph 5.9).

4.4.5 Rigid loads are subject to the provisions applicable to loads spread over several wagons.

The load may cover the coupling zone if due account is taken of longitudinal play (see also paragraph 4.3).

The provisions applicable to buffer wagons shall apply by analogy when the load is resting on one element only and extends beyond the coupling zone.

5 Methods of loading and securing

5.1 Basic principles

The type of goods, the characteristics of the wagon and of the line on which it is to run must be taken into account during loading. Railway operating safety must not be compromised by displacement of the load or its centre of gravity, the influence of wind or the presence of snow or ice on the loading surface or on the goods, etc. The goods must therefore be loaded in a stable position and secured both lengthways and crosswise against lifting, falling, moving, rolling and tipping. Damage must not arise from the way they are positioned or held in place.

Use should be made of the walls, sides, stanchions and other fixing devices built in to the wagon to secure the load. The sides and stanchions should therefore generally be placed in active (raised) position. Where this is not feasible, for example in the case of exceptionally wide loads, the goods must, subject to the agreement of the forwarding RU, be secured using special devices.

5.2 Goods loaded in bulk

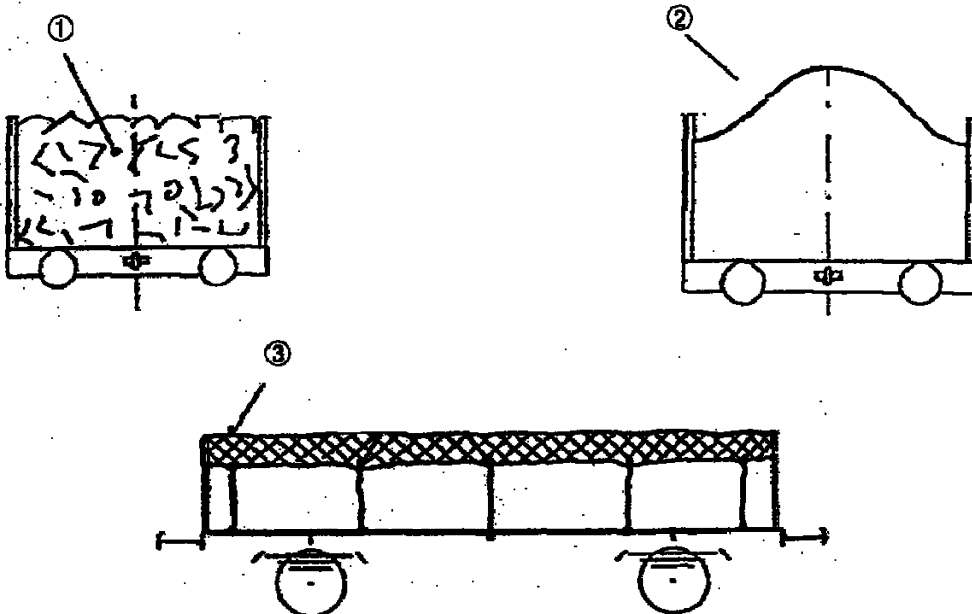
Goods such as scrap iron, used paper, wood cuttings, stones, etc. must be evenly distributed over the whole loading surface.

5.2.1 Light goods (or parts of them)

liable to be uplifted by the effect of moving air, such as:

- metal sheets (irrespective of size, surface area and thickness), sections of bodywork, machine punchings, mixture of light and heavy scrap,
- boards, planks and slabs up to 15 mm thick,
- wood chippings,
- bundles of newspapers, old paper in bulk, etc.

- ① should be loaded no higher than the top edge of the walls, including in the centre of the wagon,
- ② wood chippings may also be loaded in a cone formation,
- ③ Goods should be covered over their entire surface (irrespective of the height of the load) as described in section 6



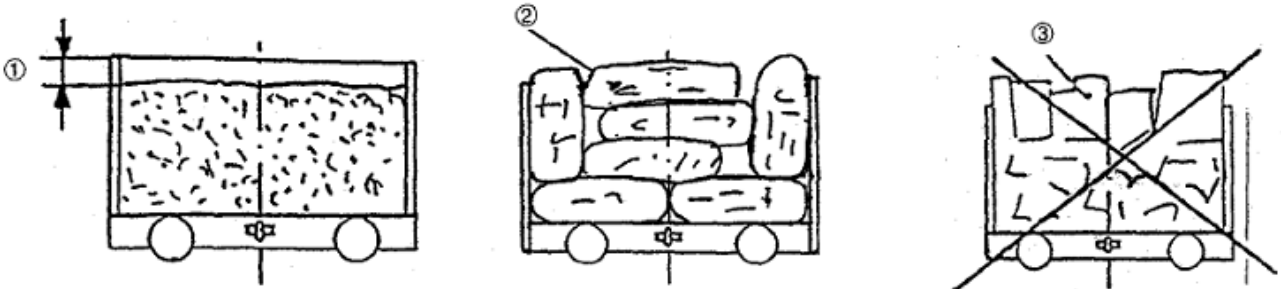
5.2.2 Heavy goods

that are liable to fall from the wagon as a result of vibrations during transit or impacts during shunting, such as:

- boards thicker than 15 mm,
- heavy scrap such as shredder scrap, cast and wrought iron pieces and fragments, shavings and chippings, stones, etc.

① should be loaded up to approx. 10 cm below the top of the sides

② Packages of compressed scrap and uncrushed motor cars should be loaded to approx. the top of the sides



③ Light and heavy goods of this kind must not be made to protrude in order to increase the effective height of the walls.

5.3 Powdery goods

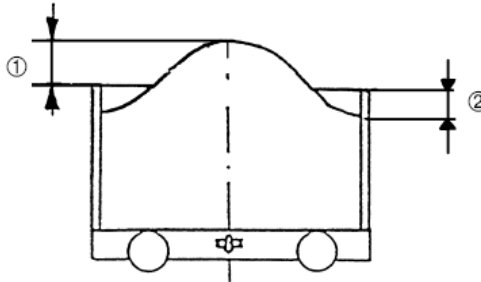
Goods such as ore, coal, coke, sand, apatite, phosphate, apples, sugar beet, etc. must be evenly spread over the whole of the loading surface.

5.3.1 Goods loaded in ordinary or special wagons

5.3.1.1 Ordinary wagons

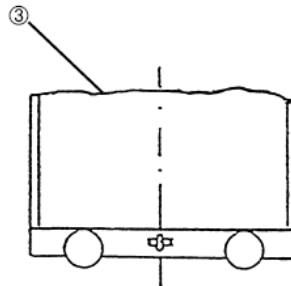
Loading in a cone formation:

- ① up to a height of approx. 500 mm
- ② the goods should be in contact with the wagon sides up to a height of 150 mm from the top.



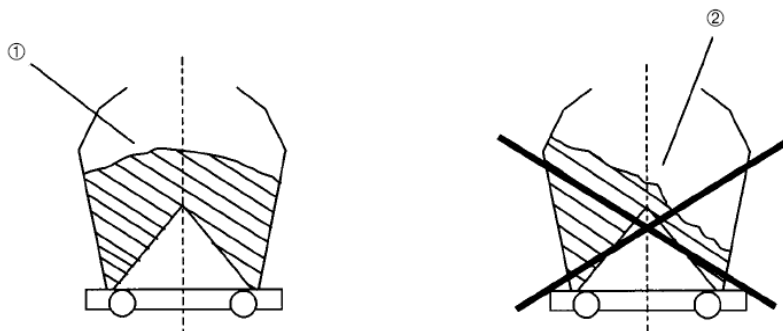
Loading without cone formation

- ③ up to the top of the wagon sides (including in the middle of the wagon)



5.3.1.2 Special wagons (fitted with cradles or loading hoppers)

- ① Cradles and loading hoppers must be filled in uniform manner both lengthways and crossways
- ② It is not permitted to fill and/or to unload the cradles/loading hoppers on one side only



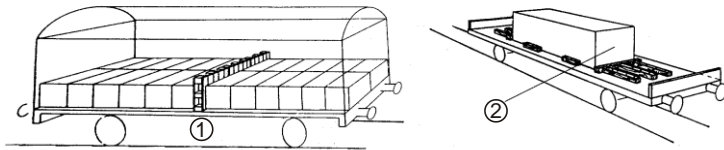
5.3.2 Goods liable to be dispersed by the wind, such as apatite, phosphate, quartz sand or goods subject to the RID must be

- loaded in closed wagons or
- completely sheeted over (see paragraph 6).

5.4 Goods loaded in compact or rigid formation

Goods that must not be able to move and goods that are able to withstand impacts.

- ① Compact = loading without intermediate space, any remaining gaps filled in
- ② Rigid = goods secured individually or in groups

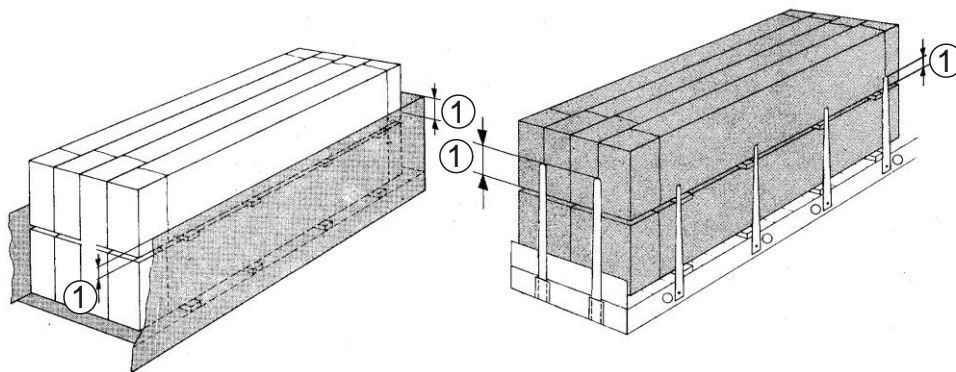


To secure the load, either use wagons with built-in securing devices, for example wagons with lockable partition walls, or adopt one of the following measures:

5.4.1 Load secured by the walls, sides or stanchions

Crosswise in the wagon the goods should be in direct contact with the walls, sides or stanchions¹⁾.

- ① Parts used to secure the load either lengthways or crosswise in the wagon must have an effective height of at least 10 cm.



Load units liable to:

- tip must be secured by the sides or walls to at least the height of their centre of gravity;
- roll over the top of the sides or walls must be secured by these sides or walls to at least the height of half their diameter. An effective height of at least 10 cm must be provided.

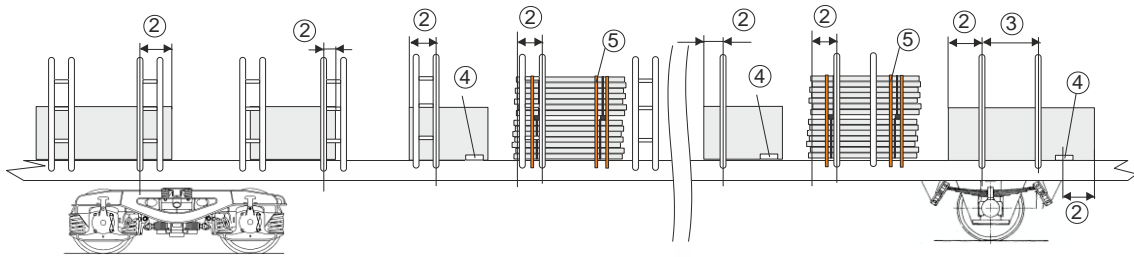
- ② Where the load is secured using two stanchions only (which must always be positioned up to a third of the way from the end of the pile), the goods must extend lengthways above the centre of each stanchion (the centre of the inside stanchion in case of wagons with double stanchions) by at least

50 cm	30 cm
ou, si la surface est rugueuse,	ou, si la surface est rugueuse,
30 cm	20 cm

- ③ The stanchions provided for securing purposes must be positioned at least 80 cm from one another with regard to the stanchions' centre lines.
- ④ Stable units formed of a single object that are secured at one end only by two stanchions must be secured at the other end using wooden guide-pieces.

¹⁾ This distance may not exceed 10 cm.

- ⑤ Bound stacks of sawn timber and crates must, if a stanchion is missing, be secured by an additional fastening at the appropriate end.

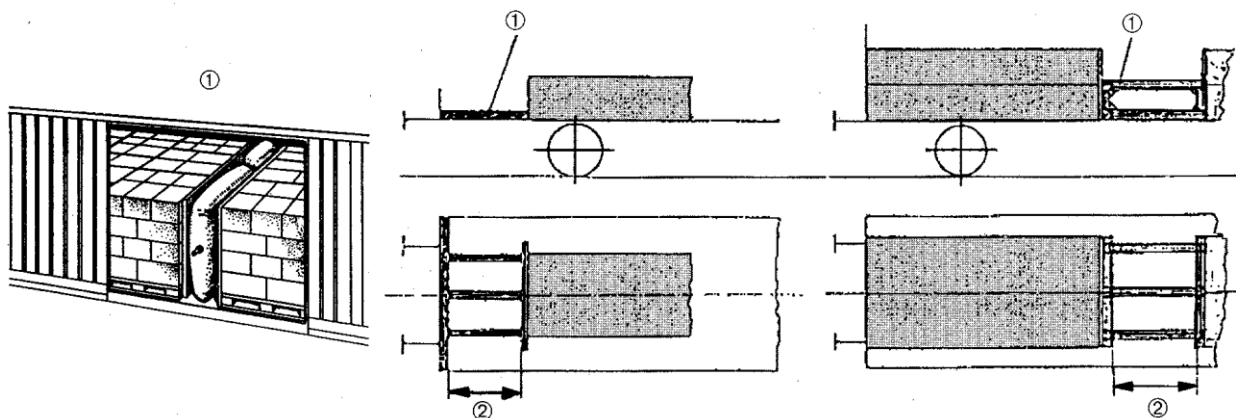


5.4.2 Securing the load by filling in gaps and using bracing

- ① To fill in empty spaces, use can be made, for example, of flat pallets (upright) or air cushions. If the gaps to be filled are larger, bracing made of squared timber (at least two timbers in each direction) with a minimum cross-section of 10 x 10 cm is required.
- ② The number of timbers will depend on the mass of the load units and the length of the gap to be filled. For a gap of 2 m and a load of 10 t, for example, the requirement is as follows:

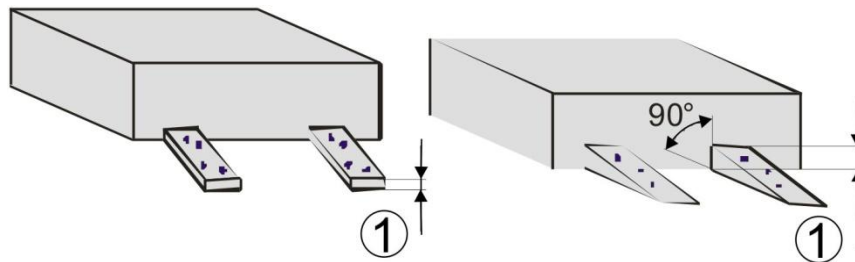
4 timbers (10 x 10 cm)

2 timbers (10 x 10 cm)



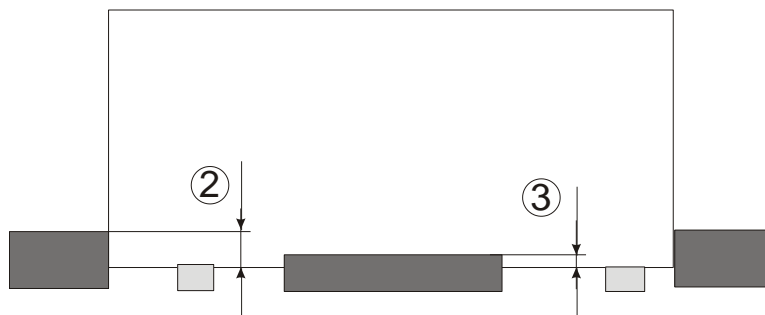
5.4.3 Securing using timbers, guide-pieces or scotches

- ① Timbers must be at least 5 cm thick, resting on their broader face and have a right-angled face at the point of contact.



The effective height of the scotches must be at least:

- ② - 5 cm to prevent longitudinal movement,
 ③ - 3 cm to prevent lateral movement.



The potential uses of nailed timbers and scotches are limited by the mass of the load as follows:

- against longitudinal movement, limited to approx.

3 t

12 t

The number of nails used - at least 2 per scotch - is specified in the loading guidelines applicable to the different types of goods and takes account of:

- the mass of the load to be secured,
- the forces involved,
- the existing coefficient of friction.

With nails of approx. 5 mm in diameter and an average friction coefficient ($\mu = 0.4$), load units can be deemed to be sufficiently secured if the scotches are fixed as follows:

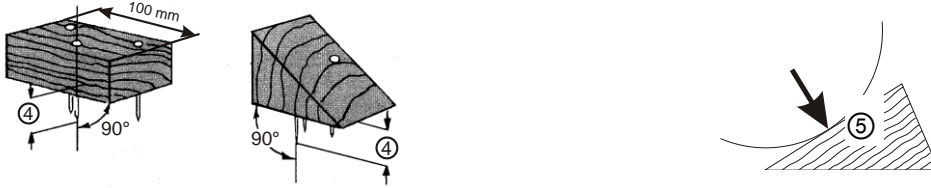
a) **lengthways** in the wagon at both ends and with at least

1 nail per 100 kg

1 nail per 400 kg

b) **crosswise** in the wagon on each side and with at least 1 nail per 1500 kg of the load unit in question.

- ④ Nails must be driven in vertically and as far as possible evenly distributed. They must penetrate to a depth of at least 40 mm into the floor and/or supporting timbers or inserts.

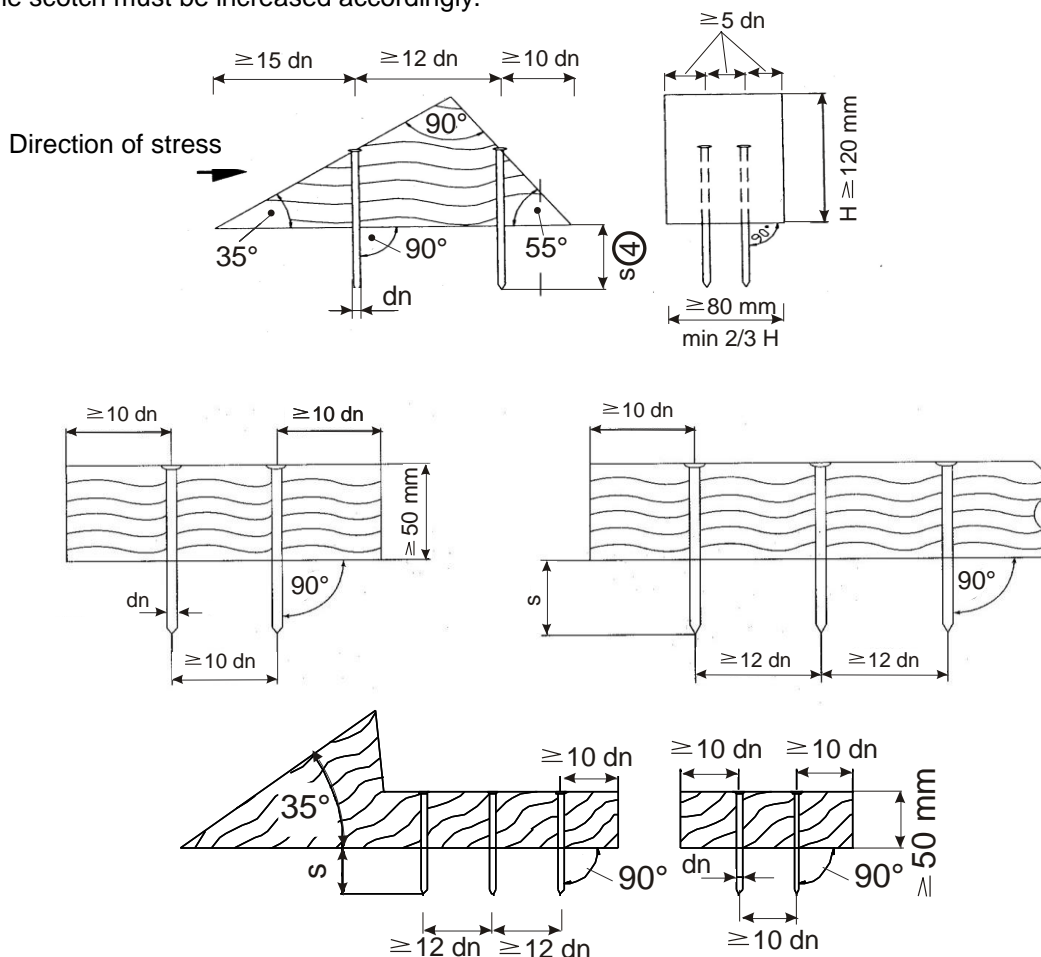


- ⑤ Scotchies must be cut in a way that ensures that stress is exerted across the grain of the fibres. The number of nails used for a given scotch must be limited, to avoid splitting the wood. For a scotch width of up to 100 mm, no more than 3 nails should be used. Where necessary, the scotches should be further secured using screws and steel connecting plates. It is also possible, **in the crossways direction**, to use smaller-diameter nails if their depth of penetration or the number of nails in relation to the mass of load is adjusted accordingly. Grooved nails can withstand higher extraction forces than smooth nails. In terms of strength a grooved nail of $d_n = 4.2$ mm is comparable to a smooth nail of $d_n = 5$ mm.

For securing goods crossways in the wagon, the following table applies:

Type of nail	Nail diameter d_n (mm)	Minimum penetration s (mm)	Mass of load/nail (t)
grooved	4.2	40	1.5
smooth	5.0	40	1.5
smooth	4.6	50	1.5
smooth	4.2	50	1.0

Minimum clearances must be observed between nails and from nails to the edges of scotches / timbers. These clearances depend on the direction of the forces, the grain of the scotch / timber fibres and the diameter of the nails. A wooden scotch with the minimum dimensions of 120 mm high x 80 mm wide can therefore take 4 nails with a 5 mm diameter. If the number of nails is greater, the width of the scotch must be increased accordingly.



5.4.4 Direct fastenings

Direct fastenings act in the direction of the stresses and are designed to resist the movement of the goods.

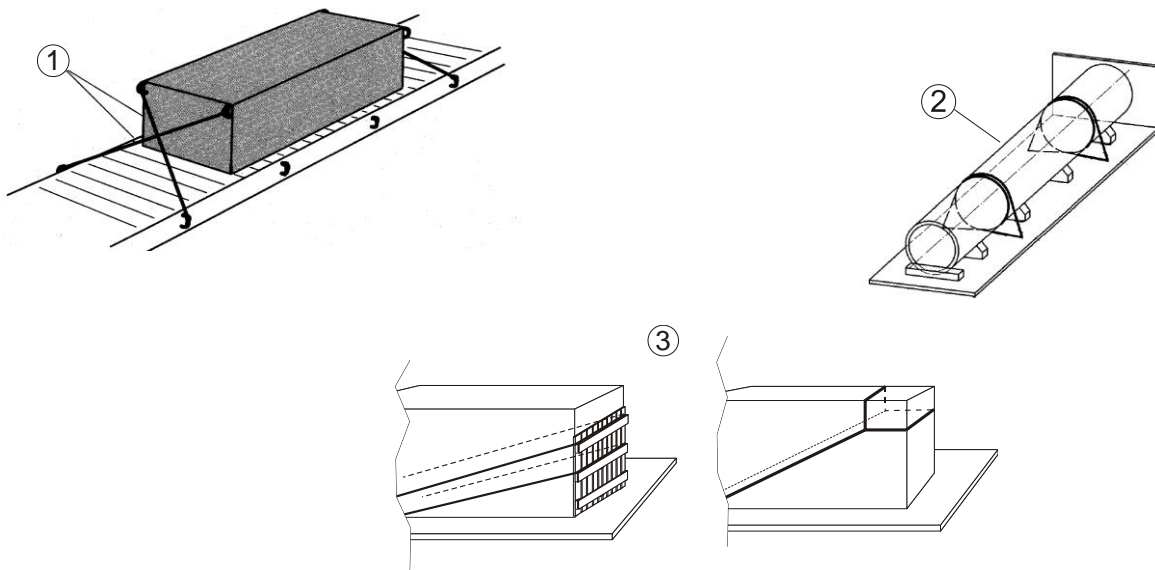
Depending on the type of goods, their weight and the loading method used, round steel chains, steel cables, woven straps or non-woven straps¹⁾ may be suitable. Steel strip is not permitted because of the particular risk of accidents in the event of breakage. For goods weighing **up to 3 t**, it is also possible to use annealed steel wire.

Where goods are secured by direct fastening only, the bindings must act both lengthways and crosswise in the wagon. Otherwise, additional securing measures must be taken. In principle, at least 2 fastenings should be used in each direction.

The following procedures may be used as means of direct fastening:

- ① - Diagonal fastening
direct connection with both the wagon and the load
- ② - Loop fastening
direct connection with the wagon
- ③ - Head-loop fastening
direct connection with the wagon

For procedures ② and ③ additional securing measures may be required, such as indirect fastenings (see 5.5.4) or anti-skid strips (see 5.5.5).



Direct fastenings placed lengthways in the wagon may be considered correctly dimensioned if the breaking strength²⁾ (straight pull) of the bindings in each direction is at least

3200 daN	1000 daN
per 1 000 kg of load.	

The annealed steel wire must have a diameter of at least 4 mm. Each binding must comprise at least

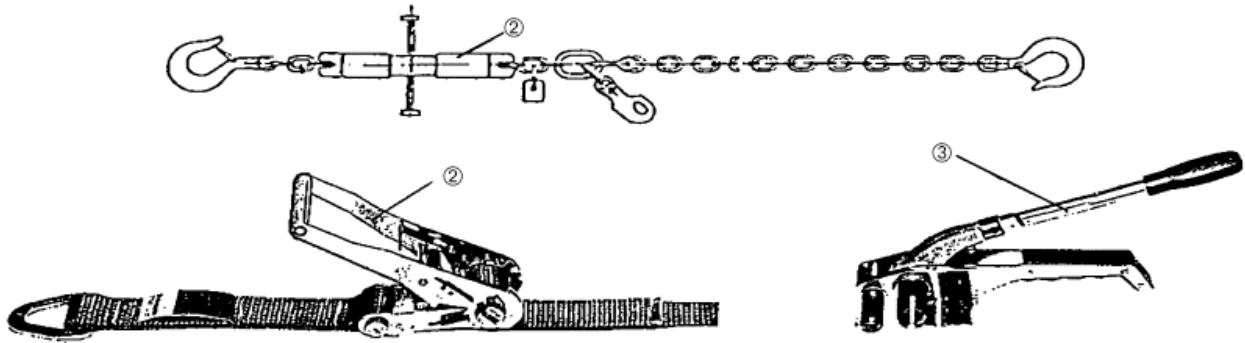
4 threads		2 threads
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¹⁾ Non-woven straps, as understood here, are made up of parallel threads with high grade polyester filaments, fully encased in high polymer thermoplastic coating (operational range - 25° C to + 70° C).

²⁾ The minimum breaking strength (straight pull) is equivalent to twice the tensile force (LC). This only applies to synthetic straps, woven straps and load-securing straps.

Chains, steel cables, woven straps and load-securing straps must be used in conjunction with:

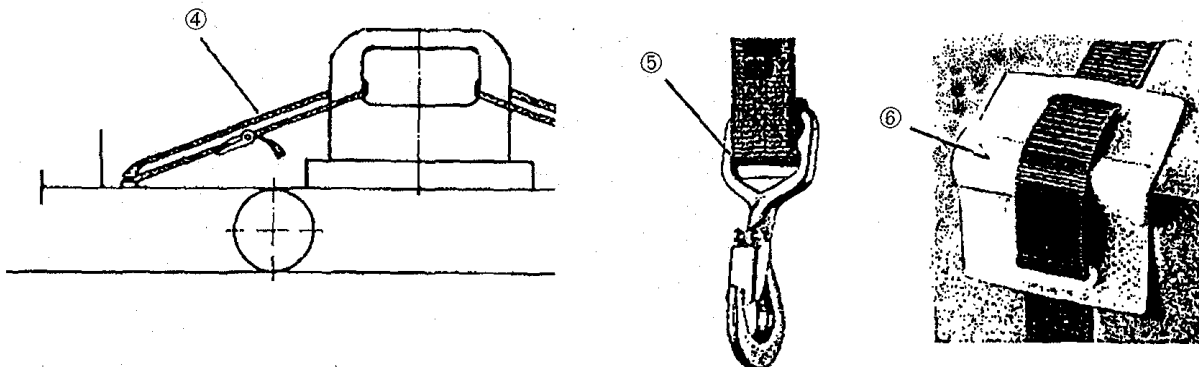
- ② - an integrated tensioning device **or**
- ③ - a separate tightening device with lever.



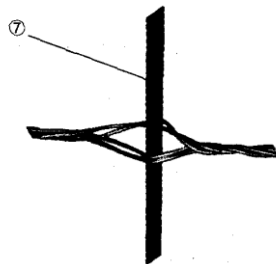
The locks and buckles of the securing straps must be adapted to the type of strap being used in terms of its functional properties and strength.

The bindings must be:

- ④ - tensioned as loops **or**
- ⑤ - fixed using hooks. Unless used in closed loading spaces, hooks must be equipped with a guard against unintentional unhooking. Hooks without this protection against unhooking must be held in place at the securing point, e.g. by means of cable ties, wire, etc.
- ⑥ Where there are sharp edges, the straps must be protected by inserts, rubber hosing or edge protections.



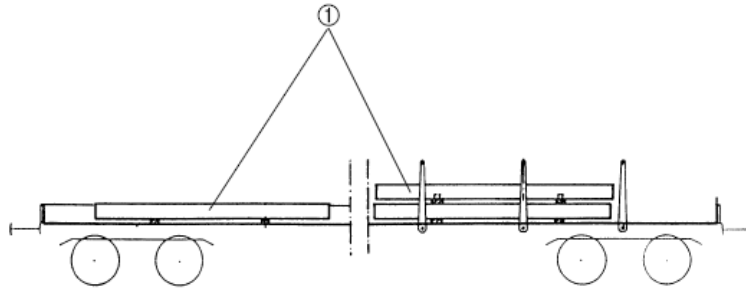
- ⑦ To tension bindings made of annealed steel wire, the wires should be twisted in pairs.



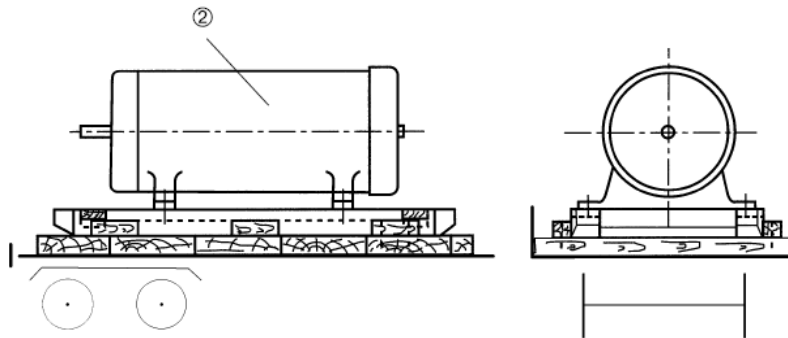
5.5 Loading with possibility of sliding lengthways in the wagon

The possibility of sliding should exist in individual wagons and groups of wagons for:

- ① - heavy goods that cannot be secured in a compact or rigid arrangement lengthways in the wagon (such as steel billets)



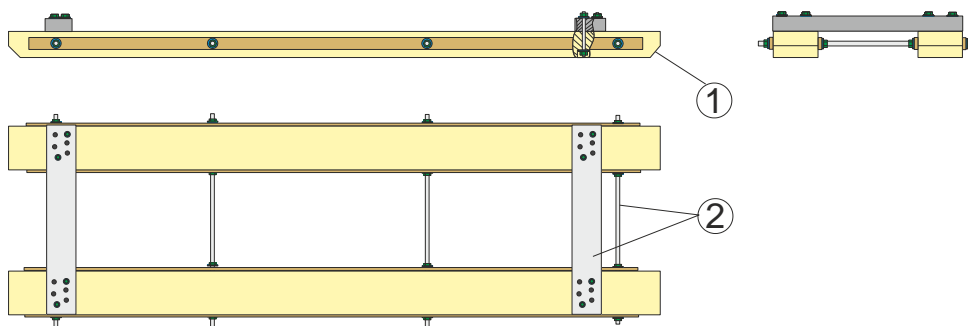
- ② - goods that are sensitive to impact, liable to be damaged as a result of the effect of longitudinal stresses (such as machinery).



To prevent lateral movement of the load and the resulting encroachment of the loading gauge, and/or to ensure the 1.25:1 ratio between the loads per wheel is not exceeded, the goods should be secured laterally. The provisions of sections 5.4.1 and 5.4.3 should also be observed.

5.5.1 Sliding devices

- ① The skids and shoes of trestles should be placed lengthways on the wagon floor; the bottom edges at each end should be chamfered to avoid the trestle becoming snagged on uneven parts of the floor.
- ② The different parts of the trestle should be joined firmly together using tie-pieces or cross-timbers. The latter should be fixed with through bolts or wood screws. If the parts are, exceptionally, nailed together, screw nails should be used; these should penetrate the timbers to a depth of at least 40 mm. The dimensions of these trestles should be set on the basis of the characteristics of the goods.



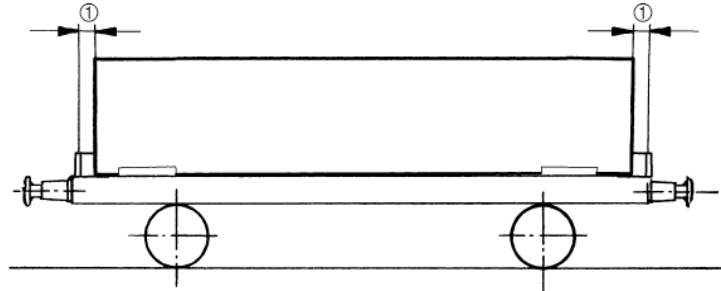
The goods should be fixed to the sliding timbers or trestles such that they are unable to move on it and are not in contact with the wagon floor.

If struts or bracing are used for support purposes, these should be fixed to the sliding timbers or to the trestle.

5.5.2 Clearances

① Lengthways in the wagon, the following clearances should be provided at each end:

- at least 30 cm for goods with a rough surface (e.g. blocks of stone)
- at least 50 cm for goods with a smooth surface (e.g. greased steel pipes or pipes with a smooth coating or steel sections, etc.),
- 100 to 150 cm for goods loaded on timbers, sliding timbers or trestles (e.g. packages of steel sheet, cable drums, machinery, etc.).



It is permitted for sliding loads to displace lengthways in the wagon under the influence of the stresses caused by carriage, as long as the conditions governing:

- mandatory clearances as per point 4 **and/or**,
- distribution of load as per point 3.3

are met.

The coverage of the supporting scotches and other timbers must be sufficient (protrusion greater than the residual sliding distance).

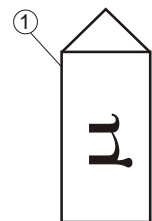
5.5.3 Limitation of sliding distances

Sliding distances must be limited in order to avoid:

- the maximum axle load being exceeded,
- the permissible ratio between the loads per axle or per bogie being exceeded,
- the goods or wagons being damaged,
- the goods encroaching on the clearances required for shunting purposes.

Sliding distances can be limited by the following means:

- indirect fastenings (e.g. woven or synthetic straps),
- timbers or inserts with friction-enhancing capability,
- elastic materials used as cushions in front of the end walls or sides.
- anti-skid packing when the load-bearing surfaces are level. The packing bears the sign indicated by the opposite diagram ①, the head of the arrow indicating the contact surface with a higher coefficient of friction.



These types of securing can be used individually or in combination.

In some instances, clearance need not be provided when the goods conveyed are not sensitive to impact, for example, steel sections and steel bars, medium and heavy plates, steel billets, round reinforcing bars, bundles of steel tubes and rails loaded on a wagon.

In most cases, these are indivisible goods requiring virtually the entire loading length of a wagon and for which the above-mentioned securing measures are not feasible or can only be applied at disproportionate cost.

In the event of the load being displaced due to impact during shunting and fouling the clearance required for shunting staff, it must be readjusted in the marshalling yard.

5.5.4 Indirect fastening

The additional vertical force exerted by indirect fastening increases adhesion and improves the stability of the load units.

The effectiveness of indirect fastenings depends on the following parameters:

- the force of the initial tension,
- the angle of fastening α (measured between the loading surface of the wagon and the fastening).

The smaller the angle of fastening α , the greater the force of initial tension must be in order to obtain the same force.

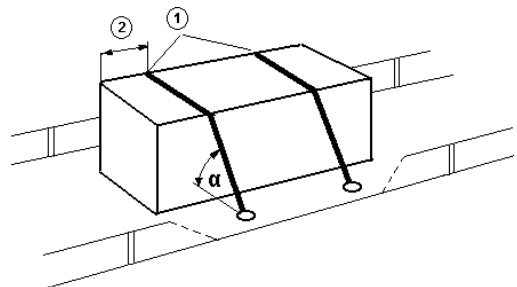
- ① The bindings used should be preferably woven or load-securing straps. These must have an integrated tensioning device or a separate tightening system.
- ② Each load unit must have at least 2 indirect fastenings applied approx. 50 cm from the ends of the load.

The breaking strength (straight pull)¹⁾ of the bindings depends on the weight, the length and the surface of the goods: 1,000 daN to 4,000 daN, with an initial tension meeting the requirements set by the manufacturer. Steel strip may not be used because of the particular risk of an accident in the event of a breakage.

The buckles and locking devices on the securing straps must be suited to the type of strap used in terms of its functional properties and strength. The bindings must, as far as possible, be fixed using hooks or tensioned in loops (loops double the breaking strength). Use of knots reduces the breaking strength of the bindings by approx. 60%. If knots are used, the diminished breaking strength must be compensated for by stronger fastenings.

Where there are sharp edges the straps must be protected by inserts, rubber hosing or edge protection (see also 5.4.4 ⑥).

For goods with a smooth surface or a surface likely to deteriorate, in addition to securing devices it is advisable to use inserts at the ends or between the goods, or packing composed of suitable anti-skid material increasing the coefficient of friction and bearing the sign as per 5.5.3 ①.



5.5.5 Securing the load by using friction-enhancing materials

It is necessary to distinguish between the different purposes for which anti-skid materials are used – limiting sliding distances, reducing the number of securing measures (securing devices), and completely preventing goods from moving (which in practice is only possible laterally).

Subsequently it is advisable to consider on a case-by-case basis whether the available friction torque suits the sought purpose (immobilising the load or limiting its movement).

Anti-skid materials are necessary:

- to reduce longitudinal movement, if for example the load consists of:
 - smooth-coated or greased steel pipes,
 - polished stone slabs,
 - palletised goods loaded on a smooth floor,
 - paper rolls loaded upright or on the roll,
 - coated chipboard panels,
- to reduce lateral movement, if for example the load consists of:
 - paper rolls loaded eye-to-side or upright,
 - coils of steel plate loaded eye-to-side,
 - coated chipboard panels.

Goods secured longitudinally may be secured against lateral movement by means of anti-skid materials used with suitable dimensions.

Friction-enhancing inserts are not in themselves sufficient to prevent goods from falling from the wagon or fouling the loading gauge. This function is fulfilled, for example, by the walls, sides, stanchions or indirect fastening.

¹⁾ Minimum breaking strength (straight pull) corresponds to twice the permissible tensile force (LC) and applies solely to synthetic or woven straps and load-securing straps.

5.6 Goods liable to rolling

Goods such as paper rolls, cable drums, wheelsets, other cylindrical load units, vehicles, etc. must be prevented from moving in all directions by fixed walls, sides, stanchions, scotches, trestles or cradles.

5.6.1 Centreline placed across the wagon

- goods with an individual or total weight up to 7 t (individual objects loaded side by side or one behind another) may not rest directly on the wagon floor, but should be secured with scotches.
- goods with an individual or total weight up to 10 t must be loaded on trestles. If the trestles are made of wood, they must be firmly screwed in place.
- goods with an individual weight exceeding 10 t must be loaded in wagons or containers fitted with cradles.

Individual or grouped loads weighing up to 7 t

Individual or grouped loads must be secured using wooden scotches as follows:

- ① - scotch angle of approx. 35° to the goods, up to 45° for vehicles
- ② - scotch height (effective height) 1/8 of the diameter, but at least 120 mm
- ③ - scotch width must be at least 2/3 of the scotch height

Goods must be secured in each direction of rolling using:

- ④ - at least 2 scotches or
- ⑤ - 1 scotch of approx. 3/4 the length of the load

Crosswise in the wagon, the goods must be secured using

- ⑥ - timbers approx. 300 mm long and at least 50 mm high or
- mechanical devices or
- inserts or anti-skid packing for individual loads weighing up to approx. 2 t.

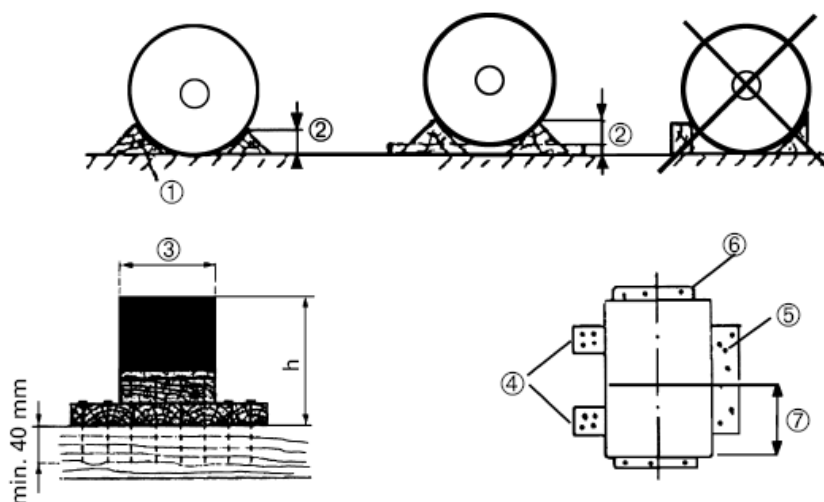
Timbers must be fixed using nails with a diameter of approx. 5 mm

- in each direction of rolling and with a total of
1 nail per 500 kg | 1 nail per 2000 kg
of load
- crosswise in the wagon, use 1 nail per 1,500 kg of load.

The nails must, wherever possible, be driven in vertically and penetrate to a depth of at least 40 mm. They should be evenly distributed on the scotches or timbers, though with at least 2 nails per scotch or timber. No more than 3 nails should be used on scotches that are up to 100 mm wide.

Goods must be secured against tipping

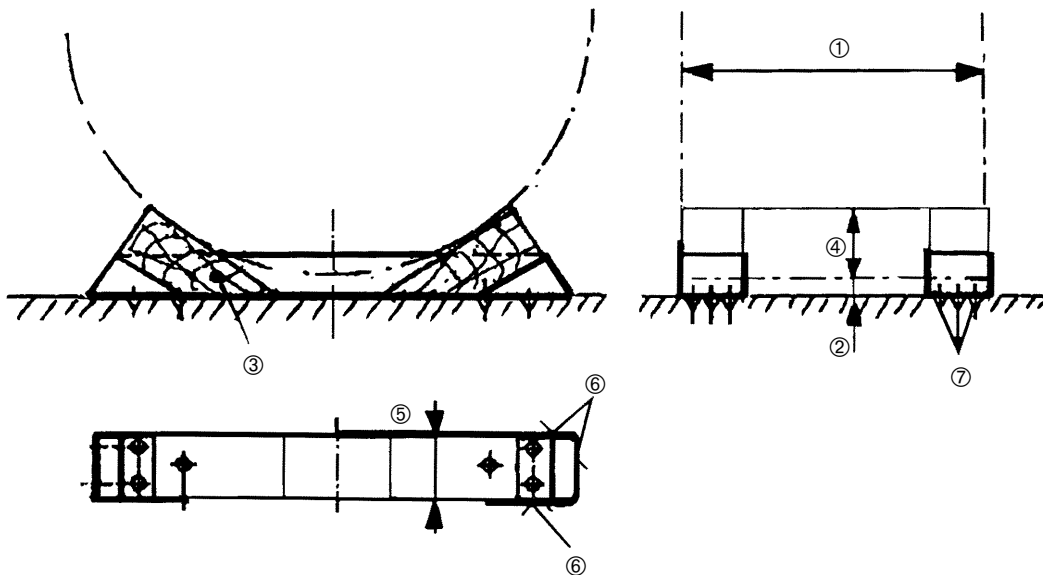
- ⑦ - when their width is less than 5/10 of their diameter (on flat wagons, less than 7/10), for example by binding the goods (see 1.5)



Individual loads weighing up to 10 t

Each unit must be secured with 2 chocks made of timber scotches and forming a cradle, joined with steel sheet

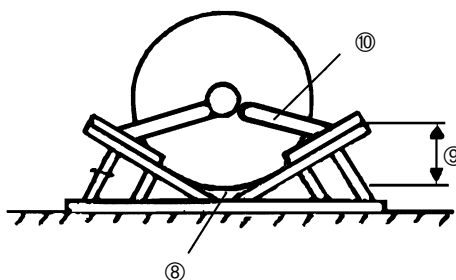
- ① – the width of the load must be at least $\frac{5}{10}$ of its diameter ($\frac{7}{10}$ on flat wagons)
- ② – the goods must not be in contact with the floor, nor be able to move on the chocks
- ③ – scotch angle in relation to the goods: approx. 35° , up to 45° for vehicles
- ④ – scotch height (effective height) $\frac{1}{8}$ of the diameter, but at least 20 cm
- ⑤ – scotch width: $\frac{2}{3}$ of the height, but at least 15 cm
- ⑥ – each of the timber scotches must be plated on 3 sides with steel sheet at least 4 mm thick and screwed in place
- ⑦ – the base plate must be prevented from moving by fitting it with at least 6 spikes (2x3), 10 to 15 mm long



Individual loads weighing over 10 t

Each unit must be loaded onto wagons or containers fitted with cradles

- ⑧ The goods must not rest on the floor of the cradle nor be able to move.
- ⑨ The effective height must be at least $\frac{1}{8}$ of the diameter.
- ⑩ Crosswise in the wagon, the goods must be secured against movement and supported at the level of their centre of gravity to prevent them from tipping, if their width is less than $\frac{4}{10}$ of their diameter.



5.6.2 Centreline lengthways in the wagon

Cylindrical goods such as silos, pipes, etc.

Goods resting on the floor, on bolsters or timbers.

The material used for the timbers must be suitable in terms of its quality and cross-section.

Timbers must

- be of a single piece of wood,
- have a rectangular cross-section (height at least 5 cm, width at least 15 cm),
- rest on their broader face,
- cover the whole width of the load,
- be secured against lateral movement (for example using scotches, stanchions or sides),
- be inset at least 50 cm from the end of the load and
- be arranged in pairs, their number depending on the weight, length and nature of the goods.

The goods must be secured using scotches with the following dimensions:

- ① – scotch angle in relation to the goods approx. 35°, up to 45° for vehicles,
- ② – scotch height: at least 1/12 of the diameter, but no less than 12 cm,
- ③ – scotch width identical to that of the timbers.

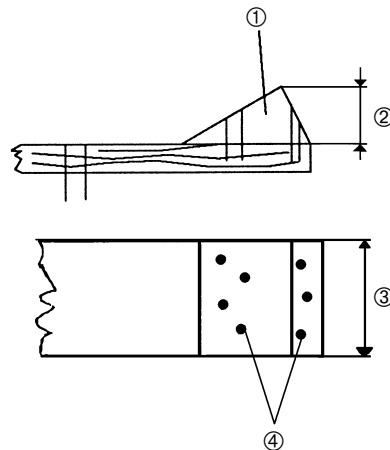
The scotches must

- ④ – be fixed on the inside and outside with nails of approx. 5 mm in diameter, with a total of 1 nail per 1,500 kg of load in each direction of rolling.

The nails must wherever possible be driven in vertically (penetrating to a depth of at least 40 mm into the timbers) and be spread evenly over the scotches (at least 4 nails per scotch).

To prevent longitudinal movement, the goods must be either secured at the wagon ends by the walls, ends or stanchions or be secured with at least 2 indirect fastenings (breaking strength at least 4,000 daN) fitted with a tensioning device. A clearance of approx. 50 cm should be maintained from the ends of the goods.

For goods that are stacked, see also section 5.8



Cylindrical goods such as coils of steel sheet, cable drums, etc.

The goods should be loaded

- on wooden cradles when their weight, individually or in a group, is less than or equal to 10 t
- on metal cradles when their weight, individually or in a group, is greater than 10 t

- ⑪ The goods must not be in contact with the floor nor be able to move on the trestle
- ⑫ Timbers must be firmly screwed in place
- ⑬ Effective height of the crib: 1/12 of its diameter, but at least 12 cm.

⑭ If the width of the goods is less than

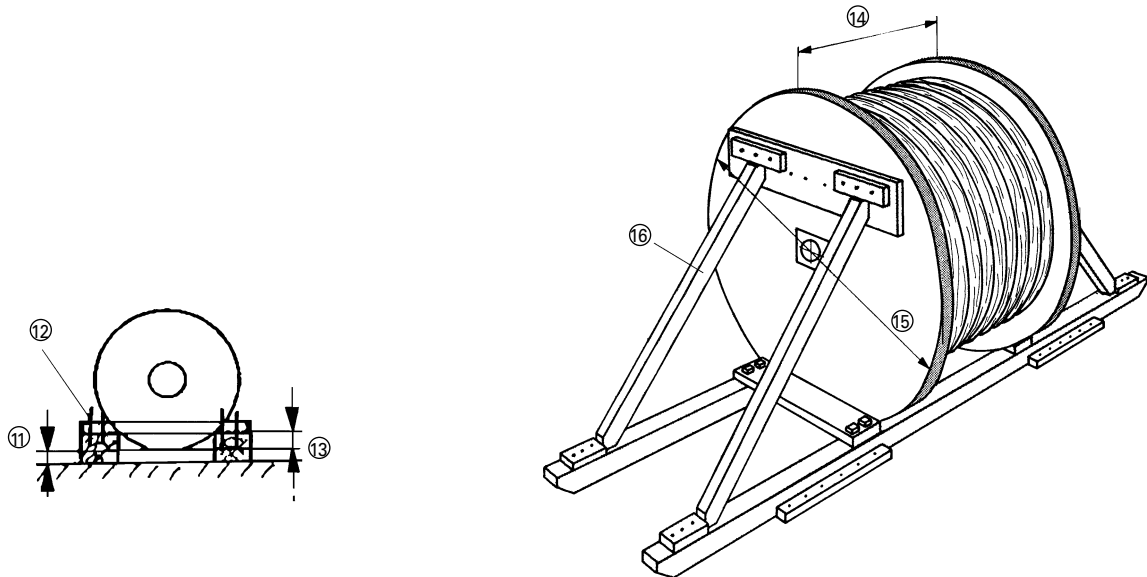
5/10

4/10

⑮ of their diameter

⑯ they must be bound together or supported at the level of their centre of gravity or above

For securing the cradles and the sliding distances to be respected, see section 5.5.



5.6.3 Vehicles and machinery on wheels or caterpillar tracks

Vehicles and machinery should be

- loaded lengthways in the wagon
- immobilised with the hand-brake on and with the first gear engaged or the gears blocked
- secured against longitudinal and lateral movement either using scotches or by direct fastening.

If it is not possible to immobilise the vehicles and machinery using the hand-brake, engage the first gear or block the gears, both scotches and direct fastenings must be applied.

Tyres must be inflated at service pressure.

Sufficient clearance must be left between each vehicle or piece of machinery, to avoid any damage. This clearance shall be determined on the basis of the technical parameters of the vehicles or machinery to be carried. Additionally, when vehicles or machinery are placed over the articulated link of coupled wagons, account must be taken of the mechanical play between the two elements forming the unit and of the relative movements of the vehicles and machinery in curves.

① Securing with scotches (scotch angle approx. 35°, for vehicles up to 45°) and timbers

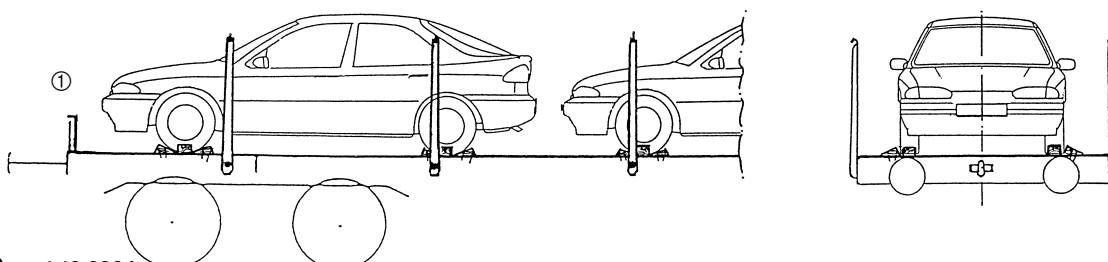
- lengthways in the wagon

- for a weight of up to 6 t using timber scotches (height 1/8 of wheel diameter and at least 12 cm)
- over 6 t using steel spiked scotches (scotch height at least 17 cm)
- number of scotches in each direction of rolling

• wheeled vehicles	4	2
• caterpillar vehicles and single-axle trailers	2	2

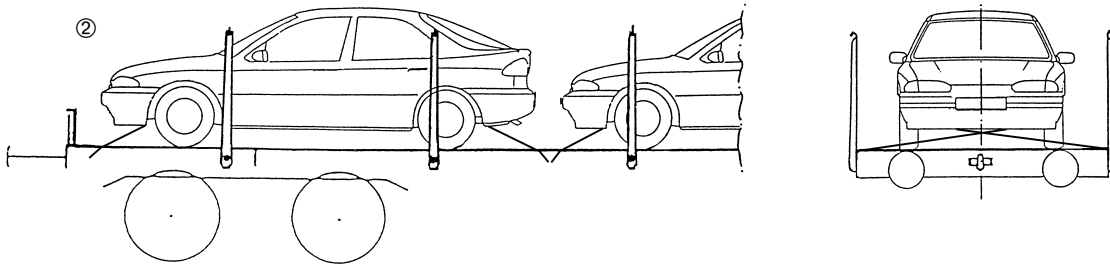
- crosswise in the wagon, on each side (inside or outside)

- wheeled vehicles secured with 2 timber scotches
- caterpillar vehicles with at least 2 timbers (height at least 5 cm)

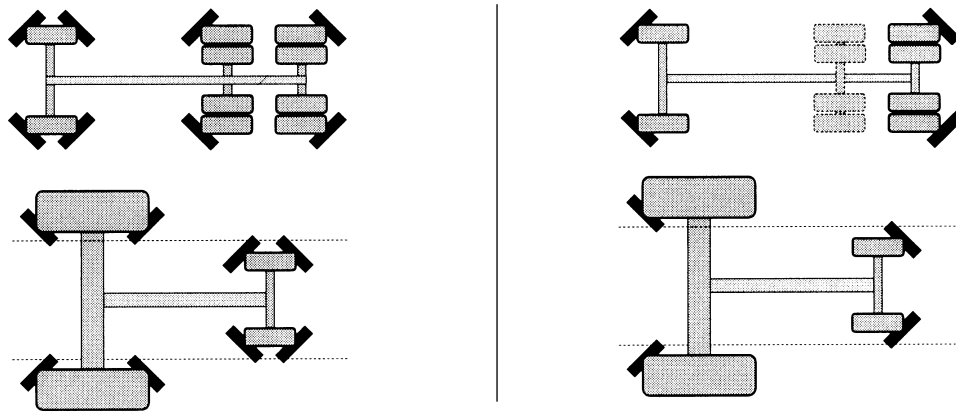


② Securing with direct fastenings

– at both ends of the vehicle using tensioned bindings acting in both longitudinal and lateral directions.

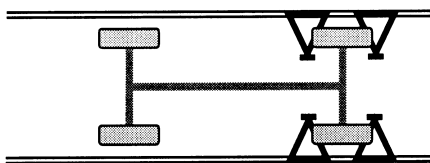


③ Heavy vehicles with pneumatic tyres should be scotched using the wagon scotches. The scotches should act in both longitudinal and lateral directions.

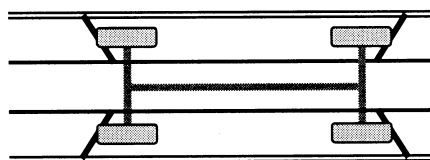


④ Light vehicles with pneumatic tyres loaded on car-carrying wagons should be scotched using the wagon scotches. The scotches should act in both longitudinal and lateral directions.

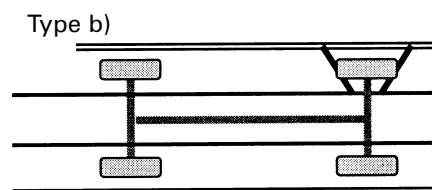
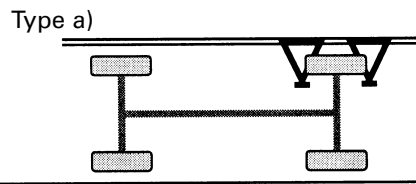
- Scotches on the wheels of one axle



- Scotches in front of the front wheels and behind the rear wheels



- Scotching of one single wheel is permitted if there are guide-rails at least 50 mm high to prevent lateral vehicle movements that might encroach the most restrictive gauge on the route and if the scotches remain effective in the longitudinal direction.



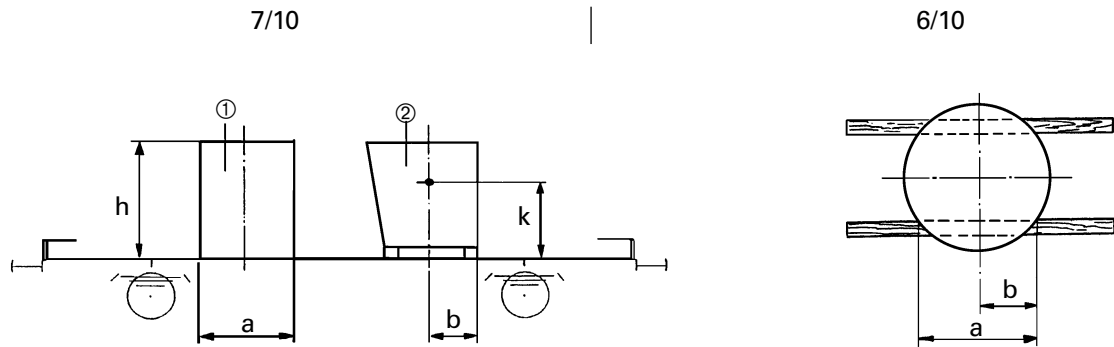
5.7 Goods liable to tipping

Free-standing goods (round or angular bearing surface)

- ① – with a regular cubic or cylindrical shape
- ② – with an irregular shape (determine the centre of gravity)

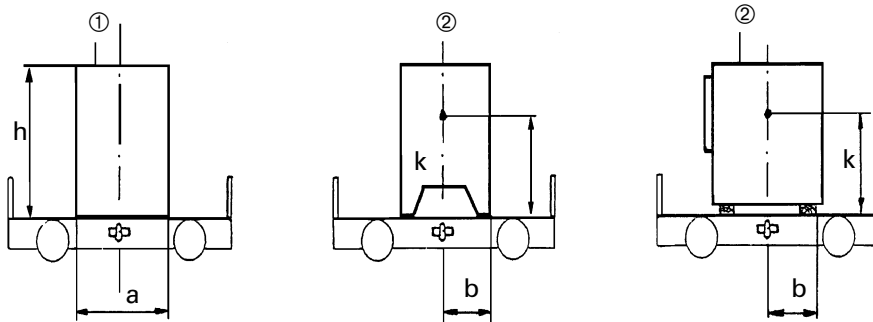
must be secured against tipping if the ratios $a : h$ or $b : k$ are less than

– lengthways (goods fixed or not)

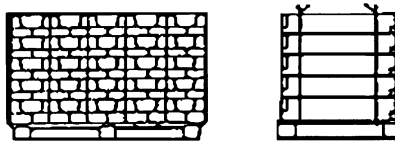


– crosswise 5/10;

7/10 for flat and low-loader wagons, if the ratio of the weight of the load unit to the lateral surface area exposed to the wind (product of the length and the height of the goods) is less than 1 t/m².

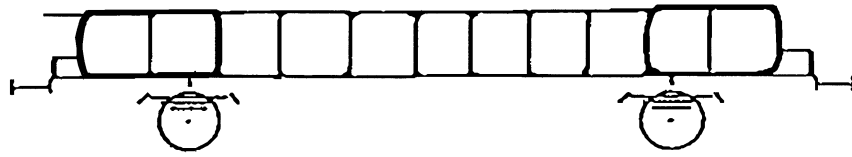


These values shall also apply if goods on cradles, sleds, etc. are bound together to form a single load unit.

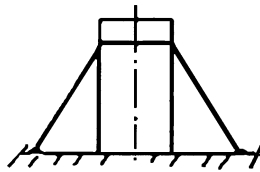


Tipping can also be prevented by

- placing several load units in compact formation and binding together

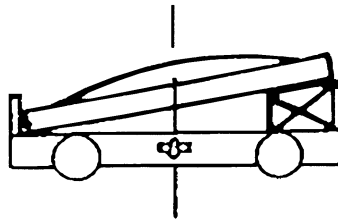


- direct fastening or supporting props



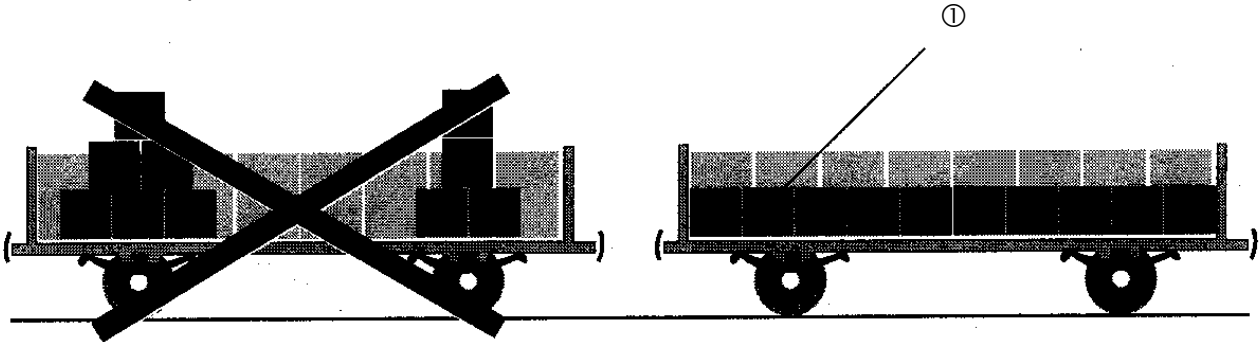
- supporting from beneath using trestles

Trestles must be positioned such that they do not tip; attention should be paid to ensuring that the wagon is not overloaded on one side.



5.8 Goods in stacks

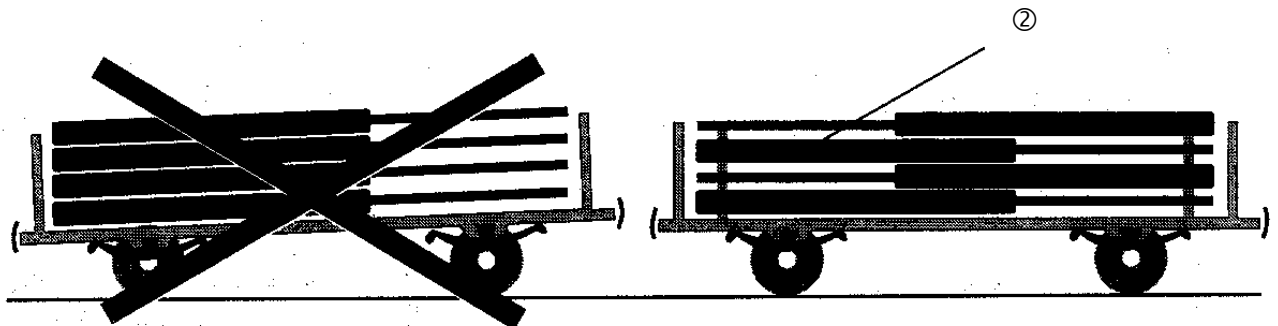
- ① The goods must be spread over as much of the available floor area as possible, to keep the stacks as low as possible.



Superimposed units must form stable stacks that must be prevented from falling apart, for example by:

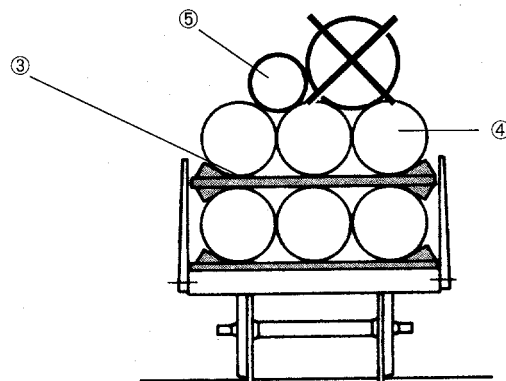
- interlocking different tiers (e.g. for metal bars or sacks),
- using timbers or friction-enhancing inserts (e.g. for slabs, sheet metal, sawn timber, paper rolls),
- using cribs (e.g. for pipes or barrels),
- using shrink-fit or stretched plastic sheeting (e.g. for palletised units),
- binding units together (e.g. for metal sheets, chipboard panels),
- indirect fastenings using woven or synthetic straps (e.g. for rough logs).

- ② When the stacks are formed of units of different length and weight, the longer, heavier units or those with a bigger diameter should be loaded at the bottom of the stack. Units that have ends with different weights or thicknesses should be loaded alternately.



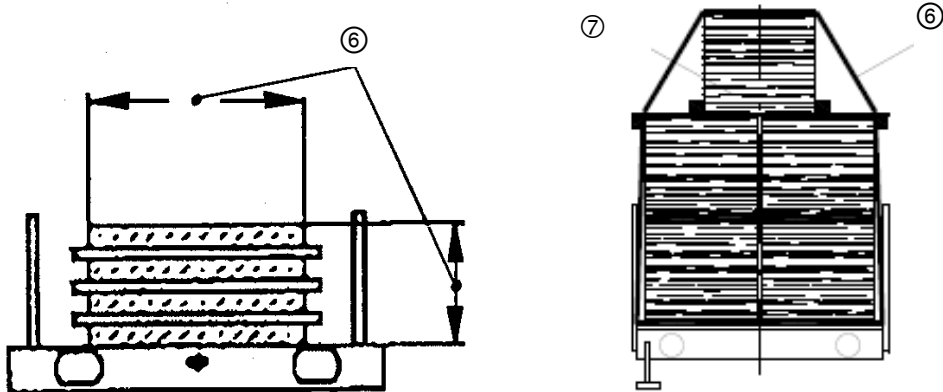
Stacks formed of cylindrical units may be loaded in flat tiers or in dovetailed formation.

- ③ As a rule, timbers should be inserted between the different tiers.
④ If the objects loaded in flat tiers are cylindrical, their centrelines must be vertically aligned.
⑤ Dovetailing is only permitted if the diameter of the units in the dovetailed tier is no greater than those in the supporting tier immediately below.

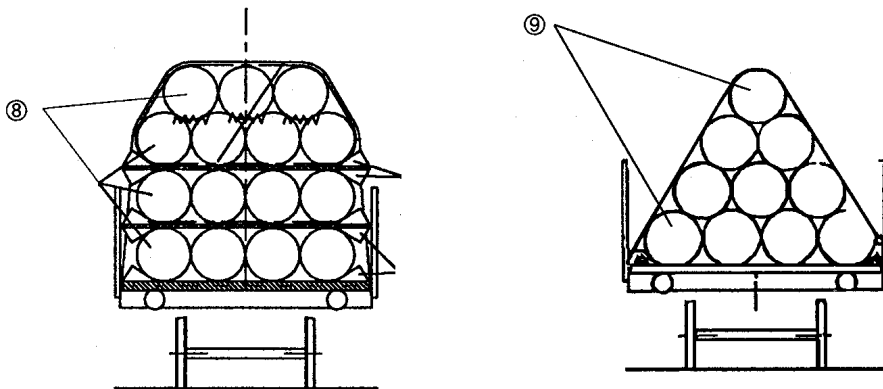


For stacks loaded on flat wagons and liable to sway laterally (e.g. metal trellis-work), the minimum horizontal clearances between the loading gauge and the load should be increased, as shown in tables 2.

- ⑥ In order to avoid loads tipping over crossways, as a general rule the height of stacks must not exceed their width, or else other appropriate measures must be taken to ensure stability against tipping.
- ⑦ For goods that are cubic in shape (e.g. crates or bound stacks of sawn timber), a further load unit may be placed in a central position on top of the load.



- ⑧ If the load is formed of pipes, the number of tiers must not exceed the number of pipes per tier; one dovetailed tier is permitted at the top of the load.
- ⑨ Where pipes are loaded in dovetailed tiers secured by scotches, no more than 4 tiers may be formed.



5.8.1 Timbers

Timbers must be made of suitable material and have an appropriate cross-section. They must generally be of a single piece and cover the full width of the load unit or the load. They must not be able to tip or roll. Hence timbers laid crosswise in the wagon must be rectangular in cross-section and rest on their broader face.

The following are acceptable:

- **for bearing purposes** (e.g. intermediate timbers for tiers of steel pipes): edge-sawn timber or planks as defined in standard EN 338, strength class C 24, sharp-edged, with thickness of at least 6 cm and a minimum cross-section according to the use in question;
- **for separation purposes** (e.g. intermediate timbers for continuous cast slabs): boards or battens, thickness¹⁾ according to use from approx. 2 cm upwards; at least 5 cm for timbers that are to accommodate nailed scotches.

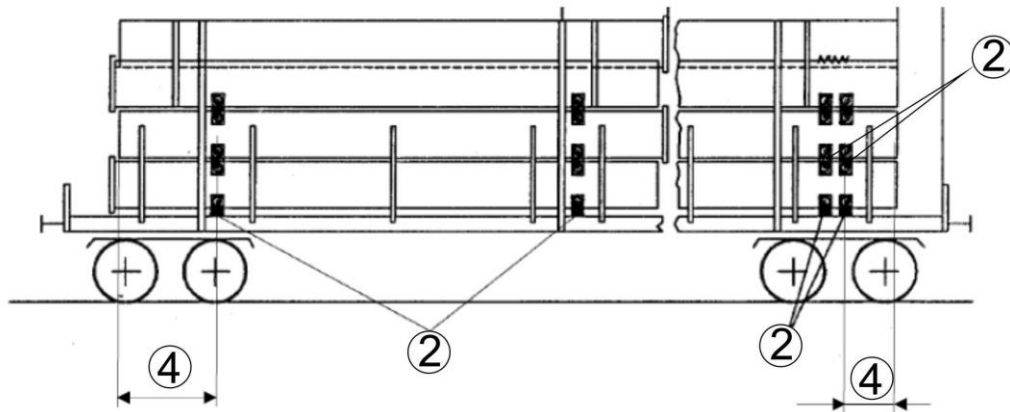
The number of timbers to be used will depend on the mass, length and nature of the goods.

For goods that are not liable to sag, use:

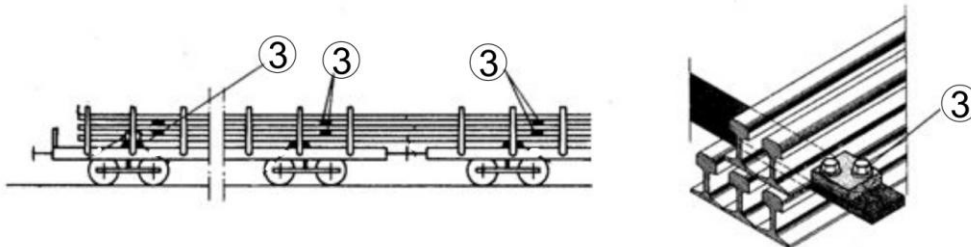
- ① - 2 supporting scotches **or**
- ② - 2x2 supporting scotches/**pairs** of timbers for extra-long or -heavy loads.

For flexible goods, use at least 4 timbers, spread evenly along the load.

For the loading of rails, the number of timbers and supporting scotches shall depend on the mass, length, consistency and means of loading of the rails.



- ③ Timbers that are placed across the wagon and are liable to slide, for example during the loading of rails or steel profiles, must be secured against movement. To prevent them from hitting the stanchions in the event of longitudinal movement of the goods, timbers should be placed approximately half-way between adjacent sets of stanchions.



- ④ The load protrudes past the scotches and timbers by at least:

50 cm		30 cm
	for goods with a rough surface:	
30 cm		20 cm

¹⁾ If, exceptionally, several pieces have to be placed one on top of another to obtain the desired thickness, the pieces must be firmly joined using nails, screws, etc.

5.8.2 Binding of goods

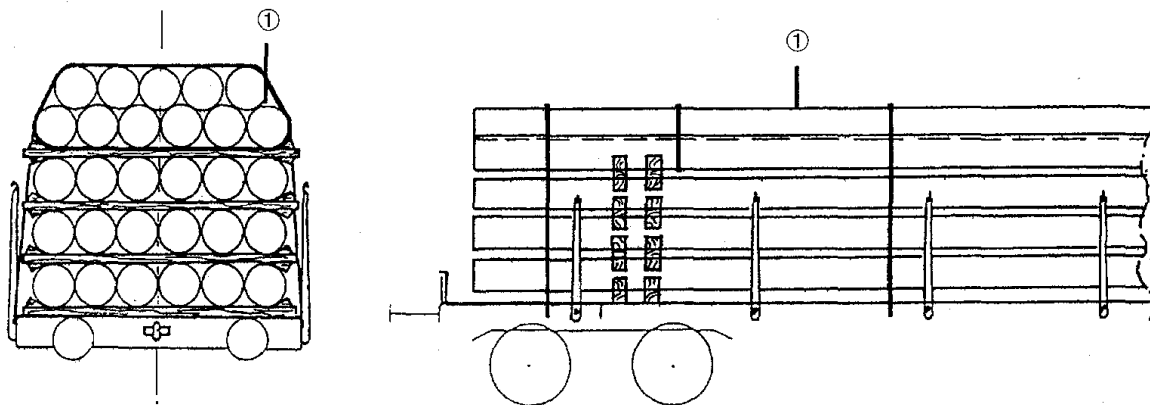
Stacked loads must be bound together using straps or steel strips (breaking strength depending on nature of goods from 1400 daN¹⁾ up to 4000 daN).

Goods that lie above the stanchions should be bound together with goods that are secured by the stanchions, if no other form of securing is possible.

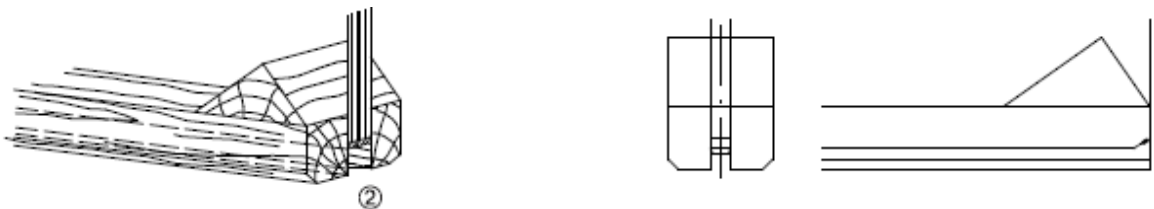
The number of bindings to be arranged evenly depends on the mass, the length and the nature of the goods. Each stack must have at least 2 bindings (see point 1.5).

- ① When stacks formed of cylindrical units are secured by scotches and protrude above the stanchions by more than half their diameter, bindings must always be provided as an additional means of securing.

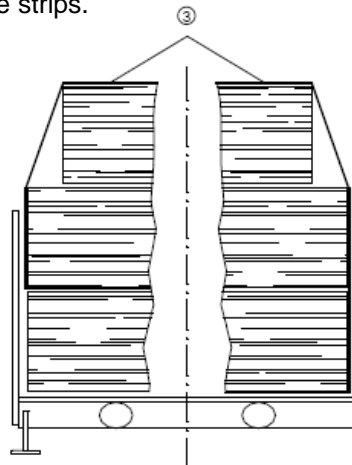
Cylindrical load units forming a dovetailed tier should be bound to the supporting tier.



- ② Where timbers are bound up with the load and laid across the wagon, the bindings should be made in a groove.



- ③ The use of steel strips for binding stacked packages of square-sawn timber, wooden boards and edge-sawn timber (formation of stacks) is not permitted due to the particular risk of accident posed by the potential tearing of the strips.



¹⁾ For low-density goods such as sawn timber, bindings with a breaking strength of 700 daN are permitted on an exceptional basis.

5.8.3 Securing

Stacks must be secured like individual objects both lengthways and crosswise in the wagon against movement, rolling off the wagon and tipping.

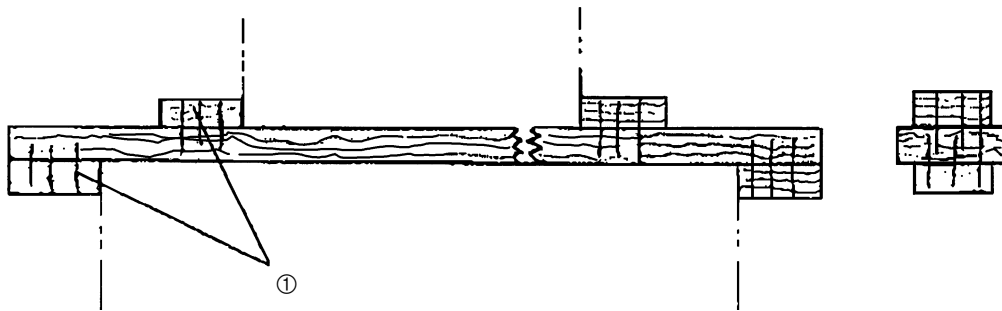
Depending on the type of goods, the provisions in sections 5.4, 5.5, 5.6 and 5.7 should be complied with.

Additional indications:

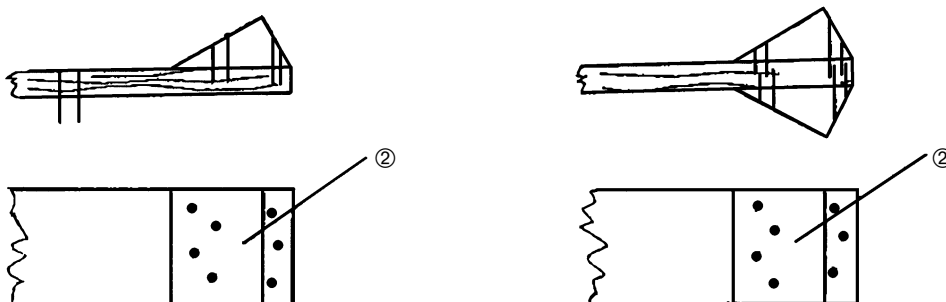
Where use is made of nailed timbers, guide-pieces or scotches, the load weight to consider when calculating the number of nails is as follows:

- for units stacked in tiers, the weight per tier, plus, as appropriate, the weight of one dovetailed tier,
- for dovetailed stacks, the weight of the whole stack.

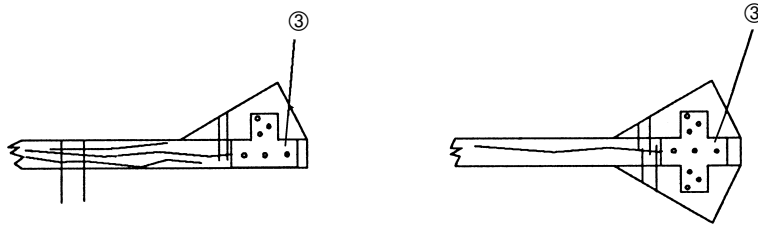
- ① Where load units arranged in tiers are to be secured against lateral movement, scotches should be fixed to the ends of the timbers to prevent their movement, not least in relation to the underlying tier. For this reason, the scotches must be attached to both the top and the bottom of the timber.



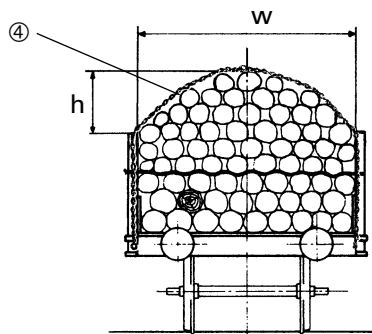
- ② When attaching scotches used for cylindrical goods (for example steel pipes), the scotches must be the same width as the timbers to provide sufficient width for nailing and to prevent the scotches from splitting. Scotches should be nailed from both inside and outside; to this end, the securing devices should be prepared prior to loading.



- ③ For cylindrical goods (for example steel pipes) that extend above the stanchions by more than half their diameter, the scotches must also be secured on both sides by steel connecting plates
- above the stanchions if the load is arranged in flat tiers
 - on the underlying timbers if the load is dovetailed
- ④ To make the indirect fastenings more effective, the upper profile of dovetailed stacks of cylindrical goods should be rounded. The height (h) of the rounded section should be at least 20 cm and no more than 1/3 of the width (w) of the load. Exceptions from this rule are permitted for pipes loaded in flat tiers with a single dovetailed tier.



cal goods should be rounded. The height (h) of the rounded section should be at least 20 cm and no more than 1/3 of the width (w) of the load. Exceptions from this rule are permitted for pipes loaded in flat tiers with a single dovetailed tier.



5.9 Goods loaded on several wagons

When goods are loaded on several wagons, a distinction should be made between

- rigid units (for example concrete beams) **and**
- flexible units¹⁾ (for example rails, steel rods for concrete, plastic pipes).

5.9.1 Rigid units

must be loaded on 2 bogie wagons with swivelling / sliding-swivelling bolsters. They must be transported as exceptional consignments (see section 7).

The goods (long goods, self-supporting goods) should be loaded on two flat bogie wagons of the same type by using a swivelling bolster, a sliding-swivelling bolster and, if necessary, an intermediate and/or guard wagon. If necessary the wagon sides and stanchions must be folded down.

The goods should be fixed to the wagon by means of the swivelling bolster. In addition the sliding-swivelling bolster enables the necessary longitudinal compensation between the goods and the wagon when negotiating curves as well as the longitudinal movement of the buffing and draw gear.

The swivelling / sliding-swivelling bolsters must, as far as possible, be placed in a central position within ± 1 m of the longitudinal axis of the vehicle, and must be secured sufficiently to withstand stresses likely to occur during transit. In case of an off-centre load, the maximum permitted load of the wagon (force application points) must be demonstrated through calculations or tests.

Concerning vibrations, the distance n_i/n_a is optimal at a ratio of 2.67:1. In principle this distance should be observed during loading.

The load must project above the swivelling bolsters by at least 1 m. For other load units (e.g. concrete sleepers), exemptions are granted when the contact points required by the design must be observed. In these cases the necessary measures must be taken to ensure the load unit cannot slide beyond the swivelling bolsters.

If so required by the shape of the goods, the swivelling / sliding-swivelling bolsters may be fitted with an additional device for the purpose of additional securing.

On straight track the centre of gravity of the load must be located between the swivelling / sliding/swivelling bolsters and above the longitudinal axis of the wagon.

Operating conditions

These consignments may not be subject to hump or fly shunting, nor may they collide with other vehicles that have been fly or hump shunted.

The transport units must be coupled in such a way that the buffers are in slight contact.

Trains including these transport units may not be pushed.

If the brake of a wagon forming part of a transport unit has to be isolated, the brakes on other wagons (carrier wagons, intermediate wagons and guard wagons) also have to be isolated.

5.9.2 Loading of flexible units

Flexible units may be loaded on several wagons with collapsible end boards, side boards or stanchions. On certain railways, units measuring over 36 m can be transported in block trains as standard consignments (see section 7).

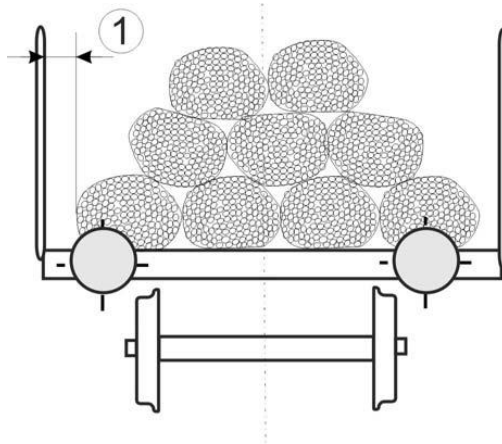
When loading flexible units:

- a vertical clearance of at least 50 mm must be left between the load and the folded end boards and/or the buffer heads
- the maximum load should be no more than
 - 75% for axle wagons
 - 85% for bogie wagonsof the applicable load limit on the line the train is running on.

¹⁾ A load is considered flexible if it can safely negotiate curves with a minimum radius R of 75 m.

For the distribution of the load, the provisions of section 3 should be observed.

- ① Flexible units bound into bundles (steel rods for concrete and similar goods) must not be loaded in more than 4 tiers, with a clearance of approx. 10 cm between the load units and the wagon sides or stanchions, to allow the load to settle.



The load must

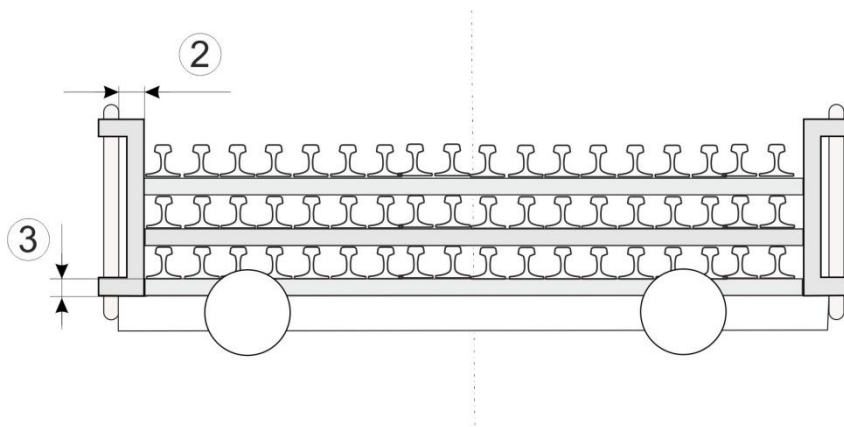
- be bound together with straps (breaking strength: 4,000 daN) or with wire (\varnothing 8 mm) between the wagons and, on wagons fitted only with stanchions, bound approx. 1 m from the ends of the load;
- be at least 50 cm clear of the ends of the loading surface;
- project by approx. 1m over the timbers at the ends.

Flexible load units that are not bound into bundles (rails and similar goods) must be loaded

- to a maximum of 4 tiers when up to 36 m in length **and**
- to a maximum of 3 tiers when longer than 36 m.

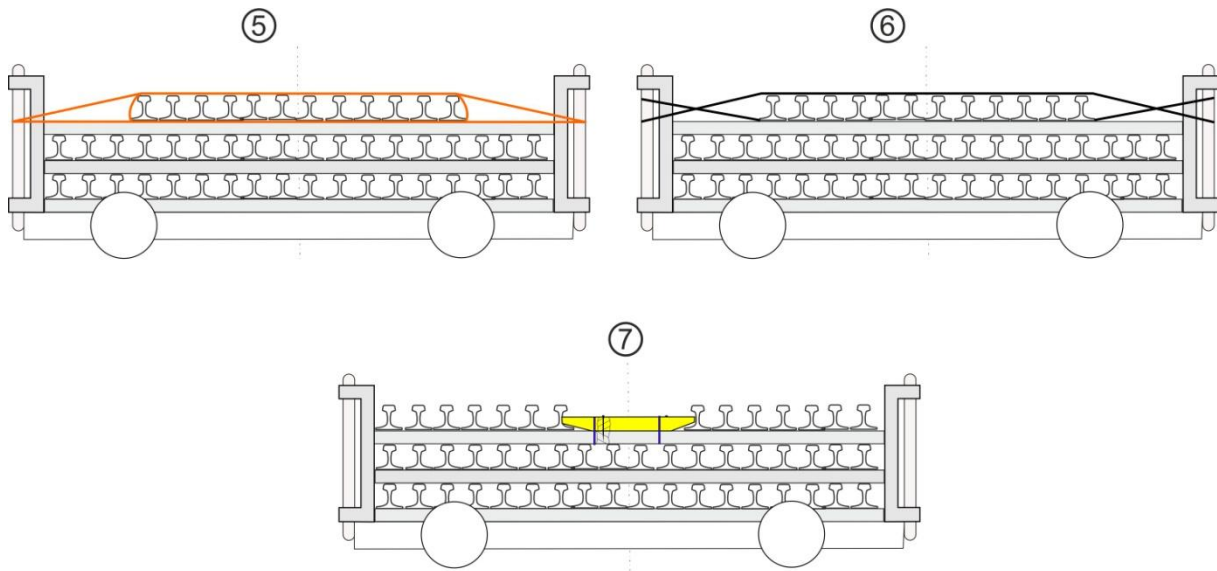
- ② The load units should be secured, e.g. using spacers at a distance of 1.5 to 3 m from the ends of the load. The spacers must be designed so as to maintain a clearance of approx. 10 cm from the wagon sides or stanchions. In addition, they must be firmly fixed to the stanchions.
- ③ Their lower edges must be at least 5 cm lower than the bearing level below the bottom tier of rails.

If timbers are used, they should be secured against movement as shown in section 5.8.1.



If the upper tier is not completely filled, it can be secured by means of:

- ⑤ straps tensioned in opposite directions in the vicinity of the spacers (breaking strength at least 4,000 daN) **or**
- ⑥ at least 2 wires (\varnothing 5 mm) in the vicinity of the spacers. The wires must also be secured to the facing stanchions, **or**
- ⑦ scotches nailed or screwed at the middle of the load to all the timbers and secured by at least two fastenings (minimum breaking strength: 700 daN, straight pull).



Clearances:

- depending on its length, the load must respect the following clearances from the ends of the loading surface on the end wagons:

Length of units	Minimum clearances
up to 36 m	50 cm
> 36 m up to 60 m	75 cm
> 60 m up to 90 m	100 cm
> 90 m up to 120 m	125 cm
> 120 m up to 180 m	150 cm

- and must project beyond the timbers at its ends by:
 - at least 100 cm for loads up to 36 m in length,
 - at least 150 cm for loads longer than 36 m.
 - at least 200 cm for loads longer than 150 m.

In view of the longitudinal movement that may occur during transit, movement in the clearance is permitted, provided that the load projects sufficiently beyond the final end timber on the facing side, i.e. by:

- at least 50 cm for rail lengths of up to 60 m
- at least 75 cm for rail lengths of more than 60 m

while complying with the rules set out in section 4.2.

6 Covering of loads

Goods should be covered

- in compliance with the RID, the tariffs and customs regulations applicable,
- for protection against the weather,
- to avoid them being blown away by the wind

6.1 Covering with sheets

Sheets should be made as per UIC Leaflet 806

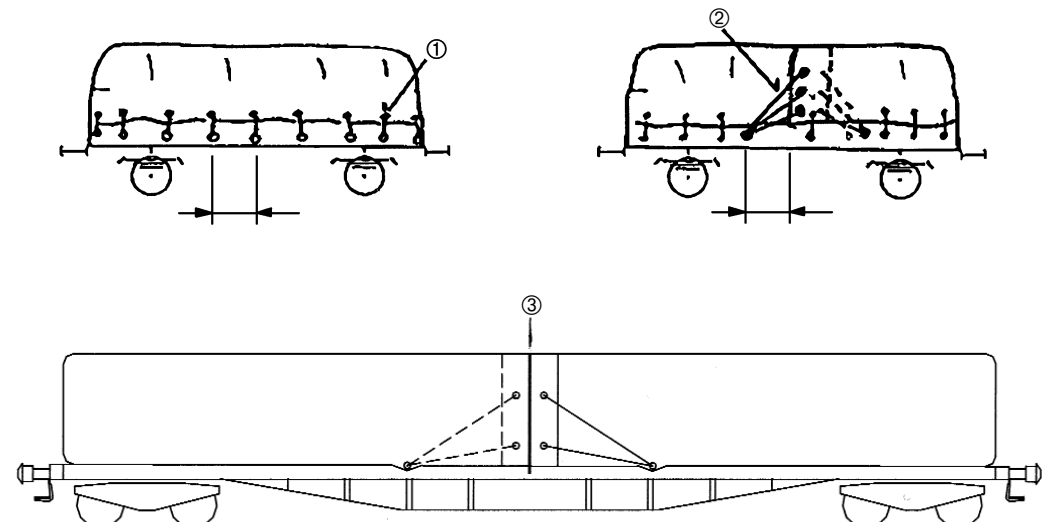
- of coated woven fabric,
- strong and fire-resistant,
- fitted with eyelets for securing purposes.

Placing the sheet on the load

- the owner's mark and the number of the wagon and of each sheet must be visible,
- when using the sliding method of loading, the sheets should be fixed directly to the load or to the sled,
- water must be able to run off the sheets, which should not sag (avoid puddles),
- when using several sheets, the ends should overlap by approx. 50 cm,
- when indirect fastenings are used, no metallic bindings should be applied to the sheets.

Attaching the sheets

- sheets must be tautly attached using non-metallic bindings (breaking strength approx. 5 kN) to each ring (eyelet) and to the rings and hooks on the wagon with double knots (to fixed wagon parts only); sheets must not be nailed in place,
- ① – each binding must be knotted to the closest sheeting ring (eyelet) on the wagon with a double knot,
 - ② – when using several sheets, each must be attached in the overlap zone using at least 3 oblique bindings on each side of the wagon.
 - ③ – if an eyelet is missing at the point where the sheets overlap, the third binding may be replaced by a fastening that encircles the whole sheet



6.2 Covering with wire meshing or netting

Material

- Wire meshing (chicken wire) with a mesh size of up to 100 mm,
- Netting made of synthetic or natural fibres with a mesh size of up to 30 mm¹⁾.

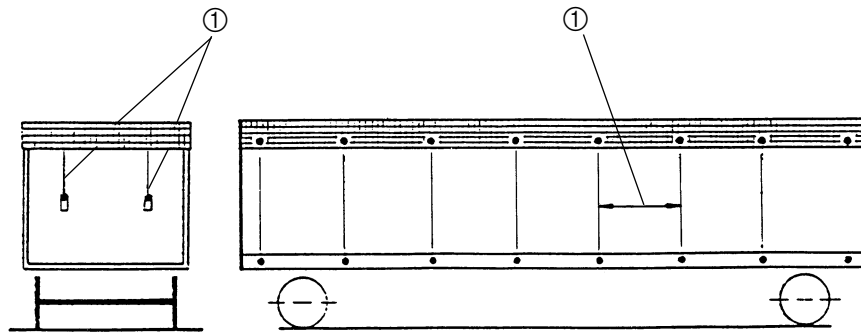
Attaching the cover

- ① – covers should be attached with non-metallic bindings approx. every 2 m, with at least 2 bindings at the wagon end (breaking strength: approx. 50 daN)

Chicken wire may also be attached with wire

- knotted to the netting or mesh or
- bound over the top of the covering

- attached tightly to the wagon hooks



1) breaking strength lengthways 39 daN at least and crosswise 48 daN at least (test sample 10 cm wide, 3 threads)

7 Exceptional consignments

A consignment is considered an exceptional consignment when it occasions particular difficulties for the fixed installations or the wagons of one of the railways/RUs used as a result of its outer dimensions, its weight or its nature and can therefore only be forwarded subject to specific technical or operational conditions.

In particular the following consignments must be considered exceptional:

- loads which are not secured in accordance with volumes 1 or 2 of the Loading Guidelines and for which there are no equivalent alternative securing arrangements, e.g. in accordance with information sheets published on pink or yellow paper (see section 1.2),
- loads which, as a result of the width restrictions imposed, encroach the loading gauge prescribed under section 4.1 for the line in question,
- rigid load units carried on 2 or more wagons with swivelling / sliding-swivelling bolsters (see 5.9.1),
- flexible load units over 36 m long loaded on several wagons without a swivelling bolster (see 5.9.2), see¹⁾
- units that must be transhipped in order to be forwarded to the destination station when they weigh over 25 t and / or are carried on low-loader wagons (only applicable in case of transshipment on railways with different gauges),
- consignments that must be carried by ferry and which do not comply with GCU²⁾ Appendix 14,
- railway vehicles running on their own wheels, covered by a contract of carriage and not bearing the TEN sign in connection with the G1, TEN-RIV, RIV or RIC symbol or the derogation plate,
- wagons with more than 8 axles when loaded, even when they bear the RIV marking or one of the interoperability markings,
- wagons forwarded past their overhaul date as per GCU Appendix 9, Annex 8,
- vehicles whose loads exceed the permissible load limit of the lines used,
- vehicles loaded in excess of the maximum load limit indicated (load limit box / additional box), up to the maximum bearing capacity allowed by their design,
- vehicles without an indicated payload, e.g. construction vehicles,
- vehicles loaded without indication of the load limits,
- vehicles running on their own wheels with technical specificities (motive power units, multiple units, tram vehicles, construction vehicles) whose carriage requires specific operating measures.

Exceptional consignments may only be accepted under the special conditions agreed on beforehand between RUs / IMs / railways.

¹⁾ For BDZ, EWS, GySEV, FS, HZ, MZ, ZFBH, ZRS, ZS, ÖBB, PKP, ADIF, GC, SNCB, SNCF, SZ and TCDD, load units of more than 36 m in length are considered exceptional consignments, even when forwarded in block trains.

²⁾ General Contract of Use for wagons

List of the loading gauges

Table 1

List of loading gauges

Name of Railway Undertaking	Abbreviation	Country code	Table
International loading gauges			1 ₁
Loading gauge (UIC) GA			1 ₂
Loading gauge (UIC) GB			1 ₃
Finnish Railways	VR	10	1 ₂ , 1 ₃ , 1 ₅
Lithuanian Railways	LG	24	1 ₄
Albanian Railways	HSB	41	1 ₂ , 1 ₃ , 1 ₄
Raab-Oedenburg-Ebenfurt-Railway	GySEV	43	1 ₂ , 1 ₃ , 1 ₄
Srpska Republic Railways	ZRS	44	1 ₂ , 1 ₃ , 1 ₄
Railways of the Bosnia-Herzegovina Federation	ZFBH	50	1 ₂ , 1 ₃ , 1 ₄
Polish State Railways	PKP	51	1 ₄
Bulgarian State Railways	BDZ	52	1 ₂ , 1 ₃ , 1 ₄
Romanian Railways	CFR	53	1 ₄
Grup feroviar roman	RO-GFR	53	1 ₄
Servtrans Invest	RO STI	53	1 ₄
Czech Cargo Railways (formerly CD)	CDC	54	1 ₂ , 1 ₃ , 1 ₄
Railcargo Hungaria (formerly MAV)	RCH	55	1 ₂ , 1 ₃ , 1 ₄
Slovakian Cargo Railway Company S.A (formerly ZSSK)	ZSSKC	56	1 ₂ , 1 ₃ , 1 ₄
Lötschberg Railways	BLS	63	1 ₆
Nord-Milano Esercizio Railways	FNME	64	1 ₂ , 1 ₇
Former Yugoslav Republic of Macedonia Railways	MZ	65	1 ₂ , 1 ₃ , 1 ₄
Ahaus-Alstätter Railways	AAE	68	1 ₂ , 1 ₄
English, Welsh and Scottish Railway International	EWS	70	1 ₈
Spanish State Railways	RENFE	71	1 ₂ , 1 ₉
Serbian Railways (formerly JZ)	ZS	72	1 ₂ , 1 ₃ , 1 ₄
Hellenic Railways (formerly CH)	TRANOSE	73	1 ₂ , 1 ₃ , 1 ₄
Green Cargo AB	GC	74	1 ₂ , 1 ₃ , 1 ₁₀ , 1 ₁₁
Turkish Republic State Railways	TCDD	75	1 ₄ , 1 ₁₂ , 1 ₁₃ , 1 ₁₄
Cargonet	C	76	1 ₂ , 1 ₃ , 1 ₁₅
Croatian Railways	HZ	78	1 ₂ , 1 ₃ , 1 ₄
Slovenian Railways	SZ	79	1 ₂ , 1 ₃ , 1 ₄
DB Schenker Rail	DB	80	1 ₂ , 1 ₃ , 1 ₄
Rail Cargo Austria	ÖBB	81	1 ₂ , 1 ₄
Luxembourg Railways	CFL	82	1 ₂ , 1 ₃ , 1 ₄
Trenitalia	FS	83	1 ₇
Railion Nederland	NL-RN	84	1 ₂ , 1 ₄
Swiss Federal Railways / CFF Cargo	SBB/CFF	85	1 ₆
Railion Danmark	DSB	86	1 ₂ , 1 ₃ , 1 ₄
French National Railways	SNCF	87	1 ₁ , 1 ₂ , 1 ₃ , 1 ₁₈
Belgian National Railways / B-Cargo	B	88	1 ₂ , 1 ₁₆
Portuguese Railways	CP	94	1 ₂ , 1 ₉
Iranian State Railways	RAI	96	1 ₁₇
Syrian Railways	CFS	97	1 ₂ , 1 ₃ , 1 ₄
Iraqi Railways	IRR	99	1 ₄

Table 11

International loading gauge

For **all lines** except the lines in

- Great Britain (table 18),
- Iran (table 117).

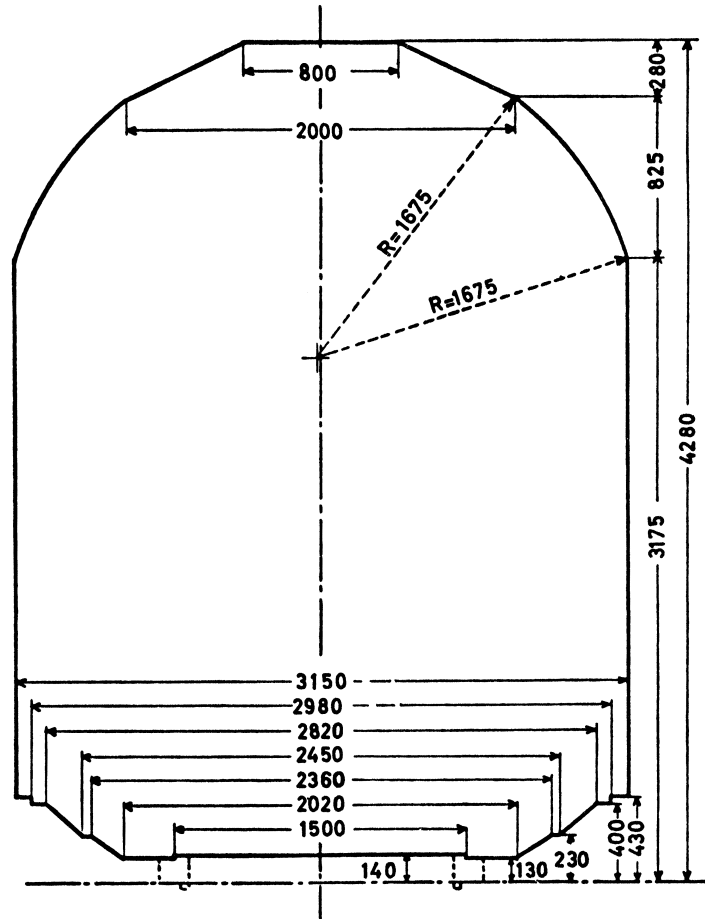


Table 11

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 450	1 461	3 750	1 260	4 050	893
430 } 3 175 }	1 575	460	1 456	760	1 252	060	871
180	1 573	470	1 450	770	1 243	070	850
190	1 570	480	1 445	780	1 234	080	829
		490	1 439	790	1 226	090	807
3 200	1 567	3 500	1 434	3 800	1 217	4 100	786
210	1 563	510	1 428	810	1 207	110	764
220	1 560	520	1 422	820	1 198	120	743
230	1 557	530	1 416	830	1 189	130	721
240	1 553	540	1 410	840	1 179	140	700
3 250	1 549	3 550	1 404	3 850	1 169	4 150	679
260	1 546	560	1 398	860	1 159	160	657
270	1 542	570	1 392	870	1 149	170	636
280	1 538	580	1 385	880	1 139	180	614
290	1 534	590	1 379	890	1 128	190	593
3 300	1 530	3 600	1 372	3 900	1 118	4 200	571
310	1 526	610	1 366	910	1 107	210	550
320	1 522	620	1 359	920	1 096	220	529
330	1 518	630	1 352	930	1 085	230	507
340	1 513	640	1 345	940	1 073	240	486
3 350	1 509	3 650	1 338	3 950	1 062	4 250	464
360	1 505	660	1 331	960	1 050	260	443
370	1 500	670	1 323	970	1 038	270	421
380	1 495	680	1 316	980	1 025	4 280	400
390	1 491	690	1 308	990	1 013		
3 400	1 486	3 700	1 301	4 000	1 000		
410	1 481	710	1 293	010	979		
420	1 476	720	1 285	020	957		
430	1 471	730	1 277	030	936		
440	1 466	740	1 269	040	914		
3 450	1 461	3 750	1 260	4 050	893		

Table 12

Loading gauge (UIC) GA

For a list of Railway Undertakings accepting this gauge, see pages T12-3 to T12-5

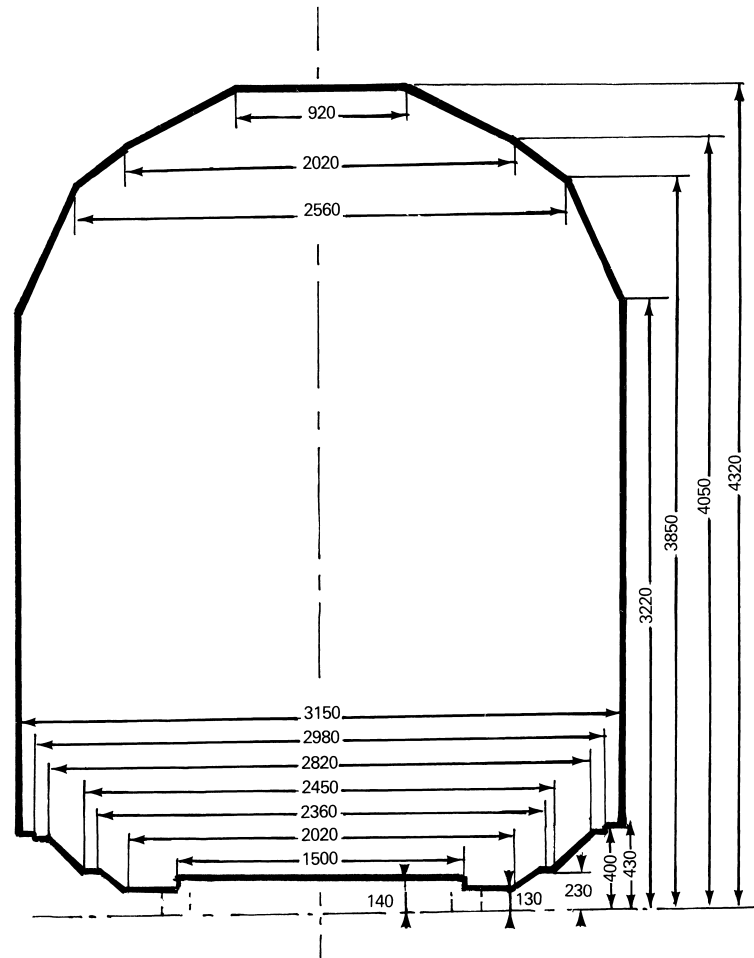


Table 12

Half-widths of the gauge (UIC) GA

Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm
		3 450	1 467	3 750	1 326	4 050	1 010
430	1 575	460	1 462	760	1 322	060	989
		470	1 457	770	1 317	070	969
		480	1 453	780	1 312	080	948
		490	1 448	790	1 308	090	928
		3 500	1 443	3 800	1 303	4 100	908
3 220	1 570	510	1 439	810	1 298	110	887
230		520	1 434	820	1 294	120	867
240		530	1 429	830	1 289	130	847
3 250		540	1 425	840	1 284	140	826
	1 560	3 550	1 420	3 850	1 280	4 150	806
260	1 556	560	1 415	860	1 266	160	785
270	1 551	570	1 411	870	1 253	170	765
280	1 546	580	1 406	880	1 239	180	745
290	1 542	590	1 401	890	1 224	190	724
3 300	1 537	3 600	1 397	3 900	1 212	4 200	704
310	1 532	610	1 392	910	1 199	210	684
320	1 528	620	1 387	920	1 185	220	663
330	1 523	630	1 383	930	1 172	230	643
340	1 518	640	1 378	940	1 158	240	622
3 350	1 514	3 650	1 373	3 950	1 145	4 250	602
360	1 509	660	1 368	960	1 131	260	582
370	1 504	670	1 364	970	1 118	270	561
380	1 500	680	1 359	980	1 104	280	541
390	1 495	690	1 354	990	1 091	290	521
3 400	1 490	3 700	1 350	4 000	1 077	4 300	500
410	1 485	710	1 345	010	1 064	310	480
420	1 481	720	1 340	020	1 050	4 320	460
430	1 476	730	1 336	030	1 037		
440	1 471	740	1 331	040	1 023		
3 450	1 467	3 750	1 326	4 050	1 010		

Table 12

List of Railway Undertakings accepting the (UIC) GA loading gauge

VR

Transit lines: all
Stations: all

HSH

Stations: all

GySEV

Transit lines: all
Stations: all

ŽRS

Transit lines: all

ŽFBH

Transit lines: all
Stations: all

BDŽ

Transit lines: all
Stations: all

ČD

Transit lines: all
Stations: all

MÁV

Transit lines: all
Stations: all

ŽSSK (ŽSR)

Transit lines: all
Stations: all

FNME

Transit lines: all
Stations: all

MŽ

Transit lines: all
Stations: all

AAE

Transit lines: all
Stations: all

RENFE

Transit lines: all
Stations: all

JŽ

Transit lines: all
Stations: all

CH

Transit lines: all
Stations: all

GC (SJ)

Transit lines: all
Stations: all

C (NSB)

Transit lines: all
Stations: all

HŽ

Transit lines: all
Stations: all

SŽ

Transit lines: all
Stations: all

DB

Transit lines: all
Stations: all

ÖBB

Transit lines: all
Stations: all

CFL

Transit lines: all
stations: all

NS

Transit lines: all
Stations: all

DSB

Transit lines: all
Stations: all

Table 12

SNCF

Transit lines: all

Stations: all, with the exception of the following stations:

AMPLEPUIIS, AUREC, BAS-MONISTROL, BASTIDE-ST-LAURENT (LA), BEGAAR, BEL-AIR-LA-MEDE, BILLOM, BOËNS, BRIVES-CHARENAC, CABANNES, CANDALE, CAPDENAC, CHALON-SUR-SAONE (PORT NORD), CHAMALIERES-SUR-LOIRE, CHAMBON-FEUGEROLLES (LE), CHARBONNIERES-LES-VARENNES, CHATEAUNEUF-LES-MARTIGUES, CHATEAURENARD-DE-PROVENCE, CLAVAUUX (LES), COLOMBIERS-RD, COURZIEU-BRUSSIEU, DECINES, DEVILLE-LES-ROUEN, DRAP-CANTARON, FIRMINY, FONT-VIEILLE, FRAISSE-UNIEUX, GRAND-COMBE-LA-PISE, LANGEAC, LANGOGNE, LESGOR, LIPOSTHEY, LYON-EST, MACON (PORT FLUVIAL), MALBOSC, MAURS, MESSEMPRE, MILLERY-MONTAGNY, NOIRETABLE, NOVES, OYONNAX, PLAN-D'ORGON, PUY-EN-VELAY (LE), RICAMARIE (LA), RIOUPEYROUX, SAINT-AMBROIX, SAINT-ANDIOL, TAMARIS, TARTAS, VIERZY, VIF, VILLEURBANNE, VILLEURBANNE-GARAGE, VIZILLE-TERRASSE, YCHOUX.

The loading gauge given in Table 11 is applicable for these stations.

SNCB

Transit lines: all

Stations: all, with the exception of the following stations:

BEIGNÉE, BERZÉE, COUR-SUR-HEURE, COUVIN, HAM-SUR-HEURE, JAMIOULX, MARIEMBOURG, PHILIPPEVILLE, PRY, WALCOURT and YVES-GOMEZÉE.

The loading gauge given in Table 11 is applicable for these stations.

CP

Stations: all

CFS

Transit lines: all

Stations: all

Table 13

Loading gauge (UIC) GB

For a list of Railway Undertakings accepting this gauge, see pages T13-3 to T13-5

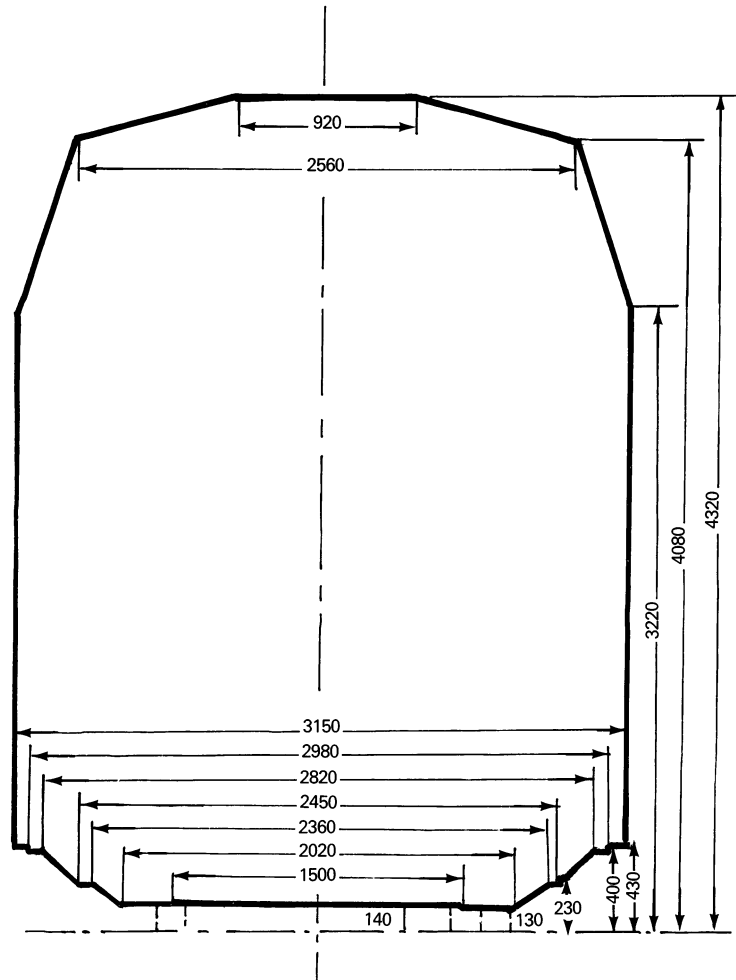


Table 13

Half-widths of the (UIC) GB gauge

Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm	Height above rail level mm	Corresponding half width mm	
		3 450	1 496	3 750	1 393	4 050	1 290	
430	1 575	460	1 492	760	1 389	060	1 286	
		470	1 489	770	1 386	070	1 283	
		480	1 485	780	1 382	080	1 280	
		490	1 482	790	1 379	090	1 245	
		3 500	1 478	3 800	1 376	4 100	1 211	
3 220	1 571	510	1 475	810	1 372	110	1 177	
230		520	1 472	820	1 369	120	1 143	
240		1 568	530	1 468	830	1 365	130	1 109
3 250		1 564	540	1 465	840	1 362	140	1 075
		3 550	1 461	3 850	1 358	4 150	1 040	
260	1 561	560	1 458	860	1 355	160	1 006	
270	1 557	570	1 454	870	1 352	170	972	
280	1 554	580	1 451	880	1 348	180	938	
290	1 550	590	1 448	890	1 345	190	904	
3 300	1 547	3 600	1 444	3 900	1 341	4 200	870	
310	1 544	610	1 441	910	1 338	210	835	
320	1 540	620	1 437	920	1 334	220	801	
330	1 537	630	1 434	930	1 331	230	767	
340	1 533	640	1 430	940	1 328	240	733	
3 350	1 530	3 650	1 427	3 950	1 325	4 250	699	
360	1 526	660	1 424	960	1 321	260	665	
370	1 523	670	1 420	970	1 317	270	630	
380	1 520	680	1 417	980	1 314	280	596	
390	1 516	690	1 413	990	1 310	290	562	
3 400	1 513	3 700	1 410	4 000	1 307	4 300	528	
410	1 509	710	1 406	010	1 304	310	494	
420	1 506	720	1 403	020	1 300	4 320	460	
430	1 502	730	1 400	030	1 297			
440	1 499	740	1 396	040	1 293			
3 450	1 496	3 750	1 393	4 050	1 290			

Tableau 13

List of railway undertakings accepting the (UIC) GB loading gauge

VR, GySEV, ŽRS, ŽFBH, CDC, RCH, MŽ, SŽ, DSB, CFS

Transit lines: all

Stations: all

HSH

Stations: all

BDŽ

Transit lines: all

Stations: all except

BOROUGHTITZA, CHICHKOVITZI, DEBELETZ, GABROVO, GUECHEVO, KJUSTENDIL, KOPILOVTZI, KRASETZ, PLATCHKOVITZI, RADEVITZI, RADOUNTZI, RAJDAVITZA, SAMOVODENE, SOKOLOVO, VARBANOVO, VELIKO, TRAPEZITZA, TRIAVNA

ŽSSKC

Transit lines: all

Stations: all except

BANSKA BELA, BANSKA STIAVNICA, KREMNICA, KREMNICKE BANE

ŽS

Transit lines: all except

VALJEVO-KALENIC and GRLICA-DJENERAL JANKOVIC

Stations: all

TRANOSE

Transit lines:

IDOMENI-MESSONISSION, IDOMENI-PROMACHON, MESSONISSION-PROMACHON, ORMENION-PITHION

Stations:

Via IDOMENI, MESSONISSION and PROMACHON:

ADENDRON, AGRAS, ALEXANDRIA, ALIKI, AMINTEON, ANCHIALOS MAC., ARMENION, ARNISSA, ASPROS, DOIRANI, DOMOKOS, DOXARAS, EDESSA, EGHINION-KOLINDROS, EPISKOPI, FILADELPHIA, FLORINA, GALIKOS, GHEFIRA, GIRTONI, IDOMENI, KALINDIA, KASTANAS, KASTANOUSSA, KATERINI, KILKIS, KOMANOS, KAZANI, KRANON, LACHA-NOKIPI, LAKIA, LARISSA, LATOMION, LEPTOKARIA, LITOKHORON, MANDRAKION, MAVRODENDRION, MESSONISSION, METALLIKO, MOURIES, NAOUSSA, N. AGATHOU-POLIS, ORFANA, PALEOFARSALOS, PLATAMON, PLATI, POLIKASTRON, PROMACHON, PTOLEMAIS, RAPSANI, RODOPOLIS, SERRE, SIDIROKASTRO, SINDOS, SKIDRA, SKOTOUSSA, STRIMON, TEMPI, THESSALONIKI, VELESTINON, VERIA, VEVI, VIRONIA, VOLOS, XECHASMENI.

Via ORMENION and PITHION:

ALEXANDROUPOLIS, CHIMONION, DIDIMOTICHON, DIKEA, FERE, LAGHINA, LAVARA, N. ORESTIAS, N. VISSA, ORMENION, PEPLOS, PITHION, SOUFLION, TICHERON

GC

Transit lines:

HELSINGBORG-CHARLOTTENBERG, HELSINGBORG-HAPARANDA, HELSINGBORG-KORNSJOE, HELSINGBORG-STORLIEN, TRELLEBORG-CHARLOTTENBERG, TRELLEBORG-HAPARANDA, TRELLEBORG-KORNSJOE, TRELLEBORG-STORLIEN

Stations: all except

ABISKO OESTRA, BJOERKLIDEN, HENRIKSDAL, NACKA, NEGLINGE, SALTSJOEBADEN, SALTSJOEDUVNAES, SALTSJOEJAERLA, STORAENGEN, VASSIJAURE

C (NSB)

Transit lines: all

Stations: all except ARENDAL

Tableau 13

HŽ

Transit lines: all

Stations: all except

KASTEL STARI, KASTEL SUCURAC, SADINE, SOLIN LUKA, SPLIT, SPLIT PREDGRADE

CFL

Transit lines:

BETTEMBOURG-KLEINBETTINGEN, WASSERBILLIG-RODANGE/ATHUS.

Stations: all except

BELLAIN, BISSEN, CLERVAUX, COLMAR-BERG, COLMAR-USINES, CRUCHTEN, DIEKIRCH, DOMMELDANGE, DRAUFFELT, ETTTELBRUCK, GOEBELSMUEHLE, KAUTENBACH, LINTGEN, LORENTZWEILLER, MAULUSMUEHLE, MERSCH, MICHELAU, SCHIEREN, TROISVIERGES, WALFERDANGE, WILNERWILTZ

SNCF

See table 118

Table 13

CFL

Transit lines:

BETTEMBOURG-KLEINBETTINGEN, WASSERBILLIG-RODANGE/ATHUS.

Stations: all, with the exception of

BELLAIN, BISSEN, CLERVAUX, COLMAR-BERG, COLMAR-USINES, CRUCHTEN, DIEKIRCH, DOMMELDANGE, DRAUFFELT, ETTTELBRUCK, GOBELSMUEHLE, KAUTENBACH, LINTGEN, LORENTZWEILLER, MAULUSMUEHLE, MERSCH, MICHELAU, SCHIEREN, TROISVIERGES, WALFERDANGE, WILNERWILTZ

DSB

Transit lines: all

Stations: all

SNCF

See Table 118

CFS

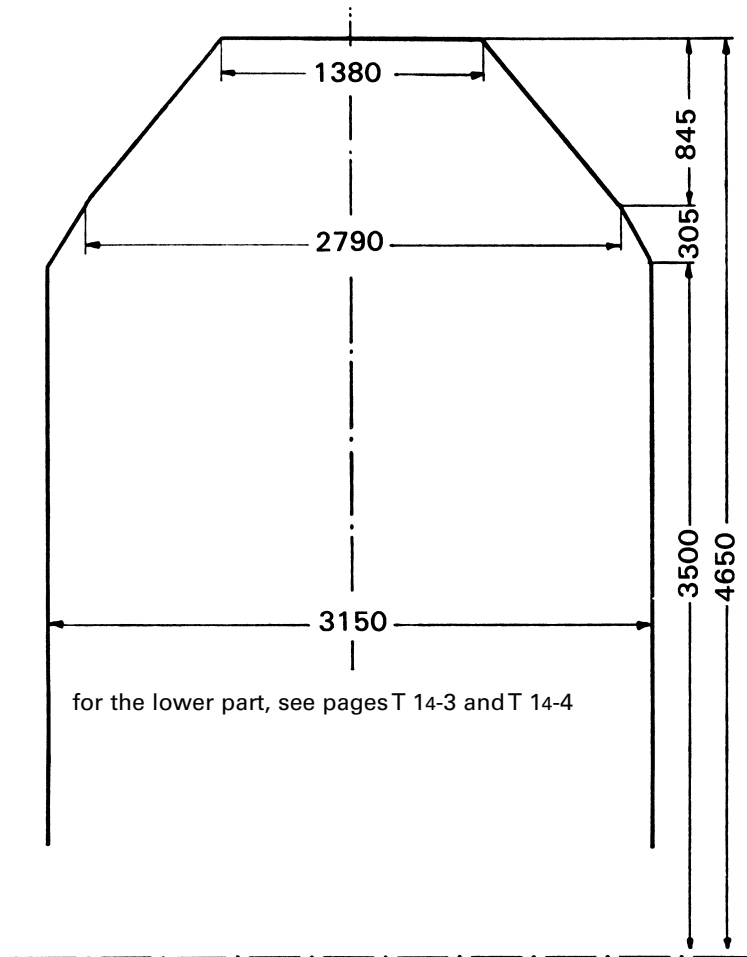
Transit lines: all

Stations: all

Table 14

Loading gauge accepted by

LG, HSH, GySEV, ŽRS, ŽFBH, PKP, BDŽ, CFR, ČD, MÁV¹⁾, ŽSSK (ŽSR), MŽ, AAE, JŽ, CH, TCDD²⁾, |
HŽ, SŽ, DB, ÖBB, CFL, NS, DSB, CFS, IRR



With the exception of the following stations:

1) **MÁV** : BUDAPEST-DELI-PU

The loading gauge given in Table 11 is applicable for this destination station.

2) **TCDD** : KAPIKULE, EDIRNE, ALPULLU, LULEBURGAZ, MURATLI, CORLU, CERKEZKOY, HALKALI, KAPIKOY, VAN

The loading gauges given in Tables 112 or 113 or 114 are applicable for these destination stations.

Table 14

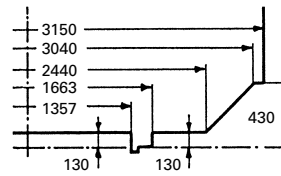
Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 800	1 398	4 100	1 149	4 400	899
430 } 3 500 }	1 575	805	1 395	–	–	–	–
510	1 569	810	1 391	110	1 141	410	890
520	1 563	820	1 382	120	1 132	420	882
530	1 557	830	1 374	130	1 124	430	874
540	1 551	840	1 366	140	1 116	440	865
3 550	1 545	3 850	1 357	4 150	1 107	4 450	857
560	1 540	860	1 349	160	1 099	460	849
570	1 534	870	1 341	170	1 090	470	840
580	1 528	880	1 332	180	1 082	480	832
590	1 522	890	1 324	190	1 074	490	823
3 600	1 516	3 900	1 316	4 200	1 065	4 500	815
610	1 510	910	1 307	210	1 057	510	807
620	1 504	920	1 299	220	1 049	520	798
630	1 498	930	1 291	230	1 040	530	790
640	1 492	940	1 282	240	1 032	540	782
3 650	1 486	3 950	1 274	4 250	1 024	4 550	773
660	1 481	960	1 266	260	1 015	560	765
670	1 475	970	1 257	270	1 007	570	757
680	1 469	980	1 249	280	999	580	748
690	1 463	990	1 241	290	990	590	740
3 700	1 457	4 000	1 232	4 300	982	4 600	732
710	1 451	010	1 224	310	974	610	723
720	1 445	020	1 216	320	965	620	715
730	1 439	030	1 207	330	957	630	707
740	1 433	040	1 199	340	949	640	698
750	1 427	4 050	1 191	4 350	940	4 650	690
760	1 422	060	1 182	360	932		
770	1 416	070	1 174	370	924		
780	1 410	080	1 166	380	915		
790	1 404	090	1 157	390	907		
3 800	1 398	4 100	1 149	4 400	899		

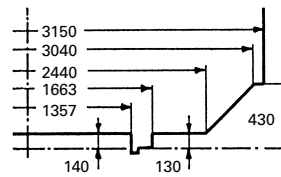
Table 14

Lower part of the loading gauge of Railway Undertakings

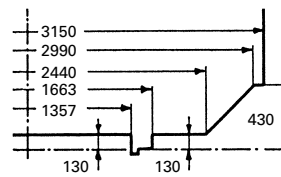
GySEV, CFR, MÁV, ÖBB, CFL, DSB



BDŽ, ČD, ŽSSK (ŽSR), AAE, DB



LG, PKP, NS, IRR



ŽRS, ŽFBH, MŽ, JŽ, HŽ, SŽ

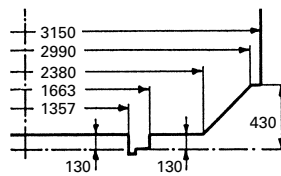
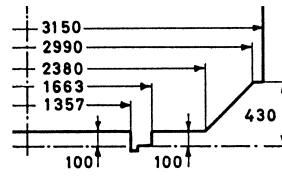
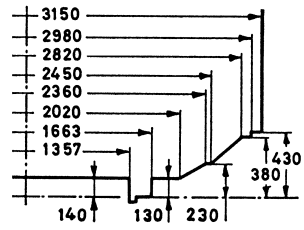


Table 14

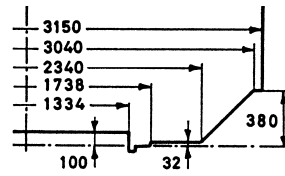
CH



TCDD



CFS



HSH

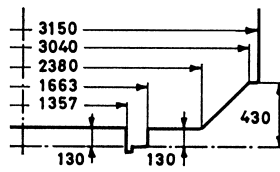


Table 15

Loading gauge accepted by VR

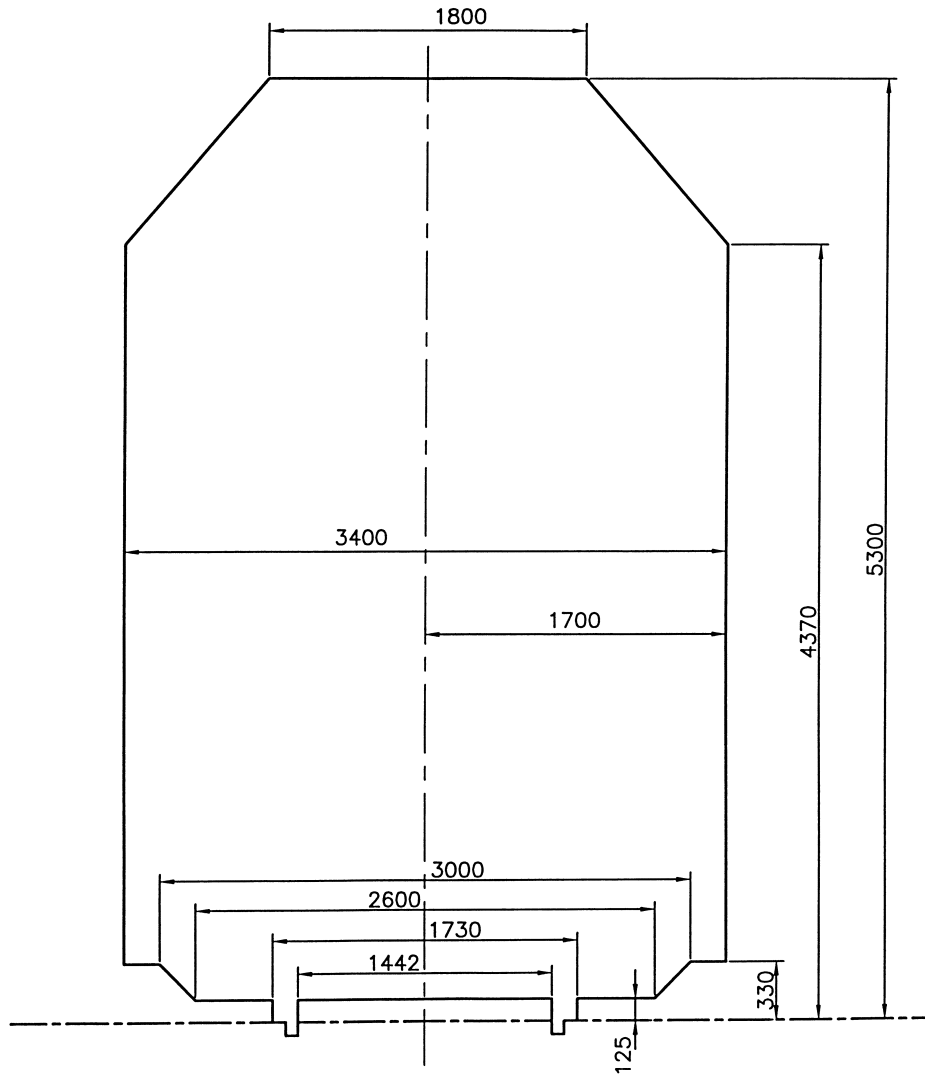


Table 15

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
330 } 4 370 } 4 380 } 4 390 }	1 700 1 691 1 683	–	–	–	–
4 400	1 674	4 700	1 416	5 000	1 158
410 420 430 440 4 450	1 666 1 657 1 648 1 640 1 631	710 720 730 740 4 750	1 408 1 399 1 390 1 382 1 373	010 020 030 040 5 050	1 149 1 141 1 132 1 124 1 115
460 470 480 490	1 623 1 614 1 605 1 597	760 770 780 790	1 365 1 356 1 347 1 339	060 070 080 090	1 106 1 098 1 089 1 081
4 500	1 588	4 800	1 330	5 100	1 072
510 520 530 540 4 550	1 580 1 571 1 562 1 554 1 545	810 820 830 840 4 850	1 322 1 313 1 304 1 296 1 287	110 120 130 140 5 150	1 063 1 055 1 046 1 038 1 029
560 570 580 590	1 537 1 528 1 519 1 511	860 870 880 890	1 278 1 270 1 261 1 253	160 170 180 190	1 020 1 012 1 003 995
4 600	1 500	4 900	1 244	5 200	986
610 620 630 640 4 650	1 494 1 485 1 476 1 468 1 459	910 920 930 940 4 950	1 235 1 227 1 218 1 210 1 201	210 220 230 240 5 250	977 969 960 952 943
660 670 680 690	1 451 1 442 1 433 1 425	960 970 980 990	1 192 1 184 1 175 1 167	260 270 280 290	934 926 917 909
–	–	–	–	5 300	900

Table 16

Loading gauge accepted by

BLS
SBB / CFF

I

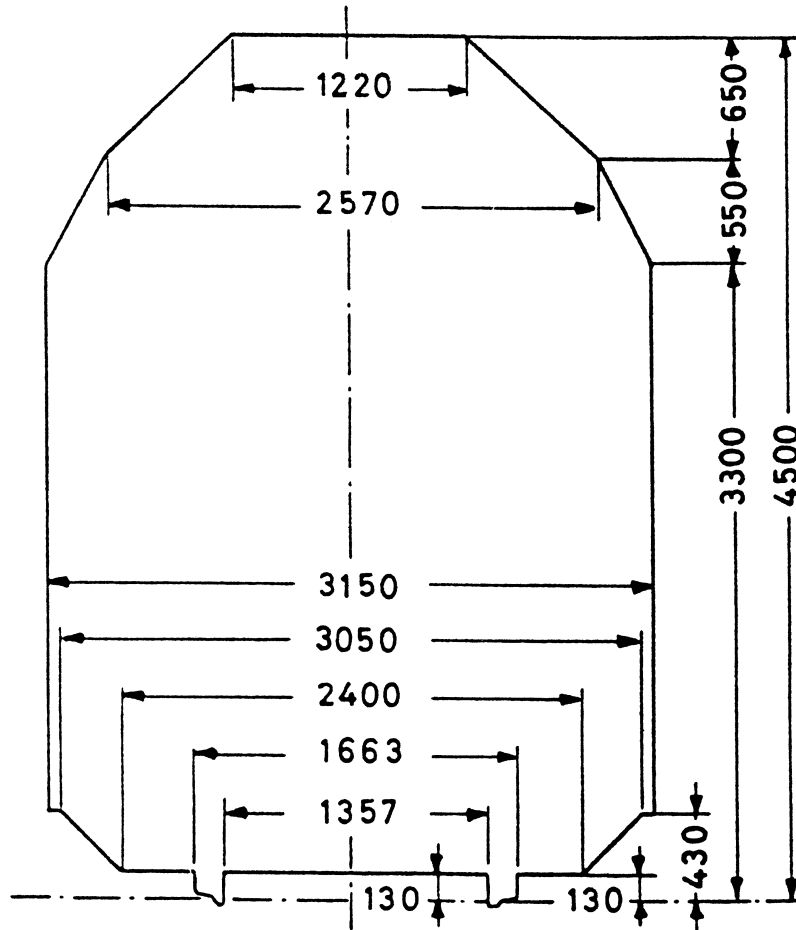


Table 16

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
3 300	1 575	3 600	1 417	3 900	1 233	4 200	922
310	1 570	610	1 412	910	1 223	210	911
320	1 565	620	1 406	920	1 212	220	901
330	1 559	630	1 401	930	1 202	230	890
340	1 554	640	1 396	940	1 192	240	880
3 350	1 549	3 650	1 390	3 950	1 181	4 250	870
360	1 543	660	1 385	960	1 171	260	859
370	1 538	670	1 380	970	1 160	270	849
380	1 533	680	1 375	980	1 150	280	838
390	1 528	690	1 369	990	1 140	290	828
3 400	1 522	3 700	1 364	4 000	1 129	4 300	818
410	1 517	710	1 359	010	1 119	310	807
420	1 512	720	1 354	020	1 108	320	797
430	1 507	730	1 348	030	1 098	330	787
440	1 501	740	1 343	040	1 088	340	776
3 450	1 496	3 750	1 338	4 050	1 077	4 350	766
460	1 491	760	1 333	060	1 067	360	755
470	1 485	770	1 327	070	1 057	370	745
480	1 480	780	1 322	080	1 046	380	735
490	1 475	790	1 317	090	1 036	390	724
3 500	1 470	3 800	1 311	4 100	1 025	4 400	714
510	1 464	810	1 306	110	1 015	410	703
520	1 459	820	1 301	120	1 005	420	693
530	1 454	830	1 296	130	994	430	683
540	1 449	840	1 290	140	984	440	672
3 550	1 443	3 850	1 285	4 150	973	4 450	662
560	1 439	860	1 275	160	963	460	652
570	1 433	870	1 264	170	953	470	641
580	1 427	880	1 254	180	942	480	631
590	1 422	890	1 243	190	932	490	620
3 600	1 417	3 900	1 233	4 200	922	4 500	610

Table 17

Loading gauge accepted by

FNME
FS

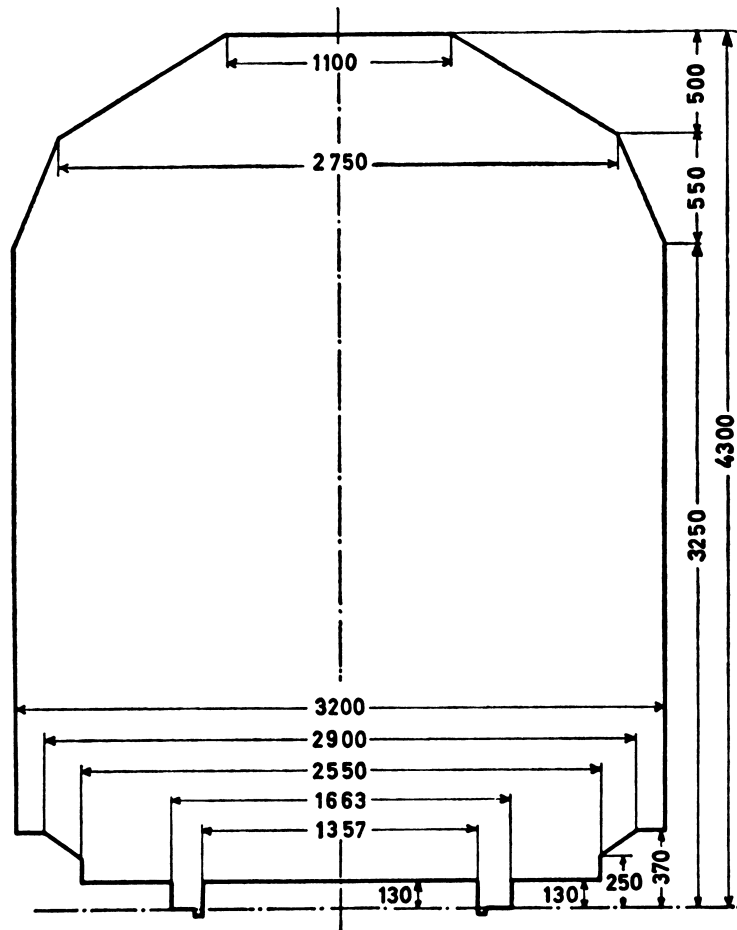


Table 17

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 500	1 498	3 800	1 375	4 100	880
370 } 3 250 }	1 600	510 520 530 540 3 550	1 494 1 490 1 485 1 481 1 477	810 820 830 840 3 850	1 359 1 342 1 326 1 309 1 293	110 120 130 140 4 150	864 847 831 814 798
260 270 280 290	1 596 1 592 1 588 1 584	560 570 580 590	1 473 1 469 1 465 1 461	860 870 880 890	1 276 1 260 1 243 1 227	160 170 180 190	781 765 748 732
3 300	1 580	3 600	1 457	3 900	1 210	4 200	715
310 320 330 340 3 350	1 575 1 571 1 567 1 563 1 559	610 620 630 640 3 650	1 453 1 449 1 445 1 440 1 436	910 920 930 940 3 950	1 194 1 177 1 161 1 144 1 128	210 220 230 240 4 250	699 682 666 649 633
360 370 380 390	1 555 1 551 1 547 1 543	660 670 680 690	1 432 1 428 1 424 1 420	960 970 980 990	1 111 1 095 1 078 1 062	260 270 280 290	616 600 583 567
3 400	1 539	3 700	1 416	4 000	1 045	4 300	550
410 420 430 440 3 450	1 535 1 530 1 526 1 522 1 518	710 720 730 740 3 750	1 412 1 408 1 404 1 400 1 395	010 020 030 040 4 050	1 029 1 012 996 979 963		
460 470 480 490	1 514 1 510 1 506 1 502	760 770 780 790	1 391 1 387 1 383 1 379	060 070 080 090	946 930 913 897		
3 500	1 498	3 800	1 375	4 100	880		

Table 18

Loading gauge accepted in Great Britain

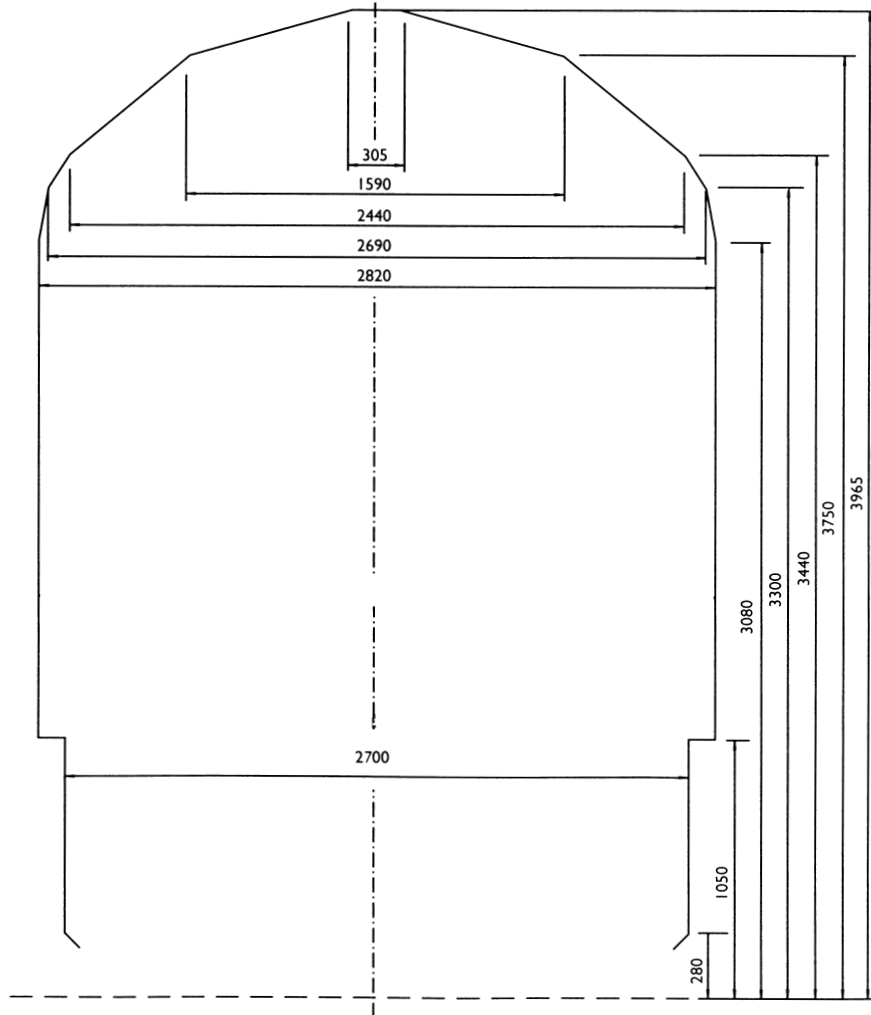


Table 1a**Half-widths of the gauge**

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
3 080	1 410	3 370	1 283	3 670	905
3 090	1 407	3 380	1 274	3 680	891
		3 390	1 265	3 690	877
3 100	1 404	3 400	1 256	3 700	864
3 110	1 401	3 410	1 247	3 710	850
3 120	1 398	3 420	1 238	3 720	836
3 130	1 395	3 430	1 229	3 730	822
3 140	1 392	3 440	1 220	3 740	809
3 150	1 389	3 450	1 207	3 750	795
3 160	1 386	3 460	1 193	3 760	765
3 170	1 383	3 470	1 179	3 770	735
3 180	1 379	3 480	1 165	3 780	706
3 190	1 376	3 490	1 151	3 790	676
3 200	1 373	3 500	1 138	3 800	646
3 210	1 371	3 510	1 124	3 810	616
3 220	1 368	3 520	1 110	3 820	586
3 230	1 366	3 530	1 097	3 830	556
3 240	1 363	3 540	1 083	3 840	526
3 250	1 360	3 550	1 069	3 850	496
3 260	1 357	3 560	1 055	3 860	466
3 270	1 354	3 570	1 042	3 870	436
3 280	1 351	3 580	1 028	3 880	407
3 290	1 348	3 590	1 014	3 890	377
3 300	1 345	3 600	1 001	3 900	347
3 310	1 336	3 610	987	3 910	317
3 320	1 327	3 620	973	3 920	287
3 330	1 318	3 630	960	3 930	257
3 340	1 309	3 640	946	3 940	227
3 350	1 300	3 650	932	3 950	197
3 360	1 291	3 660	918	3 965	152.5

Table 19

Loading gauge accepted by

RENFE
CP

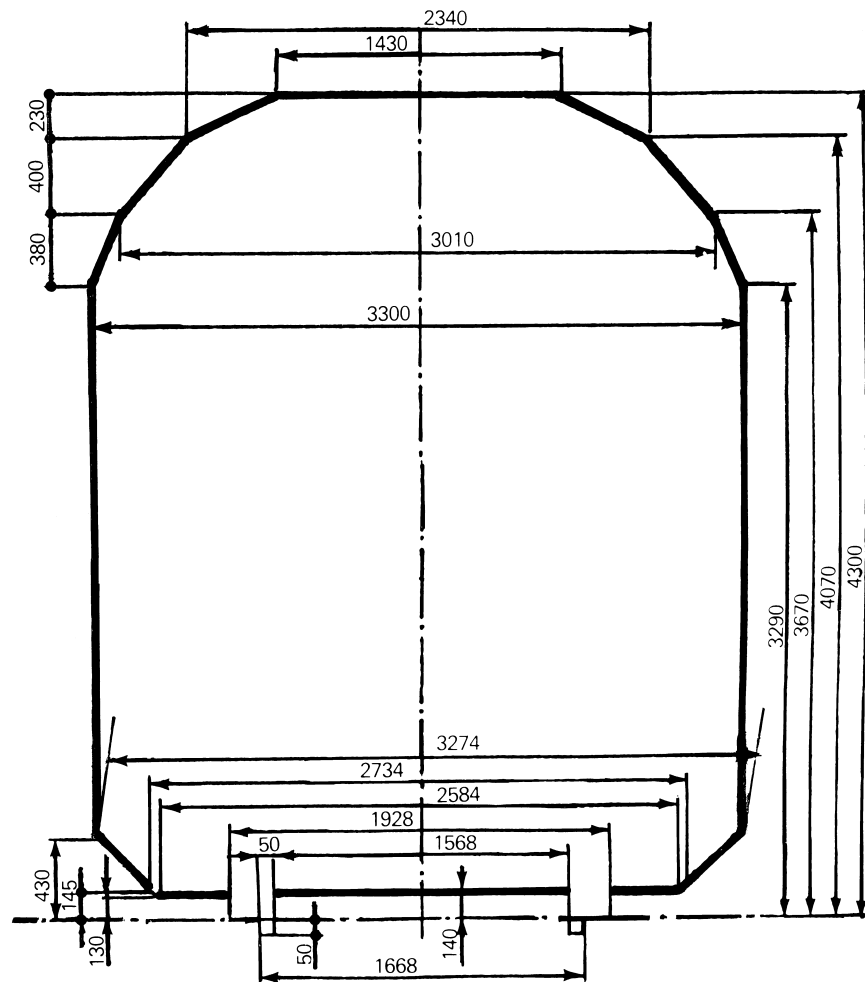


Table 19

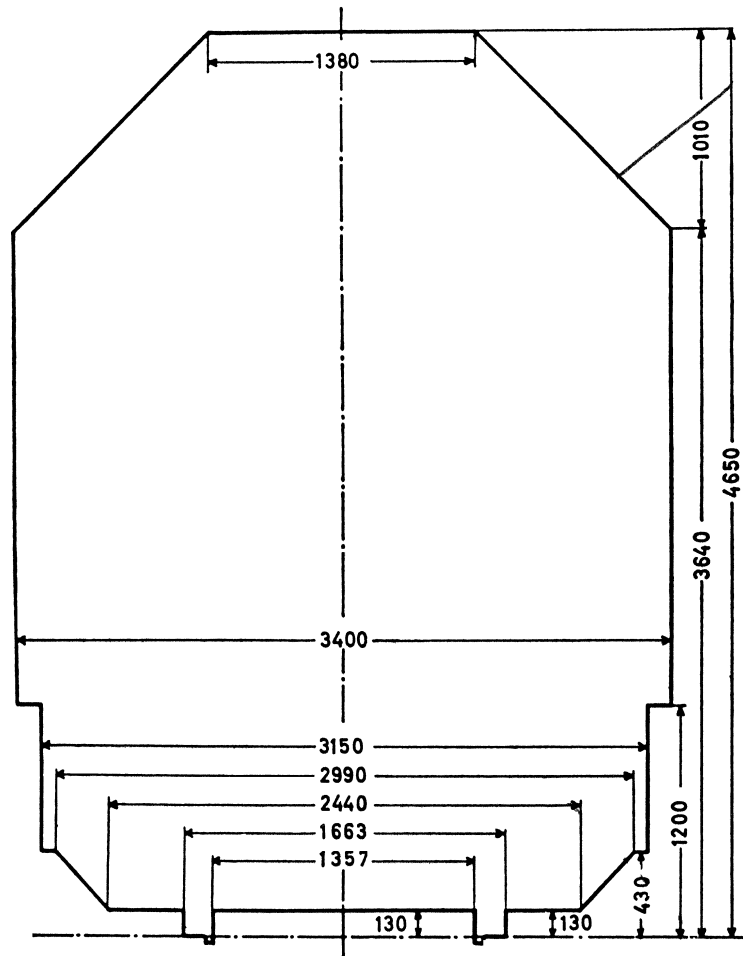
Half-widths of the gauge

Height above rail level mm	Corre- sponding half- width mm	Height above rail level mm	Corre- sponding half- width mm	Height above rail level mm	Corre- sponding half- width mm	Height above rail level mm	Corre- sponding half- width mm
430 3 290	1 650						
3 300	1 646	3 600	1 532	3 900	1 312	4 200	913
310 320 330 340 350	1 642 1 638 1 635 1 631 1 627	610 620 630 640 650	1 528 1 524 1 520 1 516 1 513	910 920 930 940 950	1 304 1 296 1 287 1 279 1 270	210 220 230 240 250	893 873 853 834 814
360 370 380 390	1 623 1 619 1 616 1 612	660 670 680 690	1 509 1 505 1 497 1 488	960 970 980 990	1 262 1 254 1 245 1 237	260 270 280 290	794 774 755 735
3 400	1 608	3 700	1 480	4 000	1 229	4 300	715
410 420 430 440 450	1 604 1 600 1 597 1 593 1 589	710 720 730 740 750	1 471 1 463 1 455 1 446 1 438	010 020 030 040 050	1 220 1 212 1 203 1 195 1 187		
460 470 480 490	1 585 1 581 1 577 1 574	760 770 780 790	1 430 1 421 1 413 1 404	060 070 080 090	1 178 1 170 1 150 1 130		
3 500	1 570	3 800	1 396	4 100	1 111		
510 520 530 540 550	1 566 1 562 1 558 1 555 1 551	810 820 830 840 850	1 388 1 379 1 371 1 363 1 354	110 120 130 140 150	1 091 1 071 1 051 1 031 1 012		
560 570 580 590	1 547 1 543 1 539 1 535	860 870 880 890	1 346 1 337 1 329 1 321	160 170 180 190	992 972 952 933		
3 600	1 532	3 900	1 312	4 200	913		

Table 110

Loading gauge accepted by GC (SJ)

I



With the exception of the station: VASSIJAURE GRENZE

The loading gauge given in Table 111 is applicable for this destination station.

Table 110

Half-widths of the gauge

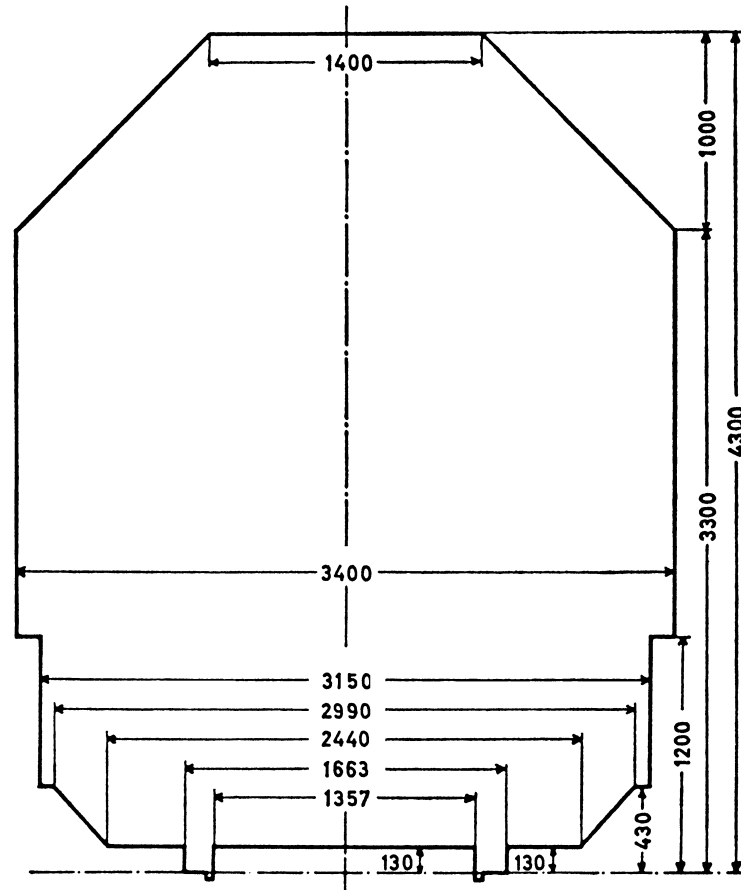
Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 900	1 440	4 200	1 140	4 500	840
430 } 1 200 } 1 200 } 3 640 } 3 650	1 575 1 700 1 690	910 920 930 940 3 950	1 430 1 420 1 410 1 400 1 390	210 220 230 240 4 250	1 130 1 120 1 110 1 100 1 090	510 520 530 540 4 550	830 820 810 800 790
660 670 680 690	1 680 1 670 1 660 1 650	960 970 980 990	1 380 1 370 1 360 1 350	260 270 280 290	1 080 1 070 1 060 1 050	560 570 580 590	780 770 760 750
3 700	1 640	4 000	1 340	4 300	1 040	4 600	740
710 720 730 740 3 750	1 630 1 620 1 610 1 600 1 590	010 020 030 040 4 050	1 330 1 320 1 310 1 300 1 290	310 320 330 340 4 350	1 030 1 020 1 010 1 000 990	610 620 630 640 4 650	730 720 710 700 690
760 770 780 790	1 580 1 570 1 560 1 550	060 070 080 090	1 280 1 270 1 260 1 250	360 370 380 390	980 970 960 950		
3 800	1 540	4 100	1 240	4 400	940		
810 820 830 840 3 850	1 530 1 520 1 510 1 500 1 490	110 120 130 140 4 150	1 230 1 220 1 210 1 200 1 190	410 420 430 440 4 450	930 920 910 900 890		
860 870 880 890	1 480 1 470 1 460 1 450	160 170 180 190	1 180 1 170 1 160 1 150	460 470 480 490	880 870 860 850		
3 900	1 440	4 200	1 140	4 500	840		

Table 111

Loading gauge accepted GC (SJ)

I

For the destination station: VASSIJAURE GRENZE



The loading gauge given in Table 110 is applicable for other stations.

Table 111

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 500	1 500	3 800	1 200	4 100	900
430 } 1 200 }	1575	510 520 530 540 3 550	1 490 1 480 1 470 1 460 1 450	810 820 830 840 3 850	1 190 1 180 1 170 1 160 1 150	110 120 130 140 4 150	890 880 870 860 850
1 200 } 3 300 }	1 700	560 570 580 590	1 440 1 430 1 420 1 410	860 870 880 890	1 140 1 130 1 120 1 110	160 170 180 190	840 830 820 810
3 300	1 700	3 600	1 400	3 900	1 100	4 200	800
310 320 330 340 3 350	1 690 1 680 1 670 1 660 1 650	610 620 630 640 3 650	1 390 1 380 1 370 1 360 1 350	910 920 930 940 3 950	1 090 1 080 1 070 1 060 1 050	210 220 230 240 4 250	790 780 770 760 750
360 370 380 390	1 640 1 630 1 620 1 610	660 670 680 690	1 340 1 330 1 320 1 310	960 970 980 990	1 040 1 030 1 020 1 010	260 270 280 290	740 730 720 710
3 400	1 600	3 700	1 300	4 000	1 000	4 300	700
410 420 430 440 3 450	1 590 1 580 1 570 1 560 1 550	710 720 730 740 3 750	1 290 1 280 1 270 1 260 1 250	010 020 030 040 4 050	990 980 970 960 950		
460 470 480 490	1 540 1 530 1 520 1 510	760 770 780 790	1 240 1 230 1 220 1 210	060 070 080 090	940 930 920 910		
3 500	1 500	3 800	1 200	4 100	900		

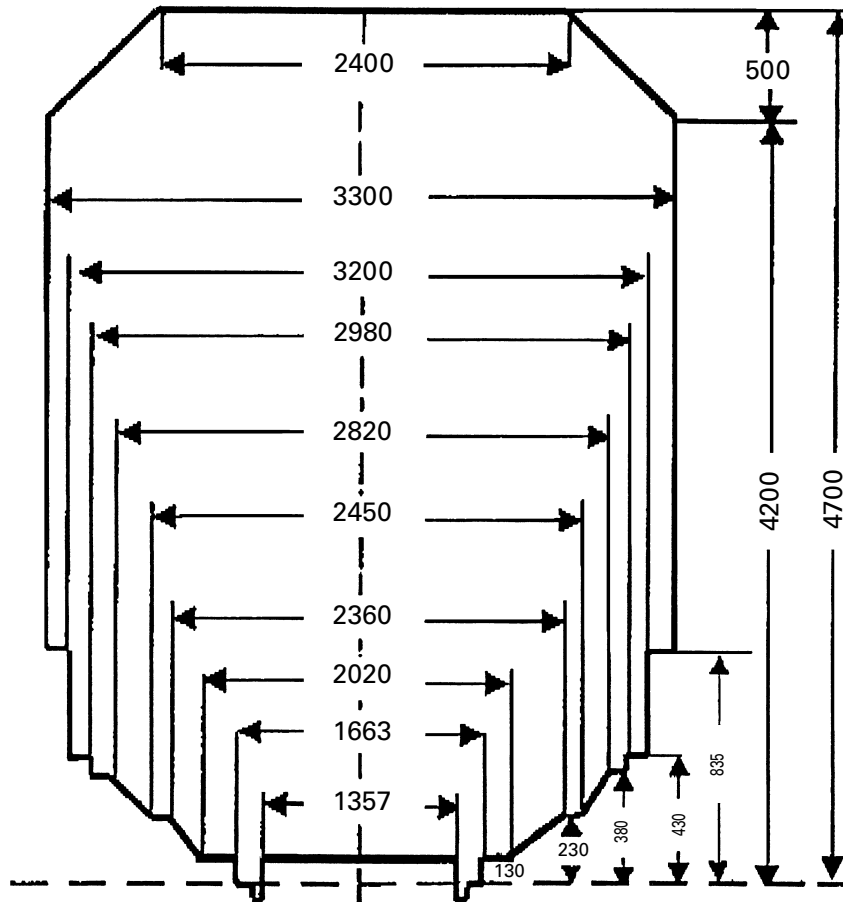
Table 112

Loading gauge accepted by TCDD

For the following

– line: KAPIKULE-EDIRNE

– destination stations: KAPIKULE, EDIRNE



For other stations see tables 14, 113 and 114.

Table 112

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
430 } 835 }	1 600		
835 } 4 200 }	1 650	4 450	1 435
210 220 230 240 4 250	1 640 1 630 1 620 1 610 1 600	460 470 480 490 4 500	1 428 1 421 1 414 1 407 1 400
260 270 280 290 4 300	1 590 1 580 1 570 1 560 1 550	510 520 530 540 4 550	1 390 1 380 1 370 1 360 1 350
310 320 330 340 4 350	1 540 1 530 1 520 1 510 1 500	560 570 580 590 4 600	1 340 1 330 1 320 1 310 1 300
360 370 380 390 4 400	1 490 1 480 1 470 1 460 1 450	610 620 630 640 4 650	1 290 1 280 1 270 1 260 1 250
410 420 430 440 4 450	1 445 1 440 1 435 1 430 1 435	660 670 680 690 4 700	1 240 1 230 1 220 1 210 1 200

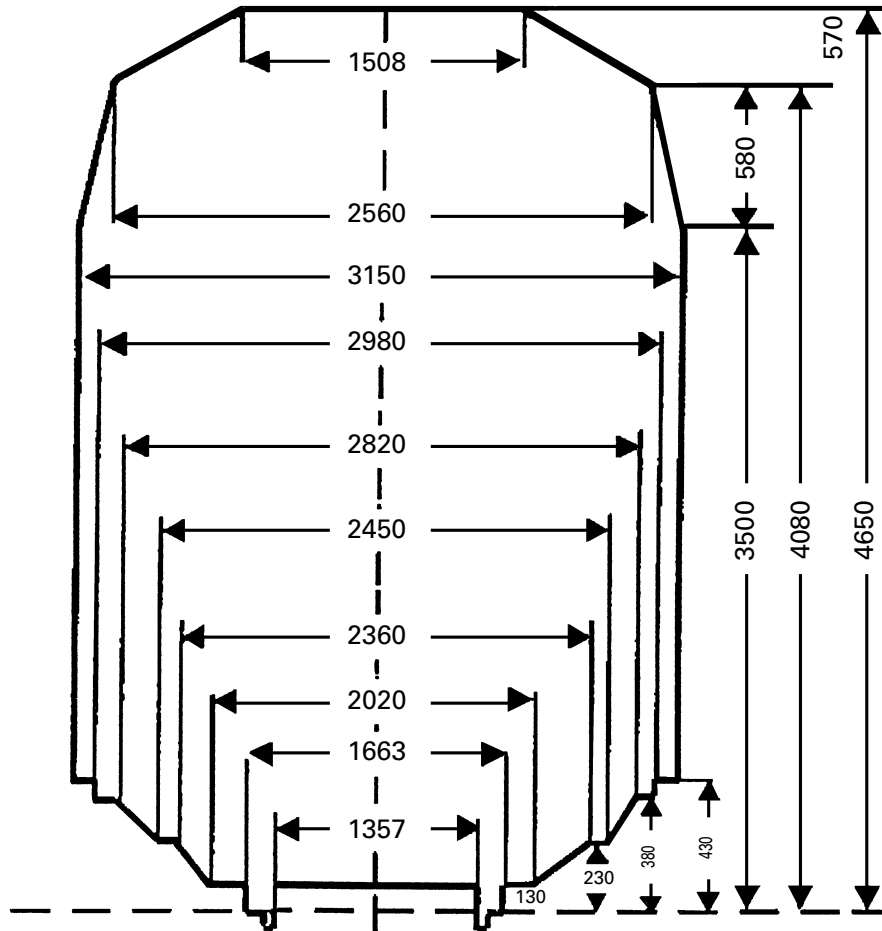
Table 113

Loading gauge accepted by TCDD

For the following

– line: EDIRNE-HALKALI

– destination stations: ALPULLU, LÜLEBURGAZ, MURATLI, CORLU, CERKEZKÖY, HALKALI



For other stations see tables 14, 112 and 114.

Table 113

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
430 } 3 500 }	1 575	3 800	1 422	4 100	1 262	4 400	985
510	1 570	810	1 417	110	1 252	410	975
520	1 565	820	1 412	120	1 243	420	966
530	1 560	830	1 407	130	1 234	430	957
540	1 555	840	1 402	140	1 225	440	948
3 550	1 550	3 850	1 397	4 150	1 215	4 450	938
560	1 544	860	1 392	160	1 206	460	929
570	1 539	870	1 387	170	1 197	470	920
580	1 534	880	1 382	180	1 188	480	911
590	1 529	890	1 377	190	1 178	490	902
3 600	1 524	3 900	1 372	4 200	1 169	4 500	892
610	1 519	910	1 366	210	1 160	510	883
620	1 514	920	1 361	220	1 151	520	874
630	1 509	930	1 356	230	1 142	530	865
640	1 504	940	1 351	240	1 132	540	855
3 650	1 499	3 950	1 346	4 250	1 123	4 500	846
660	1 494	960	1 341	260	1 114	560	837
670	1 489	970	1 336	270	1 105	570	828
680	1 483	980	1 331	280	1 095	580	818
690	1 478	990	1 326	290	1 086	590	809
3 700	1 473	4 000	1 321	4 300	1 077	4 600	800
710	1 468	010	1 316	310	1 068	610	791
720	1 463	020	1 311	320	1 058	620	782
730	1 458	030	1 305	330	1 049	630	772
740	1 453	040	1 300	340	1 040	640	763
3 750	1 448	4 050	1 295	4 350	1 031	4 650	754
760	1 443	060	1 290	360	1 022		
770	1 438	070	1 285	370	1 012		
780	1 433	080	1 280	380	1 003		
790	1 428	090	1 271	390	994		
3 800	1 422	4 100	1 262	4 400	985		

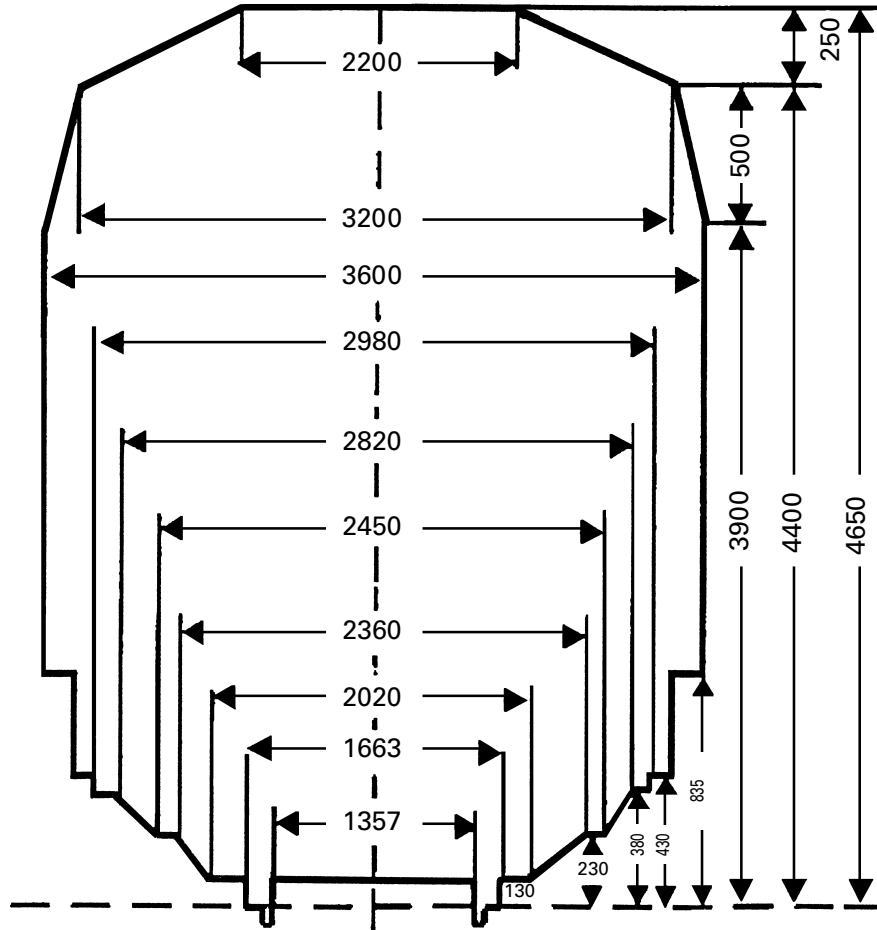
Table 114

Loading gauge accepted by TCDD

For the following

– line: VAN-KAPIKÖY

– destination stations: VAN, KAPIKÖYİ



For other stations see tables 14, 112 and 113.

Table 114

Half-width of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
830 835 835 3 900	1 600 1 800	4 200	1 660	4 500	1 400
910 920 930 940 3 950	1 795 1 787 1 780 1 774 1 760	210 220 230 240 4 250	1 658 1 656 1 654 1 652 1 650	510 520 530 540 4 550	1 380 1 360 1 340 1 320 1 300
960 970 980 990	1 756 1 752 1 748 1 744	260 270 280 290	1 648 1 646 1 644 1 642	560 570 580 590	1 280 1 260 1 240 1 220
4 000	1 740	4 300	1 640	4 600	1 200
010 020 030 040 4 050	1 738 1 736 1 734 1 732 1 730	310 320 330 340 4 350	1 636 1 632 1 628 1 624 1 620	610 620 630 640 4 650	1 180 1 160 1 140 1 120 1 100
060 070 080 090	1 726 1 722 1 718 1 714	360 370 380 390	1 616 1 612 1 608 1 604		
4 100	1 710	4 400	1 600		
110 120 130 140 4 150	1 708 1 706 1 704 1 702 1 700	410 420 430 440 4 450	1 580 1 560 1 540 1 520 1 500		
160 170 180 190	1 692 1 684 1 676 1 668	460 470 480 490	1 480 1 460 1 440 1 420		
4 200	1 660	4 500	1 400		

Table 115

Loading gauge accepted by C (NSB)

I

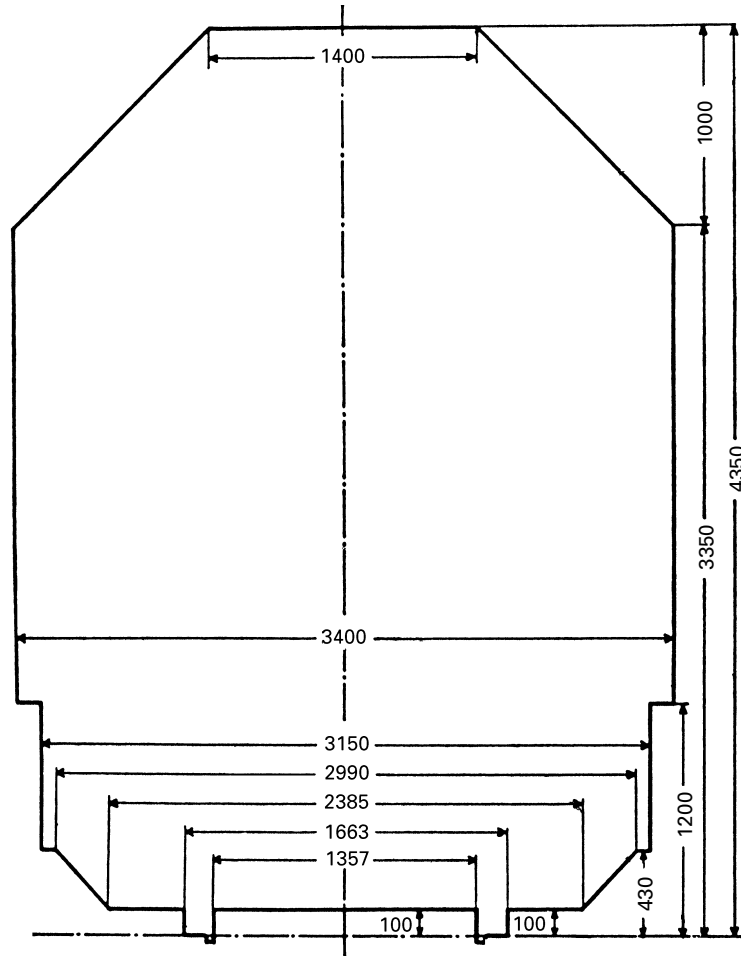


Table 115

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
		3 550	1 500	3 850	1 200	4 150	900
430 } 1 200 }	1 575	560 570 580 590 3 600	1 490 1 480 1 470 1 460 1 450	860 870 880 890 3 900	1 190 1 180 1 170 1 160 1 150	160 170 180 190 4 200	890 880 870 860 850
1 200 } 3 350 }	1 700	610 620 630 640	1 440 1 430 1 420 1 410	910 920 930 940	1 140 1 130 1 120 1 110	210 220 230 240	840 830 820 810
3 350	1 700	3 650	1 400	3 950	1 100	4 250	800
360 370 380 390 3 400	1 690 1 680 1 670 1 660 1 650	660 670 680 690 3 700	1 390 1 380 1 370 1 360 1 350	960 970 980 990 4 000	1 090 1 080 1 070 1 060 1 050	260 270 280 290 4 300	790 780 770 760 750
410 420 430 440	1 640 1 630 1 620 1 610	710 720 730 740	1 340 1 330 1 320 1 310	010 020 030 040	1 040 1 030 1 020 1 010	310 320 330 340	740 730 720 710
3 450	1 600	3 750	1 300	4 050	1 000	4 350	700
460 470 480 490 3 500	1 590 1 580 1 570 1 560 1 550	760 770 780 790 3 800	1 290 1 280 1 270 1 260 1 250	060 070 080 090 4 100	990 980 970 960 950		
510 520 530 540	1 540 1 530 1 520 1 510	810 820 830 840	1 240 1 230 1 220 1 210	110 120 130 140	940 930 920 910		
3 550	1 500	3 850	1 200	4 150	900		

Table 116

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
400 } 3 230 }	1 575	710 720 730 740 3 750	1 374 1 369 1 363 1 358 1 353	210 220 230 240 4 250	1 009 998 986 975 963
260 270 280 290	1 565 1 562 1 558 1 554	760 770 780 790	1 348 1 342 1 337 1 332	260 270 280 290	951 939 926 913
3 300	1 551	3 800	1 326	4 300	900
310 320 330 340 3 350	1 547 1 544 1 540 1 536 1 532	810 820 830 840 3 850	1 321 1 315 1 310 1 305 1 299	310 320 330 340 4 350	886 873 858 844 829
360 370 380 390	1 529 1 525 1 521 1 517	860 870 880 890	1 293 1 287 1 281 1 275	360 370 380 390	814 798 782 765
3 400	1 513	3 900	1 269	4 400	748
410 420 430 440 3 450	1 509 1 505 1 501 1 497 1 493	910 920 930 940 3 950	1 262 1 256 1 249 1 243 1 236	410 420 430 440 4 450	731 712 694 674 654
460 470 480 490	1 489 1 485 1 481 1 476	960 970 980 990	1 229 1 222 1 215 1 207	460 470 480 490	633 611 588 564
3 500	1 472	4 000	1 200	4 500	538
510 520 530 540 3 550	1 468 1 464 1 459 1 455 1 450	010 020 030 040 4 050	1 192 1 185 1 177 1 169 1 161	510 520 530 540 4 550	512 483 453 420 384
560 570 580 590	1 446 1 441 1 437 1 432	060 070 080 090	1 153 1 144 1 136 1 127	560 570 580 590	344 298 244 173
3 600	1 427	4 100	1 118	4 600	–
610 620 630 640 3 650	1 423 1 418 1 413 1 408 1 404	110 120 130 140 4 150	1 109 1 100 1 090 1 081 1 071		
660 670 680 690	1 399 1 394 1 389 1 384	160 170 180 190	1 061 1 051 1 041 1 030		
3 700	1 379	4 200	1 020		

Table 117

Loading gauge accepted by RAI

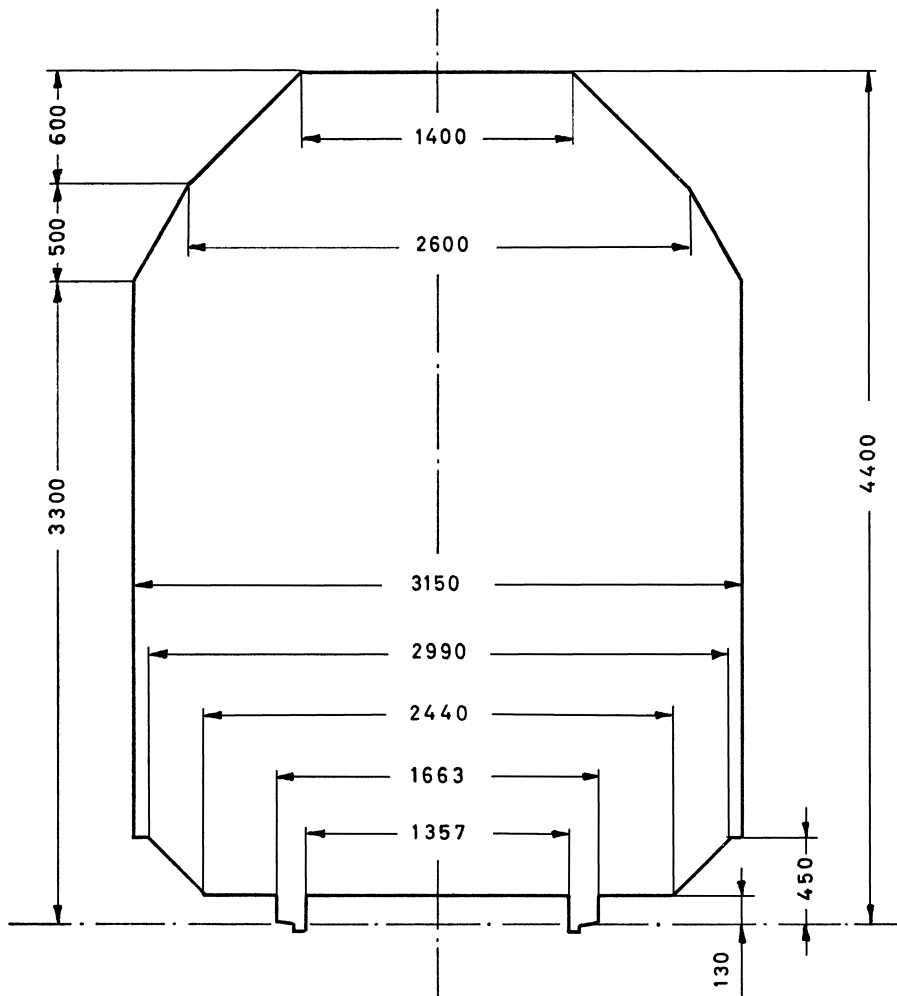


Table 117

Half-widths of the gauge

Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm	Height above rail level mm	Corresponding half-width mm
3 300	1 575	3 600	1 410	3 900	1 200	4 200	900
310	1 570	610	1 405	910	1 190	210	890
320	1 564	620	1 399	920	1 180	220	880
330	1 559	630	1 394	930	1 170	230	870
340	1 553	640	1 388	940	1 160	240	860
3 350	1 548	3 650	1 383	3 950	1 150	4 250	850
360	1 542	660	1 377	960	1 140	260	840
370	1 537	670	1 372	970	1 130	270	830
380	1 531	680	1 366	980	1 120	280	820
390	1 526	690	1 361	990	1 110	290	810
3 400	1 520	3 700	1 355	4 000	1 100	4 300	800
410	1 515	710	1 350	010	1 090	310	790
420	1 509	720	1 344	020	1 080	320	780
430	1 504	730	1 339	030	1 070	330	770
440	1 498	740	1 333	040	1 060	340	760
3 450	1 493	3 750	1 328	4 050	1 050	4 350	750
460	1 487	760	1 322	060	1 040	360	740
470	1 482	770	1 317	070	1 030	370	730
480	1 476	780	1 311	080	1 020	380	720
490	1 471	790	1 306	090	1 010	390	710
3 500	1 465	3 800	1 300	4 100	1 000	4 400	700
510	1 460	810	1 290	110	990		
520	1 454	820	1 280	120	980		
530	1 449	830	1 270	130	970		
540	1 443	840	1 260	140	960		
3 550	1 438	3 850	1 250	4 150	950		
560	1 432	860	1 240	160	940		
570	1 427	870	1 230	170	930		
580	1 421	880	1 220	180	920		
590	1 416	890	1 210	190	910		
3 600	1 410	3 900	1 200	4 200	900		

Tableau 118**SNCF**

Wagons loaded to the GB gauge shall be accepted as special consignments in accordance with UIC Leaflet 502 covered by permanent authorisation ATE 40 00 481 045 via the border points of: TOURCOING, FEIGNIES, JEUMONT, ZOUFFTGEN, APACH, FORBACH, LAUTERBOURG and KEHL, destined for the following stations:

ABBEVILLE	BALE-VOYAGEURS	BRAY-DUNES (FRONTIERE)
ACHERES-TRIAGE	BANNALEC	BRAZEY-EN-PLAINE
ACHIET	BANYULS-DELS-ASPRES	BREAUTE-BEUZEVILLE
AGEN	BAPAUME	BREST-BASSINS
AIGREFEUILLE-LE-THOU AIGUEBELLE	BARBENTANE-ROGNONAS	BRETEUIL-EMBRANCHEMENT
AIGUEPERSE	BADDYS (LES)	BRETIGNY
AIGUES-VIVES	BAR-LE-DUC	BRETONCELLES
AILLEVILLERS	BARONCOURT	BRICY-BOULAY
AILLY-SUR-NOYE	BASSENS-APPONTEMENTS	BRIENON
AIRVAULT-GARE	BASTA-LES-FORGES	BRIVE-LA-GAILLARDE
AIX-MARCHANDISES	BATHIE (LA)	BROHINIÈRE (LA)
ALBERT	BAYONNE	BRUGES
ALBERTVILLE	BAZANCOURT	BRUMATH
ALBI-VILLE	BAZEILLES	BRUYERES (VOSGES)
ALENCON	BAZIEGE	BRY-SUR-MARNE
ALIXAN-CHATEAUNEUF-D'ISERE	BEAUCAIRE-MARCHANDISES	BUISSON (LE)
ALLONNES-BOISVILLE	BEAUGENCY	BULLY-GRENAY
ALTKIRCH	BEAULIEU-LE-COUDRAY	BUZY (MEUSE)
AMAGNE-LUCQUY	BEAUNE	
AMBAZAC	BEAUVAIS	CALAIS-VILLE
AMBERIEU	BEGLES	CAMBRAI-ANNEXE
AMBOISE	BELFORT	CAMBRAI-VILLE
AMBRONAY-PRIAY	BELLENAVES	CARBONNE
AMIENS	BELLEVILLE	CARCASSONNE
AMIFONTAINE	BELLEVILLE-SUR-SAONE	CARIGNAN
ANGERS-SAINT-LAUD	BENESTROFF	CARLING
ANGOULEME	BONING	CARPENTRAS
ANOR	BERGERAC	CASTELNAU D'ESTREFONDS
APACH (MOSELLE)	BERGUES	CASTELNAUDARY
APACH-FRONTIERE	BERLAIMONT	CASTELSARRASIN
ARAMON	BERRE	CASTRES (TARN)
ARCHES	BETHUNE	CATEAU (LE)
ARGAGNON	BEZIERS	CAUDERAN-MERIGNAC
ARGENTAN	BIACHE-SAINT-VAAST	CAUDRY
ARGENTEUIL	BIARRITZ	CAVAILLON
ARGENTON-SUR-CREUSE	BISCHEIM	CAZERES-SUR-GARONNE
ARLES	BITCHE-LE-CAMP	CERBERE
ARMENTIERES	BLAGNY	CERCY-LA-TOUR
ARNAGE	BLAINVILLE-DAMELEVIÈRES	CHAGNY
ARQUES (PAS-DE-CALAIS)	BLAISY-BAS	CHALONS-EN-CHAMPAGNE
ARRAS	BLANC-MESNIL (LE)	CHALON-SUR-SAONE
ARRAS-MEAULENS	BLANGY-SUR-BRESLE	CHALON-SUR-SAONE (PORT-NORD)
ARS-SUR-MOSELLE	BLEUSE-BORNE (LA) (GARAGE)	CHAMBERY-CHALLES-LES-EAUX
ARTENAY (LOIRET)	BLOIS	CHAMPAGNE
ARTIX	BOBIGNY-G.C.	CHAMPIGNEULLES
ATTIN (GARAGE)	BOHAIN	CHANDIEU-TOUSSIEU
AUBAGNE	BOISLEUX	CHANGIS-SAINT-JEAN
AUBERGENVILLE-ELISABETHVILLE	BOLLENE-LA-CROISIERE	CHAPELLE-SUR-ERDE (LA)
AUBIGNE-RACAN	BON-ENCONTRE	CHARITY (LA)
AUBIGNY-SUR-NERE	BONNARD-	CHARMANT
AUBRAIS-ORLEANS (LES)	BASSOU	CHARMES (VOSGES)
AULNAT	BONNEVAL	CHARS
AULNOYE-AYMERIES	BONNIERES	CHARTRES
AUMALE	BORDEAUX-BASTIDE	CHASSENEUIL (VIENNE)
AUNEAU	BORDEAUX-HOURCADE	CHATEAUBRIANT
AURAY	BORDEAUX-PASSERELLE	CHATEAU-DU-LOIR
AUXERRE-SAINT-GERVAIS	BORDEAUX-SAINT-JEAN	CHATEAUDUN
AVALLON	BORDEAUX-SAINT-LOUIS	CHATEAU-GONTIER
AVESNES	BOUCAU	CHATEAULIN-EMBRANCHEMENT
AVIGNON	BOUCHAIN	CHÂTEAUNEUF-SUR-CHARENTE
AYTRE	BOULOU-PERTHUS (LE)	CHATEAUROUX
	BOURG-EN-BRESSE	CHATEAU-THIERRY
BACCARAT	BOURGET (LE)	CHÂTELAUDREN-PLOUAGAT
BACOUËL	BOURGET-TRIAGE (LE)	CHATEL-CENSOIR
BAIGTS-DE-BEARN	BOURGOIN-JALLIEU	CHATELET (LE)
BAINS-LES-BAINS	BOURG-SAINT-MAURICE	CHATELLERAULT
BALE	BOURRON-MARLOTTE	CHATEL-NOMEXY
BALE-MARCHANDISES	BOUSSENS	CHATILLON-SUR-LOIRE
BALE-SAINT-JEAN	BOUZONVILLE	CHAULNES
	BRAM	CHECY-MARDIE

CHELLES-GOURNAY
CHEMILLY-APPOIGNY
CHEVIGNY-SAINT-SAUVEUR (Garage)
CHEVRIERES
CHOCQUES
CHOISY-LE-ROI
CINTEGABELLE
CLAMECY
CLERMONT-FERRAND
CLISSON
COCHEREN
COGNAC
COLAYRAC
COLLONGES-FONTAINES
COLMAR
COLOMBIERS
COMMERCY
COMPIEGNE
CONDAT-LE-LARDIN
CONFLANS-FIN-D' OISE
CONFLANS-JARNY
CONNERRE-BEILLE
CORBEHEM
CORBEIL-ESSONNES
CORBIE
CORDEMAIS
COSNE
COUCY-LES-EPPES
COUDEKERQUE-BRANCHE
COUHE-VERAC
COULANGES-SUR-YONNE
COULOMBIERS
COURNEUVE-DUGNY (La)
COURONNE (La)
COURVILLE-SUR-EURE
COUTRAS
CRAVANT-BAZARNES
CREIL
CREPY-COUVRON
CREPY-EN-VALOIS
CREUSOT (LE)
CREUTZWALD
CROTELLES
CROUY
CRUAS
CULOZ
CUPERLY

DAMMARTIN-JUILLY-SAINT-MARD
DAOURS
DARCEY (Côte-d'Or)
DAX
DECIZE
DERCY-MORTIERS
DIEMERINGEN
DIEPPE
DIEULOUARD
DIJON-PORTE-NEUVE
DINAN
DIRINON
DOCELLES-CHENIMENIL
DOL
DOMPIERRE-SUR-MER
DONCHERY
DONGES
DON-SAINGHIN
DOUAI
DOULON
DOURDAN
DOURGES
DREUX
DUNKERQUE

EBANGE
ECOULANT
EMPALOT (Garage)
ENNEZAT-CLERLANDE
ENTRAIGUES-SUR -LA-SORGUE
ENTRESSEN
EPERNAY
EPIERRE-SAINT-LEGER

EPINAL
EPLUCHES
EPONE-MEZIERES
ERAGNY-NEUVILLE
ESCALQUENS
ESTAQUE (L')
ETAMPES
ETAPLES-LE-TOUQUET
EU

FACTURE
FARGNIERS (Garage)
FAULQUEMONT
FEIGNIES-FRONTIERE
FENOUILLET
FERE (La)
FERRIERES-FONTENAY
FERTE-HAUTERIVE (La)
FERTE-SAINT-AUBIN (La)
FERTE-SOUS-JOUARRE (La)
FERTOT (garage)
FLAVY-LE-MARTEL
FLIXECOURT
FOIX
FOLLIGNY
FONTAINEBLEAU-AVON
FORBACH
FORBACH-FRONTIERE
FORGENEUE (Garage)
FOUG
FOUQUEREUIL
FOURCHAMBAULT
FOURMIES
FRESNOY-LE-GRAND
FREYMING-MERLEBACH
FRONTENEX
FRONTIGNAN
FROUARD

GAILLAC
GAILLON-AUBEVOYE
GANDRANGE-AMNEVILLE
GANNAT
GANNES
GARGENVILLE
GAZINET-CESTAS
GENNES-LONGUEFUYE
GENNEVILLIERS
GENSAC-LA-PALLUE
GERZAT
GEVREY-CHAMBERTIN
GEVREY-TRIAGE
GIEN
GISORS-EMBRANCHEMENT
GIVORS-VILLE
GOUSSAINVILLE
GRAFFENSTADEN
GRANVILLE
GRENOBLE
GRISOLLES
GUIGNICOURT (Aisne)
GUILLAUCOURT
GUINGAMP

HAGONDANGE
HAM (SOMME)
HANGEST
HARGARTEN-FALCK
HAUBOURDIN
HAUSBERGEN
HAUTMONT
HAVRE (Le)
HAYANGE
HAZEBROUCK
HELLEMMES-LILLE
HOMING
HENDAYE
HENIN-BEAUMONT
HENNEBONT
HERBERGEMENT-LES-BROUZILS (L')
HERICOURT

HERICY
HERMITAGE-MORDELLES (L')
HERRLISHEIM (BAS-RHIN)
HESDIN
HETTANGE-GRANDE
HEYRIEUX
HOCHFELDEN
HOUDAN
HUTTE-COULOMBIERS (La)

IMPHY
INCHEVILLE
INGRANDES-SUR-VIENNE
IRUN
ISBERGUES
ISLE-FONTAINE-DE-VAUCLUSE (L')
ISSOUDUN
IS-SUR-TILLE
IVRY-SUR-SEINE-FRET

JALONS-LES-VIGNES
JANZE
JARNAC-CHARENTE
JARVILLE-LA-MALGRANGE
JAUNEY-CLAN
JEANDELIZE
JEUMONT
JEUMONT-FRONTIERE
JOEUF
JOIGNY
JOUÉ-LES-TOURS
JUSSEY
JUVISY

KEHL-FRONTIERE
KERHUON
KUNTZIG

LABARTHE-INARD
LABENNE
LABOUHEYRE
LABRUGUIERE
LACQ
LACS (Les)
LALUQUE
LAMBALLE
LAMOTTE-BEUVRON
LANDEBIA
LANDERNEAU
LANDIVISIAU
LANDRECIES
LANGEAIS
LANGON
LAON
LAROCHE-MIGENNES
LAUMES-ALESIA (Les)
LAUTERBOURG
LAUTERBOURG-FRONTIERE
LAVAL
LAVANNES-CAUREL (Garage)
LAVAU
LAVILLEDIEU
LEDENON
LEFFRINCKOUCKE
LENS
LEROUVILLE
LESCAR
LESQUIN
LEYMENT
LEZIGNAN-AUDE
LEZOUX
LIANCOURT-RANTIGNY
LIBERCOURT
LIBOURNE
LIEUSAIN-MOISSY
LILLE-CHAMP-DE-MARS
LILLE-DELIVRANCE
LILLE-FLANDRES
LILLE-GAROLILLE
LILLE-PORT-FLUVIAL (Garage)
LILLERS

LILLE-SAINT-SAUVEUR
LILLE-SUD
LIMOGES-BÉNÉDICTINS
LIMOGES-PUY-IMBERT
LOISON
LOISY-SUR-MARNE
LOMME
LONGJUMEAU
LONGPRÉ-LES-CORPS-SAINTS
LONGROY-GAMACHES
LONGUEAU
LONGUEIL-SAINTE-MARIE
LONGUYON
LORIENT
LOUHANS
LOURCHES
LUCE
LUÇON
LUMES
LUNEL
LUNÉVILLE
LUSIGNAN
LYON-GUILLOTIERE
LYON-GUILLOTIERE-PORT-HERRIOT
LYON-PERRACHE
LYON-PERRACHE-MIN
LYON-VAISE

MACON-PORT-FLUVIAL
MÂCON-VILLE
MADELEINE (Nord) (La)
MAILLY-LE-CAMP
MAISONS-ALFORT-POMPADOUR
MAISSE
MALAUSE
MALESHERBES
MANS (Le)
MANTES-LA-JOLIE
MARAINVILLER
MARAIS-DE-LOMME (Garage)
MARCHEPRIME
MARCHEZAIS-BROUÉ
MARCK
MARESQUEL
MARGUT-FROMY
MARLE-SUR-SERRE
MARLY-LES-VALENCIENNES
MARMANDE
MAROEUIL
MARSEILLE-MARITIME-ARENÇ
MARSEILLE-PRADO
MARSEILLE-SAINT-CHARLES
MASSY-PALAISEAU-GRANDE-CEINTURE
MAUBEUGE
MAZAMET
MAZIÈRES-VERRUYES
MEAUX
MELUN
MER
MERREY (HAUTE-MARNE)
MÉRU
METZ-CHAMBRIERE
METZ-DEVANT-LES-PONTS
METZ-SABLON
METZ-VILLE
MEUNG-SUR-LOIRE
MEUX-LA-CROIX-SAINT-OUEN (Le)
MEXIMIEUX-PEROUGES
MÉZY
MIRAMAS
MIRIBEL
MISSON-HABAS
MITRY-CLAYE
MODANE
MODANE-FRONTIÈRE
MOHON
MONNAIE
MONSEMPRON-LIBROS
MONTAIGU-VENDÉE
MONTARGIS
MONTATAIRE

MONTAUBAN-DE-BRETAGNE
MONTAUBAN-VILLE-BOURBON
MONTBARD
MONTBARTIER
MONTCHANIN
MONT-DE-MARSAN
MONTEREAU
MONTÉROLIER-BUCHY
MONTESCOURT
MONTEUX
MONTFAVET
MONTFORT-L' AMAURY-MÉRÉ
MONTIERCHAUME
MONTIÈRES
MONTUEL
MONTMÉLIAN
MONTOR-DE-BRETAGNE
MONTPELLIER
MONTRÉJEAU-GOURDAN-POLIGNAN
MORCENX
MORHANGE
MORLAIX
MOTHE-SAINT-HERAY (La)
MOTTEVILLE
MOUESSE (Garage)
MOULIN-NEUF (Garage) (Oise)
MOULINS-SUR-ALLIER
MOURMELON-LE-PETIT
MOUY-BURY
MULHOUSE-DORNACH
MULHOUSE-VILLE
MUREAUX (LES)
MURET
MYENNES

NAINTE-LES-BARRES
NANÇOIS-TRONVILLE
NANCY-SAINT-GEORGES
NANCY-VILLE
NANTES-ÉTAT
NANTEUIL-LE-HAUDOUIN
NARBONNE
NEAU
NEMOURS-SAINT-PIERRE
NESLE (Somme)
NEUF-BRISACH
NEUFCHÂTEAU
NEUILLY-SUR-MARNE
NEUVY-PAILLOUX
NEUVY-SUR-LOIRE
NEVERS
NICOLE
NÎMES
NIORT
NISSAN
NOGENT-L' ARTAUD-CHARLY
NOGENT-LE-PERREUX
NOGENT-LE-ROTROU
NOGENT-SUR-VERNISSON
NOISY-LE-SEC
NOTRE-DAME-D'OE
NOTRE-DAME-DE-BRIANÇON
NOVÉANT
NOYELLES
NOYON
NUISEMENT
NUITS-SAINT-GEORGES
NUITS-SOUS-RAVIÈRES

OIRY
OISSEL
ORANGE
ORGON
ORLÉANS
ORMES-SUR-VIENNE (Les)
ORMOY-VILLERS
OULLINS

PAGNY-SUR-MEUSE
PAGNY-SUR-MOSELLE
PANTIN

PARIS-BERCY-RAPÉE
PARIS-LA-CHAPELLE
PARIS-TOLBIAC
PARTHENAY
PATAY
PAU
PAUILLAC
PELTRE
PENNE (LOT-ET-GARONNE)
PÉRIGUEUX
PERPIGNAN-SAINT-CHARLES
PERRIGNY
PERSAN-BEAUMONT
PETIT-COURONNE
PETIT-QUEVILLY
PEYROUTON
PEZOU
PIERRELATTE
PLANCOËT
PLANT-CHAMPIGNY (Le)
PLEINE-FOUGÈRES
PLÉNÉE-JUGON
PLESSIS-BELLEVILLE (Le)
PLEYBER-CHRIST
PLOUNÉRIN
POINTE-BOUCHEMAINE (La)
POIRIER (Le)
POISSY
POITIERS
POIX-DE-PICARDIE
POLIÉNAS
POMBLIÈRE-SAINT-MARCEL
POMPEY
PONT-A-MOUSSON
PONT-A-VENDIN
PONT-D' ARDRES
PONT-DE-DORE
PONT-DE-L' ARCHE
PONT-DE-LA-DEULE
PONT-DE-VEYLE
PONT-DU-CHATEAU
PONTET (Le)
PONTMORT
PONT-REMY
PONT-SAINTE-MAXENCE
PORT-BOULET
PORT-D' ATELIER-AMANCE
PORT-DE-BONEUIL
PORT-DE-PILES
PORTES
PORTET-SAINT-SIMON
PORT-LA-NOUVELLE
PORT-SAINTE-MARIE
PORT-VENDRES-VILLE
POUILLY-SUR-LOIRE
POUZIN (Le)
PROUVY-THIANT
PUYOO

QUÉMÉNÉVEN
QUESTEMBERT
QUIMPER
QUIMPERLÉ

RAISMES (Nord)
RECUIGNIES
REDING
REDON
REICHSTETT (Garage)
REIMS
REIMS-SAINT-LEONARD (Garage)
REMILLY
REMOULINS-PONT-DU-GARD
RENNES
RETHEL
RETIERS
REVIGNY
RIBÉCOURT
RICHWILLER
RIEUX-ANGICOURT
RIOM

RIS-ORANGIS
 RIVES
 RIVESALTES
 ROCHEFORT
 ROCHELLE-PALLICE (La)
 ROCHELLE-VILLE (La)
 ROCHE-SUR-YON (La)
 ROCHY-CONDÉ
 ROESCHWOOG
 ROGNAC
 ROMANS-BOURG-DE-PÉAGE
 RONCHIN
 RONCO
 ROSIÈRES
 ROSIÈRES-AUX-SALINES
 ROSNY-SOUS-BOIS
 ROSNY-SUR-SEINE
 ROSPORDEN
 ROUBAIX-WATTRELOS
 ROUEN-MARTINVILLE
 ROUEN-ORLEANS
 ROUGEBARRE (Garage)
 RUE
 RUFFEC (CHARENTE)
 RUNGIS

 SABLÉ
 SAINCAIZE
 SAINT-AMAND-DE-VENDÔME
 SAINT-AMAND-LES-EAUX
 SAINT-AMOUR
 SAINT-ANDRÉ-LE-GAZ
 SAINT-AVOLD
 SAINT-AVRE-LA-CHAMBRE
 SAINT-BRIEUC
 SAINT-CÉSaire
 SAINT-CHAMAS
 SAINT-CYR
 SAINT-CYR-EN-VAL
 SAINT-CYR-GRANDE-CEINTURE
 SAINT-DENIS
 SAINT-DENIS-JARGEAU
 SAINT-DIÉ
 SAINT-DIZIER
 SAINTE-COLOMBE-LES-VIENNE-SAINTE-RO-
 MAIN-EN-GAL
 SAINTE-CROIX
 SAINT-ÉGRÈVE-SAINTE-ROBERT
 SAINTE-MAURE-NOYANT
 SAINTE-ERME
 SAINTES
 SAINT-ÉTIENNE-DE-MONTLUC
 SAINT-ÉTIENNE-DU-ROUVRAY
 SAINT-FLORENTIN-VERGIGNY
 SAINT-FONS
 SAINT-GAUDENS
 SAINT-GERMAIN-AU-MONT-D' OR
 SAINT-GERMAIN-DES-FOSSÉS
 SAINT-GERVASY-BEZOUCÉ
 SAINT-HILAIRE-AU-TEMPLE
 SAINT-HILAIRE-SAINTE-NAZAIRE
 SAINT-JEAN-DE-LOSNE
 SAINT-JEAN-DE-MAURIENNE-ARVAN
 SAINT-JORY
 SAINT-JULIEN-CLÉNAI
 SAINT-JULIEN-DU-SAULT
 SAINT-JULIEN-ÉCUISSÉS
 SAINT-JULIEN-MONTRICHER-
 SAINT-JUST-EN-CHAUSSÉE
 SAINT-LÉGER-SUR-DHEUNE
 SAINT-LOUBES
 SAINT-LOUIS (Haut-Rhin)
 SAINT-LOUIS-LES-AYGALADES
 SAINT-MALO
 SAINT-MARCEL
 SAINT-MARTIN-DE-CRAU
 SAINT-MICHEL-SUR-CHARENTE
 SAINT-MICHEL-VALLOIRE
 SAINT-NAZAIRE
 SAINT-OMER
 SAINT-OUEN-DU-BREUIL

 SAINT-OUEN-LES-DOCKS
 SAINT-PIERRE-D' ALBIGNY
 SAINT-PIERRE-DES-CORPS
 SAINT-PIERRE-DU-VAUVRAY
 SAINT-PIERRE-LA-COUR
 SAINT-PIERRE-LE-MOUTIER
 SAINT-POL-SUR-TERNOISE
 SAINT-PRIEST
 SAINT-QUENTIN
 SAINT-QUENTIN-FALLAVIER
 SAINT-RAMBERT-D' ALBON
 SAINT-ROCH (Somme)
 SAINT-SAVINIEN-SUR-CHARENTE
 SAINT-SAVIOL
 SAINT-SULPICE-AUTEUIL
 SAINT-SULPICE-LAURIÈRE
 SAINT-VALLIER-SUR-RHÔNE
 SAINT-VARENT
 SAINT-VINCENT-DE-TYROSSE
 SAINT-YRIEIX
 SALBRIS
 SALEUX
 SANTES
 SARREBOURG
 SARREGUEMINES
 SAUJON
 SAULCY
 SAULON
 SAUMUR-RIVE-DROITE
 SECLIN
 SEDAN
 SÉLESTAT
 SENAS
 SENNECEY-LE-GRAND
 SENS-LYON
 SERMIZELLES-VÉZELAY
 SÈTE
 SEURRE
 SIBELIN
 SIERCK-LES-BAINS
 SILLÉ-LE-GUILLAUME
 SILLERY
 SOISSONS
 SOLFERINO
 SOMAIN
 SOMMESOUS
 SORCY
 SORGUES-CHÂTEAUNEUF-DU-PAPE
 SOTTEVILLE
 SOUPPES
 SOUS-LE-BOIS
 SOUYS (La)
 STAINS
 STRASBOURG-CRONENBOURG
 STRASBOURG-NEUDORF
 STRASBOURG-PORT-DU-RHIN
 SUCY-BONNEUIL
 SUIPPES
 SULLY-SUR-LOIRE
 SURDON
 SURGÈRES
 SURVILLIERS-FOSSÉS

 TARASCON
 TEIL (ARDÈCHE) (Le)
 TERGNIER
 TERRASSON
 THAON
 THEIL-LA-ROUGE (Le)
 THENISSEY
 THIONVILLE
 THIVIERS
 THOUARS
 THOUROTTE
 TIERCÉ
 TONNAY-CHARENTE
 TONNEINS
 TOUL
 TOULOUSE-MAGASINS-GENERAUX
 TOULOUSE-RAYNAL
 TOURCOING

 TOURCOING-FRONTIÈRE
 TOURNES
 TOURNUS
 TOURS
 TOURY
 TRACY-SANCERRE
 TRAPPES
 TRÈBES
 TRÉPORT-MERS (Le)
 TRICHERIE (La)
 TRILPORT
 TRITH-SAINTE-LÉGER
 TROMPELOUP

 UCKANGE

 VAIRES-TORCY
 VALBONNE (La)
 VALENCE-D' AGEN
 VALENCIENNES
 VALENTON-LOCAL
 VALENTON-
 MULTITECHNIQUE
 VALLEROY-MOINEVILLE VANNES
 VARANGÉVILLE-SAINTE-NICOLAS
 VARENNES-CHENNEVIÈRES (La)
 VARENNES-SUR-ALLIER
 VAUTRY
 VAUMOISE
 VAUX-SOUS-AUBIGNY
 VAYRES
 VELAUX-COUDOUX
 VENDÔME
 VÉNISSIEUX
 VERBERIE
 VERDON (Le)
 VERDUN
 VERGEZE-CODOGNAN
 VERNEUIL-SUR-AVRE
 VERNON (EURE)
 VERNOUILLET-VERNEUIL
 VERNOU-SUR-SEINE
 VERSAILLES-MATELOTS
 VERTAIZON
 VERTOUI
 VERVINS
 VEUVE (La)
 VICHY
 VIERZON
 VIERZY
 VILLEFRANCHE-SUR-SAÔNE
 VILLENEUVE-D' INGRE
 VILLENEUVE-LE-ROI
 VILLENEUVE-SAINTE-GEORGES-TRIAGE
 VILLEPARISIS
 VILLEPERDUE
 VILLERS-COTTERETS
 VILLERS-SAINTE-SEPULCRE (Garage)
 VINCEY
 VITRÉ
 VITRY-LA-VILLE
 VITRY-LE-FRANÇOIS
 VITRY-SUR-SEINE
 VOIRON
 VOREPPE
 VOLTE-SUR-RHÔNE (La)
 VOUTRÉ
 VOVES
 WISSOUS

 WOIPPY
 WOIPPY-TRIAGE

 XERTIGNY

 YCHOUX
 YFFINIAC

 ZOUFFTGEN-FRONTIÈRE

Restrictions on load width

Table 21

Restrictions on load width on lines on the Continent¹⁾

Minimum horizontal distances, **in cm**, to be reserved on each side between the gauge and those parts of the load situated **between the end axles or the pivots**.

Distance between the end axles or between the pivots m	Distance from the section in question to the nearest end axle or to the nearest pivot																						
	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	9	10	11	12	13	14	15
7,5	0	0	0	0	0	0	0	0															
8	0	0	0	0	0	1	1	1															
9	0	0	0	0	1	1	1	2	2														
10	0	0	0	1	1	2	2	2	3	3													
11	0	0	0	1	2	2	3	3	3	4	4												
12	0	0	1	2	2	3	4	4	4	5	5	5											
13	0	0	1	2	3	4	4	5	5	6	6	6	6										
14	0	0	1	2	3	4	5	6	6	7	7	7	7	7									
15	0	0	2	3	4	5	6	6	7	8	8	8	9	9	9								
16	0	1	2	3	4	5	6	7	8	9	9	10	10	10	10	10							
17	0	1	2	4	5	6	7	8	9	10	10	11	11	12	12	12	12						
18	0	1	3	4	5	7	8	9	10	11	11	12	13	13	13	14	14						
19	0	1	3	4	6	7	8	10	11	12	12	13	14	14	15	15	16	16					
19,5	0	1	3	5	6	7	9	10	11	12	13	14	14	15	16	16	16	17					
20	0	1	3	5	6	8	9	10	12	13	14	14	15	16	16	17	17	18					
20,5	0	1	3	5	7	8	9	11	12	13	14	15	16	16	17	18	19	19	19				
21	0	2	3	5	7	8	10	11	12	14	15	16	16	17	18	19	20	21	21				
21,5	0	2	4	5	7	9	10	12	13	14	15	16	17	18	19	20	22	23	23				
22	0	2	4	6	7	9	11	12	13	15	16	17	18	19	21	22	23	24	25				
24	0	2	4	6	8	10	12	14	15	17	18	20	22	24	26	27	29	31	32	32			
26	0	3	5	7	9	11	13	15	17	19	22	24	27	29	31	32	35	38	39	40	41		
28	0	3	6	8	10	13	15	17	20	23	26	28	31	33	36	38	41	44	47	48	49	50	
30	1	3	6	9	11	14	16	19	23	26	29	32	35	38	41	43	47	51	54	56	58	59	59

For dimensions which are not given in the table, the nearest values above are to be used.

Observations

- The minimum horizontal distances are to be increased by 5 cm for those parts of the load situated less than 430 mm above rail level.
- For load units liable to tip over sideways, the minimum horizontal distances must be increased by
 - 10 cm for stacks (e.g. metal trellis work) extending beyond the stanchions,
 - 5 cm for those parts of tyred vehicles without fastenings extending beyond 3,200 mm (does not apply to vehicles loaded on the upper deck of double-decker wagons).
- For loads on wagons with bogies, the minimum horizontal distances are to be increased (for those parts of the load placed between the pivots) for a distance between the axles of the bogies
 - over 4 m up to 6 m by 1 cm
 - over 6 m by 2 cm
- When guard wagons or an intermediate wagon are used, see also 4.3 and Table 25.
- In addition to be above, the following provisions shall apply in respect of (UIC) GA (Table 12) and (UIC) GB (Table 13) gauges:

For parts of the load positioned more than 3.32 m (GA) or 3.36 m (GB) above the rails, the minimum horizontal distances shall be reduced in accordance with the table below.

(UIC) GA gauge

Above height of	3,320	3,420	3,510	3,610	3,710	3,810 mm
	1	2	3	4	5	6 cm

(UIC) GB gauge

Above height of	3,360	3,490	3,620	3,750	3,890	4,020 mm
	1	2	3	4	5	6 cm

N.B.: When this produces a negative figure, use the value: 0

1) For lines in Finland (VR) see Table 26

Table 22
(in abeyance)

Tableau 2₃

Restrictions on load width on lines on the Continent

Minimum horizontal distances, in cm, to be reserved on each side between the gauge and those parts of the load situated **beyond the end axles or the pivots**.

Distance between the end axles or between the pivots m	Distance from the section in question to the nearest end axles or to the nearest pivot																					
	0.5	1	1.5	1.75	2	2.25	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
7.5	0	0	2	3	3	4	5	7	9	11	13	16	18	21	23	26	29	32	37	42	46	52
8	0	0	2	3	4	4	5	7	9	11	14	16	18	21	23	26	29	33	38	42	47	53
9	0	0	2	3	4	5	6	7	10	12	14	16	19	21	24	27	30	35	39	44	49	55
10	0	0	2	3	4	5	6	8	10	12	14	17	19	22	25	27	32	36	41	46	52	57
11	0	0	2	3	4	5	6	8	10	13	15	17	20	23	25	29	34	38	43	49	54	59
12	0	1	2	3	4	5	6	9	11	13	15	18	21	23	26	31	36	41	46	51	56	62
13	0	1	3	4	5	6	7	9	11	14	16	19	21	24	28	33	38	43	48	53	59	65
14	0	1	3	4	5	6	7	9	12	14	17	19	22	25	30	35	40	45	50	56	62	68
15	0	1	3	4	5	6	8	10	12	15	18	20	23	27	32	37	42	47	53	59	65	71
16	0	1	3	4	6	7	8	10	13	16	18	21	24	29	34	39	44	50	55	61	67	74
17	0	1	4	5	6	7	8	11	13	16	19	22	25	30	36	41	46	52	58	64	70	77
18	0	2	4	5	6	7	9	11	14	17	20	23	27	32	38	43	49	55	61	67	73	80
19	0	2	4	5	7	8	9	12	15	18	21	24	29	34	40	45	51	57	63	70	76	83
19.5	0	2	4	5	7	8	9	12	15	18	21	24	30	35	41	46	52	58	65	71	77	84
20	0	2	4	6	7	8	10	12	15	18	21	25	30	36	42	47	53	60	66	72	79	86
20.5	0	2	5	6	7	8	10	13	16	19	22	26	31	37	43	48	55	61	67	74	80	87
21	0	2	5	6	7	9	10	13	16	19	22	27	32	38	44	50	56	62	68	75	82	89
21.5	0	2	5	6	7	9	10	13	16	19	23	28	33	39	45	51	57	63	70	77	83	90
22	0	2	5	6	8	9	11	13	17	20	23	28	34	40	46	52	58	65	71	78	85	92
24	0	3	5	7	8	10	11	15	18	21	26	31	37	44	50	56	63	70	77	84	91	98
26	0	3	6	8	9	11	12	16	19	23	29	35	41	47	54	61	68	75	82	89	97	105
28	0	3	7	8	10	12	13	17	20	25	31	38	44	51	58	65	72	80	87	95	103	111
30	0	4	7	9	11	12	14	18	22	28	34	41	48	55	62	70	77	85	93	101	109	118

For dimensions which are not given in the table, the nearest values above are to be used.

Tableau 2₃

Observations

1. The minimum horizontal distances are to be increased by 5 cm for those parts of the load situated less than 430 mm above rail level.
2. For load units liable to tip over sideways, the minimum horizontal distances must be increased by:
 - 10 cm for stacks (e.g. metal trellis work) extending beyond the stanchion,
 - 5 cm for tyred vehicles without fastenings on the parts extending beyond 3,200 mm (does not apply to vehicles loaded on the upper deck of double-decker wagons).
3. When guard wagons or an intermediate wagon are used, see also point 4.3 and Table 2₅.
4. In addition to the above, the following provisions shall apply in respect of (UIC) GA (Table 1₂) and (UIC) GB (Table 1₃) gauges:

For parts of the load positioned more than de 3,320 mm (GA) or 3,360 mm (GB) above the rails, the minimum horizontal distances shall be reduced in accordance with the table below:

(UIC) GA gauge	3,320	3,420	3,510	3,610	3,710	3,810	mm
Above height of	1	2	3	4	5	6	cm

(UIC) GB gauge	3,360	3,490	3,620	3,750	3,890	4,020	mm
Above height of	1	2	3	4	5	6	cm

N.B.: When this produces a negative figure, use the value: "0".

Table 24
(in abeyance)

Table 25

Restrictions on load width on lines on the Continent

Minimum horizontal distances, **in cm**, to be reserved on each side, between the loads and the side walls or stanchions of guard wagons or intermediate wagons.

Distance between the end axles or the pivots of the carrying wagon	Distance, in cm, from the load to the side walls or stanchions ¹⁾									
	guard wagons for a distance, from the section in question to the end axle of the carrying wagon or to the nearest pivot									
m	3	4	5	6	6.5	7	8	9	10	
4	26									
6	26	31	38	45	49	53	61	70	80	
8	26	32	39	47	50	55	63	72	83	
10	28	34	41	49	54	58	67	77	88	24
12	29	36	44	52	57	61	71	81	93	28
14	31	38	47	56	60	65	76	86	98	33
16	33	41	50	59	64	69	80	92	104	38
18	34	43	53	63	68	73	85	97	110	44
20	36	46	56	67	72	78	90	102	116	51
25	41	52	64	76	83	89	103	117	132	71
30	46	58	72	86	93	100	116	131	148	95

For those dimensions which are not given in the table, the nearest values above are to be used.

1) Loads for which the minimum horizontal distances are given in bold type are to be considered special consignments (number 7).

Table 26**Restrictions on load width on lines in Finland (VR)**

Minimum horizontal distances, **in cm**, to be reserved on each side between the gauge and those parts of the load situated **beyond the end axles or the pivots**.

Distance between the end axles or between the pivots	Distance from the section in question to the nearest end axle or to the nearest pivot											
	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	8,75	9,0	9,5	10,0
m												
17,0	0	0	0	0	0	0	0	0				
17,5	0	0	0	0	0	0	0	0	0			
18,0	0	0	0	0	0	0	1	1	1	1		
19,0	0	0	0	1	2	3	4	4	4	4	4	
20,0	0	1	2	3	5	5	6	7	7	7	7	8
For dimensions which are not given in the table, the nearest values above are to be used.												

Observations

1. The minimum horizontal distances are to be increased by 7,5 cm for those parts of the load situated less than 330 mm above rail level.
2. For load units liable to tip over sideways, the minimum horizontal distances must be increased by
 - 10 cm for stacks (e.g. metal trellis work) extending beyond the stanchions,
 - 5 cm for those parts of tyred vehicles without fastenings extending beyond 3,200 mm (does not apply to vehicles loaded on the upper deck of double-decker wagons).

Table 27**Restrictions on load width on lines in Finland (VR)**

Minimum horizontal distances, **in cm**, to be reserved on each side between the gauge and those parts of the load situated **beyond the end axles or the pivots**.

Distance between the end axles or between the pivots	Distance from the section in question to the nearest end axle or to the nearest pivot												
	1,2	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	
m													
6,0	0	1	2	2	3								
7,0	0	0	1	2	3	3							
8,0	0	0	1	1	2	3	3						
9,0	0	0	0	1	2	2	3	3					
10,0	0	0	0	1	1	2	2	3	4				
11,0	0	0	0	0	1	1	2	2	5	9			
12,0	0	0	0	0	1	1	2	2	7	11	15		
13,0	0	0	0	0	0	1	1	4	7	12	17	21	
14,0	0	0	0	0	0	1	1	5	9	14	18	23	
15,0	0	0	0	0	0	0	2	6	11	15	20	25	
16,0	0	0	0	0	0	0	3	7	12	17	22	27	
17,0	0	0	0	0	0	0	4	9	14	18	23	29	
18,0	0	0	0	0	0	1	6	10	15	20	25	31	
19,0	0	0	0	0	0	2	7	11	17	22	27	33	
20,0	0	0	0	0	0	3	8	13	18	23	30	35	
For dimensions which are not given in the table, the nearest values above are to be used.													

Observations

1. The minimum horizontal distances are to be increased by 7,5 cm for those parts of the load situated less than 330 mm above rail level.
2. For load units liable to tip over sideways, the minimum horizontal distances must be increased by
 - 10 cm for stacks (e.g. metal trellis work) extending beyond the stanchions,
 - 5 cm for those parts of tyred vehicles without fastenings extending beyond 3,200 mm (does not apply to vehicles loaded on the upper deck of double-decker wagons).

Table 3

Flaps on flat wagons which can be lowered without infringing the international gauge

UIC code No	Railway Undertaking	Wagons		Number of flaps per side	
		Letter code	Serial nos	Total	Which can be lowered
51	PKP	Kbkk	300 0 000 – 301 3 999	6	all
		K/Kbkk	321 0 000 – 321 7 999	6	all
		K/Kbkk	322 1 000 – 322 2 999	6	4 centre
		Ks	330 0 000 – 330 9 999	6	4 centre
		Ks/Kbkks	341 5 000 – 341 7 999	5	4 centre
52	BDŽ	Ras	393 ...	8	all
54	ČD	Kbkks	341 5 ... – 341 6 ...	7	all
		Res	394 1 ... – 394 4 ...	9	all
55	MÁV	Ks	330 0 000 – 330 7 999	6	all
		Lgs	441 6 ...	6	all
56	ŽSSK	Kbkks	341 5 ... – 341 6 ...	7	all
		Res	394 1 ... – 394 4 ...	9	all
64	FNME	KkkIm	328 3 000 – 328 3 010	4	all
65	MŽ	Kbs	333 0 200 – 333 0 245	6	4 centre
71	RENFE	Ks	330 1 000 – 330 1 049	6	all
		Ks	330 0 000 – 330 0 412	6	all
72	JŽ	Kbs	333 0 200 – 333 0 249	6	4 centre
74	GC	Kbs	330 0 004 – 330 0 998	6	4 centre
		Kbs 443	333 1 001 – 333 1 426	6	4 centre
79	SŽ	Kgs-Z	332 9 000 – 332 9 207	7	all
		Kgs-Z	333 0 212 – 333 0 213	7	all
		Regs-Z	392 4 002 – 392 4 327	8	all
		Res-Z	393 6 039 – 393 6 170	8	all
80	DB	Ks 446	330 0 000 – 330 1 191	6	4 centre
		Ks 447	330 1 500 – 330 1 799	6	4 centre
		Kbs 443	333 0 000 – 333 6 785	6	4 centre
		Kbs 442	333 7 000 – 334 8 599	6	4 centre
		Kbs 442	335 0 650 – 335 0 999	6	4 centre
		Kls 443	336 0 000 – 336 3 399	6	4 centre
		Kls 442	336 5 000 – 336 9 999	6	4 centre
		Klps 444	339 0 000 – 339 0 129	4*	4 centre
		Kls-x 448	346 7 000 – 346 8 361	6	4 centre
		Res 675	394 2 000 – 394 2 499	8	6 outer
		Res 677	394 2 500 – 394 2 749	9	6 outer
		Res 676	394 2 750 – 394 2 751	9	all
		Res 677	394 2 752 – 394 2 886	9	6 outer
		Res 676	394 2 887 – 394 2 999	9	all
		Res 676	394 3 000 – 394 3 999	9	all
		Res 676	394 4 000 – 394 4 134	9	all
		Res 678	399 7 000 – 399 7 543	9	all
Samms-u 454	486 0 000 – 486 0 999	6	all		
Samms-u 454	486 6 000 – 486 6 599	6	all		
Samms-u 453	486 7 000 – 486 7 765	7	all		
81	ÖBB	Ks	330 0 ...	6	4 centre
		Ks	331 0 ...	6	4 centre
		Ks	331 0 ...	6	4 centre
		Kbs	333 0 ...	6	4 centre
		Kbs	334 0 ...	6	4 centre
		Kbs	334 1 ...	6	4 centre
82	CFL	Ks	330 0 101 – 330 0 250	6	4 centre
		Ks	330 1 101 – 330 1 200	6	4 centre
		Kkks	340 4 001 – 340 4 067	6	4 centre
		Res	393 6 101 – 393 6 210	9	4 outer
		Renns	399 0 001 – 399 0 080	9	4 outer

* outer flaps missing

Table 3

Flaps on flat wagons which can be lowered without infringing the international gauge

UIC code No	Railway Undertaking	Wagons		Number of flaps per side	
		Letter code	Serial nos	Total	Which can lowered
83	FS	Ks	330 0 000 – 330 1 499	6	4 centre
		Ks	332 0 000 – 332 0 199	6	4 centre
		Km	310 0 000 – 310 0 398	6	4 centre
		Kkkm	320 5 000 – 320 5 391	6	4 centre
		Kms/Kkms	340 0 000 – 340 0 098	6	4 centre
85	SBB/CFF	Ks	330 0 ... – 330 1 ...	6	4 centre
86	DSB	Ks	330 0 000 – 330 0 299	6	4 centre
		Kbs	333 0 000 – 333 0 449	6	4 centre
87	SNCF	Ks	330 6 700 – 330 9 199	6	4 centre
		Ks	331 0 400 – 331 1 399	6	4 centre
		Ks	331 2 000 – 332 0 499	6	4 centre
		Ks	332 1 875 – 332 2 999	6	4 centre
		Ks	332 3 550 – 332 4 099	6	4 centre
		Ks	332 4 100 – 332 4 249	6	4 centre
		Ks	332 8 850 – 332 8 999	6	4 centre*
		Res	393 8 500 – 394 2 799	9	2 outer
		Res	394 7 950 – 394 7 999	9	2 outer
		Lfls	414 5 200 – 414 5 299	6	all
88	SNCB	Ks	330 4 000 – 330 5 149	6	all
		Ks	330 0 000 – 330 0 899	5	all

* The 2 centre flaps only for wagons forwarded to Spain or to Portugal.

Impact test for loading methods and loose fastenings

1 Purpose

The purpose of these tests is to check whether the loading methods used and loose fastenings stand up to the longitudinal stresses exerted during railway operating.

2 Test conditions

2.1 Impact wagon

The wagon shall be:

- a high-sided open bogie wagon,
- fitted with category A sided buffers in accordance with **UIC leaflet 526-1**,
- loaded to a total mass of 80 t, preferably with bulk goods,
- kept stationary on flat straight track in the unbraked position by means of stop blocks positioned at a distance of approximately one meter.

2.2 Wagon loaded according to the method requiring testing

The wagon must be:

- loaded as far as possible to maximum capacity (part load: insufficient), in order to limit investment in means of fastening,
- fitted in principle with categories A and B side buffers, in accordance with **UIC leaflets 526-1 or 526-2**.

The results of tests carried out with wagons with buffers in accordance with **UIC leaflet 526-1**, category C, or **UIC leaflet 526-3** may not be transposed to wagons fitted with conventional buffers (**UIC leaflet 526-1**, categories A and B, and **UIC leaflet 526-2**).

The floor of the wagon shall be

- clean,
- free from any load debris, fastenings, snow or ice.

The state of the floor (e.g. wet or dry) must be stated in the report.

2.3 Position of the impact wagon

For testing purposes, the impact wagon may also impact the wagon loaded according to the method which is being tested.

2.4 Position of the impact wagon

The speeds given in the tolerance ranges hereafter are reference speeds; the results recorded are to be interpreted in line with point 3.

2.4.1 Full wagons fly or gravity shunted

2 impacts in the same direction,

- 1st impact at 5-7 km/h
- 2nd impact at 8-9 km/h

followed, without any adjustment of the load fastenings, by

- counter-shock at 8-9 km/h.

The need to carry out a counter-shock must be assessed on the basis of the results of the two previous impacts with account taken, where appropriate, of the features of the goods carried and loading type.

Table 4

2.4.2 Full wagons not fly or gravity shunted (block trains)

2 impacts in the same direction, both at 3-4 km/h.

2.5 Measurement of impact speeds

- Measurement track section preferably to be marked with primer caps,
- End of the section situated approximately 10 m from the buffers on the impact wagon,
- Measurement by means of a chronometer and conversion using the "time/impact speed" concordance table given under point 5 of the tolerance ranges given under point 2.4.1.
- Stopping testing:
skids placed between the measurement track section and the impact wagon to act as an emergency brake which can stop testing if required.

Scenario 1: if the impact speed as per point 3 hereafter is not considered useable, the skids are to be left in place.

Scenario 2: if the impact speed is considered correct, then the skids are to be removed immediately (e.g. using a wire).

- It is also possible to apply more sophisticated measurement techniques.

3 Analysis of results

After the impact programme has been carried out in accordance with point 2.4

- operating safety must be preserved
- the fastenings, wagon gear and load must be free of damage.

In the case of loads likely to move about freely in the lengthwise direction across the wagon, the analysis will focus on the distance covered by the load during the second impact.

The result of the test must be recorded in accordance with point 7 of specimen 1.

4 Dangerous goods (RID)

For the purposes of impact tests, RID goods are assimilated to other transported goods. Other conditions which apply are set out in the RID under the section headed "Regulations relating to the various classes".

5 Conversion table

km/h	Impact speed					
	Measurement section					
	5 m	6 m	7 m	8 m	9 m	10 m
	Second"					
3	6.00	7.20	8.40	9.60	10.80	12.00
4	4.50	5.40	6.30	7.20	8.10	9.00
5	3.60	4.32	5.04	5.76	6.48	7.20
7	2.57	3.09	3.60	4.11	4.63	5.14
8	2.25	2.70	3.15	3.60	4.05	4.50
9	2.00	2.40	2.80	3.20	3.60	4.00

Issuing Railway Undertaking

Title (Type of goods)

Loading example:

$$\frac{000^{2)}}{00^{3)}-000^{4)}-00^{5)}}$$

Single wagons and groups of wagons

Wagons in block trains and combined transport
Wagons with long-stroke shock absorbers

Type of goods

Wagon

Method of loading

Securing

- lengthways

- crossways

Additional indications

