Appendix H - Examples of calculations of permitted payloads

H.1 - Example 1

Two-axle wagons with a length over buffers of 12 m and a tare of 12,4 t, the technical characteristics of which are consistent with a maximum mass per axle of 20 t in S conditions.

Application of the provisions of Appendix D - page 12, in respect of wagons for which L is greater than 7,2 m, gives the following results:

50 - T = 50 - 12,4 = 37,6
45 - T = 45 - 12,4 = 32,6
40 - T = 40 - 12,4 = 27,6
36 - T = 36 - 12,4 = 23,6
32 - T = 32 - 12,4 = 19,6

These formulas represent a simplified method. Exact values according to point 3.2.1 - page 4 can be calculated by the software tool "Calculation of the payload limits for freight wagons" provided by UIC.

However, for ordinary forwarding conditions, the load shall be limited to :

(2 x 20) - 12,4 = 27,6 instead of 37,6 because of the technical characteristics of the wagon,

(2 x 20) - 12,4 = 27,6 instead of 32,6 because of the technical characteristics of the wagon.

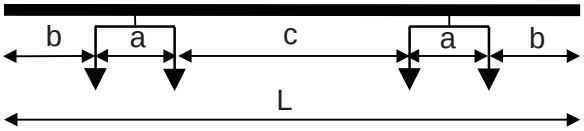
The values to be shown in the load limit table, where these values are rounded down to the nearest half-tonne, are the following:

	A	B	C	D	E
S	19,5 t	23,5 t	27,5 t		

NB: The load limit table must comply with the provisions of the *RIV 2000, point 23.2.1.4*.

NB: The values are only valid if the distance "b" from the axle to the nearest buffer is b ≥ 0,9 m.

H.2 - Example 2



a = 1,80 m b = 1,62 m c = 14,86 m L = 21,70 m

Wagons with two 2-axle bogies, a length over buffers of 21,70 m and a tare of 28,2 t, the technical characteristics of which are consistent with a maximum mass per axle of 25 t and 20 t in SS conditions.

Application of the provisions of Appendix E - page 13 in respect of wagons for which L is greater than 14,40 m gives the following results :

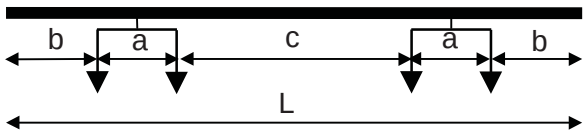
$$\begin{aligned} 100 - T &= 100 - 28{,}2 = 71{,}8 \\ 90 - T &= 90 - 28{,}2 = 61{,}8 \\ 80 - T &= 80 - 28{,}2 = 51{,}8 \\ 72 - T &= 72 - 28{,}2 = 43{,}8 \\ 64 - T &= 64 - 28{,}2 = 35{,}8 \end{aligned}$$

These formulas represent a simplified method. Exact values according to point 3.2.1 - page 4 can be calculated by the software tool "Calculation of the payload limits for freight wagons" provided by UIC.

The values to be shown in the load limit table, where these values are rounded down to the nearest half-tonne, are the following

	A	B	C	D	E
S	35,5 t	43,5 t	51,5 t	61,5 t	71,5 t
SS	35,5 t	43,5 t	51,5 t		

H.3 - Example 3



a = 1,80 m b = 1,62 m c = 5,20 m L = 12,04 m

Wagons with two 2-axle bogies, a length over buffers of 12,04 m and a tare of 22,3 t, the technical characteristics of which are consistent with a maximum mass per axle of 20 t in S conditions.

Application of the provisions of Appendix E - page 13 in respect of wagons for which L is between 11,25 m and 12,50 m gives the following results:

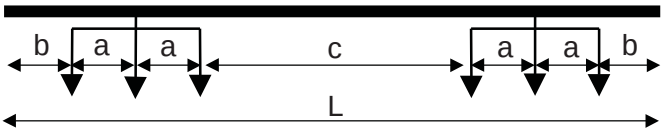
100 - T = 100 - 22,3 = 77,7	8,8 L - T = 105,95 - 22,3 = 83,65
100 - T = 100 - 22,3 = 77,7	8,0 L - T = 96,32 - 22,3 = 74,02
90 - T = 90 - 22,3 = 67,7	7,2 L - T = 86,68 - 22,3 = 64,38
80 - T = 80 - 22,3 = 57,7	6,4 L - T = 77,05 - 22,3 = 54,75
72 - T = 72 - 22,3 = 49,7	5 L - T = 60,2 - 22,3 = 37,9

These formulas represent a simplified method. Exact values according to point 3.2.1 - page 4 can be calculated by the software tool "Calculation of the payload limits for freight wagons" provided by UIC.

The values to be shown in the load limit table, where these values are rounded down to the nearest half-tonne, are the following:

	A-B1	B2	C2	C3-C4	D2	D3	D4	E4	E5
S	37,9 t	49,7 t	54,7 t	57,7 t	54,7 t	57,7 t			

H.4 - Example 4



a = 1,40 m b = 1,50 m c = 10,70 m L = 19,30 m

Wagons with two 3-axle bogies, a length over buffers of 19,30 m and a tare of 35,6 t, the technical characteristics of which are consistent with a maximum mass per axle of 16 t in S conditions.

Application of the P_r values shown in Appendix C - page 11 gives the following values:

Line categories	Z values	Y values
E5	16,0 x 6 - 35,6 = 60,4 t	19,3 x 8,8 - 35,6 = 134,2 t
E4	16,0 x 6 - 35,6 = 60,4 t	19,3 x 8,0 - 35,6 = 118,8 t
D4	15,5 x 6 - 35,6 = 57,4 t	19,3 x 8,0 - 35,6 = 118,8 t
D3	15,5 x 6 - 35,6 = 57,4 t	19,3 x 7,2 - 35,6 = 103,4 t
D2	15,5 x 6 - 35,6 = 57,4 t	19,3 x 6,4 - 35,6 = 87,9 t
C4	14,0 x 6 - 35,6 = 48,4 t	19,3 x 8,0 - 35,6 = 118,8 t
C3	14,0 x 6 - 35,6 = 48,4 t	19,3 x 7,2 - 35,6 = 103,4 t
C2	14,0 x 6 - 35,6 = 48,4 t	19,3 x 6,4 - 35,6 = 87,9 t
B2	12,5 x 6 - 35,6 = 39,4 t	19,3 x 6,4 - 35,6 = 87,9 t
B1	12,5 x 6 - 35,6 = 39,4 t	19,3 x 5,0 - 35,6 = 60,9 t
A	11,0 x 6 - 35,6 = 30,4 t	19,3 x 5,0 - 35,6 = 60,9 t

These formulas according to point 4 - page 7 represent a simplified method. Exact values according to point 3.2.1 - page 4 can be calculated by the software tool "Calculation of the payload limits for freight wagons" provided by UIC.

Since all the Z values are lower than the Y values, the values to be shown in the load limit table are the following:

	A	B	C	D	E
S	30,4 t	39,4 t	48,4 t	57,4 t	60,4 t