



Rigging in the MECC

Guidelines for Riggers

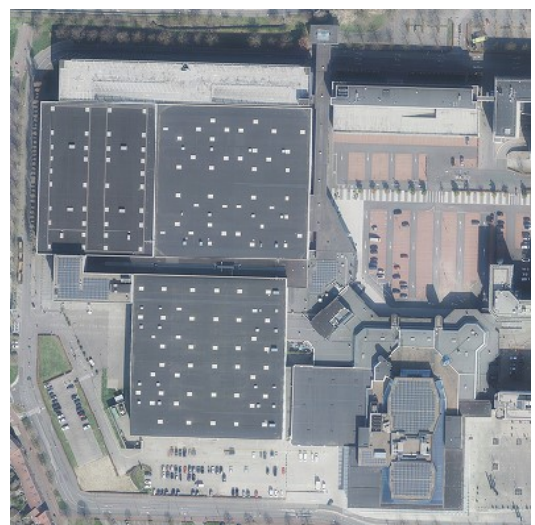
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This document is based on following sources.

- ❖ Modifying installations in MECC halls and East entrance, Maastricht, dated 21 November 2006.
- ❖ West Hall steel structure statistical calculation 98.096 dated July 1998.
- ❖ NPR 8020-10-2006
- ❖ NPR 8020-13-2010
- ❖ Machinery Directive 2006/42/EC

Previous versions:

- ❖ Rigging in the MECC NL – Version 1.1 dated 05-12-2017

With respect to the guidelines referred to in this document, amended standards/guidelines automatically replace the previous version as soon as the amended standards/guidelines are in effect. The new version automatically replaces the old version at the time that this document is released.

If principles change and/or changes are made to the roof and/or installation technology, Ingenieursbureau van der Werf & Nass must be contacted because the report may need to be amended.

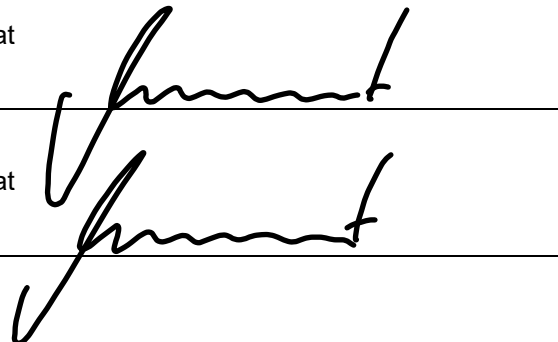
In the event of discrepancies between the two documents, the Dutch version shall prevail.

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TABLE OF CONTENTS

1	INTRODUCTION	2
2	GENERAL RIGGING GUIDELINES	3
3	NORTH HALL (GENERAL PROVISIONS)	5
3.1	Trusses in axis B21 – tables vertical rigging	9
3.2	Trusses in axis B22 – tables vertical rigging	11
3.3	Trusses in axes B23 to B33 – tables vertical rigging	13
3.4	Trusses in axis B34 – tables vertical rigging	15
3.5	Trusses in axis B35 – tables vertical rigging	17
4	SOUTH HALL (GENERAL PROVISIONS)	19
4.1	Trusses in axes B2 and B3 – tables vertical rigging	23
4.2	Trusses in axes B10, B11, B16, and B17 – tables vertical rigging	25
4.3	Trusses in axes B4 to B9 and B12 to B15 – tables vertical rigging	27
5	WEST HALL (GENERAL PROVISIONS)	29
5.1	Trusses in axis B20' to axis B35' – tables vertical rigging	33
6	EXPO FOYER	34
7	MAIN ENTRANCE	35
8	WINTER GARDEN	36
9	EUROPASSAGE	38
	APPENDIX I: RIGGING PLOT REQUIREMENTS	40
	APPENDIX II: RIGGING CALCULATIONS FORMAT	42

1 INTRODUCTION

These guidelines indicate where and under what conditions rigging must be set up in the MECC Maastricht. For each location, a description is given indicating where rigging is possible and the maximum load per suspension point for both vertical rigging (straights) and two-leg bridles. Deviating situations that cannot be assessed by MECC Maastricht based on this document, will be assessed by a structural engineer chosen by MECC Maastricht at the expense of the exhibitor or the organizer.

If you want to set up rigging in our complex, the rigger must submit a rigging plot for approval at least six weeks prior to rigging the event or exhibition in question. The plot must be submitted to the MECC Project Manager handling the event or exhibition. The plot will be assessed based on the criteria and requirements specified in this document. Submission should be in accordance with appendix I and II. This document also describes how the rigging plot should be described. Each rigging plot will be assessed according to the criteria specified in this document. You will receive an official response from MECC Maastricht within ten workdays at the latest. It will indicate whether any adjustments must be made. A final version must be agreed on at least two weeks prior to rigging the event or exhibition in question.

A map of MECC Maastricht is provided below (see Figure 1). This document contains separate sections for the North Hall, South Hall, West Hall, Expo Foyer, Main Entrance, Winter Garden, and Euro Passage. Each section describes what rigging is possible within the location.



Figure 1: Map of MECC Maastricht

Tip: Always request the latest version of this document.

2 GENERAL RIGGING GUIDELINES

For all decisions that must be made... safety first! To rig in the MECC, the following preconditions must be complied with:

Company and staff certification

1. Rigging may only be carried out by companies that are VCA*, VCA**, or Oshas 18001 certified.
2. Each rigger present must have demonstrable proof of
 - a valid VCA certificate (VCA-B or VCA-FULL for operational supervisors).
 - an 'elementary rigging technology in the entertainment industry' certificate, a 'Exhibition Rigging' certificate, or a variant thereof, such as a 'National Rigging Certificate' (UK), 'Arena Rigging Certificate' from ETCP (USA), 'Rigstar Rigging certificate' (USA), or a relevant 'VLPT rigging diploma' (GER).
 - If an aerial platform will be used, the operator must have a valid aerial platform certificate. It is the responsibility of the 'rigger' to ensure that no unauthorised individuals are present in the work area.
 - Riggers performing work while in an aerial platform must wear a full-body safety harness (EN361) secured to the anchor point on the platform deck with a safety line (EN355).
 - All individuals within the vicinity of the aerial platform (including ground workers) are required to wear a safety helmet (EN397).

Rigging plot requirements

3. Each rigger performing work must have the MECC approved rigging plot. Appendix I lists the requirements referred to in this document.
4. A 'DWG file' is available for each rigging section detailed in this document that shows where the available suspension points are located.
5. In all cases, the maximum permissible exhibit-load indicated in this document must not be exceeded.
6. The maximum permissible exhibit-load for bridles is based on two-leg bridles. The distribution of force across all suspension points must be clearly calculated.
7. For two-leg bridles, the inner angle (at the point of application of the exhibit-load) must be smaller than 120 degrees. If an inside angle greater than 120 degrees is desired, an explicit request including written justification must be submitted to Mecc Maastricht for approval.
8. Dynamic loads are not permitted unless explicitly permitted by a structural engineer chosen by MECC Maastricht and at the expense of the exhibitor or the organizer. This also applies to (complex) situations that MECC Maastricht cannot assess using this document.

Rigging in practice

9. Rigging may only be set up in accordance with the approved plot. Any change must be submitted for approval to the MECC Building & Facilities department.
10. In case of 'loosely packed' snow up to 30 cm, there are no limitations with regard to an approved rigging plan. With more than 30 cm or packed snow, the load should be reduced in consultation with the structural engineer. The MECC is authorized to have an already approved load decreased to an acceptable load.
11. Under no circumstances may the roof structure be damaged.
12. Permanent elements in the roof (including the installation technology, fixtures, smoke curtains, etc.) must not be touched during rigging work.

Use of materials

14. Only materials with a CE Marking may be used for rigging. For parties outside the EU, the products used must demonstrably satisfy the ASME guideline or equivalent.
15. The materials must have a WLL indicator or label ('Working Load Limit').
16. The maximum permissible exhibit-load is half the (industrial) WLL. The maximum permissible exhibit-load on the hoists is half of the (industrial) WLL plus a 10% overrun. For example: hoists 1,000kg. The maximum permissible load on the hoists is in this case $(0.5 \times 1,000\text{kg}) + 10\% \text{ overrun} = 550\text{kg}$.
17. The materials must be inspected once a year and the test certificate must be made available within twenty-four hours of being requested.
18. The materials must be used according to the instructions.

Note: At all times, the MECC retains the right to disassemble the rigging or have a load that was already approved to be reduced (e.g. in the event of snow). The rigger should bear in mind that the MECC is entitled to check whether the rigging was set up in accordance with the guidelines and rigging plot. If the agreements are complied with, the MECC is entitled to disapprove of and reject (parts of) the rigging. In the event of rejection, the MECC is not liable for any direct, indirect, additional, consequential damages, or any other kind of damages or loss (including financial damages and/or loss of reputation).

3 NORTH HALL (GENERAL PROVISIONS)

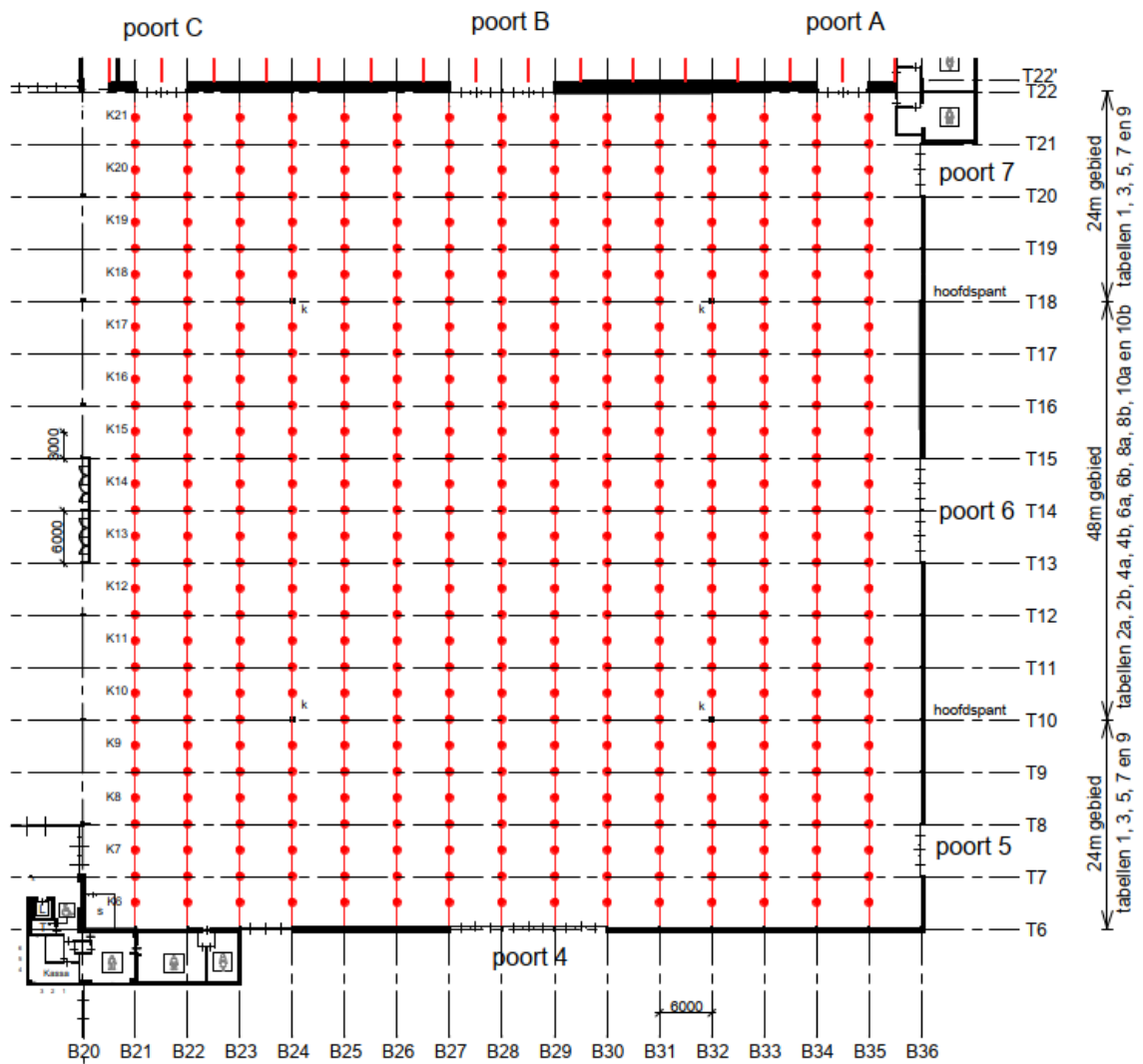


Figure 2: North Hall Suspension points

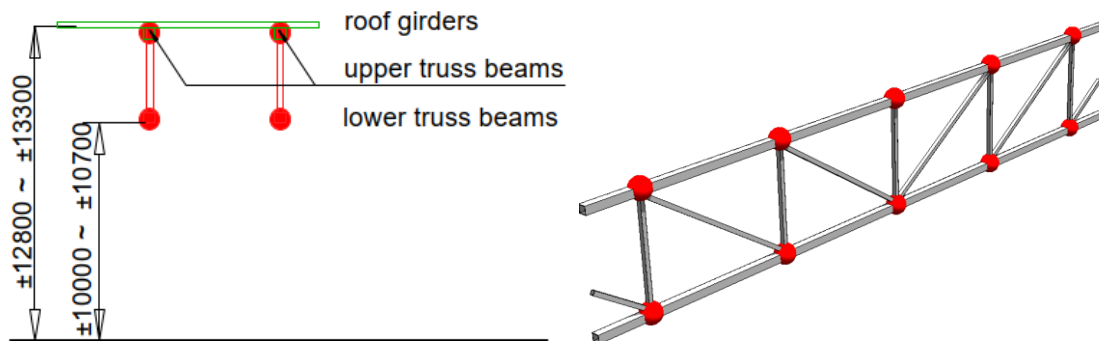


Figure 3: North Hall suspension points (●) lower and upper beam in cross-section and isometry



Figure 4: Attachment in truss joint on the lower beam (●)



Figure 5: Attachment in truss joint on the upper beam (●)

In the **North Hall**, vertical rigging is permitted at the indicated places (see

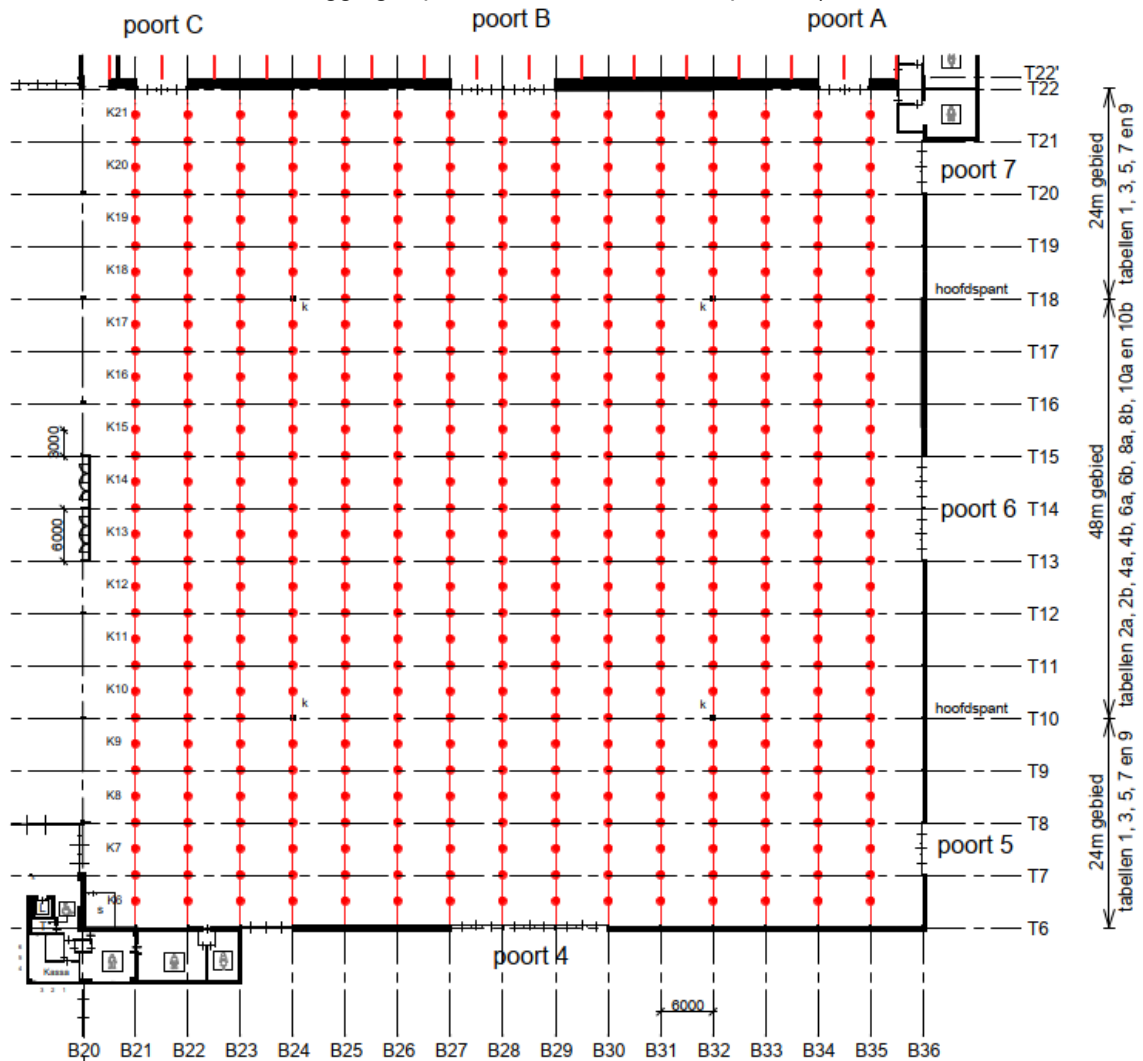


Figure 2). The available number of suspension points on the trusses is 461 (excluding axle B20 and axle B36).

Height of suspension points

- ❖ Height of upper beam on truss: $\pm 12.8 \text{ m} \sim \pm 13.3 \text{ m}$
- ❖ Height of lower beam on truss : $\pm 10.0 \text{ m} \sim \pm 10.7 \text{ m}$

Distance between suspension points

- ↕ : 3.0 m
- ↔ : 6.0 m



Vertical rigging (Straights) in axes B20 to B36

- ❖ The loads specified in Tables 1 to 10 are the maximum exhibit-loads (including hoists etc.) permitted on the lower beam or upper beam of the trusses in axis B21 to B35.
- ❖ Loads may only be attached in the truss joints (see Figure 4 and Figure 5), subject to the exceptions listed below.
- ❖ The permissible exhibit-load (including hoists etc.) between the truss joints on the lower or upper beam for the trusses: 200 kg but shall not exceed the table value (loads are not permitted on diagonals, verticals, bracings and roof girders).
Note: In the subsequent truss joints on both sides of the load (in the relevant truss), no load may be attached unless the distance between the loads is 3.0 m minimal.
- ❖ In the truss joints on the lower or upper beam of axis B20 and axis B36, a maximum exhibit-load (including hoists, etc.) of 175 kg is permitted.
- ❖ Extreme snow or wind loads may cause truss deflections of 180 mm maximum.



Two-leg bridles in axes B21 and B22

- ❖ The use of two-leg bridles is only permitted in the truss joints of the upper beams. In addition, a maximum exhibit-load (including hoists, etc.) of 50 kg is permitted for the bridle under the following conditions:
 - The exhibit-load (including hoists, etc.) in the subsequent truss joints on both sides of the load (of the relevant trusses) must be reduced by the exhibit-load (including hoists, etc.).
 - Not more than one bridle-leg between two truss joints.
 - The minimum distance between the bridles is 3.0m.
 - Loads are not permitted on diagonals, verticals, bracings and roof girders.



Two-leg bridles at axes B23 to B35

- ❖ The use of two-leg bridles is only permitted in the upper beams. In addition, a maximum exhibit-load (including hoists, etc.) of 175 kg is permitted under the following conditions:
 - The exhibit-load (including hoists, etc.) in the subsequent truss joints on both sides of the bridle-legs (of the relevant trusses) must be reduced by the exhibit-load (including hoists, etc.).
 - Not more than one load between two truss joints.
 - The minimum distance between the loads is 3.0m.
 - Loads are not permitted on diagonals, verticals, bracings and roof girders.
 - If there is a two-leg bridle between two different trusses, the conditions for the other truss must also be observed.



Two-leg bridles at axes B20 and B36

- ❖ The use of two-leg bridles is only permitted in the upper beams. In addition, a maximum exhibit-load (including hoists, etc.) of 175 kg is permitted under the following conditions:
 - The permissible exhibit-load (including hoists, etc.) is 175 kg for the truss joints of the upper beam of the trusses.
 - Loads are allowed only to be attached in the truss joints.
 - If there is a two-leg bridle between two different trusses, the conditions for the other truss must also be observed.



Two-leg bridles up to a maximum of 300 kg

- ❖ The use of two-leg bridles in the truss joints of the lower beams, is only permitted in the lengthwise direction of the truss. In addition, a maximum applies of 50% of the permissible exhibit-load (including hoists, etc.) per truss joint, but shall not exceed 300 kg.
- ❖ The two bridle-legs of each exhibit-load (including hoists, etc.) may be considered as one load.

3.1 Trusses in axis B21 – tables vertical rigging

Table 1: Permissible exhibit-load* on 24m¹ truss in axis B21				
Vertical rigging – Straights in truss joints on upper and lower beam [kg]				
n loads	C.T.C. 3 m ¹	C.T.C. 6 m ¹	C.T.C. 9 m ¹	C.T.C. 12 m ¹
1	720			
2	410	480	550	640
3	290	360	-	-
4	240	360	-	-
5	200	-	-	-
6	180	-	-	-
7	180	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 2a: Permissible exhibit-load* on 48m¹ truss in axis B21								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹	C.T.C. 15m ¹	C.T.C. 18m ¹	C.T.C. 21m ¹	C.T.C. 24m ¹
1	1440							
2	770	825	855	885	920	960	1000	1050
3	525	575	640	700	770	855	960	960
4	410	480	550	640	675	-	-	-
5	340	410	510	575	-	-	-	-
6	295	385	450	-	-	-	-	-
7	260	360	-	-	-	-	-	-
8	240	320	-	-	-	-	-	-
9	220	320	-	-	-	-	-	-
10	210	-	-	-	-	-	-	-
11	200	-	-	-	-	-	-	-
12	190	-	-	-	-	-	-	-
13	185	-	-	-	-	-	-	-
14	180	-	-	-	-	-	-	-
15	175	-	-	-	-	-	-	-
16	170	-	-	-	-	-	-	-
17	170	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 2b: Permissible exhibit-load* on 48m¹ truss in axis B21								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 27m ¹	C.T.C. 30m ¹	C.T.C. 33m ¹	C.T.C. 36m ¹	C.T.C. 39m ¹	C.T.C. 42m ¹		
1	1440							
2	1100	1150	1210	1280	1355	1440	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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3.2 Trusses in axis B22 – tables vertical rigging

Table 3: Permissible exhibit-load* on 24m¹ truss in axis B22				
Vertical rigging – Straights in truss joints on upper and lower beam [kg]				
n loads	C.T.C. 3 m ¹	C.T.C. 6 m ¹	C.T.C. 9 m ¹	C.T.C. 12 m ¹
1	360			
2	205	240	275	320
3	145	180	-	-
4	120	180	-	-
5	100	-	-	-
6	90	-	-	-
7	90	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 4a: Permissible exhibit-load* on 48m¹ truss in axis B22								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹	C.T.C. 15m ¹	C.T.C. 18m ¹	C.T.C. 21m ¹	C.T.C. 24m ¹
1	720							
2	380	410	425	445	460	480	500	525
3	260	285	320	350	385	425	480	480
4	205	240	275	320	340	-	-	-
5	170	205	255	290	-	-	-	-
6	145	190	225	-	-	-	-	-
7	130	180	-	-	-	-	-	-
8	120	160	-	-	-	-	-	-
9	110	160	-	-	-	-	-	-
10	105	-	-	-	-	-	-	-
11	100	-	-	-	-	-	-	-
12	95	-	-	-	-	-	-	-
13	90	-	-	-	-	-	-	-
14	90	-	-	-	-	-	-	-
15	90	-	-	-	-	-	-	-
16	85	-	-	-	-	-	-	-
17	85	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 4b: Permissible exhibit-load* on 48m¹ truss in axis B22								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 27m ¹	C.T.C. 30m ¹	C.T.C. 33m ¹	C.T.C. 36m ¹	C.T.C. 39m ¹	C.T.C. 42m ¹		
1	720							
2	550	575	605	640	680	720	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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3.3 Trusses in axes B23 to B33 – tables vertical rigging

Table 5: Permissible exhibit-load* on 24m¹ truss in axes B23 to B33				
Vertical rigging – Straights in truss joints on upper and lower beam [kg]				
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹
1	1320			
2	750	880	1000	1170
3	530	660	-	-
4	440	660	-	-
5	365	-	-	-
6	330	-	-	-
7	330	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 6a: Permissible exhibit-load* on 48m¹ truss in axes B23 to B33								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹	C.T.C. 15m ¹	C.T.C. 18m ¹	C.T.C. 21m ¹	C.T.C. 24m ¹
1	2640							
2	1410	1510	1570	1620	1685	1760	1830	1925
3	960	1055	1170	1280	1410	1565	1760	1760
4	755	880	1005	1175	1235	-	-	-
5	620	755	940	1050	-	-	-	-
6	540	705	825	-	-	-	-	-
7	480	660	-	-	-	-	-	-
8	440	590	-	-	-	-	-	-
9	405	590	-	-	-	-	-	-
10	385	-	-	-	-	-	-	-
11	365	-	-	-	-	-	-	-
12	350	-	-	-	-	-	-	-
13	340	-	-	-	-	-	-	-
14	330	-	-	-	-	-	-	-
15	320	-	-	-	-	-	-	-
16	310	-	-	-	-	-	-	-
17	310	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 6b: Permissible exhibit-load* on 48m¹ truss in axes B23 to B33								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 27m ¹	C.T.C. 30m ¹	C.T.C. 33m ¹	C.T.C. 36m ¹	C.T.C. 39m ¹	C.T.C. 42m ¹		
1	2640							
2	2015	2100	2215	2345	2485	2640	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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3.4 Trusses in axis B34 – tables vertical rigging

Table 7: Permissible exhibit-load* on 24m¹ truss in axis B34				
Vertical rigging – Straights in truss joints on upper and lower beam [kg]				
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹
1	2040			
2	1160	1360	1560	1810
3	820	1020	-	-
4	680	1020	-	-
5	565	-	-	-
6	510	-	-	-
7	510	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 8a: Permissible exhibit-load* on 48m¹ truss in axis B34								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹	C.T.C. 15m ¹	C.T.C. 18m ¹	C.T.C. 21m ¹	C.T.C. 24m ¹
1	4080							
2	2180	2330	2420	2510	2610	2720	2835	2970
3	1485	1630	1810	1980	2175	2420	2720	2720
4	1160	1360	1555	1810	1910	-	-	-
5	960	1165	1450	1630	-	-	-	-
6	840	1090	1275	-	-	-	-	-
7	740	1020	-	-	-	-	-	-
8	680	945	-	-	-	-	-	-
9	625	905	-	-	-	-	-	-
10	595	-	-	-	-	-	-	-
11	565	-	-	-	-	-	-	-
12	540	-	-	-	-	-	-	-
13	525	-	-	-	-	-	-	-
14	510	-	-	-	-	-	-	-
15	495	-	-	-	-	-	-	-
16	480	-	-	-	-	-	-	-
17	480	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 8b: Permissible exhibit-load* on 48m¹ truss in axis B34								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 27m ¹	C.T.C. 30m ¹	C.T.C. 33m ¹	C.T.C. 36m ¹	C.T.C. 39m ¹	C.T.C. 42m ¹		
1	4080							
2	3110	3260	3430	3625	3840	4080	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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3.5 Trusses in axis B35 – tables vertical rigging

Table 9: Permissible exhibit-load* on 24m¹ truss in axis B35				
Vertical rigging – Straights in truss joints on upper and lower beam [kg]				
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹
1	2520			
2	1435	1680	1925	2240
3	1015	1260	-	-
4	840	1260	-	-
5	700	-	-	-
6	630	-	-	-
7	630	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 10a: Permissible exhibit-load* on 48m¹ truss in axis B35								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 9m ¹	C.T.C. 12m ¹	C.T.C. 15m ¹	C.T.C. 18m ¹	C.T.C. 21m ¹	C.T.C. 24m ¹
1	5040							
2	2690	2880	2985	3100	3225	3360	3505	3665
3	1835	2020	2240	2445	2690	2990	3360	3360
4	1440	1680	1920	2240	2360	-	-	-
5	1190	1440	1790	2010	-	-	-	-
6	1035	1350	1580	-	-	-	-	-
7	910	1260	-	-	-	-	-	-
8	840	1120	-	-	-	-	-	-
9	770	1120	-	-	-	-	-	-
10	735	-	-	-	-	-	-	-
11	695	-	-	-	-	-	-	-
12	670	-	-	-	-	-	-	-
13	650	-	-	-	-	-	-	-
14	630	-	-	-	-	-	-	-
15	610	-	-	-	-	-	-	-
16	600	-	-	-	-	-	-	-
17	600	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 10b: Permissible exhibit-load* on 48m¹ truss in axis B35								
Vertical rigging – Straights in truss joints on upper and lower beam [kg]								
n loads	C.T.C. 27m ¹	C.T.C. 30m ¹	C.T.C. 33m ¹	C.T.C. 36m ¹	C.T.C. 39m ¹	C.T.C. 42m ¹		
1	5040							
2	3840	4030	4240	4480	4740	5040	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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4 SOUTH HALL (GENERAL PROVISIONS)

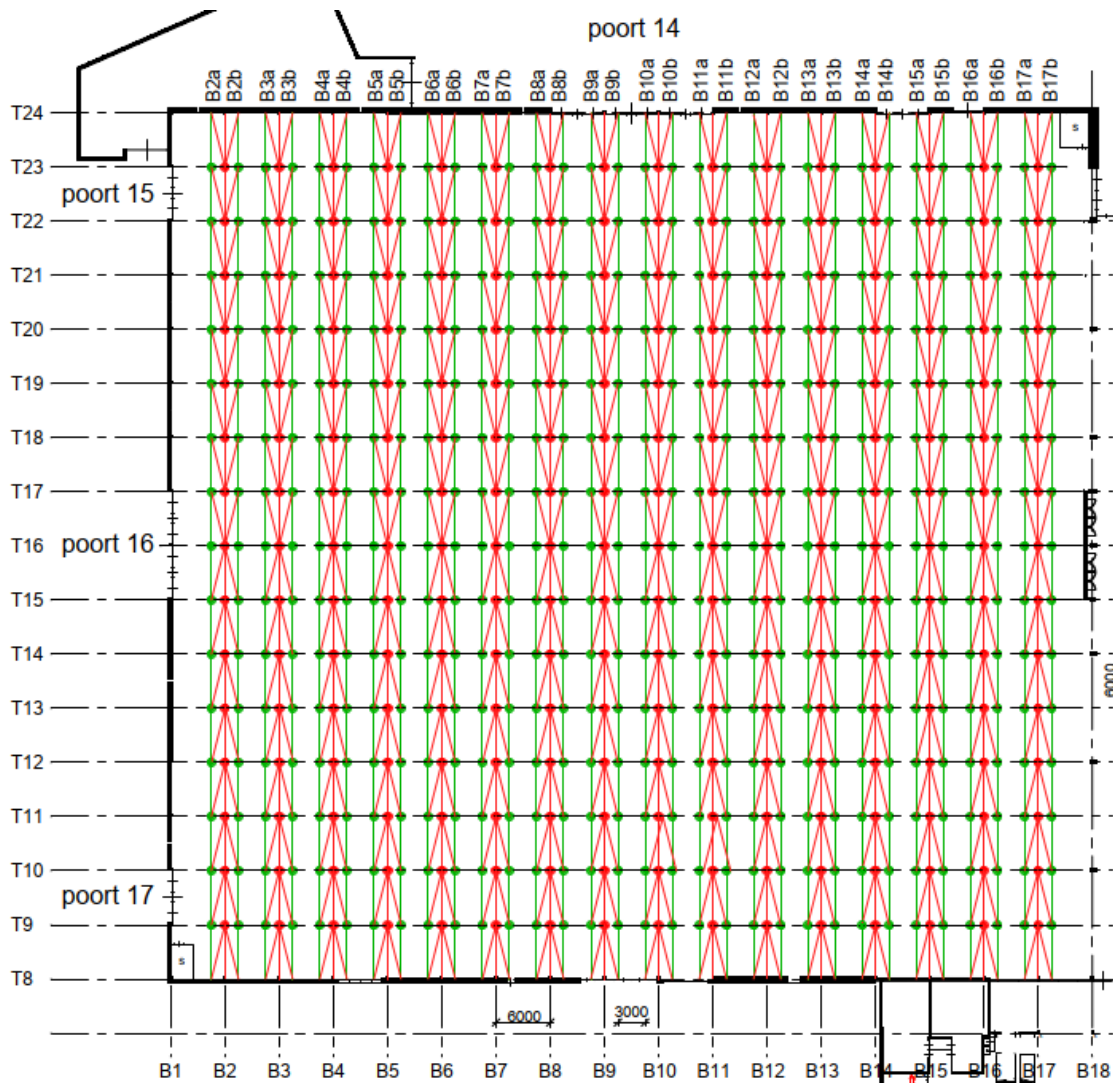


Figure 6: South Hall suspension points

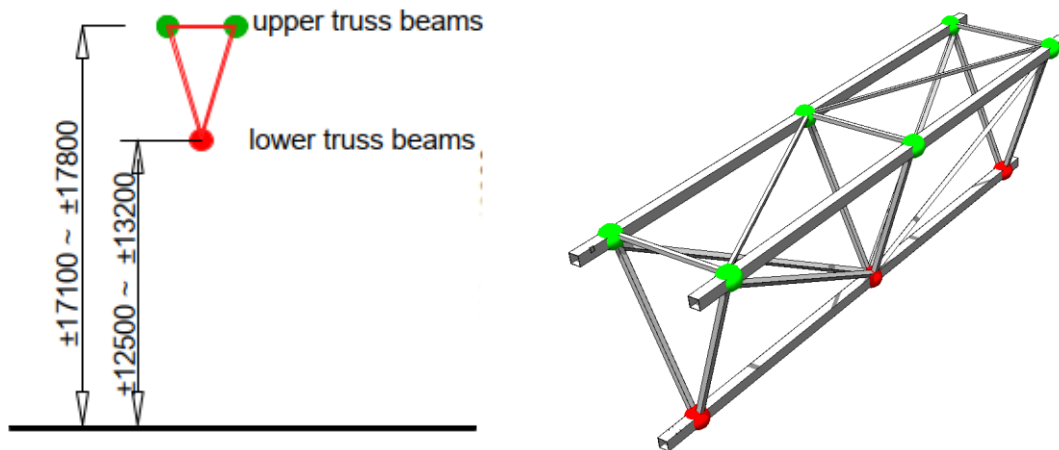


Figure 7: South Hall suspension points upper (●) and lower beam (●) in cross-section and isometry



Figure 8: Attachment in truss joint on the upper beam (●)



Figure 9: Attachment in truss joint on the lower beam (●)

In the **South-Hall**, vertical rigging is permitted at the indicated places (see Figure 6). $(480 + 240)$ = 720 suspension points are available on the trusses (excluding axis B1 and axis B18).

Height of suspension points

- ❖ Height of upper beam on truss: $\pm 17.1 \text{ m} \sim \pm 17.8 \text{ m}$
- ❖ Height of lower beam on truss: $\pm 12.5 \text{ m} \sim \pm 13.2 \text{ m}$

Distance between suspension points

- ↕ : 6.0 m
- ↔ : lower beam 6.0 m
- ↔ : upper beam 3.0 m



Vertical rigging (Straights) in axes B1 to B18

- ❖ The loads specified in Tables 11 to 13 are the maximum exhibit-loads (including hoists etc.) permitted on the lower beam. A maximum of 50% of the specified load is permitted on each upper beam (see Figure 8) provided that loads are (almost) equally (max. $\pm 5\%$) distributed across both upper beams to limit torsion in the trusses. If there is a disproportionate load, an assessment by the engineer is mandatory.
- ❖ Loads may only be attached in the truss joints (see Figure 8 and Figure 9), subject to the exceptions listed below.
- ❖ The permissible exhibit-loads (including hoists etc.) between the truss joints on the lower or upper beam for the trusses: 300 kg but shall not exceed the table value (loads are not permitted on diagonals, verticals, bracings and roof girders).
Note: In the subsequent truss joints on both sides of the load (in the relevant truss), no load may be attached unless the distance between the loads is 6.0 m minimal.
- ❖ In the truss joints on the lower or upper beam of axis B1 and axis B18, a maximum exhibit-load (including hoists, etc.) of 150 kg is permitted.
- ❖ Extreme snow or wind loads may cause truss deflections of 180 mm maximum.



Two-leg bridles at axes B2 and B17

- ❖ The permissible exhibit-load (including hoists, etc.) is 175 kg for lower and upper beams of the trusses under the following conditions.
 - The exhibit-load (including hoists, etc.) in the subsequent truss joints on both sides of the bridle-leg (of the relevant trusses) must be reduced by the exhibit-load (including hoists, etc.).
 - Not more than one bridle-leg between two truss joints.
 - The minimum distance between the bridle-legs is 6.0m.
 - Loads are not permitted on diagonals, verticals, bracings and roof girders.
 - When attached to the upper beams, the load per truss must (almost) be equally (max. $\pm 5\%$) distributed across both upper beams to limit torsion in the trusses. If there is a disproportionate load, an assessment by the engineer is mandatory.
 - If there is a two-leg bridle between two different trusses, the conditions for the other truss must also be observed.



Two-leg bridles at axis B1 and axis B18

- ❖ The permissible exhibit-load (including hoists, etc.) is 175 kg for the truss joints of the lower beams of the trusses.
- ❖ Loads are allowed only to be attached in the truss joints.
- ❖ If there is a two-leg bridle between two different trusses, the conditions for the other truss must also be observed.



Two-leg bridles up to a maximum of 300 kg

- ❖ The use of two-leg bridles in the truss joints of the lower beams, is only permitted in the lengthwise direction of the truss. In addition, a maximum applies of 50% of the permissible exhibit-load (including hoists, etc.) per truss joint, but shall not exceed 300 kg.
- ❖ The two bridle-legs of each exhibit-load (including hoists, etc.) may be considered as one load.

4.1 Trusses in axes B2 and B3 – tables vertical rigging

Table 11a: Permissible exhibit-load* on 96 m¹ trusses in axes B2 and B3								
Vertical rigging – Straights in truss joints on upper beams (50%) or lower beam (100%) [kg]								
n loads	C.T.C. 6m ¹	C.T.C. 12m ¹	C.T.C. 18m ¹	C.T.C. 24m ¹	C.T.C. 30m ¹	C.T.C. 36m ¹	C.T.C. 42m ¹	C.T.C. 48m ¹
1	5200 kg							
2	2810	2990	3110	3230	3360	3490	3650	3810
3	1910	2110	2330	2550	2790	3110	3500	-
4	1500	1750	2000	2330	-	-	-	-
5	1240	1500	1860	-	-	-	-	-
6	1080	1400	-	-	-	-	-	-
7	950	1310	-	-	-	-	-	-
8	870	1210	-	-	-	-	-	-
9	810	-	-	-	-	-	-	-
10	760	-	-	-	-	-	-	-
11	720	-	-	-	-	-	-	-
12	700	-	-	-	-	-	-	-
13	680	-	-	-	-	-	-	-
14	670	-	-	-	-	-	-	-
15	650	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 11b: Permissible exhibit-load* on 96 m¹ trusses in axes B2 and B3								
Vertical rigging – Straights in truss joints on upper beams (50%) and lower beam (100%) [kg]								
n loads	C.T.C. 54m ¹	C.T.C. 60m ¹	C.T.C. 66m ¹	C.T.C. 72m ¹	C.T.C. 78m ¹	C.T.C. 84m ¹		
1	5200 kg							
2	3990	4190	4420	4660	4940	5200	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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4.2 Trusses in axes B10, B11, B16, and B17 – tables vertical rigging

Table 12a: Permissible exhibit-load* on 96 m¹ trusses in axes B10, B11, B16 and B17								
Vertical rigging – Straights in truss joints on upper beams (50%) and lower beam (100%) [kg]								
n loads	C.T.C. 6m ¹	C.T.C. 12m ¹	C.T.C. 18m ¹	C.T.C. 24m ¹	C.T.C. 30m ¹	C.T.C. 36m ¹	C.T.C. 42m ¹	C.T.C. 48m ¹
1	5600 kg							
2	3070	3280	3400	3530	3670	3830	3990	4180
3	2090	2300	2550	2780	3060	3400	3830	-
4	1640	1910	2190	2550	-	-	-	-
5	1350	1640	2040	-	-	-	-	-
6	1180	1530	-	-	-	-	-	-
7	1040	1430	-	-	-	-	-	-
8	950	1430	-	-	-	-	-	-
9	880	-	-	-	-	-	-	-
10	830	-	-	-	-	-	-	-
11	790	-	-	-	-	-	-	-
12	760	-	-	-	-	-	-	-
13	740	-	-	-	-	-	-	-
14	730	-	-	-	-	-	-	-
15	710	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 12b: Permissible exhibit-load* on 96 m¹ trusses in axes B10, B11, B16 and B17								
Vertical rigging – Straights in truss joints on upper beams (50%) and lower beam (100%) [kg]								
n loads	C.T.C. 54m ¹	C.T.C. 60m ¹	C.T.C. 66m ¹	C.T.C. 72m ¹	C.T.C. 78m ¹	C.T.C. 84m ¹		
1	5600 kg							
2	4380	4600	4840	5110	5410	5600	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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4.3 Trusses in axes B4 to B9 and B12 to B15 – tables vertical rigging

Table 13a: Permissible exhibit-load* on 96 m¹ trusses in axes B4 to B9 and B12 to B15								
Vertical rigging – Straights in truss joints on upper beams (50%) and lower beam (100%) [kg]								
n loads	C.T.C. 6m ¹	C.T.C. 12m ¹	C.T.C. 18m ¹	C.T.C. 24m ¹	C.T.C. 30m ¹	C.T.C. 36m ¹	C.T.C. 42m ¹	C.T.C. 48m ¹
1	7200 kg							
2	3840	4100	4250	4400	4590	4780	4990	5200
3	2610	2870	3190	3490	3820	4240	4780	-
4	2050	2390	2730	3180	-	-	-	-
5	1690	2050	2550	-	-	-	-	-
6	1470	1910	-	-	-	-	-	-
7	1300	1800	-	-	-	-	-	-
8	1190	1790	-	-	-	-	-	-
9	1100	-	-	-	-	-	-	-
10	1040	-	-	-	-	-	-	-
11	990	-	-	-	-	-	-	-
12	950	-	-	-	-	-	-	-
13	920	-	-	-	-	-	-	-
14	910	-	-	-	-	-	-	-
15	890	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

Table 13b: Permissible exhibit-load* on 96 m¹ trusses in axes B4 to B9 and B12 to B15								
Vertical rigging – Straights in truss joints on upper beams (50%) and lower beam (100%) [kg]								
n loads	C.T.C. 54m ¹	C.T.C. 60m ¹	C.T.C. 66m ¹	C.T.C. 72m ¹	C.T.C. 78m ¹	C.T.C. 84m ¹		
1	7200 kg							
2	5450	5740	6040	6370	6750	7170	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

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5 WEST HALL (GENERAL PROVISIONS)

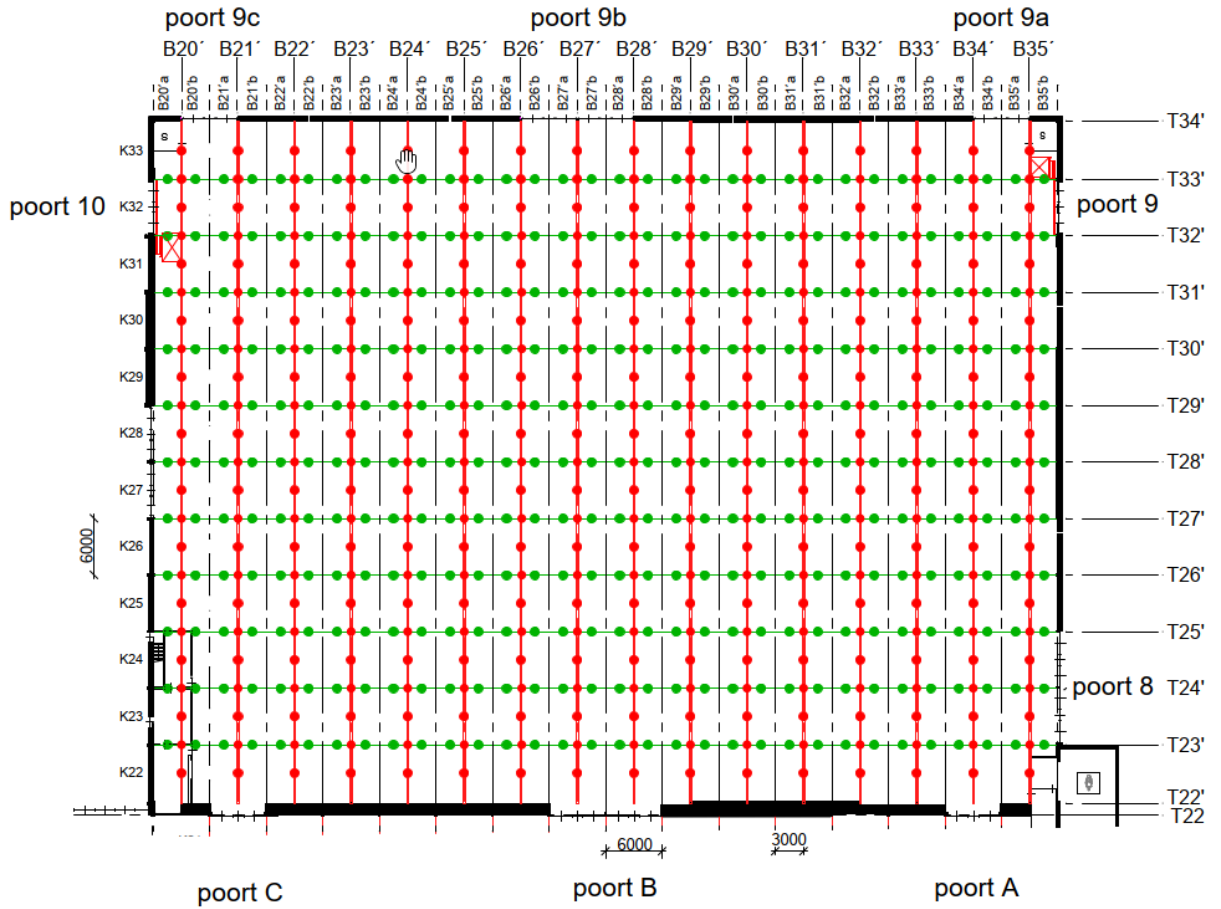


Figure 10: West Hall suspension points

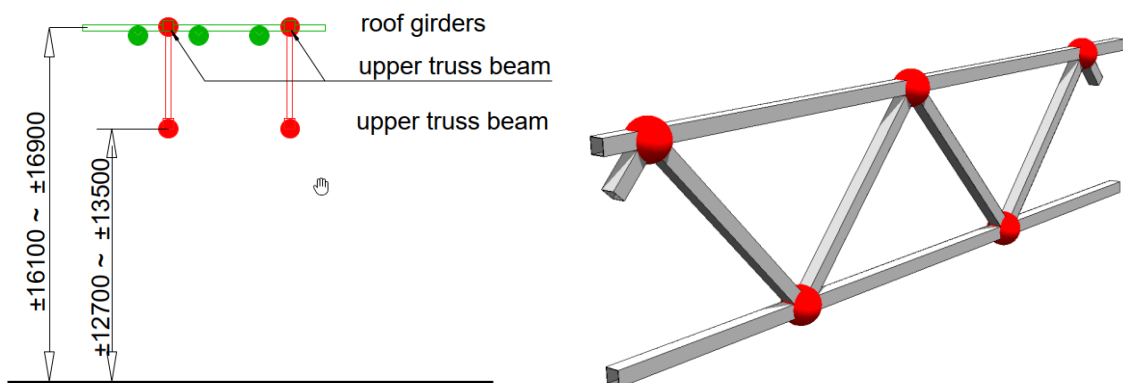


Figure 11: West Hall suspension points to girders (●) and upper/lower beam (●) in cross-section and isometry
Ir. D. Janmaat



Figure 12: Attachment at girder's suspension points (●)



Figure 13: Attachment in truss joint on the lower beam (●)

In the **West Hall**, vertical rigging is permitted at the indicated places (see Figure 10). (176 + 192 + 352) = 720 suspension points are available on the trusses.

Height of suspension points

- ❖ Height of the roof girders: $\pm 16.1 \text{ m} \sim \pm 16.9 \text{ m}$
- ❖ Height of lower beam on truss: $\pm 12.7 \text{ m} \sim \pm 13.5 \text{ m}$

Distance between suspension points

- ↕ : 6.0 m
- ↔ : 3.0 / 6.0 m



Vertical rigging (Straights)

- ❖ The exhibit-loads (including hoists etc.) specified in Table 14 may only be attached to the roof girders up to a maximum distance of 1.5 m from the truss and/or in the truss joints of the truss (see respectively Figure 12 and Figure 13).
- ❖ The maximum exhibit-load (including hoists etc.) at the 'suspension hooks' on the roof girders is 500 kg, provided the total loads do not exceed the values in Table 14.
- ❖ The loads specified in the table are maximum exhibit-loads (including hoists etc.) when using only the roof girders (up to a maximum distance of 1.5 m from the truss).
- ❖ If the exhibit-loads (including hoists etc.) are suspended only in the truss joints (as indicated in Figure 13), the value in the table may be doubled.
- ❖ If the roof girders (up to a maximum distance of 1.5 m from the truss) and the truss joints of the lower beam are loaded simultaneously, the value in the table should be reduced to 50%.
- ❖ The permissible exhibit-load (including hoists etc.) load between the truss joints on the lower or upper beam for the trusses: 300 kg (loads are not permitted on diagonals, verticals, bracings and roof girders).

Note: In the subsequent truss joints on both sides of the exhibit-load (including hoists etc.) of the concerning truss, no other load may be applied unless the distance between these loads is 6.0m minimal.



Two-leg bridles

- ❖ The maximum permissible exhibit-load (including hoists, etc.) is 500 kg on the roof girders and upper beams of the trusses, under the following conditions:
 - The use of two-leg bridles is only permitted in the truss joints of the upper beams and/or on the roof girders up to a maximum distance of 1.5 m from the truss.
 - If the roof girders (up to a maximum distance of 1.5 m from the truss) and the truss joints of the lower beam are loaded simultaneously, the value in the table should be reduced to 50%.
 - Loads are not permitted on diagonals, verticals, bracings and roof girders.



Two-leg bridles at the lower beam up to a maximum of 500 kg

- ❖ The use of two-leg bridles in the truss joints of the lower beams, is only permitted in the lengthwise direction of the truss. In addition, a maximum applies of 50% of the permissible exhibit-load (including hoists, etc.) per truss joint, but shall not exceed 500 kg.
- ❖ The two bridle-legs of each exhibit-load (including hoists, etc.) may be considered as one load.
- ❖ Loads are not permitted on diagonals, verticals, bracings and roof girders.



Two-leg bridles in other situations

- ❖ Two-leg bridles with exhibit-loads (including hoists, etc.) exceeding 500 kg are not permitted!
- ❖ Two-leg bridles in the 'suspension hooks' on the roof girders are not permitted!

5.1 Trusses in axis B20' to axis B35' – tables vertical rigging

Table 14a: Permissible exhibit-load* on 72 m¹ trusses between axes B20' to B35'								
Vertical rigging – Straights in the truss joints on the lower beam or on the roof girders ^{(1) (3)}								
n loads	C.T.C. 3m ¹	C.T.C. 6m ¹	C.T.C. 12m ¹	C.T.C. 18m ¹	C.T.C. 24m ¹	C.T.C. 30m ¹	C.T.C. 36m ¹	C.T.C. 42m ¹
1	2500 kg							
2	1220	1300	1360	1430	1510	1600	1680	1790
3	850	910	1000	1120	1270	1520	-	-
4	640	710	840	1020	-	-	-	-
5	520	600	760	-	-	-	-	-
6	440	530	730	-	-	-	-	-
7	390	480	-	-	-	-	-	-
8	350	440	-	-	-	-	-	-
9	320	420	-	-	-	-	-	-
10	290	410	-	-	-	-	-	-
11	270	400	-	-	-	-	-	-
12	260	-	-	-	-	-	-	-
13	190	-	-	-	-	-	-	-
...	...	-	-	-	-	-	-	-
23	190	-	-	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

⁽¹⁾ At a maximum distance of 1.5 m from the truss.

⁽²⁾ Maximum exhibit-load (including hoists, etc.) on the 'suspension-hooks': 500 kg.

⁽³⁾ If the roof girders (up to a maximum distance of 1.5 m from the truss) and the truss joints of the lower beam are loaded simultaneously, the value in the table should be reduced to 50%.

Table 14a: Permissible exhibit-load* on 72 m¹ trusses between axes B20' to B35'								
Vertical rigging – Straights in the truss joints on the lower beam or on the roof girders ^{(1) (3)}								
n loads	C.T.C. 48m ¹	C.T.C. 54m ¹	C.T.C. 60m ¹					
1	2500 kg							
2	1910	2100	2200	-	-	-	-	-

* Including hoists, etc.

C.T.C. (Centre To Centre)

⁽¹⁾ At a maximum distance of 1.5 m from the truss.

⁽²⁾ Maximum exhibit-load (including hoists, etc.) on the 'suspension-hooks': 500 kg.

⁽³⁾ If the roof girders (up to a maximum distance of 1.5 m from the truss) and the truss joints of the lower beam are loaded simultaneously, the value in the table should be reduced to 50%.

6 EXPO FOYER

Free height

- ❖ Height of lower beam on truss: $\pm 4.7 \text{ m} \sim \pm 4.9 \text{ m}$

Distance between truss joints

- ↕ : 8.1 m
- ↔ : 4.05 m



Vertical rigging (Straights)

- ❖ Vertical rigging (straights) is not permitted in the Expo Foyer.



Bridles

- ❖ Bridles are not permitted in the Expo Foyer.

7 MAIN ENTRANCE



Vertical rigging (Straights)

- ❖ Vertical rigging (straights) is not permitted in the Main Entrance.



Bridles

- ❖ Bridles are not permitted in the Main Entrance.

8 WINTER GARDEN

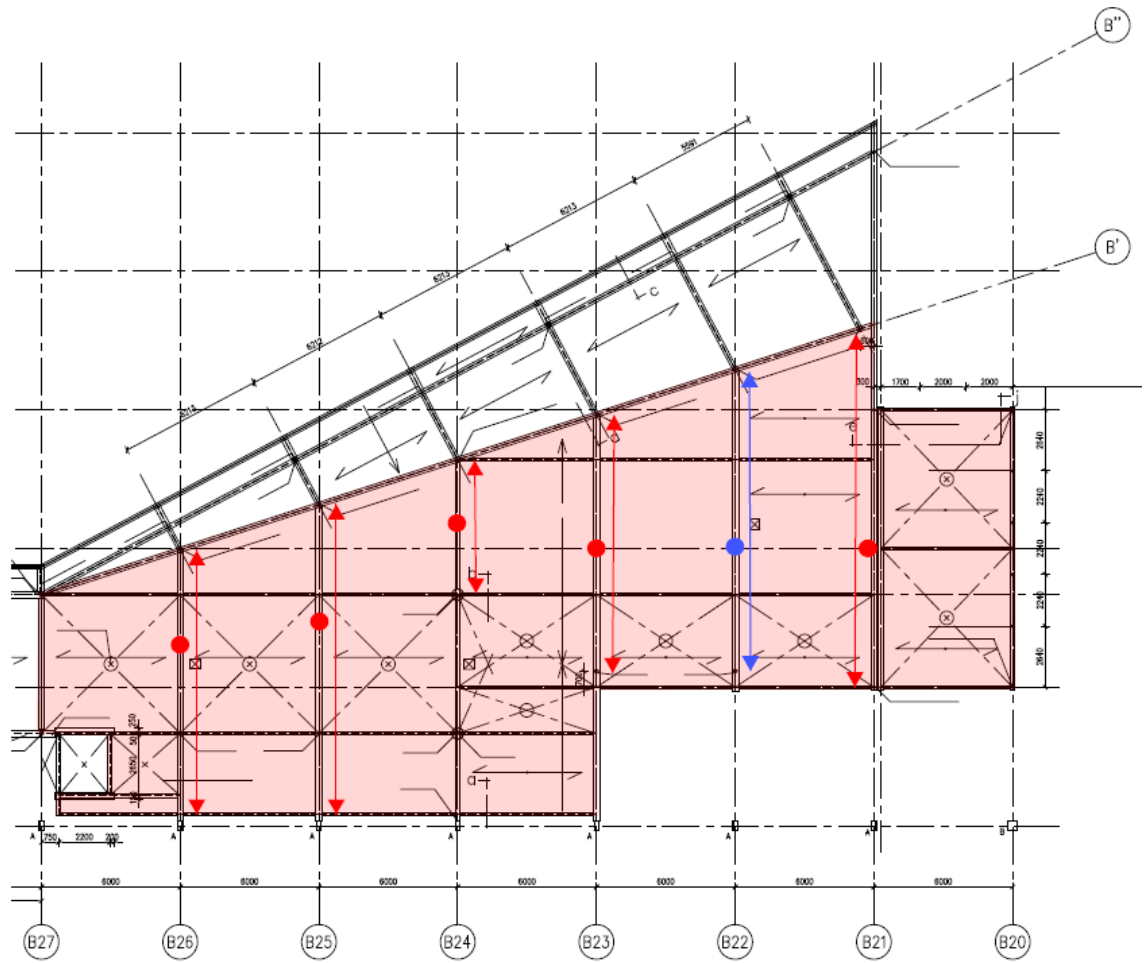


Figure 14: Suspension points on steel beams (●/●)

In the **Winter Garden**, vertical rigging is only permitted on the beams in axes B21 to B26 (see Figure 14) in conformance with Table 15. No additional loads are permitted on the canopy.

Height of suspension points

- ❖ Bottom of steel beams: ± 9.1 m (axis B21 to axis B23)
- ❖ Bottom of steel beam: variable due to stair (axis B25)
- ❖ Bottom of steel beam: ± 3.75 m (axis B26)



Vertical rigging (Straights)

- ❖ The exhibit-loads (including hoists, etc.) in Table 15, are only allowed across the span indicated in Figure 14.

Table 15: Permissible exhibit-load* on steel beams in the Winter Garden axes B21 to B26								
Vertical rigging – Straights on steel beams								
n loads	B21'	B21	B22	B23	B24	B25	B26	B27
1	-	500	175	500	500	500	500	-
		●	●	●	●	●	●	

* Including hoists, etc.



Bridles

- ❖ Bridles are not permitted in the Winter Garden.

9 EUROPASSAGE

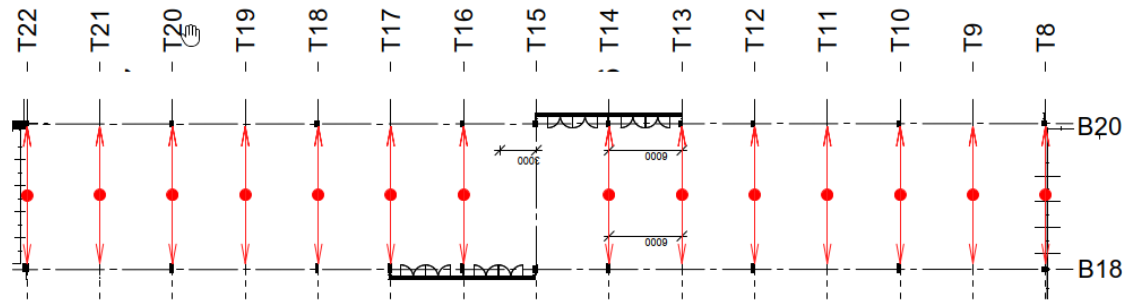


Figure 15: Suspension points on steel beams (●)

Under the **Euro Passage**, vertical rigging is only permitted on the beams in axes T8 to T22 (see Figure 15), except for T15 due to the fire retarding wall.

Height of suspension points

- ❖ Height of underside of steel beams: ± 6.4 m



Vertical rigging (Straights)

- ❖ The exhibit-loads (including hoists, etc.) in Table 16a and 16b are only allowed across the span indicated in Figure 15.
- ❖ For loads in axis B20 and axis B18, see respectively North Hall and South Hall.

Table 16a: Permissible exhibit-load* on steel beams in the Euro Passage axes T9 to T16								
Vertical rigging – Straights on steel beams								
n loads	T8	T9	T10	T11	T12	T13	T14	T15
1	50	175	175	175	175	175	175	-

* Including hoists, etc.

No load is possible in axis T15 due to the fire retarding wall.

Table 16b: Permissible exhibit-load* on steel beams in the Euro Passage axes T16 to T22								
Vertical rigging – Straights on steel beams								
n loads	T16	T17	T18	T19	T20	T21	T22	-
1	175	175	175	175	175	175	50	-

* Including hoists, etc.



Bridles

- ❖ Bridles are not permitted in the Euro Passage.

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APPENDIX I: RIGGING PLOT REQUIREMENTS

The table below shows how a rigging plot should be submitted to MECC. Send the rigging plot to the MECC Project Manager. Incomplete rigging plots will not be assessed and consequently, not approved.

Rigging plot sections	Requirements per section	By whom
<p>1. Suspension point plot (to be submitted as a DWG file and a PDF copy)</p>	<p>Specified on a CAD drawing of MECC Maastricht¹:</p> <ol style="list-style-type: none"> The exhibit-loads (including hoists etc.) to be hoisted. Hoisting equipment (trusses, support trusses, tackles, etc.). The locations of the hoisting resources with reference number and their suspension points. If possible, the above exhibit-loads (including hoists etc.) in 3D view. This helps solution-oriented thinking should a rigging plan be rejected. $F_{vertical}$ and $F_{horizontal}$ for each suspension point. If there are multiple loads, the combination $F_{vertical; total}$ and $F_{horizontal; total}$ should be determined. In which subsection e. is deleted. 	<p>Responsibility of the rigging company</p>
<p>2. Calculated loads for each suspension point in case of vertical rigging - straights (exhibit-loads including hoists etc.)</p>	<p>Submitted using the rigging calculations format of MECC Maastricht.</p> <ol style="list-style-type: none"> A unique reference number for each hoisting point (column 1). Product name, type, and maximum hoist weight of the device (column 2). Fill in "Straight"(column 3). The truss reference number of the suspension point (column 4) Position of fixing: upper or lower beam (column 5). Applicable to the North Hall and West Hall only. The vertical load (F_v) at the suspension point (column 6). 	<p>Responsibility of the rigging company</p>
<p>3. Calculated loads for each suspension point in case of two-leg bridles (exhibit-loads including hoists etc.)</p>	<p>Submitted using the rigging calculations format of MECC Maastricht.</p> <ol style="list-style-type: none"> A unique reference number for each hoisting point (column 1) Product name, type, and maximum hoist weight of the device (column 2). Fill in "two-leg bridle"(column 3). The truss reference number of the suspension point (column 4) Position of fixing: upper or lower beam (column 5). Applicable to the North Hall and West Hall only. 	<p>Responsibility of the rigging company</p>

	<ul style="list-style-type: none"> f. The vertical load (F_V) at the suspension point (column 6). g. The bridle angle (column 7). h. The horizontal load (F_H) at the suspension point (column 6). 	
<p>4. Calculated combined load of multiple loads on a single point (exhibit-loads including hoists etc.)</p>	<p>Submitted using the rigging calculations format of MECC Maastricht.</p> <ul style="list-style-type: none"> a. The cumulative force ($F_{\text{vertical; total}}$ and $F_{\text{horizontal; total}}$) of multiple loads acting on a single suspension point must be submitted (columns 9 and 10). 	<p>Responsibility of the rigging company</p>
<p>1. Each construction part in this rigging manual has an accompanying CAD drawing that indicates the possible suspension points. The supplied drawing must correspond with the completed rigging calculations format (Appendix II).</p>		

APPENDIX II: RIGGING CALCULATIONS FORMAT

Versie J.G. 1.3

BIJLAGE II: RIGGING REKENBLAD (calculations format) MECC MAASTRICHT B.V.

LOCATIE: Noordhal / Zuidhal / Westhal / Wintertuin / Europassage *

EVENEMENT:

HUISMIDDEL REF.-NR.	PRODUCTNAAM, TYPE EN HET MAX. TE HUSEN GEWICHT VAN HET HUISMIDDEL	BRIDLE/ STRAIGHT Vul in: B = bridle S = straight	SPANT/GORDING REF.-NR. (= ref.-nr. van het spant/gor- ding van de aangrijplocatie met het spant) opm.: m.b.t. gording geldt dit voor de Westhal	BEVESTIGING AAN ONDER- OF BOVENREGEL Vul in: O = onderregel B = bovenregel opm.: m.b.t. de onder-/boven- regel geldt dit voor de Noordhal en de Westhal	VERTIKALE KRACHT (Fv) OP DE AANGRIJPLOCATIE MET HET SPANT (= evenementenbelasting + hijsmiddel e.d.) Vul in aantal kg (kilogram)	BRIDLE HOEK (in graden) (de binnen- hoek van de bridle op het aan- grijppunt is maximaal 120 graden)	HORIZONTALE KRACHT (Fh) OP DE AANGRIJPLOCATIE MET HET SPANT (= evenementenbelasting + hijsmiddel e.d.) Vul in aantal kg (kilogram)	TOTALE KRACHTEN VAN MEERDERE BELASTINGEN OP ÉÉNZEELFDE AANGRIJP- LOCATIE MET HET SPANT	
								TOTALE VERTIKALE KRACHTEN (Fvert. totaal)	RESULTANTE HORIZONTALE KRACHTEN (Fhor. resultaat totaal)
(kolom-1)	(kolom-2)	(kolom-3)	(kolom-4)	(kolom-5)	(kolom-6)	(kolom-7)	(kolom-8)	(kolom-9)	(kolom-10)

Opmerkingen:

1. Ten behoeve van de te bepalen verticale en/of horizontale kracht geldt: $10 \text{ N(ewton)} = 1 \text{ Kilogram}$
2. * is doorhalen localities niet van toepassing of omcirkelen locatie wel van toepassing
3. De aangrijplocatie is het punt van het spant waar de straight/ de bridlepoot aangrijpt/verbinding maakt met het spant.
4. Het aangrijppunt is het punt waarop de evenementenbelasting aangrijpt/verbinding maakt met de steel/takel van de straight/tweesprong bridle.