

Instruction Sheet

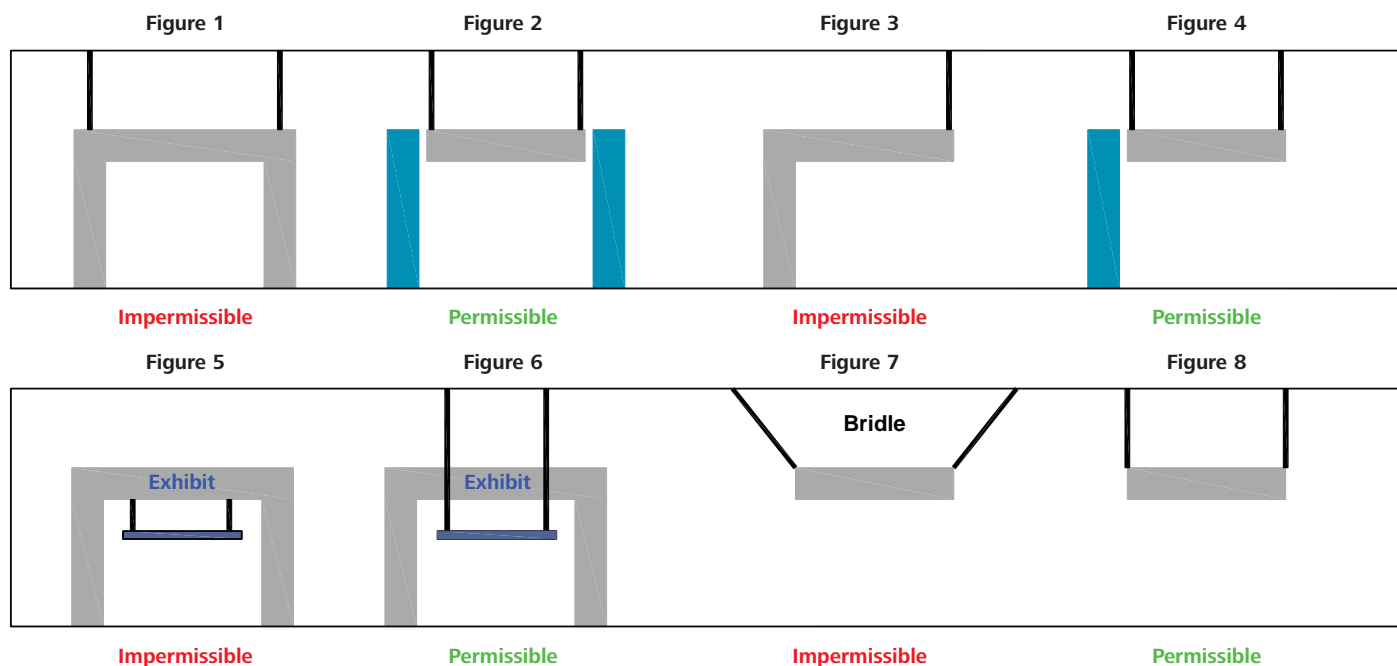
“Suspension points, trusses and lifting equipment”

The suspension of objects from the hall ceiling, the provision of suspension points and the modification of suspension constructions are carried out exclusively by NürnbergMesse through its appointed ServicePartners.

Suspension points must be ordered in writing from the Exhibition Services Dept. of NürnbergMesse using form S2.15. The construction to be suspended must be located within the stand boundaries. The maximum vertical structural load capacity of each suspension point on the ceiling construction is 25 kg for halls 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 12. The maximum vertical structural load capacity of the available suspension points in halls 4A, 7A and 11 is 250 kg. Higher loads in halls 4A, 7A and 11 are only possible on request via Event Services.

The following types of suspension are not permitted for safety reasons:

- Suspended constructions with a rigid or non-positive connection to the hall floor (see Figure 1 and 2)
- Suspension points used for securing stand components or exhibits (stand components or exhibits must stand securely on their own, see Figure 3 and 4)
- Suspension from exhibits (see Figure 5 and 6)
- The use of bridle suspension points is not permitted on the NürnbergMesse site (see Figure 7)



The use of lifting equipment (electric chain hoists, manual chain hoists, sling hoists) is only possible in halls 4A, 7A, 11 and CCN Ost and must be agreed with NürnbergMesse/Event Services.

The provision and use of attachment gear, load-bearing equipment, lifting equipment, load-bearing lines, fasteners, rope terminations, secondary safety equipment and equipotential bonding must comply with the relevant safety regulations and the recognized rules of engineering. The following regulations issued by the various German associations apply:

BGV A1 – General Regulations,

BGV C1 – Staging and Production Facilities for the Entertainment Industry,

BGV D8 – Winches, Lifting and Hoisting Equipment,

BGI 810 Guide to Safety at Productions and Events,

BGI 810-1 Safety at Productions and Events – Practical Aspects

BGI 810-3 Safety at Productions and Events – Loads Suspended above Persons

BGI 810-4 Spotlights

BGI 810-5 Special Stage Effects and Operations

VPLT SR1.0 “Provision and Use of Truss Systems”

VPLT SR2.0 “Provision and Use of Electric Chain Hoists”,

VPLT SR3.0 “Event Rigging Expert: Qualifications”,

VPLT SR4.0 “Event Electrician”

Bavarian Venue Regulations (German: Bay. VStättV)

The following information on attachment gear, load-bearing equipment, lifting equipment, fasteners, rope terminations and secondary safety components is intended as a guide and is not exhaustive.

Attachment gear:

The maximum load on ropes and slings must not exceed one-tenth of the minimum breaking load. The maximum load for other attachment gear is half the manufacturer’s specified working load limit (WLL). Any dynamic forces occurring must be given special consideration (dynamic factor).

The edge radius for attaching loads must be greater than the nominal diameter of the attachment gear (rope, webbing sling and round sling). No further load reduction is necessary for an edge radius of more than three times the nominal diameter of the attachment gear.

The heat resistance of attachment gear varies. Webbing slings and round slings made of man-made fibers (PA, PES) and wire ropes with fiber cores (ferrule and thimble) are only to be used up to 100 °C and are not suitable for use close to spotlights. Webbing slings and round slings made of polypropylene (PP) are only designed for use up to 80 °C and therefore even less suitable.

Wire ropes with steel cores (ferrule and thimble) are suitable for use at temperatures up to 150 °C.

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(continued)

Permissible attachment gear:

- Attachment ropes of steel wire with fiber or steel cores, ferrules and thimble rope terminations, and rope grade 1960 (corresponds to a minimum rated wire strength of 1770 N/mm²) to DIN EN 12385-4:2003-03+A1:2008, Table 7 (rope class 6 x 19 for ropes ≥ 6 mm), Table 12 (rope class 6 x 19 M for ropes of 3 mm to 5 mm), DIN EN 13414-1:2003 Table 3 and 4 (ropes ≥ 8 mm), or to former DIN 3060 (round-stranded rope 6 x 19 standard); rope terminations must comply with DIN EN 13411-1 (thimbles) and DIN EN 13411-3 (ferrules).
- Short-link sling chains of grade 5 (DIN 5688-1), grade 8 (DIN 5688-3) or higher, with a breaking strength ≥ 20 %
- Webbing slings and round slings made of man-made fibers to DIN EN 1492 Part 1 and 2 with marking, and using a secondary safety component comprising a steel rope with thimble, ferrule and fastener (to E DIN 56927)
- Wire rope round sling with sheath of man-made fibers (“steelflex”)
- Aluminum or steel clips and truss adapter approved for the respective trusses (accessory), with marking (indicating load capacity and safety coefficient)

Impermissible attachment gear:

- Wire ropes not conforming to the a/m requirements
- Wire ropes with sheath (sheath > 1/3 of rope length)
- Long-link sling chains (inside length of chain link (pitch) > 3 x nominal diameter of chain material)
- Untested short-link sling chains or short-link lifting equipment chains (these must not be used as sling chains, as they have a breaking strength of only 5 to 15%)
- Cable ties without the use of a secondary safety component comprising a steel wire rope with thimble, ferrule and fastener (E DIN 56927)
- Webbing slings and round slings made of man-made fibers, without marking and indication of load capacity

- Webbing slings and round slings made of man-made fibers to DIN EN 1492 Part 1 and 2, with marking and indication of load capacity, BUT without the use of a secondary safety component comprising a steel wire rope with thimble, ferrule and fastener (E DIN 56927)
- Damaged attachment gear (e.g. kinked ropes, slings with damaged sheath, sling without recognizable marking)

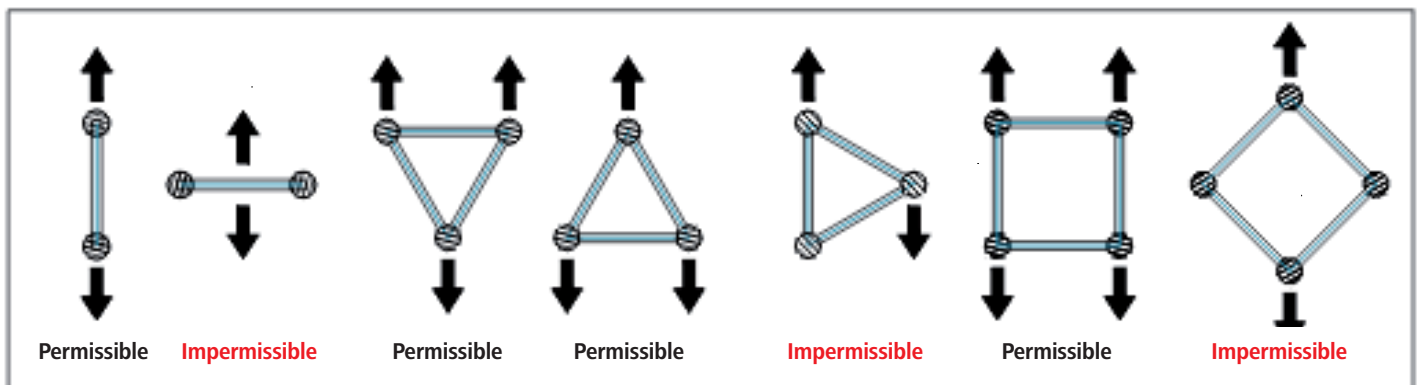
Permissible load-bearing equipment:

- Aluminum trusses to DIN 4113, GUV-I 8634/VPLT SR1.0 “Provision and Use of Truss Systems”, used in accordance with the installation instructions
- Steel trusses to DIN 18800, GUV-I 8634/VPLT SR1.0 “Provision and Use of Truss Systems”, not exceeding the max. possible load

Impermissible load-bearing equipment:

- Trusses not conforming to the requirements of GUV-I 8634/VPLT SR1.0 “Provision and Use of Truss Systems” and DIN 4113, DIN 18800
- Trusses without a structural test certificate
- Trusses without marking
- Trusses that are no longer safe for use, i.e. damaged or worn
- Trusses without end struts, if the framework is ignored
- Trusses not used for their intended purpose, e.g. screwed to stand walls, on stand walls, frames, truss tower with base plates that are too small and/or too little ballasting

Permissible and **impermissible** positions for installing trusses without additional structural safety certificate:



Equipotential bonding of truss systems¹

Truss systems that may carry hazardous contact voltages in the event of a fault must be incorporated in a common equipotential bonding system. This applies to all elements of electrically conductive material on which electrical equipment is installed or mounted or over which lines and cables are routed which could come into contact with metal parts in the event of damage. Connection to the equipotential bonding system can be made using clips, pipe clamps, screwed fasteners or special single-pole plug-in

connectors with locking device. The common equipotential bonding is to be connected to the ground conductor of the mains supply network. Suitable conductor cross-sections are 16 mm² Cu for conductor lengths of up to 50 meters and 25 mm² Cu for conductor lengths of up to 100 meters.

¹ VPLT Standard SR1.0/GUV-I 8634 Provision and Use of Truss Systems, 4.3 Installation of Truss Systems, Equipotential Bonding of Truss Systems

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(continued)

Permissible lifting equipment:

- **C 1 hoist** (point hoist to BGV C1, VPLT SR2.0)
Nominal load as specified by manufacturer
- **D 8 hoist** (electric chain hoist to BGV D8 with secondary safety component for bypassing the electric chain hoist – secondary safety component for a load of 425 kg corresponds to a rope to DIN 12385-4, Table 7 with a rope diameter of 20 mm)
MOVING OR HOLDING LOADS ABOVE PERSONS WITHOUT A SAFETY DEVICE IS PROHIBITED!
Nominal load as specified by manufacturer
- **D 8 Plus hoist** (electric chain hoist with secondary safety component/second brake to BGV D8 with special feature of holding loads in place above persons without secondary safety component – VPLT SR2.0)
MOVING LOADS ABOVE PERSONS IS PROHIBITED!
Nominal load as specified by manufacturer

Impermissible lifting equipment:

- Electric chain hoists to BGV D8, without secondary safety component
- Electric chain hoists to BGV D8 with inadequately rated secondary safety component (see Permissible secondary safety components)
- Untested electric chain hoists or electric chain hoists without test certificates (annual inspection; for C1 hoists: plus expert inspection every 4 years)
- Electric chain hoists showing signs of damage
- Electric chain hoists not used for their intended purpose (see VPLT SR2.0, e.g. stage use of an electric chain hoist to BGV D8)

Permissible fasteners:

The nominal load is half the manufacturer's specified load-bearing capacity, maximum one-tenth of the minimum breaking load.

- Shackles, straight and curved, grade 6, to EN DIN 13889 with marking, with type X threaded bolt (with hexagonal head, hexagonal splint nut) if used with dynamic loads (e.g. for suspension of loudspeakers)
- High-strength shackle, grade 8, to DIN EN
- Quick link for operation of lifting equipment, non-standard (safety factor 5), marked with load-bearing capacity
- Quick link for event equipment (safety factor 10) to DIN 56926 (E DIN 56927) with marking
- Turnbuckles with closed eyes to DIN 1480, marked with load-bearing capacity, only with safety splint and safety nut if used with dynamic loads (e.g. for suspension of loudspeakers)
- Closed O-ring marked with load-bearing capacity, or with manufacturer's data sheet
- Shortening clutch with safety element to prevent unintentional unhooking, e.g. locking pins

Impermissible fasteners:

- Carabiners with/without screw lock
- Open hooks
- Open turnbuckles to DIN 1480
- Quick link with lock nut, not marked with load-bearing capacity
- Tensioning sets as connection between two truss parts
- Shackles to DIN 82101 (have a working coefficient of only 3)

- Shortening clutch without safety element to prevent unintentional unhooking, e.g. locking pins
- Other fasteners without marking/indication of load-bearing capacity/manufacturer's data sheet

Permissible rope terminations:

- Thimble to DIN EN 13411-1 and ferrules to DIN EN 13411-3
- Rope locks (straight) to DIN 15315, for dynamic loads (e.g. suspension of loudspeakers) only with rope clamp (frog) to DIN 1142

Impermissible rope terminations:

- Rope clamps (frogs) to DIN 1141
- Rope clamps (frogs) to DIN 741

Secondary safety components:

A secondary safety component (safety) usually consists of a wire rope, rope termination and fastener to **DIN 56927: 2009-03**. The drop distance should be as short as possible, ideally zero.

This is best achieved with a safety rope together with a grade 8 shortening clutch equipped with a safety element to prevent unintentional unhooking (drop distance \leq length of one chain link (pitch)).

Only quick links to DIN 56927: 2009-03, grade 8 high-strength shackles to DIN EN 1677-1 and, with limitations, Kettbiner to DIN 56927: 2009-03 may be used as fasteners for a secondary safety component.

If secondary safety components with a larger drop distance than one chain pitch are used, a structural certificate may be requested for the pulse load of all components of the secondary safety component, attachment gear, load-bearing lines, fasteners and load-bearing equipment.

Permissible secondary safety components:

- Wire rope of steel wire with fiber core, ferrule sling and thimble as rope termination, rope grade 1960, to DIN EN 12385-4:2003-03+A1:2008, Table 7 (rope class 6 x 19 for ropes \geq 6 mm), Table 12 (rope class 6 x 19 M for ropes of 3 mm to 5 mm), DIN EN 13414-1:2003 Table 3, or to former DIN 3060 (round-stranded rope 6 x 19 standard)
- Rope terminations must comply with DIN EN 13411-1 (thimbles) and DIN EN 13411-3 (ferrules)
- Fasteners conforming to the a/m standards

Impermissible secondary safety components:

- Wire ropes not conforming to the a/m requirements
- Inadequately rated wire ropes (see DIN 56927:2009-3, BGI 810-3)
- Fasteners not conforming to the a/m requirements
- Inadequately rated fasteners (see DIN 56927:2009-3)
- Rope terminations not conforming to the a/m requirements (e.g. rope locks)