GUIDE

Safety basics in circus

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GUIDE
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developed by the working group „Safety & Prevention in Circus Practice"

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Positioning of the working group and the professional context

The Working Group on Safety and Prevention in Circus Practice was established in October 2020 to meet urgent questions that different stakeholders of multiple fields of the German society, for a variety of reasons, are more and more often addressing to actors of the various professional fields of today's circus who are dealing with issues of safety, accident prevention and the state-of-the-art.

In the view of the working group, the necessity to position oneself within the field of circus[1] on questions of the state-of-the-art or best practice methods arises above all from a lack of knowledge and competence of actors from outside the field (insufficiently qualified educators, trainers, sports equipment manufacturers, etc.), who have increasingly discovered circus activities in the broadest sense as fields of activity in the last three decades and continue to do so.

The various fields of circus have maintained a large degree of independence to this day, which is characterised, among other things, by a very low level of formalisation of the different practices. The low level of formalisation is proving increasingly problematic, especially in the area of passing on specific expert knowledge. For this reason, it seems desirable to have a minimal description of the most urgent occupational field-specific knowledge and working principles by an expert committee, due to their relevance to safety. In this way, the overall social trend of increasing formalisation of all professional activities should be met to the necessary extent in order to anticipate a threatening formalisation from outside the field.

The working group defends the independence of the various circus practices against interventions by external or state interest groups affecting circus practices, professional circus sectors and specific circus knowledge.

The responsible preservation of the necessary freedoms in the artistic and pedagogical practice of circus must remain the top priority in the discussion about safety and prevention.

Restrictions through compulsory certifications or similar must be prevented. At the same time, instruments must be developed to permanently maintain the safety standard in the circus and to make the necessary information as easily and generally accessible as possible. However, the responsibility for the implementation of and compliance with the standards must remain with the various stakeholders in the future. Only in this way can the circus maintain its diversity and innovative spirit.

For this reason, the present guidelines are limited to a basic description of the state of the art and best practice methods for circus practice. In addition, the working group recommends the establishment of a permanent expert commission reviewing the state-of-the-art at regular intervals, possibly publishing any further developments on an internet platform and ideally supporting international networking. The aim of this commission must be not only the constant updating of the state-of-the-art and best practice methods, but also the preservation of the unique characteristics of circus in relation to more or less related activities. The basic prerequisite for the goal-oriented work of this commission is its recognition by the various professional associations as well as the responsible employers' liability

1 Here the term circus stands for all activities that perform or stage circus techniques or movement arts, (Bewegungskünste) regardless of whether the approach is artistic, sporting or pedagogical, whether the activities are pursued professionally or as a hobby, and regardless of the respective aesthetic form.

insurance association (Berufsgenossenschaften). Therefore, the commission should be made up of representatives of the professional associations (ECA[2], BUZZ[3], VDCU[4], BAG[5] Zirkuspädagogik, Zirkus Macht Stark[6]) and the employers' liability insurance associations together with recognised experts from the other sectors concerned (event technology, equipment manufacture, structural engineering, sports associations, education, etc.).

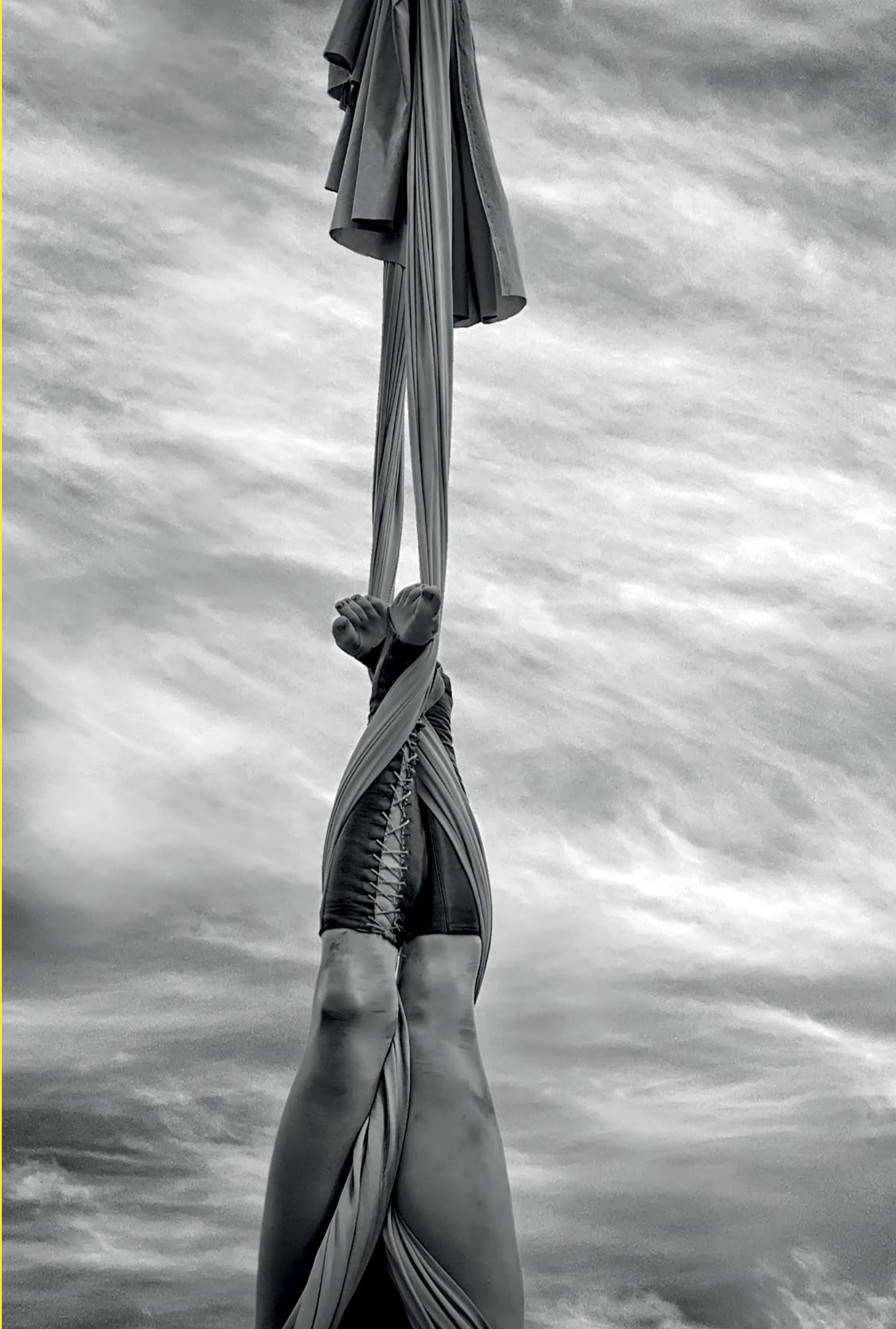
2 European Circus Association (www.europeancircus.eu)

3 Bundesverband Zeitgenössischer Zirkus e.V. (www.bu-zz.de)

4 Verband Deutscher Circusunternehmen e.V. (www.vdcu-ev.de)

5 Bundesarbeitsgemeinschaft Zirkuspädagogik e.V. (www.bag-zirkus.de)

6 Zirkus macht stark e.V. (www.zirkus-macht-stark.de)



Users and context of use

A differentiation of the stakeholders into professionals and amateurs and a corresponding orientation and assessment in the formulation of the guidelines does not appear to the working group to be conducive to the goal, since comparable to the developments in adjacent trend or extreme sports, at least the same risks are taken in the hobby and amateur area as in professional practice. Also, the respective level of performance cannot be determined as a meaningful differentiator between the amateur and professional categories. In the comparison between daily practice in the performing season or touring business and (un)regular (hobby, sport, fitness, etc.) or sporadic practice (YouTube, TikTok videos, internet in general), even the acceptance of higher risks in the supposedly non-professional area might be statistically more likely. Those who practise circus on stage every day not only work with a greater degree of routine, but are also less able to afford minor injuries (, abrasions, bruises, burns, etc.). Thus, the risk of injury in the hobby and amateur sector seems even higher than in the professional segment. Responsible handling, testing, understanding and not at least the intuitive feeling for the materials used are also likely to increase or decrease parallelly to the regularity of use. In addition, the different principles in stage practice on the one hand and pedagogical practice on the other must be taken into account. Of course, the transitions between daily and sporadic as well as artistic and pedagogical circus practice are fluid. The differences can be seen as snapshots along a multi-field continuum.

Bases of calculation and their classification

In the field of resistance calculations for circus props, a combination of the material requirements derived from the „Machinery Directive" (Directive 2006/42/EC) and therein specified **coefficients of use/working coefficients**, as well as a series of **„Dynamic Factors"**, which in the meantime have been confirmed as the result of various series of dynamic tests on loads generated by acrobatic movements in circus props and their suspension points, has become widespread throughout Europe in recent years, not least in the academic training institutions for circus arts[7].

The resulting mathematical model, which is relatively easy to use, produces reliable and realistic values for the majority of circus props, to which commercially available components and materials largely correspond. Therefore, this model will be presented and explained in detail in the following section.

However, this model as a basis for calculation also poses problems with a number of widespread props, such as straps, silks and static trapezes, since no practicable fatigue strengths can be determined for these textile props with the coefficients known from the Machinery Directive. The state-of-the-art in this respect as well as adequate best practice solutions are explained in the following and can also be applied in the future in case of changing conditions or innovations. Compromises must be found between the high requirements of the Machinery Directive, which were formulated for continuous use in an industrial context, and the specific restrictions in a circus context, which nevertheless guarantee the highest level of safety for the various users. In particular, clear labelling of the props, disclosure of the respective underlying technical assumptions by the manufacturers, unambiguous operating instructions with warnings about widespread misuse, and clear information about mandatory material inspection and its frequency are indispensable.

The correct use of the various coefficients requires a basic understanding of the labelling of the components of props and their suspensions, which are widely used in the circus context and essentially come from three product groups.

7 e.g. represented by the FEDEC (www.fedec.eu)

The vast majority of materials are either products manufactured and certified for the industrial lifting sector, the climbing sector and, more rarely, the sailing sector. These three product types are each labelled differently and this labelling must be interpreted correctly.

THE RULE OF THUMB IS:

Lifting Gear

Designation WLL or CMU in **kg** or **t**

$\rightarrow$ calculation of the permissible working load:

$$\text{perm. working load} = WLL_{\text{perm}} = WLL \cdot K_{\text{T}}$$

WLL	nominal working load limit
WLL_{perm}	permissible working load in the state of use
K_T	factor that takes into account the efficiency of the terminal connection

Nautical/Sailing Supplies

For material designed for yachting (often pulleys) depending on the manufacturer, you will find **different operating coefficients**.

Therefore, pay close attention to the technical data sheets and look for information on the minimum breaking strength! If necessary, ask the manufacturer for this.

If the breaking load is available, the calculation can be made in the same way as for the **climbing material**.

Industrial Climbing/Sport Climbing

Designation in **kN** = Indication of the breaking load

$\rightarrow$ calculation of the permissible working load:

$$\text{perm. working load} = \frac{\text{breaking load}}{\text{working coefficient}} \quad \text{resp.} \quad WLL_{\text{perm}} = \frac{F_{\text{min}} \cdot K_{\text{T}} \cdot f}{Z_{\text{p}}}$$

Source: BGI_810.3_200703_Lasten über Personen S. 10

WLL_{perm}	permissible working load in the state of use
F_{min}	minimum breaking force of the relevant component
K_{t}	factor that takes into account the efficiency of the terminal connection
f	conversion factor for units
Z_p	component/material specific working coefficient

Working Coefficients - Z_p

metal components & chains	4
wire ropes	5
textile fibre ropes & -straps	7

Source: 2006/42/EG „DIRECTIVE 2006/42/EC on machinery"

With the preceding information, the capability of the material used, i.e. the strength of the props, can be determined by stating or calculating the WLL (= permissible working load).

FOR THE SAKE OF BASIC UNDERSTANDING:

The different labelling results from the respective specific viewpoint on the intended use of the corresponding equipment:

→ Industrially used material is produced with fatigue strength in mind, i.e. permanent and regular use and stress over long periods of time and a multitude of usage cycles. This includes classic lifting equipment, i.e. equipment for cranes and winches, as well as modern industrial climbing equipment used for rope access techniques or in tree care. The production, use and regular inspection by experts of so-called „Arbeitsmittel" (work equipment) in the industrial context is complexly regulated by numerous sets of rules.[8]

→ Material used in the sport of climbing was historically designed for sporadic use in order to save lives in the event of a fall and was usually disposed of after a single high load. With the further development of climbing sports, the equipment has become extremely diversified and today it must in part withstand permanent loads that are comparable to industrial use as well. In order to meet these very different demands, the production and use of climbing equipment is strictly regulated and subject to constant control, which is oriented towards the respective user group (private, voluntary/charitable, commercial) and in some cases prescribes regular inspections by experts in accordance with the DGUV regulations.[9]

→ Material from the sailing sector is basically not manufactured for live loads or industrial use, is therefore not subject to comparable specifications and must be evaluated individually for use in artistic routines.

In a second step, the material strength described above must be compared with the maximum applied load (also called „dynamic load") that occurs in the context of the respective use.

The **dynamic load** is the force exerted by the user (e.g. acrobat) on the suspension points, lifting accessory or props through movement. Over the years, multiple dynamic test series have confirmed different dynamic factors depending on the respective prop and the type of load. These factors are summarised in a table in the appendix. The values are subject to constant monitoring. Therefore, in the future, as in the past, the table will undoubtedly change or expand with the introduction of new techniques or inventions.

DYNAMIC FACTORS:
cf. table in Appendix 1

RELATIONSHIP BETWEEN WORKING LOAD AND DYNAMIC LOAD:

With the help of the determined values: permissible working load (WLL) and applicable dynamic factor, the strength of the prop can now be compared with the actual force introduced by the use (= dynamic load):

Calculation of the action

$$(M_{\mathrm{A}} + M_{\mathrm{G}}) \cdot K_{\mathrm{D}} \cdot a$$

comparison action-resistance

$$WLL_{\mathrm{perm}} \geq (M_{\mathrm{A}} + M_{\mathrm{G}}) \cdot K_{\mathrm{D}} \cdot a$$

WLL_{perm}	permissible working load in the state of use
M_{A}	total weight of all users, (guideline for unknown weights: 90 kg per person)
M_{G}	sum of the weights of the device(s) / apparatus(es) and all other components
K_{D}	dynamic factor for the respective prop/usage scenario
a	load component per suspension/the relevant connection

As long as the permissible working load (WLL) exceeds the value of the force actually applied, safe use of the prop (within the manufacturer's guaranteed lifetime) is ensured.

8 Cf. e.g. Directive 2006/42/EC on machinery & DGUV Information 209-013 Anschläger chapter 23-25

9 Cf. DAV Panorama 5/2010 Ausrüstungs-Lebensdauer | Sicherheitsforschung p. 57"

Best Practice

Dealing with props that cannot meet the fatigue strength requirement of the Machinery Directive.

If the material from which a prop is made cannot meet the basic requirements for fatigue strength from the Machinery Directive because the usual or special use in circus arts causes load applications that stress the material beyond the range of elastic deformation and thus cause permanent material changes that manifest themselves as weakening and thus reduction of the original minimum breaking load, however small this may be for each individual use, consequences must be drawn from these physical facts:

→ Manufacturers are encouraged to develop or use materials that can withstand the actual and measurable loads or to optimise the design in such a way that the loads are technically reduced.
Example: Use of damping elements such as bungees or springs, combination of different textiles to achieve an optimal interaction of strength and ergonomics, etc.

→ If no technical solutions can be found, manufacturers may deviate from the limitations of material loads and usage specifications given in this publication, provided that they include information on the maximum service life and regular inspection intervals for the equipment in their product instructions.

At the same time, the users also have a responsibility: they must ensure the safety standard that the material cannot fulfil on its own through regular visual and functional inspections in accordance with the manufacturer's specifications and the intensity of use, as well as, if necessary, earlier discarding of the props concerned. In particularly doubtful cases, the obligatory use of additional protective equipment (soft-floor mats, lunges or similar) should be considered.

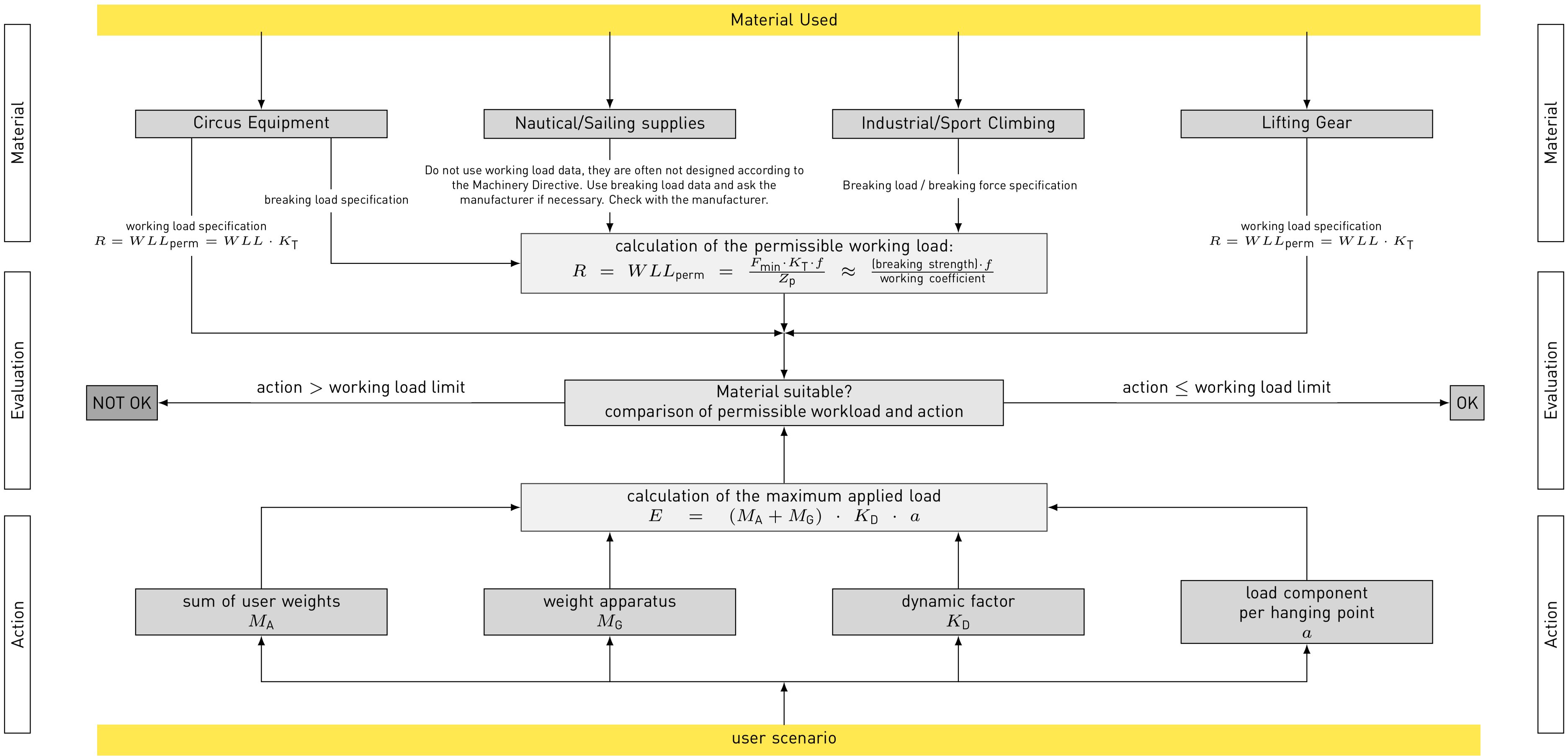
APPENDIX 1: DYNAMIC FACTORS

Circus Props / Disciplines	Dynamic factor calculated on the basis of average measurements[1]	Ratio per suspension [2]	Remarks
Static Apparatuses		**%**	
Static Trapeze	3	100 %	Also applies to: Trapeze with several bars, etc.
Silk	4	100 %	
Aerial Rope	5	100 %	without bungees at the anchor point
Silk in V-shape	3	100 %	
Rope in V-shape	4	100 %	
Straps	5	100 %	
Roman Rings	5	75 %	
Small Swinging		**%**	
Washington Trapeze	3	75 %	Swings with less than 45° lateral deflection. See also: short auto-lunge.
Conical Swinging		**%**	
Straps	4	100 %	Swings with less than 45° lateral deflection.
Silk	3	100 %	Swings with less than 45° lateral deflection.
Swinging Disciplines		**%**	
Swinging Trapeze	4	75 %	
Cloud Swing	4	50 %	Consider the opening angle of the rope (bridle-load).
Flying Trapeze	5	75 %	
Static Cradle	4*	50 %	* 4 in relation to the total mass of the acrobats or 3 for the catchers and 5 for the flyers.
Korean Cradle	4*	50 %	* 4 in relation to the total mass of the acrobats or 3 for the catchers and 5 for the flyers.
Russian Swing	5	50 %	
Lunge		**%**	
„following" double sided lunge	3	50 %	Double lunge for guidance and safeguarding e.g. for partner acrobatics, ...
double lunge as fall stop	5	50 %	Double (sided) lunge for absorbing a "big" fall e.g. on the swinging or flying trapeze.
Single lunge with lunger	5	100 %	Single-strand lunge with static anchor points and bungee system as fall absorber with experienced lunger.
Auto-lunge (single) without lunger	7	100 %	Single-strand self-catching lunge with static anchor points and bungee system as fall arrester without or in case of an inefficient lunger.
Short auto-lunge	5	100 %	Shortest possible lunge mounted directly on the unit without shock absorber.

1 These values are of course simplifications of more complex and variable situations. If you want to accurately measure the forces at one point of an acrobatic installation, placing a load cell, a dynamo-meter, is recommended as the best solution. This equipment can be rented and, if used correctly, provides valuable services.

2 The term "ratio per suspension" is to be understood according to the description in the Memento "Circus Apparatuses, Design and Manufacture (2001)" and depends on the possible positioning of the acrobats on the respective apparatus.

APPENDIX 2: CALCULATION PROCEDURE



Formula Symbol

R	resistance = absorbable stress
WLL_{perm}	permissible working load in the state of use
WLL	working load without the efficiency of the terminal connection
F_{min}	minimum breaking strength of the relevant component
K_t	factor for the efficiency of the relevant connection
f	conversion factor for units

Z_p	Working coefficients → ("Machinery") Directive 2006/42/EC
E	Action for the respective usage scenario
M_A	total weight of all users, (guideline for unknown weights: 90 kg per person)
M_G	sum of the weights of the device(s) / apparatus(es) and all other components
K_D	dynamic factor for the respective prop / usage scenario
a	load component per suspension / the relevant connection

Conversion Factor

1 kg	1 t	1 kg	1 t	1 kg	1 t
≈ 10 N	≈ 10 000 N	≈ 1 daN	≈ 1000 daN	≈ 0,01 kN	≈ 10 kN

1 N	1 daN	1 kN	1 N	1 daN	1 kN
≈ 0.1 kg	≈ 1 kg	≈ 100 kg	≈ 0.0001 t	≈ 0.001 t	≈ 0.1 t

APPENDIX 3: GLOSSARY

term/abbreviation	definition/explanation	web link/reference
best practice	(especially in business and politics) best possible (already tested) method, action or similar for carrying out or implementing something.	www.duden.de/rechtschreibung/Best_Practice
breaking force	Load that a machine or element can just no longer hold.	DGUV Information 215-313 Lasten über Personen, Anhang 3
CMU	Charge Maximale d´Utilisation (load capacity, cf. WLL); load limit for all lifting and slinging equipment.	www.machinerie-spectacle.org/ressources/e-lexique-machinerie.html?glossaryParam%5Bfl%5D=C#18524word
coefficient	constant factor before a variable value	www.duden.de/rechtschreibung/Koeffizient
daN	Deca-Newton =(10N) cf. Newton	
dynamic factor	Arithmetic ratio between the static load (weight) of the acrobat and the dynamic load induced by acrobatic exercises, determined by load measurements according to the type of use of each prop.	see Guide Annex 1
dynamic loading	The force exerted by the user (e.g. acrobat) on the suspension points, load-bearing equipment or props.	
fatigue strength	Fatigue strength: The maximum oscillation amplitude that occurs can be endured an infinite number of times. The proof of fatigue strength is carried out for components which, in the load spectrum, are subjected to a very high number of cycles of the collective components with a high oscillation amplitude. Typical examples are the crankshafts of internal combustion engines and wheel tyres of locomotives. Operational strength: It is proven that the load does not lead to a failure of the structure during the period of intended use. This proof is less conservative than a fatigue strength proof and therefore leads to lighter components. However, the operational strength verification is only advantageous compared to the fatigue strength verification if the load configuration form is suitable (low number of cycles with high vibration amplitudes). Typical components that are designed to be operationally stable are towers of wind turbines (low number of cycles in storm gusts), bridges and ships. Short-term strength: The fatigue of the component occurs with very high, plastic strain amplitudes with less than approx. 10^4 cycles. The short-term strength is only of secondary technical interest.	www.ing-hanke.de/fem-berechnung/ermuedungsfestigkeit/#betriebsfestigkeit
kN	Kilo-Newton =(1000N) cf. Newton	
lifting accessory	A component or equipment not attached to the lifting machinery, allowing the load to be held, which is placed between the machinery and the load or on the load itself, or which is intended to constitute an integral part of the load and which is independently placed on the market; slings and their components are also regarded as lifting accessories.	DIRECTIVE 2006/42/EC on machinery, Article 2 Definitions (d)
lifting equipment	Device that establishes a connection between the supporting structure and the load-bearing equipment, the load-bearing equipment and the load or the load-bearing equipment and the lifting accessory.	DGUV Information 215-313 Lasten über Personen, Anhang 3
load capacity	Maximum load that can be taken up by a work equipment as intended, without taking dynamic forces into account (cf. DIN 56950-1:2012-05), see also: WLL.	DGUV Information 215-313 Lasten über Personen, Anhang 3
load-bearing equipment	Device permanently connected to a hoist for picking up lifting accessorys, lifting equipment or loads (e.g. : Chain, wire rope, steel strap)	DGUV Information 215-313 Lasten über Personen, Anhang 3
Machinery Directive	DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery and amending Directive 95/16/EC (recast)	eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0042&from=EN

materials testing / visual inspection	Materials testing is the analysis of the physical and chemical properties of materials according to certain specifications.	www.onpulson.de/lexikon/materialpruefung
	Visual inspection is limited to the detection of apparent defects or the mechanical functional testing of work equipment for artistic exercises.	
N	Newton: SI unit of the physical quantity force. Expressed in the base units kilogram (kg), metre (m) and second (s), the definition is: 1 N = (1 kg*m)/s^2	de.wikipedia.org/wiki/Newton_(Einheit)Maschinen Artikel 2 Begriffsbestimmungen d)
nautics	Here: Sailing / Yachting	
ready to be discarded	Ready to be discarded means that lifting equipment is so badly damaged that it must not be used any further.	DGUV Information 215-313 Lasten über Personen, Anhang 3
SI	Système international d´unités (International System of Units for Physical Quantities)	de.wikipedia.org/wiki/Internationales_Einheitensystem
state of the art	Current state of development of a technology or product	de.wikipedia.org/wiki/State_of_the_art
state of the art (lege artis)	The Latin expression lege artis („according to the rules of art") requires (...) that all actions (development, production, application) are to be carried out according to social norms, scientific standards or legal rules, taking into account all usable knowledge and technical possibilities and using one's personal physical and mental abilities, skills and knowledge, so that the result (not only according to technical key figures) is state of the art.	de.wikipedia.org/wiki/State_of_the_art
sufficient risk reduction	Risk reduction that, taking into account the state of the art, at least meets the legal requirements (cf. DIN EN ISO 12100:2011-03).	DGUV Information 215-313 Lasten über Personen, Anhang 3
SWL	see WLL	
WLL	WLL and SWL are abbreviated terms often used in the field of engineering. WLL stands for Working Load Limit, while SWL stands for Safe Working Load. The main difference between Safe Working Load and Working Load Limit is that SWL is the older term. Today, SWL is no longer used as it has been completely replaced by the terms WLL and MRC.	Peter Verhoef: www.hadimpro.com/uploads/filemanager/Differences%20Between%20WLL%20and%20SWL.pdf
	Working Load Limit (WLL) is the international designation of the load capacity (often also: working load) of a lifting equipment for industrial lifting operations. The working load limit (WLL) is given in kilograms (kg) or tonnes (t). The WLL results from the minimum breaking load of the lifting equipment, which is divided by the working coefficient. If necessary, reduction factors (e.g. for the rope end connections) are taken into account.	www.12hoist4u.com DGUV Information 215-313 Lasten über Personen, Anhang 3
working coefficient	The term working coefficient replaces the old terms safety coefficient and safety factor. In simplified terms, the working coefficient is the ratio of the amount of a load that a machine or element can just no longer hold (breaking force) and the nominal load of these devices. For technical products (e.g. wire ropes, chains, lifting beams, clamps), working coefficients for safe hoist and crane operation are specified in Annex 1 of the Machinery Directive and in standards, cf. Directive 2006/42/EC (Machinery Directive) Appendix 1, point 4.1.2.5.	DGUV Information 215-313 Lasten über Personen, Anhang 3
working equipment	For the purposes of these guidelines, equipment is defined as apparatus and components (e.g. props or self-standing rigs) that enable the performance of artistic exercises.	
working load	see WLL	

APPENDIX 4: EXCERPTS FROM DGUV REGULATION 19 SHOWMEN'S AND CIRCUS ENTERPRISES

(translation by the author of legal document - only for informational purpose)

With regard to statutory accident insurance, circus in its entrepreneurial form is supervised by the Berufsgenossenschaft Nahrungsmittel und Gastgewerbe (BGN). The BGN has issued the accident prevention regulation „Schausteller- und Zirkusunternehmen (DGUV Vorschrift 19, old: BGV C2), which specifies the following safety requirements for circus (excerpts from DGUV Vorschrift 19, status: October 2022):

I. SCOPE OF APPLICATION

§ 1
Scope of application
This accident prevention regulation applies to showmen and circus companies as well as companies for artistic demonstrations and animal training.

II. DEFINITIONS

§2
Definitions
(...)
(2) For the purposes of this accident prevention regulation, circus enterprises are enterprises that present artistic performances, animal training and clowning.
(3) Artistic performances within the meaning of this accident prevention regulation are presentations of extraordinary feats, especially of a physical nature on the ground, in water and in the air.

III. CONSTRUCTION AND EQUIPMENT

A. Common provisions (...)

§4
Facilities for construction, dismantling and maintenance
(1) Amusement rides and circus installations must be constructed in such a way that they can be erected, dismantled and operated without danger. It must also be possible to ensure stability during each construction phase.
(2) It must be possible to carry out assembly, dismantling and maintenance work from safe workplaces. The necessary equipment and facilities shall be available to prevent components and objects from falling over or falling down.
(3) For erection, dismantling and maintenance work, equipment to prevent falls from a height and the necessary personal protective equipment shall be available.
(4) Platforms and pedestals shall be designed and installed in such a way that insured persons cannot slip, fall or otherwise injure themselves.
(5) Installation instructions must be available for each facility, and operating instructions must also be available for amusement rides. (...)

B. Special provisions (...)

§ 9
Artistic performances
(1) Equipment and props for artistic performances must be designed, dimensioned and constructed in such a way that they can withstand all expected loads.
(2) At the request of the Employer's Liability Insurance Association, the strength of the equipment and props in accordance with paragraph 1 must be demonstrated by submitting a calculation checked by an expert. If a calculation is not possible, proof of strength may be provided by load tests to be performed by an expert.
(3) During performances and rehearsals at a height of more than 10 m above the ground, safety devices must be provided for the artists to prevent them from falling. During rehearsals and the development of new performances, fall protection measures must be taken according to the type, degree of difficulty and level of training.
(4) Nets must be provided as fall protection for all flying aerial acts.
(5) For demonstrations and rehearsals with open fire, insured persons must be provided with clothing that is not easily flammable or easily melted. A fire blanket must be kept available.
(...)

IV. OPERATION

(...)

§ 13
Assembly and disassembly
(...)
(3) Notwithstanding paragraphs 1 and 2, the assembly and disassembly of artists' equipment shall be supervised by the artists themselves.
(...)

§ 20
Artistic performances
(1) Equipment and props for artistic performances must be checked by the artists before each rehearsal and performance to ensure that they are in good condition.
(2) The contractor shall ensure that artistic performances in the air outdoors are not started or, if already started, stopped in strong or gusty winds as well as in rain, snow or ice.

LEGAL NOTICE

Guide – Safety basics in the circus

Release: 15 October 2022

Published by Bundesverband Zeitgenössischer Zirkus e.V.

Cooperation partners:
Bundesarbeitsgemeinschaft Zirkuspädagogik e.V.
European Circus Association
European Youth Circus Festival / Kulturamt Wiesbaden
Verband Deutscher Circusunternehmen e.V.
Zirkus Macht Stark e.V.

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Design: Nane Weber, blickheben.de
Cover photo: Nicole Oestreich, **sketch**: Thomas Loriaux, **photos inside**: Nicole Oestreich

Supported by the „Fonds Darstellende Künste" with funds from the Federal Government Commissioner for Culture and the Media within the framework of „NEUSTART KULTUR".


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