

**KYIV MUNICIPAL ACADEMY
OF CIRCUS AND PERFORMING ARTS**



**VOLODYMYR KASHEVAROV,
DMYTRO OREL, DENYS SHARYKOV**

STAGE AND TECHNICAL TRAINING IN CIRCUS GENRES

safety protocol, stage and equipment manual

**FACULTY PERFORMING OF ARTS
Department of Circus genres**



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The manual systematizes the teaching methodology of the discipline "Stage and technical training" for circus specializations, safety rules, arena arrangement, operation of devices, apparatuses and equipment.

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FOREWORD

The manual "**Stage and technical training in circus genres safety protocol, stage and equipment manual**" is the first in the domestic circus science systematized scientific and methodological issue on a clear teaching methodology of "Stage and technical training" discipline for circus artists – acrobats, gymnasts, balancers, jugglers. The manual was devised by a group of authors:

➤ **Volodymyr Kashevarov** – an outstanding Circus artist, acrobat, aerial gymnast (air frame), ex-ringmaster of the Kyiv National Circus.

➤ **Dmytro Orel** – an acrobat-vaultier, aerial gymnast (paired cord-de-parille), Master of Sport in Gymnastics, Senior lecturer at the Department of Circus Genres, Faculty of Performing of Arts of the Kyiv Municipal Academy of Circus and Performing Arts.

➤ **Denys Sharykov** – the Dean of the Faculty of Performing Arts, PhD in Art Criticism, Associate Professor at the Department of the Circus, Faculty of Performing of Arts of the Kyiv Municipal Academy of Circus and Performing Arts.

The foreword briefly analyzes the peculiarities, concepts, formal and technical principles and tools for stage and technical training of circus genres – safety, stage, acrobatic equipment. In addition, the circus company structure with its own departments, structure and management is described.

Circus structure. Long work experience has resulted in formation of a certain structure of circus companies, which combines centralized management with economic independence and initiative.

There are several main departments in the *structure of stationary and mobile circuses*: circus management (managing director and his assistants), artistic departments (stage / artistic director, chief conductor, orchestra musicians, artist, choreographer, ringmaster); création / staging departments (director of creation / general stage manager, lighting designer, composer, set designer, sound engineer, choreographer, costume designer, make-up designer etc.); engineering and technical departments; administrative departments (administrators, ashers, cloakroom attendants, cleaners, ticket cashiers, fire and security guards).

The state circus companies employ circus performers and artistic and technical staff on the permanent basis. Since circus performers spend most of their time in the circus, they are always interested in its functioning and take an active part in life of the circus team. There are various types of circus structures such as stationary circuses, chapiteau, circus-theater, circus on ice, water circus, zoo circus. Let's briefly analyze some of them.

Stationary circus is a large company and artistic structure where circus artists work and seasonal circus shows take place.

In Ukraine, stationary circuses are located in major cities of Kyiv, Lviv, Kharkiv, Dnipro, Kryvyi Rih, and Zaporizhya.

Chapiteau is a mobile circus company working in various regions of the country in summer season. In winter, the tent is dismantled and stored in a warehouse until the opening of the new season.

The circus tent is a light construction made of two, four or eight 15–16 meters high masts, the number of side posts (support beams) depends on the number of seats to which the tarpaulin tent is attached. Masts, which are the main structures, are mounted to the coupola, which allowed to attach various circus apparatuses and equipment. Apparatuses, equipment, devices and animals are stored in the backstage part of the chapiteau.

GLOSSARY OF CIRCUS TERMS OF ACROBATICS AND GYMNASTICS, STAGE AND TECHNICAL TRAINING

Acrobatics is a circus and sports genre. According to the type, acrobatics is classified as parterre, solo, pair, group; acrobats-riders; grotesque; jumping acrobatics, static acrobatics, tempo acrobatics, cascade acrobatics, shoulder acrobatics; trampoline; tumbling; teeterboard; vault; power acrobatics, based on special exercises, different in nature and degree of complexity, demonstrating human feats of balance, agility, and motor coordination.

Vault is a kind of acrobatics, based on the techniques of throwing and overturning an uberman by an unterman and is performed by muscular effort only.

Gymnastics is a circus and sports genre, aimed at demonstrating the technical and artistic form, as well as to achieving the physical development of the human body. At the same time gymnastic apparatuses are used both in sports and in circus.

Gymnastics is one of the most popular kind of sport which develops the muscular system of arms, torso and shoulder girdle,

creates preconditions for mastering new physical exercises, develops the body control in unusual conditions of height, improves balance, develops the skill of decision making in difficult situations.

Gymnastics is included in the program of the Olympics. The official world championships in gymnastics for women include vault, uneven bars, balance beam and floor exercise, while men compete on six events: floor exercise, pommel horse, still rings, vault, parallel bars, and high bar. Gymnastics includes exercises from rhythmic gymnastics, aerobic gymnastics, choreography, etc.

Aerial gymnastics is a circus genre, one of the types of circus gymnastics, which demonstrates the skills of circus artists working on special apparatuses. Many elements of gymnastics have been known since ancient times in various countries of the East, but the basics of modern technique used in aerial gymnastics were formed and consolidated by circus artists during the XX century.

Aerial (circus) gymnastics includes tricks performed on apparatuses suspended from the circus ceiling such as trapeze, corde de volant, straps, silks, cord de parille; bamboo.

Apparatus (borrowed from Latin language "apparatus" – equipment, gear) is a special mechanical structure which

includes a system of electric winches and motors. These structures are suspended under the ceiling or installed on the ring (behind the ring) and are designed to enhance the spectacular effect of the circus performance. This is achieved due to the technical features of the circus apparatus: rotating, lifting, swinging, descending, a combination of several apparatuses used in one circus act.

For example, an apparatus for aerial gymnastics consists of bridges, trapeze, trapeze bar (stammbord), catch traps.

Pulley is a circus device for moving cables and ropes without bends on rollers, which is attached to the circus ceiling. There are different types of pulleys – a single pulley is used for a manual lounge and also for use of the winch; double and triple pulleys are used to tension the apparatuses and equipment (horizontal bars, catch traps).

(Picture № 1). Pulley



Bamboo (borrowed from the Malayan language bambu – a kind of a tropical plant) is a variety and apparatus of aerial gymnastics, a metal pole, 3-4 meters long, suspended vertically, on which the tricks are performed by two gymnasts.

(Picture № 2). Bamboo.



Rope – an object in the circus, made of several wires into a single unit used for the suspension of circus apparatus and equipment in circus acts (aerial gymnastics). Ropes can be steel,

made of organic materials e.g. cotton and inorganic ones e.g. synthetics.

Chinese pole is a vertical pole on which circus gymnasts climb and hold poses. It reminds pretty much of a pole designed for pole dance. The difference between the Chinese suspended pole and a regular pole is that the Chinese pole is covered with the special material (rubber) that prevents slipping

(Picture № 3). **Chinese pole.**



Aerial rings – a kind and an apparatus of aerial gymnastics. Another name for this apparatus is Roman rings. Aerial rings have a lot in common with rings for gymnastics. Today it is very difficult to meet this genre in circus performances. This is partly due to the emergence of such apparatuses and subgenres as aerial straps.

(**Picture № 4**). The aerial rings – duet.
Graduates of Kyiv municipal academy of circus and variety arts
– Eugene Shabala and
Alina Miroshnichenko.



Rules for rigging apparatuses

There are two options for rigging apparatuses: *static* (attachment to the grids), or *a specially installed winch*, the cable is passed through the pulleys to the winch to change the height.

Lifting is done manually; to lift one person at least 3 people are required – 1 assistant, 2 ring attendants). A hoisting tackle is used to facilitate manual lifting (polyspast).

Cord de parille (borrowed from the French language Cord-de-parille, "corde perilleuse" – a dangerous, risky rope) – a kind and an apparatus of aerial gymnastics. An aerial gymnastics apparatus is a tightly stretched vertical rope on which the artist performs tricks similar to the tricks on perches or bamboo ("flag", blanche, somersault).

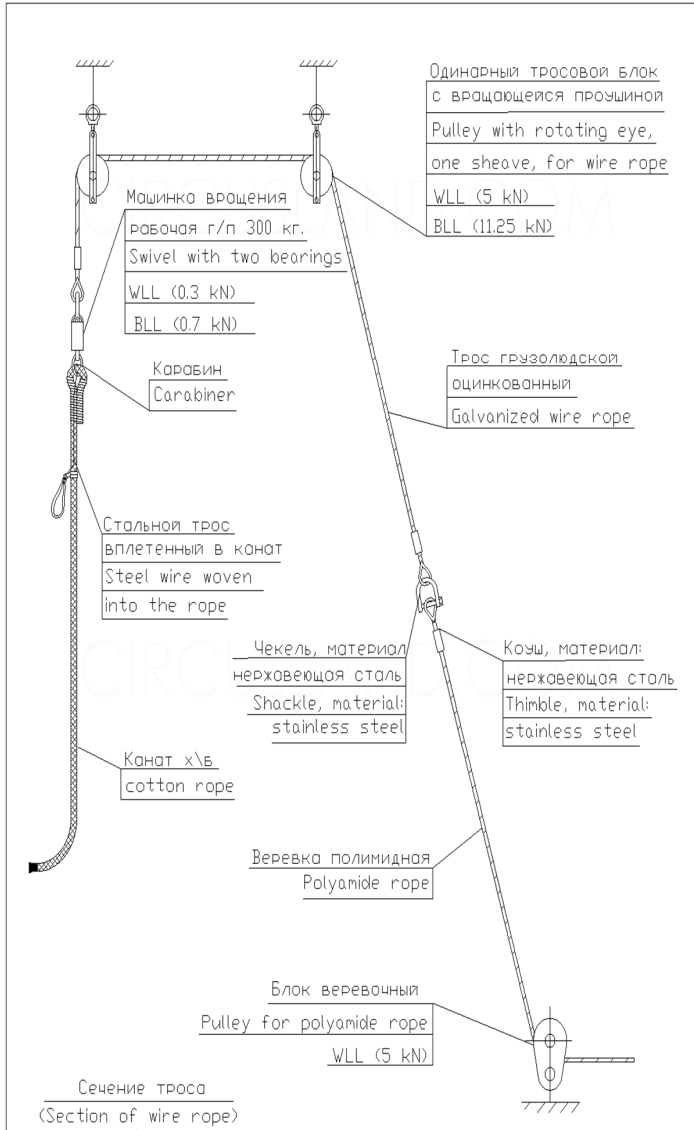
The upper end is attached to the ceiling; the lower end is pulled by an assistant; the top of it is provided with loops. The trick, which is shown on the cord deparille, is performed by one or two circus artists.

(Picture № 5). Paired cord de parille
Laureates of International awards, Silver and Bronze medalists
of International Circus Festivals, Artists of the National Circus
of Ukraine, graduates of the Kiev State School of Variety and
Circus Art.

Dmytro Orel and Svitlana Kashevarova
"Duo Air Love".



(Picture № 6). The scheme of apparatus rigging – Cord de parille



Grids (rafters) – the upper part of the circus, located above the ring, the place of rigging of circus apparatuses, longe.

(Picture № 7). Grids – "rafters".





A **carbiner** is a connecting element, a connecting link between different types of circus apparatuses.

(Picture № 8). Carbiner.



Thimbles – a device and means of protection of the ends of a cable and ropes against friction and fractures of a cable on a bend.

(Picture № 9). Thimbles



Catcher – a participant in a gymnastic trick, who hangs on his knees on a short trapeze or frame (catcher). and in a standing frame, catches a partner, flies to him from a trapeze or horizontal bar.

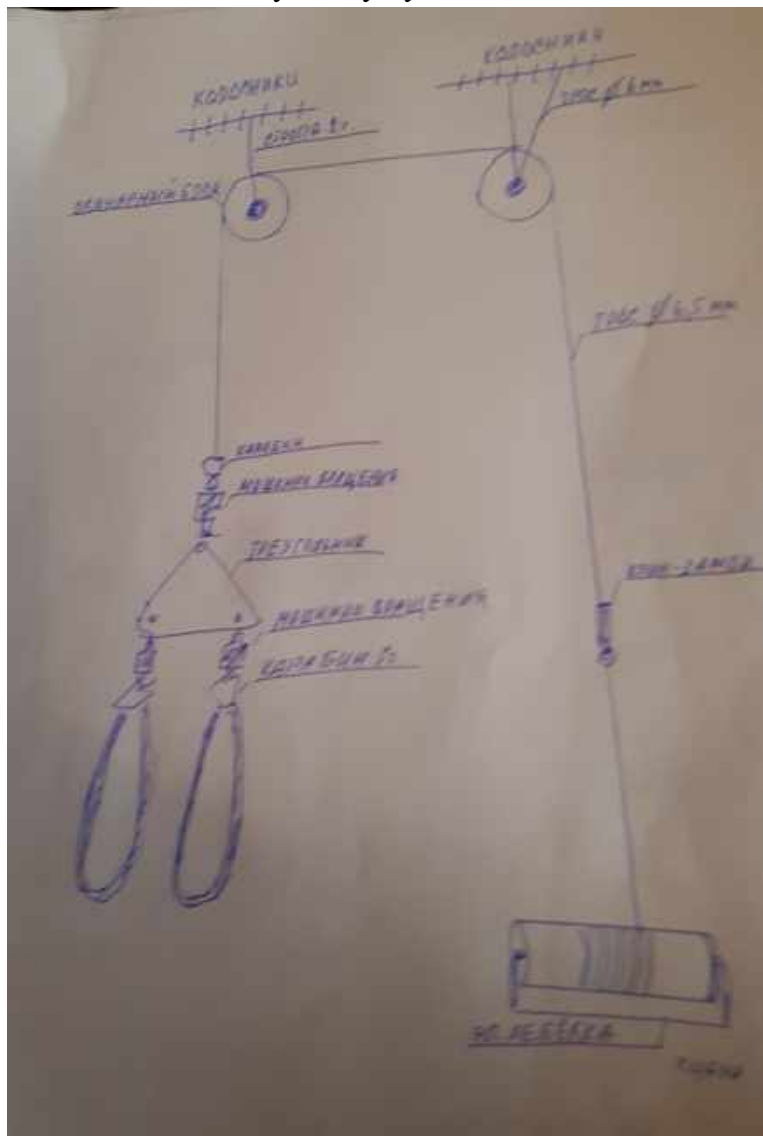
Winch – a device for lifting a circus performer (air gymnast, acrobat); used for lifting loads, equipment.

(Picture № 10). Winch.



(Picture №. 11). The principle of rigging.

Drawn by Vladymyr Kashevarov.

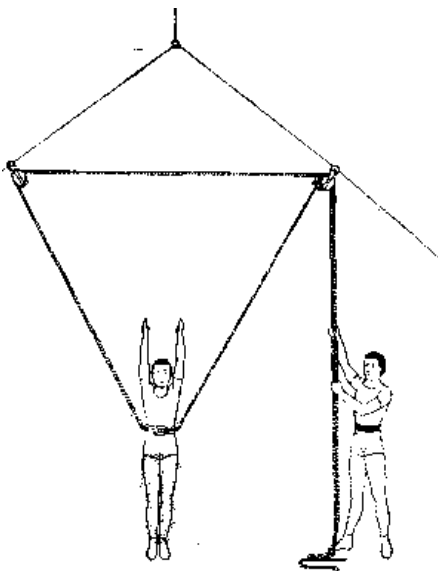


Longe (borrowed from the French language longe – rope,) in the circus this device ensures safety of circus artists during the performance of dangerous tricks; a rope attached to the belt of a gymnast or an acrobat when performing particularly complex and dangerous acts to prevent falls.

An acrobat or a gymnast fastens a belt at their waist, two spotters help him taking the ropes in their hands. Performers use a longe with a pulley that has several rotating rollers.

Vault acrobats, trapeze aerial gymnasts, cord de frills, cord-de-parille, and matte ladder balancers often use a "local longe" – a thin rope that connects the artist's belt to the apparatus.

(Picture № 12). Longe.



Stage (manege / arena) – (in French language "manege" – a place for training horseback riding) – a round platform in the center of the circus, which is 13 meters in diameter, where the circus shows take place.

(Picture № 13). Stage.



Swivel – a device used to prevent twisting of the cable, used for a variety of aerial gymnastics.

(Picture № 14). Swivel.



Spotting (in French language – "passer" – to transfer, pass) in acrobatic vault and aerial gymnastics means helping the performer (throw, pick up, support if necessary). A person who performs this function is called a **spotter**.

Piste is the edge of the ring floor, which is up to 0.5 m wide, raised near the barrier above the level of the ring by 40 cm. Piste does not allow the horse, which always runs with a slope to the center of the ring, to kick the walls of the barrier, to violate the angle of the slope and the pace of running.

(Picture № 15). Piste.



Catch trap – a kind and apparatus of aerial gymnastics. The trick on the catch trap is performed by two gymnasts – a catcher and a vaulter. The initial position of the catcher is hanging on the trap on the knees.

In this position, the catcher and his partner perform fragments of gymnastic vaulting, including tricks when both partners at some point unlink their arms. The catcher alternately holds in hands a trapeze or rings on which the vaulter performs the tricks.

(Picture № 16). Catch trap.

Loureat at International Competitions and Circus Festivals,
Leading Artists of the Kiev State Circus Vladymyr and Svitlana
Kashevarova.





Gymnasts usually perform tricks on a fixed apparatus rather than swing on a freely suspended one, or a catch trap used in aerial gymnastics. It is much more difficult to perform a trick on a moving apparatus. The jump of the vaulter from the catch trap in the hands of the catcher is carried out in the same way as on a double trapeze, i.e. "break" from a sitting position or a jump from the catch trap in the hands of the catcher.

Aerial silk is a kind and equipment of aerial gymnastics. Aerial silk makes two pieces of stretching or semi-stretching fabric fabrics (depending on the level of the gymnast), 1–1.5 meters wide which have the same suspension as a rope. It is more popular among women's aerial gymnastics, because it has a more flexible material.

(**Picture № 17**). Aerial silk – a female duo. Alumni of Kyiv Municipal Academy of Circus and **Performing of Arts** – Anastasia Parkhomenko and Elena Kharchenko, teacher Lyudmila Zavada.



Aerial flight is a kind of aerial gymnastics. There are 3 types of flying trapeze act: single, group and cross.

(Picture № 18).

Alumulus of Kyiv Municipal Academy of Circus and **Performing of Arts** – Vladimir Fedyna: flying trapeze.



Aerial straps or "Chinese straps" – a kind of aerial gymnastics and also a type of aerial apparatus which looks like two suspended ribbons. This genre originates from China, where street circus artists performed various holds, twists, rolls and manoeuvres on straps, which are now mostly similar to the exercises on the rings in gymnastics.

(Picture № 19). Alumulus of Kyiv Municipal Academy of Circus and Performing of Arts –
Yegor Gaevsky: aerial straps.



Trapeze (borrowed from Greek language "trapesion" – a rectangular with uneven sides, literally – a table) – a kind and apparatus of aerial gymnastics. A gymnastic apparatus which looks like a metal bar that hangs horizontally on two ropes (with a cable inside) attached to it at the edges. Tricks are performed in the air on both stationary and swinging trapeze.

(Picture № 20). Trapeze



A **hoisting tackle (Polyspast)** (in Greek language πολύσπαστον, πολύσπαστος – tensioner with many ropes) – a lifting device made of several moving blocks (two or three), which is wrapped around a rope, designed to gain speed (high-speed hoisting tackle) or increase strength (strength hoisting tackle).

(Picture № 21). A hoisting tackle (polyspast)



Rigging – in the circus it means rigging circus apparatuses under the grids of the circus ring, as well as the theater stage.

Suspended ropes – steel ropes or synthetic slings.

Ring space (arena space) – the part of the circus under the ring, used for the genre of illusion and magic tricks.

Tightening hardware is used for fixing circus apparatuses in a stationary condition.

Holding point (types of mount) – a hardware for mounting the circus apparatuses wall mount "utka", ground mount, located on the walls in the aisles, under the stairs, under the barrier.

(Picture № 22). Wall mount. Utka.



Hand loop – lifting loop (loop lock) – a device for holding the hand, used in aerial gymnastics, such as cord-de-parille.

(Picture № 23). Hand loop.

From the personal props of Dmytro Oryol



Vorgang (Ring entrance) is a curtain in the circus that separates the ring from the backstage.

(Picture № 24). Vorgang.



Shackle – a round bracket with a bolt, designed to connect cables, ropes. (Picture № 25). Shackle.



(Picture № 26). Shackle and swivel for aerial belts.



Stambord (Trapeze bar) (in German – stambord) – a metal crossbar that hangs horizontally at the edges and is fixed by stretchers. Circus apparatuses are rigged to it.

INFORMAL CIRCUS TRADITIONS AND SUPERSTITIONS

Most of the informal traditions in the circus are closely connected with circus superstitions, sometimes people even confuse superstitions and traditions. Some traditions may seem strange, but they are very important to circus artists.

"Congrats on the beginning!" Sometimes circus performers say "Congrats on the premiere!". These way circus artists greet each other after the premiere in the new city, the beginning of the season, the first day during the tour. At the same time, there is a superstition that it is bad luck to congratulate on the beginning of the season until the circus performer has shown all their tricks. So, as soon as the circus artist has stepped backstage, it is possible to congratulate them.

"Premiere". The premiere is the first performance in the new season, the first day during the tour, the first show in the circus. This performance is often called a rehearsal (jargon – run) with the audience. During the premiere, the audience make professionals, circus artists who are not employed in the show, future circus artists.

Of course, there are a lot of rehearsals before the premiere and it is possible to stop the act at any time, repeat the trick as many times as possible, adjust the light, sound, tailor the uniform or costumes. The premier, however, is a more responsible event

which should be smooth and impeccable. All inconveniences that were not taken into account in the rehearsals must be hidden and the spectator should not notice them. It is clear that all circus performers are anxious when the show starts, that is why the exclamation "Congrats on the premiere!" is accepted so sincerely.

"Finale". The final show in the new city, the season, the last day during the tour is called "finale". It is also called "green" "zelionka" (green representation, which comes from the theatrical tradition of an amateur variety revue.)

Once all circus staff (a ringmaster, circus performers, ring attendants, lighting engineers, musicians, ticket agents, dancers) have become friends and the show has been mastered, it's time to check the professionalism of the circus performers. During the finale, the circus performers pull each other's leg. Of course, these jokes should be unnoticeable to the audience and in any case should not disrupt a circus act or endanger the health of the circus performer. A performer must find the way how get out of any situation and prove their professionalism. It is clear that the circus management does not welcome such tradition, because on the one hand, it can be dangerous, on the other hand, the spectators should enjoy the show of the high quality rather than some whimsical performance.

"Happy weekend!". For circus artists, unlike other jobs, weekend starts on Monday as on Saturday and Sunday there are

performances in the circus just like in any other theaters – drama, opera, ballet. Circus artists say "Happy weekend!" to each other only after the artist has performed the trick.

The fact that Monday is a day off has its advantages and disadvantages. One of the advantages is that most people are at work, which means that the recreational spots and shopping malls aren't as crowded as on the weekend. One of the disadvantages is that most entertainment venues are also closed on Mondays and it's a problem for circus artists and their friends or relatives to get entertained together as their days off do not coincide.

Circus superstitions.

"It is bad luck sit with your back to the ring." Circus performers explain this superstition by saying that the ring is their home and their livelihood and sitting with your back to it means turning your back on your wellbeing. However, for those who don't believe in superstitions there is another explanation. Some rehearsals, installation, rigging or dismantling of the circus equipment, rehearsals with animals always take place on the ring, so there may be different situations that can pose threat to the human health. That is why, for safety reasons it is better to keep the ring in sight, not to get hurt.

"It is bad luck to nibble sunflower seeds in the circus" – the box office revenue will be low (there will be few spectators). It is very important for a circus performer to see the full house

(as many spectators as possible), not only because their salary often depends on it, but also because when the house is full, it is much easier and more pleasant to work.

"It is bad luck to cross the path of a circus performer before they enter the ring" – they will perform poorly. In fact, the circus artist needs to carefully warm up, concentrate, mentally rehearse a complex trick, get into character before entering the ring. If someone is standing on the way to the ring, it can be distracting, so, it should always be free.

"Never touch someone else's props", especially before the performance – the props will fail during the show. Although it is considered a superstition, however, it is a firm superstition. Props, apparatuses and equipment play a very important role in the circus act and the performer's life often depends on them. Props and equipment are carefully prepared and checked before the show and can be touched by the circus performer only, or a ring attendant who takes it to the ring.

"It is bad luck to sit down with your costume on" – it can let down the circus performer during the show. This superstition does not contain any hidden meaning. If the circus artist is careless with their costume, many unpleasant things might happen – the costume can be crumpled, the shirt can come out, the secret of the trick can be revealed, the longe can be unbuttoned.

"It's bad luck to cross the center of the ring unless you're rehearsing or performing". The ring is not for idlers. Circus artists who are not rehearsing the tricks are trying to bypass the ring, but if crossing it is urgent, do some feint, somersault, jump or skip step.

This superstition, however, does not apply to those circus artists who are currently rehearsing, spotting or performing.

"It's bad luck to step on the ring wearing your street shoes", for understandable reasons.

"It's bad luck to put posters on a bed, sofa or chair" for there will be no spectators. This superstition is explained as follows: the poster should work (attract the audience) instead of lying on the bed. Circus performers also lay another poster on the floor instead of a rug in the house, hotel room, or trailer and those who enter the house stamp their feet on it the same way spectators stamp their feet on the circus floor.

"It's bad luck to say the word 'last'" (the last time, the last show). It is necessary to say "another show" or "final performance". In general, many words with negative connotation are avoided in the circus. For example, such words and expressions as "get hurt", "fall", "break" are usually replaced by "catch a cold" and so on.

It is believed that a funeral procession, which the the circus performers meet on their way while touring, brings good luck and lots of spectators. Whereas a wedding ceremony, on the

contrary, brings bad luck and few people will come to see the show.

If a circus performer stumbles on their right foot before entering the ring, they are believed to fail their trick.

If a circus performer stumbles on their left foot before entering the ring, they are believed to be lucky. Some circus artists even come backstage and start anew if they accidentally stumble their right foot.

CHAPTER 1.

CIRCUS SAFETY RULES. GENERAL TECHNICAL REQUIREMENTS.

Topic № 1. Duties, rights and responsibilities.

Administrative and engineering staff of circus company are obliged to follow the current legislation on labor protection, orders and directives of higher bodies, decisions and resolutions of trade unions, as well as these rules in matters of safety and industrial sanitation.

Each individual circus group, show and act must have its own group leader, appointed by the circus management, the group leader is responsible for compliance with safety rules and regulations.

Individual assignment:

1. Characterize circus staff in terms of safety and industrial sanitation.
2. Give the genre characteristic of circus acrobatics.
3. Give the genre characteristic of circus gymnastics.
4. Define – acrobatics, acrobatic vault.
5. Define – apparatus.
6. Define – bamboo,
7. Define – catcher.
8. Define – a circus act.
9. Define – cord de perille.

10. Define – stage (arena, manege).
11. Define – trapeze, stambord.
12. Analyze and record the work of the circus company staff during the circus performance and rehearsal.
13. Make a brief analysis of the aerial gymnastics performance.
14. Analyze informal circus traditions and superstitions.

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Topic № 2. Administrative and artistic staff of the circus company.

A general director of the circus is responsible for labor protection in the circus company.

The General director of the Circus is obliged to:

- create healthy and safe working conditions for the circus staff, as well as ensure the safety of spectators;
- ensure the improvement of safety and industrial sanitation;
- manage the activities of a safety engineer and monitor his work (if a chief engineer is absent in the circus company);
- provide timely inspection of the company in between departmental commissions and prepare a certificate of clearance for operation;
- monitor the timely training and instruction of all employees of the circus company, as well as conduct the annual test of knowledge of rules and instructions on safety, industrial sanitation and firefighting equipment by administrative and engineering staff;
- organize engineering and technical consultations upon the request of persons responsible for safety;
- ensure the timely distribution of uniform, special footwear and safety devices in accordance with the rules;
- manage works on assembly (installation), rigging and transportation of structures of the mobile circus;
- assist representatives of state and public control and take measures to eliminate violations of labor protection;
- provide qualified medical care and timely medical check-ups of the circus staff.

The Circus Administrator must:

- ensure proper order in the circus hall (building);
- give instructions to the safety inspectors and test their knowledge.

Circus Production director. The art Director of the show) is obliged to:

- conduct instruction and on-site training of circus performers as well as all service staff on the correct and safe methods and techniques of spotting and self-spotting;
- make sure that circus artists undergo medical check ups timely;
- ban poorly prepared tricks and prevent those circus artists who might have any health problems from performing during the show;
- ensure the proper maintenance of the equipment used in the circus acts, circus apparatuses, stunts machines, safety devices, as well as the proper sanitary and hygienic condition of artistic costumes, shoes, makeup, which are in the personal use of circus performers;
- check the serviceability of the ring (stage), apparatuses, equipment, protective and safety devices, the correct fit of clothes and shoes of the circus artists before rehearsals and performances;
- provide enough working space and lighting for the performance;
- manage works on installation (rigging), dismantling and packing of the circus apparatuses, equipment and safety devices;

- ensure compliance with the requirements set out in the manual of the circus apparatus, operational safety, timeliness of technical inspection and repair;
- ensure the safety of performances and rehearsals;
- control the safe production, storage and use of pyrotechnics and weapons.

Individual assignment:

1. Analyse the functional responsibilities of the general director of the circus.
2. Analyse the functional responsibilities of the circus administrator.
3. Analyse the functional responsibilities of the production director of the circus.
4. Analyze the administrative and artistic staff of the circus company.
5. Analyze and record the work of administrative and artistic staff of the circus company during the circus performance and rehearsal.

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2. Ирхин А. Ф. Правила техники безопасности и производственной санитарии в цирковых предприятиях. Москва : Реклама, 1977. 331 с.
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Topic № 3. Circus engineering and technical staff

The Chief Safety Engineer must:

- conduct introductory safety instruction with the newly appointed director of the circus;
- store, keep records and conduct selective verification of documents for circus equipment, weapons and pyrotechnics;
- make records of changes in the equipment passports;
- keep records of circus staff turnover, circus performers injured in industrial accidents;
- collect, check and process cases of accidents at work, reports of circus companies on victims of the accidents, spending of funds for labor protection;
- analyze the causes of accidents and develop additional measures to prevent injuries;
- control the timely provision of circuses and individual teams with overalls, footwear and safety devices;
- take part in the development of more effective and convenient protective equipment and devices;
- inspect the state of labor protection and safety in circuses;
- take part in the investigation of cases related to gross violations of these Rules.

The Circus Fire Engineer is obliged to:

- take part in applying for firefighting equipment and distribution of funds;
- control the timely treatment of wooden elements and tarpaulin products with fire-retardant composition;

- consider plans of capital fire-prevention actions (replacement of combustible designs, the device of water supply systems and reservoirs, installation of automatic detectors);

- keep records of fires;

- investigate cases of fire on the spot;

- analyze the causes of fires, develop additional measures to prevent them;

- inspect the state of fire safety and the work of security guards;

- organize and conduct training of newly hired conveyor chiefs;

The Circus Ringmaster is obliged to:

- instruct, train and test knowledge of safety and industrial sanitation of artists and staff;

- provide normal operation of the ring, timely and correct making of the ring flooring;

- take part in the technical certification of technological devices, lifting mechanisms, circus devices, safety devices placed in the circus hall and backstage in order to ensure their normal operation;

- control the timely provide artistic and service personnel with safety means and protective devices, overalls and footwear;

- control the safety of performances and rehearsals of tricks with increased danger;

- monitor the regular rehearsals of artists whose work is associated with increased physical activity;

- ban persons who are sick or intoxicated from taking part in the shows;

- keep passports for circus devices during their operation in this circus, make the necessary entries in them, make corrections to control copies of passports in case the design of the device is changed;

- conduct circus performances, avoiding situations that endanger people's lives or health;

- ban the use of faulty circus equipment or safety means, performing tricks that are dangerous to life and health;

- control the safety of production, storage and use of pyrotechnics and weapons;

- take part in the investigation of accidents at work with artists and support staff.

The senior circus ring attendant is obliged to:

- know the basics of rigging work and rules of safe operation of hoisting mechanisms, methods of spotting, rules of handling dangerous animals and work with hand-held electrified tools;

- be able to properly and reliably suspend (install) circus devices, select and use ropes and rigging devices, knit knots, use carpentry, joinery and saddle tools, properly hold the longe, spot the circus artists;

- take part in rehearsals and performances;

- timely and correctly prepare a ring and technical devices for rehearsals and circus performances;

- train and instruct ring attendants on safety measures in the workplace.

Individual assignment:

1. Analyze the functional responsibilities and work of a senior circus safety engineer.
2. Analyze the functional responsibilities and work of the circus fire engineer.
3. Analyze the functional responsibilities and work of the circus ringmaster.
4. Determine the work of the circus ringmaster during rehearsals and circus performances.
5. Analyze the functional responsibilities and work of a senior circus ring attendant.
6. Analyze the engineering and technical staff of the circus enterprise.
7. Analyze and record the work of engineering and technical staff of the circus company during the visit to the circus performance and rehearsal.
8. Make a description and record the work of the circus ringmaster.

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Topic № 4. Medical staff and industrial sanitation.

The chief circus doctor is obliged to:

- manage the medical staff of the circus company;
- keep records of diseases and injuries of circus artists;
- collect, check and process reports of medical centers of circus companies;
- analyze the causes of injuries and illnesses, develop measures to reduce or eliminate them;
- take part in discussions of projects for the construction and reconstruction of circus buildings and structures;
- keep track of work and rest schedule of circus artists (especially teenagers and women) doing the tricks with high physical activity, to give appropriate recommendations;
- hold an advisory reception of circus artists;
- refer sick or injured circus artists for treatment;
- train artistic staff to provide first aid;
- give advice to the circus departments on recruitment or transfer of circus performers to another circus genre or another climatic zone in connection with the state of health;
- control medical care and sanitary and hygienic conditions of circus companies;
- control the timely provision of sanitary clothing.

Medical check-ups. Medical care.

When hiring circus artists, it is necessary to take into account not only their knowledge and skills, rewards and experience, but also their physical condition, actual professional performance, functionality, stability and sensitivity of the vestibular apparatus, absence of acrophobia (fear of heights), as

well as psychological factors (speed of reaction, attention, memory). To hire aerial gymnasts, functional check-ups are conducted, for example a Barany chair test.

The medical records of these workers should contain records of the results of fluorography and electrocardiography. After each long illness or serious injury, as well as when starting other genres like aerial gymnastics, circus performers are required to undergo an additional medical check-up.

Circus artists and their apprentices are examined at least once every three months by a circus doctor before starting work in the new city.

Medical centers are organized in stationary circuses and circus schools. The doctor of the circus medical center submits reports on their work to the circus management in due time. Sections of the circus doctor's work are given in the appendix.

The first-aid kit (in a locker or a portable bag) should contain sterile bandages, individual aseptic packages, cotton wool, rubber plaits, plywood and wire tires, iodine and valerian tinctures, 2% boric acid solution, ammonia liquid, hydrogen peroxide, validol, streptocide powder, vaseline, bactericidal adhesive tape, BF-6 glue, thermometer, scissors, hot-water bag and ice-cube container. First aid kits should be stored in a visible place in the administrative building both at the point of work and during the move.

Circus performers who have acute or chronic diseases (including post-traumatic ones) with contraindications to

physical activity are not allowed to participate in circus performances.

A circus doctor might allow such circus artists to work with reduced load (e.g. participation in parades).

Circus doctor's field of work

Medical control consists of a medical check-up, carried out in the form of initial and repeated check-ups, as a result of which a medical assessment report is issued.

The circus doctor examines all the artists who come to work in the new show during the first three days.

The purpose of the examination is to determine possible problems in the state of health, to prevent the development of the disease or aggravation of previously received microtraumas, to decide on the admission of the circus artist to work.

After the earlier diseases and injuries additional check-ups are carried out.

The set of check-ups conducted by the circus doctor includes:

- anthropometric measurements are taken once a year, weight is measured at least once every two months;
- general examination;
- determination of the state of the nervous, cardiovascular, respiratory systems, musculoskeletal system, abdominal organs;
- conducting a functional test to determine the body fitness.

If necessary, the doctor advises the circus artists to consult the specialists and take urine and blood tests. For women, a gynecologist's examination must be conducted at least once a

year. The results of the check ups and tests are recorded in the medical history of the circus artist.

Current sanitary and hygienic supervision

Current sanitary and hygienic supervision of the ring, auditorium (hall), bathrooms, dressing rooms, toilets and other backstage facilities entails the monitoring of cleaning, efficiency of ventilation devices, adequate lighting and heating, hygienic content of props, clothing and footwear.

Each circus should have a journal of sanitary and hygienic control, which records the results of the survey and recommendations corrective measures.

Sanitary awareness building

Sanitary awareness building includes the organization of lectures and talks on medical topics ("Hygiene of clothes", "Work and rest balance"), popularizing of the healthy lifestyle, physical training, self-massage, a rational diet.

Prevention of injuries and diseases

First aid and medical care.

Responsibilities of the doctor. The doctor must:

a) explain to the circus artists the reasons and situations that contribute to the occurrence of injuries;

b) daily monitor compliance with temperature and other sanitary and hygienic standards, which are rehearsals and performances;

c) ban the circus artists from working in case of illness, severe forms of fatigue, insufficient physical training.

The circus doctor provides first aid to the injured and sick circus performers, monitors their further treatment. He also must ensure that the medical center of the circus has all the necessary

medicines. During rehearsals, medical care is provided by paramedics.

In circus companies which do not have paramedics in staff, a person who is trained to provide the first aid is appointed. The doctor is obliged to inform the ringmaster about the poor health of a circus performer in due time. The circus doctor provides medical care to circus workers and spectators.

All injuries and diseases are recorded in a special journal. The circus doctor makes a report on the work of the medical center.

Medical and pedagogical observations

On the basis of medical and pedagogical observations, the circus doctor gives recommendations to circus artists and those who control the circus acts on a mode and an individual technique of rehearsals. These recommendations are especially important to those performers who have overcome an illness or injury.

Individual assignment:

1. Analyze the importance of medical check ups and medical care in the circus.
2. List the sections of the circus doctor's work and provide brief comments.
3. Analyze medical control of circus performers in the circus.
4. State the purpose of the medical check ups of the circus artists.
5. Analyze the current sanitary and hygienic supervision.
6. Analyze sanitary awareness building.
7. Analyze medical and pedagogical observations.

8. Prepare a seminar on medical care of the circus artists in the circus.

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Topic № 5. Academic staff of circus specialization at the Kyiv Academy of Circus And Variety Arts. Education and work of students.

A member of the academic staff of Kyiv Academy of Circus And Variety Arts, working with the students pursuing their bachelor's degree in circus arts must:

- hold classes according to the schedule, allowing to attend them only those students who are dressed in training suits and special shoes;

- create conditions for classes that exclude cases of injuries;

- provide students who perform dangerous tricks with reliable spotting; teach them safe methods of performing tricks, insurance, self-spotting and spotting;

- practice with students the techniques of safe falling into the net and on the carpet;

- demand from students unconditional observance of safety rules and industrial sanitation;

- get students aware of circus apparatuses, teach them safe methods of using apparatuses and safety equipment.

Training and work of students studying at the department of junior bachelors (specialists).

Adolescents at least 14 years old who are physically fit can be admitted to circus educational institutions. Admission of boys and girls for individual professional training or participation in circus performances is allowed only with the written consent of the university union.

Training in circus performances is determined by the rules of the "Special Regulations" on individual apprenticeship. The

director of studies is responsible for the lives and health of the students.

Training should take place under the constant guidance of experienced teachers in the hours specified in the schedule, in specially equipped gyms.

Spotting is carried out by the art director, a teacher or an experienced person appointed by a ringmaster.

During training and practice, the implementation of safety rules is strictly observed, experienced managers and ringmasters are assigned for this purpose.

Teenagers can take part in aerial performances at the age of 15, and performances with detachable tricks the age of 16.

The working day in circus performances should not exceed 3 hours for boys and girls under 16 years old, and 4 hours for boys and girls from 16 to 18 years old.

Teenagers are not allowed to work more than twice a day.

Individual assignment:

1. Determine the functional responsibilities of the academic staff of circus specialization at the Kyiv Academy of Circus And Variety Arts, as well as training and work of students of the department of junior bachelors.

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Topic № 6. Instruction and training. Fire safety requirements.

All staff of circus companies, regardless of working experience, must be instructed on safety measures, industrial sanitation and fire safety. Training is conducted in the form of introductory (general) training and on-the-job training - when applying for a job, repeated training and unscheduled training.

Introductory and on-the-job training is carried out taking into account the specific working conditions, and circus art. The training should be carried out when entering the job, transferring from one job to another and changing the circus art.

The introductory training is conducted by the person responsible for the safety of the company (safety engineer - in circuses, head of the technical section - in the zoo, the art director of the show).

Scheduled training is conducted at the workplace at least once every six months. The training of persons of dangerous professions and electrical personnel is carried out by the heads of workshops at each new place of work, but at least once every three months. The training is conducted with the staff within the same profession (genre) in order to deepen the initial knowledge and skills in work safety, as well as to identify the level of knowledge of safety rules.

Fire safety requirements. Buildings and structures of stationary circuses must have access to the city driveways, except for the back facade, which may be adjacent to the backyard. Circuses must stand at least 50 m from the red line of construction on the opposite side of the driveway.

In external exits for spectators, within the limits of the red line, unloading platforms at the rate of 0,2 m on one spectator are installed. Backyard and driveways (at least 6 m) must have hard-surface pavement. An area of at least 1000 m² is allocated for the backyard. Circuses must be provided with sufficient water for drinking, household and firefighting purposes.

Internal fire hydrants, sprinklers and drenchers are provided for internal firefighting in stationary circuses. Fire pumps must have a 100% reserve.

The number and width of exits in circuses is determined by the conditions of safe evacuation of spectators. In the hall, in addition to the main exists and ring entrance, there must be at least two side exists. In stationary circuses, they are all located at the level of the ring.

The width of the exits of the upper circle is assigned taking into account fire regulations. Exits cannot be clogged. Only equipment used in the following circus act or animals performing in the following circus act can be allowed to stay close to ring entrance. It is forbidden to put chairs, armchairs or benches in the aisles. Crowds of spectators in the aisles during the performance are also not allowed. All seats in the auditorium, except for the seats in the boxes, are attached to the floor.

In stationary circuses bathrooms, toilets, foodcourts, a medical center, feed kitchens and rooms equipped with sinks should be provided with hot water supply.

Individual assignment:

1. Analyze the importance of instruction and training.
2. Define the introductory training.

3. Define scheduled training.
4. Describe the fire safety requirements at circus companies.

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1. Ирхин А. Ф. Правила техники безопасности и производственной санитарии в цирковых предприятиях. Москва : Реклама, 1977. 331 с.

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CHAPTER 2.

STAGE. EQUIPMENT AND ITS OPERATION AT THE STATIONARY CIRCUS

Topic № 7. General technical and sanitary requirements for circus companies. Lighting

General technical requirements

Design, construction, reconstruction and operation of stationary and mobile circus companies is carried out in accordance with building rules and regulations.

In circus companies there should be auxiliary backstage premises:

- household premises (rest room, dressing rooms, showers, washrooms, toilets, dryers, booths at the controllers' workplaces);
- foodcourts;
- medical centers.

The equipment of these premises must meet certain requirements.

Wardrobe for storage of street and work clothes of production and technical personnel (workers, circus attendants) must have insulated floors, a sufficient number of chairs and be equipped with individual lockers. Lockers must be 50 cm deep, 25 cm wide, (single) and 33 cm (double), 1,65 m tall. The width of the aisles between rows of lockers must be at least 1 m.

The main and auxiliary premises of mobile circuses can be equipped on the basis of industrial automobile trailers and semi-trailers or mobile containers. For convenience of storage and

transportation, mobile circuses should have the same type of vehicles in their fleet.

Living and working premises should be equipped with heating and ventilation systems in the cold season. The air temperature should not be below 14°C and above 25°C in stationary circuses, and below 14°C and above 35°C in mobile circuses.

It is desirable to equip the hall and backstage premises of stationary circuses with air conditioning with automatic regulation of temperature and humidity. Humidity in the hall for spectators of the stationary circus should be within 30–75%.

To control these parameters a thermometer and psychrometer are installed at a height of 1.5 m in the ring entrance.

The medical center, administrative, household and auxiliary premises should be provided with the natural **lighting**. Natural lighting can be replaced with artificial only in the premises of short-term stay.

There are different types of lighting:

- staging, intermission, rehearsal, working, regular and emergency lighting, lighting of the ring and hall;
- general, regular and emergency lighting, lighting of other premises for spectators, backstage and auxiliary rooms;
- advertising and illumination lighting;
- general and security lighting of the territory.

The system of staging lighting should allow the production director to solve various tasks related to the show production (lighting of aerial circus acts, lighting of a group of individual performers in the ring, aisles, hall).

Individual assignment:

1. Analyze the importance of general technical, fire and sanitary requirements for circus companies.
2. Describe the general technical requirements.
3. Analyze the importance of heating in circus companies.
4. Analyze what lighting at a circus involves.
5. Analyze the system of stage lighting at circus companies.

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Topic № 8. Auditorium and **stage**

The first row of seats for spectators should be located no closer than 1.2 m to the ring barrier. The floor of the auditorium (including the stage) must be smooth, without potholes, thresholds and cracks. Installation of ramps is allowed. The part of the floor around the ring (see Glossary "Ring"), from the barrier to the first row of spectator seats should be wooden (**Picture № 13**).

The floor of the ring entrance is made of boards laid across the entrance. The floor of the main and side entrances can be covered with concrete with a rough or corrugated surface.

The orchestra box must have two exits and a balustrade on the side of the hall and be at least 60 cm high.

The floor of the orchestra box to the sound canopy must be at least 2 m high. A lobby for musicians and a room for storing notes and instruments should be located next to the orchestra box.

The stage, located in front of the orchestra box, should have convenient access to the backstage and two exits towards the ring.

A special *pull-out ladder* is sometimes installed to get the circus artists out of this platform to the ring. Slope of this ladder of more than 45° is not allowed.

It is forbidden to install safety net fences at the edge of the lighting balconies of the galleries, as well as under the lighting equipment located above the auditorium or ring and under the spotlight rings at the grids.

Individual assignment:

1. Describe the features of the hall (auditorium) and the ring in the circus.
2. Describe the peculiarity of the location of seats for spectators in the circus.
3. Describe the peculiarity of the location of the orchestra box and stage.

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Topic № 9. Technological devices and grids.

Technological devices for mounting circus apparatuses must be reliable and easy to operate. Their strength is justified by technical calculations. Inscriptions about the maximum allowable workloads are posted in the places of fastening. The number, type, location and regulatory loads of technological devices for mounting circus apparatuses in a stationary circus must comply with the layout and drawings of parts of these devices and special standards in a stationary circus.

The applied forces to technological devices should not exceed the maximum admissible sizes specified in the scheme of an arrangement of technological devices and marked in places of fastenings.

It is necessary to close the floor hatches tightly with wooden lids. It is not permissible for the lids and handles to protrude above the floor and for the extensions of the devices to touch the sides of the hatch (Glossary "Ring space").

It is necessary to provide devices for fixing winches in the ring entrance and on the stage.

Fastening and rigging devices installed in the lower and top tiers should not obstruct the aisles. They are installed above 1.8 m from the floor level or placed at one level with the side walls of the aisles.

It is necessary to have reliable devices for temporarily tying animals in the arena entrance. In stationary circuses, such devices are installed in the main aisle.

Circuses must be equipped with grids (Glossary "Grids"); (**Picture № 7**). In newly built circuses, the grids are made with a

diameter of 13–14 m and a height of 18 m from the level of the ring. The passage to the grid must be insulated, at least 1.2 m wide. The passage from the grid to the circus ceiling must be at least 1.9 m tall. Metal vertical stairs are attached at a distance of 150 mm from the wall. If the height of such stairs is higher than 2.5 m, a protective net is placed. The gap in the light between the bars of the grid should be 70 mm. It is necessary to secure each bar to the load-bearing structure. When checking the grid, the standard evenly distributed load is assumed to be equal to 100 kg / m² with an overload factor of 1.3.

The standard load on the grid should equal to 3 tons, and the total load is taken according to the executive drawings of the project and test reports. Grid elements are fastened so as to avoid residual deformations. Deflection of decking elements are allowed no more than 1/200 of the calculated span. Weakening of a grid and bearing structures (gouging, drilling or cutting of separate elements) is not allowed.

Grid hatches must be closed with hinged lids. Two or three concentrically arranged rings of pipes with a diameter of at least 150 mm, or other metal structure used for rigging and mounting of circus apparatus are arranged at a height of 30-50 cm from the grid are.

Internal stairs leading to the grids or rafters, in addition to handrails, must have fences made of metal net. It is necessary to have a reliable ladder or a ladder with double-sided fences 0.8 m high, with racks every 1.2 m to access the roof.

Individual assignment:

1. Describe the features of technological devices in the circus – hatches, grids, devices for temporary chaining of animals.
2. Describe the features of the grids in the circus.

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Topic № 10. Production, technical and auxiliary premises.

Rehearsal halls (small arena) must be at least 6 meters tall. The hall must be equipped with wall bars and devices for rigging and mounting of circus equipment. A warm-up spot should be at least 4.5 meters tall and close to the ring entrance. The rehearsal hall and the warm-up spot should be equipped with rings, trapeze, cord-parel and safety devices (mats, rugs).

The ringmaster's office should be located near the ring entrance.

Artists' wardrobes should be at least 3.25 m² per person and provided with make-up tables, hangers, chairs, table lamps, trashcans, decanters for water.

The medical center should consist of two rooms with a total area of at least 24 m². It should be located at the level of the ring and have a convenient passage to the ambulance for the evacuation of patients. The location and size of the doors should be suitable for transportation of patients on a stretcher. There should be a list telephone numbers of the nearest ambulance and emergency services at the medical center.

There should be a special, isolated room for the *sound director*.

Warehouses must be at least 3 meters high. Doorways should be no less than 1.5 m wide and 2.5 m high. If the outer or inner door is located above or below the floor level, a ramp is made along the width of the slot (plus 30 cm to the side). Thresholds in doorways are not allowed.

Lifting device (cantilever, stationary, rotary cranes) for loading and unloading boxes with circus devices and artistic

props, cages with animals should be located *in the circus backyard*.

Foodcourts should be located in isolated rooms equipped with refrigerators, provided with hot and cold water supply.

Showers should be located on the same floor with toilets and should be at least 1.8 by 0.9 m². The cabins are divided from each other by partitions made of moisture-resistant materials 1.6 m tall.

Restrooms should be arranged on each floor in stationary circuses. The cabins should be separated from each other by partitions at least 1.8 m high that do not reach the floor by 0.2 m. The restrooms should be equipped with ozonators, sanitizers and clothes hangers.

Restrooms should be equipped with washbasins, towel holders, soap dispensers and hand dryers.

Individual assignment:

1. Describe and determine the features of production, technical and auxiliary premises in the circus.
2. Describe and determine the features of the rehearsal hall in the circus.
3. Describe and determine the features of warm-up spot in the circus.
4. Describe and determine the features of the ringmaster's office in the circus.
5. Describe and determine the features of artistic wardrobes in the circus.
6. Describe and determine the features of the medical center in the circus.

7. To give the characteristic and to define features of points of public catering.
8. Describe and determine the features of restrooms (showers, toilets) in the circus.

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Topic № 11. Operation of a stationary circus.

All holes (locks) in the roof, if they are not used for fastening circus apparatuses, are tightly closed with special plugs that exclude the possibility of any atmosphere precipitation or other objects falling down the circus hall. It is forbidden to hold loose objects (rope clippings, tools, bolts) on the grids.

During the rigging works on the grid, tools must be attached to the belt of the worker or to the grid itself. Construction, installation and other works on the grid or rafters can be carried out only if the ring is empty. As an exception, the works can be performed during the rehearsal, provided that the dangerous area is fenced in the ring and the work area is covered with tarpaulin. The number of people allowed on the grid is limited. All of them must undergo special safety training from the ring master.

One worker *is not allowed* to work on the grids.

The director of the circus appoints a responsible person who keeps a special journal and records the condition of the grids and the equipment placed on them. Inspection of the grid and circus ceiling should be carried out at least once a month before the start of the new show and after its completion. In addition to the person in charge of the condition of the grid, the safety engineer, the circus operation engineer, the ringmaster, the senior electrician, and fire engineer take part in the inspection. The results of the inspection are recorded in the journal.

The upper part of the circus arena is replaced at least twice a month or more often if there are acts with animals in the show.

Partial replacement of the top layer should be carried out at least once a week with soap alkali disinfection.

The ring must be moisturized before and after the circus performance.

Before the circus performance, a special covering of at least 90 cm wide is laid on the ring barrier. The covering is filled taking into account the uniform slope on both sides of the barrier, which eliminates its slipping. It is forbidden to cut holes in the carpet (for example, for mounting circus devices). When working with equestrian acts, the floor from the stable to the ring is laid with jute or hemp covering with special fasteners.

The perches, stairs and other long circus devices should not clutter the ring entrance and the pre-arena space. They should be stored on special wall brackets.

Only trained staff with special knowledge and practical skills are allowed to operate *winches and other lifting mechanisms*. Control of mechanisms that have an electric drive can be entrusted to persons who have the qualifications of electrical personnel.

Individual assignment:

1. Describe and determine operational aspects of a stationary circus.
2. Identify the conditions of working on the grids.
3. Give the characteristic and define operational aspects of lifting mechanisms.

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CHAPTER 3.

CIRCUS APPARATUS AND EQUIPMENT

Topic № 12. Circus apparatuses. Devices.

Circus apparatuses, with lifting capacity, equipment and rigging equipment must meet the standards of technical design and the requirements of state standards. They must be reliable, durable, stable, easy to use and accessible for inspection and repair (Glossary "Apparatus").

It is allowed to use parts of circus apparatuses made by free forging or hot stamping with the subsequent normalization, and also the details made by milling from the whole piece of metal. It is forbidden to use bent or cast fasteners or rigging parts. Metal parts must have a clean and smooth surface. Torn or worn threads, nuts and other defects are not allowed. The outer and inner surfaces of the pipes must be smooth and even. The curvature of straight pipes may not exceed 1.5 mm per 1 m of the pipe.

There must be certificates for the supporting pipes. Reliable locking measures are taken to avoid self-unscrewing threaded connections operating in the conditions of shocks, vibrations or shakes.

Circus apparatuses and hardware should not have sharp protruding angles, corners and burrs. Sharp edges (boards) of apparatuses and separate details should be rounded or have facets, except for technically justified cases. Hand-operated winches designed for lifting people are provided with safe handles that allow lifting and lowering only during continuous

rotation. Lowering speed above 20 m / min is prohibited. Winch handles must be mounted on the drive shaft. The force applied to the handle must not exceed 15 kg.

Horizontal bars of the traditional type must meet special requirements. The height from the ring to the upper edge of the crossbar is set in the range from 245 to 255 cm, the rod between the centers of the hinges must be 240 cm long.

Crossbeams of horizontal bars and trapezes are made with a diameter of 25-30 mm from heat-treated steel or alloy steel without heat treatment or steel with high quality, hardness, not less than 140 kgf / mm² and an elongation of at least 5%. (Glossary "Trapeze",).

Rigging systems can be made of steel ropes and chains (Glossary "Rigging").

Traditional folding trampolines must meet special requirements. Net must be at least 1.2 m wide. Trampoline frames must have soft trim around the perimeter. The central part of the net must be visible to the circus artists and it should be made of cords of brighter color. The net should be stretched evenly on all sides.

In apparatuses that have tubular structure (bamboo, perch), it is necessary to weave a safety steel rope where it is possible. Parts of these apparatuses that support the legs or arms of artists should be wrapped with ribbon or tape. When installing rigging racks, it is necessary to take into account special requirements to the apparatuses.

The mutual movement of parts in telescopic joints should not have unnecessary backlash. At considerable dimensions it is necessary to make apparatuses disassemblable and foldable.

Ropes for lifting and taking down, as well as cor de parel (Glossary "Cord de perille") are made of cotton or synthetic ropes with a diameter of 25–28 mm (Glossary "Ropes").

Swivel must be strong, reliable, easy to manufacture and accessible for inspection. They must provide free and silent rotation around the axis (Glossary "Swivel"); (**Picture № 14**).

Rope ladders for climbing on circus apparatuses must be made of cotton or sisal rope with a circumference of at least 60 mm, balusters must be made of oak, maple or ash.

Individual assignment:

1. Analyse the circus apparatuses and equipment at the circus company.

2. Analyse the circus apparatuses and equipment – a rigging devices, winches, ropes, ladders for lifting, crossbeams of horizontal bars and trapeze.

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Topic № 13. Electric drive of circus apparatus.

An electric drive can be used for rotating, lifting, or taking down a circus apparatus. Due to the fact that the operation of the circus apparatus is carried out in a repeated short-term mode, when choosing a drive, it is desirable to use asynchronous motors of three-phase current of the general type in a closed low-noise design and in lightweight aluminum shells or crane design.

If speed control is not required, short-circuited motors can be used, otherwise it's necessary to put motors with a phase motor having contact rings.

For lifting of circus aparatuses and artists it is allowed to use cargo-human reversible winches with nominal loading capacity no more than 1,5 ts. Winches must be compact, transportable, low-noise, safe and reliable (Glossary "Winch"); (**Picture № 10**). Electric winches are equipped with normally closed pad brakes, which operate automatically when the motor is switched off.

The braking force factor must be at least 2. The winches are also equipped with a manual drive that allows lifting and taking down loads or people manually.

The winch motor shaft should be connected to the winch drum shaft only by a worm gear. The use of belt and friction gears as well as jaw clutch for this purpose is prohibited. The use of special winches that deviate from the above requirements is allowed, if the passport of the manufacturer states that the winch is designed for lifting people.

Winches are provided with devices for their mounting (for example, to rings in floors). The winch frame is fixed in such a way that the winch cannot move during the double working load.

The winch drum, designed for single-layer winding of the rope, must have grooves cut along the helical line with such a rope capacity that at least 1.5 non-working turns of the rope are wound on the drum, not including the turns under the clamp. The use of stunt winches that deviate from the above requirements is allowed if they have been designed (or agreed) by a specialized organization.

Controls (remotes, starters, buttons, switches, handles) should be structural, concise and located in places convenient for inspection and operation. Their appearance should not contradict the usual associations. Controls must have inscriptions indicating the operation for which they are intended, or the nature of the signal ("on", "off") and signal lights in case of work in a darkened hall.

Markings on the panels must be clear and concise. Buttons and fonts of the buttons "start" and "lift" are painted green, "stop" must be marked red, grounding screws are marked black, and the rest of the inscriptions – white color.

Individual assignment:

1. Characterize electric drives of circus apparatuses at the circus company.
2. Analyse the devices for lifting of circus apparatuses and artists.
3. Determine the features of the device and the operation of the winch.

4. Describe the controls for operating the electric devices.

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Topic № 14. Types of safety devices.

It is necessary to protect rotating parts of devices (including drive mechanisms) with covers or provide other protection that prevents accidents. Bridges for "high ropes" (at a height of 4 m or more above the arena) should be protected on three sides by barriers, at least 0.8 m tall.

Every circus company must have suspended central longes in working condition and an emergency rope ladder for unforeseen descent of performers from the circus apparatus. There must be a safety net measuring at least 4 by 4 m in stationary circuses,.

The main safety device for aerial gymnasts, balancers, jockeys, acrobats are longes which can be single, double and chest (Glossary "Longe").

Longes can be also manual and suspended. Suspended lounges, in turn, are divided into local and central. The local longes directly to the circus apparatus on which stand by artists work. The central longes should be attached to special technological devices on grids or other structures.

The neck longe is a kind of a local longe, and the *pirouette longe*, which is used for tricks with rotations simultaneously in several planes, is a kind of a central lounge. Longes can be stationary and mobile (light). The neck longes have gaskets for even distribution of the forces.

The longe consists of a safety belt, a long rope and devices for their secure connection. In addition, local longes are equipped with attachments to circus apparatuses, and central longes are equipped with braids of the running ends of the

lounge ropes, as well as pulleys with suspension ropes. All types of longes must meet the standards and samples. The dynamic force on a single longe can not exceed 700 kgf, and the breaking statistical load on the belt in the working position of 1500 kgf.

A safety belt must fit the performer well and be 30 mm wide. The belt should be made of a combination of materials that provide some damping to remove the amplitude of the force perceived by the performer in the event of a possible failure.

The top of the longe belt is made of saddle yuft. The belt is strong, smooth, clean, well stretched, without gaps in stitches and breaks in the threads and parallel at the edges. To increase the strength, the belt is reinforced with a steel rope of 1.6-3.0 mm in diameter.

Steel rings and buckles are firmly and securely attached to the belt. The buckles are made so that they cannot involuntarily unbutton or pinch the artist's skin at any position.

Soft steel ropes with an organic core or aviation ropes are used to make longes. The end of a rope which is held by stand by performers, is intertwined with a cotton rope. The length of the rope of the local longe should be minimal to reduce the free fall of the performer in case of failure.

Longe ropes, subject to shock loads, should be provided with rubber or spring shock absorbers.

It is necessary to connect the *longe rope* to the safety belt with a shackle or a carabiner with a self-opening safety mechanism. The use of a shackle is required (Glossary "Shackle"); (**Picture № 25–26**) when the longe belt of the central longe is worn directly on the ring. The covering of the running

end of a long rope is made by section of 25–30 mm from cotton ropes or a rope made by a self-acting mule.

Chains for holding catchers are securely fastened to special belts made of rawhide, a safety steel rope. Belts, in addition to buckles, should be provided with safety buttons. Foot and hand loops of bamboo, perches and other circus apparatuses should be secured with steel ropes of small cross-section. Loping locks should be strong and comfortable, individually adjusted.

Hoses for taking down the artists on the rope are made from scraps of fire linen sleeve with sewn at the end of the rings to avoid wrapping and sudden failure of the devices. Hoses must have an internal smooth and clean line without knots and loops.

A lifting loop with a movable hand loop made of saddle leather or tape is sewn to the hose to insure against failure of a circus performer in case the hose is stuck.

The size of the safety net must be no bigger than 6 m for a tightrope walker, 5 m for group flying acts and 4 m for single flying acts so that a performer is backed up in the event of a failure from any position, The length of the net should have greater distances between the extreme parts of the apparatus by 2 m on each side. The net should cover the bridge by at least 1 m. The height of the net suspension and its tension should have a distance of 1 m between the net and the ring floor when the maximum number of performers falls into it.

In all cases, the safety of spectators is ensured when an aerial gymnast falls anywhere on the net. The safety net of the air rope must be stretched so that the bridge, the catcher and the valet are above the middle (width) of the net, located symmetrically about its long axis.

It is forbidden to use supports in the form of racks in safety nets. For all types of flying acts slopes with a width equal to the width of the net are stretched on both sides of the net. To prevent the performers from being thrown back, the slopes should be stretched at an angle to the horizon of no more than 80 ° from the side of the amphitheater.

The top of the slope must not exceed at least 1 m of the top lift point of the artists during the flying act. When repairing safety nets, it is necessary to use good quality materials of the same type as the net material.

The barrier track, which is at least 1 m wide, must be laid neatly, with the same hang over the edges of the ring barrier. The acrobatic track must meet certain professional requirements and be at least 1.5 m wide. *Gymnastic mats* must have faux leather covers. Rehearsals and performances of *acrobats-jumpers* should be held only on the gymnastic track, not less than 12 m long, and the ring carpet, not less than 6 by 6 m in size.

To prevent artists from blows, dislocations and sprains, it is necessary to use special protective devices. Ankle pads, knee pads and elbow pads, made of elastic knitwear, protect joints and tendons from excessive dynamic loads.

Bandages are used to prevent injuries in the groin and lower back when lifting heavy objects and tension.

It is necessary to use viscous friction dampers (using oil or other liquids) and shoes with thick rubber insoles to soften hard surfaces, when jumping on stilts. Protective devices should also be used in case of any functional disorders of the musculoskeletal system.

Individual assignment:

1. Analyze circus apparatuses and devices in the circus company.
2. Analyze circus apparatuses and devices in a circus – a suspension bracket, winches, ropes, ladders for lifting, crossbeams of horizontal bars and trapeze.
3. Analyze safety means, protective devices in the circus and ensuring safety of aerial gymnasts, balancers, acrobats.
4. Analyze the types of longes – single, double and neck; hand loop and lifting loop.

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Topic № 15. Chains, ropes, rigging devices.

Chains used in circus apparatuses and safety devices must meet certain requirements. The chains are allowed to be connected only by using electric welding of new links or by means of special connecting links.

Steel ropes must meet certain requirements as well. For lifting and taking down people six-or eight-row untwisting ropes of cargo and human purpose, twice twisted with an organic core, are used for lifting and taking down circus performers. For transportation of cargoes, devices of mast cables and stationary extensions it is allowed to apply non-untwisting ropes of cargo purpose, double or single perm with an organic core.

Organic ropes, in addition to second-rate and resin ones, can be used as slings, braces and bangs. Organic steel ropes used in circus equipment and apparatuses, as well as in hoisting mechanisms must be tested before their use. The following table can be used to select the diameter of the steel rope:

load capacity of the mechanism, ts	Diameter of a rope, mm.
0,5	6,2 – 7,7
1,0	7,7 – 11,0
1,5	11,0 – 12,5
2	12,5 – 15,5
3	15,5 – 17,5
4	17,5 – 18,5
5	18,5 – 22,00

Due to the possibility of stretching the ropes to the measures given in the table, the ropes must be pre-stretched.

Statistical reinforcement of steel ropes – 30% of the breaking force of the rope as a whole, and being under load should not exceed 5 hours. Cotton ropes (for example, for cord-de-parille) are stretched under load for 12 hours.

Type of rope	Maximum stretching,%
Steel rope	1,5
Sisal rope	7
Cotton rope	9
Hemp manila rope	10
Cotton belt tape	18
Braided linen cords	20
Cotton cords	20
Linen cords	22
Chlorine rope	24
Nylon rope	40

It is possible to cut steel ropes with a gas burner, a thin scissor wheel or a circular saw. To prevent loosening and untwisting of the cross-sections of the ends of the ropes, stamps must be applied to them. The mark on steel ropes is made by an overlay of 12–15 hoses from cords of a soft steel wire. Depending on the dimensions of the organic ropes, stamps made of thin cords or cord thread of 2.5 cm length are applied to them.

The final fastenings of steel ropes can be performed in the following way:

- the formation of a loop on the clamps;
- pressing in a cast or forged sleeve;
- installation of wedge locks.

The strength of any of these joints will be below the nominal breaking force of the rope by 15-25%. The use of thimbles when setting fire is mandatory. When arranging a loop of steel rope around pipes or rods with a diameter of more than four diameters of the rope, thimbles can be placed (Glossary "Thimbles"); (**Picture № 9**).

The diameter of the axis for attaching the loop of the rope at the point of its connection to the equipment or apparatuses must be no less than 0.8 of the inner diameter of the thimble. Choosing and testing of thimbles is given in the appendix. Ropes are used as cargo, cable, load-bearing (for rigging of apparatuses, longes). It is forbidden to spit (splice) ropes into the hoisting tackle.

The only exception make universal slings. When producing and connecting the ropes of the same cross-section, a short braiding is made, the length of which must be at least 40 diameters of the rope. Splices and loops should be braided (steel ropes with soft benzene wire, organic with ropes) to give them more strength, comfort and use, to prevent abrasion and the harmful effects of moisture. When making a loop made of hemp or cotton ropes, the braid should have at least two full and two half punches, and then edged.

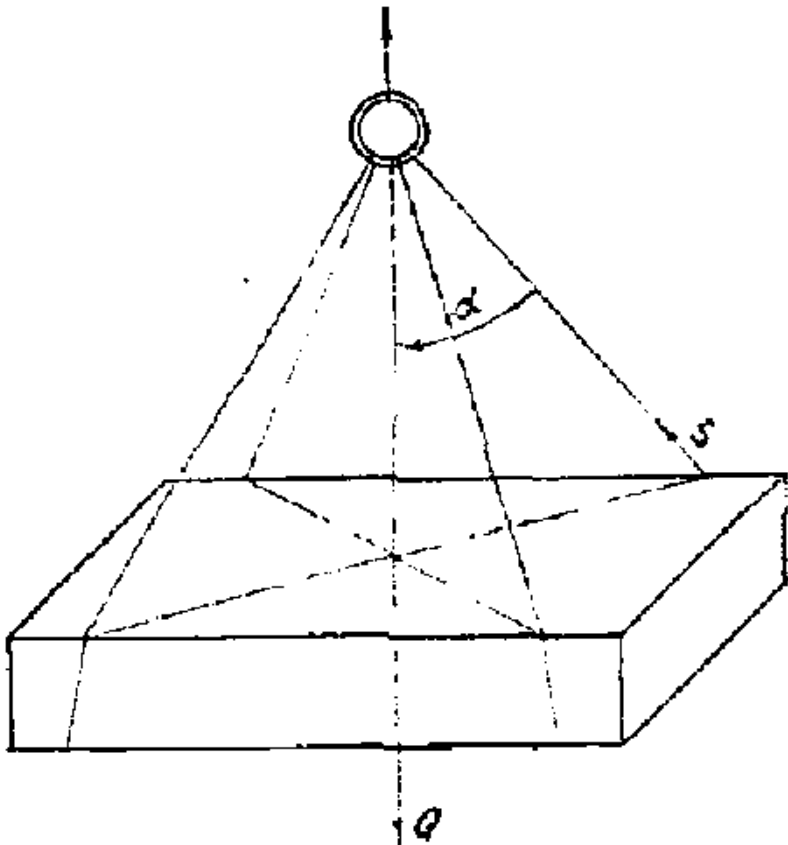
The connection of steel ropes with organic ones can be done only "loop to loop". If the connection of the ropes passes through the blocks, a splice is formed. Three or more ropes can be connected in one using *spider-shaped beams*.

For lifting heavy loads (rigging and dismantling of support masts, loading and unloading of containers, cages with animals, boxes with heavy apparatuses) chain slings, universal or light slings made of steel ropes, inventory mounting slings are used.

The management of the circus is obliged to provide the slingers with both tested and marked slings of proper carrying capacity.

Slings are assigned with individual numbers and recorded in the journal of technical inspection. Metal tags are firmly attached to the slings, indicating the number, load capacity and test date.

Angles of inclination of sling branches within 45° 60° are allowed only in exceptional situations, and inclination over 60° is forbidden.



Sling rigging scheme

Nominal load capacity of unified slings is considered at an angle between the branches of 90° . In addition to slings, shackles and carbiners can be used.

During the rigging of circus apparatuses, as well as for ensuring the safety of people, fire, jockey and special carbiners with the mechanism that prevent spontaneous disclosure are used. Fastening the pin with a cotter pin is mandatory. The cotter pin is installed in place with a gap of not

more than 0.5 mm. Shackles are selected according to the diameters of steel ropes or the lengths of the circles of organic ropes.

The block clamps are provided with safety brackets to prevent the rope from getting out of the groove of the roller. Pulleys are used for rigging a longe. To tighten the ropes of a small diameter, it is possible to use hoisting tackles with lightweight three-roll pulleys.

Pulleys clips are used for rigging hemp ropes. For removal or rigging of ropes made from vegetable fibers it is desirable to use plastic pulleys. Pulleys are selected by the diameter of the rope (Glossary "Pulley"); (**Picture № 1**).

The diameter of the stream of pulleys of traction and barbed organic ropes should not exceed the diameter of the rope more than 10 times, and pulley ropes more than 7 times (Glossary "Hoisting tackle – Polyspast"); (**Picture № 21**).

In hoists where the speed exceeds 10 m / min, blocks with cast iron rollers on bronze bushings can be used, and for devices that require a higher rope speed, blocks with cast steel rollers on rolling bearings can be used.

Rigging devices (slings, shackles, pulleys, hooks, carbiners) as well as often used circus equipment have to be manufactured in accordance with the technical, standards or according to an individual design approved in the prescribed manner.

Individual assignment:

1. Define and analyze the role of chains, ropes, rigging devices at the circus company.
2. Define and analyze the role of pulley, swindles.
3. Define and analyze the role of slings, a carbiner, shackle, thimbles.

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Topic № 16. Operation of circus apparatus/equipment.

Prior to the operation of circus equipment, an art director must:

- show an apparatus with all auxiliary and safety devices to the labor protection engineer for technical inspection and verification of compliance of the passport device to the rules;
- agree with a ringmaster and a team leader the location of the rigging (installation) of the apparatus and safety devices;
- instruct service staff (ring assistants, controllers) on-site on safe methods of operation during rigging, removal and operation of the apparatus.

All dangerous work on installation, rigging and removal of apparatuses and safety devices is carried out by participants of the trick headed by an art director and under the control of the ringmaster. It is forbidden to involve untrained persons in this work.

This work must be carried out with the full safety of all participants. Rigging of circus apparatus, hoisting devices and safety devices using structural elements not intended for this purpose is prohibited.

Rigging and mounting of circus equipment should be agreed with the persons responsible for the operation of circus, for instance, a stage setter. The apparatus must be tied to the nodes in which the lifting ropes must be connected to the rod. The bar itself is unfastened in the right position, the hilt with the counterweight is attached to the fixed parts of the building.

To disperse the load from the circus apparatus under the rafters, round logs of 2–3 m long and 12–15 cm in diameter are

placed across the beams, to which the suspension ropes are tied. Drilling or other violations of the stage, walls and ceilings are made only with the permission of the direction.

Suspended ropes, extensions and the apparatuses themselves should not touch the live parts of electrical equipment and lighting devices, clutter the space above the ring and prevent the safe performance of tricks by the circus artists.

Load on grids during rigging is distributed evenly and should not exceed admissible measures. Rigging works should be done only above the ring in circuses, and above the stage in theaters.

The ropes are braided with knots and loops, which excludes involuntary untying. During rigging, the ropes are knitted with clove hitches. The ends of the ropes that remain free are folded into a bay, tied with soft wire or fastened with clamps. During the mounting of apparatus to the structures of non-circular cross-section it is necessary to put round wooden pads to eliminate breakage or grinding under the ropes.

To avoid significant additional tension in the ropes and structures of the apparatus, the inclination of the extensions is maintained within the limits specified in the passport.

When tightening the hoist, it is necessary to make sure that the threads of the rope do not touch each other and do not twist, and the pulleys are not skewed. Stambords, horizontal bars and other apparatuses are rigged (installed) strictly horizontally.

Trampolines must be installed the way to prevent overturning or skewing. Trampoline racks should be placed strictly vertically. The net should be tightened evenly around the perimeter.

Individual assignment:

1. Make a brief analysis of knitting knots and loops.
2. Make a brief analysis of the clove hitch (cross loop, double clove hitch)

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Topic № 17. Safety requirements to circus artists.

Aerial and ring performances.

Only physically healthy and professionally trained circus artists who perform tricks correctly and confidently are allowed to participate in circus performances. Conditions for the safe trick performance on the ring (on stage) are determined by art director together with a ringmaster. It is forbidden for the circus artists to perform more often than twice a day if they wear makeup that covers most of the body. Circus performers ought to cover their skin (more than 20%) with make-up compositions not earlier than 30 minutes before the start of the performance. It is necessary to remove makeup immediately after the show.

The most complex tricks, which require concentration and fast pace, must be performed at the end of the show, when body is well warmed up and is in a stable state. Carpet clowns who perform or imitate tricks which require physical strength and agility, have to follow the safety rules of the corresponding circus art. Vertical swinging of a perch with the circus artists on it is allowed only to the limits of safe bending specified in the passport of the apparatus or determined by the test load.

Balances of rope walkers should be securely fastened on bridges before and after their usage. All equipment and parts of rotating circus devices must be carefully fastened and protected from falling due to shock, vibration, centrifugal force or other causes. It is possible to throw props from the suspended circus apparatus to the ring in exceptional cases, in agreement with the director and the ringmaster. After throwing in strabat (abfall or

slip-off), the distance from the outstretched arms of the gymnast to the ring should not exceed 1.5 m.

The use of bits that belong to other artists or made by the bite of others is prohibited.

The artists performing tricks on horizontal bars are required to use special pads (gloves) made of strong tape or ribbon to prevent blisters. For safety purposes, the circus performers are given chalk, rosin, magnesium and other substances in quantities determined by the ringmaster. Before performing tricks on horizontal bars, trapeze, rings and other similar circus apparatuses, circus artists must wipe the working surface of the apparatus to remove moisture and excess magnesium.

The following actions are forbidden on the ring or stage:

- women are forbidden to perform as athletes and power jugglers;

- tricks related to pathological dissociation of joints, swallowing flammable liquids (gasoline, kerosene, etc.), living organisms and any objects (swords, etc.);

- jumps through hoops made of knives or other sharp products;

- shooting and throwing sharp and heavy props (knives, axes, arrows) in the shields next to the "live target" (partners, assistants);

- tricks on spectators without safety devices (such as nets) that ensure the safety of people;

- stay under the circus apparatuses.

Circus artists are allowed to perform in the flying acts no more than twice a day. As an exception, on holidays and school

holidays circus artists can perform three times a day but reduce the physical activity by simplifying some tricks, reducing their number and time.

The circus artists who are undergoing a rehabilitation period after illnesses, injuries, as well as before starting work on the new ring, those who perform in acts with increased physical activity (including riders), should be given special time for rehearsals and adaptations. The time of these rehearsals is determined by the director, ringmaster, doctor and art director.

Rehearsals and warm-ups

For a reliable execution of complex tricks, artists must have a functional redundancy of their ability to perform, i.e. development of such abilities that would exceed the minimum necessary for performance. This functional redundancy should form a reserve (protective zone) of the circus artist, without forcing them to perform tricks on the verge of physical and psychological capabilities, which eliminates the occurrence of accidents or stressful situations.

The circus performer must know the typical dangerous situations that may arise when performing tricks and how to avoid them, rehearse in advance and master every movement. Acrobats and gymnasts performing above the safety net must be trained to safely falling to the floor, carpet or net from any position in which a fall (failure) may occur.

The falls are practiced with the participation of spotters, simultaneously with the practice of the landing, first on the net and then on the mat.

In case of sudden failure, an artist must tense the muscles of the torso and limbs, group themselves, pull the head and

shoulders and press the chin to the chest. This elastic position of the body will significantly soften the blow and protect an artist from serious injury.

After the jump, the landing on the mat should always be soft, on the toes of slightly bent legs. This will eliminate unwanted concussions, displacement of internal organs, joint damage or stretching of the leg muscles. Do not stand hard on your heels and straight (tight) legs. When landing on the safety net or trampoline net, or in case of a failed trick, the muscles should be tense, the arms in the air or pressed to the body. An artist shouldn't lean their hands on the net.

All artists, whose performances are associated with increased physical activity, must do general and special warm-up in the right sequence in order to exclude the possibility of injuries. The warm-up should correspond to the nature of the tricks.

Warm-up time varies depending on the level of fitness, individual training of the artist, the size and intensity of the workload. In any case, the artists should warm up until they start sweating. The more complex the tricks, the longer the warm-up. General and special warm-ups last at least 15 minutes. It is recommended to work out in a warm woolen training suit to warm up the body faster. In a cold room, the warm-up time is extended. In the hot season and at high humidity, the duration of the warm-up can be reduced.

At the end of a warm-up, it is necessary to practice forced breathing with an emphasis on exhalation. The warm-up ends 10-15 minutes before entering the ring. During this time a circus artist should:

- take off warm clothes;
 - do a light muscle shaking self-massage and rub one's skin for blood flow to the muscles; restore the rhythm of breathing;
 - put on dry clothes and artistic costume;
 - apply or correct makeup;
 - to check up serviceability of the apparatus and equipment necessary for performance (for example, those who perform tricks on crossbeams and rings should check the condition of gloves).
- Relax (preferably lying on one's back with the legs bent and muscles relaxed).

These recommendations can vary in order and duration depending on the nature of the trick, or air temperature. During breaks lasting up to 15 minutes, the artist must wear a warm robe to keep the body warm.

If a break between the performances is longer than one hour (for example, between the first and second acts), circus artists have to perform additional warm-up consisting only of a special part. At longer breaks (for example, change or delays of the circus program), it is necessary to perform repeated warm-up. The ringmaster is obliged to provide the conditions for the warm-up to the circus artists 40–45 minutes before the performance. Those circus artists, whose performances are associated with increased physical activity, are forbidden to enter the ring without pre-warming up.

Individual assignment:

1. Analyse safety requirements to circus artists.

2. Analyse why it is forbidden to be in the ring during the installation of apparatuses on the grids.

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Topic № 18. Safety equipment and spotting.

Rehearsals and performances of circus artists should be held in conditions that exclude accidents. The following circus artists must use safety equipment:

- performers of tricks associated with the possibility of an unforeseen fall, regardless of its height;

- all artists who perform tricks at a height of four or more meters above the ring or at a height of three or more meters above the stage (hard floor);

- acrobats who perform jumps on another artist or on the perch;

- artists who perform tricks on the perch, stairs, masts and other similar apparatuses, regardless of their height;

- acrobats carried on the head or shoulders of their partners;

- artists performing tricks on horseback or on such apparatuses as bullets, motorcycles, bicycles, etc.;

- artists hanging on the bits;

- artists descending the rope on a hose;

- students and artists who have a poor command of the technique of complex jumps (somersaults, pirouettes) and other dangerous acrobatic tricks.

Spotting is a subject to:

- rigid and uncertain landing on a ring floor or a mat;

- tough landing of women acrobats on the ring floor.

Safety equipment is used depending on the specific conditions of tricks, devices of circus apparatus and their speed, the number of participants in the trick, the degree of risk.

Spotting is carried out using special devices (longes, nets, loops) or with the help of experienced spotters. The type and methods of spotting are determined by a commission appointed by the director of the circus. The decision of the commission is recorded in the passport of the circus apparatus.

During the performance of tricks with the use of circus devices (horizontal bars), as well as jumping from springboards and throwing boards, it is necessary to secure these tricks with mats or spotters. If there is the possibility of fall from the height of three and more meters, there should be two spotters.

Spotting of circus artists is entrusted only to specially trained persons. With longe spotting, one performer is spotted by two people, and two performers by three respectively. Before using the longe, it is necessary to make sure it is in good condition, check its reliability, correct mounting. People standing on the longe must wear leather gloves. Make sure that no one stands on the free end of the longe. Rigid fixing of the safety end of the central longe is prohibited.

A spotter must choose a long rope in accordance with the rhythm of movement of the circus artist, without excessive sagging and excessive tension. In the event of an unforeseen fall (failure) of the performer, the longe is stretched smoothly, without jerk. At sharp tension there can be a painful and dangerous squeezing of a thorax by a safety belt. Spotters must stand where performers may fail or fall, be careful, not be distracted and be on constant alert. It is forbidden to sit during spotting.

When spotting a group trick, each artist must know exactly their responsibilities and location. Everyone should have an

independent task so as not to rely on others. The artists should be trained self-spotting, assistance in preventing accidents. Performers, who perform shoulder and vault tricks, must take care of the safe landing of their partners on the ring floor.

When teaching jumping acrobatics to people who perform somersaults, it is necessary to secure the longe. In some tricks safety equipment can be replaced by spotting.

The use of longes to perform tricks during performances is not allowed. It is allowed to spot equilibrists who perform on high ropes, with the help of long balances. Descent by rope on a hose without a safety loop with a movable loop is prohibited. The use of loops when holding heels is mandatory.

Individual work:

1. Make a brief analysis of safety equipment and spotting in the circus.
2. Make a comparative analysis of the work of a spotter.

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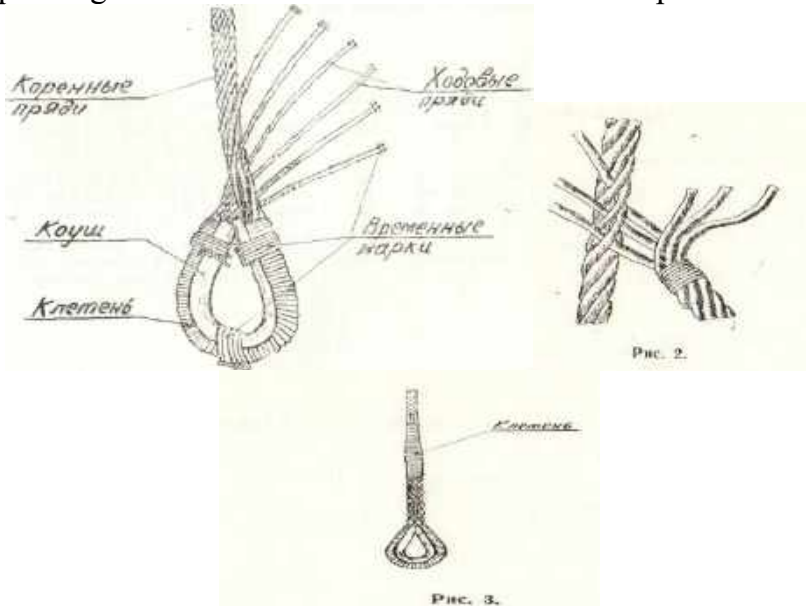
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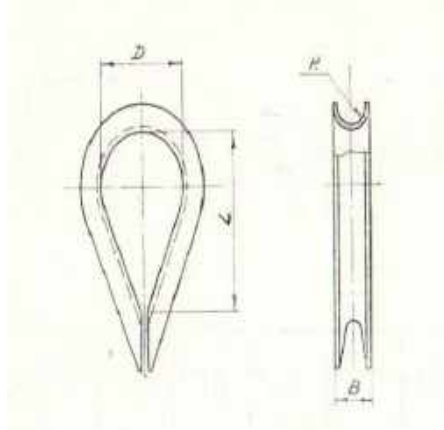
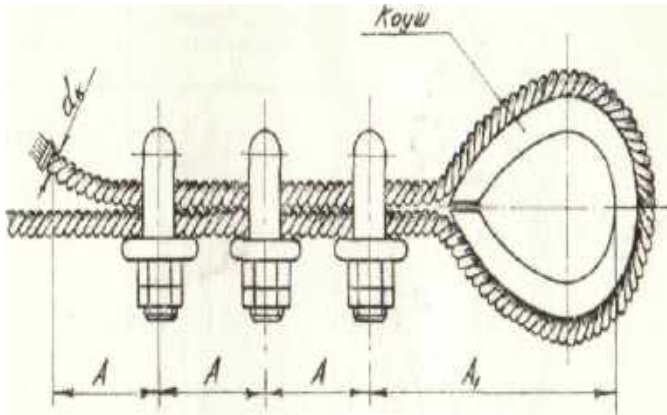
Topic № 19. Loops on the steel rope

A temporary stamp of soft wire is applied at some distance from the end of the rope, sufficient to make a loop. The organic core of the rope is cut out, and in the case of braiding with a steel core, the latter is punched together with one of the strands. Before making a loop, it is desirable to wrap the part of the rope that is tucked into the thimble with a thin line, soft tinned wire or a steel aviation rope with a cross section of 1.8-2.5 mm, depending on the cross-sectional size of the root rope.



Making loops on a steel rope with steel thimble clamps

Steel thimbles



Note:

1. When crossing the rope up to 16 mm, the number of clamps must be at least three, and at a larger section – at least four.
2. The distance between the clamps (A) must correspond to the table and be at least six diameters of the rope.
3. The clamps must meet certain requirements.

4. The clamps should be tightened so that the ratio of the cross section of the compressed rope to the nominal diameter is 0.6mm.

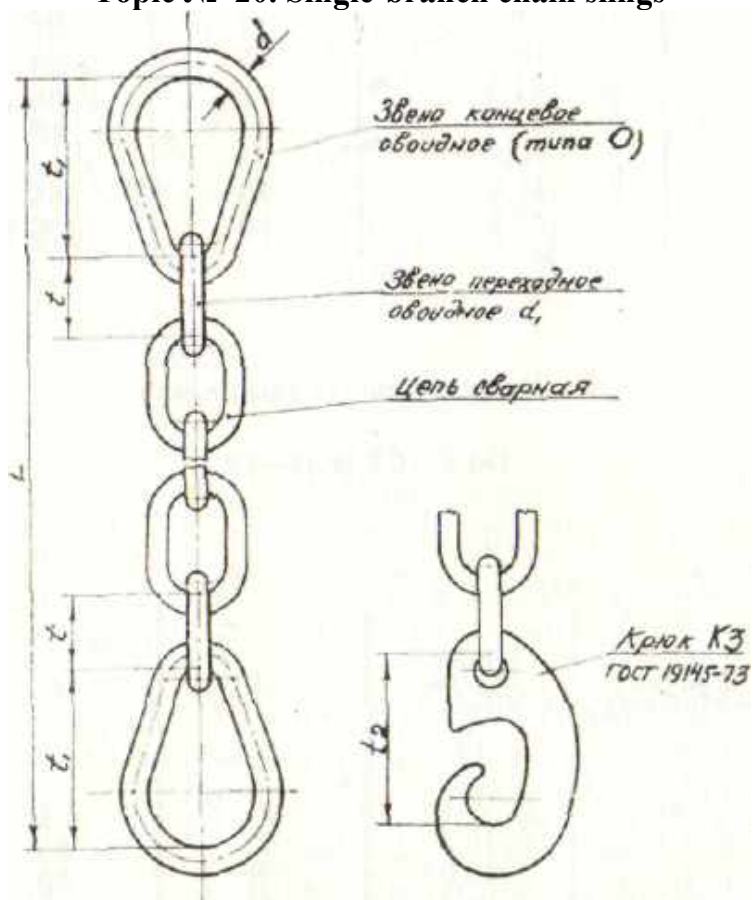
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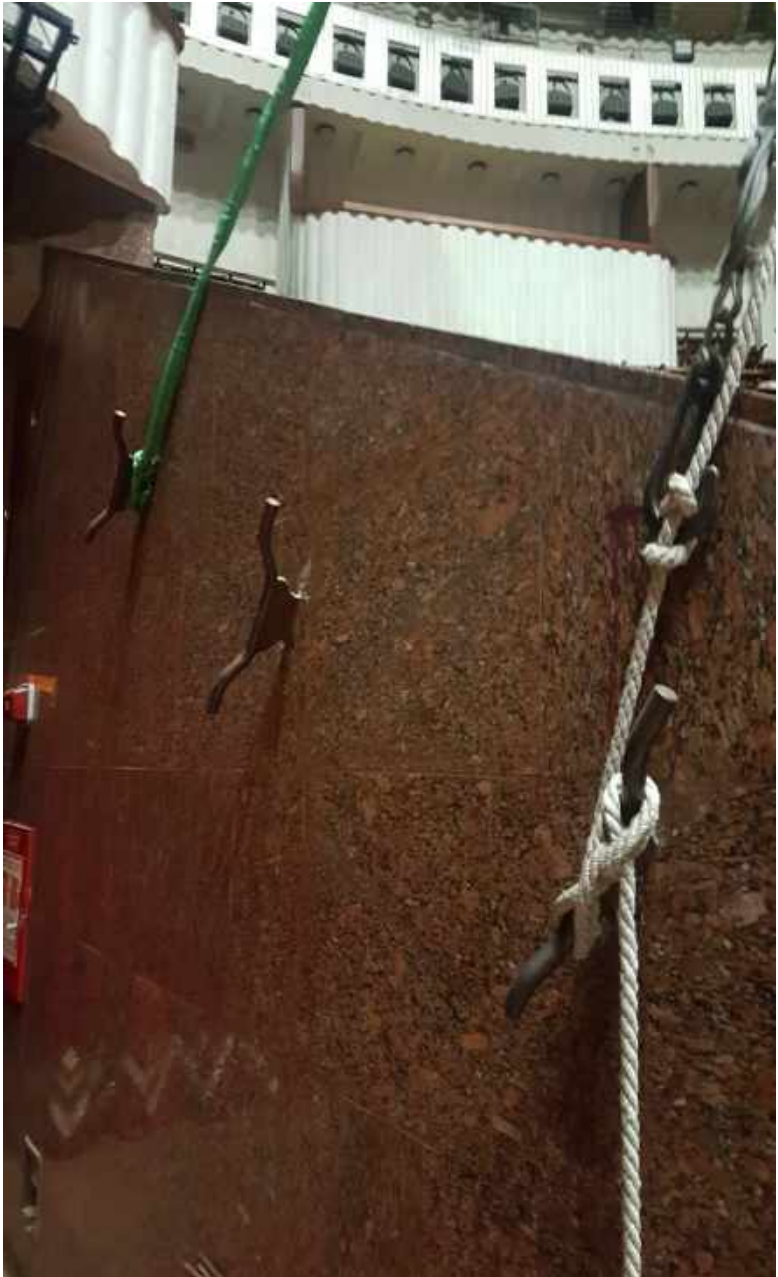
Topic № 20. Single-branch chain slings



(Picture № 27).

Hardware for attachment of longes, ropes, extensions.



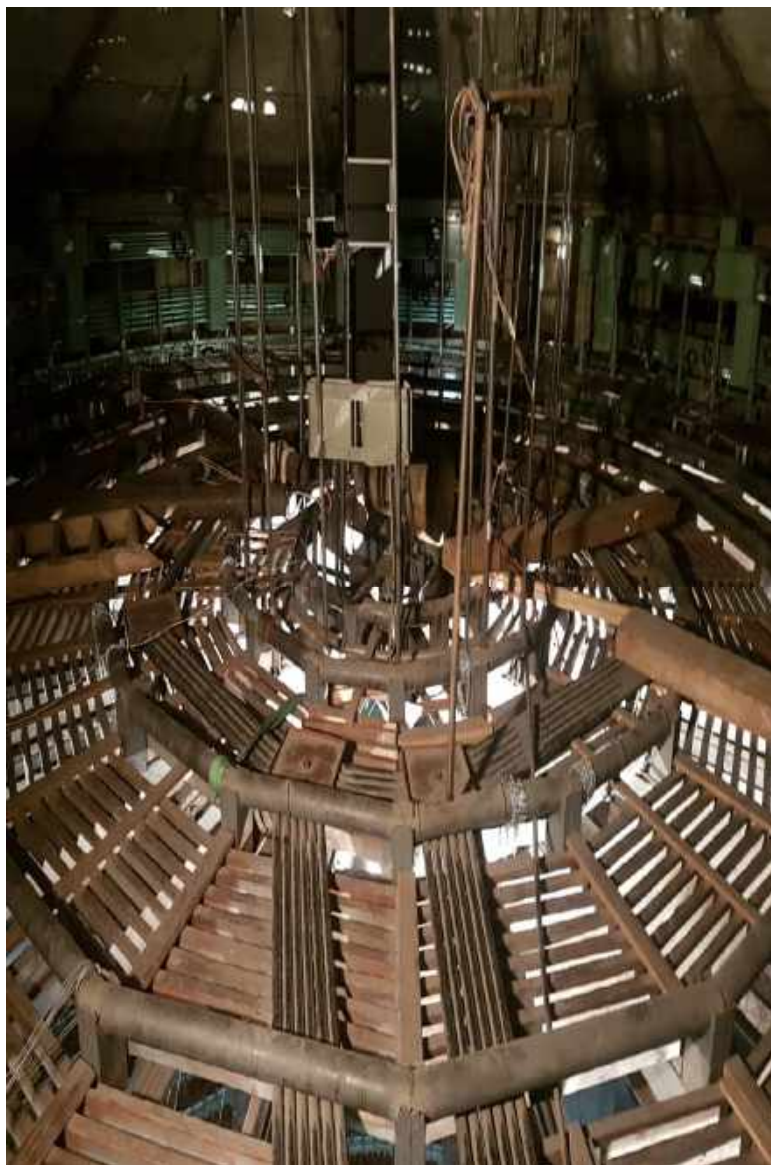




Grids – "rafters".



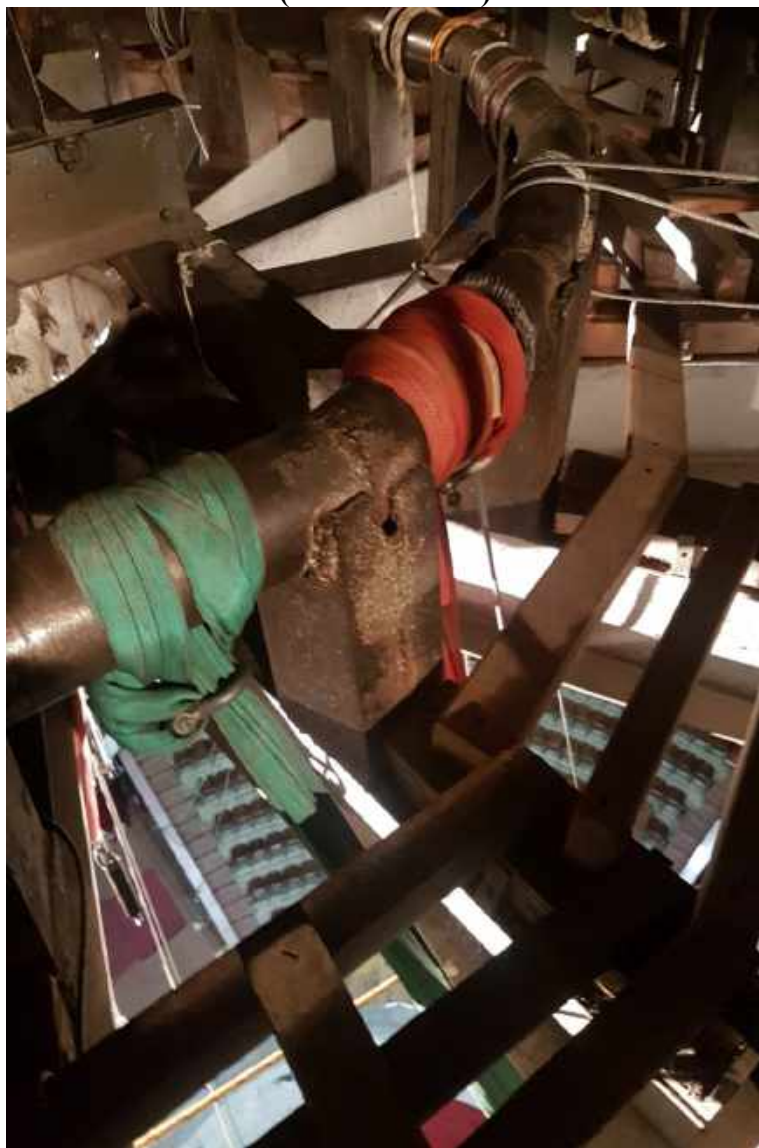
(Picture № 28). Grids (inside view).



(Picture № 29). Rigging points for circus apparatuses



Rigging of slings on grids
(Picture № 30)



(Picture № 31). Grid (inside view).



(Picture № 32). Forgang, stage and stairs.



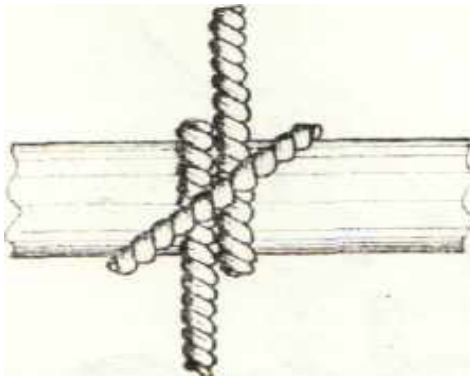
KNOTS AND LOOPS

Right knot



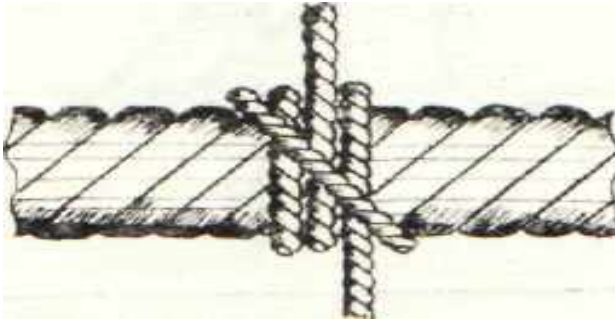
It is used for fast non-twisting and deaf tying of organic ropes of the same section with a wooden liner. It can be used for steel ropes.

Clove hitch (cross loop)



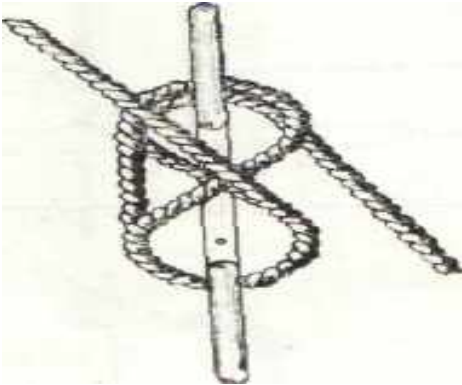
It is used for rigging of circus apparatus, fastening of cables and extensions to masts and anchors to other technological devices.

Clove hitch with slag (sliding bayonet).



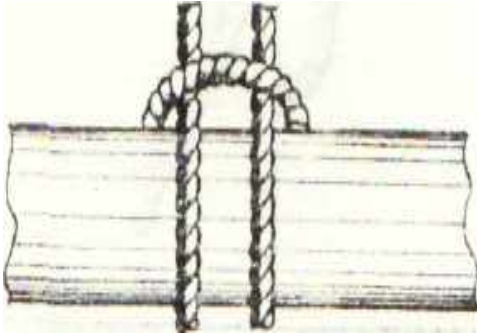
It is used for rigging of circus apparatuses, fastening of cables and extensions to masts, anchors and for lifting of freights and attachment of thin organic ropes to thick ones.

Double clove hitch



It is used for fastening of extensions and long ropes.

Choker hitch (anchor hitch)



It is used for self-tightening slinging

BIOGRAPHY OF AUTHORS



Volodymyr Kashevarov

(April 24, 1951)

Acrobat-jumper, aerial gymnast, 1960-1990s. Laureate of international circus festivals. Ex-ringmaster of the Kyiv National Circus. Famous for the tricks like acrobats on camels "Kadirgulyam" directed by Vladislav Yanushevsky, "Flip forward through five camels", "Rondad back flip over the barrier", acrobats-jumpers "Cheremosh" directed by the honored

artist Victor Maximov, "Double somersault back on the carpet", "Arabic somersaults in a circle on the ring". Performed a duet trick – air frame "Air Love" with his partner and wife, an honored artist of Ukraine Svetlana Kashevarova. The brightest tricks are "Double somersault forward in the hands of a partner", "Vault and cabriole with a partner".



Dmyrto Orel

(December 29, 1972)

Senior Lecturer at the Department of Circus Genres, Faculty of Performing Arts, Kyiv Municipal Academy of Circus and Variety Arts. Master of sports in gymnastics. Acrobat-vaultier. Air gymnast paired cord de parille, "Duo Air Love". The 3rd prizewinner in "Bronze Pierrot" International Circus

Festival, Budapest (Hungary), 2004. "Prix de la ville de Liège, prix spécial - Dame du cirque" Liege (Belgium), 2006.

The 2nd prizewinner in "Silver Clown" International Circus Festival Warsaw (Poland), 2008.

Circus artist, aerial gymnast at the National Circus of Ukraine, Little World, Nagoya; Rusutsu Ressort, Sapporo; Canal City, Fukuoka (Japan), TV 5 Paris; Circus "Educative"; Circus Arlette Grusse (France); Circus 180 (Germany) Circus «Benneweis» (Denmark) Variete-Casino Donald Tramp; Circus "Dream" (USA) Cirqie Du Soleil, show "OVO". World tour.

Art director of the Acrobatic Trio winning the 1st Prize at VII International Festival of Circus Art "Bright Arena of the Dnieper", Dnipro, 2017.

Author of the books on circus specialty: "Acrobatics" and "Stage and technical training of circus genres", Department of Circus Genres Kyiv municipal academy of circus and variety arts, 2018.

Author and developer of a training method of "Circus Therapy", Department of Directing and Choreography, Lviv National University. Ivan Franko, 2018.

Director of Circus Air Compositions of the National Circus of Ukraine, (2019, 2020).

Author of 15 Scientific publications, 6 of them are international (2017–2021) on circus acrobatics and aerial gymnastics.

The head is a member of the jury at the All-Ukrainian festivals and competitions in Contemporary Circus Art (2016–2021).



Denys Sharykov

(August 12, 1977)

Dean of the Faculty of Performing Arts, Associate Professor of the Department of Circus Genres of the Kyiv Municipal Academy of Circus and Variety Arts, PhD in Art History, choreologist, choreographer, circus critic.

The 1st prizewinner at international Ballet Competitions (2006), The 1st prizewinner and "Grand Prix" (2018) at the

international competition of Modern "Super Dance". Chairman of the panel of judges of International Festivals and Competitions in Contemporary Choreography 2010–2020.

Scientific editor of the textbooks "Acrobatics" (Dmytro Orel, 2018), "Stage-technical training of circus genres" (Volodymyr Kashevarov, Dmytro Orel, 2018). Author and composer of the training manual "Aerial gymnastics" co-authored by Volodymyr Kashevarov, Dmytro Orel (2021).

Member of the UNESCO World Dance Council (CID).

Author of 2 Neoclassical Ballets, 50 Choreographic productions and 70 Scientific publications in the field of neoclassical ballet and circus genres.

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Department of Circus genres

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