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Construction Work

DGUV Rules are compilations of content relating to particular areas, work procedures or workplaces. They explain the specific prevention measures that can be taken in order for employers to meet their obligations for the prevention of occupational accidents, occupational diseases and work-related health hazards.

In areas for which no occupational accident regulations issued by the state or the accident insurance institutions exist, DGUV Rules describe how occupational accidents, occupational diseases and work-related health hazards can be avoided. They also provide access to the experience gained by the accident insurance institutions through their prevention work.

Due to the particular way they are created and the fact that their content focuses on specific operational processes or areas of use (oriented towards specific sectors/modes of operation/areas), DGUV Rules represent technical recommendations aimed at protecting safety and health. They have a high degree of practical relevance and informative value, are largely viewed as essential by the relevant stakeholders and can therefore be used as appropriate guiding principles for workplace prevention activity. DGUV Rules do not give rise to a presumption of conformity.

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Foreword

This DGUV Rule for safety and health specifies and explains DGUV Regulation 38 "Construction Work" (November 2019). Specifications and explanations are subordinate the provisions of the accident prevention regulation, which are shown in italics. If a specification or explanation appears immediately after the paragraph heading, this applies to the entire paragraph.

Introduction

Construction work is significantly different from working in stationary facilities due to the changing construction stages and the risks associated with this. Therefore, specific requirements for occupational safety and health shall be implemented.

The specific requirements in relation to organisation, facilities, work equipment and operation that are of particular importance in the context of construction work are stated in DGUV Regulation 38 "Construction Work" and are specified and explained further in this DGUV Rule. This document will provide users with the information they need in order to fulfil the requirements for the safe execution of construction work.

In addition to DGUV Regulation 38 "Construction Work", the relevant government regulations (e.g. the German Ordinance on Workplaces, the German Ordinance on Industrial Safety and Health, the German Ordinance on Hazardous Substances[1]) and the relevant technical rules (e.g. for workplaces, for operational safety, for hazardous substances) shall be considered and the generally recognised rules of technology (e.g. DIN standards, VDE specifications) shall be taken into account.

This applies especially to employers and insured individuals. This also applies to other groups of persons, such as contractors without employees as set out in § 6 of the German Construction Site Ordinance (Baustellenverordnung).

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[1] Arbeitsstättenverordnung, Betriebssicherheitsverordnung, Gefahrstoffverordnung

1 Scope

1.1

DGUV Regulation 38
§ 1 section 1

This accident prevention regulation applies to construction work.

The term “construction work” refers to all works listed under § 2 (1) to (3) of DGUV Regulation 38 “Construction Work”.

DGUV Regulation 38 “Construction Work” applies to both commercial and non-commercial construction work.

1.2

DGUV Regulation 38
§ 1 section 2

This accident prevention regulation applies to employers and insured individuals; it also applies

- *to employers and employees from a foreign company that are carrying out work within the Federal Republic of Germany without belonging to a social accident insurance institution,*
- *to insured individuals working at or for a company that is covered by a different social accident insurance institution than they are,*
- *to solo self-employed individuals (self-employed individuals who do not have any employees), and*
- *to building owners that carry out non-commercial construction work with construction helpers as part of their own work.*

§ 1 (2) of DGUV Regulation 38 “Construction Work” provides an overview of the target audience of DGUV Regulation 38 “Construction Work”.

The term “employer” primarily refers to employers who have employees in their capacity as a work provider. “Insured individuals” are the individuals insured by the relevant social accident insurance institution.

The addressees include employers from and the employees of foreign companies (see § 16 (2) of the Seventh Book of the German Social Code [SGB VII]) and employees working at or for a company that is covered by a different social accident insurance institution (see § 16 (1) SGB VII).

DGUV Regulation 38 “Construction Work” also applies to “solo self-employed individuals” who are carrying out work alone, i.e. with no employees (contractors without employees).

Irrespective of their insurance cover, solo self-employed individuals are required to observe the accident prevention regulations just like other employers and insured individuals, as these regulations primarily serve the public interest of preventing occupational accidents and protecting the lives and health of people.

This accident prevention regulation also applies to building owners that carry out non-commercial construction work with construction helpers as part of their own work. Therefore, a private building owner can also be an addressee of this accident prevention regulation.

Detailed information can be found on the website of the German Social Accident Insurance Institution for the Construction Industry (BG BAU) (↗ www.bgbau.de) by entering the search term “private Bauherren” (EN: private building owner; information is only available in German at the time of writing).

2 Definitions

2.1 DGUV Regulation 38 § 2 section 1

Construction work refers to work involving the construction, assembly, maintenance, modification, dismantling and removal of physical structures including the preparatory and concluding work required for this. Construction work also includes: Earth moving and excavation work, assembly and dismantling of prefabricated elements and machines, conversions, painting work, repairs, demolition and dismantling work, cleaning work, maintenance, renovation and work involving the detection and clearance of explosive ordinance.

Preparatory and concluding works for construction work is, for example, the setting up and clearing of construction sites including the provision, installation, inspection, maintenance and dismantling of all scaffolding, devices, machines, formwork systems, complex plants (e.g. mixing plants, industrial plants, cranes) and facilities.

2.2 DGUV Regulation 38 § 2 section 2

Underground construction work is construction work that creates subterranean cavities in a trenchless construction, including any expansion, conversion, maintenance and removing work performed on these cavities.

Underground construction work includes, e.g. tunnel and gallery construction (including constructions using the Milan method), cavern and shaft construction and impact moling.

2.3 DGUV Regulation 38 § 2 section 3

Temporary construction work refers to work that does not exceed two hours per work shift, such as maintenance, servicing, inspection, measuring and assembly work.

The time period of 2 hours covers the sum of the time used for the work within one work shift. Interruptions (e.g. breaks or other activities) should not be included in this total.

2.4 DGUV Regulation 38 § 2 section 4

Physical structures are structures connected to the ground and made of building materials and structural components. A connection to the ground is also present when the structure rests on the ground due to its own weight or when it can be moved to a limited extent along fixed rails or when the purpose of use of the structure dictates that it should be predominantly stationary while in use. Embankments, excavations and artificial cavities below the surface of the earth are considered physical structures.

Other examples of physical structures include, for example, wind turbines, power plants, gantry cranes, pipelines, roller shutters, photovoltaic systems or mobile constructions. In the context of DGUV Regulation 38 “Construction Work”, mobile constructions are suitable for and generally also designed for repeated assembly and dismantling, e.g. air domes and large tents.

Temporary amusement rides and sales stands are excluded. Excavations are construction pits and trenches, for example.

Artificial cavities under the earth’s surface are, for example, tunnels or caverns.

2.5 DGUV Regulation 38 § 2 section 5

Falling edges are edges that persons could fall from during construction works. A falling edge is defined as

- *an edge between a flat surface and a surface sloping by more than 60 degrees (e.g. a roof surface),*
- *a transition between a fall-through-resistant and a non-fall-through-resistant surface,*
- *a transition between surfaces with different angles of inclination from a surface inclined up to 22.5 degrees to a surface inclined more than 60 degrees,*
- *the imaginary line on curved surfaces from which the angle of inclination of a tangent is greater than 60 degrees.*

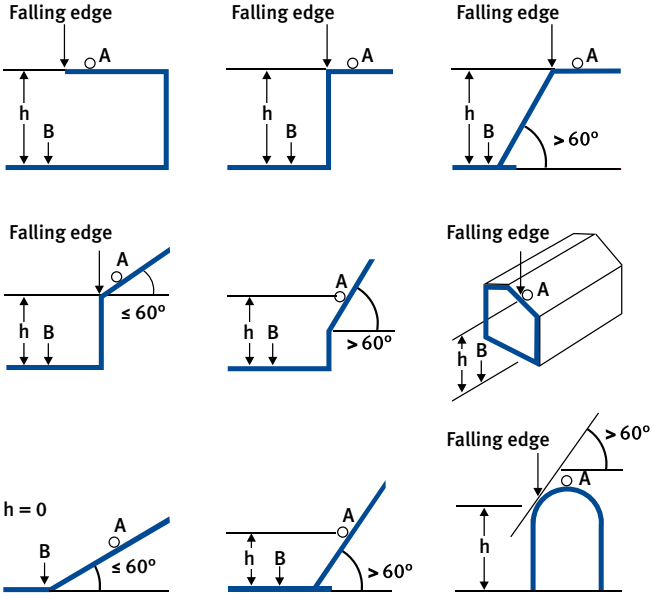
Falling edges can be particularly common on

- physical structures,
- construction site equipment,
- scaffolding that is in the process of being assembled or dismantled,
- devices and
- other auxiliary structures.

2.6 DGUV Regulation 38 § 2 section 6

The fall height is the difference in height between the standing area of persons at workplaces and traffic routes or at a falling edge and the adjacent, lower-lying, sufficiently large and load-bearing surface (impact area).

The impact area is sufficiently large when a person, as a result of a fall, falls onto a load-bearing area and another potential fall is prevented.



h = vertical difference in height between A = standing area or falling edge and B = impact area

Fig. 1 Graphical representations concerning the definition of the falling edge

2.7 DGUV Regulation 38 § 2 section 7

Workplace is the area in which insured individuals conduct their work. This also includes work tasks that take up a very small percentage of time.

Workplaces on construction sites shall be defined with respect to the time for which they will be used, the space they occupy and the specific activities they will be used for. A workplace on a construction site is the confined area required to perform the work to which a certain number of people are assigned by their employer in accordance with § 1 (2) DGUV Regulation 38 "Construction Work", in order to work on a defined work step for a particular time (can be just a short time). Examples of defined work steps involved in the construction of a storey ceiling include, in particular, setting up the formwork, laying in the reinforcement, pouring the concrete and stripping the formwork.

2.8 DGUV Regulation 38 § 2 section 8

Traffic routes are paths/facilities that, for example, provide access to the workplace, to sanitary rooms, to accommodation or to break areas and stand-by rooms, as well as all paths or areas that are planned for, designated for and created for the transport of persons and/or vehicle traffic, regardless of whether the traffic routes are located in buildings or out in the open. Traffic routes that are designated and created for insured individuals are not considered a workplace.

As points of access to workplaces, sanitary rooms, accommodations or to break areas and stand-by rooms, traffic routes on construction sites shall satisfy the requirements of the German Ordinance on Workplaces and the

associated Technical Rules for Workplaces across all phases. This includes footbridges, stairs, corridors, hallways, loading ramps, fixed ladders, manhole steps and escape routes.

Traffic routes on, in or to work equipment shall comply with the requirements of the German Ordinance on Industrial Safety and Health and the associated Technical Rules for Operational Safety.

As the construction project progresses, the arrangement and the size/dimensions of workplaces and traffic routes often change. A sub-section of a construction site can be designated as a workplace or traffic route as the construction project progresses. When different defined work steps are taking place simultaneously, a sub-section of a construction site can be designated as a workplace for some insured individuals and at the same time as a traffic route for other insured individuals.

If a sub-section of a workplace also needs to be simultaneously used as a traffic route by other insured individuals from the same company, then the employer shall designate and set up this traffic route in advance.

If a sub-section of a workplace needs to be simultaneously used as a traffic route for insured individuals from another company, the affected companies shall come to an agreement concerning the designation and setting up of the traffic routes (e.g. with regard to the protective equipment required at falling edges) (§ 8 German Occupational Safety and Health Act, § 6 DGUV Regulation 1 “Principles of prevention”).

If an area designated as a traffic route is used by other insured individuals as a workplace as part of their work assignment, the requirements of the traffic route are unaffected by this. The employer shall ensure that insured individuals in this jointly used area do not endanger each other.

3 Management, supervision and safety tasks

3.1 DGUV Regulation 38 § 3 section 1

The employer shall ensure that construction work is managed by authorised and competent managers. These managers shall ensure that the occupational safety and health and accident prevention regulations are considered and that risks to the safety and health of insured individuals are minimised while the construction work is carried out.

Managing the construction work also involves setting up and clearing the construction site.

The management of construction work can be performed by the employer themselves, or by a person within or outside of the company that they assign to do so. Generally, the "authorised and competent manager" on construction sites is the "construction manager", or in the case of cleaning work, the "facility manager".

Not covered under the term "manager" in the sense of § 3 (1) DGUV Regulation 38 "Construction Work" are persons who hold the following roles, for example

- the person deployed by the commissioning party to manage work performed by a commissioned company (e.g. property managing person),
- construction managers according to the building regulations of the relevant federal state,
- coordinators according to the German Construction Site Ordinance,
- the person commissioned according to § 6 (1) of DGUV Regulation 1 "Principles of prevention".

Managerial reporting relationships defined within the company are unaffected by the roles mentioned above. Duplicate roles are possible. The requirements with regard to specialist knowledge depend on the type of task.

Requirements include relevant vocational training, professional experience or a relevant professional activity carried out recently. Existing specialist knowledge can be kept up to date by participating in training programmes (specific further training measures).

3.2 — DGUV Regulation 38 § 3 section 2

The employer shall ensure that construction work is supervised by authorised and competent persons (supervisors).

These supervisors shall monitor the construction work and ensure that it is carried out in a safe way.

Supervisors are persons who are authorised by their employer or by the manager to issue instructions to persons working under them in accordance with § 3 (1) DGUV Regulation 38 "Construction Work". Persons from outside the company can also be assigned as a supervisor based on a contract.

Supervisors shall possess sufficient knowledge to ensure that construction work is carried out safely. This is the case when they are familiar with the work that needs to be carried out and with the requirements and measures that are to be considered when carrying out the tasks to ensure safety and health.

3.3 DGUV Regulation 38 § 3 section 3

In the case of construction work that requires safety tasks to be carried out, the employer shall ensure that competent persons are entrusted with these tasks. While fulfilling these duties, these persons shall not be tasked with any other activity.

The competent person shall carry out the safety task assigned to them and shall not perform any other activity during this period.

Safety tasks are performed by flagmen or marshals, for example, safety tasks can be necessary in

- demolition work,
- work in pipelines,
- bores,
- confined spaces (e.g. silos or chimneys),
- the use of mobile self-propelled work equipment.

While performing safety tasks, the designate competent person shall be constantly present, shall not perform any other activity and shall have received relevant training and instruction.

Due to their responsibility for the safety and health of others, only the following persons may be tasked with safety tasks:

1. Persons who are aged 18 and over, and
2. Persons who can be expected to perform the duties assigned to them in a responsible way.

If the safety task requires communication between the persons being protected and the person responsible for the safety tasks, a communication agreement, e.g. through hand signals or shouting, shall be agreed between the two parties. Constant monitoring of the persons to be protected may be required, e.g. for work in bores or work in pipe lines.

Safety tasks as per § 3 (3) DGUV Regulation 38 "Construction work" do not include the provisions in accordance with DGUV Regulation 77/78 governing work in the area of rail tracks.

3.4 DGUV Regulation 38 § 3 section 4

The employer shall ensure that a common understanding in German language is ensured at least with the supervisor or their representative during the performance of construction work. This can be achieved with the help of a person with sufficient command of the German language on site, for example.

A person with sufficient command of the German language shall have the required specialist knowledge and be familiar with specialist terminology in order to ensure a clear understanding.

In the case of construction work not carried out on a construction site and with a low hazard potential (e.g. simple maintenance cleaning), the common understanding via the German language can be assured using different methods, e.g. via phone.

3.5 DGUV Regulation 38 § 3 section 5

The employer shall only provide facilities, work equipment, tools, personal protective equipment, work processes and working materials that are technically safe. The employer shall ensure that these facilities, the work equipment, tools, personal protective equipment, work processes and working materials are used in accordance with the instructions for use and in accordance with the instruction and training provided. Insured individuals shall ensure that they use the provided facilities, work equipment, tools, personal protective equipment, work processes and working materials in accordance with the instructions for use and in accordance with their instruction and training.

If an insured individual identifies that facilities, work equipment, tools, personal protective equipment, work processes or working materials are not safe, they shall inform the supervisor of this immediately if they are unable to remedy the problem themselves.

Facilities, work equipment, tools, personal protective equipment , work processes and working materials are considered technically safe when they comply with the relevant written provisions and specifications (e.g. laws, regulations, limit values, rules, manufacturer's specifications, instructions for use, operating instructions).

Using the information from the manufacturer and the type of work to be carried out as a basis, the employer defines in an operating instruction how facilities, work equipment, tools, personal protective equipment, work processes and working materials shall be used.

Information from the manufacturer can come from
- the user manual for work equipment, such as machines, plants, ladders,
- the instructions for use for personal protective equipment
- the assembly and usage instructions, e.g. for scaffolding.

The following are not permitted
- manipulation of existing protective equipment,
- The use of work equipment with safety features (e.g. overload warning systems, safety belts, roll bar, protective covers, locks, protective circuits) that are not in operation.
- Any use of work equipment or working materials prohibited by manufacturers, e.g. sawing of polystyrene boards using a saw blade designed for wood on the construction circular saw, using the chainsaw in an unsafe standing position, operating a petrol engine (e.g. petrol-driven trowel or generator) in fully or partially enclosed areas (carbon monoxide poisoning).

The employer shall ensure that only work equipment and auxiliary equipment designed by the manufacturers for the purpose of lifting persons are used to lift insured individuals, e.g. person lifts, aerial work platforms or service lift systems.

By way of derogation the lifting of insured individuals using work equipment that was not designed for this purpose is permissible when the requirements in accordance with Annex 1 item 2.4 of the German Ordinance on Industrial Safety and Health and the associated Technical Rule for Operational Safety TRBS 2121-4 governing lifting people with work equipment that is not intended for this purpose are met.

4 Instructions

DGUV Regulation 38
§ 4

For assembly work, disassembly work, demolition work and deconstruction work that are subject to special safety requirements, the employer shall ensure that, on the basis of the risk assessment, a written instruction (e.g. assembly instructions, termination statement) is present on the construction site that contains all the necessary information to carry out this work.

Special safety requirements are present in the following work, for example

- assembly of finished parts made of concrete or wood, for example, that have to be laid on a support or first secured in their installation position with struts and supports,
- assembly/dismantling of steel structures or demolition and deconstruction of steel structures,
- assembly/dismantling, demolition and deconstruction of pipelines and containers,
- assembly, dismantling, demolition and deconstruction of large facade and roof elements,
- assembly or dismantling (assembly, conversion and disassembly) of large, pre-assembled support scaffolding/supporting structures,
- assembly/disassembly and demolition and deconstruction work with risk of falling.

Special safety requirements apply for dismantling of finished parts and, for example during the following demolition work:

- demolition using demolition equipment,
- wire rope pulling,
- blasting work,
- demolition work with risk of falling.

For this work, written specifications for the work processes shall be determined before work commences. Thereby particular consideration shall be given to the type, condition and stability of the components and the building materials, and these factors shall be checked before work commences.

Therefore, the necessary measures and information for all relevant activities shall be listed in an instruction sheet (e.g. assembly instructions, dismantling instructions, termination statement). This includes, for example

- proof of stability,
- specifications regarding the required order of work to be carried out
- pipeline plans
- masses/weights
- load-bearing equipment
- information about accesses and measures to safeguards persons against the risk of falling
- anchor devices
- specifications regarding the installation of required auxiliary structures.

5 Stability and load-bearing capacity

5.1 DGUV Regulation 38 §5 section 1

The employer shall ensure that physical structures and their parts, auxiliary constructions, scaffolding, footbridges, devices and other equipment are not overloaded and are also stable throughout the individual stages of construction. They shall be dimensioned, positioned, supported, braced, anchored and designed so that they are able to absorb and distribute the loads associated with their intended use.

Physical structures and their parts that only achieve their full load-bearing capacity after hardening, after being joined with other parts or after retrospective construction measures are carried out shall only be subjected to loads in accordance with their relevant load-bearing capacity. Individual stages of construction shall be considered.

It shall be ensured that the stability and load-bearing capacity of physical structures, their parts and auxiliary structures are not impaired by construction work. The stability in particular shall not be put at risk as a result of hollowing out or groove cutting. Conditions where there is a defect or risk shall be remedied immediately. This applies in particular after the work has been interrupted for a long time or after events that could impair the stability or load-bearing capacity, e.g. a storm, heavy rain or snow.

Before assembly, dismantling, demolition or deconstruction work is commenced, the order of the work shall first be defined. To avoid impairing the stability, the work shall be carried out in the defined order.

The following occurring loads shall be considered:

- dead loads, e.g. due to the self-weight of structural members or attached fixtures,

- changing influences, e.g. wind and snow or payloads resulting from material storage, vehicle traffic or the operation of work equipment (e.g. cranes, aerial work platforms, pipelines for concrete and mortar delivery),
- accidental actions (e.g. vehicle impact) where applicable.

5.2 DGUV Regulation 38 §5 section 2

The employer shall ensure that components, building materials and work equipment is stored, transported and installed in such a way that their storage position cannot be unintentionally changed.

This requirement is fulfilled, when, for example

- the weight specifications of the component, building materials and work equipment and the required transport position are observed,
- components have been checked before transport and before installation for damage, deformation and cracks with regard to their stability and transport and installation safety,
- the attachment points on the components are selected and designed in such a way that the forces generated during transport are able to be absorbed without damaging the load-bearing equipment or components,
- transport vehicles, lifts and load-bearing equipment that are suitable for the weight, shape and dimensions of the components are used to transport the components.
- the suitable supporting structures (e.g. storage rack, trestle supports) are reserved and used for the storage of the components,
- load-bearing equipment for detached components (e.g. finished parts, steel supports, machines, shuttering formwork, pipes) is only released when the components are fastened in such a way that no unintentional changing of the storage position is possible,
- items such as guide ropes are used to prevent pendulum movements.

5.3 DGUV Regulation 38 § 5 section 3

The employer shall ensure that during work on and in front of earth walls and rock faces, as well as in building pits, trenches and bores, the earth walls and rock faces are sloped, shored or otherwise secured so that they are stable during the individual stages of construction and insured individuals are not at risk due to slipping or falling objects. Excavations and trenches can be created without securing them with vertical walls up to a maximum depth of 1.25 m provided that there are no conditions or influences (especially ground properties, ground inclination, loads) that can negatively affect the stability of the excavations or the trench walls.

The requirements concerning the stability of earth walls and rock faces are described in the following standards in particular:

- DIN 4084:2009-01 “Soil – Calculation of embankment failure and overall stability of retaining structures”
- DIN 4123:2013-04 “Excavations, foundations and underpinnings in the area of existing buildings”
- DIN 4124:2012-01 “Excavations and trenches – Slopes, planking and strutting breadths of working spaces”.

Impairments of the stability of the earth walls and rock faces can result from the following conditions and influences in particular:

- External loads, e.g. neighbouring structures, machines, vehicles, lifting devices, excavated material
- Existing plants, e.g. parallel pipelines
- Heavy rain, frost and other natural events
- Heavy vibrations, e.g. due to ramming, blasting, vehicle traffic.

Undercutting of earth walls and rock faces is not permitted. Overhangs shall be eliminated promptly. Boulders, building remains and similar exposed during excavation work that pose a risk of falling or slipping off shall be promptly secured or removed.

Impairments of the stability of earth walls and rock faces can also result from backfillings and embankments. To assess the ground conditions, the information and documents provided by the building owner (including the Safety and Health Protection Plan, if applicable) can be particularly useful.

6 Existing plants and traffic hazards

6.1 DGUV Regulation 38 § 6 section 1

Before construction work commences, the employer shall ensure that it is determined whether the intended work area contains plants that could pose a risk to people. The term "plants" includes, for example, electrical equipment, pipelines, channels, shafts, tanks, plants with a risk of explosion, mechanical plants and equipment, cranes and conveyor systems.

Persons can be at particular risk during:

- Work near overhead power lines or catenary equipment, when there is a risk of sufficient protective distances not being maintained (see § 6 (2) DGUV Regulation 38 "Construction work"),
- Civil engineering work close to underground pipes,
- Work on low-voltage systems, work on the construction site power supply and during boring, milling and mortising work on facades, walls, ceilings and floors that may contain lines/cables.

According to the German Construction Site Ordinance, the building owner is required to provide the employer with information about hazards caused by plants in the working area, e.g. in the Safety and Health Protection Plan (as set out in § 2 (3) German Construction Site Ordinance). This shall be created by the building owner or a person commissioned by the building owner as soon as the requirements for creation are known and before the construction site is set up. If the requirements for a Safety and Health Protection Plan are not available, this information shall be provided elsewhere (e.g. preliminary observations regarding the performance specification, building specification) by the building owner before the construction site is set up.

The building owner has a particular obligation to evaluate potential risks posed by explosive ordinance. The findings shall be taken into account (see e.g. DGUV Informative Publication 201-027 governing instructions for risk assessment and definition of protective measures during explosive ordinance clearance).

6.2 DGUV Regulation 38 § 6 section 2

If plants in accordance with section 1 are present, the employer shall ensure in consultation with the owner or operator of the plant that the required safety measures are defined and implemented.

Work in the danger zone of the plant can only commence once the required safety measures have been implemented in consultation with the owner or the operator.

With regard to work at and near electrical installations and with electrical work and operating equipment, DGUV Regulation 3/4 “Electrical installations and equipment”, containing safety rules of electrical engineering, shall be observed.

Work near overhead power lines or catenary equipment can be carried out when:

1. these have been de-energised by the plant operator and the de-energised state for the entire duration of the work is ensured by the plant operator,
2. for the duration of the construction work, with particular consideration of the voltage, the place of operation, the type of work plus the work equipment used and the loads to be transported it is ensured that entry into the danger zone is not possible by using covers or barriers or other suitable measures and/or technical movement restrictions.
3. If the measures set out in 1. and 2. are not carried out, the safety distances listed in table 1 shall be maintained. When determining the required safety distances, the movement of the power lines, loads, hoisting and load-bearing equipment and unintentional movement of persons with tools and materials shall be taken into account.

Table 1 Required protective distances from overhead power lines

Nominal mains voltage kV	Safety distance (direct distance from unprotected live parts) m
up to 1	1.00
more than 1 to 110	3.00
more than 110 to 220	4.00
more than 220 to 380	5.00
in the event of unknown nominal voltage	

For work in the vicinity of the overhead contact line of electrically powered trains, the provisions of

- DGUV Regulation 77/78 governing work in the area of rail tracks,
- DIN EN 16704-1:2017-11 “Railway applications – Track – Safety protection on the track during work – Part 1: Railway risks and common principles for protection of fixed and mobile work sites”
- DIN VDE 0105-103:2014-10 “Operation of electrical installations – Part 103: Particular requirements for railways” in conjunction with
- DIN VDE 0105-100:2015-10 “Operation of electrical installations – Part 100: General requirements”

should be consulted.

Further information can also be found in DGUV Informative Publication 203-019 governing work of overhead contact lines.

Lines and underground cables are to be considered live when the de-energised state has not been confirmed by the operator or by a person commissioned by the operator. Further information is provided in the DGUV Informative Publication 203-017 governing protective measures during excavation work in the vicinity of underground cables and pipelines.

During work close to photovoltaic plants, these plants shall not be touched or stepped on.

Workplaces and traffic routes on or close to cranes, conveyor systems and other machinery shall be protected through limitation of the risk-causing movement, for example, by means of barriers, flagmen or signalling devices.

For work on gas lines during which there is a risk of insured individuals being exposed to gas, the provisions of Chapter 2.31 of DGUV Rule 100-500/100-501 shall be observed.

Information about work on contaminated plants that pose a risk due to hazardous substances or biological substances can be found in DGUV Rule 101-004 governing contaminated areas. Information about work in the vicinity of electromagnetic fields can be found in DGUV Rule 103-013/103-014 governing electromagnetic fields.

6.3 DGUV Regulation 38 § 6 section 3

Employers shall ensure that the construction work is immediately interrupted, in the event of unexpected contact with plants as defined in section 1. In the event of unexpected contact with plants as defined in paragraph 1, insured individuals shall inform their supervisors immediately.

No further explanatory information is given in relation to § 6 (3) DGUV Regulation 38 “Construction work”.

6.4 DGUV Regulation 38 § 6 section 4

If there is a risk to insured individuals during construction work due to contact with road vehicles, vessels or aircraft, the employer shall ensure that safety measures are defined in consultation with the owners or operators of these vehicles and/or the relevant authorities.

Insured individuals can be put at risk by public or company transport, e.g. during work on company premises.

For the assessment of the risks from the traffic involving road vehicles, vessels or aircraft, information and documents from the building owner as well as the Safety and Health Protection Plan, if applicable, should be included. This information can be used by the executing company with due consideration of the actual site conditions to determine the measures in their risk assessment. If the work affects public traffic areas, then the necessary official orders [verkehrsrechtliche Anordnung] shall be obtained before commencing work (§ 45 (6) German Road Traffic Regulations [StVO]). Required safety distances and working areas in accordance with Technical Rule for Workplaces ASR A5.2 governing requirements of workplaces and traffic routes on construction sites that border public roads shall be taken into account.

In all other cases, owners, operators or responsible authorities shall define safety measures in consultation with the employer.

For protecting against the risks from the operation of railways and trams, see DGUV Regulation 77/78 governing work in the area of rail tracks.

7 Operation of self-propelled work equipment and vehicles on construction sites

7.1 — DGUV Regulation 38 § 7 section 1

The employer shall ensure that traffic management plans are established for the construction site traffic and traffic routes are defined.

The traffic management plans include, for example, operating instructions, which specify that only certain traffic routes shall be used.

A traffic management plan can contain specifications, in particular, to
- separate traffic routes and pedestrian routes,
- establish one-way traffic,
- prevent reversing.

For the planning and stipulation of the construction site traffic the employer can use the Safety and Health Protection Plan of the building owner; see information under § 6 (4) DGUV Regulation 38 “Construction work”.

7.2 — DGUV Regulation 38 § 7 section 2

In the event of the use of mobile self-propelled work equipment and vehicles, the employer shall ensure that the driver has an adequate view of the driving and working area. If the direct vision of the driver is insufficient to ensure the safety of persons in the driving and working area, the mobile self-propelled work equipment and vehicles shall be fitted with suitable assistance systems (e.g. camera and monitor system). Clause 2 does not apply when the employer has ensured that no persons are in the driving and working area that could be put at risk by the mobile self-propelled work equipment and vehicles.

The driving and working area is the surrounding environment of the work equipment or vehicle in which people could be hit due to work-related movement of the work equipment or vehicle, its chassis, its working gear and attachments, due to swinging loads, falling cargo or due to falling working gear.

The driving person's view of the driving and working area is limited when the driver of the vehicle does not have a sufficient enough view of the driving and working area in order to see people early enough to ensure that they are not hit, run over or slewed on.

If people could be located in the driving and working area, the driver's view of the driving and working area shall be ensured via direct vision or indirect vision. The positioning of the visual aids, such as mirrors and monitors is state of the art when they are visible in the front 180° field of vision of the driving person. During operation, they shall not be affected by moving parts of the machine, e.g. excavator arm. Mirror-to-mirror systems are not permitted. Information regarding selection and combination of suitable assistance systems (e.g. camera and monitor systems and sensor systems) can be found in the Technical Rule for Operational Safety TRBS 2111 (part 1) governing measures to protect against risks when using mobile work equipment. Further information regarding the ergonomically suitable positioning of assistance systems to improve vision are listed in DIN EN 894-2:2009-02 "Safety of machinery – Ergonomics requirements for the design of displays and control actuators – Part 2: Displays".

If technical measures cannot yet be implemented, the following measures are suitable as a temporary solution:

- cordoning off the danger areas of work machines and vehicles,
- using marshalling persons/flagmen.

Flagmen or marshalling persons stay outside of the danger area and within the field of vision of the driving person, warn persons at risk and persons operating mobile work equipment about risks. During this period, they are not allowed to take on any other task.

If flagmen or marshalling persons remain in the surrounding environment of vehicles and machines, then they are at risk of being hit or run over. Look-out personnel or marshalling persons shall wear high visibility clothing and should only be used as a short-term protective measure.

8 Workplaces and traffic routes

8.1 DGUV Regulation 38 § 8 section 1

The employer has to ensure that workplaces and traffic paths are set up and designed in such a way that they, in accordance with the

- *the type of physical structure,*
- *the changing construction stages,*
- *the weather conditions,*

and

- *the activities to be carried out,*

enable safe working, walking or driving on. Jobs and traffic routes shall have sufficient dimensions.

Requirements for workplaces and traffic routes can be found, for example, in:

- DIN 4124:2012-01 “Excavations and trenches – Slopes, planking and strutting breadths of working spaces”
- DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction”
- DIN 18160-5:2016-04 “Chimneys – Part 5: Appliances for chimney-sweep work – Requirements, planning and construction”
- DIN EN 1004:2005-03 “Mobile access and working towers”
- DIN EN 1495:2009-12 “Lifting platforms – Mast climbing work platforms”
- DIN EN 1610:2015-12 “Construction and testing of drains and sewers”
- DIN EN 12811-1:2004-03 “Temporary works equipment – Part 1: Scaffolds”
- DIN EN 12812:2018-12 “Falsework”
- DIN 4420-1:2004-03 “Service and working scaffolds – Part 1: Service scaffolds – Performance requirements, general design, structural design”
- DIN EN 12951:2005-02 “Prefabricated accessories for roofing – Permanently fixed roof ladders”.

If work equipment is used for workplaces that involve working at heights, then this equipment shall enable safe working. This includes, for example, scaffolds, mast climbing work platforms, mobile working towers or mobile elevated work platforms.

Risks during the use of mobile work equipment for workplaces involving work at height shall be minimised, e.g.

- by following the manufacturers' instructions for use,
- in the case of mobile working towers, by locking the castors and complying with the prohibition of being on work platforms while they are being moved, and
- during the movement of articulated telescopic platforms and telescopic platforms, by the use of personal fall protection equipment (PFPE, lanyard not longer than 1.80 m),
- by giving operators suitable instruction and training.

Assembly work at height should preferably replaced by pre-assembly at a workplace close to the ground wherever the process and technicalities of the work allow it.

If the level of natural light is insufficient, then sufficient workplace lighting should be established to ensure safe working and sufficient general lighting should be established to ensure safe navigating by foot and driving on traffic routes.

Further information can be found in the Technical Rule for Workplaces ASR A3.4 governing lighting and the DGUV Informative Publication 215-210 governing natural and artificial lighting of workplaces.

Risks due to weather influences can include, e.g. frost, hoar frost, heavy rain, icing of step surfaces or walking surfaces. Protective measures can include: roofing, winter maintenance.

Information regarding non-slip protection of flooring can be found in the Technical Rule for Workplaces ASR A1.5/1.2 governing flooring.

Traffic routes generally have to have a usable clearance of at least 0.50 × 2.00 m. Components that protrude into traffic routes, e.g. joists and beams, can reduce the clear headroom to 1.80 m. With regard to scaffolding, in these cases, the clear headroom based on the upper ledger can be reduced to 1.75 m.

The minimum width for workplaces bordering areas with public traffic is 0.80 m.

The usable clearance in excavations and trenches shall be at least 0.60 m × 2.00 m.

For workplaces and traffic routes in tunnels, galleries, culverts, push-through pipes and pipelines, different minimum clear dimensions shall be maintained in accordance with table 2 and table 3.

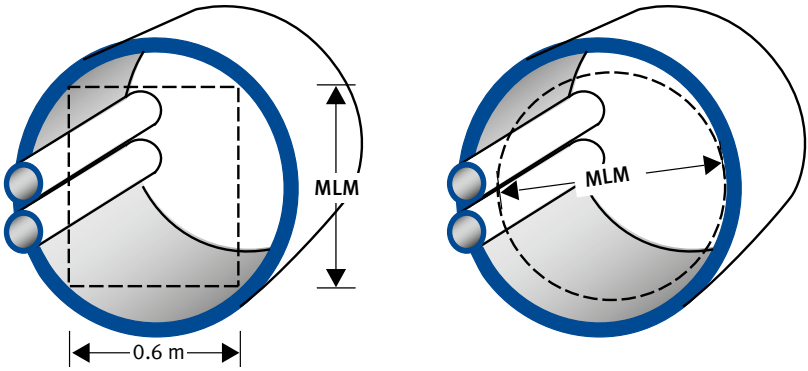


Fig. 2 Schematic diagram for minimum clear dimension (MCD)

Table 2 Minimum clear dimension of workplaces and traffic routes in tunnels, galleries, culverts and push-through pipes

Length of tunnels, galleries, culverts and push-through pipes m	Minimum clear dimension (MCD) m		
	Circular cross section	Rectangular cross section	
	Diameter	Height	Width
< 50	0.80	0.80	0.60
50 to < 100	1.00	1.00	0.60
≥ 100	1.20	1.20	0.60

Riser shafts shall have a free cross-sectional area of at least 0.70 m × 0.70 m.

Table 3 Minimum clear dimension of workplaces and traffic routes in pipelines

Profile type	Circular cross section	Rectangular profile		Egg-shaped profile		Mouth-shaped profile (clear head room)
	Diameter	Height	Width	Height	Width	
Minimum clear dimension in pipelines (MCD) m	0.60	0.60	0.60	0.90	0.60	0.60

In the case of a minimum clear dimension of 0.60 m to 0.80 m, insured individuals can only be deployed in pipelines under certain conditions, which are described in more detail in DGUV Informative Publication 201-052 governing pipeline construction work.

The minimum clear dimensions listed in table 2 and table 3 do not apply for work in waste water treatment plants. In this case, the provisions of DGUV Rule 103-003/103-004 governing work in enclosed spaces of waste water treatment plants apply.

8.2 — DGUV Regulation 38 § 8 section 2

The employer shall ensure that workplaces and traffic routes are able to take a sufficient load. For workplaces and traffic routes on non-accessible components, suitable measures shall be present that prevent people from breaking through and falling off.

For the use of load-distributing coverings or footbridges, then these shall enable safe dissipation of the occurring loads to the load-bearing substructure and shall be protected against slipping and lifting off the ground. Furthermore, in addition to the footbridges and the load-distributing coverings for preventing people from breaking through, suitable measures shall be implemented to prevent people from falling.

For construction work, footbridges and load-distributing coverings shall be at least 0.50 m wide and shall only be used at a maximum slope gradient of 1:1.75 (around 30°). They shall have anti-slip strips if they are steeper than 1:5 (around 11°).

The requirements regarding the dimensions and load-bearing capacity of workplaces and traffic routes are fulfilled, for example:

- In the case of work in excavations and trenches, when the requirements set out in DIN 4124:2012-01 “Excavations and trenches – Slopes, planking and strutting breadths of working spaces” are complied with.
- For the use of permanently installed installations of the physical structure, when the requirements set out in DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction” are complied with.

- For chimney-sweep work and the use of permanently installed installations complying with the requirements set out in DIN 18160-5:2016-04 “Chimneys – Part 5: Appliances for chimney-sweep work – Requirements, planning and construction”.
- For work on drains and sewers, when the requirements set out in DIN EN 1610:2015-12 “Construction and testing of drains and sewers” are complied with.

If evidence according to the test principle GS-BAU-18 “Principles for the testing and certification of fall-through protection of components during construction or maintenance work” from the Testing and Certification Body BAU (Prüf- und Zertifizierungsstelle BAU) is available for non-accessible components, for example, it can be assumed that if a person falls onto this component that they cannot fall through.

Components that can break when walked on include asbestos boards and other fibre cement panels, suspended ceilings, skylights, glass roofs, ventilation ducts and boards with a low load-bearing capacity.

Workplaces of traffic routes are deemed to be load-bearing when, e.g. the spacing between the roof battens is no more than 0.40 m and the roof battens comply with the requirements set out in DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction”. Glass surfaces can be walked on when the ability of the glass to be walked on is verified in accordance with the Technical Building Regulations.

Components that can slip of their supports include, e.g. roofs and ceilings made up of boards or with fillers that are not secured against slipping or breaking out of their supports, false floors/dead floors of a wooden beam ceiling or boarded ceiling and loosely positioned grates.

If workplaces or traffic routes are set up in close vicinity to components that could break if walked on, measures to prevent falling through (inwards), such as protective nets, shall be implemented.

8.3 DGUV Regulation 38 § 8 section 3

The employer shall ensure that traffic routes can be safely walked on or driven on while construction work is under way.

The requirement is fulfilled when elements such as lifts, stairs, staircase towers, footbridges or fall-through-protected and load-bearing ceiling surfaces are used as a traffic route.

If temporary coverings (e.g. painter's covers) are used, then these shall be safe to walk on. They are safe to walk on when they, for example, fulfil the requirements of the test principle GS-IFA-B02 "Principles for the testing and certification of temporary floor coverings" from the Institute for Occupational Safety and Health of the German Social Accident Insurance.

Workplaces and traffic routes in excavations and trenches more than 1.25 m deep shall only be entered and exited using suitable equipment, e.g. steps or ladders (see § 8 (7) DGUV Regulation 38 "Construction work"). Traffic routes over trenches that are more than 0.80 m wide shall be equipped with crossings such as footbridges or gangways.

Traffic routes that run directly along the sloped edges of construction trenches and excavations are only permitted to be used as traffic routes after the stability of the earth walls or rock walls of these construction trenches and excavations has been ensured.

If traffic routes (driving routes) for self-propelled work equipment or vehicles are particularly close to excavations, trenches or sloped edges, then in order to ensure they can be safely driven on, a sufficient clearance distance shall be maintained; see DIN 4124:2012-01 “Excavations and trenches – Slopes, planking and strutting breadths of working spaces”. If necessary, measures shall be implemented to ensure the stability of the excavations/ trench walls, e.g. planking measures.

If there is a risk of self-propelled work equipment or vehicles going off course on the edge of e.g. excavations, slopes, structures, falsework or port installations, then appropriate measures shall be implemented. This includes fixed road borders (collision protection) in particular.

8.4 DGUV Regulation 38 § 8 section 4

The employer shall ensure that inclined surfaces that pose a risk of persons slipping are only used as a workplace or traffic route after anti-slip measures have been implemented.

The risk of slipping can occur independently of the angle of inclination, e.g. due to the material properties of the surface (e.g. glass, metal, plastic), dirt and contamination or weather influences.

For work at or on roof surfaces with a potential fall height of more than 2.00 m and a roof pitch of 22.5° to 60°, protective equipment to break falls and catch people who slip shall be present. The difference in height between workplaces or traffic routes and the protective equipment to break falls shall not be more than 5.00 m.

On roof pitches of up to 60°, protective equipment to break falls includes roof safety scaffolding in accordance with DIN 4420-1:2004-03 “Service and working scaffolds – Part 1: Service scaffolds – Performance requirements, general design, structural design” and safety barriers in accordance with DGUV Informative Publication 201-023 governing the use of side protection and side protection systems as well as edge protection as protective equipment during construction works.

For workplaces on slopes with an angle of more than 45°, special workplaces shall be created, e.g. horizontal standing areas with a width of at least 0.50 m.

8.5 DGUV Regulation 38 § 8 section 5

The employer shall ensure that special workplaces are created for work on a roof surface with a roof pitch of more than 45°. Special workplaces include slatted roof surfaces, roof ladders, roofer chairs or level standing surfaces with a width of at least 0.50 m.

Special workplaces include, for example:

- slatted roof surfaces in accordance with DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction”.
- roof ladders or roofer chairs; see also Annexes 1 and 2 of DGUV Informative Publication 201-054 governing roof, carpentry and timber construction work,
- permanent installations of the physical structure, which are used during chimney-sweep work and satisfy the requirements set out in DIN 18160-5:2016-04 “Chimneys – Part 5: Appliances for chimney-sweep work – Requirements, planning and construction”.

8.6 DGUV Regulation 38 § 8 section 6

If there is a risk of drowning when working on, at and above the water, the employer shall ensure that appropriate rescue equipment in accordance with application is available and ready to hand. To this end, the employer shall ensure that insured individuals have access to suitable personal protective equipment to protect against drowning and, if required, protective clothing.

If no technical protective measures against falls (e.g. edge protection) are possible when working on, at or above water, there is a risk of drowning. When selecting suitable rescue equipment and personal protective equipment (PPE), further risks (e.g. cold, current, swell) shall be taken into account alongside the effectiveness of combined PPE together with the rescue equipment.

The requirement for suitable PPE is met when lifejackets, e.g. in accordance with DIN EN ISO 12402-2:2017-12 “Personal flotation devices — Part 2: Lifejackets, performance level 275 — Safety requirements” or DIN EN ISO 12402-3:2017-12 “Personal flotation devices — Part 3: Lifejackets, performance level 150 — Safety requirements” are available.

Suitable rescue equipment includes, for example:

- Lifebuoys in accordance with DIN EN 14144:2003-08 “Lifebuoys – Requirements, tests”
- Lifeboats in accordance with DIN EN 1914:2016-12 “Inland navigation vessels – Work boats, ship’s boats and lifeboats”.

Adequate numbers of rescue equipment shall be kept available. The boats shall be ready to use and also fitted with a motor when intended for use in water with a string current ($v > 1.2$ m/s).

8.7 — DGUV Regulation 38 § 8 section 7

The employer shall ensure that the risk assessment justifies the use of a ladder as a workplace or as a traffic route, taking into account the hazards, the duration of use and the present structural conditions. It shall be considered that the use of other, safer work equipment has priority over the use of ladders.

The employer shall ensure that portable ladders are only used as a workplace during construction works when

- *the standing height is no greater than 2.00 m*
- *at a standing height of more than 2.00 m and up to 5.00 m, only occasional work is carried out.*

Portable ladders shall only be used as a workplace during construction work if the insured individual stands with both feet on a step or platform and the standing position on the ladder is not more than 5.00 m above the setup area.

Working on portable ladders with rungs is only permissible when the risk assessment finds that no other safe work equipment can be used.

Occasional construction work in the outdoors on a ladder shall only be carried out when the ambient conditions and weather conditions do not negatively impact the health and safety of insured individual. In particular, work cannot be started or continued when the weather conditions – e.g. heavy or gusty wind, ice or packed snow – give rise to the possibility that insured individuals could fall or be injured by falling or overturning objects.

The employer shall ensure that ascents to workplaces are designed as stairs or footbridges.

Deviating from clause 8, portable, erectable ladders can be used as traffic routes when:

- *The difference in height to be covered is not more than 5.00 m and the ascent is only required for short-term construction work,*

or

- *The workplaces are located in confined spaces, such as in shafts, and the installation of stairs is not possible for construction-related or work-related reasons.*

As part of the risk assessment, it shall be assessed whether the scheduled construction work can be carried out with different work equipment other than a ladder. Other alternative work equipment can include scaffolds, site staircases, mobile working towers or mobile elevated work platforms.

When using ladders the following shall be complied with:

- the weight of the tool(s) and material(s) to be carried shall not exceed 10 kg,
- no objects with wind-exposed areas exceeding 1 m² are carried along,
- no materials or devices are used that pose additional hazards to insured individuals,
- only work that requires a lower level of force than that which would cause the ladder to tip over can be carried out.

As part of the risk assessment, environmental conditions such as the set-up location (e.g. structural conditions), the ground and the interactions with the environment (e.g. internal traffic) shall be assessed and protective measures defined where required.

If, during the use of ladders, existing fall protection safety devices become ineffective (e.g. standing area on the ladder is higher than a balcony rail in the area of the impact surface), protective measures against falling shall be implemented.

Furthermore, an assessment of whether the level of safety can be increased through the use of ladder accessories shall be carried out, e.g. with floor brackets, guard rails, foot plates, wall supports, base enlargements, stile extensions, fixing the ladder at the top and bottom, rail extensions, ground points, swivelling base with rubber pads, step hook-on platforms, base bars, supports.

During use, ladders shall be set up in a way that is stable and safe to use for ascent. The add-on parts, e.g. crossbeams, required for the safe use of the ladders shall be used.

Use of a ladder as a workplace for work at height

If a portable ladder is selected as work equipment for an elevated workplace in accordance with the risk assessment, firstly, it shall be checked whether a ladder can be used with a platform.

The insured individual shall stand on a step or a platform with both feet. This means, for example, that stepladders must be designed with steps or platform. In exceptional cases with special justification (e.g. work in narrow shafts), working on portable ladders with rungs is permitted.

Use of a ladder as a traffic route

Ladders used as a traffic route shall always be secured against slipping at the top of the ladder or at the contact point.

If straight ladders are used as an ascent or descent, these shall be positioned in such a way that they project at least 1.00 m over the exit point if other equivalent possibilities for holding on to are not present.

In particular work areas, special types of ladders (e.g. temporary ladders for confined spaces in shaft structures) can offer a higher level of safety than single ladders and shall be preferred.

If a ladder is used very rarely as an access to reach workplaces, the height difference to be covered may exceed 5.00 m. When assessing the proportionality, the structural characteristics shall be taken into account.

Fixed ladders are outside of the regulatory scope of § 8 (7) DGUV Regulation 38 “Construction work”.

9 Falls from height

9.1 DGUV Regulation 38 § 9 section 1

Fall heights of more than 1.00 m represent a fall hazard.

No further explanatory information is given in relation to § 9 (1) DGUV Regulation 38 “Construction work”.

9.2 DGUV Regulation 38 § 9 section 2

The employer shall ensure that equipment is in place which prevents persons from falling (protective equipment):

1. Regardless of the fall height at

- *workplaces on and above water or other solid or liquid substances in which one can sink,*
- *traffic routes above water or other solid or liquid substances in which one can sink.*

2. Where the fall height exceeds 1.00 m and the conditions of number 1 are not met, at

- *exposed flights and landings of stairs,*
- *wall openings and*
- *traffic routes*

3. When the fall height exceeds 2.00 m at all other workplaces.

By way of derogation from numbers 2 and 3, protective equipment up to a fall height of 3.00 m can be dispensed with at workplaces and traffic routes on roofs and ceilings with a pitch of up to 22.5° and a floor area no greater than 50 m2, provided that the work is carried out by insured individuals with the relevant professional qualifications and suitable physical characteristics who have been specially instructed and are able to clearly identify the falling edges.

During the identification and assessment of the risk of falling from height, the following criteria shall be taken into account at a minimum

- fall height,
- type and duration of activity, physical strain,
- distance from the falling edge,
- condition (e.g. slope and slip resistance) and load-bearing capacity (e.g. risk of falling through) of the standing area or surface,
- condition of the area below, e.g. water or liquids (sinking, drowning), concrete (hard impact), rebar connections (impalement hazard),
- condition of the work environment and hazardous external influences, e.g. visibility conditions, detectability (e.g. lighting, time of day, glare), weather influences (e.g. wind, ice or heavy snowfall),
- condition of the work surface with regard to openings in floors, ceilings or roof surfaces and depressions.

Protective equipment is, for example, barriers in the form of parapets, guard rails, grates, three-part side guard or walkable and immovable covers.

Requirements concerning the dimensions and design of protective equipment are described in:

- DIN 4420-1:2004-03 “Service and working scaffolds – Part 1: Service scaffolds – Performance requirements, general design, structural design”
- DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction or construction and planning regulations for existing buildings”
- DIN EN 12811-1:2004-03 “Temporary works equipment – Part 1: Scaffolds – Performance requirements and general design”
- DIN EN 13374:2019-06 “Temporary edge protection systems – Product specification – Test methods”
- DGUV Informative Publication 201-023 governing the use of side protection and side protection systems as well as edge protection as protective equipment during construction work.

The requirement for protective equipment is met when:

- stair landings and ladder platforms that are used exclusively as a traffic route and flights of stairs are fitted with a side protection system consisting of guardrails and intermediate rails and with dimensions and a design that complies with the requirements set out in DIN EN 12811-1:2004-03 “Temporary works equipment – Part 1: Scaffolds – Performance requirements and general design” and in DGUV Informative Publication 201-023 governing the use of side protection and side protection systems as well as edge protection as protective equipment during construction work.
- in steel structures, taut steel ropes (horizontal force of 0.3 kN, max. deflection of 5.5 cm) are attached of footbridges as side protection at heights of 0.50 m and 1.00 m above the floor covering and toe board. When no walls are present, this shall be carried out on both sides.
- in the case of chimney sweeping activities, permanent installations of the physical structure are used that comply with the requirements set out in DIN 18160-5:2016-04 “Chimneys – Part 5: Appliances for chimney-sweep work – Requirements, planning and construction”.

Substances in which one can sink include liquids, slurries, bulk materials stored in silos or stockpiles.

At wall openings, there is a risk of falling in the sense of § 9 (2) no. 2 of DGUV Regulation 38 “Construction work” (see figure 3) when the wall opening has a clear dimension of more than 1.00 m in height and 0.30 m in width and at the same time the existing parapet height is smaller than 1.00 m.

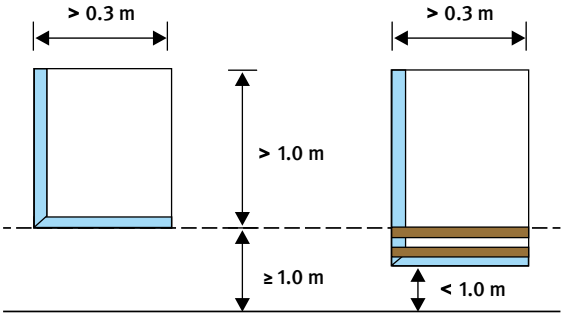


Fig. 3
Schematic diagram of wall openings and relevant protective measures

Equipment and measures to protect people against falling are not required, regardless of the fall height, when:

1. The horizontal distance from the falling edge at workplaces or traffic routes is max. 0.30 m away from other load-bearing and sufficiently large surfaces.
2. Workplaces or traffic routes are located on surfaces with a slope of up to 22.5 °and are closed off from the falling edges at a minimum distance of 2.00 m by means of a rigid barrier, e.g. via guard rails, chains or ropes. Barrier tape is not a rigid barrier. In addition, there shall be no danger from slippery conditions resulting in persons slipping under the barrier.
3. Traffic routes used for maintenance and inspection work on surfaces with a slope of up to 22.5° which have a minimum distance from the falling edge of 2.00 m, which are visually clearly recognizable and thus the danger zone is delimited.

Elevated Workplaces on ladders and the use of ladders as traffic routes are excluded from the provisions of § 9 (2) DGUV Regulation 38 “Construction work”; see § 8 (7) DGUV Regulation 38 “Construction work”.

9.3 DGUV Regulation 38 § 9 section 3

If, for technical work-related reasons, protective equipment cannot be used, the employer shall ensure that devices for catching falling persons (fall arrest devices) are used in their place.

Fall arrest systems (e.g. protective nets, safety nets, safety barriers, protective scaffolds) shall effectively catch falling persons and protect them from further deeper falls.

"Work-related reasons" may exist when:

- working directly on the falling edge is necessary and equipment to protect against falls from height would make it impossible to perform this work

or

- protective equipment against falls from height could not be attached to the falling edge due to the insufficient load-bearing capacity of the construction.

Fall arrest devices should be installed as close as possible underneath the falling edge to be protected. The maximum height difference between the falling edge or the workplace and the scaffold flooring or safety net

1. shall not be more than 2.00 m when cantilever scaffolding and bracket scaffolding is used,
2. shall be no more than 1.50 m when roof safety scaffolding is used,
3. shall be no more than 2.00 m when all other safety scaffolding is used,
4. shall be no more than 3.00 m when safety nets are used.

9.4 DGUV Regulation 38 § 9 section 4

If no protective equipment or fall arrest devices can be set up, the employer shall ensure that personal fall protection equipment (PFPE) is used as an individual protective measure. The suitable PFPE shall be identified on the basis of the risk assessment.

A pre-requisite is the presence of suitable anchor devices.

The authorised and competent supervisor shall define the suitable anchor devices in each individual case. The insured individuals shall be instructed and trained in the use of PFPE and about the execution of the required rescue measures.

When selecting protective measures against falls from height, a key principle is the prioritisation of technical protective measures (side protection, technical fall restraint systems) over the use of individual protective measures (e.g. PFPE).

If, in individual cases, fall protection devices or fall arrest systems cannot be used for technical reasons or due to the local conditions, PFPE may be used.

The insured individuals shall receive instruction and training on the use of PFPE and about the execution of the required rescue measures, both from a theoretical and practical viewpoint (see § 31 DGUV Regulation 1 “Principles of prevention”).

The use of PFPE requires a risk assessment to be carried out for the intended activity. This shall include an assessment of the suitability of the intended PFPE. Among other the following aspects shall be considered:

- The PFPE shall be selected according to the framework conditions at the workplace, e.g. edge load of fall arrest lanyards at fall edges and the required clearances below the standing area of the user.
- Personal restraint systems, which are part of PFPE, should be given priority where possible.
- A suitable rescue concept that enables the quick and safe rescue of caught persons shall be created.
- Any equipment that may be required to implement the rescue concept shall be kept to hand at the point of use.
- Information about the handling of PFPE and the rescue concept shall be communicated to insured individuals through appropriate training and instruction methods including exercises.
- When selecting anchor devices, the load-bearing capacity of the construction is one element that shall be considered. Anchor devices shall be used according to their intended use. The manufacturer's directions for use shall be observed.

Requirements for suitable PFPE can be found in DGUV Rule 112-198 governing the use of personal fall protection equipment.

Suitable anchor devices are e.g. those that satisfy the requirements set out in DIN 4426:2017-01 "Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction".

In the context of § 3 (1) DGUV Regulation 38 "Construction work", "authorised and competent supervisors" are persons that also have specialist knowledge about the use of PFPE.

9.5 DGUV Regulation 38 § 9 section 5

If the unique nature and progress of the activity and the specific conditions at the workplace rule out the previously mentioned protective measures, the employer and the insured individuals can only forgo the use of personal fall protection equipment (PFPE)on a case-by-case basis when:

- *The work is carried out by insured individuals with the relevant professional qualifications and suitable physical characteristics,*
- *The employer has provided special instruction and training for this justified exceptional case and*
- *The falling edge is clearly identifiable for the insured individuals.*

This only applies to workplaces in accordance with § 2 (7) DGUV Regulation 38 “Construction work”.

It is only permissible to forgo PFPE after all other possible measures to protect against falls from height have been assessed for the relevant individual case and are not able to be used in these exceptions, with specific justification provided. The specific reasons shall be documented by the employer in the risk assessment for the relevant individual case. It is recommended to retain proof of the special instruction and training, including the training content, along with the signatures of those that have received instruction at the site of the construction work.

10 Securing of openings and depressions

DGUV Regulation 38
§ 10

The employer shall ensure that openings in floors, ceilings and roof surfaces along with depressions are secured through protective equipment or through covers that prevent people from falling off, falling in or stepping inside. Technical fall restraint systems can also be used, though these should be given lower priority. Covers shall be protected against unintentional movement.

Openings in floors, ceiling and roof surfaces include e.g. ceiling breakthroughs, installation shafts, stair openings, inspection shafts, road gullies and light shafts.

Generally, openings are
- openings with straight borders where one edge is ≤ 3.00 m long, or
- openings with an area of ≤ 9 m^2.

Openings in floors, ceilings and roof surfaces along with depressions are properly secured when they are
- bordered by railings, or
- when they are accessible and covered with an immovable cover, or
- filled with load-bearing material.

Skylight domes and arcade rooflights should be treated like openings when they are not fall-through proof.

Though they should be viewed as a lower priority option, technical fall restraint systems can be used to catch falling persons when protective equipment against falls or covers cannot be used for technical reasons or construction-related reasons. This is the case, for example, when

- working directly on the opening or depression is necessary and equipment to protect against falls (fall protection devices) would make it impossible to perform this work or
- fall protection devices could not be attached to the falling edge due to the insufficient load-bearing capacity of the construction.
- personal fall protective equipment (PFPE) can be used subordinated to technical fall restraint systems (§ 9 (4) DGUV Regulation 38 “Construction work”).

11 Falling objects

11.1 DGUV Regulation 38 § 11 section 1

The employer shall ensure that workplaces and traffic routes at which there is a risk from falling objects are equipped with devices that prevents persons from being injured by falling objects or prevents them from entering the danger zones.

Protection against objects and masses that fall of, topple over, slip off or roll off is provided, for example, when there are sufficiently load-bearing covers, scaffolding decks, retaining walls, grates, safety nets with a mesh size of max. 0.02 m or protective roofs over the lower workplaces and traffic routes. Small items and tools shall be carried and stored in suitable containers. When in use, tools shall be secured against falling down where necessary.

Hoppers used for the filling of material that are positioned above workplaces and traffic routes shall be set up in such a way that it is not possible for persons to be hit by the material.

Free edge areas of e.g. storey ceilings, roof surfaces, scaffolds and supporting structures as well as the upper edges of excavations, trenches, shafts and slopes shall be kept free from loose objects in order to minimise the risk of falling objects.

The upper edge of the trench lining shall protrude at least 0.05 m above the ground surface at a depth of up to 2.00 m and at least 0.10 m above the ground at a depth of more than 2.00 m.

When using load lifting devices, lifting slings and load lifting attachments that prevent the falling of the load or of parts shall be used, e.g. through the use of positive holding load lifting attachments.

For information on protection against falling objects, see also DGUV Informative Publication 201-055 governing construction of fireproof structures, towers and chimneys.

11.2 DGUV Regulation 38 § 11 section 2

Construction work shall not be carried out simultaneously in two areas where one area is situated above the other unless the employer has ensured that the lower workplaces and traffic routes are protected against objects and masses that may fall off, topple over, slip off or roll off. The employer shall ensure that this protective equipment is dimensioned appropriately based on the fall height and the falling weight.

Protective equipment is dimensioned appropriately when e.g. it complies with the requirements set out in DIN 4420-1:2004-03 “Service and working scaffolds – Part 1: Service scaffolds – Performance requirements, general design, structural design” or DIN EN 12811-4:2014-03 “Temporary works equipment – Part 4: Protection fans for scaffolds”. See also DGUV Informative Publication 201-055 governing construction of fireproof structures, towers and chimneys.

Protection in accordance with § 11 (2) DGUV Regulation 38 “Construction work” in the case of two scaffolding level with one directly above the other is only required when there is a risk to insured individuals due to the possibility of objects or masses falling, toppling over, slipping off or rolling off (e.g. bricks, hand-held machinery, broken material).

§ 11 (2) DGUV Regulation 38 “Construction work” does not apply for the fitting and installation of a large component in the space between the scaffold and the facade when this is necessary for constructional reasons.

11.3 DGUV Regulation 38 § 11 section 3

Objects and masses shall only be dropped when the employer has taken effective measures that prevent people from being hit by falling objects and masses.

In particular, enclosed chutes down to the delivery point or barriers preventing access to the danger zone shall be present.

Barriers preventing access to the danger zone can be provided in the form of a closed site fence, chains or ropes in conjunction with the necessary marking (see Figure 4 for an example).

Fig. 4
Example of necessary marking: Safety marking D-P006 “No access for unauthorised persons”

The use of a flagman can also be an effective method for securing the danger area. This measure is only effective when the danger area is defined and identifiable.

In this case, the flagman cannot be situated in the danger zone and cannot perform another activity while performing their role as a lookout.

12 Administrative offences

DGUV Regulation 38
§ 12

An administrative offence in the context of § 209 (1) clause 1 no. 1 of the Seventh Book of the German Social Code (SGB VII) is deemed to have been committed by any person who intentionally or negligently violates the provisions of

- *§ 3 section 1 clause 1, sections 2, 3, 5,*
- *§ 4,*
- *§ 5 sections 1, 2, section 3 clause 1,*
- *§ 6 section 1 clause 1, sections 2, 3, 4,*
- *§ 7 section 2,*
- *§ 8 sections 2 to 4, section 5 clause 1, section 6, section 7 clause 3, clause 8, clause 9,*
- *§ 9 sections 2, 3, section 4 clause 1, clause 4,*
- *§ 10,*
- *§ 11 sections 1, 2*

or

- *§ 11 section 3 clause 1.*

No further explanatory information is given in relation to § 12 DGUV Regulation 38 “Construction work”.

13 Entry into force

No further explanatory information is given in relation to § 13 DGUV Regulation 38 “Construction work”.

Annex for translated version – Bibliography

1 Acts, ordinances, technical rules

Sources:
Book trade and internet, e.g.
www.gesetze-im-internet.de or www.baua.de

- Social Code Book VII – German Social Accident Insurance (Siebtes Buch Sozialgesetzbuch – SGB VII – Gesetzliche Unfallversicherung)
- Occupational Safety and Health Act (ArbSchG)
- Ordinance on Industrial Safety and Health (BetrSichV) with associated Technical Rules for Operational Safety (TRBS)
  - TRBS 2111-1 (governing measures to protect against risks when using mobile work equipment)
  - TRBS 2121-4 (technical rule governing lifting people with work equipment that is not intended for this purpose)
- Ordinance on Workplaces (ArbStättV) with associated Technical Rules for Operational Safety (ASR)
  - ASR A1.5/1.2 (governing flooring)
  - ASR A3.4 (governing lighting)
  - ASR A5.2 (governing requirements of workplaces and traffic routes on construction sites that border public roads)
- German Road Traffic Regulations (StVO)

2 Regulations, rules and informative documents concerning occupational health and safety

Sources:
Available from your accident insurance institution and at
www.dguv.de/publikationen

Accident prevention regulations

- DGUV Regulation 1 “Principles of Prevention”
  (DGUV Vorschrift 1 „Grundsätze der Prävention“)
- DGUV Regulation 3/4 “Electrical installations and equipment”
  (DGUV Vorschrift 3/4 „Elektrische Anlagen und Betriebsmittel“)
- DGUV Regulation governing construction work
  (DGUV Vorschrift 38 „Bauarbeiten“)
- DGUV Regulation governing work in the area of rail tracks
  (DGUV Vorschrift 77/78 „Arbeiten im Bereich von Gleisen“)

DGUV Rules

- DGUV Rule governing principles of prevention
  (DGUV Regel 100-001 „Grundsätze der Prävention”)
- DGUV Rule governing the operation of work equipment
  (DGUV Regel 100-500/100-501 „Betreiben von Arbeitsmitteln“)
- DGUV Rule governing contaminated areas
  (DGUV Regel 101-004 „Kontaminierte Bereiche“)
- DGUV Rule governing work in enclosed spaces of waste water treatment plants (DGUV Regel 103-003/103-004 „Arbeiten in umschlossenen Räumen von abwassertechnischen Anlagen“)
- DGUV Rule governing electromagnetic fields
  (DGUV Regel 103-013/103-014 „Elektromagnetische Felder“)
- DGUV Rule governing the use of personal fall protection equipment
  (DGUV Regel 112-198 „Benutzung von persönlichen Schutzausrüstungen gegen Absturz“)

DGUV Informative publications

- DGUV Information governing the use of side protection and side protection systems as well as edge protection as protective equipment during construction works (DGUV Information 201-023 „Einsatz von Seitenschutz und Seitenschutzsystemen sowie Randsicherungen als Schutzvorrichtungen bei Bauarbeiten“)
- DGUV Information governing instructions for risk assessment and definition of protective measures during explosive ordinance clearance (DGUV Information 201-027 „Handlungsanleitung zur Gefährdungsbeurteilung und Festlegung von Schutzmaßnahmen bei der Kampfmittelräumung“)
- DGUV Information governing pipeline construction work (DGUV Information 201-052 „Rohrleitungsbauarbeiten“)
- DGUV Information governing roof, carpentry and timber construction work (DGUV Information 201-054 „Dach-, Zimmer- und Holzbauarbeiten“)
- DGUV Information governing construction of fireproof structures, towers and chimneys (DGUV Information 201-055 „Feuerfest-, Turm- und Schornsteinbau“)
- DGUV Information governing protective measures during excavation work in the vicinity of underground cables and pipelines (DGUV Information 203-017 „Schutzmaßnahmen bei Erdarbeiten in der Nähe erdverlegter Kabel und Rohrleitungen“)
- DGUV Information governing work of overhead contact lines (DGUV Information 203-019 „Arbeiten an Fahrleitungsanlagen“)
- DGUV Information governing natural and artificial lighting of workplaces (DGUV Information 215-210 „Natürliche und künstliche Beleuchtung von Arbeitsstätten“)

3 Standards/VDE specifications

Sources:
Beuth-Verlag GmbH, Burggrafenstrasse 6, 10787 Berlin, Germany
VDE-Verlag, Bismarckstrasse 33, 10625 Berlin, Germany

- DIN 4084:2009-01 “Soil – Calculation of embankment failure and overall stability of retaining structures”
- DIN 4123:2013-04 “Excavations, foundations and underpinnings in the area of existing buildings”
- DIN 4124:2012-01 “Excavations and trenches – Slopes, planking and strutting breadths of working spaces”.
- DIN 4420-1:2004-03 “Service and working scaffolds – Part 1: Service scaffolds – Performance requirements, general design, structural design”
- DIN 4426:2017-01 “Equipment for building maintenance – Safety requirements for workplaces and accesses – Design and construction”
- DIN 18160-5:2016-04 “Chimneys – Part 5: Appliances for chimney-sweep work – Requirements, planning and construction”
- DIN EN 1004:2005-03 “Mobile access and working towers”
- DIN EN 1495:2009-12 “Lifting platforms – Mast climbing work platforms”
- DIN EN 1610:2015-12 “Construction and testing of drains and sewers”
- DIN EN 1914:2016-12 “Inland navigation vessels – Work boats, ship’s boats and lifeboats”
- DIN EN 12811-1:2004-03 “Temporary works equipment – Part 1: Scaffolds – Performance requirements and general design”
- DIN EN 12812:2018-12 “Falsework”
- DIN EN 12951:2005-02 “Prefabricated accessories for roofing – Permanently fixed roof ladders”
- DIN EN 13374:2019-06 “Temporary edge protection systems – Product specification – Test methods”
- DIN EN 14144:2003-08 “Lifebuoys – Requirements, tests”

- DIN EN 16704-1:2017-11 “Railway applications – Track – Safety protection on the track during work – Part 1: Railway risks and common principles for protection of fixed and mobile work sites”
- DIN EN ISO 12402-2:2017-12 “Personal flotation devices — Part 2: Lifejackets, performance level 275 — Safety requirements”
- DIN EN ISO 12402-3:2017-12 “Personal flotation devices — Part 3: Lifejackets, performance level 150 — Safety requirements”
- DIN VDE 0105-100:2015-10 “Operation of electrical installations – Part 100: General requirements”
- DIN VDE 0105-103:2014-10 “Operation of electrical installations – Part 103: Particular requirements for railways”

4 Further Information

Sources:
www.bgbau.de

Test principle GS-BAU-18 (governing principles for the testing and certification of fall-through protection of components during construction or maintenance work)

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