



RINGSCAFF

MODULAR SCAFFOLDING

INSTRUCTIONS FOR
ASSEMBLY AND USE



RINGSCAFF





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1 INTRODUCTION

The RINGSCAFF system by Scafom-rux is a modular scaffolding system that combines the assembly speed of a system scaffolding with the flexibility of a traditional scaffolding system, resulting in the following advantages:



SAFETY

TIME SAVING

QUALITY

The RINGSCAFF system consists of modular components such as vertical standards, horizontal tubular ledgers and intermediate ledgers as well as vertical diagonals which can be connected in various positions with a fixed perforated ring. All modular components have been developed and tested in accordance with European standards.

EN12810: Façade scaffolds made of prefabricated components -
Part 1: Product specifications

EN12810: Facade scaffolds made of prefabricated components –
Part 2: Particular calculation procedures and verification

EN12811: Temporary structures for buildings -
Part 1: Working scaffolds - performance requirements, design, construction
and calculation

EN12811: Temporary structures for buildings - Part 2: Information on materials

EN12811: Temporary structures for buildings - Part 3: Tests on load-bearing capability

This system can also be used to erect safe working platforms for all load classes from 1 to 6 – up to 600 kg/m² – in accordance with EN12811.

To protect the system against corrosion and to ensure a long service life, all components have been hot-galvanized as per EN ISO 1461 or equivalent criteria.

The RINGSCAFF system is used all over the world and is approved for use in many different countries. In Europe it has official approval from the German Institute for Building Technology: DIBT (German institute), AFNOR (French institute), RISE (Swedish institute) and AENOR (Spanish institute).

Moreover, in addition, the system, its components and parts have been tested, verified and registered according to various other standards such as AS/NZS1576.1 and AS/NZS1576.3 for Australia and New Zealand. Other product certificates, see next page.

This manual has been prepared for persons who assemble and work with the RINGSCAFF system. It serves as an aid for the safe and efficient erection of the standard, basic scaffold configurations. Please contact your technical service department or your dealer for further information on non-standard use or more complex structures.

This manual describes various components, including their use and safe working loads. It mainly contains instructions pertaining to façade scaffolds with nominal widths of 0.732 m (2 steel decks), 1.088 m (3 steel decks) and 1.400 m (4 steel decks). The instructions in this manual can also be used for guidance on the use of “metric” bay lengths and widths.



(D) Z-8.22-869



(UK)



(F)



(S)



(E)



(AS/NZS)

1.1 PRELIMINARY CONSIDERATIONS

The erection, modification and dismantling of the RINGSCAFF scaffolding system should only be carried out by competent persons who know the system or under such person’s supervision.

Damaged components may not be used to erect a system scaffolding. During the erection of the scaffold, a visual inspection of the condition of the parts needs to be carried out. If parts look worn or damaged, they should not be used but returned to the depot for repair or replacement.

The information in this manual refers specifically to the component elements of the modular scaffolding system “RINGSCAFF 2005”, the production of which started in 2005.

In recent years there have been considerable improvements in the scaffolding industry, meaning e.g. that a scaffold structure may contain components from different origins/manufacturers. The Scafom-rux company follows the principle that this is only permissible when each component used is a part of a certified scaffolding system. Further, mixing approvals are available in some cases. They fundamentally describe which components may be used. This applies both to “original approvals” as well as for “mixing approvals”. Currently, there are no basic legal uncertainties regarding mixing approvals. See paragraph 10 for rules and requirements regarding mixing with scaffolding components.

The stability of the scaffolding at the construction site is ensured when the scaffold builder follows the regulations pursuant to the scaffold approval certification and the associated requirements contained in these Product manual. The risk of a “site closure” or liability in case of accidents exists for both unmixed as well as mixed scaffolds.

All scaffold structures on the construction site are to be erected in accordance with valid technical requirements, approvals and in line with the prevailing Industrial Safety Regulation.

1.2 FUNDAMENTAL COMMENTS

- 1.2.1 This specific designation refers to the standard configurations described later in this manual, representing the basis for the RINGSCAFF approval Z-8.22-869. Deviations from these standard configurations are possible and permissible when – in a specific case – the stability and suitability for use pursuant to the technical regulations and/or building codes and the data and instructions contained in this manual have been verified in writing.
- 1.2.2 Stability and functional suitability can also be verified on the basis of the planning tables contained in this manual, which have been prepared in accordance with the technical building regulations.
- 1.2.3 Deviations from the alternatives detailed in this manual are possible if the safety of the erection and dismantling procedures (e.g. fall protection, stability in intermediate stages) has been tested and proven in individual cases.
- 1.2.4 Work in connection with the erection, modification and dismantling of scaffolds may only be carried out by qualified, trained and suitable scaffold erectors with relevant approval and under the supervision of a qualified person (supervisor) on the basis of a project-related risk assessment and risk analysis (and the assembly instructions).
- 1.2.5 The supervisor and the scaffolders need to be able to access this manual and the product approval on the construction site during erection and dismantling of RINGSCAFF scaffolds.
- 1.2.6 Scaffolding may only be erected or dismantled up to wind force 5 on the Beaufort scale. In stronger winds, the scaffold must be secured immediately, and clearance is recommended. **Note:** when wind forces above 6 prevail, simple walking movement through the wind is only possible with noticeable restrictions and hindrances.
- 1.2.7 For the assembly of the scaffold on site, the scaffolding company will – depending on the complexity – need to provide a plan as well as a drawing and have it prepared by a qualified person. For this purpose, this manual can be used supplemented with details for each scaffolding version.
- 1.2.8 Unfinished scaffolds or scaffold areas must be marked with the prohibition sign “Access prohibited to unauthorized persons”. Access to these hazardous zones must be clearly cordoned off.
- 1.2.9 After completion, the respective scaffolders need to check the scaffold for proper assembly and safe function before it is handed over to the user. Inspection and verification will need to be carried out by a person qualified for this purpose - if necessary by the project supervisor or site manager.
- 1.2.10 After completion and inspection, the scaffolding has to be marked for handover. This scaffold marking (e.g. with the Scafom-rux Scaff-Tag) is to contain information about the scaffolding company, type, load and width class. General instructions and information should also be included. The tag is attached to

the scaffolding in a clearly visible position e.g. next to the access points.

- 1.2.11 Once the scaffolding has been checked by the scaffolding erector to ensure that it is in proper condition, it can be handed over to the user. It is recommended to carry out the handover and final inspection together with the user and to record this in a checklist or report. The results of the inspection and handover are to be documented in the checklist form or report and are to be kept for a reasonable period of time, usually three months longer than the standing time of the scaffolding.
- 1.2.12 This Product manual has to be available to designers throughout the entire service life of the scaffolding.

1.3 PRELIMINARY REMARKS BEFORE SCAFFOLD ASSEMBLY

- 1.3.1 These Product manual provides the information of proper structural design. In addition, the Instructions for Assembly and Use apply to the erection, modification and dismantling of the RINGSCAFF modular scaffolding system as well as to its use, exclusively by professionals.
- 1.3.2 The RINGSCAFF scaffolding system has, among others, the German approval DIBt No. Z-8.22-869 (general and official approval).
- 1.3.3 The standard configurations described in this manual correspond to the approval No. Z-8.22-869. They are detailed in Appendix I of this manual; additional information can be derived from the German approval mentioned above. Please contact your technical service department or your dealer for further information on non-standard use or more complex structures.
- 1.3.4 The technical solutions described in this manual shall not be deemed as excluding any other proven solutions for which at least adequate evidence has been provided that they are equivalent alternatives.
- 1.3.5 In addition to the provisions in this manual and the general regulations, both the scaffolders and the users of the scaffolds are obliged to follow the general, valid rules and requirements regarding scaffolds and safety, such as e.g.:
- General type approval - German Institute for Building Technology DIBt No. Z-8.22-869.
 - EN12810: Façade scaffolds made of prefabricated components
 - EN 12811: Temporary structures for buildings
 - DIN 4420-1: Working and protective scaffolds - Part 1: Protective scaffolds
 - (Inter)national provisions on labour law and occupational health and safety
 - Industrial safety regulations for the industrial sector in their latest version
 - Accident prevention regulations
 - Technical regulations on operational safety
 - Guidelines and technical regulations for working and protective scaffolds, birdcage scaffolds and free-standing scaffolds
 - Guidelines for the erection and dismantling of scaffolding
- 1.3.6 These instructions are only valid when original RINGSCAFF components are used; marked in accordance with approval Z-8.22-869 and the parts list in Appendix I.

- 1.3.7 The RINGSCAFF components may not be changed or modified.
- 1.3.8 Before the components are fitted, they must be checked by the scaffolder / scaffold supplier. Damaged components may not be used to assemble a system scaffold. A visual inspection of the condition of the parts is to be carried out during the erection of the scaffold. If parts look worn or damaged, they should not be used but returned to the depot for repair or replacement.
- 1.3.9 The employers of RINGSCAFF scaffolding workers are obliged to carry out inspections of these scaffolding activities and work at height. Workers who do not meet the screening requirements for work at height (e.g. hazardous conditions) may not be permitted to access the scaffold.
- 1.3.10 The publisher of this manual is Scafom-rux Holding and its subsidiaries; email: info@scafom-rux.com.

Subject to technical modifications and revision.

In the event of any open issues or missing instructions, the current national rules and regulations always need to be consulted.

1.4 WARNINGS BEFORE ASSEMBLY AND USE

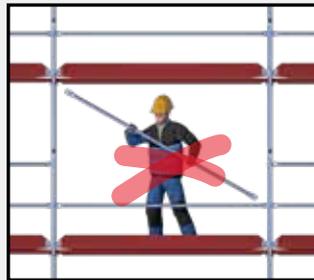


WARNINGS

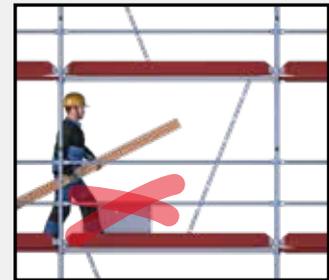
- **Unauthorised access and use of the scaffolding is forbidden.**
- **Any defects or deficiencies are to be reported to the scaffold builder immediately and the scaffold is to be cordoned off and made inaccessible.**



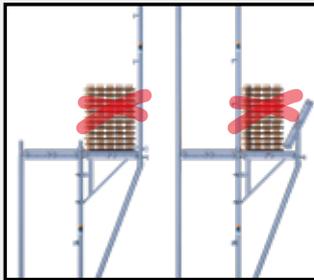
Pay careful attention to the Safety Instructions



Any modifications to the scaffolding may only be carried out by the scaffold builder



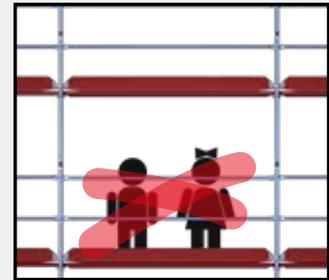
Keep hatches in the ascent decks closed



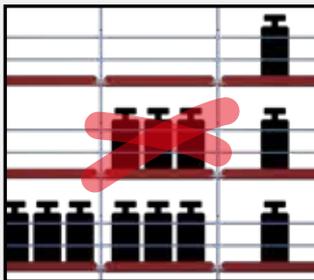
Do not store material on safety catch scaffolds or protective roofs



Workplaces may not be located above one another at any one time



Children may not access the scaffolding at any time



Do not overload scaffold decks



Pay careful attention to any possible risk of falling between the scaffold and the building



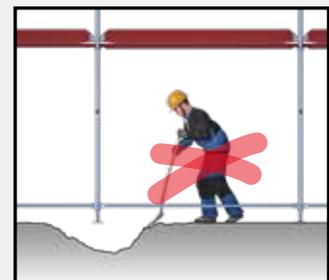
Only use fitted ladders or stairways for ascent and descent



When material is stored, make sure there is still sufficient space left to move along the decking



Do not jump on decks



Do not endanger the stability of the scaffolding by excavating or digging around the base

2 THE RINGSCAFF MODULAR CONNECTION

The connection of the various RINGSCAFF components to the standards is achieved with a specially designed perforated ring that is welded to the vertical standards at 0.50 m intervals to each other. The wedge head connectors on the RINGSCAFF tubular ledgers enable simple attachment to the perforated ring.

The flat perforated ring has four narrow holes and four large holes, see Figure 2.1.

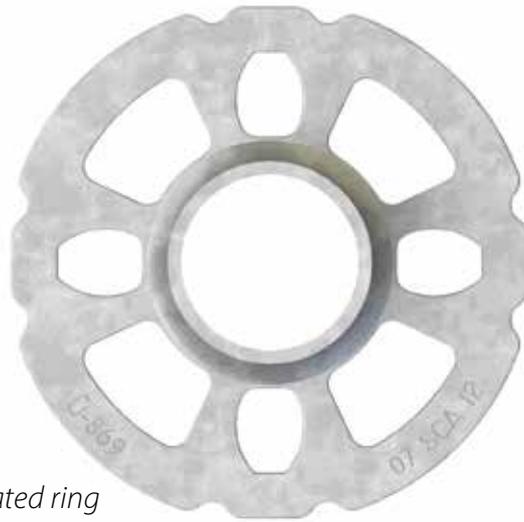


Figure 2.1: RINGSCAFF perforated ring

The four narrow holes position the tubular ledgers automatically and affix them at right angles immediately after being secured by means of the wedge. The four large holes allow the tubular ledgers and diagonals to be aligned at the required angle, as shown in Figure 2.2.

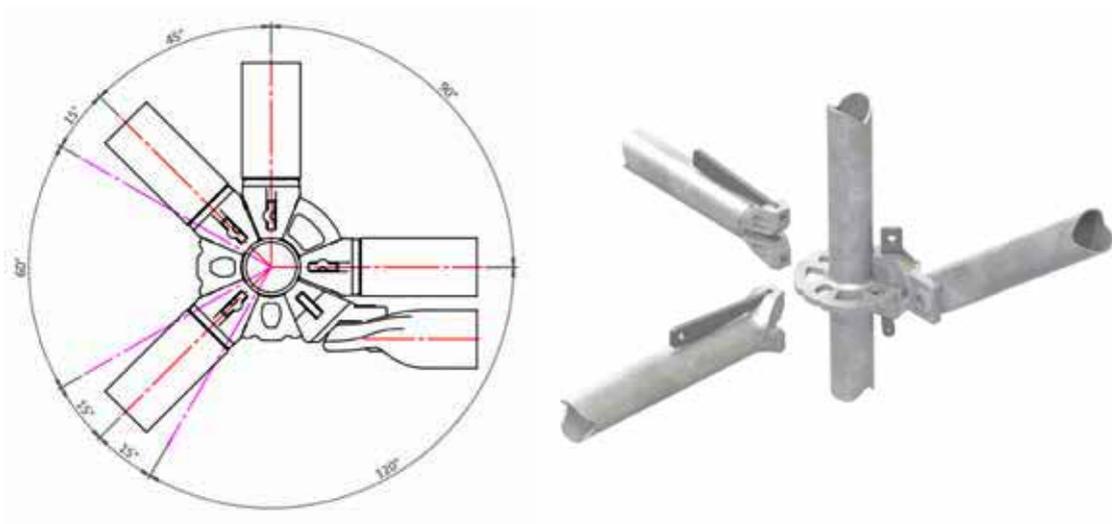


Figure 2.2: Plan view of RINGSCAFF node

The connection is made by (see figures 2.3):

- a) Sliding the ledger head over the flat perforated ring
- b) Inserting the wedge into one of the holes
- c) Securing the wedge with a blow with a metal hammer (500 g) until the impact rebounds



Figure 2.3a



Figure 2.3b



Figure 2.3 c

The connection has thereby been transformed into a force-transmitting, rigid one that can immediately absorb loads in any direction, see Figure 2.4.

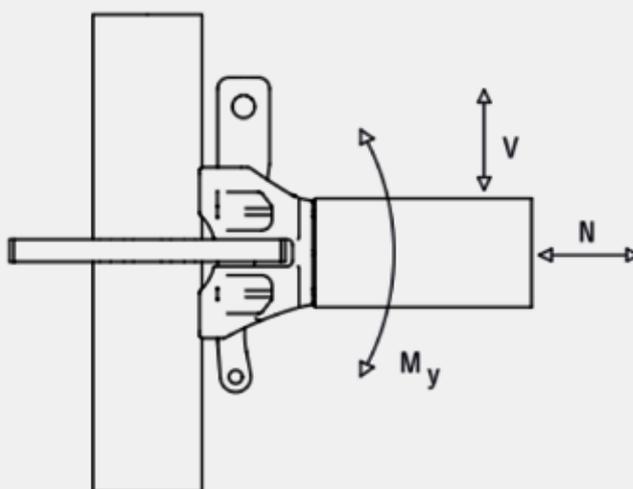


Figure 2.4: Fixed node

3 THE RINGSCAFF NODE – DESIGNATION – PRODUCT MARKING

The strength, stiffness and stability of the scaffold structure is determined by the rigidity of the RINGSCAFF node and the load-bearing capacity of several RINGSCAFF components.

In the product manual the stiffness of the node as well as the load-bearing capacity of supporting components such as the RINGSCAFF base jack, the standards, tubular ledgers, diagonals and steel decks are described in more detail. These loads are calculated for the “RINGSCAFF 2005 system” and have been determined by means of tests and static calculations (in accordance with e.g. AS/NZS1576.1, AS/NZS1576.3, EN12810 and EN12811).

3.1 RINGSCAFF designation of the system

The RINGSCAFF scaffold system and its components can be applied to build scaffolds that are classified to any of the classes as indicated in EN12810-1, table 1.

For the purpose of this product manual refer is made to the German product approval Z-8.22-869, in which the following basic designation has been assessed and confirmed:

Scaffold EN 12810 - 3D - SW06/307 - H2 - A – LA.

3.2 RINGSCAFF marking – labelling of the components

The RINGSCAFF scaffold components are easily recognisable and permanently marked with among others:

- the capital letter “Ü”,
- at least the abbreviated approval number “869”,
- the mark of the respective manufacturing plant and
- the last two digits of the year of manufacture
(see also Annex B, page 62 of Z-8.22-869).

Labelling is carried according to this listing and as prescribed in EN12810-1, because the requirements according to section 2.3 of the German technical approval Z-8.22-869 are fulfilled;

- a declaration of conformity is available of the manufacturing plant, on the basis of a factory production control and a certificate of conformity of a certification body recognised for this purpose as well as regular external surveillance including product testing of the scaffold components and their parts by a recognised surveillance body in accordance with the given provisions.
- A factory production control is established and carried out in each manufacturing plant.

Illustrations of marking & labelling of RINGSCAFF some main components on next pages:

Illustrations of marking & labelling of RINGSCAFF components are:



Figure 3.3a: RINGSCAFF Standard

[01] On the tube: SCA Location Scafom
 AE Aenor
 NF 20RSP: Norme français
 18 Year
 16 Week
 05 Batch

[02] On the ring: Ü 869
 12 Batch
 SCY Production plant Scafom
 17 Year



Figure 3.3b: RINGSCAFF Diagonal

[01] On the tube: SCA Location Scafom
 AE Aenor
 NF 20RSP: Norme français
 18 Year
 16 Week
 05 Batch

[02] On the wedge: 18 Year
 SCA Location Scafom
 02 Week
 u869 Certification

[03] On the ledger end: 16 Year
 01 Week

RINGSCAFF

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Figure 3.3c: RINGSCAFF Ledger

[01] On the tube: SCA Location Scafom
 AE Aenor
 NF 20RSP: Norme français
 18 Year
 16 Week
 05 Batch

[02] On the wedge: 18 Year
 SCA Location Scafom
 02 Week
 u869 Certification

[03] On the ledger end: 16 Year
 04 Week



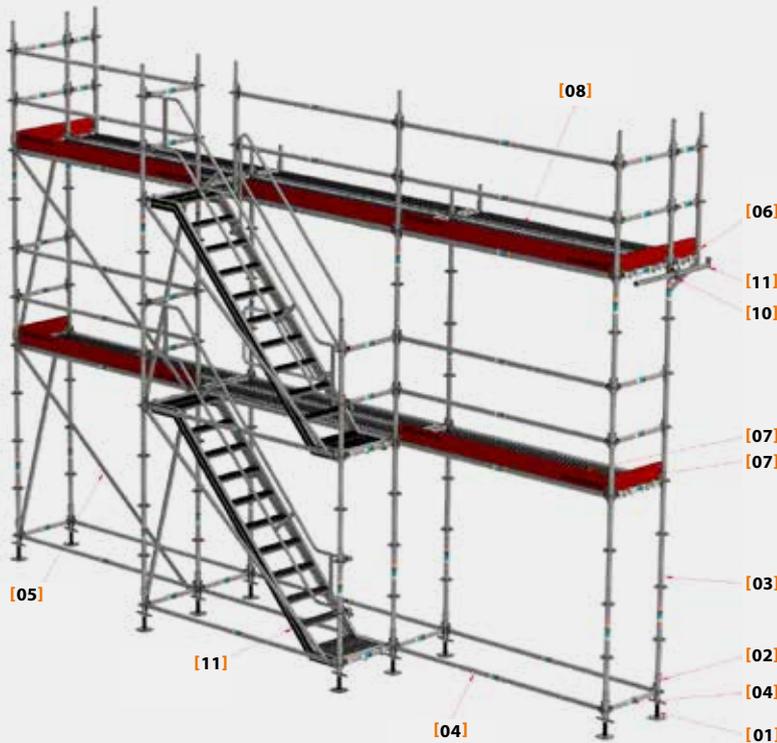
Figure 3.3d: RINGSCAFF Base Jack

[01] On the ring: 18 Year
 01 Week
 U924 Certification

[02] On the nut: B11 Model

[03] On the nut: 17 Year
 T Production location

4 RINGSCAFF BASIC COMPONENTS



RINGSCAFF offers a complete scaffolding solution with the following main components:

- [01]** Base jack 4.1
- [02]** Standard lead-off adapter 4.2
- [03]** Standard 4.3
- [04]** Tubular ledger/Intermediate ledger 4.4
- [05]** Vertical stabilisation 4.5
- [06]** Side bracket 4.6
- [07]** Side protection 4.7
- [08]** Platform 4.8
- [09]** Anchor 4.9
- [10]** Accessories 4.10
- [11]** Access 4.11

Figure 4.1: Example of a scaffold structure

A list of basic components and ancillary parts is given in Appendix 11; underneath the overview and data of the main components and parts to build the standard configurations of the RINGSCAFF scaffolds. For technical data and load characteristics, see Product manual. (Load bearing) Data, given in the tables in par. 4, are Safe Working Loads, considering partial load factor $YF = 1,5$.

4.1 Base jack

The adjustable, threaded base jack is used to level-off the scaffolding standards at the same height. (other base jack lengths on request).



Product number	Description	Weight (kg)
E02RS0005	Base jack 0.60 m	4.0
E02RS0002	Base jack 0.78m	4.8

4.2 Standard base collar

The standard lead-off adapter with a simple perforated ring is placed over the base jack and enables the erection of a simple base structure from the scaffolding.



Product number	Description	Weight (kg)
E04RS0002	Standard lead-off adapter 0,26 m	1.5
Optional	Standard lead-off adapter 0.43m	2.5

4.3 Standard

The vertical standard carries the loads from the scaffold down to the ground. The standard tube with an outer diameter of 48.3 mm has perforated rings at 0.5 m intervals, a press-fit tube connector at the top and drill holes at both ends.



Product number	Description	Weight (kg)
Optional	Standard with tube connector 0.5 m	3.0
E04RS0030	Standard with tube connector 1.0m	5.4
E04RS0055	Standard with tube connector 1.5m	7.7
E04RS0071	Standard with tube connector 2.0m	10.0
optional	Standard with tube connector 2.5m	12.4
E04RS0096	Standard with tube connector 3.0m	14.8
E04RS0107	Standard with tube connector 4.0m	20.2

To assess the exact load-bearing capacity of the standards, please contact your design engineering consultants.

The standards are manufactured with a pressed-in-tube connector. These standards may not be used for suspended structures. For suspended standards, please contact your local scaffolding supplier.

4.4 Tubular ledger / Intermediate ledger

The tubular ledger consists of a 48.3 mm diameter tube with wedge-shaped end pieces at both ends. The tubular ledger is used in various lengths as a support for steel decks or wooden scaffold planks or as a structural element. The tubular ledger is also used as a guardrail or knee rail for side protection.

The tubular ledger may also serve as an intermediate ledger, taking the form of a U-shaped tubular ledger



Product number	Description	Weight (kg)
E04RS0011	Tubular ledger 0.73 m	3.1
E04RS0033	Tubular ledger 1.09m	4.4
E04RS0047	Tubular ledger 1.40m	5.5
E04RS0058	Tubular ledger 1.57m	6.7
E04RS0074	Tubular ledger 2.07m	7.9
E04RS0086	Tubular ledger 2.57m	9.6
E04RS0099	Tubular ledger 3.07m	11.4



Product number	Description	Weight (kg)
E04RS0232	Double ledger 1.57 m	9.4
E04RS0233	Double ledger 2.07m	11.8
E04RS0234	Double ledger 2.57m	14.7
E04RS0235	Double ledger 3.07m	17.5

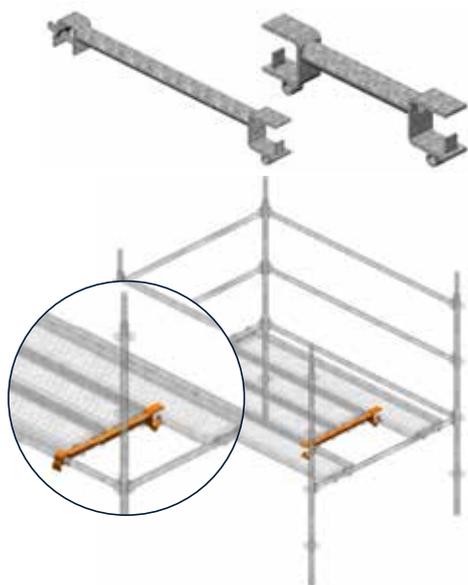


Product number	Description	Weight (kg)
E04RS0651	Reinforced ledger T 1.09 m	7.4
E04RS0653	Reinforced ledger T 1.40m	9.7

The intermediate ledger reduces the free space in a scaffold bay that needs to be covered with wooden scaffold planks. A wedge fixes the position of the intermediate ledger.



Product number	Description	Weight (kg)
E04RS0020	Intermediate ledger 0.73 m	3.6
E04RS0039	Intermediate ledger 1.09m	5.3
E04RS0053	Intermediate ledger 1.40m	6.4
E04RS0067	Intermediate ledger 1.57m	7.2
E04RS0202	Intermediate ledger 2.07m	8.3
E04RS0236	Intermediate ledger 2.57m	10.1
E04RS0237	Intermediate ledger 3.07m	12.1



Product number	Description	Weight (kg)
E04RS0363	Ledger-to-deck transom 1-board	2.8
E04RS0364	Ledger-to-deck transom 2-board	4.1

Product number	Description	Weight (kg)
E04RS0371	Deck-to-deck transom 1-board	4.4
E04RS0372	Deck-to-deck transom 2-board	5.5

4.5 Double wedgehead coupler

The double wedgehead coupler is used to connect 2 Ringscaff standards.



Product number	Description	Weight (kg)
E04RS1337	Double wedgehead coupler	1.1



4.6 Vertical diagonal braces

The vertical diagonal brace consists of a 48.3 mm diameter tube with wedge connectors at both ends. The vertical diagonal increases the rigidity of the scaffold structure.



Product number	Description	Weight (kg)
E04RS0017	Vertical diagonal 0.73 x 2.0 m	7.2
E04RS0018	Vertical diagonal 1.09 x 2.0 m	7.5
E04RS0051	Vertical diagonal 1.40 x 2.0 m	7.9
E04RS0065	Vertical diagonal 1.57 x 2.0 m	8.1
E04RS0077	Vertical diagonal 2.07 x 2.0 m	9.0
E04RS0092	Vertical diagonal 2.57 x 2.0 m	10.0
E04RS0102	Vertical diagonal 3.07 x 2.0 m	11.0

4.7 Side bracket

The side brackets can be used to enlarge the working platform. This extension can be made with either a single-deck bracket (0.39 m), a two-deck bracket (0.73 m) or a three-deck bracket (1.09 m).

Product number	Description	Weight (kg)
E04RS0543	Bracket 0.39 m (tube)	3.8
E04RS0018	Bracket 0.73m (tube)	6.8
E04RS0270	Bracket 1.09m (tube)	11.5



The RINGSCAFF side brackets are designed for a maximum load-bearing capacity of 1.5 kN/m² on the extended platform.

4.8 Side protection

The toe boards made of wood or steel limit each scaffolding level and prevent material from falling down.



Product number	Description	Weight (kg)
E04RS0016	Wooden toe board 0.73m	2.8
E04RS0037	Wooden toe board 1.09m	3.9
E04RS0054	Wooden toe board 1.40m	4.9
E04RS0064	Wooden toe board 1.57m	5.5
E04RS0076	Wooden toe board 2.07m	7.2
E04RS0091	Wooden toe board 2.57m	8.8
E04RS0101	Wooden toe board 3.07m	10.3



Product number	Description	Weight (kg)
E04RS0631	Steel toe board 0.73m	2.4
E04RS0632	Steel toe board 1.09m	3.4
E04RS0633	Steel toe board 1.40m	4.3
E04RS0634	Steel toe board 1.57m	4.7
E04RS0635	Steel toe board 2.07m	6.1
E04RS0636	Steel toe board 2.57m	7.5
E04RS0637	Steel toe board 3,07m	8.7

4.9 Platforms / Scaffold system decks

The steel decks are used to build platforms. They are made of light sheet steel with a non-slip surface. The steel decks are placed on the intermediate ledgers.

Various steel decks are available in widths of 0.32 m and 0.19 m for fitting on intermediate tubular ledgers or on U-shaped intermediate ledgers. The load-bearing capacity of the decks is determined by the classification 1 to 6 in accordance with EN 12811-1. The load-bearing capacities of these classes are:

Class	Load [in kN/m ²]
1	0.75
2	1.5
3	2.0
4	3.0
5	4.5
6	6.0



Product number	Description	Weight (kg)
E04RS1052	Steel deck 0.32 x 0.73 m	7.0
E04RS1053	Steel deck 0.32 x 1.09 m	9.1
E04RS1054	Steel deck 0.32 x 1.40 m	14.2
E04RS1055	Steel deck 0.32 x 1.57 m	12.3
E04RS1056	Steel deck 0.32 x 2.07 m	15.5
E04RS1057	Steel deck 0.32 x 2.57 m	18.5
E04RS1058	Steel deck 0.32 x 3.07 m	21.4



Product number	Description	Weight (kg)
E04RS0908	Steel deck 0.19 x 0.73 m	4.3
E04RS0909	Steel deck 0.19 x 1.09 m	5.8
E04RS0910	Steel deck 0.19 x 1.40 m	7.3
E04RS0911	Steel deck 0.19 x 1.57 m	8.0
E04RS0912	Steel deck 0.19 x 2.07 m	10.2
E04RS0913	Steel deck 0.19 x 2.57 m	12.3
E04RS0914	Steel deck 0.19 x 3.07 m	14.4

Note: The scaffolding system as it is applied and used can have some additional components, to expand the capabilities of the system, within the guidelines set forth in the manual. The load-bearing components with U-support (ledgers, transoms, brackets, platforms and scaffold boards, stair units) can be used in the same way as the same parts with a tube profile. On request, an addendum to this product manual is available, showing the technical data of the U-components.

4.10 Scaffold anchor

In order to obtain a stable construction, the façade scaffolding needs to be anchored to a building. Together with a connecting eyebolt on the building and the scaffold couplers, the anchors connect the scaffold to the building and transfer the horizontal loads from the scaffold to the building.



Product number	Description	Weight (kg)
E04AA0005	Anchoring tube 0.35 m	1.8
E04AA0006	Anchoring tube 0.90m	3.8
E04AA0004	Anchoring tube 1.00m	4.2
E04AA0007	Anchoring tube 1.50m	6.1
E04AA0029	Anchoring tube 1.60m	6.5
E04AA0030	Anchoring tube 2.00m	8.0
E04AA0046	Anchoring tube 2.40m	9.5

4.11 Accessories / Couplers and scaffold tubes

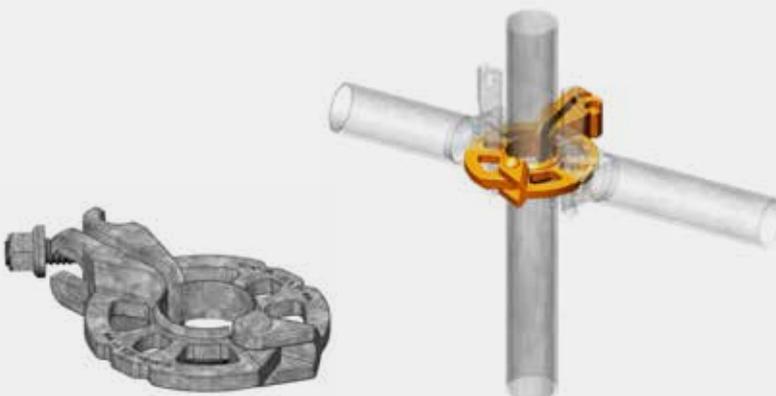
Couplers are used to connect two scaffold tubes (diameter 48.3 mm) e.g. to connect the anchoring tube to the vertical tube. Couplers can be Rectangular angle RA couplers or Swivel couplers, both with wedge or bolt-nut connection (as compliant to EN74-1).



Scaffold tubes can be used to connect – adopt – reinforce the RINGSCAFF scaffold structures, in combination with RA or Swivel couplers type EN74-1. Scaffold tubes should comply to EN39 or equivalent.

Product number	Description	Weight (kg)
Various	Tube lengths	3.60

Product number	Description	Weight (kg)
E04RS1032	Rosette coupler with bolt sw22 for rail	1.3



4.12 Access

Ladder frames are used for scaffolding with a low gradient or when access by workers with equipment is not required.

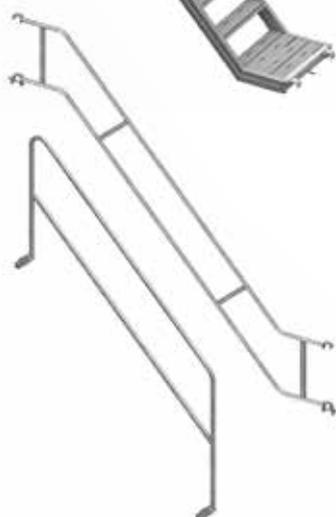


Product number	Description	Weight (kg)
E04RS0465	Ladder frame aluminium/plywood 0.61 x 2.57 m	21.0
E04RS0466	Ladder frame aluminium/plywood 0.61 x 3.07 m	24.5



Stairway access is recommended for ascent to higher platforms. The stairs are made of aluminium and can be easily handled by two persons.

Product number	Description	Weight (kg)
E04RS0571	Aluminium platform stairway 2.57 x 2.00 m	31.0

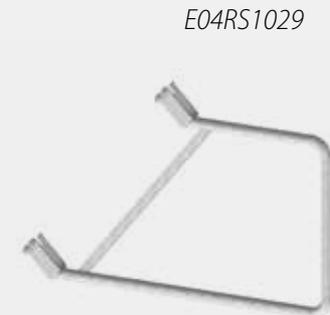
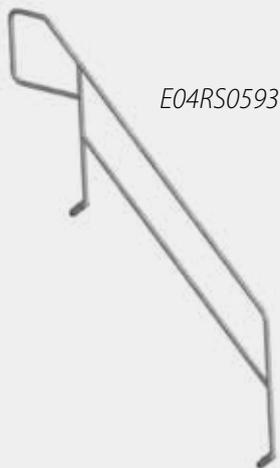


The outer and inner handrails guide you safely to the higher levels of the scaffolding. Both handrails are made of steel.

Product number	Description	Weight (kg)
E04RS0572	Outer handrail 2.57 x 2.00 m	13.8
E04RS0573	Inner handrail 2.57 x 2.00 m	10.9
E04RS0593	Inner handrail, extended	12.2



Product number	Description	Weight (kg)
E04RS0592	Railing holder	1.0
E04RS1029	Guardrail universal	5.7



4.13 Lattice girders

Lattice girders are used to carry heavy loads with a large span width or to erect a bridge structure within the scaffolding.



Product number	Description	Weight (kg)
E04RS0240	Lattice girder + tube connector 4.14 m	43.3
E04RS0241	Lattice girder + tube connector 5.14m	52.6
E04RS0242	Lattice girder + tube connector 6.14m	62.8

The intended load-bearing capacity of the lattice girders can only be achieved by reinforcing the top chord of the lattice girder every 1.2 m. See figure 4.2.



Product number	Description	Weight (kg)
E04RS0559	Lattice girder coupler	1.6

Figure 4.2 Reinforcement of two lattice girders

The full list of RINGSCAFF products on offer varies from region to region. Please contact your local distributor for a complete product list; in 11 Appendix 1 a short list of components is given, as available to complete standard configurations of the RINGSCAFF standard configuration scaffolds.

5 ASSEMBLY AND LOAD-BEARING CAPACITY OF WORKING PLATFORMS / SYSTEM DECKS

Working platforms consist of a platform out of steel decks or wooden planks and a side protection. This side protection consists of a principal guardrail, a knee rail and a toe board.



Figure 5.1: Side protection

According to the European standard for façade scaffolds (EN 12811-1), the following minimum widths are required for working platforms:

- Class W06: minimum width = 0.60 m, e.g. RINGSCAFF: 0.73m
- Class W09: minimum width = 0.90m, e.g. RINGSCAFF: 1.09m
- Class W12: minimum width = 1.20m, e.g. RINGSCAFF: 1.40m

In all cases, the free space available on scaffolds has to be at least 500 mm.

This section describes how working platforms are assembled with the standard RINGSCAFF steel decks and wooden planks together with intermediate ledgers.

The load-bearing capacity of a platform depends on how the load is transferred from the platform via the intermediate ledgers to the standards. It makes an important difference to the load-bearing capacity whether the platforms are fitted with steel decks or with wooden planks together with intermediate ledgers.

In all cases, the scaffold reference value has to be marked in accordance with the six load classes pursuant to Table 3 of EN12811-1:

Table 3 - Traffic loads in working areas (see also 6.2.2)

Load class	Evenly distributed load	Concentrated load in the range 500 mm x 500 mm	Concentrated load in the range 220 mm x 200 mm	Partial area load	
	q_1 kN/m ²	F_1 kN	F_2 kN	q_2 kN/m ²	Partial area factor a_p ¹
1	0.75	1.50	1.00
2	1.50	1.50	1.00
3	2.00	1.50	1.00
4	3.00	3.00	1.00	5.00	0.4
5	4.50	3.00	1.00	7.50	0.4
6	6.00	3.00	1.00	10.00	0.5

5.1 Steel decks

RINGSCAFF steel decks have a non-slip surface and are equipped with welded clamps at the head sections for intermediate ledgers. The decks have an anti-lift retainer at both ends, which needs to be attached during erection to prevent the steel deck from lifting unintentionally or due to wind load. See figure 5.2.

The steel decks may also be used on pedestrian protection and for roof edge safety scaffolds.



Figure 5.2: Securing the steel decks against lift

Standard steel decks are 0.32m or 0.19m wide. The following arrangements are possible for the various platform widths:

Arrangement of the steel decks							
Bay length (m)	0.73	1.09	1.40	1.57	2.07	2.57	3.07
No. decks:	2 x 0.32	3 x 0.32	4 x 0.32	4 x 0.32 1 x 0.19	6 x 0.32	7 x 0.32 1 x 0.19	9 x 0.32

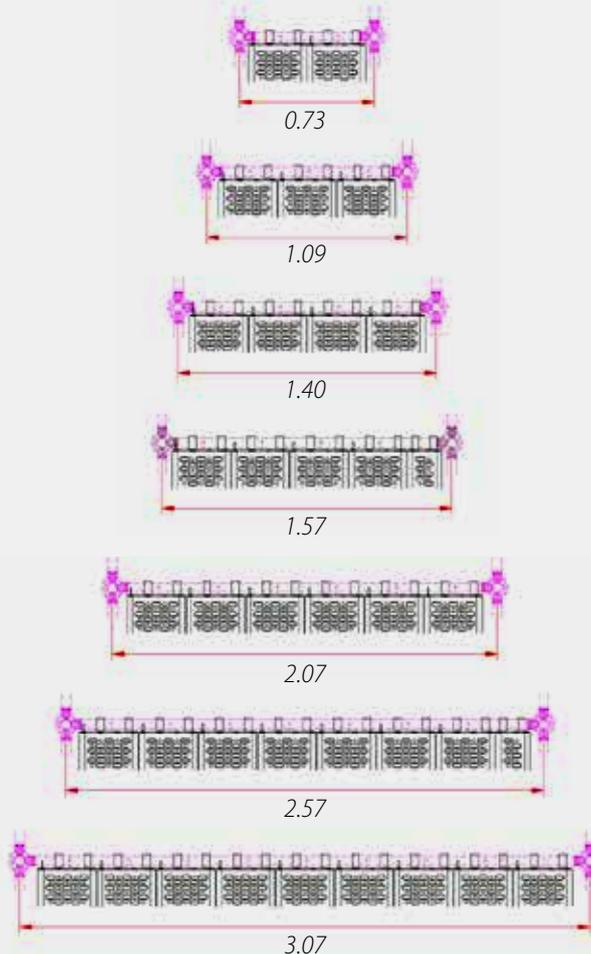


Figure 5.3: Arrangement of the steel decks



Load-bearing capacity of working platforms with steel decks

In the case of steel decks, the load is transferred from the working platform through the steel decks to the intermediate ledgers. This means that the load-bearing capacity is determined by the maximum load-bearing capacity of the steel deck or the maximum load-bearing capacity of the intermediate ledger or the supporting structure. There can essentially only be two different platform configurations for façade scaffold structures.

- A) single bay, like a tower
- B) Several bays, like a façade

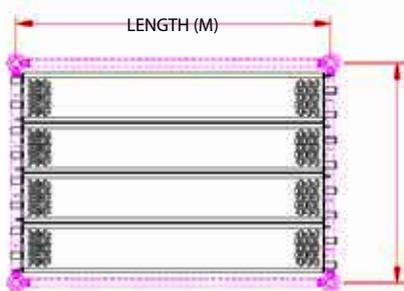


Figure 5.4: A) Single-bay structure

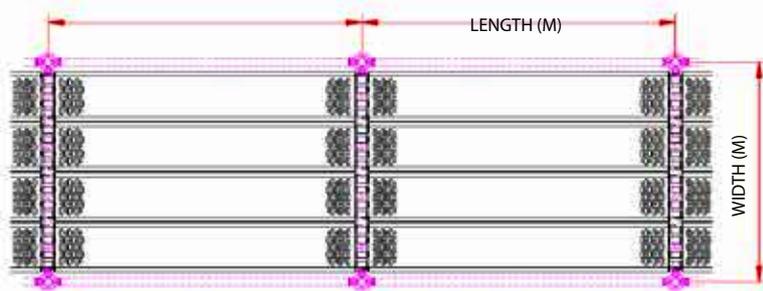


Figure 5.5: B) Multi-bay structure

In configuration A, the entire platform load is distributed evenly over two intermediate ledgers.

In configuration B, this load is distributed over only one intermediate ledger.

In the following table the maximum platform loads are indicated in accordance with the scaffold class as per EN 12811-1:

Assumption: individual intermediate tubular ledgers.

Permissible platform load for steel decks (configuration A: single-bay (kN/m ²))				
Bay width (m)	Bay length (m)			
-	1.57	2.07	2.57	3.07
0.73	6.0	6.0	4.5	3.0
1.09	6.0	6.0	4.5	3.0
1.40	6.0	6.0	4.5	3.0

Permissible platform load for steel decks (configuration B: multiple-bay (kN/m ²))				
Bay width (m)	Bay length (m)			
-	1.57	2.07	2.57	3.07
0.73	6.0	6.0	4.5	3.0
1.09	6.0	4.5	3.0	3.0
1.40	4.5	3.0	2.0	2.0

5.2 Wooden planks

The following needs to be observed whenever wooden-plank platforms are to be fitted:

- The quality of the wooden planks must be carefully checked; damaged planks may never be used!
- The wood quality of the planks has to comply with the relevant European standards
- Wooden planks must be arranged and fitted so that they cannot lift or slip away
- It is not permitted to have gaps in the platform that are wider than 25 mm
- The arrangement of two planks in a longitudinal direction has to be carried out in accordance with figure 5.6



Figure 5.6: Arrangement of the wooden planks

- Depending on their size, the planks need to be supported on intermediate ledgers in accordance with the following table:

Permissible support interval for wooden planks (m)						
Scaffold class	Plank width (cm)	Plank thickness				
		3.0 cm	3.5 cm	4.0 cm	4.5 cm	5.0 cm
1, 2, 3	20	1.25	1.50	1.75	2.25	2.50
	24 and 28	1.25	1.75	2.25	2.50	2.75
4	20	1.25	1.50	1.75	2.25	2.50
	24 and 28	1.25	1.75	2.00	2.25	2.50
5	20, 24, 28	1.25	1.25	1.50	1.75	2.00
6	20, 24, 28	1.00	1.25	1.25	1.50	1.75

Permissible platform load for wooden planks (kN/m ²)				
Plank thickness = 3.0 cm				
Bay length (m)	1.57	2.07	2.57	3.07
Bay width (m)	(1 intermediate ledger)	(1 intermediate ledger)	(2 intermediate ledgers)	(2 intermediate ledgers)
0.73 (3xW = 20 cm)	6.0	6.0	6.0	4.5
1.09 (4xW = 24 cm)	6.0	6.0	4.5	3.0
1.40 (6xW = 20 cm) (5xW = 24 cm)	6.0	4.5	3.0	2.0

Wooden planks are not foreseen to be used in protective scaffolds.

6 ANCHORAGE AND STABILISATION

Scaffolding structures that are free-standing are not stable and therefore always need to be anchored to a secure façade. In principle, a scaffold represents a “weak” system since it is merely the linking up of a number of loose components. In order to obtain a strong and rigid structure, the scaffold therefore needs to be stabilised through the addition of a few specific components.

Façade scaffolds need to be stabilised in all of the following four different sections:

- A) Stabilisation of the sections vertical to the façade
- B) Stabilisation of the inner section parallel to the façade
- C) Stabilisation of the outer section parallel to the façade
- D) Stabilization of the horizontal sections of the scaffold

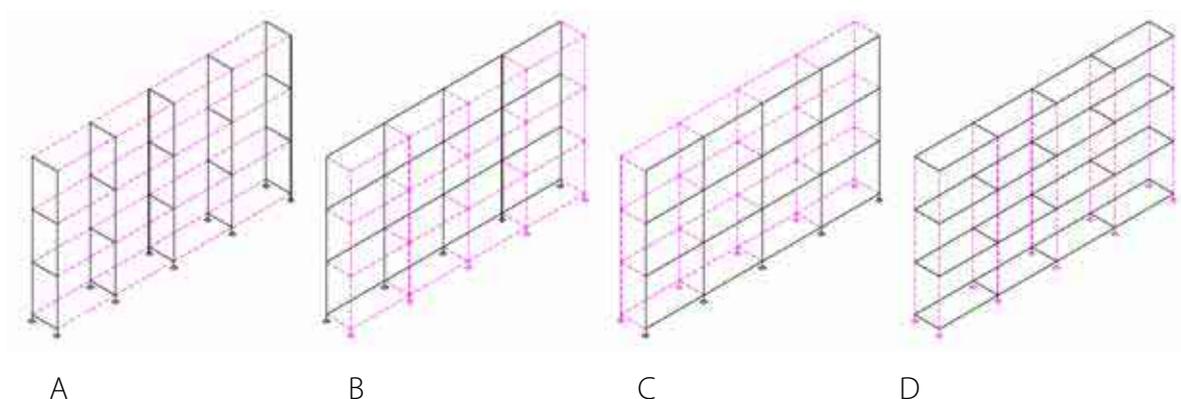


Figure 6.1 Sections of the façade scaffolding

Anchors (or tie bars) and V-shaped anchors are used to stabilise sections A and B, vertical reinforcements are used for section C and steel decks or horizontal reinforcements for sections of type D.

6.1 Anchorage

To stabilise the scaffolding in a vertical direction to the façade, scaffold anchors are used, which are to be attached to each row of standards. The anchors provide general stability for the scaffold (the scaffold cannot tip over) and local stability (the buckling length of the vertical tubes is reduced).

A scaffold anchor consists of:

- An anchorage tube with special hooks for attachment to the anchoring means*/ eyebolts
- A standard coupler for attaching the anchorage tube to the standards
- An eyebolt for fixing the anchorage tube to a sufficiently stable façade

The anchors are mounted with couplers on the inner (and possibly outer) standards near (< 0.30 m) the nodal point of the standard and the tubular ledger (see figure 6.2).

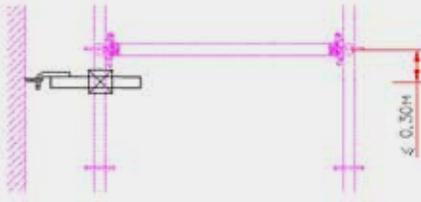


Figure 6.2a: Example of an anchor

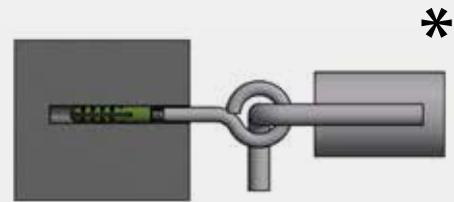


Figure 6.2b: Example of an anchor point



Note: Ensure that the anchors and the anchorage base material can always carry the loads demanded by the scaffold structure. These loads will need to be assessed and calculated.

* = The anchorage components described must always be checked and tested on site. Number of tests = 10 % of the number of anchor points used. This serves to check the maximum permissible load. The minimum removal force required at any respective anchor point can be determined with the aid of a testing device.



Figure 6.2c: Example of a tie bar test

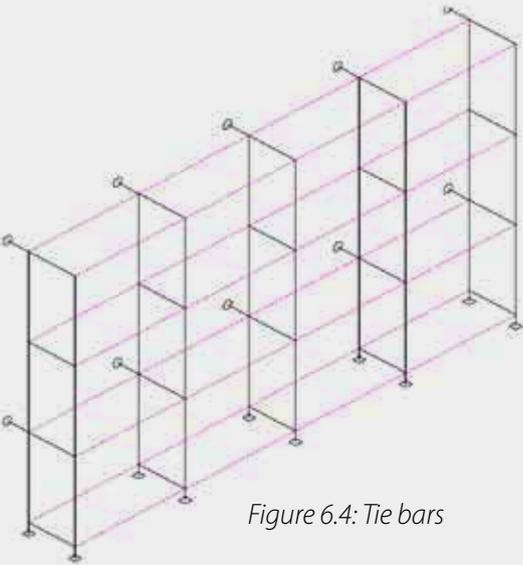


Figure 6.4: Tie bars

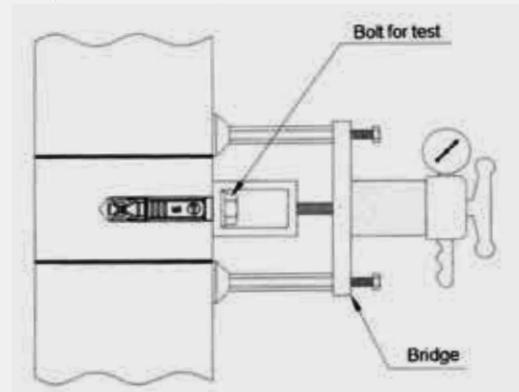


Figure 6.3: Example of a test stand for a wall anchor

The number of anchors required is determined by calculation or the structure anyway corresponds to the standard configuration. The anchors are applied in a regular pattern all over the scaffolding. In general, the standard configurations need to be checked to determine an anchorage pattern for every individual scaffold. Depending on the required number of anchors, three main pattern arrangements can be distinguished. See figure 6.5:

- 8-metre pattern and 4-metre on the outer standards
- 4-metre pattern or 4 metre offset pattern
- 2-metre pattern, anchors at each node at 2 metre intervals

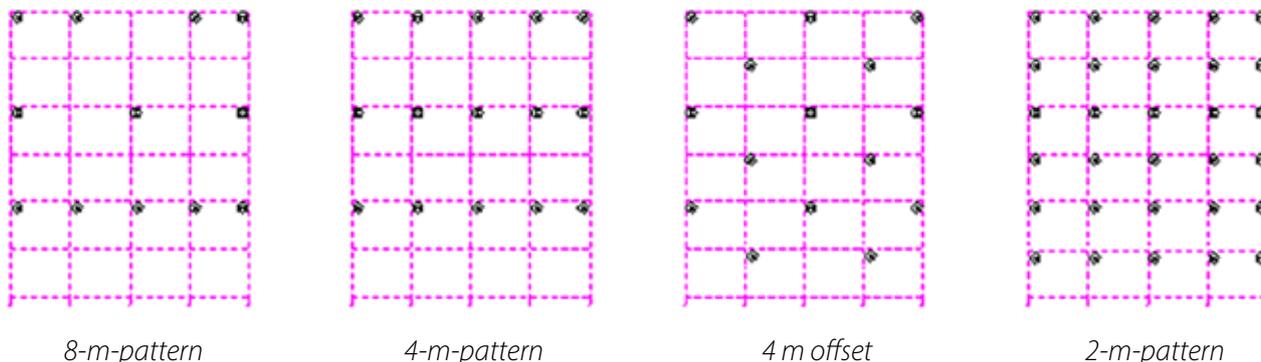


Figure 6.5 Anchorage arrangement patterns

V-shaped anchor

If it is not possible to use anchors attached to both the inner and outer standards to stabilise the inner section parallel to the façade, anchors may be applied which are attached at an angle of approx. 60 degrees, a kind of V-shaped anchor. Depending on the horizontal loads ensuing, V-shaped anchors need to be attached parallel to the façade and preferably at least at both ends of the scaffolding. Please also consult the standard configurations when positioning V-shaped anchors.

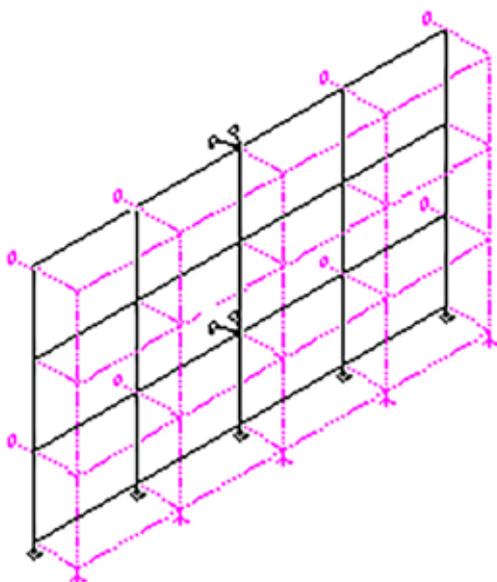


Figure 6.6 V-shaped anchors

6.2 Diagonal / Stabilisation

Vertical diagonal /stabilisation

Vertical diagonals are used parallel and perpendicular to the façade to stabilise the outer section of the scaffold. Vertical diagonals are attached perpendicular to the façade at least in every fifth bay, at each bay level and in every end bay.

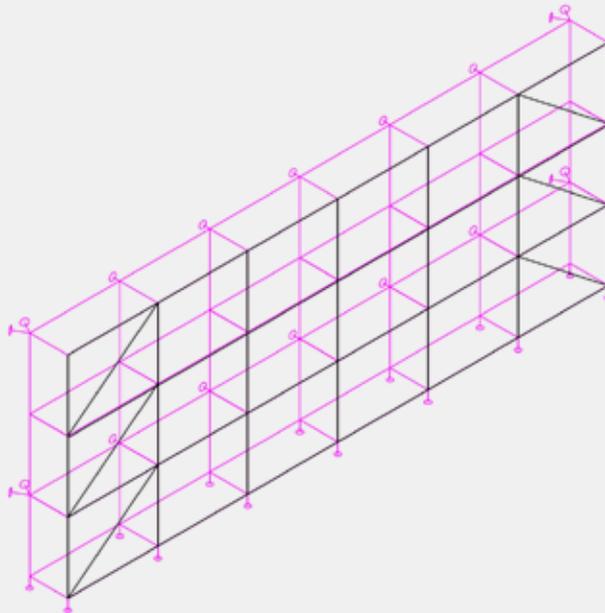


Figure 6.7 Vertical diagonal

Horizontal bracing

The horizontal sections of the scaffolding are stabilised by horizontal diagonals either in the form of steel decks or wooden planks in the case of platforms. These horizontal diagonals must be attached at least in every fifth bay and at each bay level.

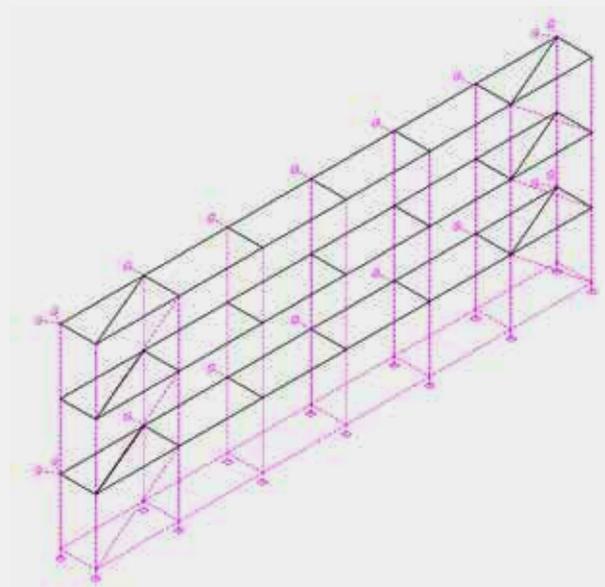


Figure 6.8 Horizontal diagonal
for wooden platforms

7 ACCESS TO THE RINGSCAFF SCAFFOLDING

There are two different ways to access the RINGSCAFF scaffolding:

- Access via special ladder frames made of aluminium or plywood
- Access via aluminium stairways

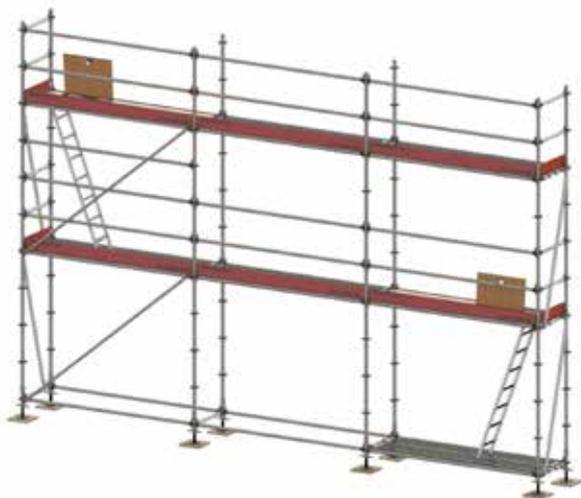


Figure 7.1 Access to higher levels via ladder frames

7.1 Access via ladder frames

Access to higher levels can be made possible by fitting aluminium or plywood platforms with integrated ladder and special access hatches. The ladder frames are integrated into the working platforms. The maximum safe working load for scaffolding with aluminium or plywood platforms is 2 kN/m^2 pursuant to EN12811 - class 3. Verticals in the ladder frame bay need to be anchored at least every four meters.

7.2 Access via stairways

Another possibility for access to higher scaffold levels is to erect a separate stair tower for the scaffolding. In this respect the RINGSCAFF system offers two different configurations as possible solutions:

- A) Construction of an additional bay ($0.732 \times 2.572 \text{ m}$) on the outside of the scaffolding. The stairs are all assembled in the same direction. The user is able to enter each level of the scaffold. Users can walk around this level and take the next staircase up to the higher level (Figure 7.2).
- B) Construction of an additional bay ($1.400 \times 2.572 \text{ m}$) at an access bay in the scaffolding with a length of 2.572 m . The stairs are mounted in opposite directions. Access to the working platforms is at the top of the stairs (Figure 7.3).



Figure 7.2 Stairway configuration A



Figure 7.3: Stairway configuration B

Verticals in the stairway bay need to be anchored at least every four meters.

8 ASSEMBLY USE AND DISMANTLING OF THE SCAFFOLDING

8.1 Inspection before assembly

The following important points need to be considered before starting to erect a scaffolding:

- The function of the scaffolding must be known
- It must be ensured that all assembly work is carried out exclusively by professional companies and that only these companies may use the scaffolding: in addition, it must be ensured that all parties concerned have qualified and competent staff available
- All loads that occur on the scaffold structure and its surroundings and the position of the loads on the scaffold and its surroundings need to be verified; the different loads being:
 - the scaffold structure's own weight
 - payloads on the working platforms
 - wind loads (possibly together with cladding)
- The alignment of the scaffolding to the building must be known: it must be ensured that the plan for the scaffolding corresponds to local conditions
- The ground conditions at the positioning of the scaffolding need to be checked
- The condition of the façade at the anchorage points needs to be checked
- It has to be ensured that all loads ensuing can be carried by the scaffolding structure
- It must be ensured that all vertical loads from the scaffolding can be supported by the ground and that all horizontal loads can be absorbed by the anchors and the building façade
- The position of the scaffolding in relation to the surroundings needs to be checked
- All (local) safety requirements must be known
- Possible explosion or fire hazards must be known
- It must be ensured that the scaffold erectors are suitably qualified to assemble the scaffolding structure
- It has to be ensured that the scaffolders have been comprehensively instructed
- The safety and functionality of all tools used during assembly is to be checked
- Check all material used in the construction of the scaffolding



Damaged material may not be used in any scaffold structure!

8.2 Assembly procedure

8.2.1 The assembly starts with the arrangement of the components in their approximate positions.

8.2.2 Position the standard lead-off adapter on the base jack (see Figure 8.1) and use wooden boards under the base plate of the jacks to distribute the loads across the ground.



Figure 8.1

8.2.3 Repeat these steps, positioning base jacks at all four corners of the bay, which are then connected with tubular ledgers/transoms; see Figure 8.2.



Figure 8.2

8.2.4 At the highest point above the ground, start levelling the base with a spirit level and by adjusting the wing nut on the threaded base jack. Lock down all wedge connections with a hammer blow. Now the base is fixed and the scaffold can be erected in a vertical direction.

8.2.5 Insert standards into the threaded base jacks. Use 3-metre standards on the outside and 2-metre standards on the inside of the scaffolding for greater convenience during assembly/disassembly, see Figure 8.3.

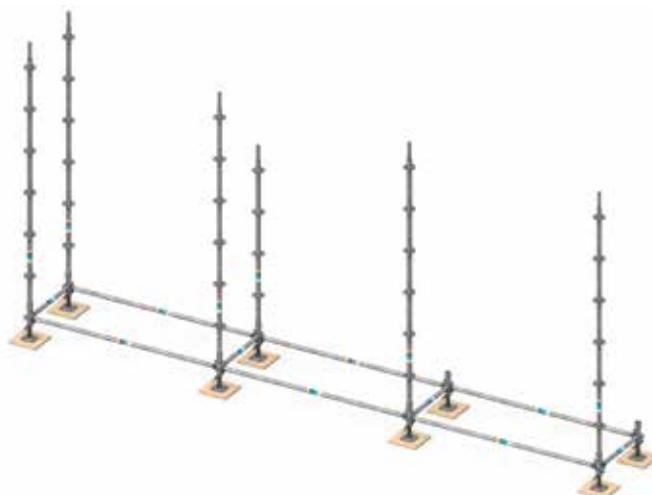


Figure 8.3

- 8.2.6 Begin construction of the first level by securing the tubular ledgers and intermediate ledgers at the designated points; see Figure 8.4.



Note: It may be necessary for the steel deck to be fitted at this base level to facilitate assembly of the first level.

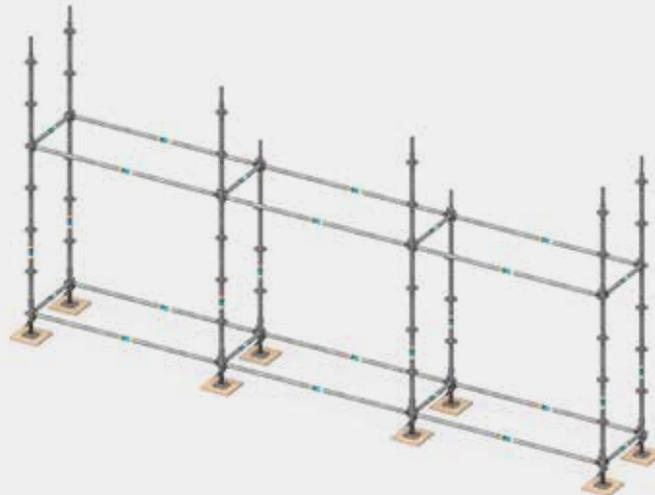


Figure 8.4

- 8.2.7 Diagonal stabilisation at the front sides need to be fitted at least in every 5th bay, from bottom to top of the scaffolding or as specified in the design configuration; see Figure 8.5. Diagonal reinforcement results in increased stability of the scaffold structure.

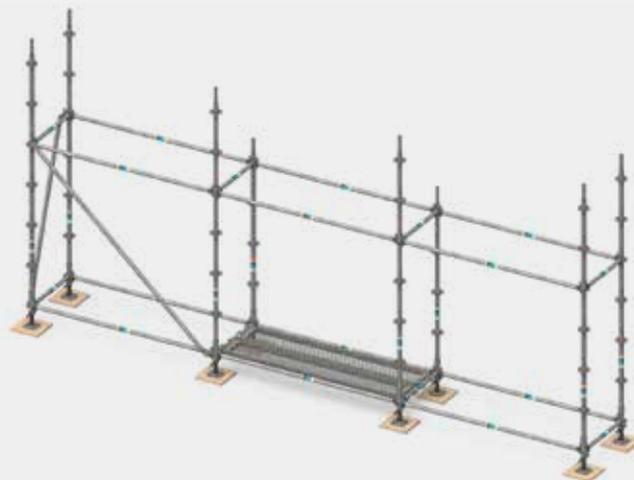


Figure 8.5

- 8.2.8 After completion of the first level, the next levels can be built. It is very important to work **safely** when erecting the next levels. This means that a side protection system such as a guardrail has to be fitted before moving up to the next level. The RINGSCAFF system offers various solutions for this side protection during assembly; see Figures 8.6A and 8.6B. Assembly instructions for higher levels are described in section 8.3 of these Instructions for Assembly and Use.

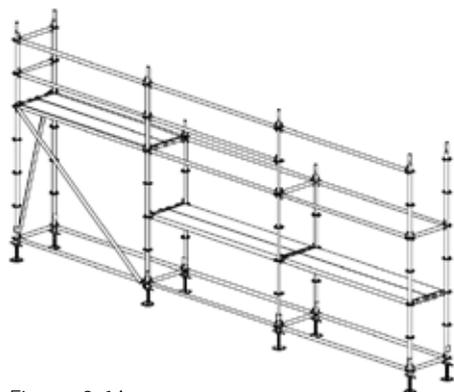


Figure 8.6A

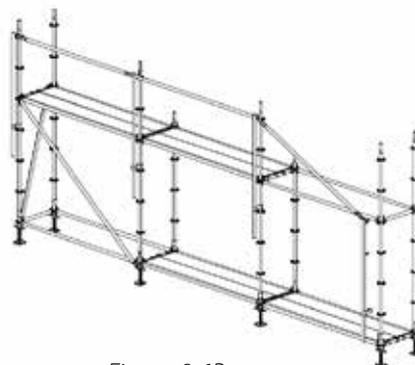


Figure 8.6B

Figure 8.6A shows how standard RINGSKAFF components are used to temporarily erect an additional assembly level at a height of 1 m above the actual working level. The guardrails and steel decks for the next level can be fitted from here.

Figure 8.6B shows how to work with a temporarily-installed guardrail system. The temporarily-installed guardrail system consists of guardrail posts and guardrails. These components can be installed from the level below along the entire next higher level. After ascending to the upper level, the permanent guardrails can then be mounted and the temporarily-fitted guardrails can be installed on the next higher level.

It is important to ensure that work is always carried out safely on unfinished levels! For further instructions on higher levels see section 8.3.

If, for whatever reason, users cannot be protected by the above-mentioned side protection systems (Figures 8.6A or 8.6B), they must be safeguarded by wearing a safety harness that is secured to the guardrails or standards. The positioning of the secure attachment points on the tubular ledgers and standards of the scaffold structure can be found in Section 8.3. Please consult the information provided there!

8.2.9 Fit steel decks on the first level from below as per Figure 8.7.



Note: If wooden scaffold planks are used, intermediate ledgers are to be inserted on the longitudinal ledgers. For safe access to higher levels of the scaffolding, stairs, inner ladders or inner ladder frames can be used. An additional bay needs to be erected on the outside of the scaffold for the assembly of the stairway; see Illustration 8.7.

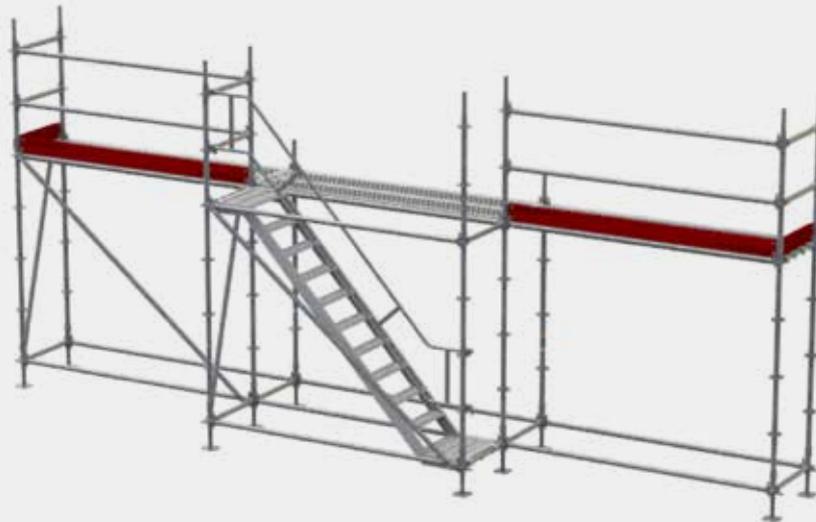


Figure 8.7

- 8.2.10 The next higher level must always be decked from below. A stairway or ladder is used to access the next level. Ensure that all working levels have side protection consisting of double guardrails and a toe board. Stairways, ladders or ladder frames are used for erecting further levels.

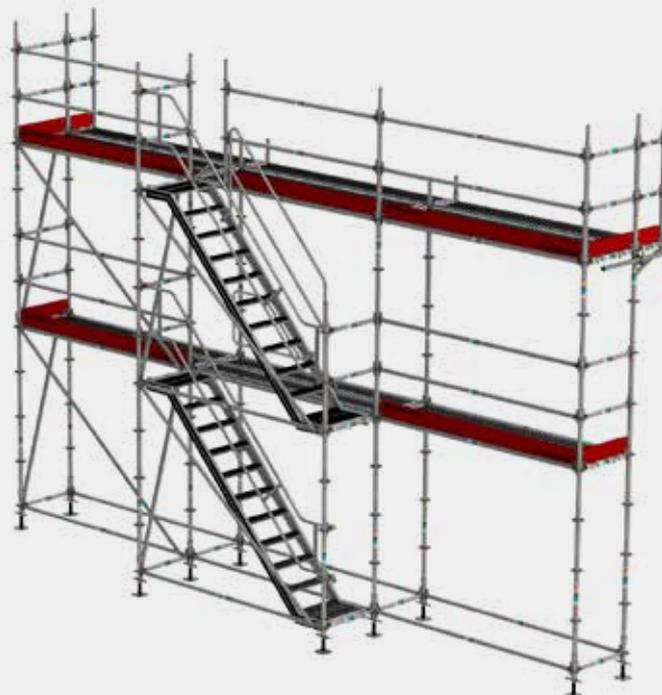


Figure 8.8

- 8.2.11 The scaffolding should be physically connected to the building façade at the first possible point, ideally at the second level. The anchorage patterns shown in this manual should be consulted. Each row of standards needs to be anchored to the façade.
- 8.2.12 When the assembly has been completed and the scaffold is ready for use, the proper and correct instructions for using the scaffold are to be indicated on the so-called “Scaff-Tag”.

8.3 Assembly instructions for higher levels

8.3.1 Stability

During erection or dismantling of the scaffolding, no anchorage is available after a certain point in time to prevent the scaffolding from tipping over. In this case precautions need to be taken. For example, temporary supports can be attached to the scaffold (see Figure 8.9)

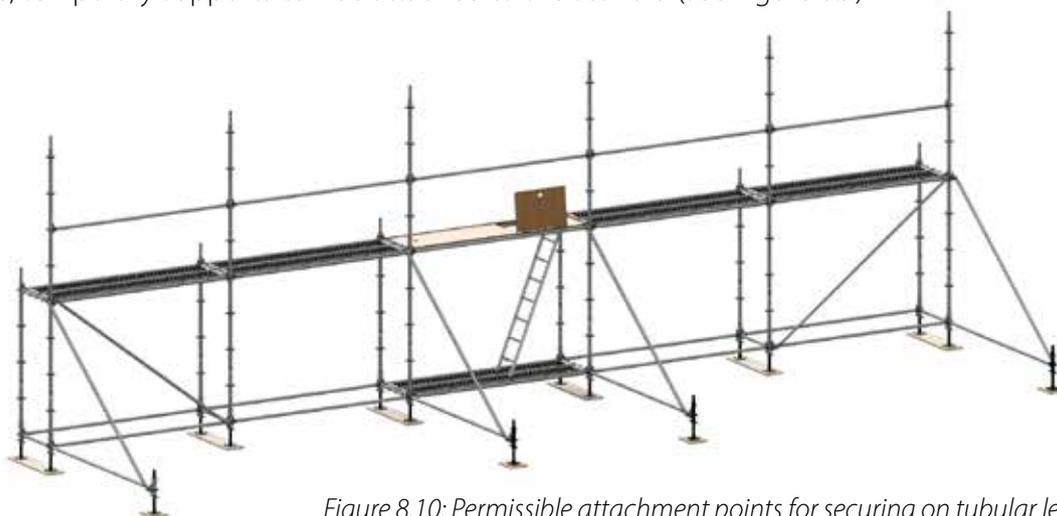


Figure 8.10: Permissible attachment points for securing on tubular ledgers (red)

8.3.2 Measures against fall hazards

When assembling additional scaffold levels, there may be a risk of falling. The assembly work must be carried out in such a way that fall hazards are avoided and that the remaining risks are reduced to a minimum. The scaffolder / scaffolding contractor is to carry out an appropriate risk assessment for each individual case or for each assembly step to ensure safety. Possible safety measures:

- Use of RINGSCAFF mounting safety guardrails (see section 8.3.2.2)
- Use of appropriate personal protective equipment such as a safety harness (see section 8.3.2.1)
- Combination of the above-mentioned protective measures

Only components that comply with approval Z-8.22-869 may be used for the mounting safety guardrail.

When working with a safety harness, a height rescue plan needs to be available at the construction site.

When using a safety harness as protective equipment, it must be approved for use in the scaffolding industry.

When using a safety harness, it is extremely important to use the correct attachment points for connecting the suspension hook. Figure 8.10 and Figure 8.11 show the correct attachment points for connection to a tubular ledger or a perforated ring.

Figure 8.10: Permissible attachment points for securing on tubular ledgers (red)

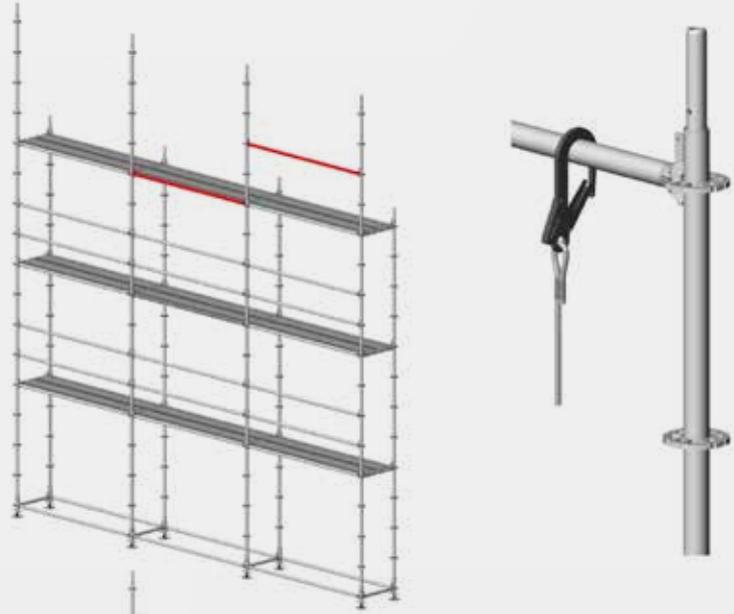
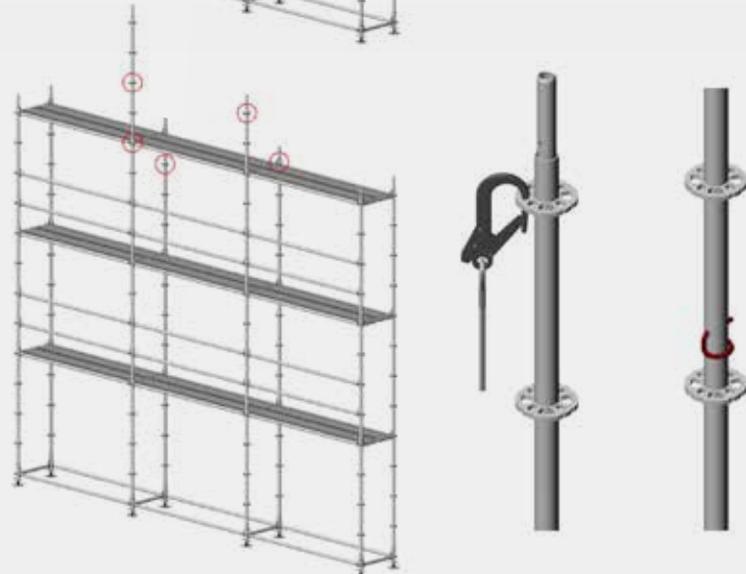


Fig. 8.11: Permissible attachment points for securing on red circles. Rosette maximum 1.0 m above the highest floor.



The actual attachment points should always comply with the local regulations and guidelines issued by the professional associations.



The attachment points always need to be as high as possible above the actual working level and at a maximum height of 1.0 m above it. (Make sure that the standard is connected on a spigot underneath the top platform to assure maximum impact capacity at the top of the standard); The standards must be secured with a securing pin (right figure).



The snap hook on the safety harness may only be connected to closed parts of the scaffolding to ensure that the hook cannot slip off. Open sections such as e.g. tube ends may not be used as attachment points for the safety harness.



The use of a safety harness with shock absorbing line is only permitted if the height of fall is at least 5.75 m when measured vertically from the attachment point to the ground.

If it is not possible to use a mounting safety guardrail and/or safety harness due to the nature of a particular type of scaffolding, or if the mounting safety guardrail and/or the safety harness do not provide adequate protection, special additional safety measures will need to be taken.

- The scaffolding work must be carried out by qualified scaffolders
- Scaffold erectors need to be specially trained in applying any other safety measures that may deviate from the norm
- Steep edges should be clearly marked for scaffolders and users of the scaffold

Fall protection measures are not required when the working and access areas are to be enlarged within a distance of no more than 0.30 m from supporting and sufficiently large surface areas.

8.3.3 Vertical height transport of scaffolding components

8.3.3.1 Construction lifts

A lift has to be used for the erection and dismantling of scaffolding with a height of more than 8 metres (measured from the height of the working level). Such elevator installations may e.g. be manually-operated pulley systems.

Motor-driven construction lifts may be dispensed with if the height of the scaffolding does not exceed 14 metres and the length is not more than 10 metres.



Please refer to the manual lift instruction handbook before use!

8.3.3.2 Vertical height transport by hand

In scaffolding bays where the vertical transport of scaffolding components is manual, full side protection (guardrails and knee rails) are required on the lower working levels. On the top level of the scaffold, a mounting safety guardrail (MSG) is sufficient. At least one person should stand on each scaffold level when scaffold materials are transported vertically (see Figure 8.12).

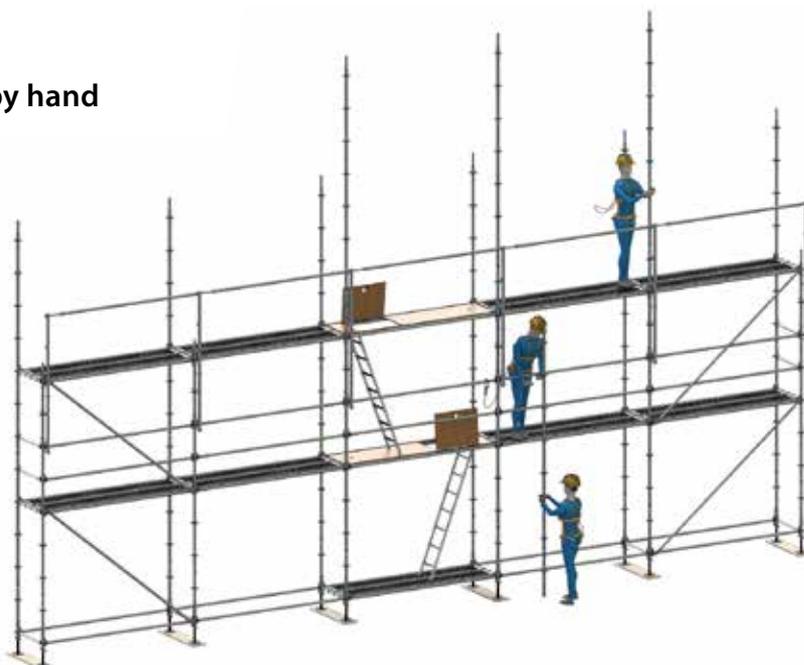


Figure 8.12: Example of vertical height transport by hand

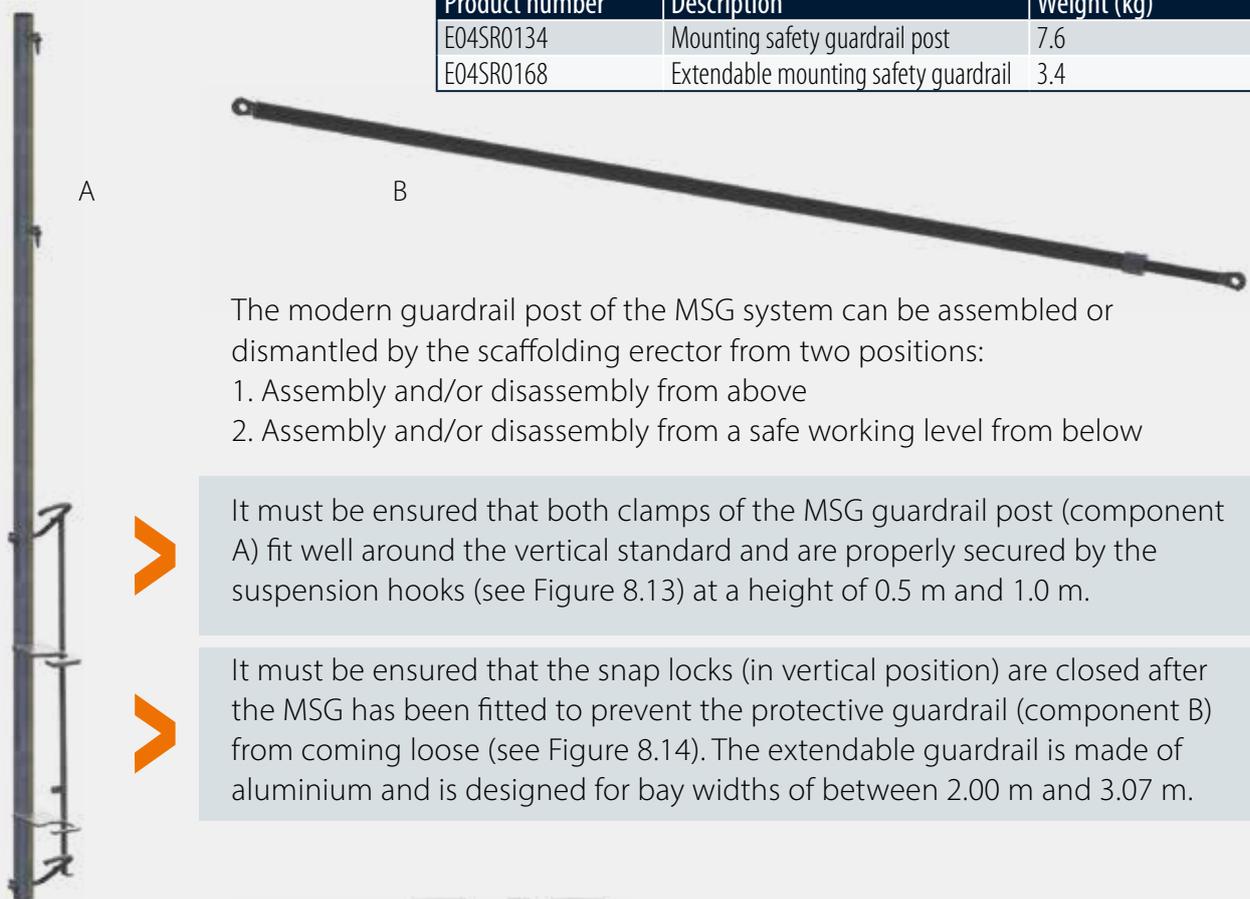
8.3.4 Assembly of the scaffolding

The scaffold builder initiates the necessary fall protection precautions (see Section 8.3.2) as a part of the overall risk assessment. The following safety measures can be taken as fall protection during assembly or dismantling of the scaffold:

8.3.4.1 Mounting safety guardrails (MSG)

The ultra-modern guardrails by Scafom-rux consist of two basic components: a mounting safety guardrail post and an extendable guardrail. The guardrail post has to be used in accordance with local provisions and requirements.

Product number	Description	Weight (kg)
E04SR0134	Mounting safety guardrail post	7.6
E04SR0168	Extendable mounting safety guardrail	3.4



The modern guardrail post of the MSG system can be assembled or dismantled by the scaffolding erector from two positions:

1. Assembly and/or disassembly from above
2. Assembly and/or disassembly from a safe working level from below

- > It must be ensured that both clamps of the MSG guardrail post (component A) fit well around the vertical standard and are properly secured by the suspension hooks (see Figure 8.13) at a height of 0.5 m and 1.0 m.
- > It must be ensured that the snap locks (in vertical position) are closed after the MSG has been fitted to prevent the protective guardrail (component B) from coming loose (see Figure 8.14). The extendable guardrail is made of aluminium and is designed for bay widths of between 2.00 m and 3.07 m.



Figure 8.13



Figure 8.14

i. Fitting of the mounting safety guardrail from a safe working level

The MSG is erected on all sides of the scaffolding where there is a risk of falling.

- Attach the MSG post to the outer scaffold standard (Figure 8.15a)
- Attach the MSG guardrail to the first MSG post and attach the second MSG post to the guardrail (Fig. 8.15b)
- Attach the second MSG post to the outside of the scaffold (Fig. 8.15c)
- Other MSG components can be attached in a similar way in the horizontal direction (Fig. 8.15d)



Figure 8.15a



Figure 8.15b



Figure 8.15c



Figure 8.15d

ii. Further assembly of the scaffolding, protected by MSG



Figure 8.16

- Enter the top level of the scaffolding through the hatch of the ladder frame, which is located in the access bay, then close the hatch immediately after ascending
- Begin fitting the standards on the lower standards, commencing with the access bay of the scaffolding
- Install side protection in the access bay of the scaffolding
- Continue with the above procedure in a horizontal direction from the access bay
- If required, connect standards together with a locking pin to ensure a secure connection against tensile forces (Figure 8.17)

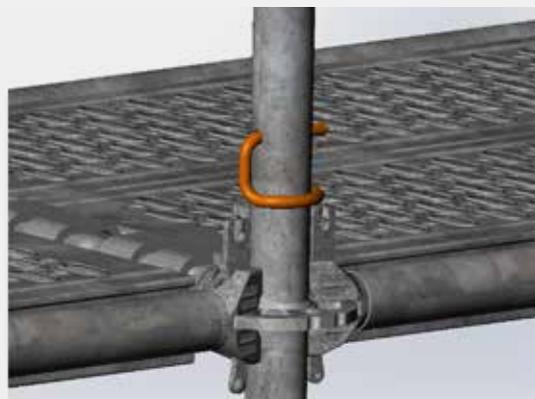


Figure 8.17

- When the final bay of the scaffolding is reached, the verticals need to be fitted (Fig. 8.18)



Figure 8.18

- Fit the longitudinal and transverse ledgers of the second level at a height of 2.0 m above the current working level (Figure 8.4)
- Attach the steel decks or wooden planks of the RINGSCAFF system on to the transverse ledgers (for further information, see section 5.2 of this manual) (Figure 8.5)
- If anchorage is required at this level, attach the anchors to the scaffold in accordance with section 6 of this manual

8.3.4.2 Further assembly of the scaffolding, protected by safety harness and MSG in the access bay of the scaffolding

A) MSG in the access bay; assembly to be carried out from the lower, fully-secured scaffold level (section 8.3.7.1).

Fitting of the next levels, starting with the access bay and protected by MSG.

Enter the top level of the scaffolding through the hatch of the ladder frame, which is located in the access bay, then close the hatch immediately after ascending.

Begin fitting the standards on the lower standards, commencing with the access bay of the scaffolding.

Install side protection in the access bay of the scaffolding.

If required, connect standards together with a locking pin to ensure a secure connection against tensile forces (Figure 8.17).



Figure 8.19: Fitted mounting safety guardrail (MSG)

B) Further assembly of the scaffolding, protected by a safety harness

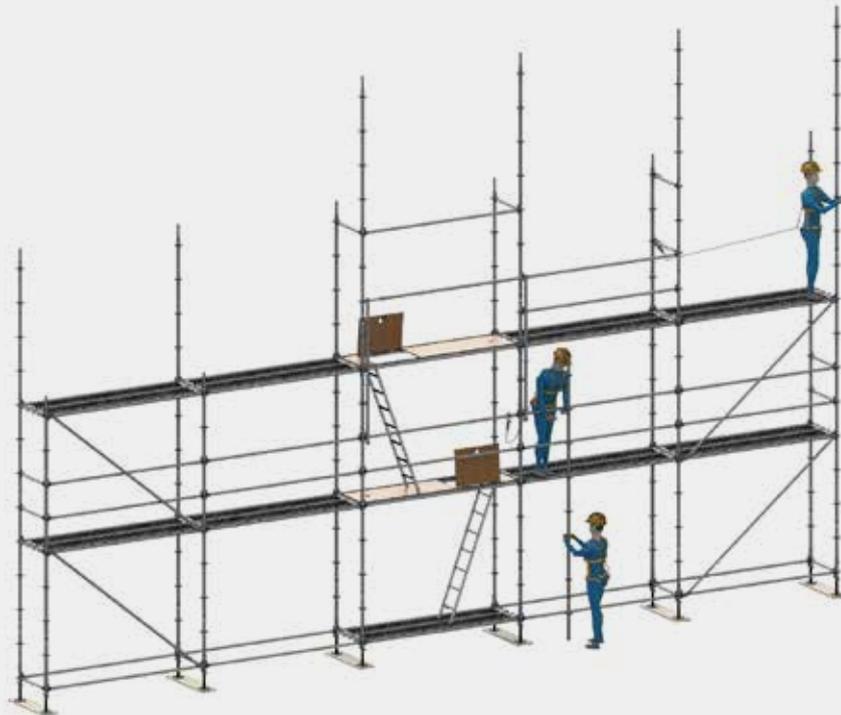


Figure 8.18

- Starting with the access bay:
 - Before leaving the protected scaffold bay, attach the safety harness with the snap hook at a prescribed attachment point on the scaffold (see section 8.3.2)
 - Fit the next vertical standards
 - Assemble the guardrails in the new scaffold bay
 - If required, connect standards together with a locking pin to ensure a secure connection against tensile forces (Figure 8.17)
- After reaching the end of the scaffold, attach the front guardrails (Fig. 8.18)
- Fit the tubular ledgers and intermediate ledgers of the second level at a height of 2.0 m above the current working level (Figure 8.4)
- Install the steel decks or wooden planks of the RINGSCAFF system in combination with intermediate ledgers above the lower intermediate ledgers (for further information, see section 5.2 of this manual) (Figure 8.5)
- If anchorage is required at this level, attach the anchors to the scaffold in accordance with section 6 of this manual

8.4 Use of the scaffolding

The following is required and necessary to use the scaffolding:

- The persons working on or with the scaffold must know the maximum permissible load of the scaffold. This means the maximum permissible load on the platform and the maximum number of platforms that may be loaded.
- No changes may be made to the scaffold without the approval of the responsible scaffold design engineer.
- The scaffold may not be used in difficult weather conditions such as storms (wind force > 6 on the Beaufort scale), thunderstorms and lightning, snowfall, hail or ice.
- The scaffolding must be inspected regularly, especially after extreme weather conditions.

8.5 Dismantling procedure

The following work and checks represent the basis for the safe dismantling of the RINGSCAFF scaffolding system:

- A) All platforms must be free of loose material. The scaffold is to be inspected to ensure that it is still in the condition it was erected in e.g. that no components or ties have been removed or incorrectly reattached. The "Scaff-Tag" on the scaffold must indicate that the structure is no longer approved for use.
- B) Dismantle the scaffolding in the reverse order to the assembly procedure. This means starting at the top and dismantling from level to level downwards. During dismantling and modification, the scaffold must always be in a stable, usable and safe condition.
- C) Remove the toe boards and guardrails from the highest platform.
- D) Only after checking that all components previously attached to the standards have also been removed can the standards mounted above the platform level be removed.
- E) From a temporarily-mounted platform under the highest platform level, remove the decks (of steel) from the highest platform.
- F) Remove all tubular ledgers and intermediate ledgers from the highest platform level.
- G) Always work from a platform that is no more than 2 m below the level from which the components are removed. Dismantle the scaffold step by step in the order described above.
- H) Remove the tie bars one after another as the scaffolding is dismantled.



Note: Tie bars should only be removed when they prevent further dismantling of the scaffolding.

- I) The components are to be carefully and safely transported to the ground from hand to hand down the scaffolding or by a suitably safe lowering method such as by rope, crane, lift, etc.

9 VARIOUS SOLUTIONS

Since RINGSCAFF is a modular scaffolding system, there are various solutions for erecting a safe working platform at height around all types of façades. This section describes some of these solutions.

9.1 Corner solutions

Due to the flexibility of the system, it is possible to fit various types of corner solutions. Figures 9.1 to 9.5 below show some of these solutions for right-angled corners using steel decks in the scaffold.



Figure 9.1



Figure 9.2



Figure 9.3



Figure 9.4



Figure 9.5

Figure 9.1 Corner solution with 2 standards, 1 intermediate ledger and 1 double tubular ledger

Figure 9.2 Corner solution with 3 standards and 2 intermediate ledgers

Figure 9.3 Corner solution with 4 standards and 3 intermediate ledgers

Figure 9.4 Corner solution with 3 standards, 2 intermediate ledgers and 1 side bracket (2 steel decks)

Figure 9.5 Corner solution with 4 standards, 2 intermediate ledgers (2 system free decks extra)

9.2 Platform extensions

Side brackets (see Figure 9.6) can be used to extend the working level and/or to fill gaps between the scaffolding and the building.

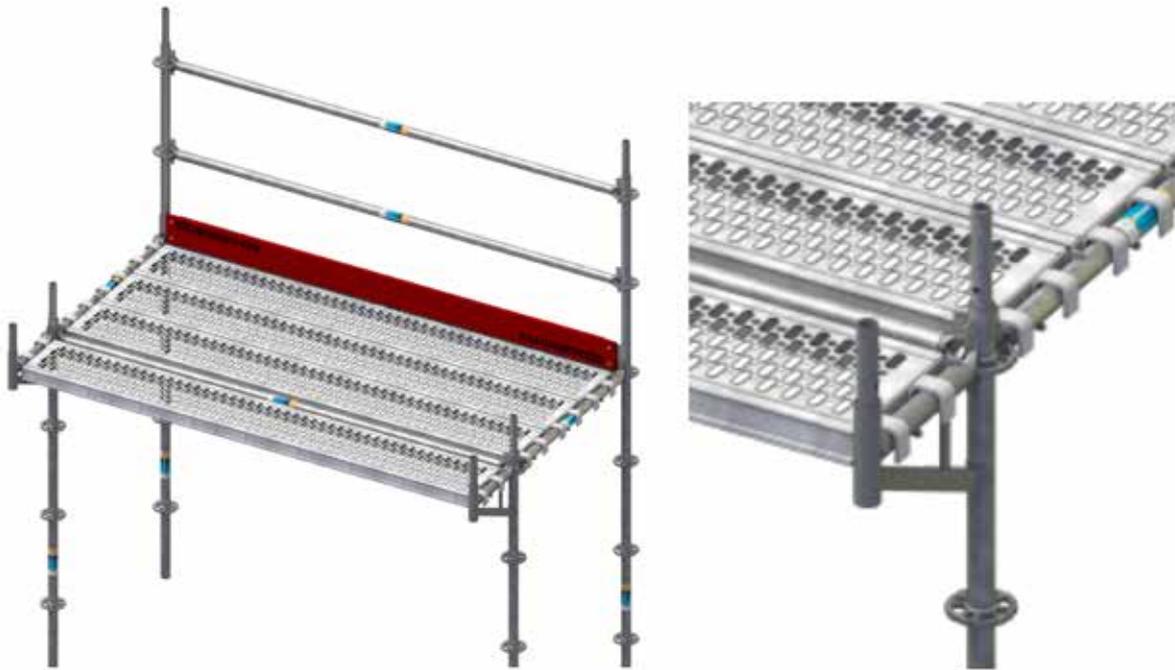


Figure 9.6

Side brackets are available in widths of 0.39 m (for one steel deck) and 0.73 m (for 2 steel decks).

The side brackets are mounted on the standards by attaching the bracket's welded wedge head to the perforated ring on the standards. After a hammer blow on the wedge, the bracket is affixed to the scaffolding and can take up loads.

If side brackets are used to create a wider working platform, the steel decks on the side brackets need to have at least the same load-bearing capacity as the steel decks on the main platform area.

For anchorage patterns and permissible standard loads when using side brackets in the scaffold structure, see Appendix I, "Standard configurations".

9.3 Bridging Solutions

For the construction of passageways in scaffolding structures, the RINGSCAFF system can be used to construct bridge-like structures using RINGSCAFF components such as the standard lead-off adapter, standards and system diagonals; see Figure 9.7. The bays directly around the bridge structure need to be reinforced with RINGSCAFF system diagonals.

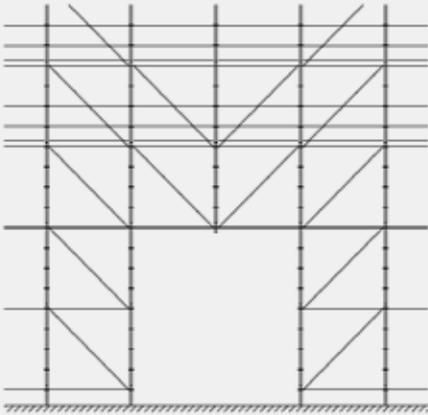


Figure 9.7

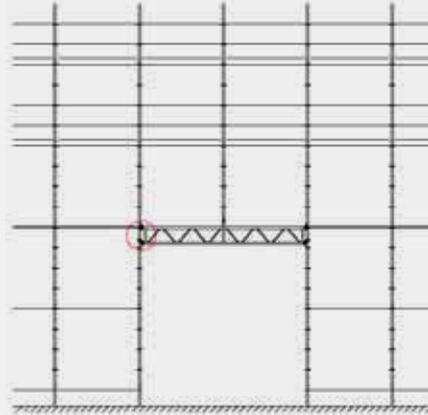
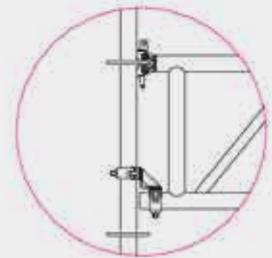


Figure 9.8



Another solution for bridging is presented by RINGSCAFF lattice girders and lattice girder couplers, see Figure 9.8.

The lattice girders are available in the system lengths 4.14 m, 5.14 m and 6.14 m. These lengths enable two bays of the sizes 2.07 m, 2.57 m or 3.07 m to be bridged.

The upper side of the lattice girder is attached to the standards with the welded wedge head connections. The bottom chord of the lattice girder is attached to the standards with special lattice girder couplers, see details in Figure 9.8.

To prevent the lattice girders from buckling due to the load on the girder, they need to be stabilised by reinforcing the pressure tube using tubes and fixing components; see Figure 9.9 (alternative: use of anchor tubes to stabilise the lattice girder bridge at the wall).

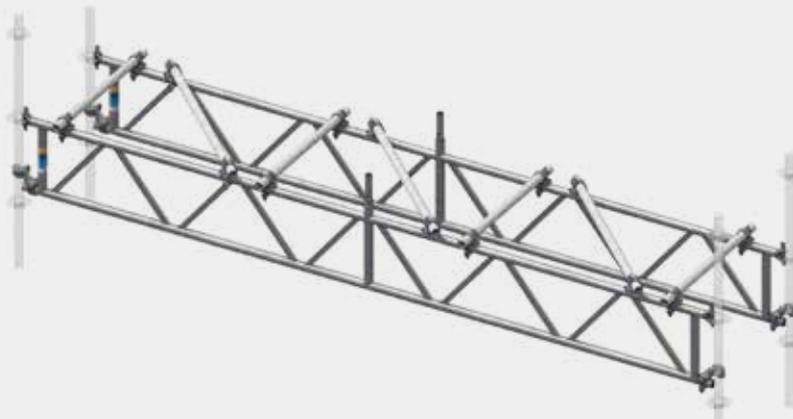


Figure 9.9

10 RULES AND REQUIREMENTS REGARDING THE MIXING OF SCAFFOLD COMPONENTS

The RINGSCAFF system and its manufacture have been certified as approved in accordance with standards such as EN12810 / EN12811. In addition, mixing with Layher Allround® and Plettac Contur® / Futuro® components has also been certified as approved in the German mixing approval certificates:

- Z-8.22-901 Mixing with Layher Allround®
- Z-8.22-911 Mixing with Plettac Contur®
- Z-8.22-971 Double mixing with Layher Allround® and Plettac / Futuro®

This means that an evaluation and approval has been carried out by an external, accredited body, thereby ensuring and substantiating the full compatibility of these mixed components. In other words:

- A mixing approval describes components that may be used. This applies both to “original approvals” as well as for “mixing approvals”. Currently, there are no fundamental legal uncertainties regarding mixing approvals.
- In principle, there is a risk that components not included in a certification (original or mixing approval) may be fitted into a scaffolding. It always takes a little time to include all components in such an approval.
- Approvals for scaffolding products need to encompass a “user manual”. In the case of a mixed scaffold, the relevant manual will need to be adapted (properties, standard configurations).
- There is no loss in value of the scaffolding material in the case of mixed components when the “original approvals” are modified.
- The inclusion of new components in an original mixing approval does not initially have any impact. New components do not automatically have an immediate effect on the mixing approval: a modification of the mixing approval is required at a later date.
- The risk of “site closure” or liability in the event of accidents exists for both unmixed and mixed scaffolds. This principle applies as long as the respective mixing approval is available and the instructions (for safety) are observed.

Please check in the appendices pertaining to the mixing approval the components concerned and the corresponding standard configurations for each individual mixing system and the eventual restrictions.

11 APPENDIX I: STANDARD CONFIGURATIONS

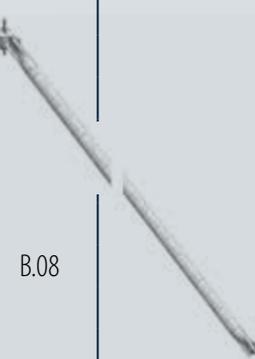
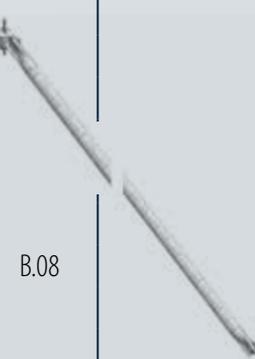
11.1 List of components

Date: 13th of January 2023

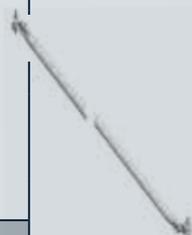
Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E02RS0005	BASEJACK L=600 RD38*8	4,0	E02RS0002	B.43	
E02RS0002	BASEJACK L=780 RD38*8	4,8	E02RS0002	B.44	
E02RS0008	BASE JACK L=780 RD38*8 swivel	6,3	E02RS0008	B.45	
E04RS0002	RINGSCAFF BASE COLLAR	1,5	G00002598	B.16	
E04RS0005	RINGSCAFF STANDARD WITH SPIGOT 0,5M	3,0	E04RS0005	B.17	
E04RS0030	RINGSCAFF STANDARD WITH SPIGOT 1,0M	5,4	E04RS0005		
E04RS0055	RINGSCAFF STANDARD WITH SPIGOT 1,5M	7,7	E04RS0005		
E04RS0071	RINGSCAFF STANDARD WITH SPIGOT 2,0M	10,0	E04RS0005		
E04RS0225	RINGSCAFF STANDARD WITH SPIGOT 2,5M	12,4	E04RS0005		
E04RS0096	RINGSCAFF STANDARD WITH SPIGOT 3,0M	14,8	E04RS0005		
E04RS0107	RINGSCAFF STANDARD WITH SPIGOT 4,0M	20,2	E04RS0005		
E04RS0006	RINGSCAFF STANDARD WITHOUT SPIGOT 0,5M	2,2	E04RS0006		
E04RS0031	RINGSCAFF STANDARD WITHOUT SPIGOT 1,0M	4,5	E04RS0006		
E04RS0056	RINGSCAFF STANDARD WITHOUT SPIGOT 1,5M	6,8	E04RS0006		
E04RS0072	RINGSCAFF STANDARD WITHOUT SPIGOT 2,0M	9,0	E04RS0006		
E04RS0226	RINGSCAFF STANDARD WITHOUT SPIGOT 2,5M	11,3	E04RS0006		
E04RS0097	RINGSCAFF STANDARD WITHOUT SPIGOT 3,0M	13,6	E04RS0006		
E04RS0108	RINGSCAFF STANDARD WITHOUT SPIGOT 4,0M	18,3	E04RS0006		
E04RS0574	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 1,0M	4,5	E04RS0574		
E04RS0575	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 1,5M	6,6	E04RS0574		
E04RS0576	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 2,0M	11,4	E04RS0574		
E04RS0577	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 2,5M	13,8	E04RS0574		
E04RS0578	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 3,0M	16,2	E04RS0574		
E04RS0579	RINGSCAFF STANDARD WITH SPIGOT DOUBLE BOLTED 4,0M	21,6	E04RS0574		

RINGSCAFF

INSTRUCTIONS FOR ASSEMBLY AND USE

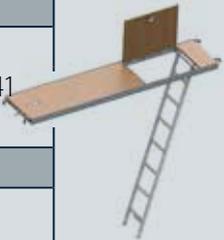
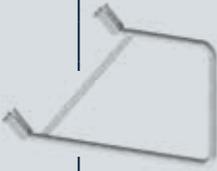
Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0504	RINGSCAFF LEDGER 0,250M	1,4	E04RS0008		
E04RS0505	RINGSCAFF LEDGER 0,390M	1,9	E04RS0008		
E04RS0011	RINGSCAFF LEDGER 0,732M/2'-4"	3,0	E04RS0008		
E04RS0033	RINGSCAFF LEDGER 1,088M	4,4	E04RS0008		
E04RS0047	RINGSCAFF LEDGER 1,400M	5,5	E04RS0008	B.18	
E04RS0058	RINGSCAFF LEDGER 1,572M/5'-2"	6,1	E04RS0008		
E04RS0074	RINGSCAFF LEDGER 2,072M/6'-10"	7,9	E04RS0008		
E04RS0086	RINGSCAFF LEDGER 2,572M/8'-6"	9,6	E04RS0008		
E04RS0099	RINGSCAFF LEDGER 3,072M/10'-1"	11,4	E04RS0008		
E04RS0232	RINGSCAFF LEDGER DOUBLE TUBE 1,572M/5'-2"	10,1	G00002380		
E04RS0233	RINGSCAFF LEDGER DOUBLE TUBE 2,072M/6'-10"	12,7	G00002380	B.23	
E04RS0234	RINGSCAFF LEDGER DOUBLE TUBE 2,572M/8'-6"	15,8	G00002380		
E04RS0235	RINGSCAFF LEDGER DOUBLE TUBE 3,072M/10'-1"	18,4	G00002380		
E04RS0228	RINGSCAFF LEDGER REINFORCED 1,088M	5,9	G00002581		
E04RS0415	RINGSCAFF LEDGER REINFORCED 1,400M	7,7	G00002581	B.20	
E04RS1337	RINGSCAFF DOUBLE WEDGEHEAD COUPLER	1,6	E04RS1337	B.63	
E04RS0017	RINGSCAFF DIAGONAL 0,732M/2'-4"*2,0M	7,2	E04RS0017		
E04RS0038	RINGSCAFF DIAGONAL 1,088M*2,0M	7,5	E04RS0017		
E04RS0051	RINGSCAFF DIAGONAL 1,400M*2,0M	7,9	E04RS0017		
E04RS0065	RINGSCAFF DIAGONAL 1,572M/5'-2"*2,0M	8,1	E04RS0017	B.08	
E04RS0077	RINGSCAFF DIAGONAL 2,072M/6'-10"*2,0M	9,0	E04RS0017		
E04RS0092	RINGSCAFF DIAGONAL 2,572M/8'-6"*2,0M	10,0	E04RS0017		
E04RS0102	RINGSCAFF DIAGONAL 3,072M/10'-1"*2,0M	11,0	E04RS0017		
E04RS0334	RINGSCAFF DIAGONAL 1,088M*1,50M	6,8	E04RS0276		
E04RS0320	RINGSCAFF DIAGONAL 1,400M*1,50M	7,2	E04RS0276		
E04RS0335	RINGSCAFF DIAGONAL 1,572M/5'-2"*1,50M	7,6	E04RS0276	B.08	
E04RS0336	RINGSCAFF DIAGONAL 2,072M/6'-10"*1,50M	8,2	E04RS0276		
E04RS0337	RINGSCAFF DIAGONAL 2,572M/8'-6"*1,50M	9,6	E04RS0276		
E04RS0338	RINGSCAFF DIAGONAL 3,072M/10'-1"*1,50M	10,5	E04RS0276		

E04RS0328	RINGSCAFF DIAGONAL 1,088M*1,00M	4,9	E04RS0285	B.08	
E04RS0329	RINGSCAFF DIAGONAL 1,400M*1,00M	5,5	E04RS0285		
E04RS0330	RINGSCAFF DIAGONAL 1,572M*1,00M	5,9	E04RS0285		
E04RS0331	RINGSCAFF DIAGONAL 2,072M/6'-10"*1,00M	7,1	E04RS0285		
E04RS0332	RINGSCAFF DIAGONAL 2,572M/8'-6"*1,00M	8,2	E04RS0285		
E04RS0333	RINGSCAFF DIAGONAL 3,072M/10'-1"*1,00M	9,8	E04RS0285		

Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0198	RINGSCAFF H - DIAGONAL 0,732M*2,57M	7,7	G00002014	B.09	
E04RS0199	RINGSCAFF H - DIAGONAL 1,088M*2,57M	8,0	G00002014		
E04RS0195	RINGSCAFF H - DIAGONAL 1,088M*2,07M	7,5	G00002014		
E04RS0385	RINGSCAFF H - DIAGONAL 2,072M*2,07M	8,6	G00002014		
E04RS0530	RINGSCAFF HOR. DIAGONAL 1,572M*1,57M	6,7	G00002015		
E04RS0531	RINGSCAFF HOR. DIAGONAL 3,072M*3,07M	12,5	G00002016		
E04RS0883	RINGSCAFF STEEL DECK 0,320*0,73M (O) MOD.T	7,1	E04RS0876	B.37	
E04RS0884	RINGSCAFF STEEL DECK 0,320*1,088M (O) MOD.T	9,7	E04RS0876		
E04RS0885	RINGSCAFF STEEL PLANK 0,32*1,400M (O) MOD.T	11,7	E04RS0876		
E04RS0886	RINGSCAFF STEEL DECK 0,320*1,57M (O) MOD.T	12,7	E04RS0876		
E04RS0878	RINGSCAFF STEEL DECK 0,320*2,072M (O) MOD.T	15,6	E04RS0876		
E04RS0876	RINGSCAFF STEEL DECK 0,320*2,57M (8'-6") (O) MOD.T	18,8	E04RS0876		
E04RS0879	RINGSCAFF STEEL DECK 0,320*3,07M (O) MOD.T	21,8	E04RS0876		
E04RS1052	RINGSCAFF STEEL PLANK 0,32*0,732M/2'-4", clinched	7,0	E04RS1052	B.35	
E04RS1053	RINGSCAFF STEEL PLANK 0,32*1,088M, clinched	9,1	E04RS1052		
E04RS1054	RINGSCAFF STEEL PLANK 0,32*1,400M, clinched	11,2	E04RS1052		
E04RS1055	RINGSCAFF STEEL PLANK 0,32*1,572M/5'-2", clinched	12,3	E04RS1052		
E04RS1056	RINGSCAFF STEEL PLANK 0,32*2,072M/6'-10", clinched	15,5	E04RS1052		
E04RS1057	RINGSCAFF STEEL PLANK 0,32*2,572M/8'-6", clinched	18,5	E04RS1052		
E04RS1058	RINGSCAFF STEEL PLANK 0,32*3,072M/10'-1", clinched	21,4	E04RS1052		
E04RS0908	RINGSCAFF STEEL DECK 0,190*0,732M MOD. T	5,2	PB-11-00	B.29	
E04RS0909	RINGSCAFF STEEL DECK 0,190*1,088M MOD. T	7,3	PB-11-00		
E04RS0910	RINGSCAFF STEEL DECK 0,190*1,572M MOD. T	9,0	PB-11-00		
E04RS0911	RINGSCAFF STEEL DECK 0,190*1,40M MOD. T	10,5	PB-11-00		
E04RS0912	RINGSCAFF STEEL DECK 0,190*2,072M MOD. T	12,7	PB-11-00		
E04RS0913	RINGSCAFF STEEL DECK 0,190*2,572M (8'-6") MOD. T	15,5	PB-11-00		
E04RS0914	RINGSCAFF STEEL DECK 0,190*3,072M MOD. T	18,3	PB-11-00		

RINGSCAFF

INSTRUCTIONS FOR ASSEMBLY AND USE

Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0827	RINGSCAFF PLATFORM+LADD ALU/PLYW 0,61*2,072M/6'-10"	24,1	E04RS0465	B.41	
E04RS0465	RINGSCAFF PLATFORM+LADD ALU/PLYW 0,61*2,572M/8'-6"	27,2	E04RS0465		
E04RS0466	RINGSCAFF PLATFORM+LADD ALU/PLYW 0,61*3,072M/10'-1"	30,4	E04RS0465		
E04RS0037	RINGSCAFF TOEBOARD 1,088M WOOD	3,4	E04RS0487	B31	
E04RS0054	RINGSCAFF TOEBOARD 1,400M WOOD	4,9	E04RS0487		
E04RS0064	RINGSCAFF TOEBOARD 1,572M/5'-2" WOOD	5,5	E04RS0487		
E04RS0076	RINGSCAFF TOEBOARD 2,072M/6'-10" WOOD	7,2	E04RS0487		
E04RS0091	RINGSCAFF TOEBOARD 2,572M/8'-6" WOOD	8,8	E04RS0487		
E04RS0101	RINGSCAFF TOEBOARD 3,072M/10'-1" WOOD	10,3	E04RS0487		
E04RS0631	RINGSCAFF TOEBOARD 0,732M/2'-4" STEEL	2,3	E04RS0631		
E04RS0632	RINGSCAFF TOEBOARD 1,088M STEEL	3,3	E04RS0631		
E04RS0633	RINGSCAFF TOEBOARD 1,400M STEEL	4,1	E04RS0631		
E04RS0634	RINGSCAFF TOEBOARD 1,572M/5'-2" STEEL	4,5	E04RS0631		
E04RS0635	RINGSCAFF TOEBOARD 2,072M/6'-10" STEEL	5,8	E04RS0631		
E04RS0636	RINGSCAFF TOEBOARD 2,572M/8'-6" STEEL	7,1	E04RS0631		
E04RS0637	RINGSCAFF TOEBOARD 3,072M/10'-1" STEEL	8,4	E04RS0631		
E04RS0543	RINGSCAFF KONSOLE 0,39M	4,2	E04RS0543	B.25	
E04RS0018	RINGSCAFF KONSOLE 0,732M/2'-4"	6,6	E04RS0018		
E04RS0270	RINGSCAFF KONSOLE 1,088m/3'-6"	11,5	G00003115		
E04RS0240	RINGSCAFF LATTICE GIRDER 0,45*4,141M + SPIGOT	43,4	G00001515	B.27	
E04RS0241	RINGSCAFF LATTICE GIRDER 0,45*5,141M + SPIGOT	52,4	G00001516		
E04RS0242	RINGSCAFF LATTICE GIRDER 0,45*6,141M + SPIGOT	62,8	G00001517		
E04RS0559	RINGSCAFF LATTICE GIRDER COUPLER	1,5	G00003492		
E04RS0003	RINGSCAFF SPIGOT CLAMP	1,3	G00002457	B.59	
E04RS0571	RINGSCAFF ALUMINIUM PLATFORM STAIR 2,572M	31,0	E04RS0571	(*) Z-924,A.48	
E04RS0572	RINGSCAFF OUTER GUARDRAIL 2,572M	13,8	G00002342		
E04RS0592	RINGSCAFF GUARDRAIL ADAPTOR	0,8	G00003433		
E04RS0573	RINGSCAFF INNER GUARDRAIL 2,50-3,07M	10,9	G00002343		
E04RS0593	RINGSCAFF INNER GUARDRAIL 2,50-3,07M EXTENDED	13,7	G00002512		
E04RS1029	RINGSCAFF INNER GUARDRAIL UNIVERSAL	5,7	E04RS1029		
E04RS1030	RINGSCAFF INNER GUARDRAIL TOP PLATFORM	9,1	E04RS1030		
E04RS0726	RINGSCAFF END GUARDRAIL 0,70M	6,1	E04RS0726		

Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0020	RINGSCAFF INTERMEDIATE TRANSOM 0,732M	3,6	E04RS0020		
E04RS0039	RINGSCAFF INTERMEDIATE TRANSOM 1,088M	5,3	E04RS0020		
E04RS0053	RINGSCAFF INTERMEDIATE TRANSOM 1,400M	6,4	E04RS0020		
E04RS0067	RINGSCAFF INTERMEDIATE TRANSOM 1,570M	7,2	E04RS0020		
E04RS0202	RINGSCAFF INTERMEDIATE TRANSOM 2,072M	8,3	E04RS0020		
E04RS0236	RINGSCAFF INTERMEDIATE TRANSOM 2,572M	10,1	E04RS0020		
E04RS0237	RINGSCAFF INTERMEDIATE TRANSOM 3,072M	12,1	E04RS0020		
E04RS0371	RINGSCAFF DECK-TO-DECK TRANSOM 1-BOARD	4,4	G00001512		
E04RS0372	RINGSCAFF DECK-TO-DECK TRANSOM 2-BOARD	5,5	G00001512		
E04RS0363	RINGSCAFF LEDGER-TO-DECK TRANSOM 1-BOARD	2,8	G00002425		
E04RS0364	RINGSCAFF LEDGER-TO-DECK TRANSOM 2-BOARD	4,1	G00002425		
E04AA0025	RINGSCAFF ANCHOR TUBE 0,40M	1,9	E04AA0277	B.41	
E04AA0026	RINGSCAFF ANCHOR TUBE 0,60M	2,7	E04AA0277		
E04AA0027	RINGSCAFF ANCHOR TUBE 0,80M	3,4	E04AA0277		
E04AA0095	RINGSCAFF ANCHOR TUBE 1,00M	4,2	E04AA0277		
E04AA0155	RINGSCAFF ANCHOR TUBE 1,20M	5,0	E04AA0277		
E04AA0156	RINGSCAFF ANCHOR TUBE 1,50M	6,1	E04AA0277		
E04RS0603	RINGSCAFF PEDESTRIANFRAME 1,572M	22,2	G00003429	B.43	
E04AA0062	SAFETY CLIP D10	0,1	G00002256		
E04AA0892	RA BOLT COUPLER class BB TYPE P41	1,3	E04AA0183	EN74-1	
E04AA0893	SWIVEL BOLT COUPLER class B TYPE P46	1,5	E04AA0198		
E04RS1032	RINGSCAFF ROSETTE COUPLER WITH BOLT SW22 FOR RAIL	1,3	E04RS1032		

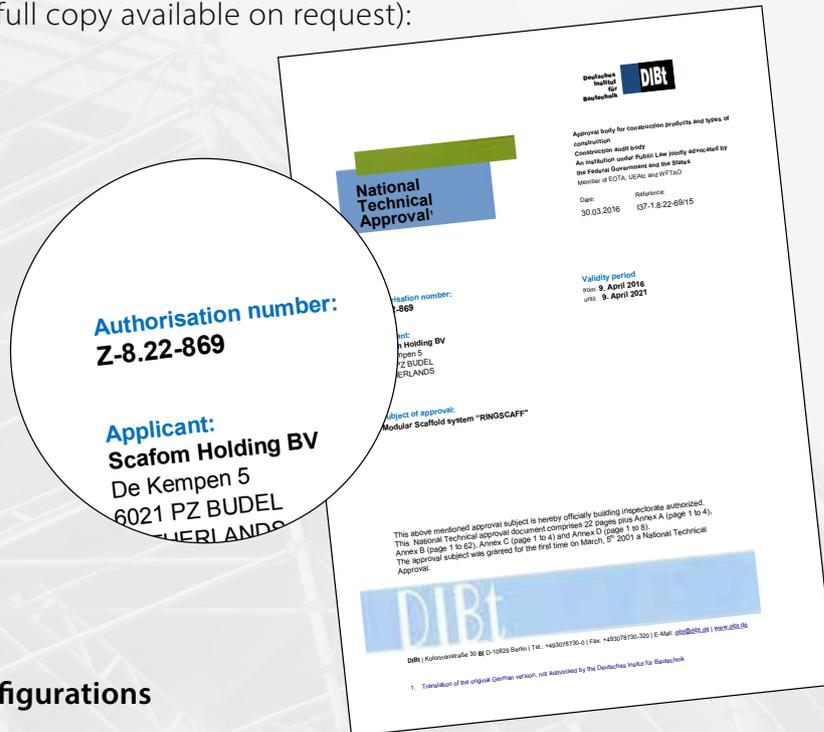
RINGSCAFF

INSTRUCTIONS FOR ASSEMBLY AND USE

Article nr. 2023 U-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0378	RINGSCAFF U-LEDGER 0,732M	3,2	G00001576	B.19	
E04RS0379	RINGSCAFF U-LEDGER REINFORCED 1,088M	6,2	G00001577	B.22	
E04RS0380	RINGSCAFF U-LEDGER REINFORCED 1,400M	7,9	G00001577		
E04RS0392	RINGSCAFF U-LEDGER DOUBLE TUBE 1,572M	10,5	G00002403		
E04RS0395	RINGSCAFF U-LEDGER DOUBLE TUBE 2,072M	12,8	G00002538	B.24	
E04RS0397	RINGSCAFF U-LEDGER DOUBLE TUBE 2,572M (8'-6")	14,3	G00002404		
E04RS0399	RINGSCAFF U-LEDGER DOUBLE TUBE 3,072M	20,1	G00002405		
E04RS0941	RINGSCAFF STEEL DECK 0,320*0,73M (U) MOD.T	5,5	E04RS0887	B.38	
E04RS0887	RINGSCAFF STEEL DECK 0,320*1,088M (U) MOD.T	8,2	E04RS0887		
E04RS0942	RINGSCAFF STEEL DECK 0,320*1,57M (U) MOD.T	11,8	E04RS0887		
E04RS0888	RINGSCAFF STEEL DECK 0,320*2,072M (U) MOD.T	15,6	E04RS0887		
E04RS0943	RINGSCAFF STEEL DECK 0,320*2,57M (8'-6") (U) MOD.T	19,3	E04RS0887		
E04RS0944	RINGSCAFF STEEL DECK 0,320*3,07M (U) MOD.T	23,1	E04RS0887		
E04RS0608	RINGSCAFF STEEL DECK 0,190*0,732M (U) MOD.T	4,0	E04RS0608	B.39	
E04RS0609	RINGSCAFF STEEL DECK 0,190*1,088M (U) MOD.T	5,5	E04RS0608		
E04RS0611	RINGSCAFF STEEL DECK 0,190*1,572M (U) MOD.T	7,5	E04RS0608		
E04RS0612	RINGSCAFF STEEL DECK 0,190*2,072M (U) MOD.T	9,6	E04RS0608		
E04RS0613	RINGSCAFF STEEL DECK 0,190*2,572M (8'-6") (U) MOD.T	11,7	E04RS0608		
E04RS0614	RINGSCAFF STEEL DECK 0,190*3,072M (U) MOD.T	14,0	E04RS0608		
E04RS0594	RINGSCAFF STEEL DECK SAFETY 0,732M (U)	1,3	E04RS0594	B.32	
E04RS0595	RINGSCAFF STEEL DECK SAFETY 1,088M (U)	1,9	E04RS0594		
E04RS0596	RINGSCAFF STEEL DECK SAFETY 1,400M (U)	2,4	E04RS0594		
E04RS0597	RINGSCAFF STEEL DECK SAFETY 1,572M (U)	2,7	E04RS0594		
E04RS0598	RINGSCAFF STEEL DECK SAFETY 2,072M (U)	3,6	E04RS0594		
E04RS0599	RINGSCAFF STEEL DECK SAFETY 2,572M (U)	4,4	E04RS0594		
E04RS0600	RINGSCAFF STEEL DECK SAFETY 3,072M (U)	5,3	E04RS0594		
E04RS0449	RINGSCAFF BRACKET 0,390M 1 BOARD (U)	4,1	G00002324	B.26	
E04RS0467	RINGSCAFF DECK&LADDER ALU/PLYW 0,61*2,572M (8'-6") (U)	26,7	E04RS0467	B.41	
E04RS0468	RINGSCAFF DECK&LADDER ALU/PLYW 0,61*3,072M (U)	30,0	E04RS0467		
E04RS0589	RINGSCAFF PLATFORM STAIRS 2,572*2,0M B=0,625M ALU (U)	26,8	E04RS0589	Z-924,A.48	

11.2 Details from Technical Product approval Z-8.22-869

For the technical characteristics and certification of the RINGSCAFF scaffold system, reference is made to the German, technical product approval Z-8.22-869. Front page of technical product approval (full copy available on request):



11.3 Standard configurations

The following RINGSCAFF structures have been designated as standard configurations for façade scaffolding (see diagrams on the following pages, (in pages 62 - 65).

Configuration No.	Transom	Bay width (m)	Bay length (m)	Load class (kg/m ²)	Cladding	Side brackets	Bridging
Alternative 1	U-type	0.73	3.07	3 (200)	Without cladding	-	-
Alternative 2	U-type	0.73	3.07	3 (200)	Without cladding	Included	-
Alternative 3	U-type	0.73	3.07	3 (200)	Without cladding	-	Included
Alternative 4	U-type	0.73	3.07	3 (200)	Without cladding	Included	Included

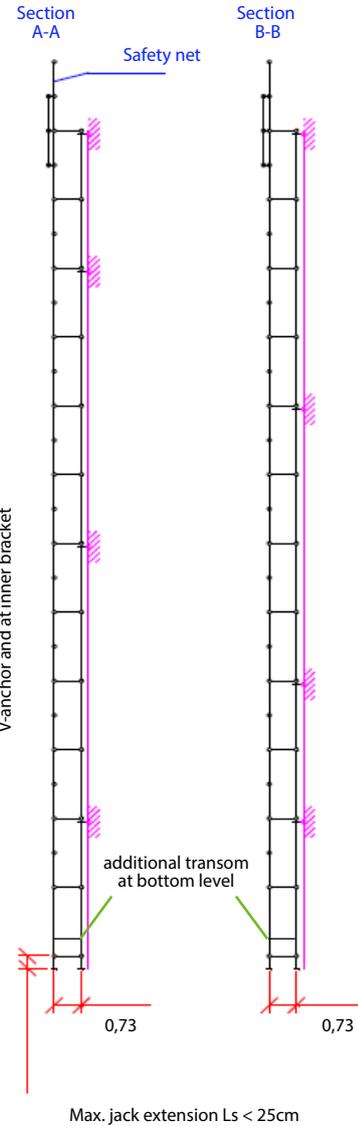
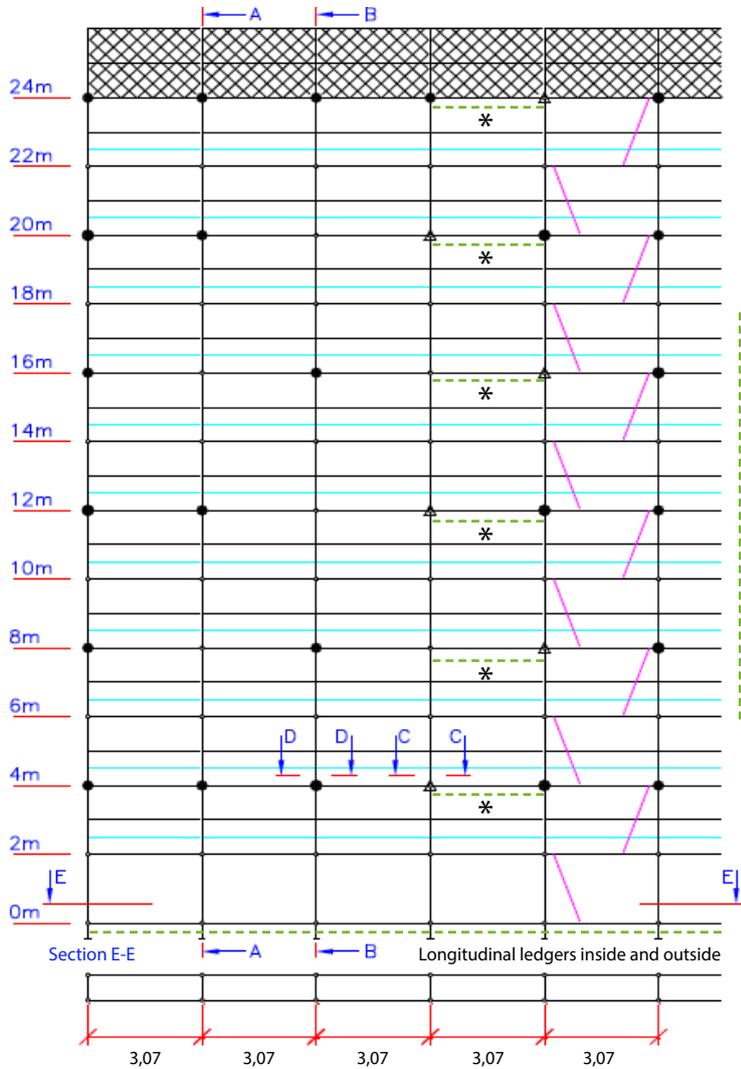
Configuration No.	Transom	Bay width (m)	Bay length (m)	Load class (kg/m ²)	Cladding	Side brackets	Bridging
Alternative 5	O-type	0.73	3.07	3 (200)	Without cladding	-	-
Alternative 6	O-type	0.73	3.07	3 (200)	Without cladding	Included	-
Alternative 7	O-type	0.73	3.07	3 (200)	Without cladding	-	Included
Alternative 8	O-type	0.73	3.07	3 (200)	Without cladding	Included	Included

Figure II.1: Standard configurations

When planning and erecting the scaffolding, follow the assembly instructions in this manual and the technical instructions in the product manual or the standard configurations in the product approval.

U-transoms

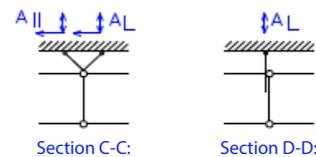
Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A- LS
 Alternative 1: Without inner side brackets



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 8 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

- Max. standard loads:
- Outer standard: 12.6 kN
 - Inner standard: 8.7 kN
- Max. anchor forces
- Orthogonal to façade: +/- 4.1 kN (AL)
 - Parallel to façade: +/- 2.4 kN (All)

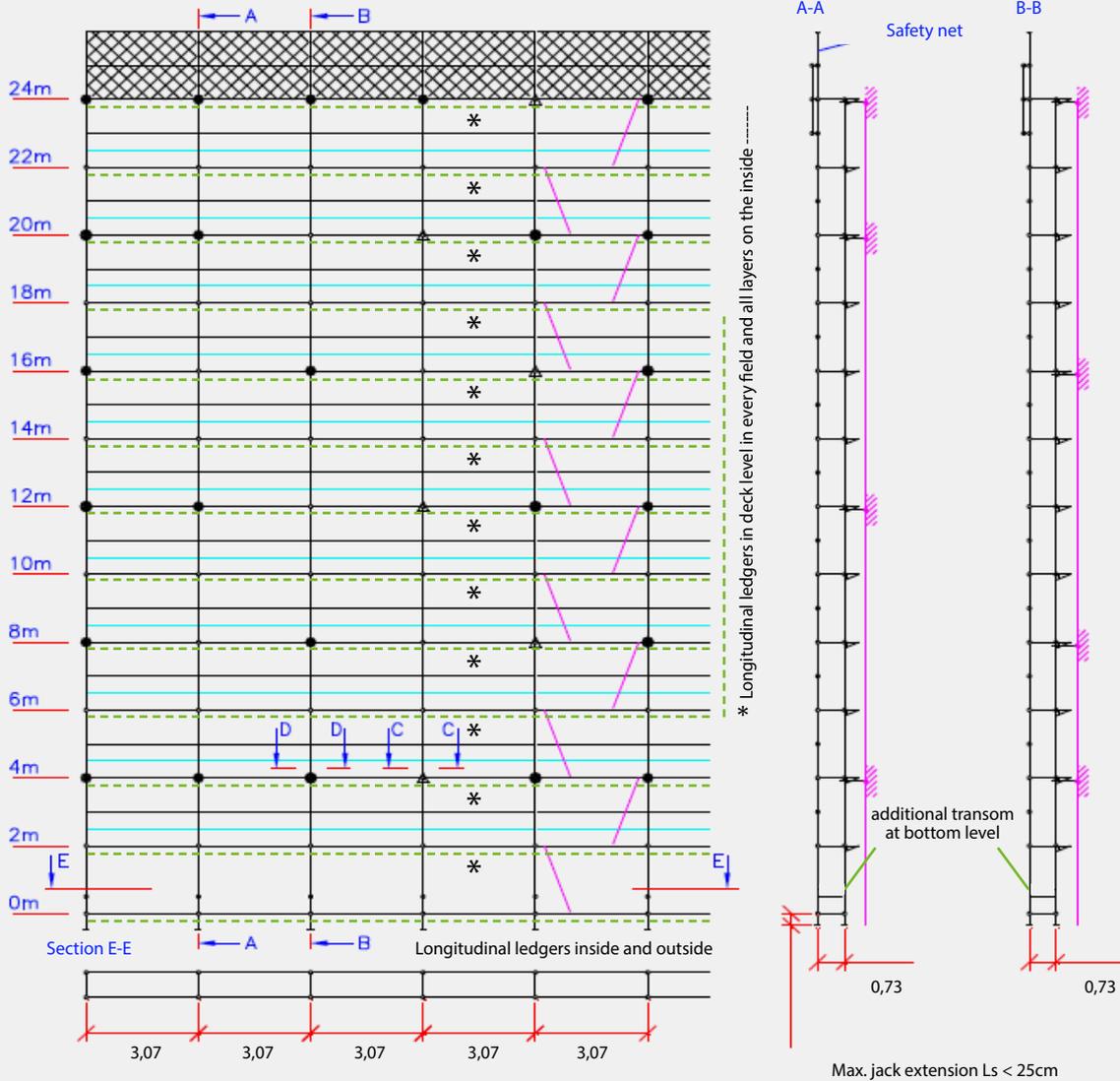
- Anchorage on inner standard
- ▼ V-shaped tie bar



Loads according to German approval Z-8.22-869; schematic drawing

U-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A - LS
Alternative 2: With inner side brackets



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 8 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

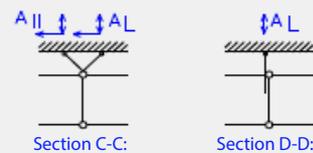
Max. standard loads:

- Outer standard: 12.6 kN
- Inner standard: 18.7 kN

Max. anchor forces

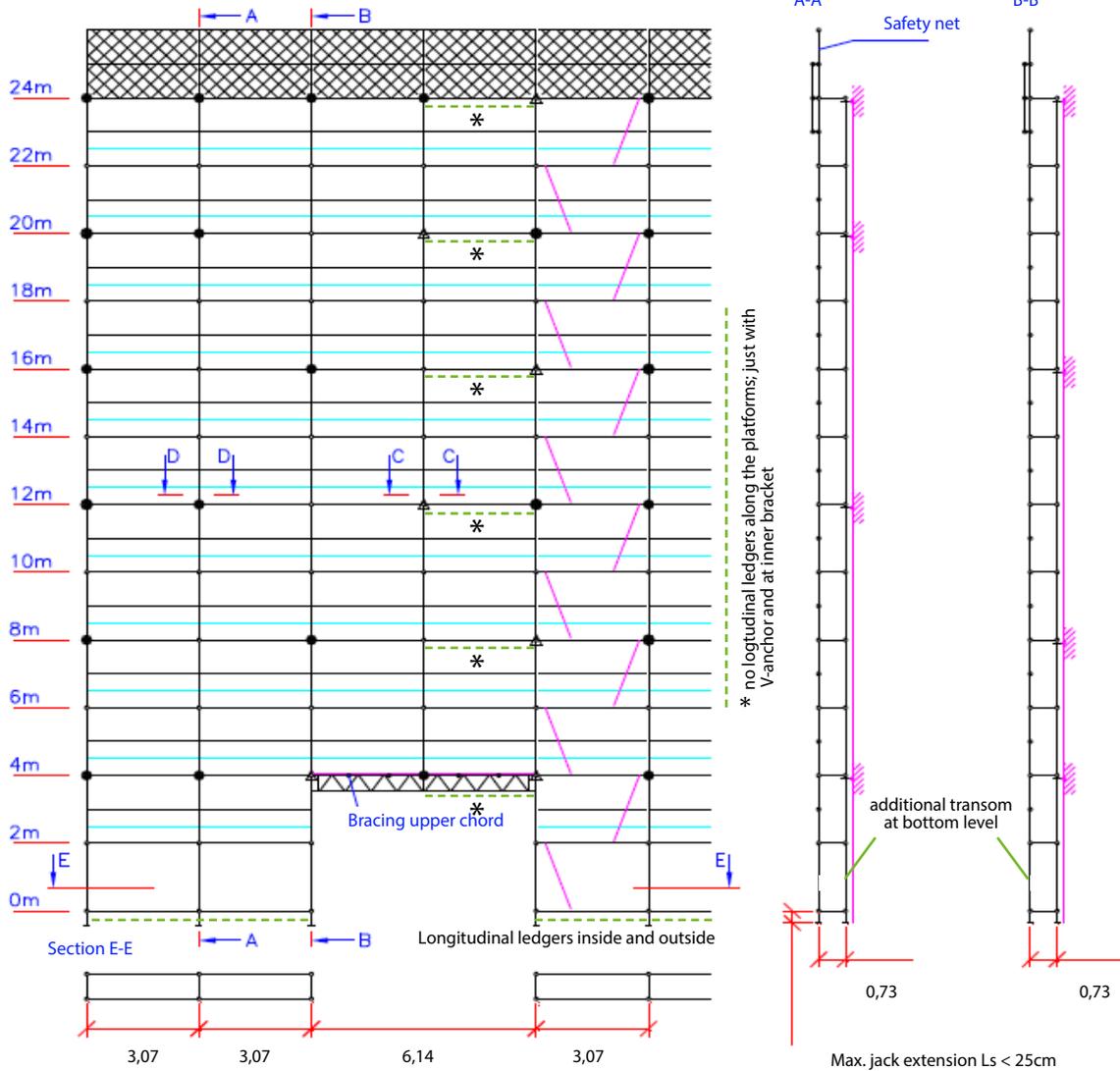
- Orthogonal to façade: +/- 4.1 kN (AL)
- Parallel to façade: +/- 3.0 kN (All)

- Anchorage on inner standard
- ▼ V-shaped tie bar



U-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A- LS
 Alternative 3: Without inner side brackets, with bridging



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 8 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

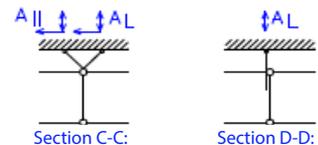
Max. standard loads:

- Outer standard: 18.9 kN
- Inner standard: 13.1 kN

Max. anchor forces

- Orthogonal to façade: +/- 4.1 kN (AL)
- Parallel to façade: +/- 2.4 kN (AII)

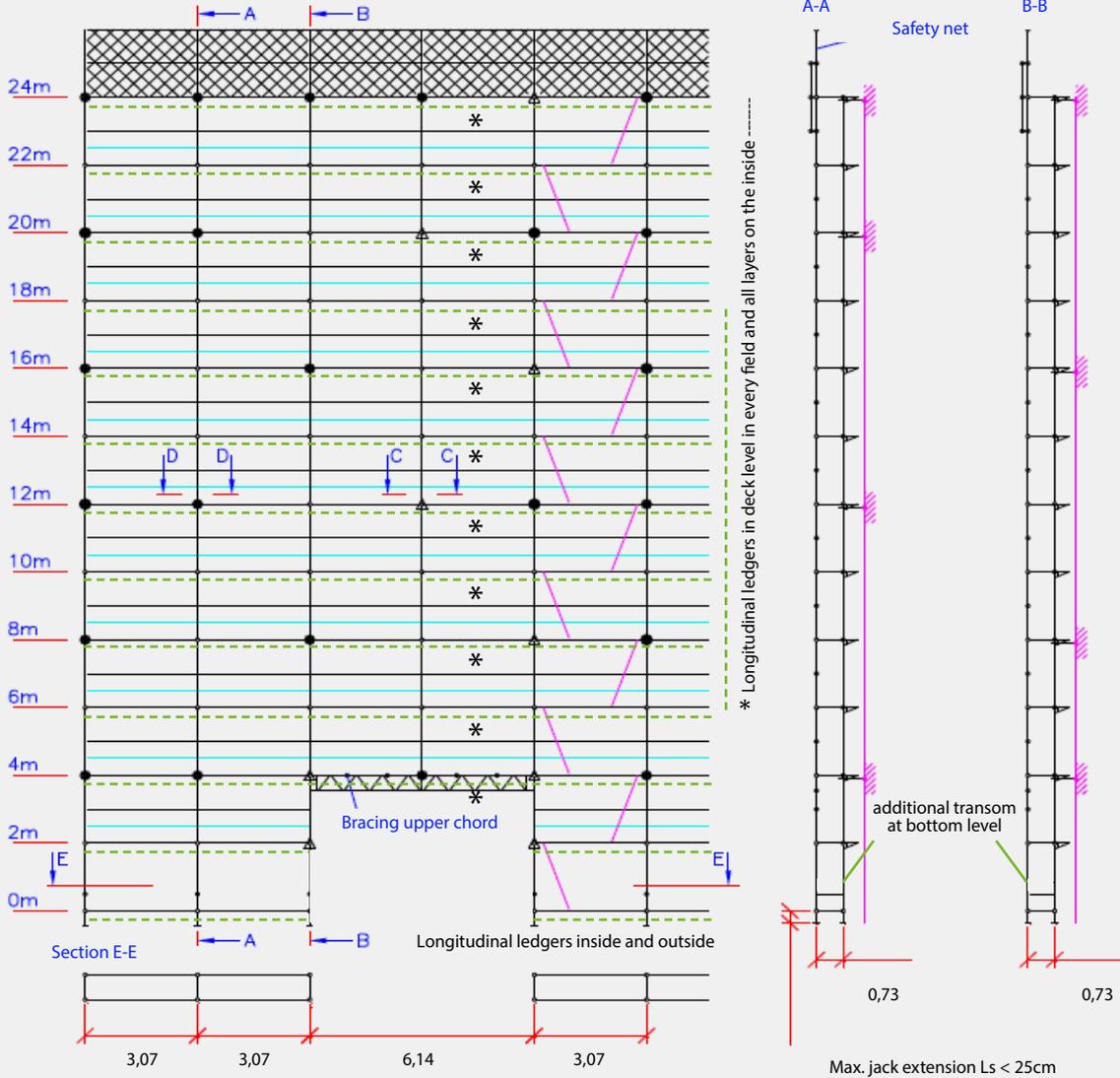
- Anchorage on inner standard
- ▼ V-shaped tie bar



Loads according to German approval Z-8.22-869; schematic drawing

U-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A - LS
 Alternative 4: With inner side brackets and bridging



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 8 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

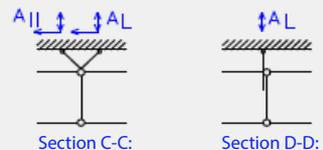
Max. standard loads:

- Outer standard: 18.9 kN
- Inner standard: 26.0 kN

Max. anchor forces

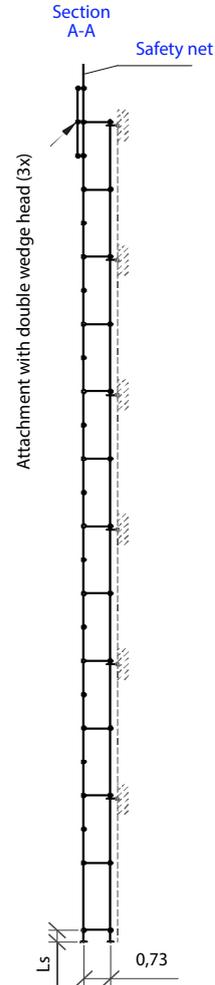
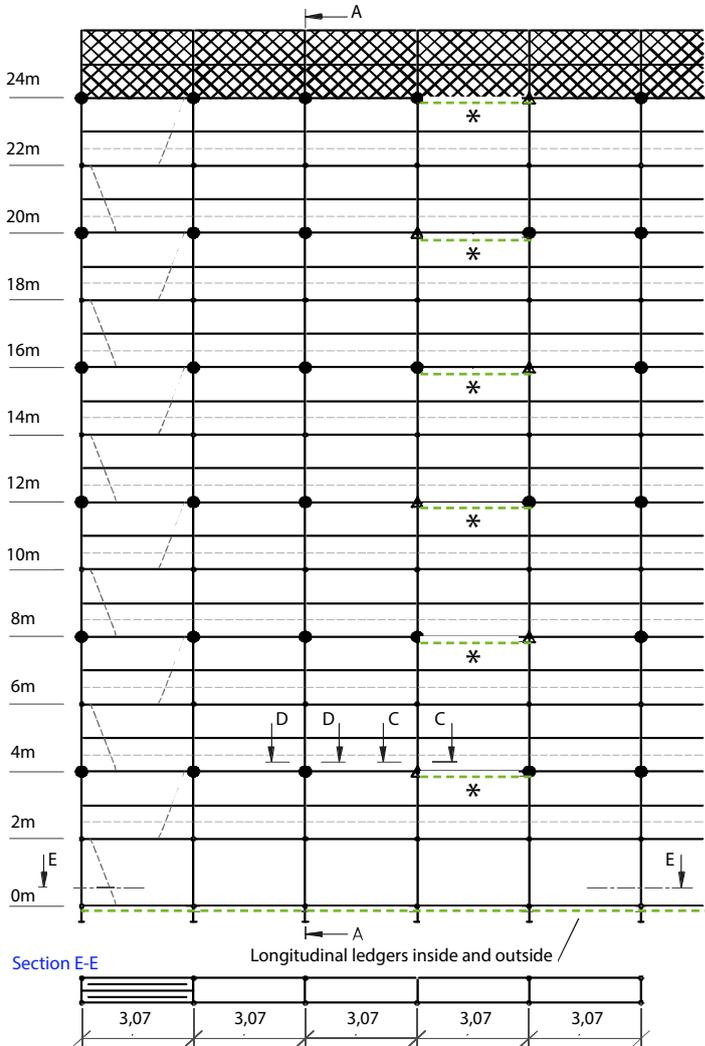
- Orthogonal to façade: +/- 4.1 kN (AL)
- Parallel to façade: +/- 3.0 kN (AII)

- Anchorage on inner standard
- ▼ V-shaped tie bar



O-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A - L5
 Alternative 5: Without inner side brackets, with bridging.



Max. jack extension $L_s \leq 25\text{cm}$

- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 4 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

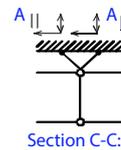
Max. standard loads:

- Outer standard: 12.6 kN
- Inner standard: 8.7 kN

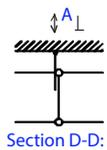
Max. anchor forces

- Orthogonal to façade: +/- 2.2 kN (AL)
- Parallel to façade: +/- 2.4 kN (All)

- Anchorage on inner standard
- ▼ V-shaped tie bar



Section C-C:

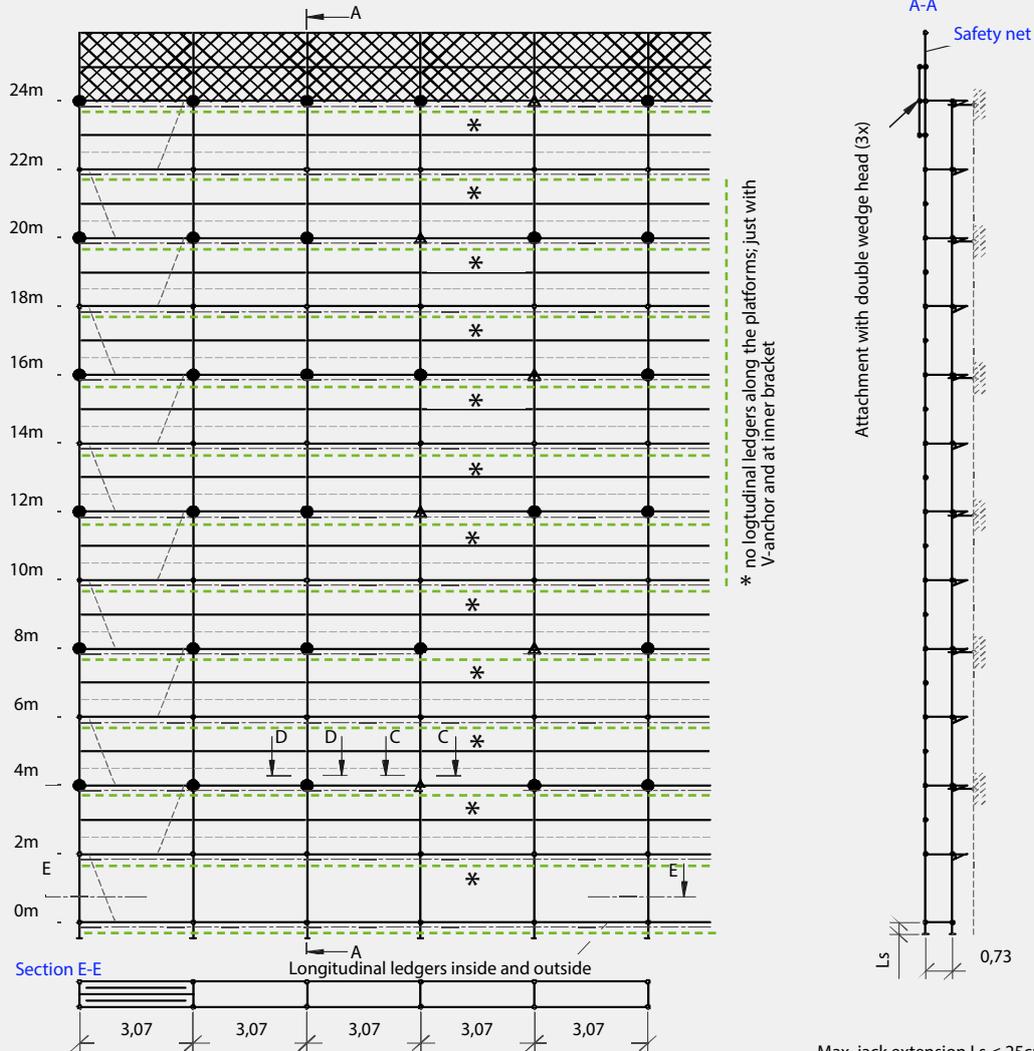


Section D-D:

Loads according to German approval Z-8.22-869; schematic drawing

O-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A - LS
 Alternative 6: With inner side brackets, with bridging.



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 4 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

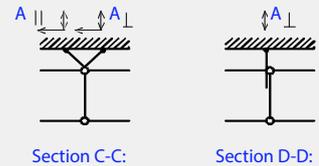
Max. standard loads:

- Outer standard: 12.6 kN
- Inner standard: 18.7 kN

Max. anchor forces

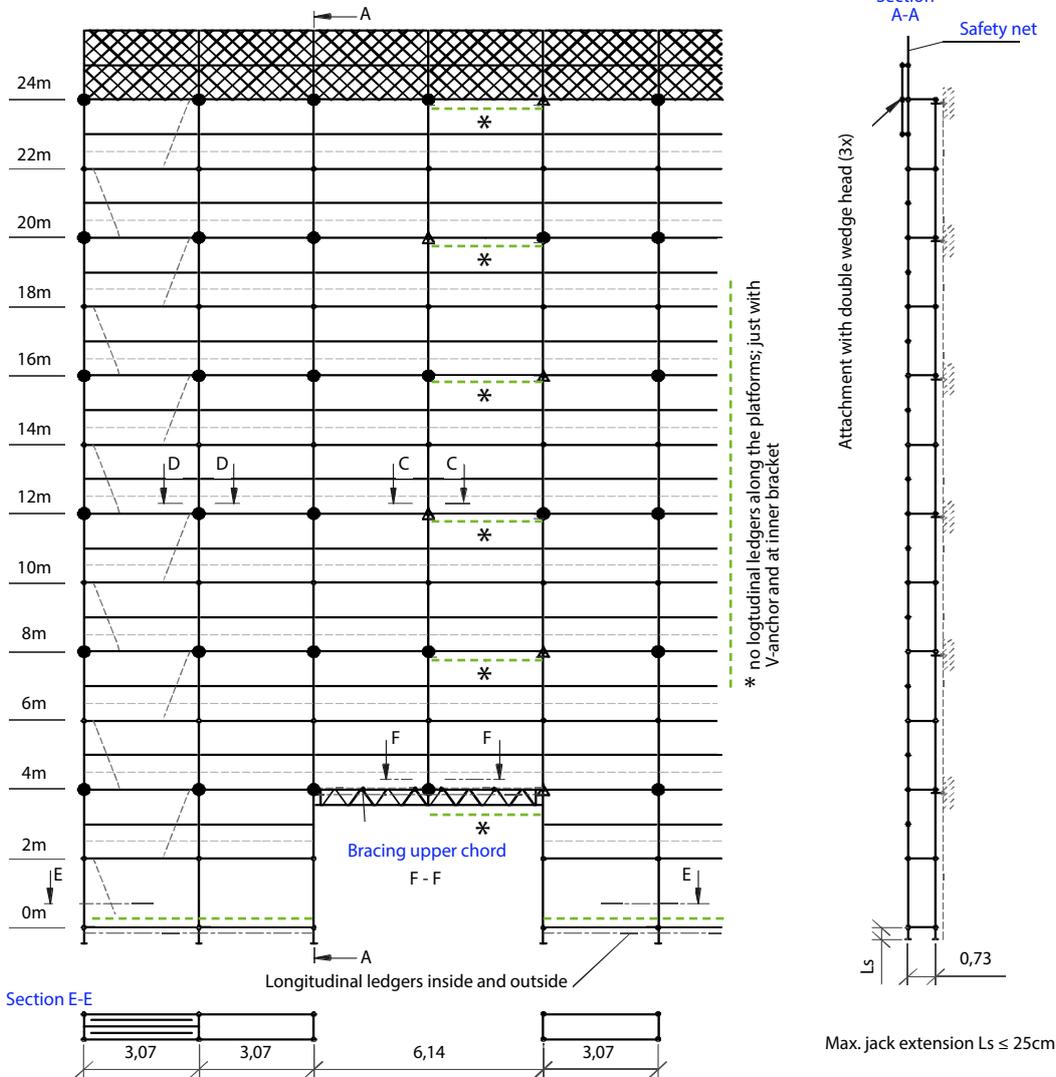
- Orthogonal to façade: +/- 2.2 kN (AL)
- Parallel to façade: +/- 3.0 kN (AII)

- Anchorage on inner standard
- ▼ V-shaped tie bar



O-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A- LS
 Alternative 7: Without inner side brackets, with bridging.



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 4 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

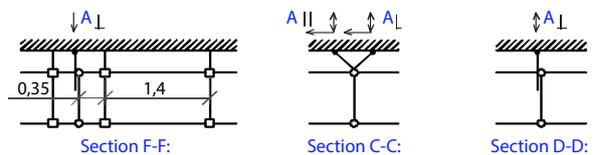
Max. standard loads:

- Outer standard: 18.9 kN
- Inner standard: 13.0 kN

Max. anchor forces

- Orthogonal to façade: +/- 2.2 kN (AL)
- Parallel to façade: +/- 2.4 kN (All)

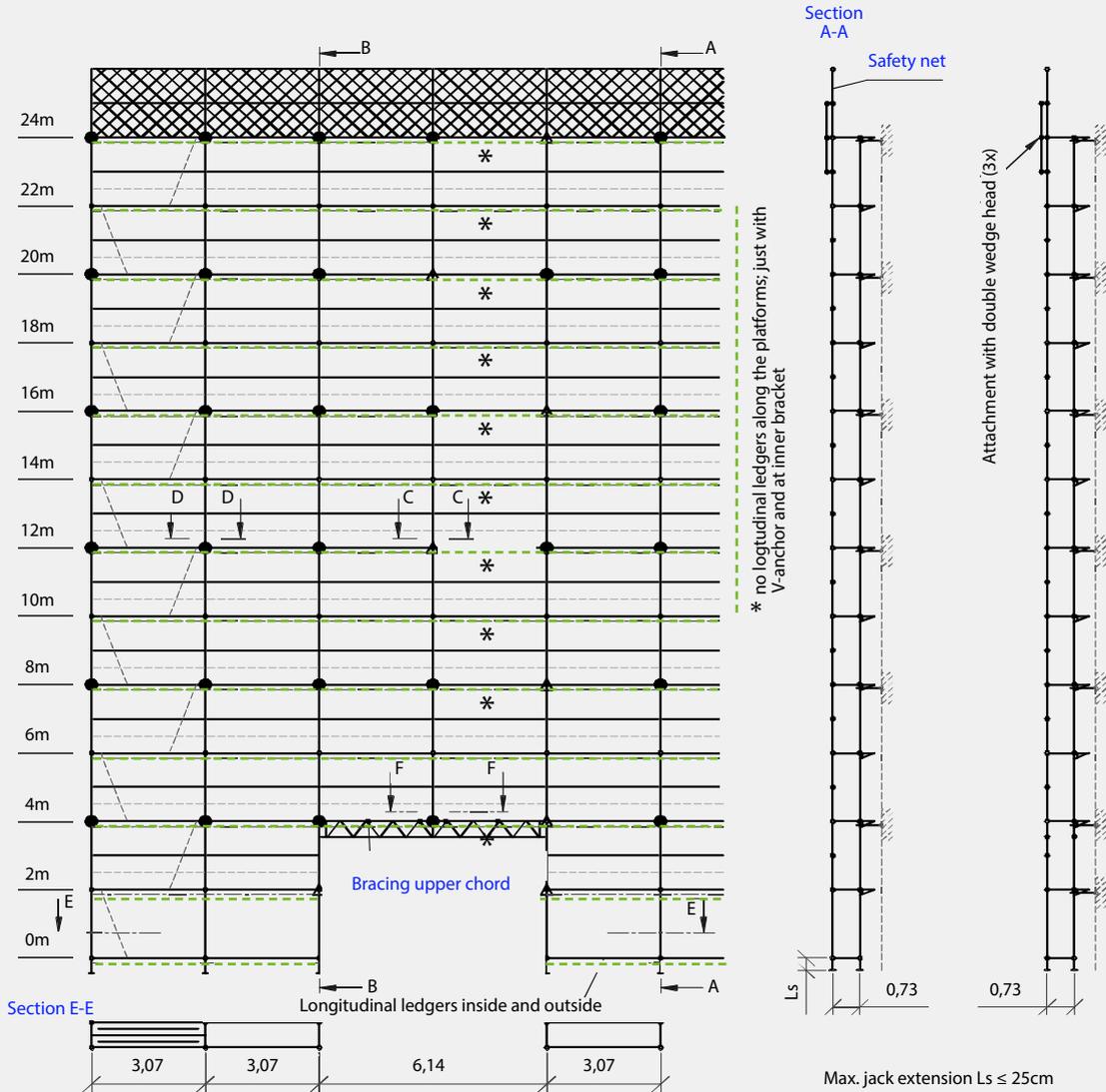
- Anchorage on inner standard
- ▼ V-shaped tie bar



Loads according to German approval Z-8.22-869; schematic drawing

O-transoms

Standard configuration: EN12810 - 3D - SW06/ 300 - H2 - A - LS
 Alternative 8: With inner side brackets, with bridging.



- Bay length x width = 3.07 m x 0.73 m
- Load according to load class 3 EN 128-11 (2kN/m²)
- Anchorage every 4 m
- Steel decks 0,32m and safety fan
- Scaffold unclad
- Scaffold in front of partially open façade

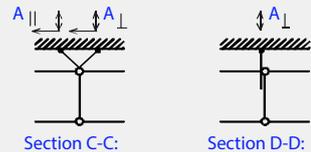
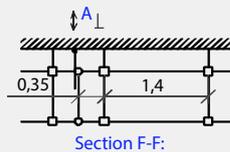
Max. standard loads:

- Outer standard: 18.9 kN
- Inner standard: 26.0 kN

Max. anchor forces

- Orthogonal to façade: +/- 2.2 kN (AL)
- Parallel to façade: +/- 3.0 kN (All)

- Anchorage on inner standard
- ▼ V-shaped tie bar



12 APPENDIX II: VERIFICATION CRITERIA FOR SCAFFOLDING COMPONENTS

In order to ensure that the scaffolding is erected safely, it is very important that the components used do not show any signs of damage.

For this reason, Scafom-rux has defined inspection criteria for the main components of the "RINGSCAFF" modular scaffolding system. These serve as instructions for the persons who work with or maintain the scaffolding, i.e. scaffold erectors and on-site supervisors as well as stock supervisors and staff.

Verification criteria have been defined for the following components that have a load-bearing function in the scaffolding structure:

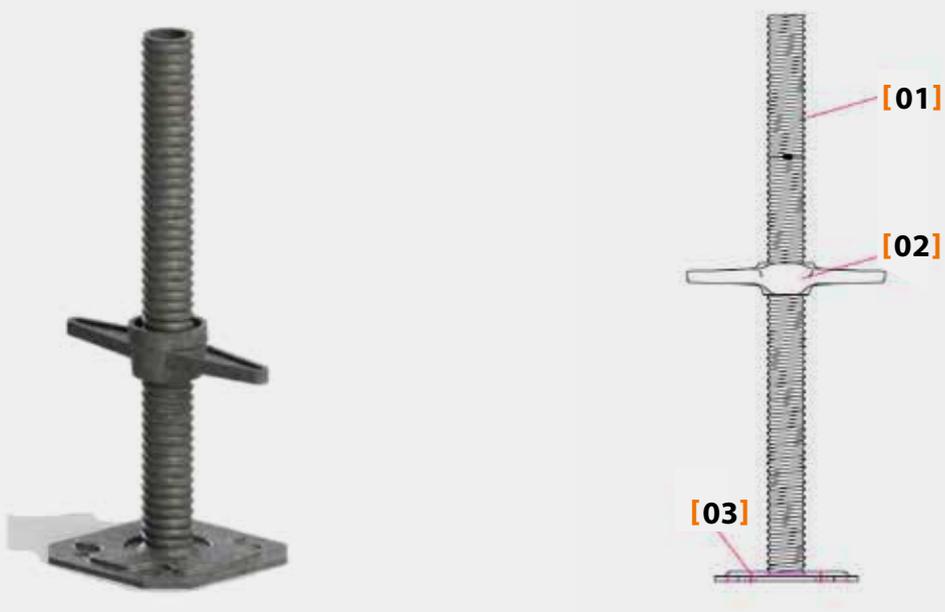
- 1) Base jacks
- 2) Standard lead-off adapters
- 3) Standards with tube connector
- 4) Tubular ledgers / Transverse ledgers / Support ledgers
- 5) Intermediate ledgers
- 6) Vertical diagonal
- 7) Side brackets
- 8) Toe boards
- 9) Steel decks
- 10) Anchorage

If the component part does not satisfy the inspection criteria, it should no longer be used but be replaced on site and returned to the depot for maintenance and/or repair by qualified personnel or be entirely disposed of.

Cleaning and maintenance instructions; according to the regular standards for construction equipment and tools.

Storage and stacking; in suitable stacking racks and bins.
Steel scaffolding material can be stored outside. Wooden parts in covered or indoor storage, where parts can be stored dry.

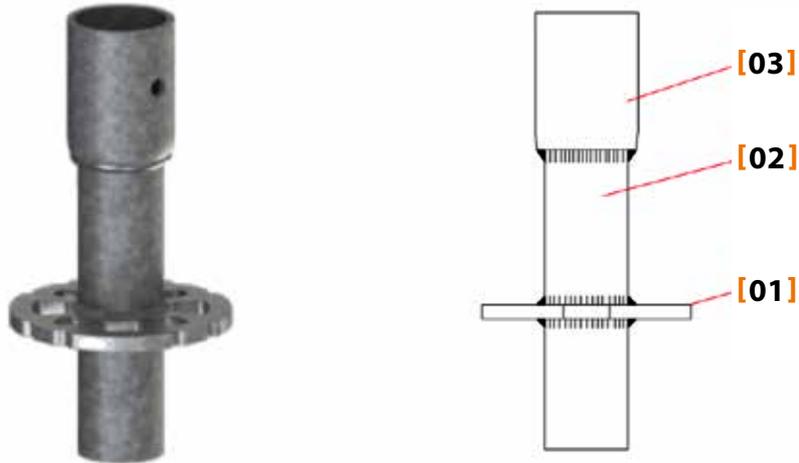
12.1 Base jack



Verification criteria:

- 1) The base plate [03] has to be noticeably flat and visibly perpendicular to a flat surface.
- 2) The base jack shall not be rusty.
- 3) The threaded shaft [01] has to be noticeably straight.
- 4) The threaded shaft may not show any visible signs of damage such as breaks, cracks or dents.
- 5) The welding joints on the threaded shaft and the base plate may not show any cracks.
- 6) The threaded shaft has to be fitted with a restraining element to limit the upper position of the adjustable wing nut [02].
- 7) The adjustable wing nut must be able to be turned over the entire thread length from the bottom to the limit point without any problems.
- 8) The wing nut may not show any signs of damage or cracks.
- 9) The base plate may not show any cracks or dents.
- 10) The base plate must be free of concrete or other impurities.

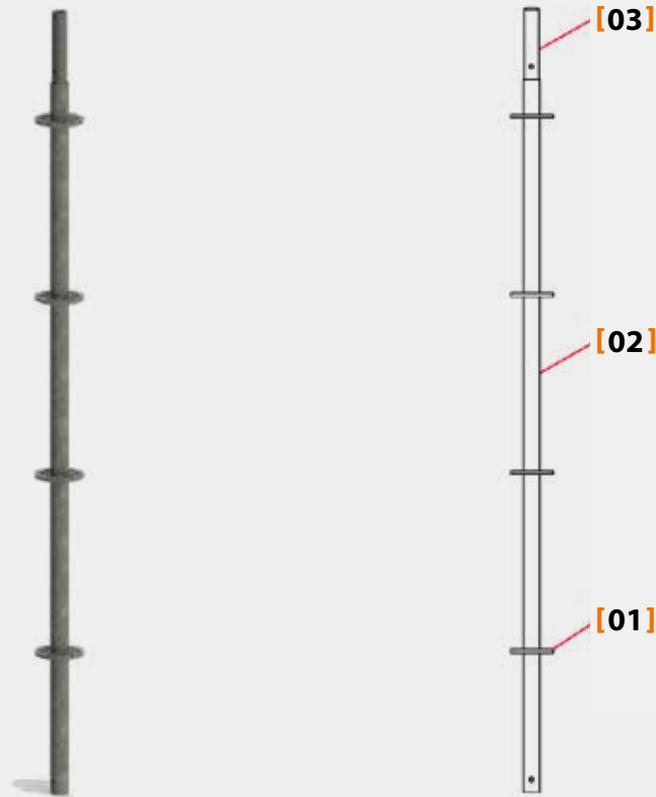
12.2 Standard lead-off adapter



Verification criteria:

- 1) There may be no visible signs of damage such as breaks, cracks or dents on the standard lead-off adapter.
- 2) The standard lead-off adapter may not be rusty.
- 3) The perforated ring **[01]** may not be bent nor may it show any cracks.
- 4) The welding joints between the perforated ring and the tube **[02]** as well as between the standard lead-off adapter **[03]** and the tube may not show any cracks.
- 5) The standard lead-off adapter must be round to accommodate a scaffold tube.
- 6) The contact areas of the tube **[02]** both on the upper side as well as on the underside must be smooth and may not carry any impurities.
- 7) The standard lead-off adapter must be free of concrete or other impurities

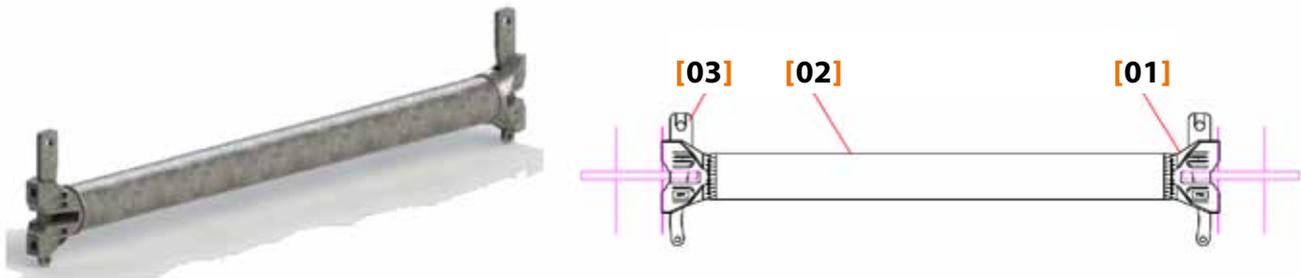
12.3 Standard with tube connector



Verification criteria:

- 1) The standard may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The standard may not be rusty.
- 3) The standard has to be visibly straight.
- 4) The perforated rings [01] may not be bent nor may they show any cracks.
- 5) The welding joints between the perforated ring and the tube [02] may not show any cracks.
- 6) The contact areas of the tube [02] both on the upper side as well as on the underside must be smooth and may not carry any impurities.
- 7) The tube connector [03] has to be attached in the standard tube so that it is straight, firmly affixed and without any play.
- 8) The standards must be free of concrete or other impurities. In particular, there may be no soiling on the connecting surfaces to tubular ledgers and diagonals.

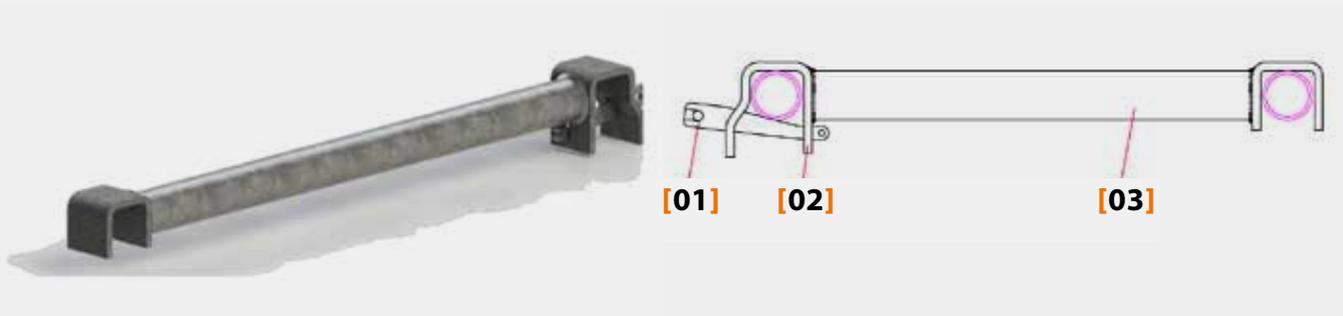
12.4 Tubular ledger / Transverse ledger / Support ledger



Verification criteria:

- 1) The tubular ledger may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The tubular ledger may not be rusty.
- 3) The tubular ledger has to be visibly straight and in a horizontal position when connected to a standard.
- 4) The welded joints between the tubular ledger end pieces [01] and tube [02] may not show any cracks.
- 5) The wedges [03] must be freely movable and secured against loosening.
- 6) The wedges may not be bent or cracked.
- 7) The opening on the tubular ledger end pieces has to be straight and easy to fit onto a perforated ring.
- 8) The tubular ledger must be free of concrete or other impurities.

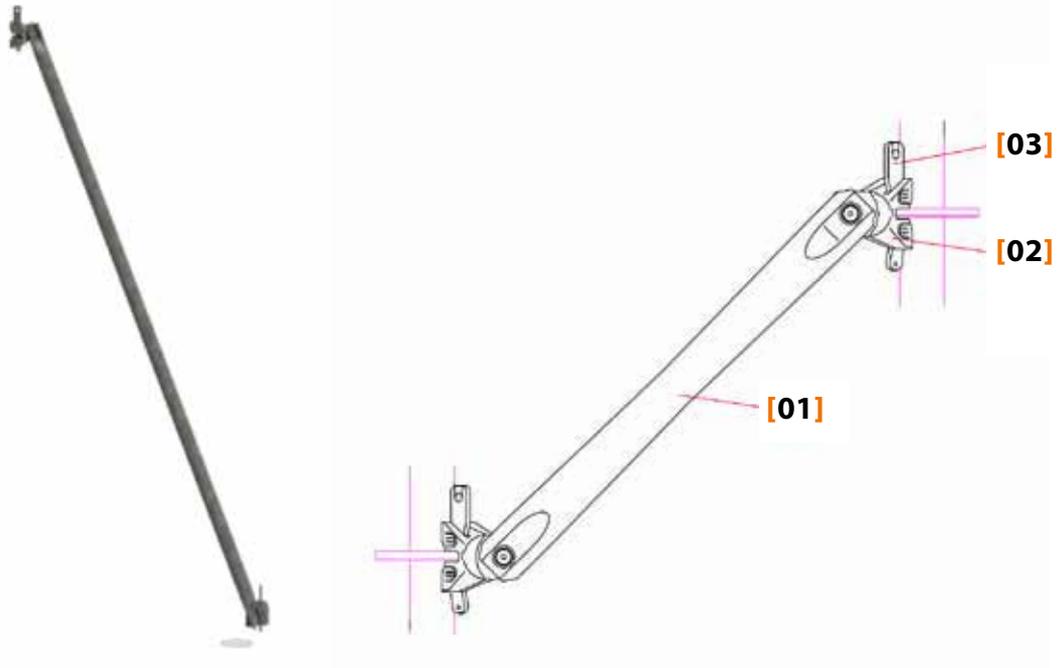
12.5 Intermediate ledger



Verification criteria:

- 1) The intermediate ledger may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The intermediate ledger may not be rusty.
- 3) The intermediate ledger has to be visibly straight.
- 4) The welding joints between the clamps [02] and tube [03] may not show any cracks.
- 5) The wedge [01] must be freely movable and secured against loosening.
- 6) The wedge may not be bent or cracked.
- 7) The clamps on the intermediate ledger must be straight and easy to fit onto the scaffold tube.
- 8) The intermediate ledger must be free of concrete or other impurities.

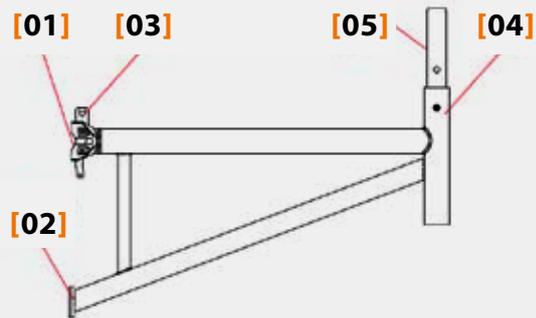
12.6 Vertical diagonal



Verification criteria:

- 1) The horizontal front guardrail may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The horizontal front guardrail may not be rusty.
- 3) The horizontal front guardrail **[01]** tube has to be visibly straight.
- 4) The wedges **[02 + 03]** must be freely movable and secured against loosening.
- 5) The wedges may not be bent or cracked.
- 6) The opening on the front guardrail end pieces has to be straight and easy to fit onto a perforated ring.
- 7) The horizontal front guardrail must be free of concrete or other impurities.

12.7 Side bracket



Verification criteria:

- 1) The side bracket may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The side bracket may not be rusty.
- 3) The side bracket has to be visibly straight and in a horizontal position when connected to a standard.
- 4) The welding joints between the tubular ledger end piece [01] and / or clamps [02] may not show any cracks.
- 5) The wedge [03] must be freely movable and secured against loosening.
- 6) The wedge may not be bent or cracked.
- 7) The opening on the tubular ledger end pieces has to be straight and easy to fit into a perforated ring opening.
- 8) The contact area of the tube [04] on the upper side must be smooth and may not carry any impurities.
- 9) The tube connector [05] has to be attached in the tube [04] so that it is straight, firmly affixed and without any play.
- 10) The side bracket must be free of concrete or other impurities.

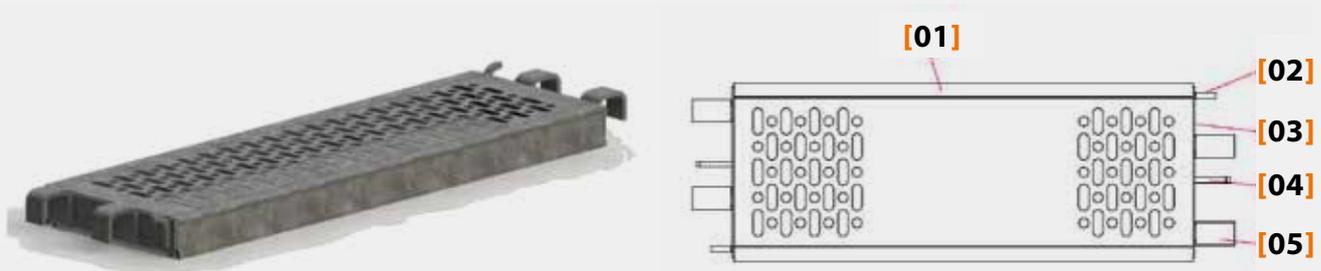
12.8 Toe board



Verification criteria:

- 1) The toe board has to be visibly straight.
- 2) Minimum height of the toe board: 150 mm; thickness: 30 mm.
- 3) The toe board **[01]** may not show any visible signs of damage such as breaks or cracks.
- 4) The toe board needs to be equipped with two steel end sections **[02]**.
- 5) The end sections may not be bent or show cracks. They have to be well fixed to the wooden board.
- 6) The toe board must be free of concrete or other impurities.

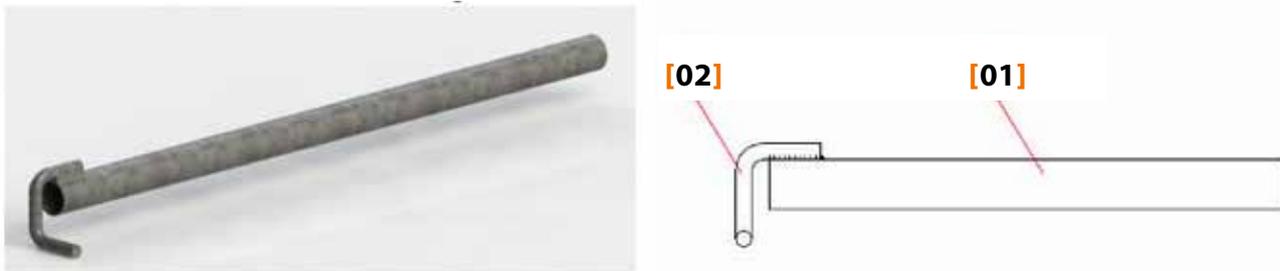
12.9 Steel deck



Verification criteria:

- 1) The steel deck may not show any visible signs of damage such as breaks, cracks or dents, especially in the longitudinal support profiles on the underside.
- 2) The steel deck may not be rusty.
- 3) The steel deck has to be visibly straight and must lie flat with its support hooks flush-fitting on the carrying ledgers **[01]**.
- 4) The support hooks **[02]** may not be bent or cracked.
- 5) The welding joints between the hooks and the end section **[02]** as well as those of the end section and the deck profile **[03]** may not show any cracks.
- 6) The deck retainers **[04]** must be in place and functional.
- 7) The side supports **[05]** have to be in their envisaged position.
- 8) The steel deck must be free of concrete or other impurities.

12.10 Anchorage



Verification criteria:

- 1) The anchorage may not show any visible signs of damage such as breaks, cracks or dents.
- 2) The anchorage may not be rusty.
- 3) The anchoring tube [01] has to be visibly straight.
- 4) The hook [02] may not be bent or cracked.
- 5) The welding joints between hook and tube may not show any cracks.
- 6) The anchorage must be free of concrete or other impurities.

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