



**INSTRUCTIONS
FOR ASSEMBLY
AND USE**

ALFIX MODUL MULTI

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Instructions for Assembly and Use MODUL MULTI published by ALFIX.

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Dear ALFIX customers,

with the „ALFIX MODUL MULTI“ scaffolding system of ALFIX GmbH you have purchased a versatile and robust scaffolding.

Please follow these „Instructions for Assembly and Use“ during assembly, use and dismantling to ensure safe working!

Read this manual carefully. Always keep it with you when assembling, using or dismantling the scaffolding and provide it to the scaffolding erector. It explains in detail all necessary steps and safety measures in the correct order.

The figure on page 4 provides you with an overview of the components which is useful when working with this manual.

If you wish to deviate from these „Instructions for Assembly and Use“, or if you have questions regarding our „ALFIX MODUL MULTI“ scaffolding system, please contact us. We are happy to offer advice.

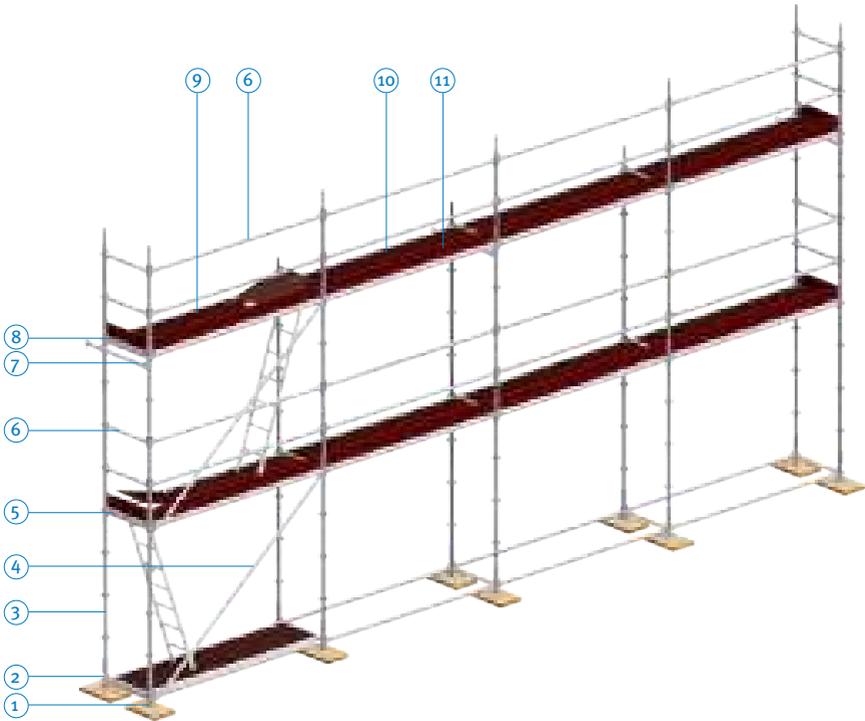
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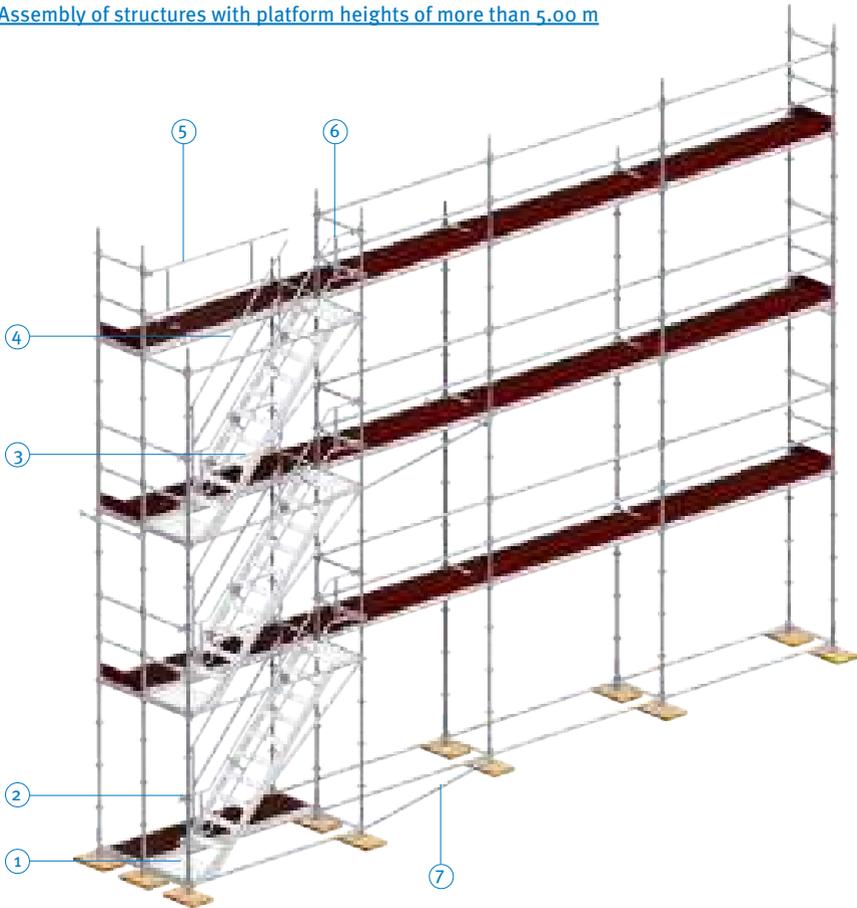
Website: www.alfix-systems.com

Assembly of structures with platform heights of up to 5.00 m



- | | | | |
|---|-------------------------|---|---------------------------------|
| ① | Base jack | ⑦ | Spacer tube |
| ② | Vertical starter piece | ⑧ | Lift-off preventer |
| ③ | Standard | ⑨ | ALBLITZ access deck with ladder |
| ④ | Vertical diagonal brace | ⑩ | ALBLITZ frame platform |
| ⑤ | U-ledger | ⑪ | Toeboard |
| ⑥ | Tube ledger | | |

Assembly of structures with platform heights of more than 5.00 m



- ① ALBLITZ stairway
- ② Stair guardrail holder
- ③ Stair stringer fall protection
- ④ Inner guardrail

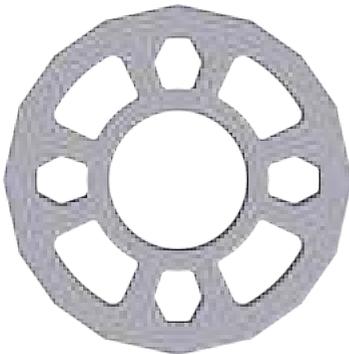
- ⑤ ALBLITZ platform guardrail
- ⑥ ALBLITZ stair guardrail
- ⑦ Horizontal diagonal brace

The key element of the ALFIX MODUL MULTI system is the ALFIX modular connector disc (rosette). The proven wedge connection allows for positive and non-positive connections which are increasingly replacing the time-consuming screw joints used in conventional scaffolding. The ALFIX modular connector disc is installed at intervals of 50 cm and has 8 connection openings, allowing for connection adjustments in all directions. The 50 cm metric arrangement of the connector disc lets scaffolding erectors fit deck levels at nearly any angle.

Please refer to approval Z-8.22-906 (ALFIX MODUL MULTI) for load-bearing capacities and stiffness values of the node connections. The scaffolding system additionally has an official approval for combined systems (Vermischungszulassung ALBLITZ MODUL, Z-8.22-913).

The connector disc (rosette) made of steel has 4 small openings which allow for the connection of ledgers at right angles and 4 large openings which allow for connections of diagonals and transoms at angles larger or smaller than 90°. Please refer to chapter 10 for detailed information on the load-bearing capacity of the nodes.

The modular scaffolding system “MODUL MULTI” can be used for facades, for complex structures in industrial building and as an elaborate load-bearing construction. State-of-the-art technology and user-friendly handling allow for fast, cost-effective and versatile scaffolding structures. Moreover, the scaffolding system lets erectors adapt the scaffolding structures easily to complicated floor and ground plans and structures with different heights.



Modular connector disc (rosette)



Wedge connection



Follow the instructions for use

General warnings

Any modifications or alterations to the scaffolding must be carried out by the scaffolding erector

Always keep the hatches of the access decks closed when not in use for access

Do not store any material on roof fall arrest scaffolding or temporary roofs

Workers should never work directly below or above another worker

Children must keep off the scaffolding

The total load acting on one scaffolding bay must not exceed the allowable load according to the respective load class

! ≤ 30 cm
Take particular care not to fall between the scaffolding and the building

Only use ladders or stairways that are already installed for ascending and descending a scaffolding

Allow sufficient space for passing when storing material on the scaffold bay

Do not jump from scaffold decks

Make sure excavations do not undermine the structural stability of the scaffold

The following safety symbols are used in this manual:



Falling hazard



Fasten safety harness



Wear safety helmet



Follow the instructions for use



No unauthorized entry



Do not climb on the outer face of the scaffold

The figure shown in this manual are intended as representative examples and are not to be considered as mandatory.

General Instructions for Assembly / Safety Issues / Safety Measures

The modular scaffolding shall be assembled and dismantled only by qualified persons, qualified in scaffold assembly, moving, dismantling or alteration. Scaffolding assembly, alteration and dismantling must be done in accordance with the stipulations of DGUV Information 201-011 (by the German Social Accident Insurance DGUV, the body that regulates occupational health and safety) „Instructions for handling working, service and fall protection scaffoldings” and the notes and provisions of DIN 4420 and/or DIN EN 12811. The German Technical Regulations on Health and Safety at the Workplace (TRBS 2121) shall also be observed.

In site-related instructions for assembly and use, the employer shall decide upon the most suitable protection against risk of falling, based on a risk analysis and in accordance with the German Industrial Safety Regulations. Potential measures include technical protection and safety measures, personal protective equipment (PPE) to prevent falling and special training. As a technical measure to prevent the risk of falls, ALFIX offers an advanced guardrail system. Please refer to pages 13 and 14 for more detailed information on the advanced guardrail system.

In case the risk analysis results in the need for protective equipment (PPE) to prevent falling, appropriate anchor points at the modular scaffolding shall be used. Please refer to page 12 for more detailed information.

Damaged scaffolding components must not be used and have to be replaced by sound material immediately. Repair work shall only be done by the manufacturer of the MODUL MULTI scaffolding system, i.e. ALFIX GmbH.

In accordance with the relevant German Industrial Safety Regulations, risk analyses shall be performed taking into account the particularities for each individual case in order to assess any required measures. Risk assessment must include any potential rescue measures.

If the scaffolding deviates from the standard assembly configuration in accordance with these Instructions for Assembly and Use, the structural stability of the scaffolding shall be verified for each individual case and site-related by means of a structural analysis.

Inspection and Documentation

The working scaffolding is only to be used upon approval by the scaffolding erector. The scaffolding erector shall ensure that assembly, dismantling and alteration works are clearly indicated at all entries using the safety sign „**No unauthorised entry**“. Upon completion of the assembly, the scaffolding erector must provide a written protocol for the structure, which is the basis of the scaffold identification and place a copy in the labelled tamper-proof transparent plastic pocket “No access”, documenting the approval of the scaffold. The protocol also documents the configuration of the scaffolding in accordance with the intended use. The user of the scaffolding shall be informed about the hazards arising from unintended use. Prior to using the scaffolding, the user shall inspect it to ensure that there are no apparent defects.

During the use of the scaffolding, any alterations, including those applied only to parts of the scaffolding, must be reported to the scaffolding erector immediately and an exceptional inspection must be carried out by a qualified person who has been appointed by the scaffolding erector.

Inspection protocols must be kept for at least 3 months after the service life of the scaffolding.

CAUTION

Scaffoldings shall be assembled, altered and dismantled only under the supervision and direction of a qualified person and only by staff qualified in scaffold assembly, moving, dismantling or alteration.



Identification and approval for scaffolds according to DIN EN 12811 / DIN 4420		
Customer / Client:	Scaffolding erector: (stamp, if applicable)	Competent person during assembly:
Construction project / Place of erection:		Assembly period:
Scaffold no.:		Competent person for inspection:
Phone:	Phone:	Inspection period:
Scaffold: <input type="checkbox"/> Working scaffold acc. to EN 12811 <input type="checkbox"/> Protective scaffold acc. to DIN 4420 <input type="checkbox"/> Mobile scaffold tower	<input type="checkbox"/> Facade scaffold <input type="checkbox"/> Stairway tower <input type="checkbox"/> Custom-design scaffold:	<input type="checkbox"/> Birdcage scaffold <input type="checkbox"/> Protection scaffold <input type="checkbox"/> Protective roof <input type="checkbox"/> Roof edge protection scaffold
Cladding: <input type="checkbox"/> None <input type="checkbox"/> Tarpsaulins <input type="checkbox"/> Nets		
Load class: <input type="checkbox"/> 2 (500 kg/m ²) <input type="checkbox"/> 3 (200 kg/m ²) <input type="checkbox"/> 4 (300 kg/m ²) <input type="checkbox"/> () kg/m ²		Width class: <input type="checkbox"/> W06 <input type="checkbox"/> W09 <input type="checkbox"/> W12 <input type="checkbox"/> W
Restrictions on use:		
Unauthorized scaffold modifications are prohibited unless the scaffolding erector has been consulted beforehand. Please follow the respective instructions for Assembly and Use.		
Inspected and approved Competent person of scaffolding erector: _____ Date, Signature: _____	Competent person of user: Date, Signature: _____	 ALFIX GmbH Langhemmersdorfer Str. 15 D - 09603 Großschirma

CAUTION

The inspection protocol must include at least the following information:

- Type of scaffolding
- Load class
- Width class
- Cladding
- Intended use
- Date
- Scaffolding manufacturer

Please also refer to the approval and inspection protocol in chapter 11.

CAUTION

For areas where modular connector node connections, connector discs or tube ends pose a risk, the ends must be covered with the appropriate available covers.



Cover for modular connector node



Cover for modular connector disc (rosette)



Wooden deck



Circular protective base



Angular protective base



Tube end cap

Structural stability

The supporting surface must be inspected to ensure that it has the required load-bearing capacity and appropriate load-distributing bases must be used e.g.: wooden planks 50 x 32 cm with a minimum thickness of 4.5 cm.

Protective bases (circular or angular) for base jacks ensure safe and non-slip standing but do not have a load-distributing effect (important in case surfaces do not have the required load-bearing capacity). Made of durable plastic material. Ideally suitable for areas with public traffic: the clearly visible bases and covers help prevent accidents.

Transport of scaffolding components

For scaffoldings with more than 3 working levels (exception: detached single family houses in accordance with the maximum dimensions in accordance with Model Building Code classes 1a and 2) or in case of a scaffolding length of up to 10 m and a scaffolding height of at least 14 m, suitable mechanical aids for lifting and hoisting must be used. Suitable mechanical aids for lifting and hoisting are, for example, cranes, hoists and hand-operated rope pulleys. Scaffolding bays in which vertical transportation is carried out manually must have a two-part side protection. In case of manual transportation, at least one person per working level is required. When passing scaffolding components by hand (vertically up or down) during assembly, workers must not stand directly above/below each other but must, at all times, stand one assembly bay laterally offset in relation to each other. When passing scaffolding components to the side on one level, one-part side protection on the topmost working level is required.



Fall protection measures

Scaffolding assembly work must be performed in such a way that falls are avoided or the risk of falls is minimised to the extent possible. In accordance with the so-called “TOP prevention and control measures” (a hierarchy of prevention and control measures to prevent, and if not possible reduce risks, whereby measures are to be implemented in the following order: technical, organisational and personal measures), the following must be implemented:

1. **Fall protection** measures preventing falls in the first place have top priority. A fall protection measure is the side protection which can be installed by means of the advanced guardrails described herein.
2. In cases when such side protection cannot be installed, **fall arrest systems** (such as a fall arrest scaffolding or protection nets) must be installed to mitigate the consequences and distance should a fall occur.
3. In cases when neither fall protection measures nor fall arrest systems can be installed, **personal protective equipment to prevent falls (PPE)** must be used.

If personal protective equipment to prevent falls (PPE) is required, it must be compliant with the DIN EN standards 354/355/360/361/362/363 and / or DGUV (the German Social Accident Insurance) rule 112-198 “Use of personal fall protection equipment”. The protective equipment must be examined by an expert at least every twelve months.

Risk assessment must include any potential procedures to safely rescue someone who has fallen from a height. Fall arresters in accordance with DIN EN 360 may also be used as part of the PPE against falls. Do not combine fall arrest systems.

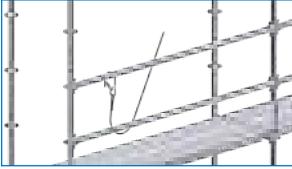
When using PPE against falls, make sure that the anchor point of the PPE is around 6 m above the closest impact surface. Lower anchor points do not prevent the user from hitting the level below.

Please observe any additional provisions as instructed by the PPE manufacturer!



CAUTION

Fall prevention measures are not required when working levels are 0.30 m away from other bearing and sufficiently large surfaces.

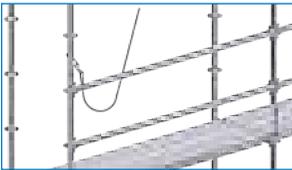


①

Anchor points for “personal protective equipment against falls “(PPE)

If personal protective equipment against falls (PPE) is to be used, the following anchor points can be used:

- ① guardrail / longitudinal ledger 1 m above deck level (do not use in connection with the advanced side protection)
- ② modular post, 1 m above deck level or higher
- ③ Connection to the connector disc, 1 m above deck level or higher



②

CAUTION

Do not use the advanced guardrails as an anchor point.



③

Use carabiners according to DIN EN 362 with a carabiner gate opening width of ≥ 50 mm as connector elements.

When entering a new working level: Attach the carabiner to the connector disc at the outer post of the outer face of the scaffolding on deck level. To do this, stand on a ladder and attach the carabiner to the outer face of the modular connector disc from above. For further assembly work, the above-mentioned anchor points may also be used. Free-standing standards may also be used, provided the standard joint is below deck level or the standard is attached to other vertical posts by means of longitudinal ledgers and transoms.

CAUTION

For more information on PPE against falls, please refer to DGUV rule 112-198, DGUV information 201-011.

PPE equipment against falls in accordance with DIN EN 354 / 355 / 361 / 363.

The connector element between harness and carabiner must be sharp edge-tested.

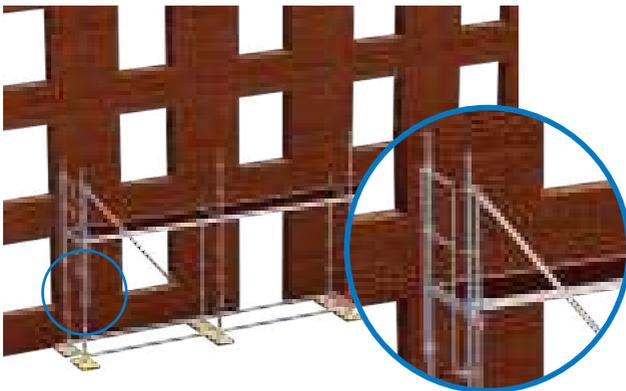
Advanced guardrail

When using the advanced guardrail with telescopic guardrail, temporary side protection must be installed on the entire deck level that is to be erected.

On the first working level (stand height < 2 m) the components are assembled from the ground, on all other levels the advanced guardrail post only needs to be moved vertically using the connected telescopic guardrails.

Start mounting at one of the ends of the modular scaffolding. On the upper side, the advanced end guardrail is suspended to the connector disc on deck level, and on the lower side it is connected to the modular connector disc at head level. Next, the telescopic guardrail is mounted at the upper tilting pin of the advanced guardrail and the post at the outer corner standard of the scaffolding. Now, the guardrail post is fitted onto the outer face of the modular scaffolding with the lower fork positioned in the modular connector disc (rosette) 1 m below the respective working level.

Bolts in the outer small openings of the modular connector disc (rosette) provide for the upper fixation (see left figure), in the process of which the advanced guardrail is locked automatically.



Then fit the guardrail along the scaffolding. The other end of the telescopic guardrail is suspended to the next guardrail post as is a second telescopic guardrail.



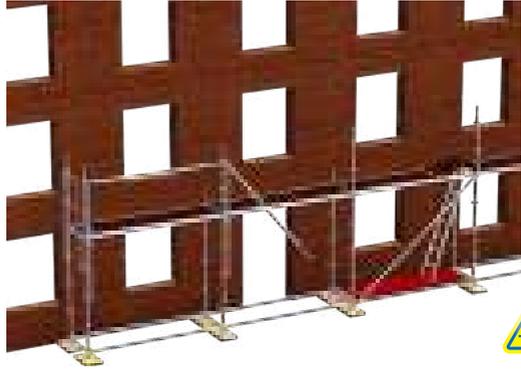
Advanced end guardrail



Application example:
Advanced guardrail post

CAUTION

Where the advanced guardrail cannot be installed, fall arrest systems or PPE against falls must be used.



CAUTION

In scaffolding bays in which vertical transport is carried out, another telescopic guardrail must be fitted to the adjacent guardrail posts before they are mounted (tilting pin suspension, lower tilting pins).

Now lift guardrail post and telescopic guardrail and fitted to the next vertical post as described above.

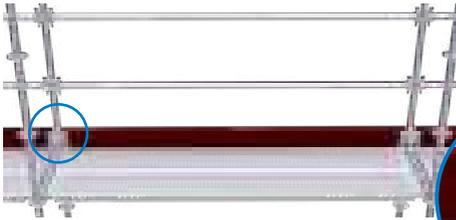
Repeat the steps for suspending the telescopic guardrail and installing the next guardrail post with fitted guardrails over the entire length of the working level. Do not access this level and assemble the posts and the required three-part side protection before the advanced guardrail has been installed along the entire working level.



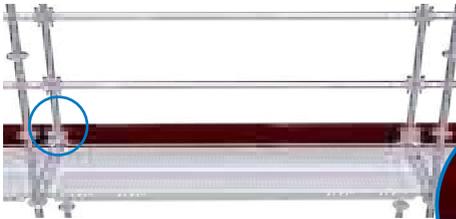
CAUTION

Only enter the next working level, after the guardrail post has been repositioned.

Provide fall protection on the next working level by vertically repositioning the advanced guardrail post with telescopic guardrails fitted on both sides. To do this, unlock the advanced guardrail posts by foot, take them out of the connector discs (rosettes) and reposition them.



Installing a toeboard with tube fixture



Installing a toeboard with system fixture



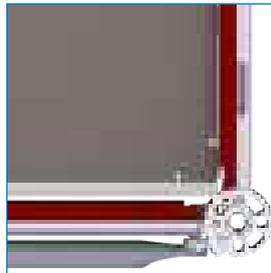
MODUL toeboard

The ALFIX MODUL toeboard is a component of the three-part side protection for the working levels. Apart from these, the side protection comprises ledgers installed to the outer post at a height of 0.50 m and 1.00 m above deck level.

The toeboards have a fitting, allowing their use both in connection with system decks with U-suspension and decks with tube fixture. To do this, simply turn the MODUL toeboard around its own axis.



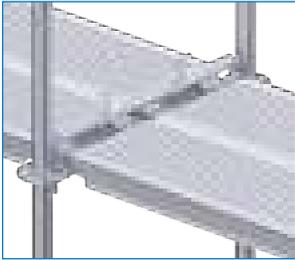
Toeboard corner arrangement



The ALFIX MODUL toeboard has a fitting base with special slots. In longitudinal direction, they are installed behind the wedges of the support ledgers and in cross-direction they are installed behind the wedges of the longitudinal ledgers. The slots in the toeboard fittings allow for a cross joint at the corners.

Lift-off preventer

Lift-off preventers are fitted after the decks have been installed. The lift-off prevention is secured by turning the T-shaped bolts until they lock.



Lift-off preventer with T-shaped bolts

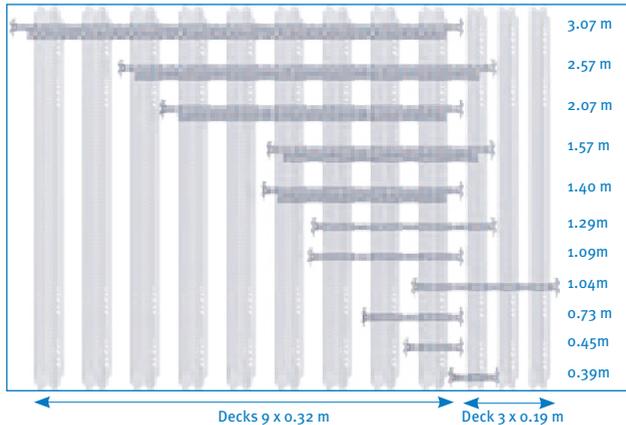
U-ledger

The U-ledgers that are used to accommodate the system decks are available in different lengths. The overview on the left lists possible configurations of the U-ledgers with decks.



CAUTION

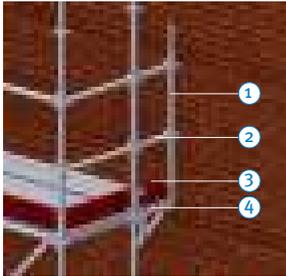
The U-ledgers have different design loads (point load / line load)! Please refer to chapter 10 for these values, which are needed for the structural analysis.



Application example U-ledger 1.57 m: 4 decks 0.32 m + 1 deck 0.19 m
Note: Any 2 decks 0.32 m can be replaced by 1 deck 0.61 m

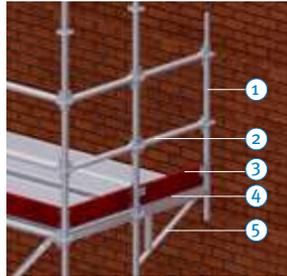
Figure showing the widening of the deck surface using bracket 0.39 m and 0.73 m on the inner face.

Bracket 0.39 m



- ① Standard 1.00 m
- ② Tube ledger 0.39 m
- ③ Toeboard 0.39 m
- ④ Bracket 0.39 m

Bracket 0.73 m

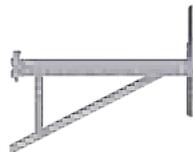


- ① Standard 1.00 m
- ② Tube ledger 0.73 m
- ③ Toeboard 0.73 m
- ④ Lift-off preventer 0.73 m
- ⑤ Bracket 0.73 m

Bracket 0.39 m with integrated lift-off preventer for one deck
(figure of single component)



Bracket 0.73 m for 2 decks
(figure of single component)

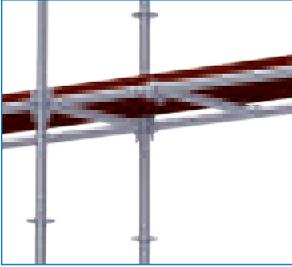


MODUL brackets

MODUL brackets 0.39 m and 0.73 m for widening the deck surface:

Deck surfaces can be widened in different ways depending on the anchorage and / or structural stability of the scaffolding. Depending on the configuration, the following load-bearing capacities of the MODUL brackets apply:

- 0.39 m:
for bay length 3.07 m
max. load class 4 with
300 kg/m²
the max. point load per
bracket must not exceed
300 kg
- 0.73 m:
for bay length 3.07 m
max. load class 3 with
200 kg/m²
the max. point load per
bracket must not exceed
400 kg



Application example **support ledger** used with non-system decks

Variant 1: Non-system decks

Circular tube support ledgers are used to accommodate non-system planks and decks with tube fixture. When using decks without system-fixture, horizontal diagonal braces must be installed on the working levels in order to achieve horizontal bracing.

When using non-system planks (in wood), the maximum spans and minimum cover lengths of the decks among each other as specified in the regulations must be observed. If necessary, install support ledgers.



Application example **horizontal diagonal brace**

Variant 2: System decks with tube fixture

The decks with circular tube support have support claws made of steel that are laterally offset in relation to each other. This allows for a continuous arrangement of the decks without lateral offset. The decks have an integrated lift-off preventer.

The above-mentioned integrated steel or access deck lift-off preventer consists of a transom at the end fitting, which must be moved underneath the support tube by hand after mounting the deck.



Steel deck with tube fixture



Detailed view of **lift-off prevention**

The decks with tube fixture are particularly suitable for use as erection decks when assembling and dismantling modular scaffolding that have no decks. Tube ledgers that have to accommodate decks with tube fixture must have a higher load-bearing capacity accordingly. ALFIX offers reinforced tube ledgers and double tube ledgers to meet these requirements. Please refer to chapter 10 "Technical details" for the load-bearing capacities.

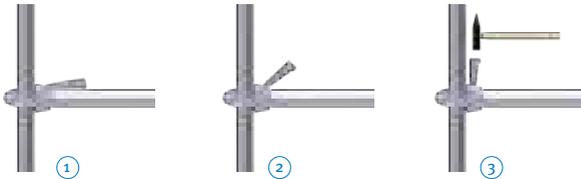


Double tube ledger

Mounting the node connection

The node connection is mounted in only a few steps. ALFIX has opted for the well-known and proven wedge-connection for the ledger-standard-joint. With this wedge-connection, a form-fit connection of the scaffolding node is achieved already by loosely inserting the wedge by hand. A force-fit connection is achieved by driving the wedge into its housing to the end-stop with a hammer. The end piece is pressed against the standard at the upper and lower contact surface, creating a very rigid and fixed-angle connection.

Different angles can be created as follows:



The connector disc (rosette) has 4 small openings which are arranged offset at 90°. These are used for connecting tube ledgers at perfect right angles. The right angle is created automatically by driving the wedge into its housing.

Between the small openings, there are slotted holes which allow for ledger connections at angles of $\pm 15^\circ$. This enables creating layouts other than the 90° angle layout. Between two ledgers, variable angles can be created between 45° and 315°.

Please note:
Wedge heads must not be mounted offset by 180°!

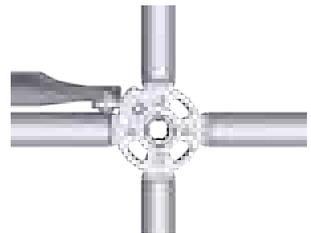


Modular connector nodes are dismantled in the reverse assembly order of erection. Drive the wedge out of the housing with a hammer from below, until it can be pulled out of the ledger head by hand.

! CAUTION

The wedges must be driven to the end stop with a hammer blow as wedge connections might not be properly secured otherwise.

- ① Pull the head piece of the ledger sideways over the connector disc (rosette). The wedge lies horizontally on the tube ledger and is held captive by means of a rivet at the top.
- ② By lifting the wedge and driving it into the connector disc, the ledger is locked and ③ by driving it into its housing by means of a hammer blow, a force-fit connection to the standard is created.



Connector disc (rosette)

! CAUTION

Check all components for damage before use. Components must not be bent or otherwise deformed. The wedge in the transom head must remain freely movable and captive in the connection.

6.1 Assembling the facade scaffolding without stairs

1. First place the base jacks at the right positions (length and cross spacing) as planned, using the ledgers for orientation.

If necessary, install load-distributing bases (planks, squared timber). If the supporting surface is inclined, wooden wedges for levelling purposes are required.



CAUTION

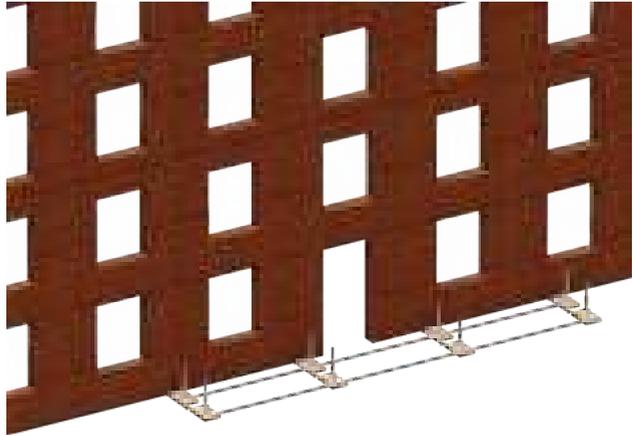
Make sure the supporting surface has the required load-bearing capacity. If necessary, provide suitable bases.

The maximum allowed spindle extension length must not be exceeded to avoid the danger of collapse. Please also refer to the standard assembly configuration in the Annex, chapter 8.

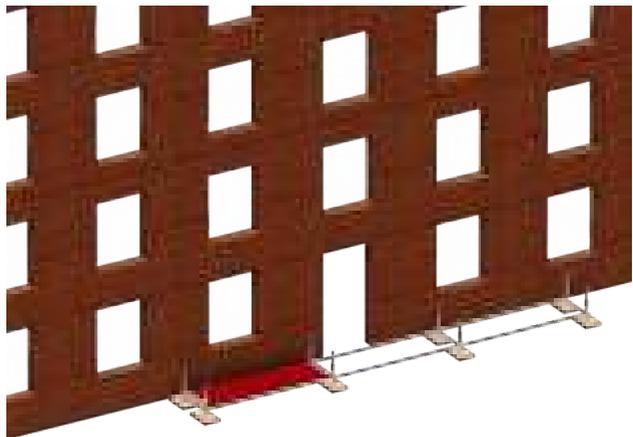
The support points must be located on a supporting surface that has an adequate load-bearing capacity so that they can transfer the forces resulting from the scaffolding to the ground.

2. Fit the vertical starter pieces onto the base jacks and connect them to the transoms of the required bay length.

When erecting the scaffolding on a slope, the scaffolding must be levelled out by adjusting the nuts at the foot of the base jack. Start levelling out from the highest point. of the supporting ground.



1.



2.

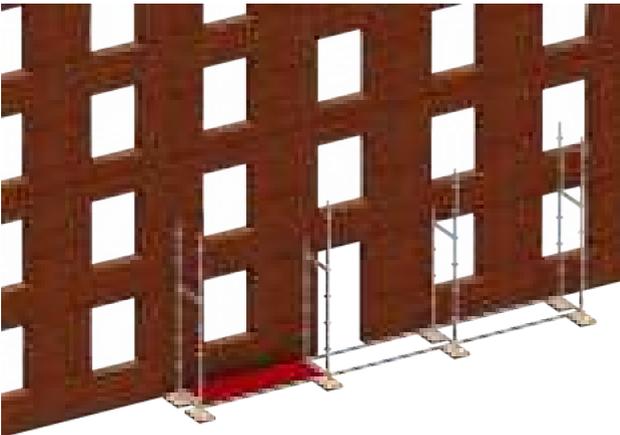
6. Assembling the scaffolding



3. Make sure the ledgers are aligned horizontally with a water level before driving home the wedges. Check the right angles or make sure they are right angles by using the horizontal diagonal braces.

After driving home the wedges, the exact scaffolding ground plan is given so that further assembly can easily be carried out without any significant alignment work.

3.



4. Fit the starter pieces into the standards and connect them at intervals of 2 m with U-ledgers in lateral direction.

When using decks with tube fixture, the lateral connection is established by means of tube ledgers.

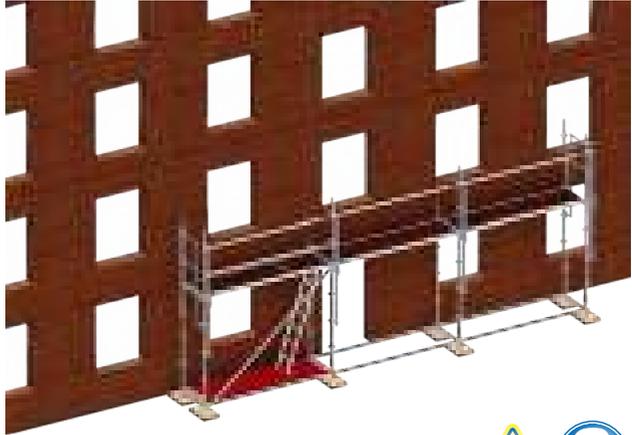
4.



5. Now fit the decks and internal access decks into the U-profiles.

Use vertical diagonal braces which are wedged into the large openings of the connector disc to brace the scaffolding longitudinally and laterally. The exact number of diagonal braces is determined by means of a structural analysis.

Standard assembly variants in accordance with Z-8.22-906 do not require any vertical diagonal braces. Install the advanced guardrail which consists of advanced end guardrails, guardrail posts and telescopic guardrails before entering the next scaffold level.

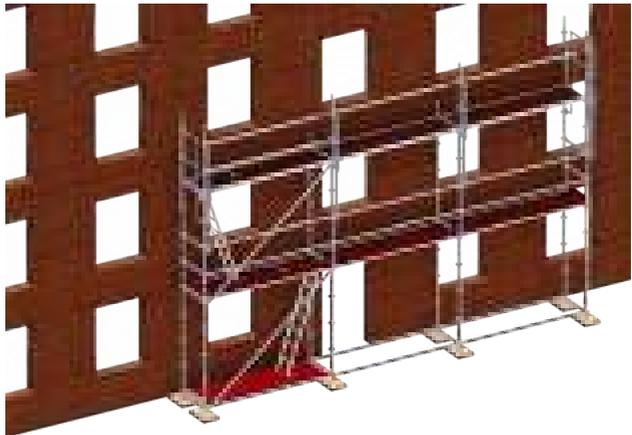


5.

CAUTION

Free standing scaffoldings that have no structural stability must be anchored immediately upon reaching the first anchoring level as specified in the regulations.

6. Repeat the above-mentioned steps for the assembly of the next levels: install any new standards by means of the tube connectors onto the existing standards and, if necessary, lock by means of a locking pin and fit vertical diagonal braces, tube ledgers and decks.

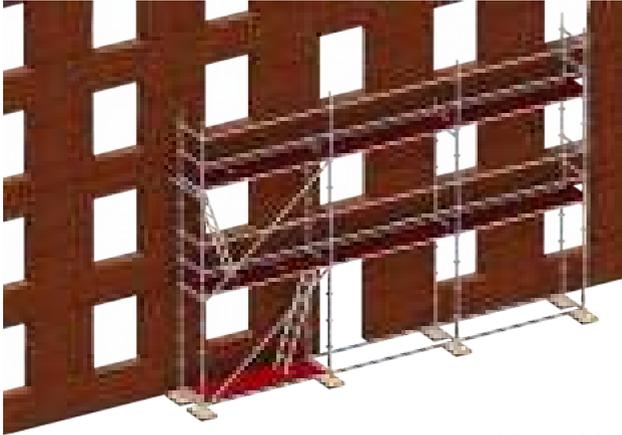


6.

CAUTION

Use advanced guardrail posts and, if required, personal protective equipment against falls (see pages 11 and 12) during assembly.

6. Assembling the scaffolding



7.



7. Secure the fitted system decks by means of a lift-off preventer against unintentional lift-off.

Install the three-part side protection after having reached the planned working level or in accordance with the intended use of the scaffolding. Provide a ledger at a height of 0.50 m as midrail and at a height of 1 m as handrail, as well as a toeboard along each bay and at the end sides. The advanced guardrails can be dismantled when the side protection is installed.



8.

8. When using system decks, the tube ledgers in longitudinal direction may be omitted. They have to remain in place for the bays with V-type anchors. Please refer to approval Z-8.22-906 for the assembly diagrams for the structural heights according to the standard assembly configuration of up to 24 m plus spindle extension length. Anchor points and diagonal braces are described in chapter 8 “Standard assembly configurations”.

6.2 Assembling the facade scaffolding with stairs

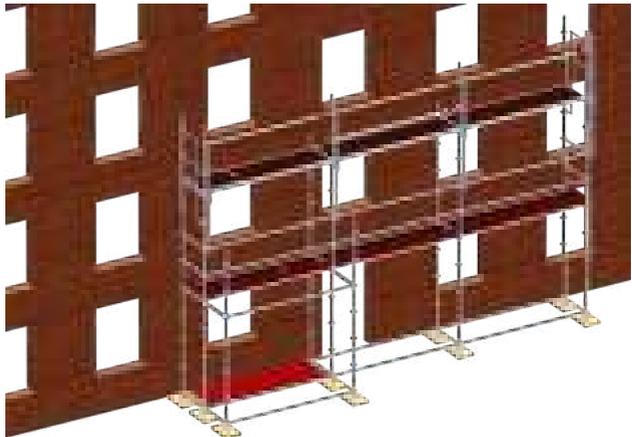
For structural heights of 5 m and higher (with the exception of detached single-family houses in accordance with the maximum dimensions of Model Building Code classes 1a and 2) stairways must be provided to access the scaffolding throughout its service life. One way of achieving this is by installing a front-mounted stairway tower as described below.

1. Assemble the facade scaffolding up to the second working level. Please refer to “6.1 Assembling the facade scaffolding without stairs” for the assembly sequence.



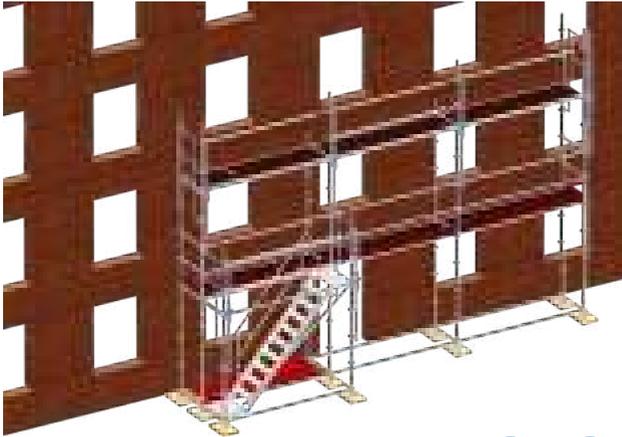
1.

2. Now install the vertical starter pieces with base jacks and 3 m standards for the stairway access bay and connect them with tube- and U-ledgers.



2.

6. Assembling the scaffolding



3.



3. Proceed by installing the aluminium stairway with inner guardrail, stair guardrail holder, deck lift-off preventer below and diagonal braces. Then fit the advanced side protection in the stairway access bay.



4.



4. And dismantle the tube ledgers and toeboards between the stairway access bay and the facade scaffolding. Now, the next facade scaffolding level is assembled.

5. As the advanced guardrail posts are no longer connected to the modular connector disc, the remaining tube ledgers and the stair guardrail can be installed.



5.

6. Repeat these working steps until the required height is reached. Additionally, install stair stringer fall protection at the aluminium stairways. Remove the advanced guardrails of the facade scaffolding before readily installing the stairway to the topmost level. Anchorage is provided in accordance with Chapter "6.1 Assembling the facade scaffolding without stairs".



6.



7.



7. Finish off by installing the platform guardrail on the top-most level as fall protection and a H-diagonal brace or a tube-coupler bracing unit between the facade scaffolding and stairway access at intervals of 4 m to brace the structure.

6.3 Dismantling the facade scaffolding

Facade scaffolding structures are dismantled in the reverse order of erection. Loose components must be fully broken down and lowered to ground level immediately. Do not throw or drop any parts.

At each stage, advanced side protection guardrails must be refitted to the next highest level. The anchor points of the scaffolding should not be dismantled until the next level above is completely dismantled.



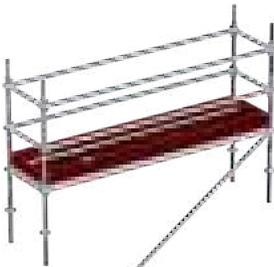
All assembly configurations shown so far are approved structures for use as facade scaffolding. Any further variants are assembly configuration examples which deviate from the standard assembly configuration and have to be documented by means of a separate structural analysis. Proof of structural stability of special configurations can be obtained from ALFIX GmbH.

7.1 Free standing reinforcement scaffolding

Free standing reinforcement scaffoldings are scaffoldings that can be crane-lifted and are primarily used for mounting reinforcement structures. According to the standard, free standing reinforcement scaffoldings have a maximum of 3 adjacent bays and can have a maximum structural height of 10.54 m / working height of 12.54 m (depending on the variant). Variants 1 and 2 are suitable for load classes 1 - 3 (see EN 12811-1; 0.75 - 2.00 kN/m²). Bay lengths of 1.57 m - 3.07 m may vary in accordance with the requirements. An individual bay of a free standing reinforcement scaffolding must have a minimum width of 2.57 m.

7.1.1 Variant 1: Free standing reinforcement scaffolding without stairs

Supporting surface = 1.40 m width x chosen bay length;
max. structural height: 4.54 m (= working height 6.54 m)



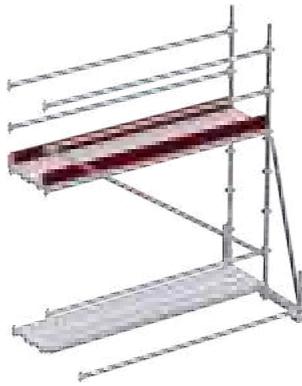
Adding a level (by 2 m per level)



Extending the scaffolding (by 2 m per level)



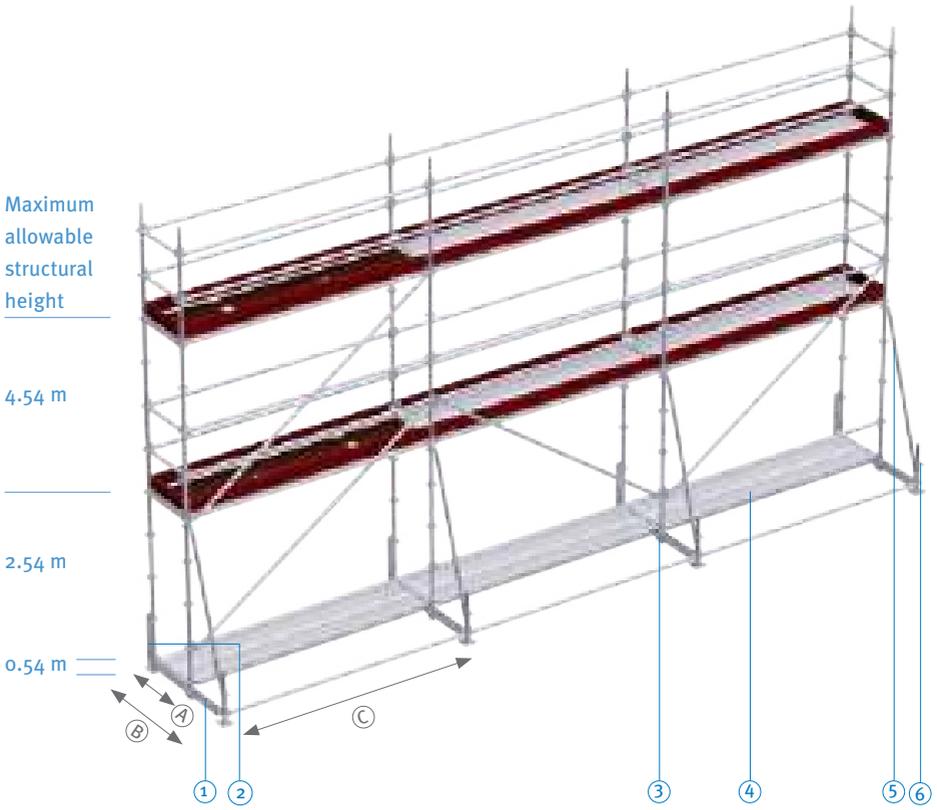
Base structure for adding a level



Base structure for extending the scaffolding

⚠ CAUTION

The figure shows the maximum allowable structural height of this assembly configuration. Free standing reinforcement scaffoldings that are not set up in front of a closed wall must be secured against overturning. Please refer to the notes regarding finishing work or weather changes on page 34!



- Ⓐ 0.73 m
- Ⓑ 1.40 m
- Ⓒ 1.57 - 3.07 m

(Minimum width 3.07 m)

- ① U-ledger 1.40 m, reinforced
- ② Locking device for base jack
- ③ Tube ledger for U-ledger

- ④ Steel deck
- ⑤ Bracket brace
- ⑥ Spindle nut

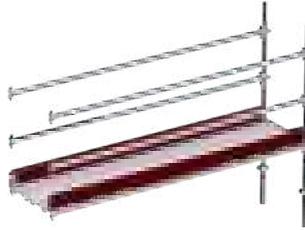
7.1.2 Variant 2: Free standing reinforcement scaffolding with stairs

Supporting surface = 2.13m width x chosen bay length;
max. structural height: 10.54 m (= working height 12.54 m)

Building segments without stairs:



Extending the scaffolding to the left
(by 2 m per level)



Extending the scaffolding to the right
(by 2 m per level)

CAUTION

In case of free standing reinforcement scaffoldings that consist of 2 bays, each added segment must be braced using diagonal braces, irrespective of the direction in which the scaffolding is extended. In case of free standing reinforcement scaffoldings that consist of 3 bays, diagonal braces must be fitted in all extended segments on the right and on the left.



Base structure for extending the scaffolding to the left



Base structure for extending the scaffolding to the right

Building segments with stairs:



Adding a level (by 2 m per level)

Please note:
Install a platform guardrail on the last added level.



Base structure for adding a level

CAUTION

The figure shows the maximum allowable structural height of this variant. Free standing reinforcement scaffoldings that are not set up in front of a closed wall must be secured against overturning. Please refer to the notes regarding finishing work or weather changes on page 34!

Maximum
allowable
structural
height

10.54 m

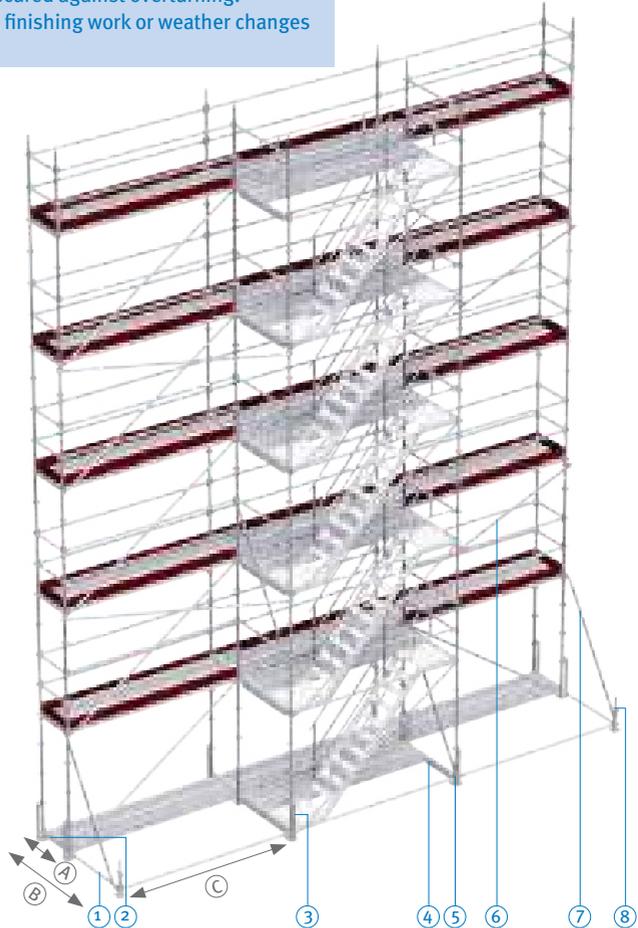
8.54 m

6.54 m

4.54 m

2.54 m

0.54 m



(A) 0.73 m

(B) 2.13 m

(C) 1.57 - 3.07 m
(Minimum width 3,07 m)

(1) Tube ledger 1.40 m

(2) U-ledge 0.73 m

(3) Locking device for base jack

(4) U-ledge 1.40 m, reinforced

(5) Vertical starter piece

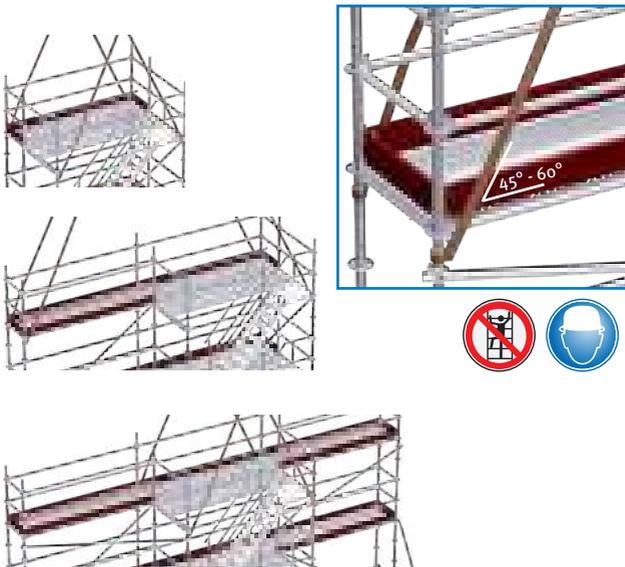
(6) H-diagonal braces (tube + coupler)

(7) Vertical diagonal brace 1.40x2.00 m

(8) Spindle nut

7.1.3 Crane lifting

Attach the lifting slings to the standards as shown in the figure. Make sure, the lifting slings are attached to the standard directly under the connector disc (rosette) of the upper deck surface. Use lifting slings that are long enough, allowing an angle of inclination of $45^\circ - 60^\circ$. If required, additionally use a 4-leg chain sling.



! CAUTION

The standards must be connected, e.g. by means of linchpins!

Mount the locking devices of the base jacks!

Use webbing slings and 4 leg chain slings!



Dead load in kg / max. support reaction F in kN

Structural height in m	Variant	1 bay 3.07 m	2 bays 6.14 m	3 bays 9.21 m
2.22 - 2.54	1 (supporting surface 1.40 m)	346 / 3.7	627 / 7.1	908 / 7.1
4.22 - 4.54		530 / 5.6	959 / 10.7	1.389 / 10.7
6.22 - 6.54	2 (supporting surface 2.13 m)	1.324 / 13.9	1.949 / 19.9	2.549 / 19.9
8.22 - 8.54		1.684 / 15.7	2.484 / 22.6	3.248 / 22.6
10.22 - 10.54		2.043 / 17.5	3.004 / 25.2	3.916 / 25.2

! CAUTION

Special conditions apply to free standing reinforcement scaffoldings with a stand height of 10.22 - 10.54 m:

Free standing reinforcement scaffoldings are designed based upon the requirements of temporary scaffoldings. Dynamic pressure $q = 0.2 \text{ kN/m}^2$. "Working wind load" = 8 Beaufort (62-74 km/h).

For free standing reinforcement scaffoldings of variant 2, with a structural height of 10.22 - 10.54 m, there is a restriction for the daily wind of 6 Beaufort (39-49 km/h).

When applying a working wind load of 8 Beaufort, this structural height requires tension- and compression-resistant anchorage below deck level 6.54 m, at a right angle and parallel on each axis as continuous anchor along the inner and outer post.

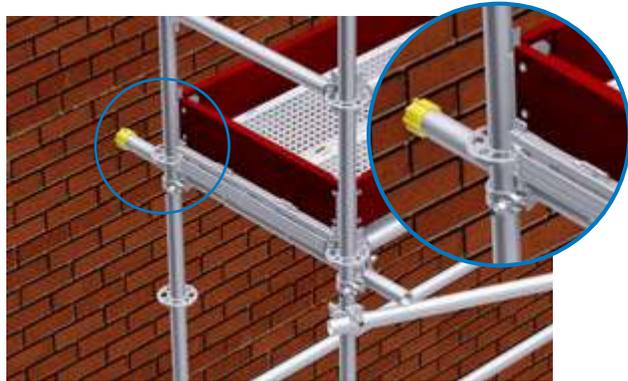
In case of the given wind speeds, free standing reinforcement scaffoldings with a structural height of up to 8.54 m may be used in front of existing wall formwork or closed walls without anchorage or mounted with pressure anchors according to their structural height. Please also refer to the table for more details.

In case of higher wind loads, at the end of every working day as well as in case of sudden weather changes, the free standing reinforcement scaffoldings must be secured against overturning! Scaffoldings can be secured against overturning, among others, as follows:

1. Anchor the scaffolding with scaffolding anchors in a tension- and compression-resistant way at right angles and parallel to a suitable surface below deck level 6.22 - 6.54 m. Please also refer to page 23.
2. Connect multiple free standing reinforcement scaffoldings to each other to enlarge the supporting surface. In this case, a ratio of scaffold height to supporting surface area of 3 to 2 is ideal.

7.1.4 Anchoring

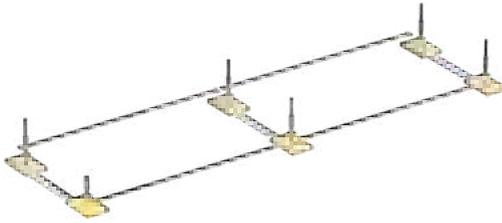
Provide structural stability for free standing reinforcement scaffoldings with stand heights higher than 8.22 m by means of pressure anchors below bay level 6.22 - 6.54 m on each scaffold axis. The client must provide proof of structural stability of the anchor ground. Anchorage is provided by means of a scaffold tube that is fitted to the standards below the connector discs with standard couplers and is supported to the formwork. Cover the tube end with a cover to prevent the tube from damaging the formwork.



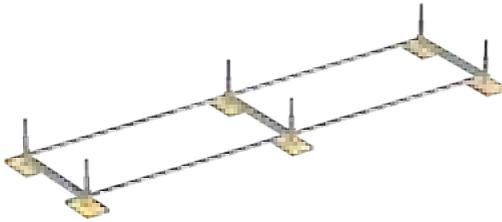
Compression forces in kN		
Structural height in m	Variant	
2.22 - 2.54	1 (supporting surface 1.40 m)	no support *
4.22 - 4.54		no support *
6.22 - 6.54	2 (supporting surface 2.13 m)	no support *
8.22 - 8.54		0.9
10.22 - 10.54		1.1**

* Free standing reinforcement scaffoldings do not require anchoring or compression bracing for the given stand height and wind speeds of up to 8 Beaufort (62-74 km/h), when they are mounted in front of existing wall formwork or closed walls and are appropriately secured when finishing work or in case of weather changes.

** Only when assuming wind loads of 6 Beaufort/39-49 km/h. In case of higher wind speeds, tension- and compression-resistant anchorage is required below deck level 6.54 m.



1.



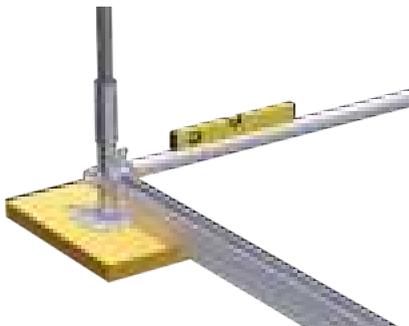
2.



CAUTION

Make sure the supporting surface has the required load-bearing capacity. If necessary, provide suitable bases.

The maximum spindle extension length of 50 cm must not be exceeded to avoid the danger of collapse.



3.

7.1.5 Assembly variant 1

1. First place the base jacks at the right positions (length and cross spacing) as planned, using the laid out ledgers for orientation.

If necessary, install load-distributing bases (planks, squared timber). If the supporting surface is inclined, wooden wedges for levelling purposes are required.

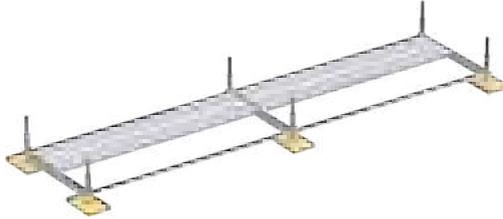
2. The support points must be located on a supporting surface that has an adequate load-bearing capacity so that they can transfer the forces resulting from the scaffolding to the ground.

Fit the vertical starter pieces onto the base jacks and connect them to the transoms of the required bay length.

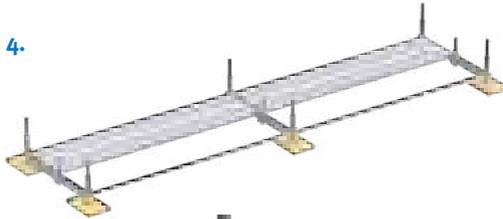
When erecting the scaffolding on a slope, the scaffolding must be levelled out by adjusting the nuts at the foot of the base jack. Start levelling out from the highest point of the supporting ground.

3. Make sure the ledgers are aligned horizontally with a water level before driving home the wedges. Check the right angles. After driving home the wedges, the exact scaffold ground plan is given so that further assembly can easily be carried out without any significant alignment work.

4. Install steel decks to the reinforced U-ledgers, two per bay. Push them right up to the wall surface that is under construction.



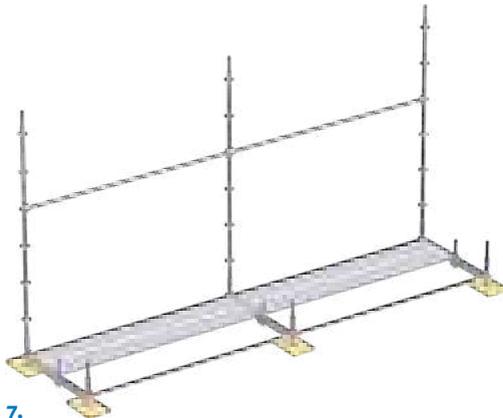
5. Remove the linchpins from the U-ledgers and fit one tube connector onto each reinforced U-ledger. Now reinstall the linchpin.

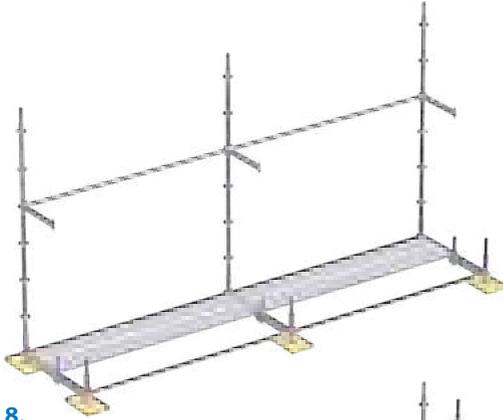


6. Proceed by installing the deck lift-off preventers onto the reinforced U-ledgers.



7. Standards 3.00 m are fitted onto the vertical starter pieces on the inner face of the scaffolding and connected to one another along the scaffold by means of tube ledgers at a height of 2 m.

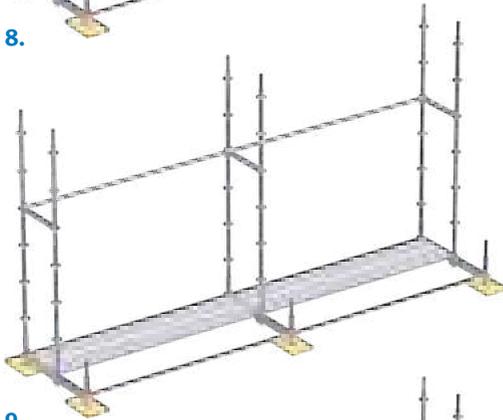




8.



8. Also install U-ledgers at an angle of 90° to the tube ledgers 0.73 m at a height of 2 m.



9.

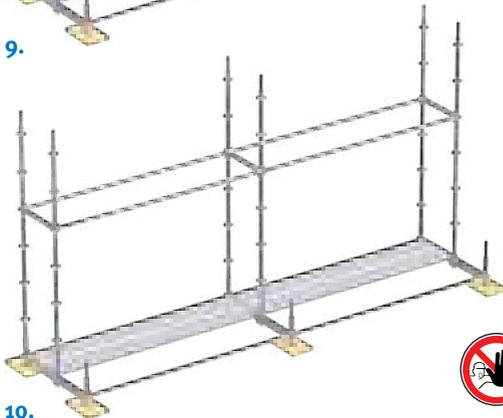


9. Then fit standards 3.00 m onto the tube connectors for U-ledgers and connect them immediately with the previously fitted U-ledgers 0.73 m.



CAUTION

When doing so, please note that the boreholes in the tube connectors point in longitudinal direction of the scaffolding.

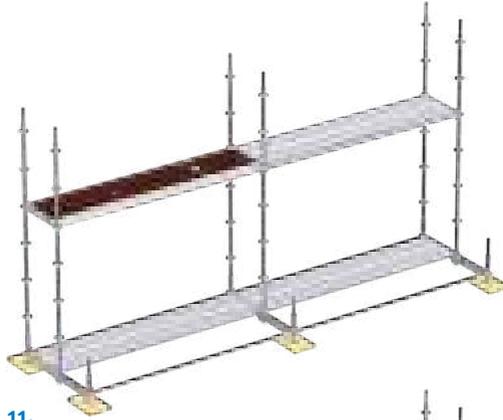


10.



10. Now connect the standards that were mounted last with the tube ledgers at a height of 2.00 m along the scaffolding.

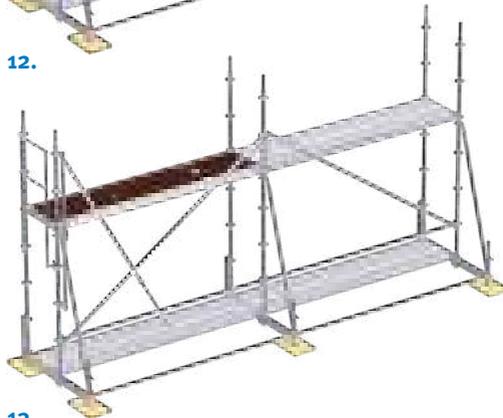
11. Start by suspending an internal access deck with ladder into the U-ledger at a height of 2.00 m. Make sure hatch of the internal access deck opens inwards (towards the middle of the deck). Install steel decks in the other bays.



12. Then install vertical diagonal braces in longitudinal direction as shown. The MODUL bracket braces are installed transversely. Fit the base jack locking devices to the inner standards, secure the connection between standard and tube connector for the U-ledgers with linchpins, and additionally secure the threaded tubes of the base jacks that protrude from the starter pieces with spindle nuts.



13. Install the advanced guardrail as side protection along the entire scaffolding before entering the first level. Use an advanced guardrail all around for free standing scaffoldings. Please refer to chapter 3 for more information on the assembly of the advanced guardrail.





14.

14. Close the hatch after entering the first working level. Now fit the remaining tube ledgers as side protection.

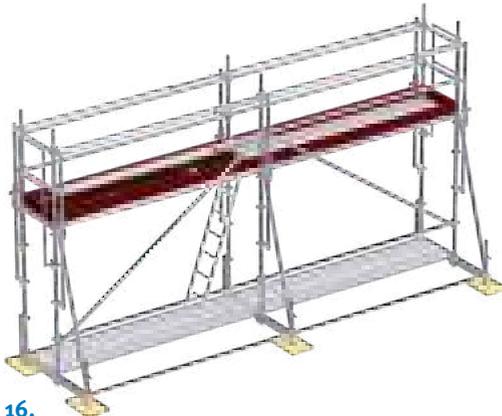
! CAUTION

The advanced guardrail can only be used for scaffolding bays of 2.07 m or longer. If smaller bays are added after installing the base structure for adding a level, the advanced guardrail must be fitted to this base structure and appropriate PPE (personal protective equipment to prevent falls) must be used when entering adjacent bays! Please also refer to chapter 3 for more information.



15.

15. Install the lift-off preventers along the entire working level onto U-ledgers.



16.

16. Finish by fitting the toeboards (see chapter 3).

17. When levels are added to the free standing reinforcement scaffolding, standards 2.00 m are fitted onto the standards 3.00 m and immediately secured by means of linchpins. Proceed by connecting the fitted standards longitudinally and transversely to tube ledgers and U-ledgers at a height of 2 m.



17.

18. Next, fit the internal access deck with ladder into the U-ledgers. Make sure the hatches are not installed directly one above or below the other. Now fit the steel decks in the other bays. Now fit the steel decks in the other bays. This is done in parallel with the diagonal braces of the level below.



18.



19.



19. Reposition the advanced guardrail 2 m upwards before entering the next level. Please refer to chapter 3 for more information on installing the advanced guardrail.



20.



20. Close the hatch after entering the next level.

Now fit the remaining tube ledgers as side protection. Install the lift-off preventers along the entire working level onto the U-ledgers. Finish by fitting the toeboards (see chapter 3).

If required, the advanced guardrail can now be disassembled. Disassembly is done in the reverse order of assembly. It can, however, also remain installed for the entire service life of the scaffolding.

Provide anchorage immediately upon reaching the height at which anchorage is mandatory (see page 34).

7.1.6 Assembly variant 2

1. First place the base jacks at the right positions (length and cross spacing) as planned, using the laid out ledgers for orientation.

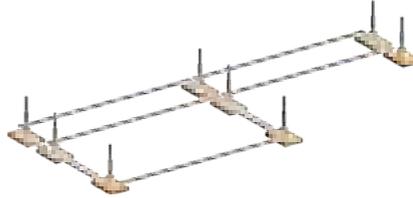
If necessary, install load-distributing bases (wooden planks, squared timber). If the supporting surface is inclined, wooden wedges for levelling purposes are required.

2. The support points must be located on a supporting surface that has an adequate load-bearing capacity so that they can transfer the forces resulting from the scaffolding to the ground.

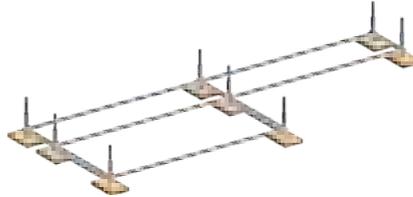
Fit the vertical starter pieces onto the base jacks and connect them to the ledgers of the required bay length.

When erecting the scaffolding on a slope, the scaffolding must be levelled out by adjusting the nuts at the foot of the base jack. Start levelling out from the highest point of the supporting ground.

3. Make sure the ledgers are aligned horizontally with a water level before driving home the wedges. Check the right angles. After driving home the wedges, the exact scaffold ground plan is given so that further assembly can easily be carried out without any significant alignment work.



1.



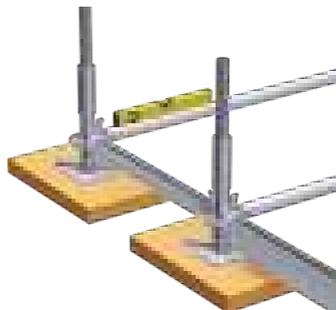
2.



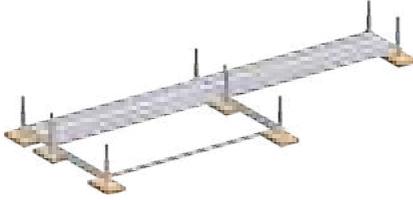
CAUTION

Make sure the supporting surface has the required load-bearing capacity. If necessary, provide suitable bases.

The maximum spindle extension length of 50 cm must not be exceeded to avoid the danger of collapse.

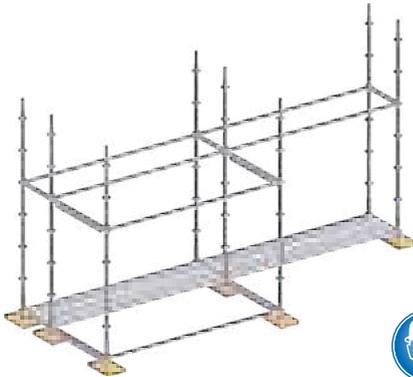


3.



4.

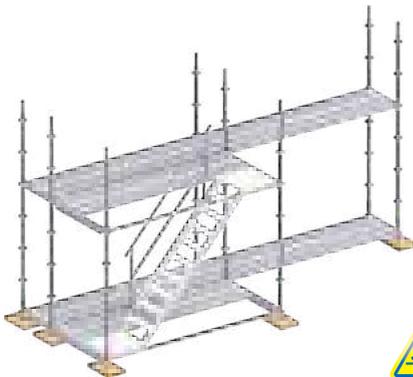
4. Install the steel decks in the U-ledgers, two per bay. Push them right up to the wall surface that is under construction.



5.



5. Standards 3.00 m are fitted onto the vertical starter pieces and connected to one another along the scaffold by means of tube ledgers or in transverse direction by means of U-ledgers at a height of 2 m.

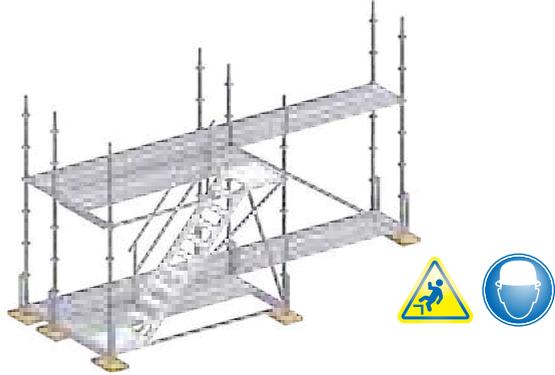


6.



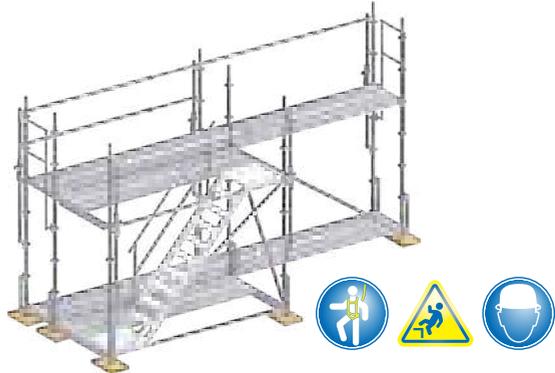
6. Then fit the aluminium stairway with inner guardrail and fit the steel decks. Subsequently, install the stair guardrail holders and the lift-off preventers.

7. Now, fit the required vertical diagonal braces and the locking devices for the base jacks.



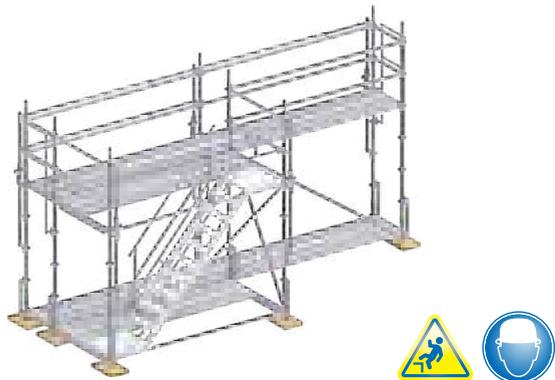
8. Install the advanced guardrail as side protection along the entire scaffolding before entering the first level. Use PPE against falls if there is no side protection, e.g. with the bay lengths < 2.07 m.

7.

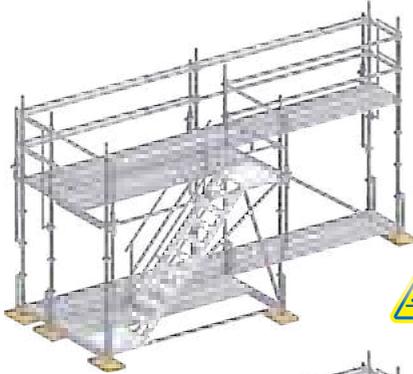


9. Now fit the remaining tube ledgers as side protection after which the stair guardrail holder is fitted.

8.



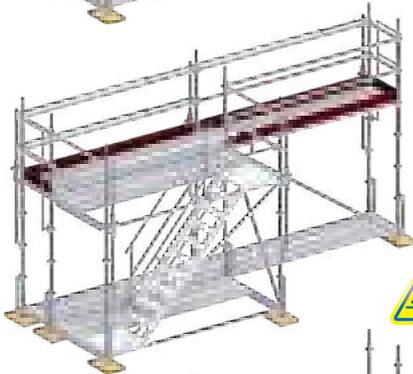
9.



10.



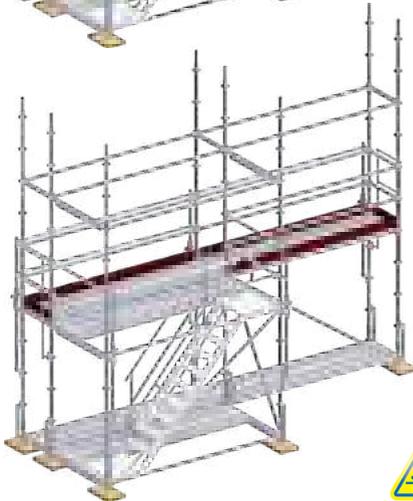
10. Install the lift-off preventers along the entire working level onto U-ledgers.



11.



11. Finish by fitting the toeboards (see chapter 3).

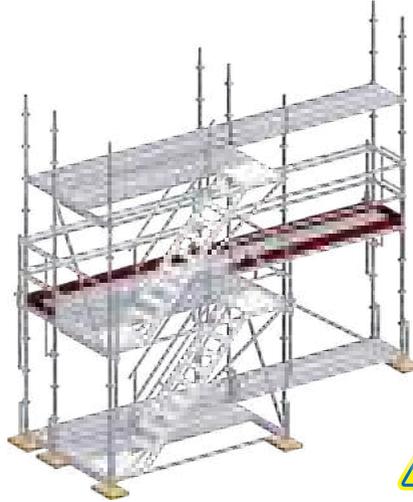


12.



12. Next, the next level can be added to the free standing reinforcement scaffolding by fitting standards 2.00 m onto the standard 3.00 m and securing them immediately with a locking pin. Proceed by connecting the fitted standards longitudinally and transversely with the tube ledgers and U-ledgers.

13. Then fit the steel decks and the aluminium stairway with inner guardrail into the U-ledgers. Next, install the required diagonal braces on this level. This is done in parallel with the diagonal braces of the level below.



13.



14. Reposition the advanced guardrail 2 m upwards before entering the next level and / or use PPE against falls.



14.





15.



15. Now fit the remaining tube ledgers as side protection and fit the stair guardrail. Install the deck lift-off preventers along the entire working level onto the U-ledgers.



16.



16. Finish by installing the toeboards and the stair stringer fall protection to the aluminium stairway.

17. Repeat these working steps until the required height is reached. Install the platform guardrail on the topmost level as fall protection and an H-diagonal brace or a tube-coupler bracing unit between the facade scaffolding and stairway access at intervals of 4 m. If required, the advanced guardrail can now be disassembled. It can, however, also remain installed for the entire service life of the scaffolding. Provide anchorage immediately upon reaching the height at which anchorage is mandatory (see 7.1.4).



17.



7.1.7 Dismantling

Free standing reinforcement scaffoldings are dismantled in the reverse order of erection. Loose components must be fully dismantled and lowered to ground level immediately. Do not throw or drop any parts.

First, the advanced side protection guardrails must be refitted to the next highest level.

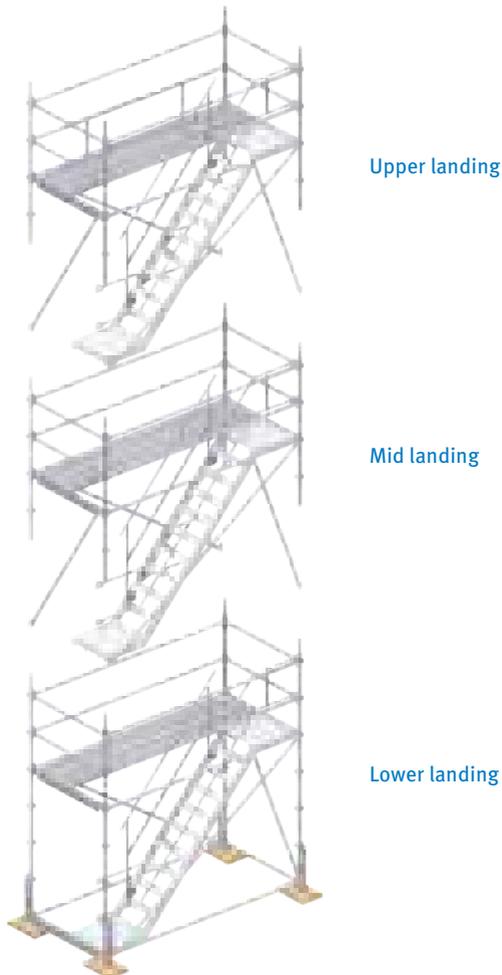


7.2 Stair tower - continuous assembly

The stairway towers have a base area of 2.57 - 3.07 m x 1.40 m. The stairway towers can be crane lifted to be used as stairway towers for construction sites for load class 3 in accordance with EN 12811-1 with 2 kN/m². In accordance with this standard, they correspond to a flight of stairs of class "A".

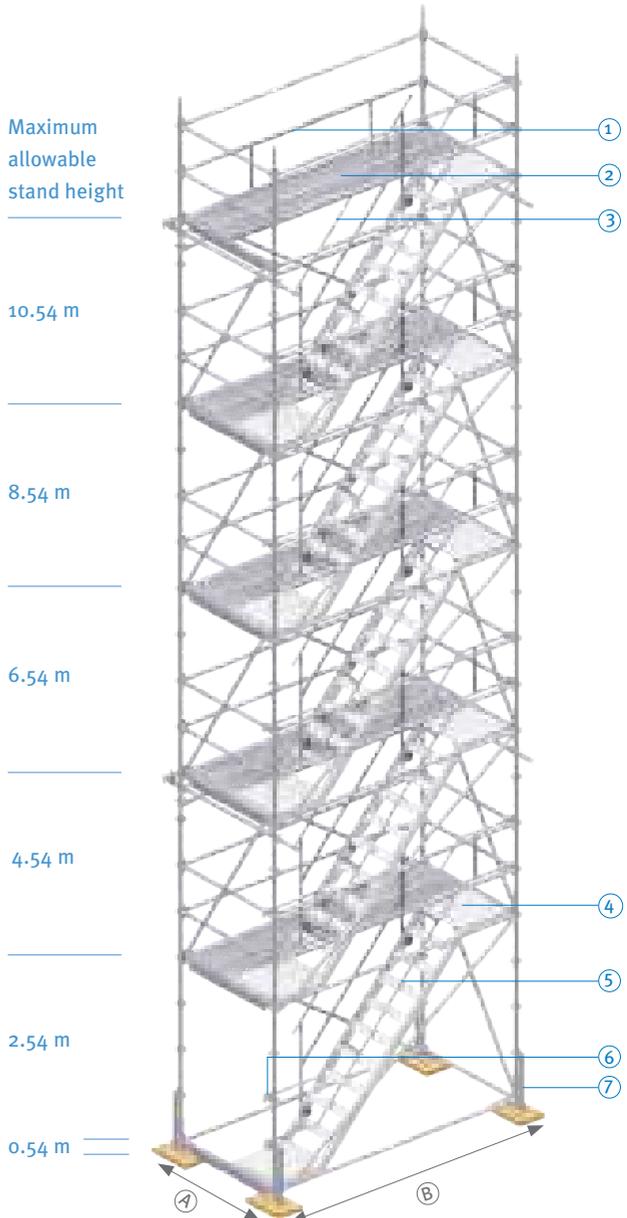
7.2.1 Variant 1: with linear stairs

The stairway towers with linear stairs are designed to provide access to scaffolding levels. For this purpose, they have a platform made of steel decks at height intervals of 2 m.



⚠ CAUTION

The figure shows the maximum allowable stand height of this variant according to the standard verification. Higher structural heights are possible but require individual proof of structural stability. In some cases, the anchor configuration changes. Please refer to the notes regarding anchoring on page 55.

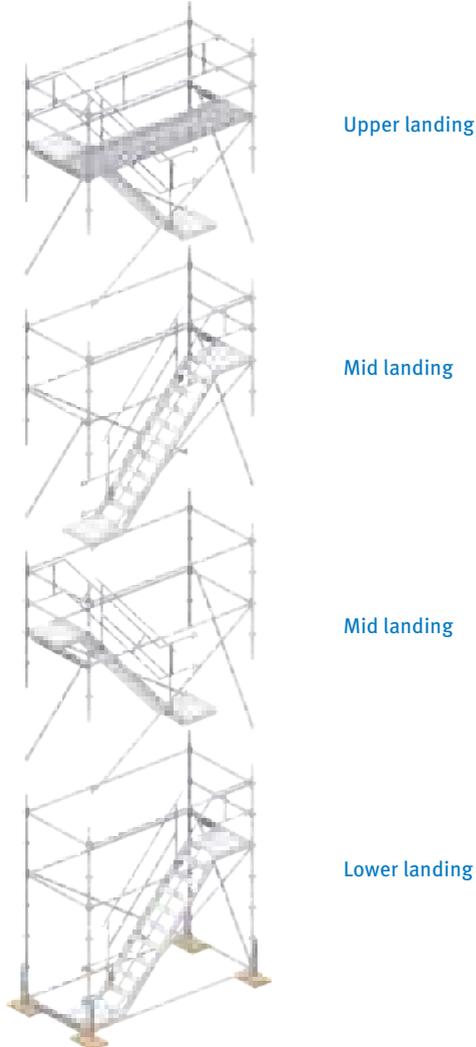


- Ⓐ 1.40 m
- Ⓑ 2.57 - 3.07 m

- ① ALBLITZ platform holder
- ② Steel deck
- ③ Inner guardrail
- ④ ALBLITZ stairway
- ⑤ ALBLITZ stair guardrail
- ⑥ Stair guardrail holder
- ⑦ Locking device for base jack

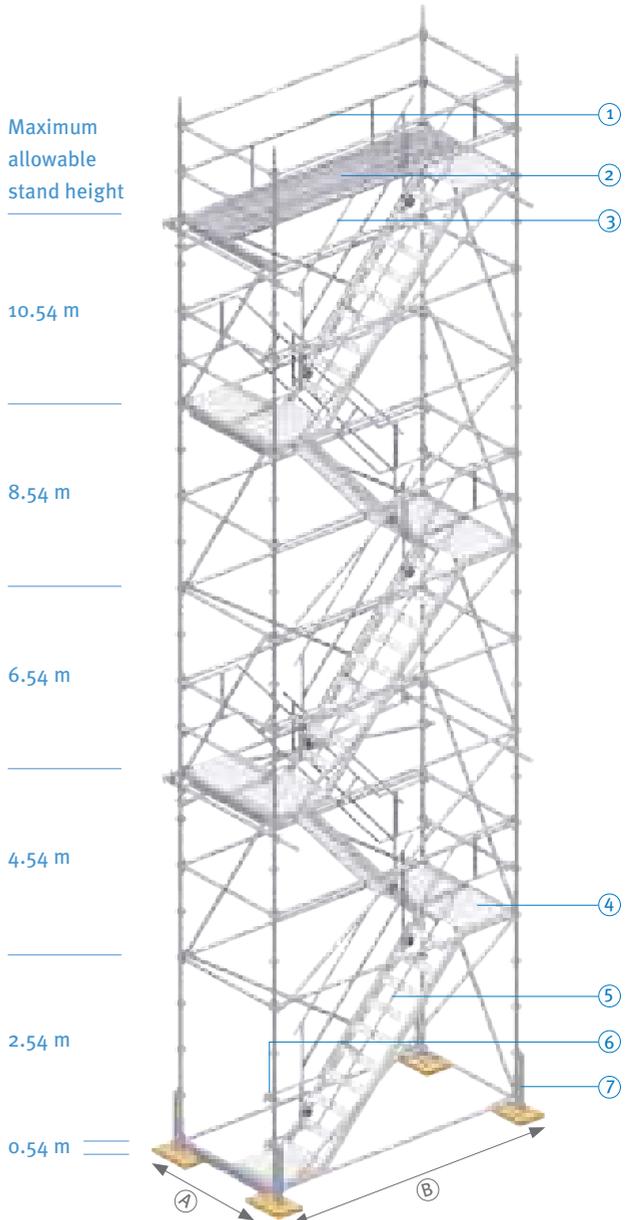
7.2.2 Variant 2: with half-turn stairs and landings

Stairway towers with half-turn stairs and landings are designed to provide access to working levels. For this purpose, they have a platform made of steel decks at the upper stand height.



⚠ CAUTION

The figure shows the maximum allowable stand height of this variant according to the standard verification. Higher structural heights are possible but require individual proof of structural stability. In some cases, the anchor configuration changes. Please refer to the notes regarding anchoring on page 55.



- Ⓐ 1.40 m
- Ⓑ 2.57 - 3.07 m

- ① ALBLITZ platform holder
- ② Steel deck
- ③ Inner guardrail
- ④ ALBLITZ stairway
- ⑤ ALBLITZ stair guardrail
- ⑥ Stair guardrail holder
- ⑦ Locking device for base jack

! CAUTION

The standards must be connected, e.g. by means of linchpins!

Mount the locking devices of the base jacks!

Use webbing slings and 4 leg chain slings!

7.2.3 Crane lifting

Attach the lifting slings to the standards as shown in the figure. Make sure the lifting slings are attached to the standard directly under the connector disc (rosette) of the upper deck surface. Use lifting slings that are long enough, allowing an angle of inclination of $45^\circ - 60^\circ$. If required, additionally use a 4-leg chain sling.



Dead load in kg for scaffold width 1.40 m / max. support reaction F in kN per base

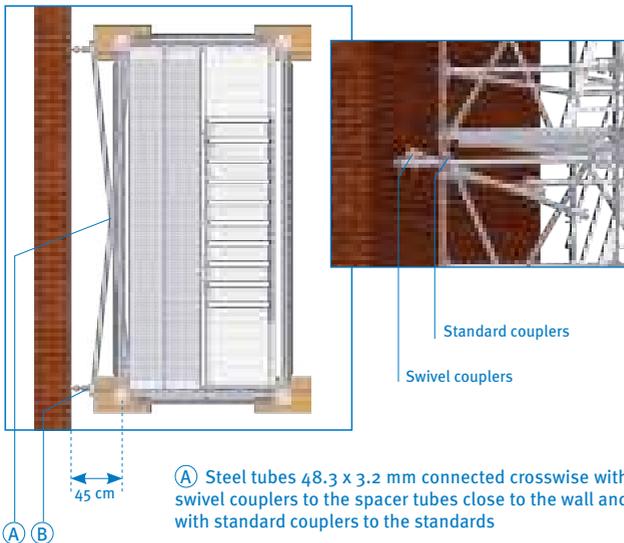
Structural height in m	Flight of stairs with linear stairs	Flight of stairs with half-turn stairs and landings
		3.07 m
2.22 - 2.54	371 / 2.8	280 / 3.5
4.22 - 4.54	656 / 5.4	564 / 5.2
6.22 - 6.54	918 / 8.0	758 / 6.7
8.22 - 8.54	1.179 / 10.5	952 / 8.0
10.22 - 10.54	1.441 / 11.2	1.146 / 9.5

7.2.4 Anchoring

The stairway towers must be anchored in a tension- and compression-resistant way as specified below. Anchorage is provided by means of spacer tubes and lifting eye bolts $D = 12$ mm screwed into the supporting ground. Instead of lifting eye bolts, statically equivalent or better systems may be used. Proof of structural stability of the anchor ground in relation to the specified anchor forces must be provided by the building contractor.

Anchorage of the stairway towers

Structural height in m	Anchorage below deck level
4.22 - 4.54	4.22 - 4.54 m
6.22 - 6.54	4.22 - 4.54 m
8.22 - 8.54	4.22 - 4.54 m and 8.22 - 8.54 m
10.22 - 10.54	4.22 - 4.54 m and 10.22 - 10.54 m

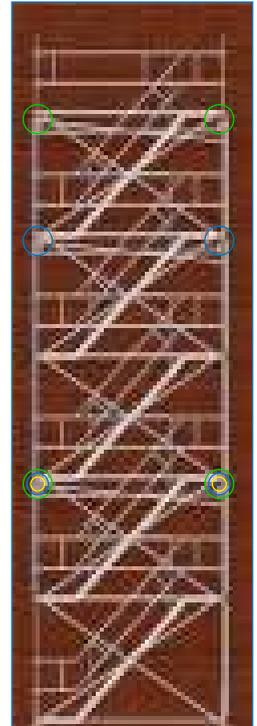


Ⓐ Steel tubes 48.3×3.2 mm connected crosswise with swivel couplers to the spacer tubes close to the wall and with standard couplers to the standards

Ⓑ Spacer tube 2.00 m (EIFS) 48.3×4.05 mm: Connected by means of 2 standard couplers to the standards below deck level; fixing to the wall is done with lifting eye bolts and plastic scaffold anchors (wall plugs)

⚠ CAUTION

Anchor forces per anchor point:
 · parallel to the facade: 1.8 kN
 · at a right angle to the facade: 2.4 kN



ⓐ Anchor points of the stairway tower at deck level 10.25 m

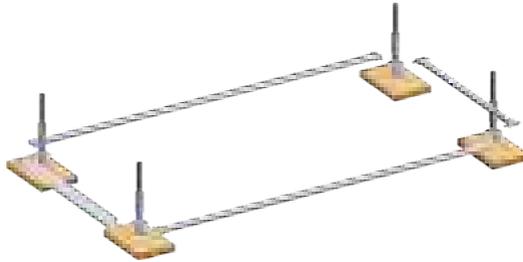
ⓑ Anchor points of the stairway tower at deck level 8.25 m

ⓒ Anchor points of the stairway tower at deck level 4.25 m and 6.25 m

7.2.5 Stairway assembly with half-turn stairs and landings

1. First place the base jacks at the right positions (length and cross spacing) as planned, using the ledgers for orientation.

If necessary, install load-distributing bases (planks, squared timber). If the supporting surface is inclined, wooden wedges for levelling purposes are required.



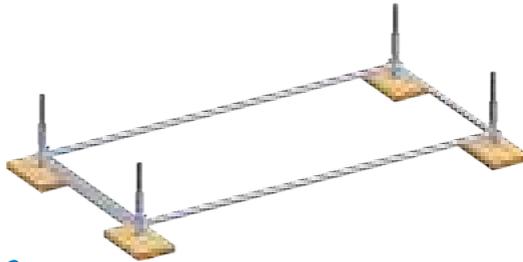
1.



2. The support points must be located on a supporting surface that has an adequate load-bearing capacity so that they can transfer the forces resulting from the scaffolding to the ground.

Fit the vertical starter pieces onto the base jacks and connect them to the transoms of the required bay length.

When erecting the scaffolding on uneven ground or on a slope, the scaffolding must be levelled out by adjusting the nuts at the foot of the base jack. Start levelling out from the highest point of the supporting ground.



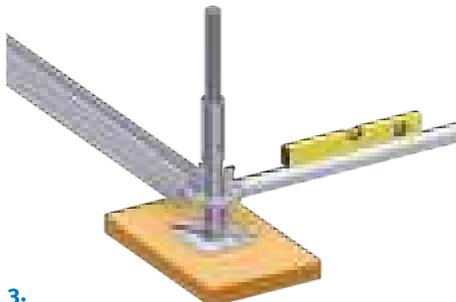
2.



CAUTION

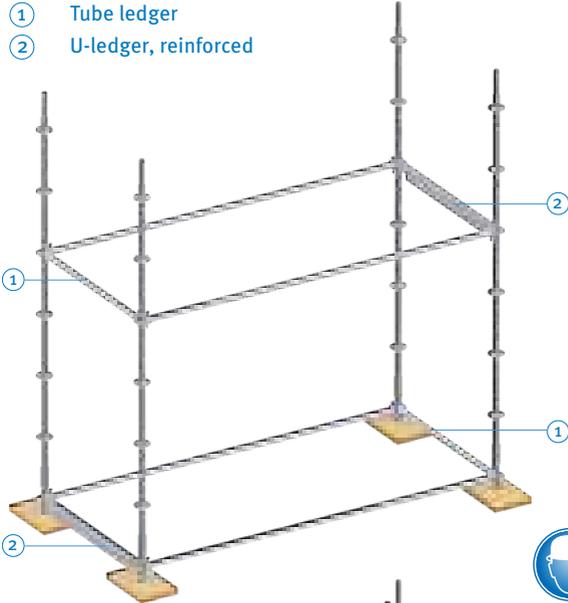
The maximum spindle extension length of 50 cm must not be exceeded to avoid the danger of collapse.

3. Make sure the ledgers are aligned horizontally with a water level before driving home the wedges. Check the right angles. After driving home the wedges, the exact scaffold ground plan is given so that further assembly can easily be carried out without any significant alignment work.



3.

- ① Tube ledger
- ② U-ledger, reinforced



4.



5.



4. Standards 3.00 m are fitted onto the vertical starter pieces and connected to one another along the scaffold and in lateral direction by means of tube ledgers and U-ledgers at a height of 2 m. Make sure the reinforced U-ledgers and tube ledgers 1.40 m are installed in an alternating way.

Stairway towers that can be lifted by crane must have base jack locking devices at all 4 standards.

5. Assemble the first stairway and fit the diagonals as shown in the figure.

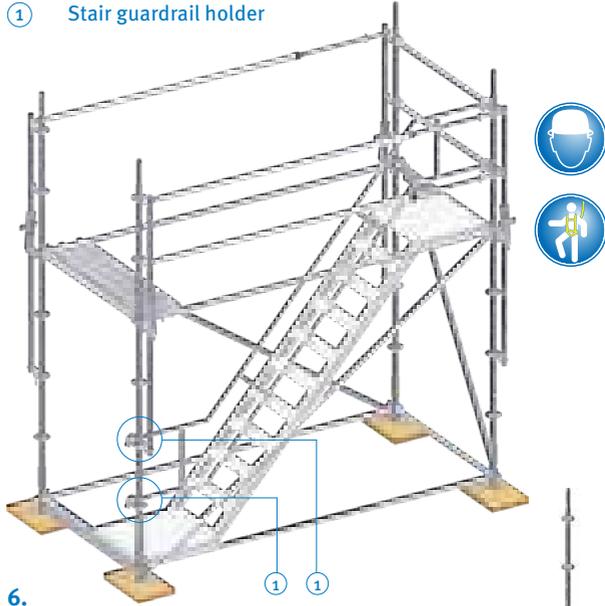
! CAUTION

Use an advanced guardrail (see chapter 3 for assembly instructions) for the assembly of further levels. When required, also use personal protective equipment to prevent falling (PPE against falls, see chapter 3).

Mount the tube ledgers 1.40 m as side protection from the topmost steps of the stairway. Install a lift-off preventer on the reinforced U-ledger onto the lowermost landing of the stairway.

6. First install the stair guardrail holder to the standard at the lower section of the stairway, then install the stair guardrail as shown in the figure. Before entering the next level, fit the erection deck (one steel deck 1.40 m with tube fixture) opposite the upper stairway landing on the longitudinal ledger.

① Stair guardrail holder



7. Two steel decks of the respective system length of the stairway are fitted onto the erection deck and reinforced at the other end with U-ledgers and suspended next to the upper stairway landing. Then secure the inner and outer face of the stairway tower along the scaffold with advanced guardrails. Please refer to chapter 3 for more information on the assembly of the advanced guardrail. The pair of standards above the stairway landing is connected to one another and braced (depending on the height of the stairway) at a height of 2 m above the upper stairway landing by means of a tube ledger or U-ledge. This ledger will be used as anchor point for further assembly work. From this level onwards, PPE against falls in connection with self-retracting lifelines must be used. For more information on the use of PPE against falls, please refer to chapter 3.

6.

7.



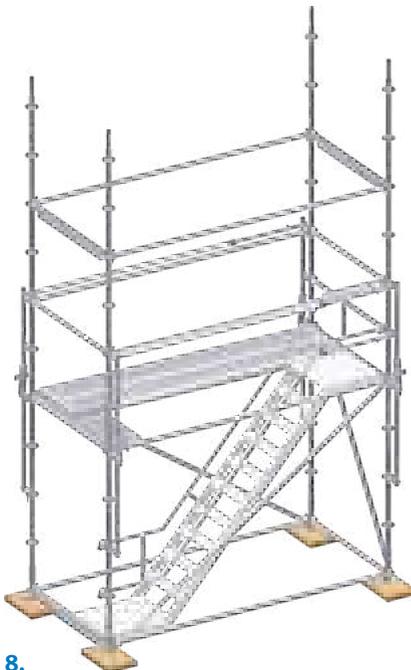
PPE AGAINST FALLS AND SELF-RETRACTING LIFELINES



If an anchor point has to be relocated during assembly to a section that is not yet otherwise secured, another fall arrest/protection additionally to the self-retracting lifeline must be used! First attach the scaffold hook of the fall arrest/protection to the reinforced U-ledger at head level. This can be done at the transition between the U-ledger and the connector head.

CAUTION

Provide anchorage of the stairway tower immediately upon reaching the height at which anchorage is mandatory (see page 55)!

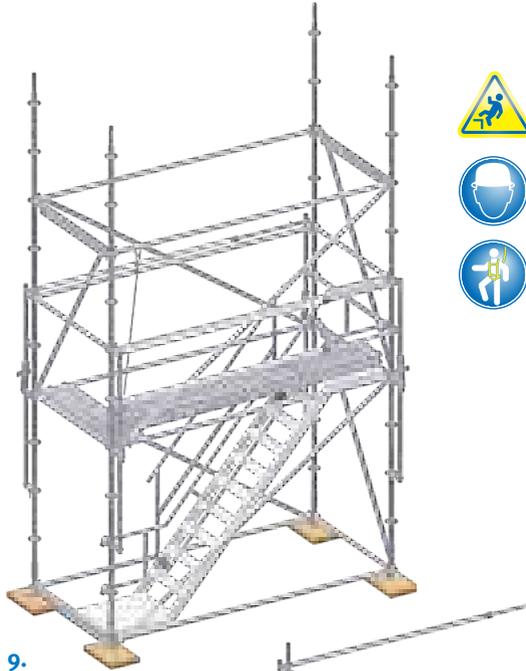


8.

8. First fit tube ledgers 3.07 m and 1.40 m into the connector disc as handrail all around at 1 m above deck level, then fit standards 2.00 m and secure immediately with locking pins. The standards are now connected with each other longitudinally and laterally by means of tube ledgers or ledgers at a height of 2.00 m. In accordance with the final height of the stairway tower, make sure the tube ledgers and U-ledgers are installed in an alternating way.

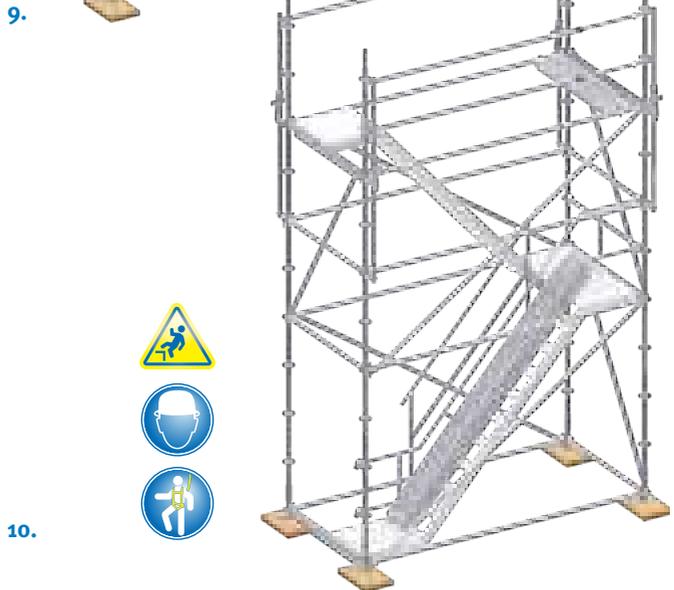


9. After the diagonal braces and the internal stairway guardrail on the lower stairway have been installed, the decks that had been installed for assembly purposes are removed and fitted one level higher on the erection deck and stairway landing to assemble the next level. VNow assemble the next stairway from here. Operatives must use PPE against falls and self-retracting lifelines that are attached at head level to the longitudinal tube ledgers. Assembly should be done by two persons.



10. When the next aluminium stairway is installed, the advanced guardrails are moved up one level, the steel decks on the stairway landing and erection deck are stored temporarily on the flight of stairs and the erection deck is installed on the next level.

The reinforced U-ledger 1.40 m that is now fully occupied by the stairway units is now secured with lift-off preventer. During assembly, the worker must use PPE against fall and self-retracting lifelines that are attached to the longitudinal tube ledgers.





11.

11. Now assemble the next end tube ledger 1.40 m and then fit the stair guardrail. If you have not yet reached the final height of the structure, proceed with further assembly as described.



12.

12. Upon reaching the final height of the stairway tower, install a platform using steel decks and a tube ledger as side protection guardrail. The longitudinal ledgers on deck level and, as soon as installed, the upper tube ledgers of the side protection serve as anchor points. If an anchor point has to be relocated during assembly to a section that is not yet otherwise secured, another fall arrest/protection additionally to the self-retracting lifeline must be used!

13. As soon as the inner guardrail of the last flight of stairs and the platform guardrail have been mounted, the lift-off preventer must be installed on this level.

Now, the advanced guardrail can be removed or remains in place until the stairway tower is disassembled.



7.2.6 Dismantling

Stairway towers are dismantled in the reverse order of erection. Loose components must be fully broken down and lowered to ground level immediately.

Do not throw or drop any parts.

At each stage, advanced side protection guardrails must be refitted to the next highest level.



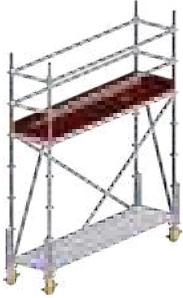
! CAUTION

The allowable scaffold designs are shown with bay length 3.07 m. In accordance with the requirements, the bay size can be reduced to up to 2.07 m.

7.3 Mobile working scaffolding

7.3.1 Allowable designs in accordance with the structural design calculation

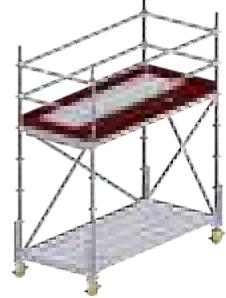
The figures do not show ballast weights that are required in individual cases. Please refer to chapter 7.3.3 for an overview of ballast weight requirements.



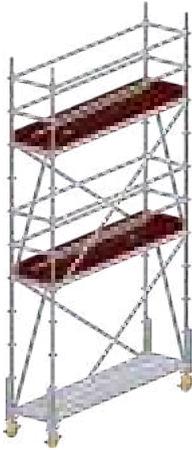
0.73 x 2.07 m
0.73 x 3.07 m
Stand height = 2.40 m



0.73 / 1.40 x 2.07 m
0.73 / 1.40 x 3.07 m
Stand height = 2.40 m



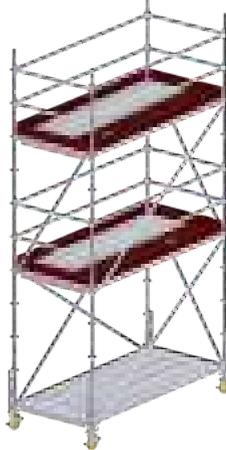
1.40 x 3.07 m
Stand height = 2.40 m



0.73 x 2.07 m
0.73 x 3.07 m
Stand height = 4.40 m



0.73 / 1.40 x 2.07 m
0.73 / 1.40 x 3.07 m
Stand height = 4.40 m



1.40 x 3.07 m
Stand height = 4.40 m

7.3.2 General instructions

1. The load-bearing capacity of the mobile scaffold tower is 2 kN/m² in accordance with load class 3 (DIN EN 12811-1).
2. The maximum stand height (deck level) is 4.40 m. Do not exceed this height by adding crates, ladders or any other equipment!
3. The maximum allowable wind speed for assembly, use, alteration and dismantling is 43 km/h (6 Beaufort).
4. During assembly and dismantling, the platforms and intermediate deck levels must be installed in such a way that the distance between 2 platforms is smaller than 2.10 m.
5. The distance to the ground of the bottom platform must not be larger than 60 cm.
6. The maximum vertical distance between platforms is 4.20 m.
7. Horizontal and vertical loads (e.g. lifting gear) that can cause an imbalance and lead to the mobile scaffold tower overturning must be avoided.
8. Do not move, lift or relocate the mobile scaffold tower with a forklift or similar equipment.
9. Do not move the mobile scaffold tower when there are persons or loose materials on the tower.
10. Unlock the castor wheel brakes to move the mobile scaffold tower.
11. Lock the castor wheel brakes when the scaffold tower is repositioned.
12. When left unattended after work or in case of wind speeds of 43 km/h (6 Beaufort) or higher, the mobile scaffold tower must be moved to an area that is sheltered from wind or must be secured against overturning (e.g. by means of tension- and compression-resistant anchorage to the structure) or dismantled.

CAUTION

Deviations from these Instructions for Assembly and Use are not allowable!

Structural modifications to the mobile scaffold tower may only be carried out by the manufacturer!



13. Only use the original ALFIX ballast weights!

14. Secure the joints of the standards against unintentional lift-off with linchpins.



15. Only climb the tower from the inside. Install the internal hatches in an alternating way. Close the hatch after accessing a deck.

16. Workers on mobile scaffold towers must not lean against the side protection.



17. Only move mobile scaffold towers on a level ground that can support the mobile scaffold tower and only move them longitudinally or in a pivoting movement. Do not move the mobile scaffold tower on a sloping ground that has an inclination of more than 3%. Caution should be exercised when moving the tower that heights are clear of obstacles!

18. After moving the mobile scaffold tower, check if the tower is vertical and that all castors are firmly on the ground and locked. Reposition the tower if this is not the case.

19. Never erect scaffold towers within 5 metres of an overhead electric line. In keeping the minimum clearance distance from the closest part of the scaffold, consider the possible sway or sag of the electric line as well as any movement of the workers and equipment or materials they move while standing on the tower. Smaller clearance distances are allowed in accordance with the "Instructions for handling working and service scaffoldings" (DGUV Information 201-011) by the German employer's liability insurance association for the construction industry.

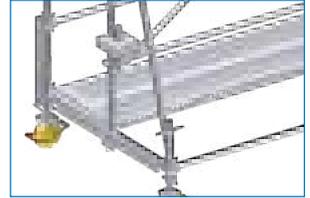


20. Do not bridge two mobile scaffold towers that stand side by side or a mobile scaffold and a building.

21. Always secure the tower and provide adequate lighting when there is nearby traffic.

7.3.3 Overview ballasting

Only use the specified mobile scaffold tower and the respective assembly configuration in accordance with the DIN EN 1004 standard. The scaffoldings must be ballasted in accordance with the application/load cases shown in the overview below. Mobile scaffold towers are designed based upon the requirements of temporary scaffolds. Dynamic pressure $q = 0.1 \text{ kN/m}^2$. Ballasting is provided with ballast weights and ballast weight holders, fitted to the standards above the first connector disc.



Each ballast weight holder can be equipped with 4 ballast weights. In circumstances where more than 40 kg of ballast weights have to be fitted per standard, additional ballast weight holders can be mounted.

Overview of ballast weight requirements per scaffolding unit:

Load case I:

Mobile scaffold tower used as temporary scaffold, in front of closed formwork or wall



additionally required total ballast at 3.07 m

additionally required total ballast at 2.07 m

SH 4,40m	Type 3.07 x 1.40 m	SH 4,40m	Type 3.07 (2.07) x 0.73/1.40 m	SH 4,40m	Type 3.07 (2.07) x 0.73 m	SH = Stand height
0 kg	0 kg	80 kg	0 kg	160 kg	40 kg	
0 kg	0 kg	60 kg	0 kg	120 kg	20 kg	

Load case II:

Mobile scaffold tower used as temporary scaffold, free standing



additionally required total ballast at 3.07 m

additionally required total ballast at 2.07 m

SH 4,40m	Type 3.07 x 1.40 m	SH 4,40m	Type 3.07 (2.07) x 0.73/1.40 m	SH 4,40m	Type 3.07 (2.07) x 0.73 m	SH = Stand height
0 kg	0 kg	340 kg	100 kg	660 kg	180 kg	
0 kg	0 kg	220 kg	60 kg	480 kg	80 kg	

Ballasting examples (load class II)

Type 3,07 x 0,73 / 1,40 m
Stand height (SH) 2,40 m



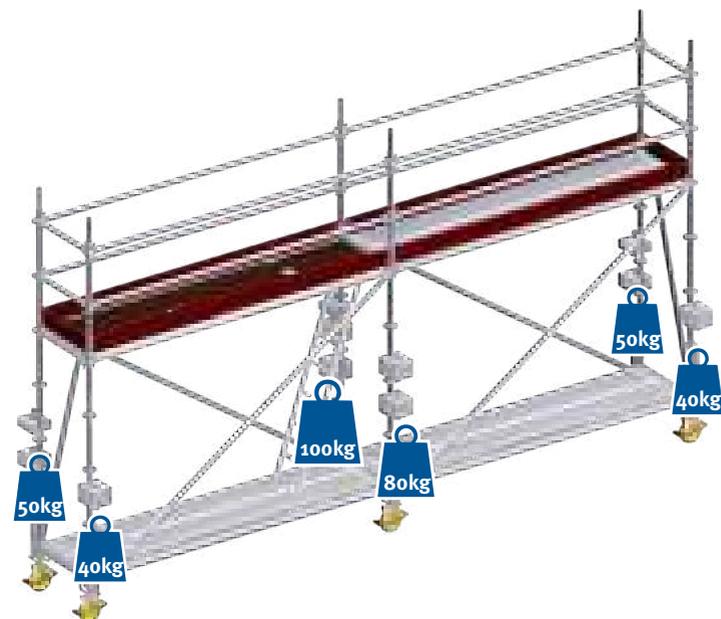
Type 6,14 x 0,73 / 1,40 m
Stand height (SH) 2,40 m



7. Assembly variations



Type 3.07 x 0.73 m
Stand height (SH) 2.40 m



Type 6.14 x 0.73 m
Stand height (SH) 2.40 m

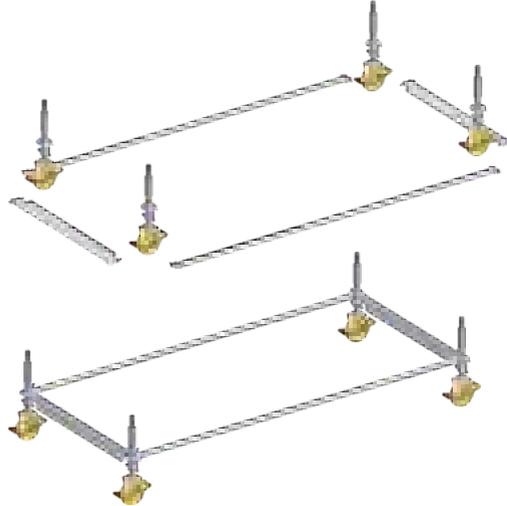
7.3.4 Assembling

Assembly and dismantling should be done by at least 2 erectors.

1. First place the castor wheels at the right positions (length and cross spacing) as planned, using the laid-out ledgers for orientation. Make sure the scaffold is erected on firm, even ground without any slopes.

2. The support points must be located on a supporting surface that has an adequate load-bearing capacity so that they can transfer the forces resulting from the scaffolding to the ground. Fit the vertical starter pieces onto the castor wheels and connect them to the tube ledgers and U-ledgers in the required bay length. When erecting the scaffolding on a slope, the scaffolding must be levelled out by adjusting the nuts at the castor wheels. Start levelling out from the highest point of the supporting ground.

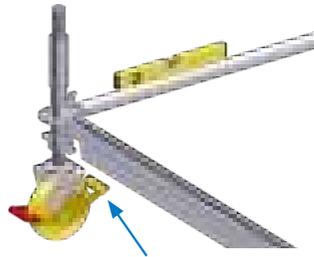
3. Make sure the tube ledgers are aligned horizontally using a water level before driving home the wedges. Check the right angles. After driving home the wedges, the exact scaffold ground plan is given so that further assembly can easily be carried out without any significant alignment work.



CAUTION

Make sure the supporting surface has the required load-bearing capacity. If necessary, provide suitable bases.

Lock the castors with the locking brake before assembly.



3. Operating the castor wheel

Locking

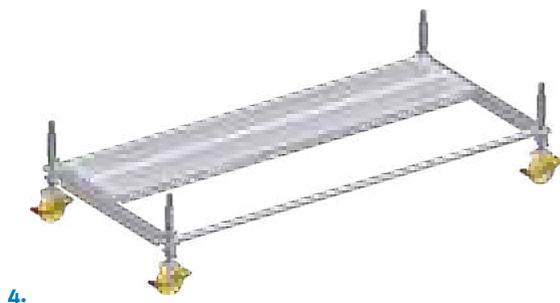
Press the brake lever (red part) down



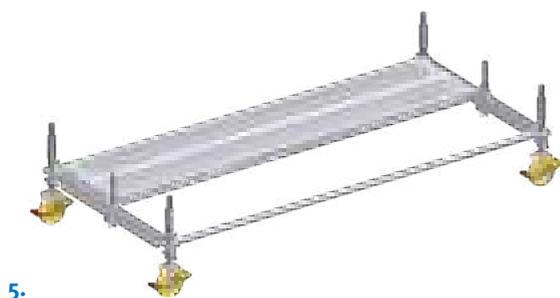
Unlocking

Press the opposite brake lever (yellow part) down





4. Fit steel decks in the U-ledgers, two per bay. Push them right up to the ledgers bordering the wall surface that is under construction.



5. Remove the linchpins from the tube connectors for the U-ledgers and fit one tube connector onto each U-ledger. Now reinstall the linchpin.



6. Proceed by installing the lift-off preventers onto the U-ledgers.

7. Standards 3.00 m are fitted onto the vertical starter pieces on the inner face of the scaffolding and connected to one another along the scaffold by means of tube ledgers at a height of 2 m.

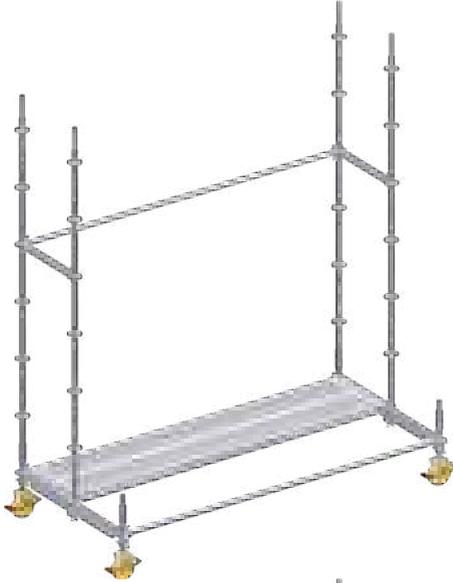
7.



8. At the same height (2 m), also fit U-ledgers at an angle of 90° to the tube ledgers 0.73 m.

8.





9.



9. Then fit standards 3.00 m onto the tube connectors for U-ledgers and connect them immediately with the previously fitted U-ledgers 0.73 m. Secure the connection between standard and tube connector with a linchpin.

CAUTION

When fitting the linchpin, make sure the borehole in the standards is aligned with the borehole in the standard connection.



10.



10. Now connect the standards that were mounted last with the tube ledgers at a height of 2.00 m along the scaffolding.

11. Start by fitting an access deck into the U-ledgers at a height of 2.00 m.



11.



12. Then install the tube ledgers and vertical diagonal braces in longitudinal direction as shown. In transverse direction, MODUL bracket braces are installed. Fit the security mechanism for the base jacks to the inner standards and additionally secure the threaded pipes of the castor wheels that protrude from the vertical starter pieces with spindle nuts. Now fit the ballast weights using the weight holders in accordance with the overview on page 67.



12.





13.

13. Install the advanced side protection along the entire scaffold width before entering the first level.

Please refer to chapter 3 for more information on the assembly of the advanced guardrail.

In cases when the advanced guardrail cannot be used (e.g. for bay length 2.07 m), personal protective equipment to prevent falls (PPE) must now be used (see chapter 3).



14.

14. Close the hatch after entering the first level. Now fit the remaining tube ledgers as side protection.

15. Install the lift-off preventers along the entire working level onto the U-ledgers.



15.



16. Finish by installing the MO-DUL toeboards (see chapter 3).



16.





17.



17. When adding levels to the mobile scaffold tower, standards 2.00 m are fitted onto the standards 3.00 m and immediately secured by means of linchpins.

Proceed by connecting the fitted standards along the scaffold length and width using tube ledgers and U-ledgers at a height of 2 m.



18.



18. Next, fit the access deck (with hatch) into the U-ledgers. Hatches must never be positioned directly above or below each other. Now mount vertical diagonal braces along the length of the scaffolding on this level. This is done in parallel with the diagonal braces of the level below.

19. Move up the advanced side protection by 2 m before entering the next level.



19.

20. Close the hatch after entering the second level. Now fit the remaining tube ledgers as side protection.

Install the lift-off preventers along the entire working level onto the U-ledgers. Finish by installing the MODUL toeboards (see chapter 3).

If necessary, the advanced side protection can now be removed. Disassembly is done in the reverse order of assembly. The advanced side protection can, however, also remain installed for the entire service life of the scaffolding.



20.

7.3.5 Dismantling

Disassembling the mobile scaffold tower is done in reverse order of assembly. Loose components must be fully broken down and lowered to ground level immediately. Do not throw or drop any parts. First, the advanced guardrail must be refitted to the next highest level.



7.3.6 Additional instructions

When installing decks with a bay length of 2.07 m (frame platform with hatch without ladder, not possible for type 3.07 x 1.40 m), use the MODUL storey ladder 0.50 m. The ladder is fitted at intervals of 50 cm into the connector disc of the standards below the hatch opening and can also be used to bridge distances between two working platforms > 2.00 m and < 2.00 m. The MODUL bracket brace 2.05 m is not required for 0.73 bays that are fitted entirely with MODUL storey ladders 0.50 m.



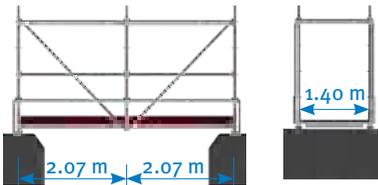
MODUL storey ladder 0.50 m



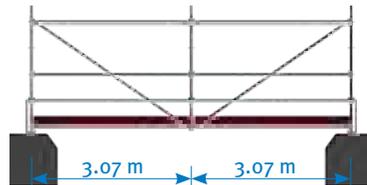
7.4 Trench bridges

Trench bridges are suitable for bridging trenches such as waterways or construction-related trenches and for connecting stairway towers. They are constructed using components of the MODUL working scaffolding, and are available in width 1.40 m and the lengths 4.14 m, 6.14 m, 8.21 m and 9.21 m.

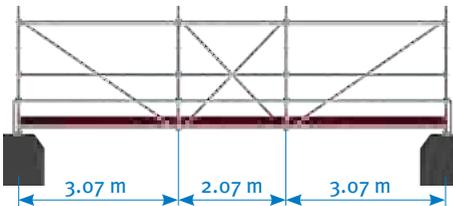
Trench bridge 4.14 m



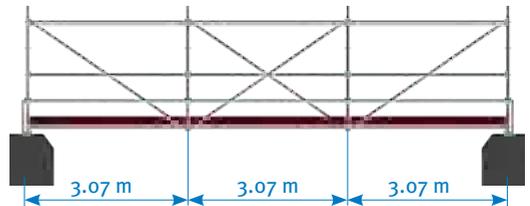
Trench bridge 6.14 m



Trench bridge 8.21 m



Trench bridge 9.21 m

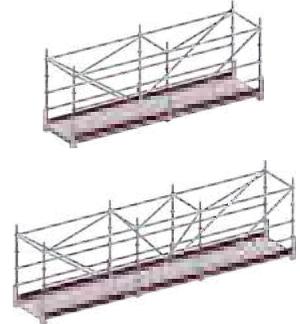


7.4.1 Assembly instructions

The modular scaffolding is assembled as described in the chapters above. Please note that additional base jacks are required and that all push-in joints must be secured because of the crane lifting operations. Also note the differences between small bridges (4.14 m / 6.14 m) and large bridges (8.21 m / 9.21 m) during assembly. Within these size categories, however, they only differ in terms of deck length. Assembly is basically the same for all bridges. In accordance with the number of standards and the pattern shown, start by mounting 6 or 8 base jacks. Then fit vertical starter and subsequently standards onto the base jacks. The lowermost and topmost connector disc levels are fitted with tube ledgers and U-ledgers. Then fit decks and the three-part side protection.

7. Assembly variations

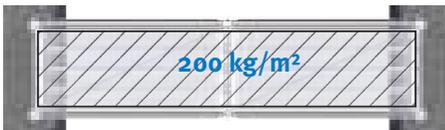
Trench bridges are braced in a tension-resistant way with diagonal braces. Fit a diagonal brace on each side of each bay and a horizontal strut on the topmost level. Finish by connecting the four outer base jacks and vertical starter pieces with locking devices for base jacks to the standards. In the centre, connect the vertical starter pieces to the standards with connectors for suspended scaffolds to the standards. As a result, the base jacks in the centre will remain at the site of erection when crane lifting the trench bridge.



7.4.2 Loads

The dead load and the distributed load of load class 3 (LC 3) result in the support reactions listed in the table, which have to be resisted in the supporting ground.

Distributed load for load class 3: 200 kg/m² on the entire deck surface, e.g. for length 6.14 m



Length of bridging construction	Width of bridging construction	Deck surface	Load due to distributed load		Load due to dead weight	
			Total	Per base	Total	Per base
4.14 m	1.40 m	5.8 m ²	1.160 kg	290 kg	451 kg	113 kg
6.14 m	1.40 m	8.6 m ²	1.720 kg	430 kg	592 kg	148 kg
8.21 m	1.40 m	11.5 m ²	2.300 kg	575 kg	787 kg	197kg
9.21 m	1.40 m	12.9 m ²	2,580 kg	645 kg	857 kg	214 kg

7.4.3 Parts list

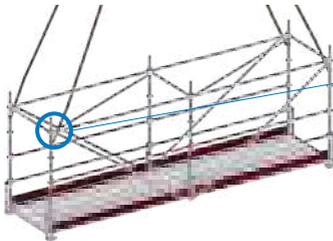
Please refer to the table below for the components needed to construct trench bridges of different lengths.

Article number	Designation	4.14 m	6.14 m	8.21 m	9.21 m
1151060	Base jack 0.60 m	4	4	4	4
1221207	Steel deck 2.07 x 0.32 m	8	0	4	0
1221307	Steel deck 3.07 x 0.32 m	0	8	8	12
4000041	Vertical starter piece	6	6	8	8
4005200	Standard 2.00 m	6	6	8	8
4025200	Vertical diagonal brace 2.07 x 2.00 m	4	0	2	0
4027200	Vertical diagonal brace 3.07 x 2.00 m	0	4	4	6
4043207	Horizontal diagonal brace 2.07 x 1.40 m	2	0	1	0
4043307	Horizontal diagonal brace 3.07 x 1.40 m	0	2	2	3
4060140	Tube ledger 1.40 m	3	3	4	4
4060207	Tube ledger 2.07 m	16	0	8	0
4060307	Tube ledger 3.07 m	0	16	16	24
4065140	U-ledger, reinforced 1.40 m	3	3	4	4
4095207	Toeboard 2.07 m, wood	4	0	2	0
4095307	Toeboard 3.07 m, wood	0	4	4	6
4098140	Lift-off preventer 1.40 m	3	3	4	4
4152003	Locking device for base jack	4	4	4	4
4875080	Suspended scaffolding connector 0.60 m	2	2	4	4

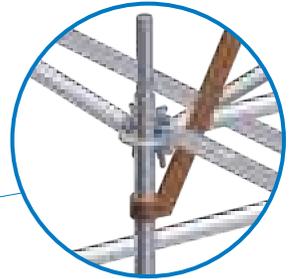
Alternatively, trench bridges with a width of 1.57 m can be fitted. Suitable bases are available and can be ordered.

7-4-4 Crane lifting

All trench bridges are stable constructions due to the reinforcement provided by means of the diagonal braces and horizontal struts. Therefore, they can be lifted by crane and positioned at the desired location. When doing so, the dead weight (see table: 462 kg - 904 kg) must be considered. Also note that the lifting slings must have an angle of inclination in relation to the horizontal struts of 45° and 60°. Fit the lifting slings to the external corners below the topmost modular connector disc (rosette).



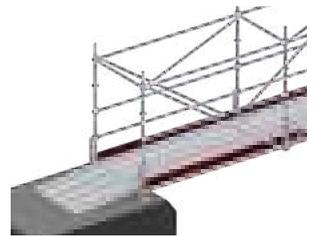
[Detailed view A](#)



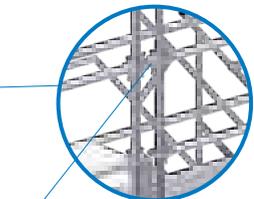
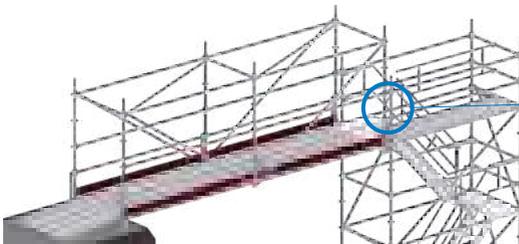
7-4-5 Connection variants

Height differences between the supporting ground and the platform can be overcome by fitting additional decks. Alternatively, on-site ramps can be used.

Trench bridges can also be connected to a stairway tower. From the stair tower, connect the modular connector discs of the stairway tower and trench bridge with distance couplers 0.15 m. Then adjust the base jacks until they stand on the ground and the decks of the stairway tower and trench bridge are one level. Finish by removing the side protection at the connection. Eccentric loading of the scaffolding structure due to the connection of a trench bridge can cause instability of the structure!



[Detailed view B](#)



Distance coupler 0.15 m

Excerpt of approval Z-8.22-906 / Standard assembly configuration - Use as facade scaffolding with system width 0.73 m

National technical approval /
general construction technique permit
no. Z-8.22-906 of 15 October 2021

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C.1 General provisions

In its standard assembly configuration, the scaffolding system may be used as working scaffold of load classes ≤ 3 with system width $b = 0.732 \text{ m}$ and bay widths $l \leq 3.07 \text{ m}$ in accordance with DIN EN 12811-1:2004-03, and as protection scaffold and roof edge protection scaffold in accordance with the regulations stipulated in Section C.2.

The topmost horizontal level (working level) must not exceed 24 m above ground level, not including the spindle extension length. The standard assembly configuration of the scaffolding system is designed for use on a scaffold level in accordance with the regulations of the DIN EN 12811-1:2004-03 standard, Section 6.2.9.2 in front of a "partially open" facade with an open proportion of no more than 60%, and in front of closed facades. When determining the wind load, a statistical factor of

$\chi = 0.7$, assuming a maximum service life of 2 years, has been taken into account.

Structural analysis for scaffold cladding with tarpaulins has not been provided in the standard assembly configuration. Structural analysis for scaffold cladding with nets has only been provided in the standard assembly configuration in front of closed facades. Structural analysis for net-covered scaffolding applies to scaffolds with an aerodynamic force coefficient of the entire structure (net and scaffolding) that is no greater than $C_{L, total} = 0.6$

Without any further structural proof, the standard assembly configuration shall only be used if the loads the bays will carry do not exceed the respective live loads in accordance with DIN EN 12811-1:2004-03, Table 3.

For the standard assembly configuration of the "ALFIX MODUL MULTI" scaffolding system, the following designation in accordance with DIN EN 12810-1:2004-03 shall be used:

Scaffolding EN 12810 – 3D – SW06/307 – H2 – A – LA

The assembly variants of the standard assembly configuration are listed in Table C.4.

C.2 Protection scaffold and roof edge protection scaffold

In its standard assembly configuration, the scaffolding system may be used as a protection scaffold and roof edge protection scaffold with a top fall arresting layer of class FL 1 and as a roof edge protection scaffold with protective walls of class SWD 1 according to DIN 4420:2004-03.

Access decks must not be fitted into brackets.

The protective wall is to be installed in accordance with Annex D, page 7.

Use protective nets in accordance with DIN EN 1263-1:2015-03 with a mesh size of no more than 100 mm.

C.3 Components

In addition to these components, other components may be used: steel tubes $\varnothing 48.3 \cdot 3.2 \text{ mm}$ and couplers as well as standard couplers for the connection of the wall ties and V-type wall ties to the standards in accordance with DIN EN 12811-1:2004-03.

C.4 Bracing

Horizontal scaffolding levels are to be braced by continuously installing the following members at vertical intervals of 2 m

tube ledgers 0.73 m with	
one aluminium frame platform with tube fixture	in accordance with Annex B, page 51 or 52 or
two steel decks with tube fixture	in accordance with Annex B, page 64 or
two steel decks AF with tube fixture	in accordance with Annex B, page 61
or	

Modular scaffolding system "ALFIX MODUL MULTI"	Annex C, page 1
Standard assembly configuration Load Class 3 / SW06 / $l \leq 3.07 \text{ m}$ - General provisions	

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U-ledger 0.73 m and
one aluminium frame platform with plywood in accordance with Annex B, page 66 or 67 or
one aluminium deck with plywood in accordance with Annex B, page 72, 73, 78 or 79 or
two steel decks in accordance with Annex B, page 85 or
two steel decks AF in accordance with Annex B, page 84 or
one aluminium lightweight frame platform in accordance with Annex B, page 90
each.

When installing ladder accesses, the following members must be used instead of platforms and decks:
aluminium access frame platforms (with tube fixture) when using tube ledgers or aluminium frame
platform with internal hatch with ladder when using U-ledgers.

Secure the platforms, decks and hatches against unintentional lift-off.

The outer vertical planes are to be braced by means of tube ledgers used as guardrails (1 m above
deck level) continuously for each scaffolding bay.

Vertical starter pieces are to be installed directly above the base jacks (scaffolding spindles) and
connected by means of longitudinal ledgers in the inner and outer plane parallel to the facade and by
means of transoms at right angles to the facade.

C.5 Anchoring

Anchoring is to be provided using wall ties in accordance with Annex B, page 120.

Wall ties are to be installed as anchor pairs at an angle of 90° (V-type wall tie) or as "short" wall ties
only to the inner vertical frame standard using standard couplers. Depending on the assembly
configuration, the node points that are anchored by means of V-type anchors are to be connected on
the inner plane parallel to the facade with the adjacent standard section by means of tube ledgers
(longitudinal ledgers).

The V-type anchors and wall ties are to be installed in the immediate vicinity of the node points of the
standard tubes and transoms.

The anchor forces listed in Table C.2 were determined with the characteristic values of the actions
($\gamma_F = 1.0$). For the design analysis of the anchorage and the load transfer, the values given must be
multiplied by the respective partial safety factor γ_F (generally $\gamma_F = 1.5$).

Each frame section is anchored at vertical intervals of 8 m; anchoring points of neighbouring vertical
frame sections must be arranged with a vertical offset of half the spacing. Frame sections at the edge
of a scaffolding must be anchored at a vertical interval of 4 m. On the topmost and second working
level, each standard section must be anchored.

C.6 Foundation loads

Depending on the assembly variation, the foundation loads listed in Table C.3 must be absorbed and
transferred in the supporting surface.

The foundation loads are given as characteristic values.

For the structural analysis of transfer of loads in the supporting surface, the values given must be
multiplied by the partial safety factor γ_F (generally $\gamma_F = 1.5$).

C.7 Bridging construction

The bridging girders may be used at a height of 4m to bridge gate entrances or similar openings when
the working levels underneath the bridging part are omitted.

The bridging girders are to be anchored in the supporting and centre section and are to be braced
additionally by means of a horizontal bracing unit comprised of tubes and couplers or by means of
additional anchorage (see also Annex D, pages 3, 4 and 8).

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C.8 Ladder access

When installing internal ladder accesses, aluminium access frame platforms (with tube fixture) must be installed when using tube ledgers, or aluminium frame platforms with internal hatch or aluminium access frame platforms with ladder must be installed when using U-ledgers.

C.9 Widening bracket

Only use brackets 0.39 m on the inner face of the scaffolding on all working levels.

Table C.1: Components of the standard assembly configuration

Designation	Annex B, page
Vertical starter piece	10
Standard with tube connector 200	11
Base jack	17
AB Base jack	18
Tube ledger $l \leq 3.07$ m	25
U-ledger 0.73 m	32
U-transom lattice girder 0.73 m V	44
Tube-transom lattice girder 0.73 m V	45
MODUL lattice girder 6.14 m	46
MODUL lattice girder 4.14 m / 5.14 m	47
MODUL lattice girder with tube fixture 6.14 m	48
MODUL lattice girder with tube fixture 4.14 m / 5.14 m	49
MODUL lift-off preventer	50
Aluminium frame platform with tube fixture 1.57 m; 2.07 m	51
Aluminium frame platform with tube fixture 2.57 m; 3.07 m	52
Aluminium access frame platform with tube fixture 3.07 m	54
Aluminium access frame platform with tube fixture 2.57 m	55
Aluminium access frame platform with tube fixture 1.57 m – 3.07 m without ladder	57
Aluminium access frame platform with tube fixture 2.57 m – 3.07 m with aluminium chequer plate	58
Steel deck AF with tube fixture 0.32 m	61
Steel deck with tube fixture	64
Aluminium frame platform with plywood 1.57 m; 2.07 m	66
Aluminium frame platform with plywood 2.57 m; 3.07 m	67
Aluminium frame platform with internal hatch 2.57 m; 3.07 m	69
Aluminium deck with plywood 2.57 m; 3.07 m	72
Aluminium deck with plywood 1.57 m; 2.07 m	73
Aluminium access frame platform 3.07 m with ladder	75
Aluminium access frame platform 2.57 m with ladder	76
Aluminium deck with plywood 3.07 m	78
Aluminium deck with plywood 1.57 m, 2.07 m, 2.57 m	79
Aluminium access deck with ladder 3.07 m	81
Aluminium access deck with ladder 2.57 m	82
Steel deck AF 0.32 m	84
Steel deck	85
Lightweight aluminium deck 0.60 m	90

Modular scaffolding system "ALFIX MODUL MULTI"

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Standard assembly configuration Load Class 3 / SW06 / $l \leq 3.07$ m - General provisions

8. Standard assembly configuration

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Table C.1: (continued)

Designation	Annex B, page
MODUL gap cover $l \leq 3.07$ m	94
MODUL gap cover with tube fixture $l \leq 3.07$ m	95
Gap cover $l \leq 3.07$ m	96
Bracket 0.39 m with tube fixture	103
MODUL bracket 0.39 m	104
MODUL toeboard	107
MODUL toeboard, aluminium	109
Toeboard; end toeboard AF	110
Toeboard; end toeboard	112
Aluminium toeboard; aluminium end toeboard AF	114
Aluminium toeboard; aluminium end toeboard	115
MODUL guard net system	116
MODUL double end guardrail 0.73 m	117
Storey ladder 2.00 x 0.40 m, steel	118
Storey ladder 2.00 x 0.40 m, aluminium	119
Scaffold retainer / wall tie	120
Wedge-head swivel coupler	122
MODUL U-tube connector	123
MODUL tube connector	124
Wedge-head coupler, rigid	125
Standard 4.0	154
Vertical starter piece 4.0	155
Tube ledger 4.0 $l \leq 3.07$ m	156
MODUL gap cover, T-shaped and universal design claw coupler	158

Table C.2: Characteristic anchor forces

Variant / configuration	Annex D, page	Bay length [m]	partially open facade			closed facade		
			GH	DRH		GH	DRH	
			A_{\perp} [kN]	$A_{//}$ [kN]	A_{\perp} [kN]	A_{\perp} [kN]	$A_{//}$ [kN]	A_{\perp} [kN]
without inner bracket	1, 3	3.07	3.6	2.4	2.4	1.2	2.4	2.4
		2.57	3.0	2.4	2.4	1.0	2.4	2.4
without inner bracket	2, 4	3.07	3.6	3.0	3.0	1.2	3.0	3.0
		2.57	3.0	3.0	3.0	1.0	3.0	3.0
(-) Tension (+) Compression GH wall tie (single tube attachment) DRH V-type wall tie								

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Table C.3: characteristic foundation loads

Standard force for	Fittings	Bay length [m]	Structural height		
			24 m [kN]	16 m [kN]	8 m [kN]
Inner standard basic scaffolding F_{IS}	without inner brackets	3.07	7.9	6.3	4.8
		2.57	6.6	5.3	4.0
	with inner brackets	3.07	17.2	13.9	10.6
		2.57	14.4	11.6	8.9
Outer standard basic scaffolding F_{AS}	with / without inner brackets	3.07	11.5	8.7	6.0
		2.57	9.6	7.3	5.0
	additional loads				
	protective wall	3.07	+ 0.5		
		2.57	+ 0.4		
	add-on access bay	3.07	4.2	2.9	1.6
		2.57	3.5	2.4	1.3
Outer standard access bay F_{AST}	without	3.07	10.6	9.3	8.1
		2.57	8.9	7.8	6.8
Special configuration	bridging construction F_D	all	Inner standard: $1.5 \cdot F_{IS}$		
			Outer standard: $1.5 \cdot F_{AS}$		

Table C.4: Assembly variants of the standard assembly configuration

Cladding	Fittings	without	with
		inner brackets	inner brackets
uncladded / partially open facade uncladded / closed facade net cladding / closed facade	no supplementary components	Annex D, page 1	Annex D, page 2
	protective wall		
	Bridging girder	Annex D, page 3	Annex D, page 4

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8. Standard assembly configuration

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Standard assembly configuration without inner bracket – Bay length $L \leq 3.07m$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 8m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- continuous row of anchorage at $H=4.00m$
- protective wall position: continuous row of anchorage with 2 V-type wall ties per 5 bays

Spindle extension:

- $L_A \leq 50cm$ (Distance to foot level)

Bracing:

- handrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00m$

Supplementary components:

- protective wall (for details see Annex D, page 7)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

ALFIX MODUL MULTI	
Standard assembly configuration without inner bracket	Annex D, page 1
MU716-D001	11.2016

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Standard assembly configuration with inner bracket – Bay length $L \leq 3.07\text{m}$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 8m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- continuous row of anchorage at $H=4.00\text{m}$
- protective wall position: continuous row of anchorage with 2 V-type wall ties per 5 bays

Spindle extension:

- $L_A \leq 50\text{cm}$ (Distance to foot level)

Bracing:

- handrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00\text{m}$
- 2. Transom at a height of 0.50m from the floor line
- longitudinal ledger, inner face attached to V-type wall tie

Supplementary components: – protective wall (for details see Annex D, page 7)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

ALFIX MODUL MULTI	
Standard assembly configuration with inner bracket	Annex D, page 2
MU716–D002	11.2016

8. Standard assembly configuration

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[Seal Deutsches Institut für Bautechnik]

Standard assembly configuration without inner bracket with bridging girder – Bay length $L \leq 3.07m$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 8m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- continuous row of anchorage at $H=4.00m$
- protective wall position: continuous row of anchorage with 2 V-type wall ties per 5 bays

Spindle extension:

- $L_A \leq 50cm$ (Distance to foot level)

Bracing:

- handrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00m$

Supplementary components:

- protective wall (for details see Annex D, page 7)
- bridging girder (for details see Annex D, page 8)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

ALFIX MODUL MULTI	
Standard assembly configuration without inner bracket with bridging girder	Annex D, page 3
MU716-D003	11.2016

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 general construction technique permit
 no. Z-8.22-906 of 15 October 2021

[Seal Deutsches Institut für Bautechnik]

Standard assembly configuration with inner bracket with bridging girder –
 Bay length $L \leq 3.07\text{m}$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 8m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- continuous row of anchorage at $H=4.00\text{m}$
- protective wall position: continuous row of anchorage with 2 V-type wall ties per 5 bays
- bridging girder: 2 V-type wall ties attached to inner standard at $H=2.00\text{m}$

Spindle extension:

- $L_A \leq 50\text{cm}$ (Distance to foot level)

Bracing:

- handrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00\text{m}$
- 2. Transom at a height of 0.50m from the floor line (mandatory at standard bridging girder)
- longitudinal ledger, inner face attached to V-type wall tie

Supplementary components:

- protective wall (for details see Annex D, page 7)
- bridging girder (for details see Annex D, page 8)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

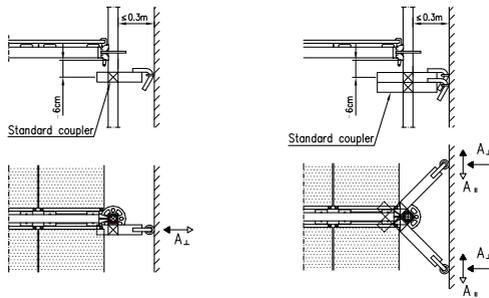
ALFIX MODUL MULTI	Annex D, page 4
Standard assembly configuration with inner bracket with bridging girder	
MU716–D004	11.2016

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Standard assembly configuration: Detailed view – Anchorage 1 –
 scaffolding without inner bracket



Symbol  Scaffold retainer/wall tie

Symbol  V-type wall tie

Anchor forces A_{\perp} and A_{\parallel} see Annex C, Table C.2

ALFIX MODUL MULTI

Standard assembly configuration: Detailed view – Anchorage 1 –
 scaffolding without inner bracket

MU716-D005

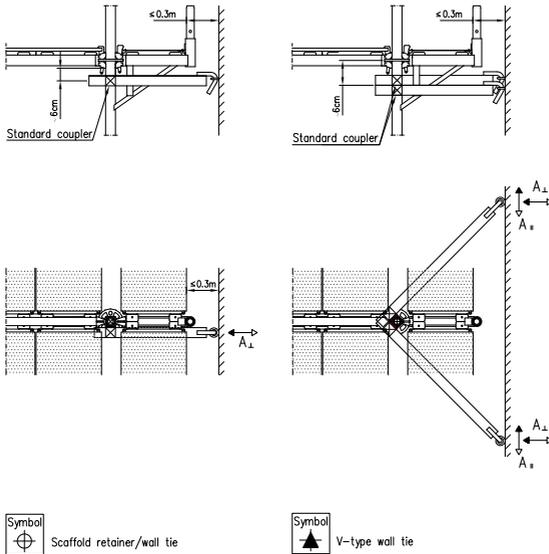
12.2016

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[Seal Deutsches Institut für Bautechnik]

Standard assembly configuration: Detailed view – Anchorage 2 – scaffolding with inner bracket



Symbol Scaffold retainer/wall tie

Symbol V-type wall tie

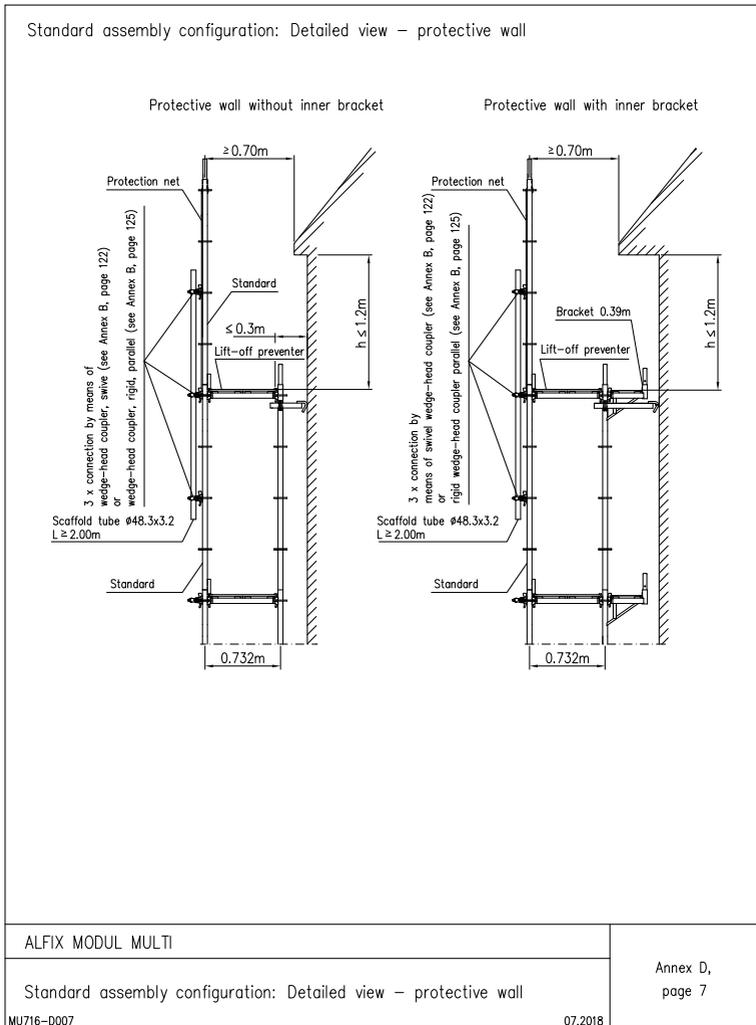
Anchor forces A_{\perp} and A_{\parallel} see Annex C, Table C.2

ALFIX MODUL MULTI	Annex D, page 6
Standard assembly configuration: Detailed view – Anchorage 2 – scaffolding with inner bracket	
MU716–D006	07.2018

8. Standard assembly configuration

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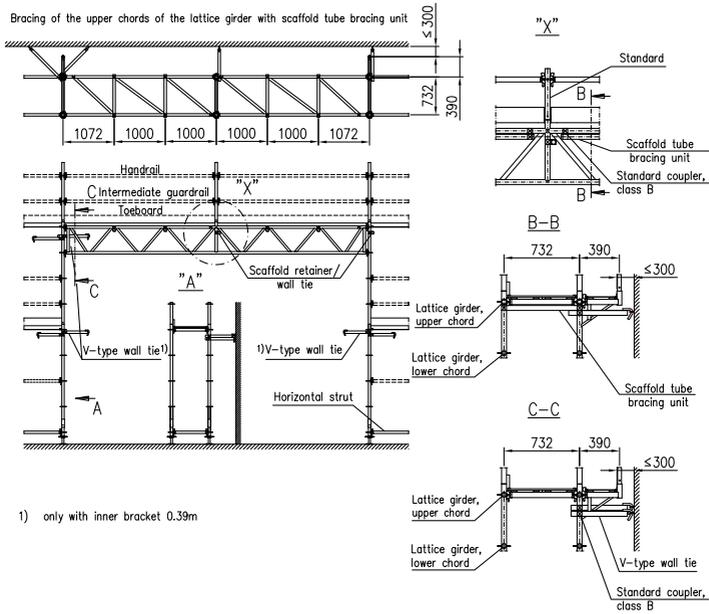
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Standard assembly configuration: Detailed view – bridging girder



ALFIX MODUL MULTI

Standard assembly configuration: Detailed view – bridging girder

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07.2018

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page 8

Excerpt of approval Z-8.22-906 / Standard assembly configuration - Use as facade scaffolding with system width 1.09 m

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E.1 General Instructions

In its standard assembly configuration, the scaffolding system may be used as working scaffold of load classes ≤ 4 with system width $b = 1.09 \text{ m}$ and bay widths $l \leq 2.57 \text{ m}$ in accordance with DIN EN 12811-1:2004-03, and as protection scaffold and roof edge protection scaffold in accordance with the regulations stipulated in Section E.2.

The topmost horizontal level (working level) must not exceed 24 m above ground level, not including the spindle extension length. The standard assembly configuration of the scaffolding system is designed for use on a scaffold level in accordance with the regulations of the DIN EN 12811-1:2004-03 standard, Section 6.2.9.2 in front of a "partially open" facade with an open proportion of no more than 60%, and in front of closed facades. When determining the wind load, a statistical factor of $\chi = 0,7$, assuming a maximum service life of 2 years, has been taken into account.

Structural analysis for scaffold cladding with tarpaulins has not been provided in the standard assembly configuration. Structural analysis for scaffold cladding with nets has only been provided in the standard assembly configuration for cladding in front of closed facades. Structural analysis for net-covered scaffolding applies to scaffolds with an aerodynamic force coefficient of the entire structure (net and scaffolding) that is no greater than $\alpha_{L, total} = 0,6$.

Without any further structural proof, the standard assembly configuration shall only be used if the loads of the bays will carry do not exceed the respective live loads in accordance with DIN EN 12811-1:2004-03, Table 3.

For the standard assembly configuration of the modular scaffolding system* ALFIX MODUL MULTI", the following designation in accordance with DIN EN 12810-1:2004-03 shall be used:

Scaffolding EN 12810 – 4D- SW09/257- H2- A- LA

The assembly variants of the standard assembly configuration are listed in Table E.4.

E.2 Protection scaffold and roof edge protection scaffold

In its standard assembly configuration the scaffolding system may be used as a protection scaffold and roof edge protection scaffold with a top fall arresting layer of class FL 1 and as a roof edge protection scaffold with protective walls of class SWD 1 according to DIN 4420:2004-03. Access decks must not be fitted into brackets.

The protective wall is to be installed in accordance with Annex F, page 7.

Use protective nets in accordance with DIN EN 1263-1:2015-03 with a mesh size of no more than 100 mm.

E.3 Components

The components intended for use are listed in Table E.1. In addition to these components, other components may also be used: steel tubes $\varnothing 48,3 \cdot 3,2 \text{ mm}$ and couplers for the protective wall and the horizontal bracing of the bridging girders as well as standard couplers for the connection of the wall ties and V-type wall ties to the standards in accordance with DIN EN 12811-1:2004-03.

E.4 Bracing

Horizontal scaffolding levels are to be braced by continuously installing the following members at vertical intervals of 2 m tube ledger 1.09 m with

three steel decks with tube fixture	in accordance with Annex B, page 64	or
three steel decks AF with tube fixture	in accordance with Annex B, page 61	or
U-ledger 1.09 m and		
three steel decks	in accordance with Annex B, page 85	or
three steel decks AF each.	in accordance with Annex B, page 84	

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Standard assembly configuration Load Class 4 / SW09 / $l \leq 2.57 \text{ m}$ - General provisions	

The steel decks are to be secured against unintentional lift-off using deck lift-off preventers.

The outer vertical planes are to be braced depending on the assembly configuration with tube ledgers used as handrails (1 m above deck surface) and as intermediate guardrail (0.5 m above deck surface) continuously in each scaffold bay as well as vertical diagonal braces.

Vertical starter pieces are to be installed directly above the base jacks (scaffolding spindles) and connected by means of longitudinal ledgers in the inner and outer plane parallel to the facade and by means of transoms at right angles to the facade. Additionally, depending on the assembly configuration diagonal cross braces are to be installed up to the first working level.

E.5 Anchoring

Anchoring is to be provided using wall ties in accordance with Annex B, page 120.

Wall ties are to be installed as anchor pairs at an angle of 90° (V-type wall tie) or as "short" wall ties only to the inner vertical frame standard using standard couplers. Depending on the assembly configuration, the node points that are anchored by means of V-type anchors are to be connected on the inner plane parallel to the facade with the adjacent standard section by means of tube ledgers (longitudinal ledgers).

The V-type anchors and wall ties are to be installed in the immediate vicinity of the node points of the standard tubes and transoms.

The anchor forces listed in Table C.2 were determined with the characteristic values of the actions ($\gamma_F = 1.0$). For the design analysis of the anchorage and the load transfer, the values given must be multiplied by the respective partial safety factor γ_F (generally, $\gamma_F = 1.5$).

Each frame section is anchored at vertical intervals of 4 m. On the topmost working level, each standard section must be anchored.

E.6 Foundation loads

Depending on the assembly variation, the foundation loads listed in Table E.3 must be absorbed and transferred in the supporting surface. The foundation loads are given as characteristic values. For the structural analysis of transfer of loads in the supporting surface, the values given must be multiplied by the partial safety factor γ_F (generally $\gamma_F = 1.5$).

E.7 Bridging construction

The bridging girders may be used at a height of 4 m to bridge gate entrances or similar openings when the working levels underneath the bridging part are omitted.

The bridging girders are to be anchored in the supporting and centre section and are to be braced additionally by means of a horizontal bracing unit comprised of tubes and couplers or by means of additional anchorage (see also Annex F, pages 3 and 8).

E.8 Add-on access bay

When installing the add-on access bay in load class 3, aluminium access frame platforms (with tube fixture) must be installed when using tube ledgers, or aluminium frame platforms with internal hatch or aluminium access frame platforms with ladder must be installed when using U-ledgers. The add-on access bay is to be braced at vertical intervals of 4 m by means of horizontal diagonal braces. The outer vertical planes are to be braced with tube ledgers used as handrails (1 m above deck surface) and as intermediate guardrail (0.5 m above deck surface) continuously in each scaffold bay. Additionally, a longitudinal ledger is to be installed at the outer face of the access bay directly above the scaffolding spindle. (see Annex F, page 4).

E.9 Widening bracket

Only use brackets 0.39 m on the inner face of the scaffolding on all working levels.

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Table E.1: Components of the standard assembly configuration

Designation	Annex B, page
Vertical diagonals braces 0.73 m – 2.57 m x 2.00 m	8
Horizontal diagonal braces 0.73 m – 2.57 m x 1.09 m	9
Vertical starter piece	10
Standard with tube connector 200	11
Base jack	17
AB Base jack	18
Tube ledger $l \leq 2.57$ m	25
Tube ledger reinforced 1.09 m	27
U-ledger 0.73 m *)	32
U-transom reinforced 1.09 m	33
U-transom lattice girder 1.09 m V	44
Tube-transom lattice girder 1.09 m V	45
MODUL lattice girder 4.14 m / 5.14 m	47
MODUL lattice girder with tube connector 4.14 m / 5.14 m	49
MODUL lift-off preventer 0.73 m, 1.09 m	50
Aluminium access frame platform with tube fixture 2.57 m *)	54
Aluminium access frame platform with tube fixture 1.57 m – 2.57 m without ladder *)	57
Aluminium access frame platform with tube fixture 2.57 m – 2.57 m with aluminium chequer plate *)	58
Steel deck AF with tube fixture 0.32 m $l \leq 2.57$ m	61
Steel deck with tube fixture $l \leq 2.57$ m	64
Aluminium frame platform with internal hatch 2.57 m *)	69
Aluminium access deck with ladder 2.57 m *)	76
Aluminium access deck with ladder 2.57 m *)	82
Steel deck AF 0.32 m $l \leq 2.57$ m	84
Steel deck $l \leq 2.57$ m	85
MODUL gap cover 0.73 m, 1.09 m	94
MODUL gap cover with tube fixture	95
Gap cover $l \leq 2.57$ m	96
MODUL swing gate	102
Bracket 0.39 m with tube fixture	103
MODUL bracket 0.39 m	104
MODUL toeboard $l \leq 2.57$ m	107
MODUL aluminium toeboard $l \leq 2.57$ m	109
Toeboard $l \leq 2.57$ m, end toeboard AF	110
Toeboard $l \leq 2.57$ m, end toeboard	112
Aluminium toeboard $l \leq 2.57$ m; Aluminium end toeboard AF	114
Aluminium toeboard $l \leq 2.57$ m; Aluminium end toeboard	115
MODUL guard net system $l \leq 2.57$ m	116
MODUL double end guardrail	117
Storey ladder 2.00 x 0.40 m, steel	118

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Standard assembly configuration Load Class 4 / SW09 / $l \leq 2.57$ m - General provisions

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Table E.1: (continued)

Designation	Annex B, page
Storey ladder 2.00 x 0.40 m, aluminium	119
Scaffold retainer / wall tie	120
Wedge head swivel coupler	122
MODUL U-tube connector	123
MODUL tube connector	124
Wedge-head coupler, rigid	125
Diagonal cross brace	134
Tube ledger reinforced 1.09 m	144
U-ledger 1.09 m	147
Standard 4.0	154
Vertical starter piece 4.0	155
Tube ledger 4.0 / $l \leq 2.57$ m	156
MODUL gap cover, T-shaped and universal claw coupler $l \leq 2.57$ m	158
*) only on the add-on access bay 3	

Table E.2: characteristic anchor forces

Variant / configuration	Annex F, page	Bay length [m]	partially open facade			closed facade		
			GH	DRH		GH	DRH	
			A_L [kN]	A_{II} [kN]	A_L [kN]	A_L [kN]	A_{II} [kN]	A_L [kN]
without inner bracket	1	2.57	1.6	2.9	2.9	0.5	2.9	2.9
		2.07	1.3	2.9	2.9	0.4	2.9	2.9
with inner bracket	2, 3	2.57	1.6	3.5	3.5	0.5	3.5	3.5
		2.07	1.3	3.5	3.5	0.4	3.5	3.5
(-) Tension (+) Compression GH wall tie (single tube attachment) DRH V-type wall tie								

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8. Standard assembly configuration

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Table E.3: characteristic foundation loads

Standard force	Fittings	Bay length [m]	Structural height		
			24 m [kN]	16 m [kN]	8 m [kN]
Inner standard basic scaffolding F_{IS}	without inner brackets	2.57	11.4	9.5	7.6
		2.07	9.2	7.7	6.1
	with inner brackets	2.57	21.3	17.9	14.5
		2.07	17.2	14.4	11.7
Outer standard basic scaffolding F_{AS}	with / without inner brackets	2.57	14.8	11.9	9.0
		2.07	11.9	9.6	7.2
	additional loads				
	protective wall	2.57	+ 0.5		
		2.07	+ 0.4		
add-on access bay	2.57	3.5	2.4	1.3	
Outer standard access bay F_{AST}	without	2.57	8.9	7.8	6.8
Special configuration	Bridging construction F_{ij}	all	Inner standard: $1.5 \cdot F_{IS}$		
			Outer standard: $1.5 \cdot F_{AS}$		

Table E.4: Assembly variants of the standard assembly variants

Cladding	Fittings	without inner brackets	with inner brackets
uncladded / partially open facade uncladded / closed facade net cladding / closed facade	no supplementary components	Annex F, page 1	Annex F, page 2
	protective wall		
	Bridging girder	---	Annex F, page 3
	Add-on access bay	Annex F, page 4	

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Standard assembly configuration without inner bracket – Bay length $L \leq 2.57\text{m}$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 4m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- protective wall position: 2 V-type wall ties per 5 bays

Spindle extension:

- $L_A \leq 50\text{cm}$ (Distance to foot level)

Bracing:

- handrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00$
- longitudinal ledger, inner face attached to V-type wall tie

Supplementary components:

- protective wall (details see Annex F, page 7)
- add-on access bay (details see Annex F, page 4)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

Legend:
 Scaffold retainer/wall tie
 V-type wall tie

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Standard assembly configuration without inner bracket	
MU716-F001	11.2016

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Standard assembly configuration with inner bracket – Bay length $L \leq 2.57\text{m}$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 4m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- protective wall position: 2 V-type wall ties per 5 bays

Spindle extension:

- $L_A \leq 50\text{cm}$ (Distance to foot level)

Bracing:

- handrail and knee guardrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00$
- longitudinal ledger, inner face attached to V-type wall tie
- diagonal cross brace in lowermost frame
- vertical diagonal brace and longitudinal ledger on the outer face at $H=2.00\text{m}$ on every second bay

Supplementary components:

- protective wall (details see Annex F, page 7)
- add-on access bay (details see Annex F, page 4)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

Scaffold retainer/wall tie
 V-type wall tie

ALFIX MODUL MULTI	Annex F, page 2
Standard assembly configuration with inner bracket	
MU716-F002	07.2018

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Standard assembly configuration with inner bracket with bridging girder –
Bay length $L \leq 2.57\text{m}$

- ① uncladded scaffolding in front of partially open facade
- ② uncladded scaffolding in front of closed facade
- ③ Scaffolding with net cladding in front of closed facade

Anchor configuration:

- 4m vertically offset anchor configuration
- at least 1 V-type wall tie per 5 bays
- protective wall position: 2 V-type wall ties per 5 bays
- bridging girder: 2 V-type wall ties attached to inner standard at $H=2.00\text{m}$

Spindle extension:

- $L_A \leq 50\text{cm}$ (Distance to foot level)

Bracing:

- handrail and knee guardrail as longitudinal ledger on each working level
- longitudinal ledger on inner and outer face on foot level at $H=0.00$
- longitudinal ledger, inner face attached to V-type wall tie
- diagonal cross brace in lowermost frame (mandatory at standard bridging girder)
- vertical diagonal brace and longitudinal ledger on the outer face at $H=2.00\text{m}$ on every second bay

Supplementary components:

- protective wall (details see Annex F, page 7)
- add-on access bay (details see Annex F, page 4)
- bridging girder (details see Annex D, page 8)

Note: Side protection components (handrail, knee guardrail, longitudinal ledger) are only shown when they are required for the structural stability

ALFIX MODUL MULTI	Annex F, page 3
Standard assembly configuration with inner bracket with bridging girder	
MU716-F003	07.2018

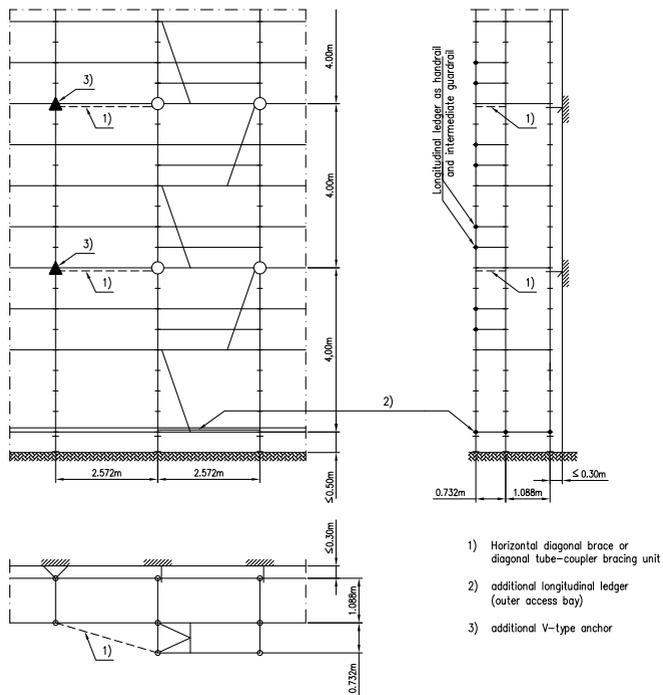
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Standard assembly configuration: Add-on access bay

The figure shows the access bay in front of the facade scaffolding without inner bracket

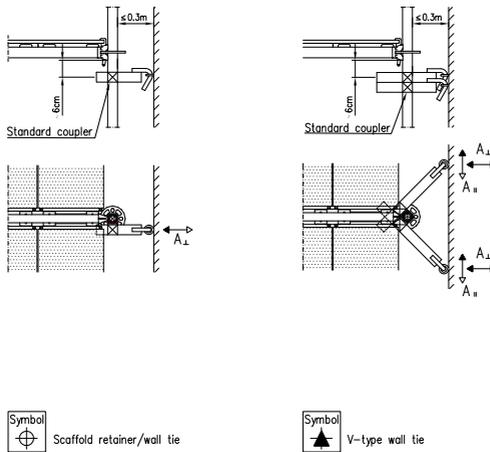


ALFIX MODUL MULTI		Annex F, page 4
Standard assembly configuration: Add-on access bay		
MU716-F004	11.2016	

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Standard assembly configuration: Detailed view – Anchorage 1 –
 scaffolding without inner bracket



Anchor forces A_L and A_H see Annex E, Table E.2

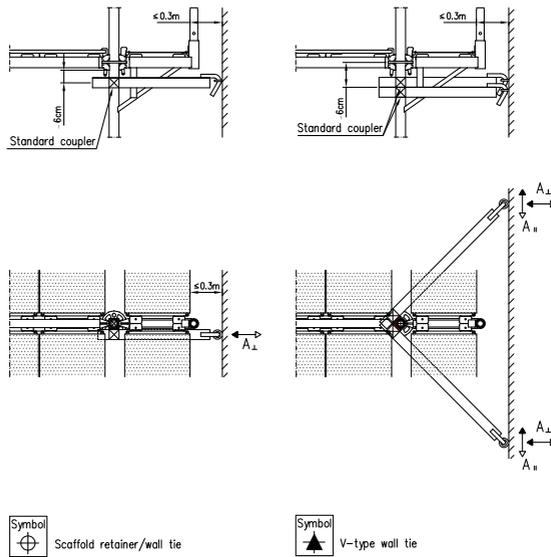
ALFIX MODUL MULTI	Annex F, page 5
Standard assembly configuration: Detailed view – Anchorage 1 – scaffolding without inner bracket	
MU716-F005	12.2016

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Standard assembly configuration: Detailed view – Anchorage 2 – scaffolding with inner bracket



Anchor forces A_L and A_H see Annex E, Table E.2

ALFIX MODUL MULTI

Standard assembly configuration: Detailed view – Anchorage 2
 scaffolding with inner bracket

MU716-F006

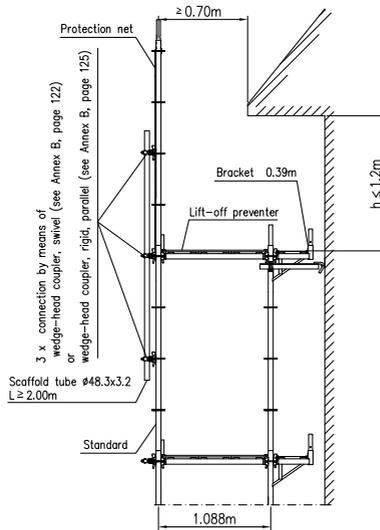
07.2018

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 page 6

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Standard assembly configuration: Detailed view – protective wall



ALFIX MODUL MULTI

Standard assembly configuration: Detailed view – protective wall

MU716-F007

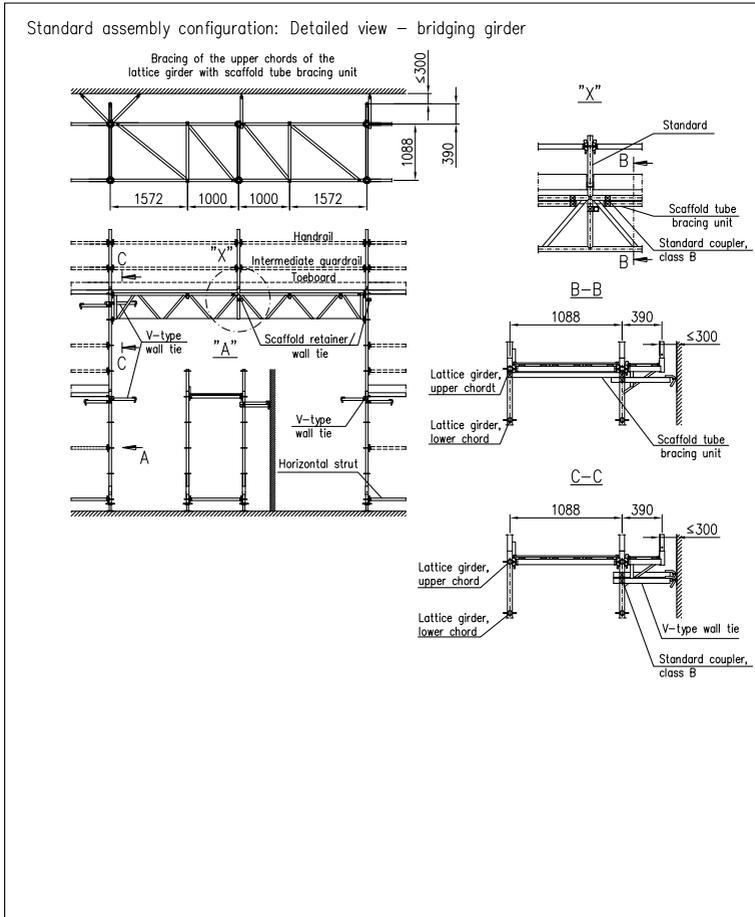
07.2018

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page 7

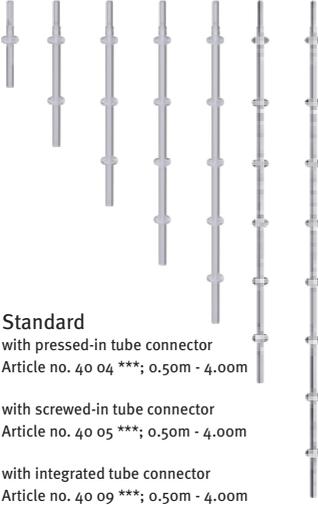
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Standard assembly configuration: Detailed view – bridging girder	
MU716-F008	07.2018



Standard

with pressed-in tube connector
Article no. 40 04 ***; 0.50m - 4.00m

with screwed-in tube connector
Article no. 40 05 ***; 0.50m - 4.00m

with integrated tube connector
Article no. 40 09 ***; 0.50m - 4.00m



U-Ledger

Article no. 40 65 ***; 0.39m - 1.29m



U-ledge, reinforced

Article no. 40 65 ***; 1.40m - 3.07m



Intermediate deck U

Article no. 40 52 ***; 0.32m - 0.96m



Intermediate deck ledger with tube fixture

Article no. 40 51 ***; 0.64m - 0.96m



Tube connector for U-ledge

Article no. 41 51 002



Vertical starter piece

Article no. 40 00 041



Tube connector 520

Article no. 83 40 050



Double end guardrail

Article no. 40 62 073; 0.73m
Article no. 40 62 109; 1.09m



Base jack

Article no. 11 51 ***;
0.40m - 0.80m



Locking device for base jack

Article no. 41 52 003



U-head jack

Article no. 41 59 000; 0.60m
Article no. 41 59 100; 1.00m



ALFIX castor

Article no. 14 12 007

9. Overview of the components



Tube ledger

Article no. 40 60 ***; 0,36m - 4,14m



Tube ledger, reinforced

Article no. 40 61 ***; 1,09m - 1,40m



Lift-off preventer

Article no. 40 98 ***; 0,45m - 3,07m



Vertical diagonal brace

Article no. 40 ** 200: for bay height 2,00m; bay length 0,73m - 3,07m

Article no. 40 ** 150: for bay height 1,50m; bay length 1,57m - 3,07m

Article no. 40 ** 100: for bay height 1,00m; bay length 1,57m - 3,07m

Article no. 40 ** 050: for bay height 0,50m; bay length 1,57m - 3,07m



Horizontal diagonal brace

Article no. 40 ** 073: 0,73 - 3,07m x 0,73m

Article no. 40 ** 109: 0,73 - 3,07m x 1,09m

Article no. 40 ** 140: 0,73 - 3,07m x 1,40m

Article no. 40 ** 157: 0,73 - 3,07m x 1,57m

Article no. 40 ** 207: 0,73 - 3,07m x 2,07m

Article no. 40 ** 257: 0,73 - 3,07m x 2,57m

Article no. 40 ** 307: 0,73 - 3,07m x 3,07m



Wedge head coupler, swivel base

Article no. 41 50 001



Distance coupler, rigid

Article no. 41 50 003: 0,15m

Article no. 41 50 002: 0,18m



Wedge-head coupler, rigid

Article no. 41 50 000



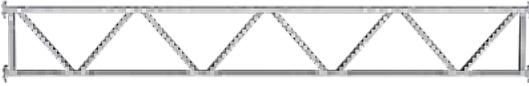
Swivel coupler

Article no. 13 03 019



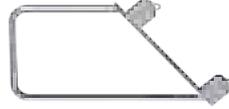
Standard coupler

Article no. 13 01 019



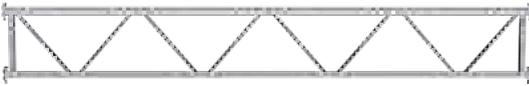
Lattice girder with 4 wedge heads

Article no. 40 70 ***; 2.07m - 7.71m



Stair stringer fall protection

Article no. 11 31 001



U-lattice girder

Article no. 40 71 ***; 2.07m - 7.71m



ALBLITZ platform guardrail

Article no. 41 29 257; 2.57m

Article no. 41 29 307; 3.07m



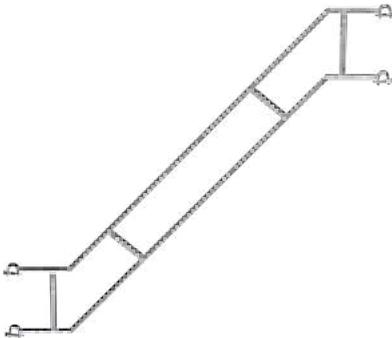
Suspended scaffolding connector

Article no. 48 75 060



Inner guardrail, steel

Article no. 11 31 000



ALBLITZ stair guardrail

Article no. 41 36 203; 2.57m

Article no. 41 36 206; 3.07m



ALBLITZ stairway, aluminium

Article no. 12 98 257; 2.57m

Article no. 12 98 307; 3.07m



Stair guardrail holder

Article no. 41 36 300



Storey ladder segment

Article no. 40 11 001

9. Overview of the components



Double tube ledger

Article no. 40 61 ***; 1.57m - 3.07m



Guard net system

Article no. 40 76 ***; 2.07m - 3.07m



Bracket brace

Article no. 40 10 205



Support ledger with tube fixture

Article no. 40 50 ***; 0.73m - 3.07m



Advanced telescopic guardrail

Article no. 14 43 200



Spacer tube

Article no. 13 61 ***; 0.40m - 1.50m



Advanced end guardrail

Article no. 40 40 074



Advanced guardrail post

Article no. 40 78 000



Bracket

Article no. 40 10 ***; 0.28m - 1.09m



Bracket with tube fixture

Article no. 40 10 009; 0.39m;

Article no. 40 10 013; 0.73m



ALBLITZ frame platform, aluminium
Article no. 12 90 ***; 0.73m - 3.07m



Frame platform with tube fixture, aluminium
Article no. 41 60 ***; 1.57m - 4.14m



Steel deck 0.32m
Article no. 12 21 ***; 0.73m - 3.07m



Steel deck with tube fixture
Article no. 40 20 ***; 0.73m - 3.07m



Solid aluminium deck 0.32m
Article no. 12 11 ***; 1.09m - 4.14m



ALBLITZ Lightweight deck 0.60m
Article no. 12 13 ***; 1.57m - 3.07m



Wooden deck
Article no. 12 31 ***; 0.73m - 3.07m



Toeboard, wood
Article no. 40 95 ***; 0.73m - 4.14m

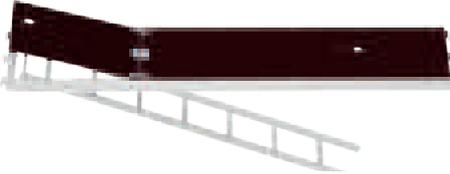


Intermediate deck, steel
Article no. 12 25 ***; 1.57m - 3.07m



Intermediate deck with tube fixture, steel
Article no. 40 30 ***; 1.57m - 3.07m

9. Overview of the components



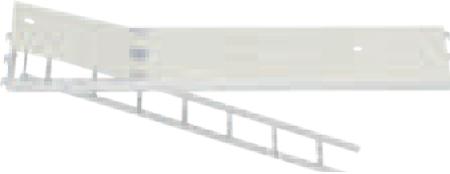
ALBLITZ access deck, aluminium, with ladder, film-coated plywood

Article no. 12 91 ***; 2.57m - 3.07m



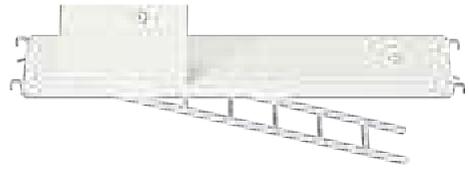
Access deck with tube fixture, aluminium with ladder, with entrance step, film-coated plywood

Article no. 41 63 ***; 2.57m - 3.07m



ALBLITZ access deck, aluminium, with ladder, chequer plate with 5 bar pattern

Article no. 12 94 ***; 2.57m - 3.07m



Access deck with tube fixture, aluminium, with ladder, with entrance step, chequer plate with 5 bar pattern

Article no. 41 67 ***; 2.57m - 3.07m



ALBLITZ access deck, aluminium, without ladder, film-coated plywood

Article no. 12 92 ***; 1.57m - 3.07m



Access deck with tube fixture, aluminium, without ladder, with going, film-coated plywood

Article no. 41 63 ***8; 2.07m - 3.07m

In its standard assembly configuration, the scaffolding system may be used as working scaffold of load classes ≤ 3 with system width $b = 0.732$ m and with bay width $l = 3.07$ m and / or load classes ≤ 4 m with system width $b = 1.09$ m and with bay width $l = 2.57$ m in accordance with DIN EN 12811-1:2004-03 and as a protection scaffold and roof edge protection scaffold in accordance with DIN 4420-1:2004-03.

The topmost horizontal level (working level) must not exceed 24 m above ground level, not including the spindle extension length. The standard assembly configuration of the scaffolding system is designed for work carried out on a scaffold level in accordance with the regulations of the DIN EN 12811-1:2004-03 standard, section 6.2.9.2 in front of an „open“ facade with an open proportion of no more than 60%, and in front of closed facades.

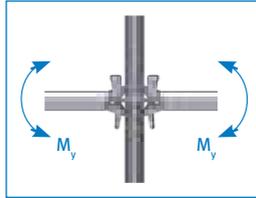
Without any further structural proof, the standard assembly configuration shall only be used if the loads acting on the bays do not exceed the respective live loads in accordance with

DIN EN 12811-1:2004-03, Table 3. For the standard assembly configuration of the „ALFIX MODUL MULTI“ scaffolding system, the following designation in accordance with DIN EN 12810-1:2004-03 shall be used:

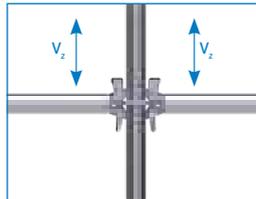
Scaffolding EN 12810-3D-SW06/307-H2-A-LA

Scaffolding EN 12810-4D-SW09/257-H2-A-LA

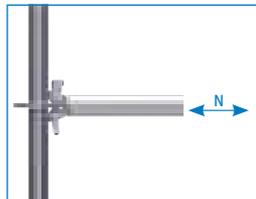
Load-bearing capacity: ALFIX MODUL MULTI scaffold node



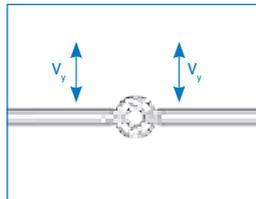
Bending moment $M_{y,R,d} = \pm 104$ kNm



Vertical shear force $V_{z,R,d} = \pm 35$ kN

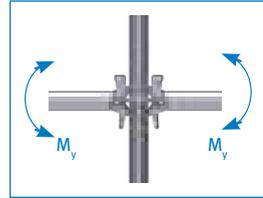


Normal force $N_{R,d} = \pm 36$ kN

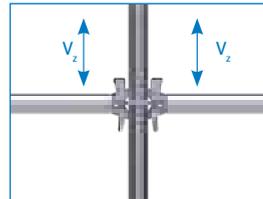


Horizontal shear force $V_{y,R,d} = \pm 16$ kN

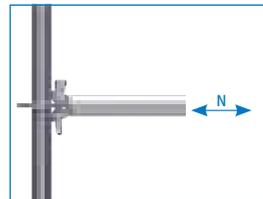
Load-bearing capacity: ALBLITZ MODUL* scaffold node



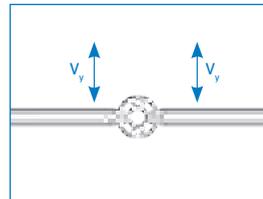
Bending moment $M_{y,R,d} = \pm 101$ kNm



Vertical shear force $V_{z,R,d} = \pm 26$ kN



Normal force $N_{R,d} = \pm 31$ kN



Horizontal shear force $V_{y,R,d} = \pm 10$ kN

* with official approval for combined systems (Vermischungszulassung)

Scaffolds must be assembled and dismantled in accordance with the scaffolding rules of BG Bau, of DGUV Regulation “Construction Work” (by the German Social Accident Insurance DGUV, the body that regulates occupational health and safety, formerly BGV C22) as well as the notes and provisions of DIN 4420 and/ or DIN EN 12811.

In site-related instructions for assembly and use, the employer shall decide upon the most suitable protection against risk of falling, based on a risk analysis and in accordance with the German Industrial Safety Regulations. Potential measures include technical protection and safety measures, personal protective equipment (PPE) to prevent falling and special training.

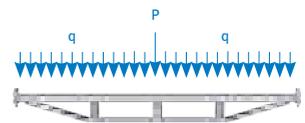
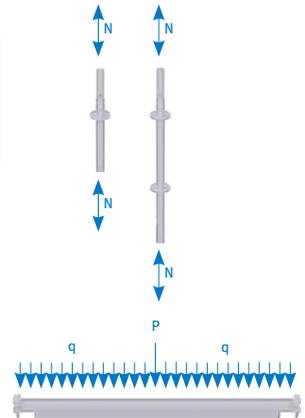
As a technical safety measure, ALFIX offers the “advanced guardrail” in two variants. For more information, please refer to the instructions related to the advanced guardrail system in the present instructions as well as the documents relating to the “advanced guardrails” provided by the manufacturing company. In case the risk analysis results in the need for protective equipment (PPE) to prevent falling, appropriate anchor points at the modular scaffolding shall be used. Appropriate anchor points can be the free outer functional openings of the connector disc (rosette) or the outer standard above the decks (no higher than 1 m above standing level).

Vertical standards: load bearing capacity ¹ in axial compression and tension with screwed-in tube connector						Tension
Unsupported length [m]	1.0	1.5	2.0	3.0	4.0	2 x 2 M10 8.8
Axial (buckling) force N [kN]	97.4	65.6	42.6	21.0	12.3	64.1

U-ledger / U-ledger, reinforced: load bearing capacity ¹ against vertical load action (design values)							
	Ledger		Ledger, reinforced				
Length L [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Uniformly distributed load q [kN/m]	26.00	24.60	31.66	25.15	14.41	9.30	6.32
Individual load P [kN] bay centre	9.20	12.70	22.20	19.78	14.96	12.01	9.71

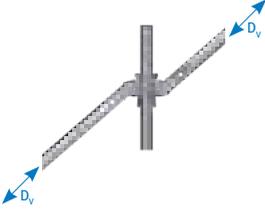
Tube ledger / Double tube ledger: load bearing capacity ¹ against vertical load action (design values)							
	Ledger	Ledger, reinforced		Double tube ledger			
Length L [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Uniformly distributed load q [kN/m]	32.70	25.20	15.15	24.90	15.60	9.90	7.05
Individual load P [kN] bay centre	11.85	13.65	10.58	21.30	13.05	8.40	6.75

Tube ledgers: load bearing capacity ¹ in axial compression and tension (Z = 24 kN; design values)							
Bay length [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Axial force D [kN], buckling considered	36.00	36.00	36.00	36.00	36.00	27.60	20.10



¹ Load bearing capacities include partial safety factor $\gamma_M=1.1$.

Note: Safe working loads are obtained by dividing the load bearing capacity by $\gamma_F=1.5$.



Vertical diagonal brace:
load bearing capacity¹ in axial compression and tension (design values) bay height = 2.00 m

Bay length [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Maximum compression force D [kN] x 1.5	22.05	21.45	19.50	18.45	15.45	12.75	10.35
Maximum tension force D [kN] x 1.5	22.05	22.80	22.80	22.80	22.80	22.80	22.80

¹ Load bearing capacities include partial safety factor $\gamma_{M1}=1.1$.

Note: Safe working loads are obtained by dividing the load bearing capacity by $\gamma_f=1.5$.

Load-classes of the scaffolding decks

Designation	Bay width l (m)	Use in protection scaffold and roof edge protection scaffold	Use in load class (service class)	
Steel deck 0.32 m	≤ 2.07	permissible	6	
	2.57	permissible	5	
	3.07	permissible	4	
	4.14	permissible	3	
Wooden deck 0.32 m	≤ 1.57	permissible	6	
	2.07	permissible	5	
	2.57	permissible	4	
Solid aluminium deck 0.32 m	≤ 2.07	permissible	6	
	2.57	permissible	5	
	3.07	permissible	4	
Lightweight ALBLITZ deck 0.60 m	4.14	-	3	
	1.57	permissible	4	
	2.07	permissible	4	
	2.57	permissible	4	
ALBLITZ access deck with ladder 0.60 m with chequer plate with 5 bar pattern	3.07	permissible	3	
	2.57	permissible	4	
ALBLITZ access deck with ladder 0.60 m with film-coated plywood	3.07	permissible	3	
	≤ 3.07	permissible	3	
ALBLITZ access deck without ladder, 0.60 m with film-coated plywood	≤ 3.07	permissible	3	

10. Technical details

Horizontal diagonal brace: load bearing capacity in axial compression or tension (design values) refer to Approval Z-8.22-906)

Horizontal diagonal braces	Bay length (m)	Bay width (m)	$N_{H,Rd}$ (kN)
	2.07	0.73	3.03
	2.57	0.73	3.00
	3.07	1.09	2.95

Cross-section properties of the base jacks

Base jack	The substitute section properties of the base jacks for the stress analyses and calculations of deformation in accordance with DIN 4425 shall be assumed as follows:	
	$A = A_s$	= 3.52 cm ²
	I	= 4.00 cm ⁴
	W_{el}	= 2.68 cm ³
	W_{pl}	= 1.25 x 2.68 = 3.35 cm ³

Live loads on working levels

Working levels	Load class	Evenly distributed load q_1 in kN/m ²	Concentrated load F_1 in kN on 500 mm x 500 mm	Concentrated load F_2 in kN on 200 mm x 200 mm	Partial load	
					q_2 in kN/m ²	Partial load factor a_2
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

Overhead clearance class

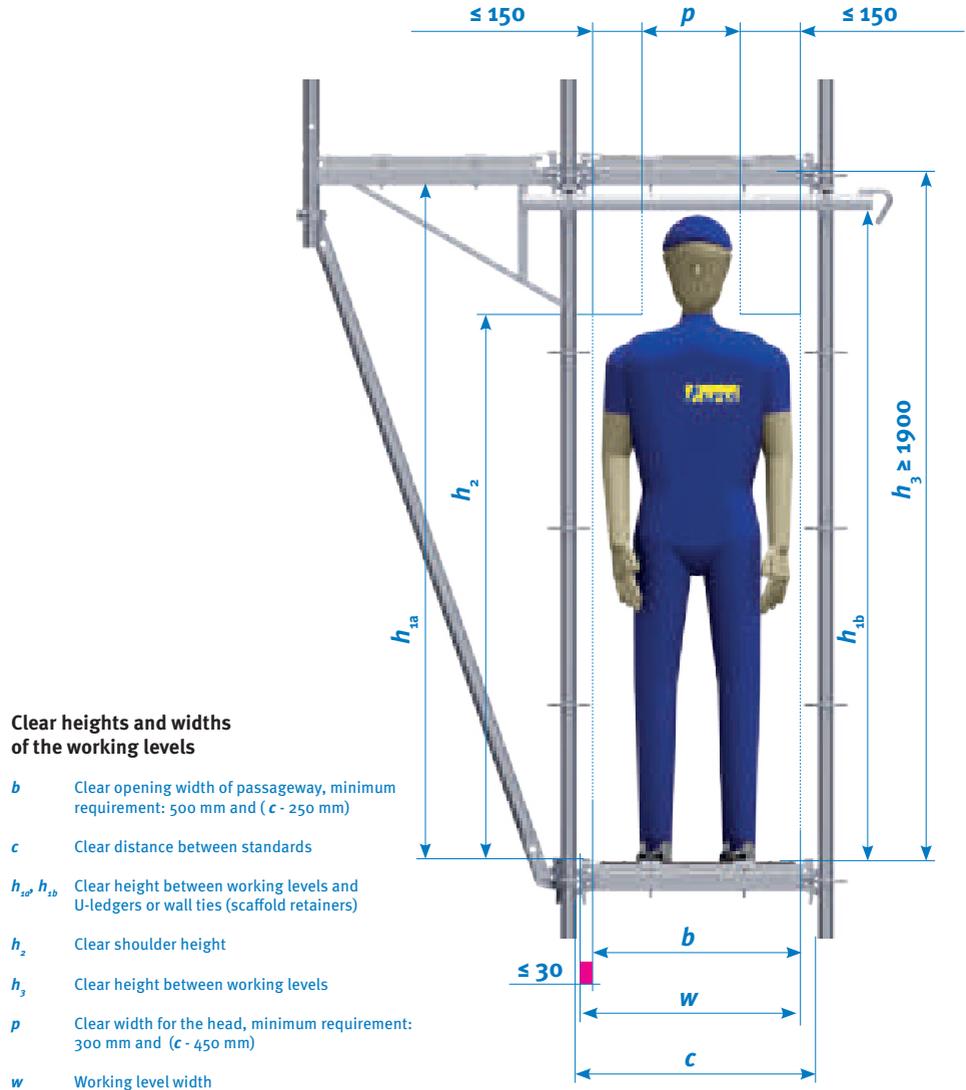
Working levels	Class	Overhead clearance		
		between the scaffolding levels h_1	between the scaffolding levels & transoms or wall ties (scaffold retainers) h_{1a} and h_{1b}	Shoulder height h_2
H_1		$h_3 \geq 1.90$ m	$1.75 \text{ m} \leq h_{1a} \leq 1.90 \text{ m}$ $1.75 \text{ m} \leq h_{1b} \leq 1.90 \text{ m}$	$h_2 \geq 1.60$ m
H_2		$h_2 \geq 1.90$ m	$h_{1a} \geq 1.90$ m $h_{1b} \geq 1.90$ m	$h_2 \geq 1.75$ m

Width classes

Working levels	Width class	w in m
	W06	$0.6 \leq w \leq 0.9$
	W09	$0.9 \leq w \leq 1.2$
	W12	$1.2 \leq w \leq 1.5$
	W15	$1.5 \leq w \leq 1.8$
	W18	$1.8 \leq w \leq 2.1$
	W21	$2.1 \leq w \leq 2.4$
	W24	$2.4 \leq w$

Scaffolding system designation in accordance with EN 12810-1 (example)

Gerüst EN 12810 - 4 D - SW09/257 - H2 - A - LA	
Scaffolding EN 12810	Frame scaffolding (system scaffolding) in accordance with DIN EN 12810-1
4	Load class 4 (see Table 3 DIN EN 12811-1)
D	Drop tests on scaffold deck (D = with design analysis of drop test, N = no drop test)
SW09/257	Width class (see table 1 DIN EN 12811-1) here between 0.90 m and 1.20 m / bay length 2.57 m
H2	Clearance class (see Table 2 DIN EN 12811-1)
A	without cladding (A = without cladding, B = with cladding)
LA	with ladder (LA = ladder, ST = stairway, LS = ladder and stairway)



Clear heights and widths of the working levels

- b** Clear opening width of passageway, minimum requirement: 500 mm and (c - 250 mm)
- c** Clear distance between standards
- h_{1a} , h_{1b}** Clear height between working levels and U-ledgers or wall ties (scaffold retainers)
- h_2** Clear shoulder height
- h_3** Clear height between working levels
- p** Clear width for the head, minimum requirement: 300 mm and (c - 450 mm)
- w** Working level width



Identification and approval for scaffolds according to DIN EN 12811 / DIN 4420

Customer / Client:	Scaffolding erector: (stamp, if applicable)	Competent person during assembly:
Construction project / Place of erection:		Assembly period:
Scaffold no.:		Competent person for inspection:
Phone:	Phone:	Inspection period:
Scaffold:	<input type="checkbox"/> Working scaffold acc. to EN 12811 <input type="checkbox"/> Façade scaffold <input type="checkbox"/> Birdcage scaffold <input type="checkbox"/> Protective roof <input type="checkbox"/> Protective scaffold acc. to DIN 4420 <input type="checkbox"/> Stairway tower <input type="checkbox"/> Protection scaffold <input type="checkbox"/> Roof edge protection scaffold <input type="checkbox"/> Mobile scaffold tower <input type="checkbox"/> Custom-design scaffold: _____	
Cladding:	<input type="checkbox"/> None <input type="checkbox"/> Tarpaulins <input type="checkbox"/> Nets	
Load class:	<input type="checkbox"/> 2 (150 kg/m ²) <input type="checkbox"/> 3 (200 kg/m ²) <input type="checkbox"/> 4 (300 kg/m ²) <input type="checkbox"/> _____ kg/m ² Width class: <input type="checkbox"/> Wo6 <input type="checkbox"/> Wo9 <input type="checkbox"/> W12 <input type="checkbox"/> W _____	
Restrictions on use:		
<p>Unauthorized scaffold modifications are prohibited unless the scaffolding erector has been consulted beforehand. Please follow the respective instructions for Assembly and Use.</p>		
Inspected and approved		
Competent person of scaffolding erector:	Competent person of user:	
Date, Signature	Date, Signature	
		 ALFIX GmbH Langhemmersdorfer Str. 15 D - 09603 Großschirma

11. Approval and inspection protocol



Inspection protocol according to Section 14 of the German Industrial Safety Regulations (BetrSichV)

Scaffold no.:		In order?		
		Yes	No	Not applicable
Scaffolding components	No visible damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Identification - tubes, couplers, components	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural stability	Load-bearing capacity of assembly surface/ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Base jacks - extension length,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Struts / diagonals (at least 1 per 5 bays in every axis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Longitudinal ledger - at base height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lattice girders - bracing of compression chord, mounting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decks	Anchoring - number, anchoring surface, anchoring configuration, spacing, testing according to standard version or statics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Scaffold levels - fully decked or with horizontal bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	System coverings - including bracket coverings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Scaffolding planks - cross-section, mounting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lift-off preventer - in case of lift-off forces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working and operating safety	Corner design - in full width, side protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Openings - gaps closed (< 2 cm / < 8 cm)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Three-part side protection - end protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Wall distance ≤ 30 cm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Distance between structure and deck - inward side protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Accesses and ascents - number (≤ 50 m), suitability, height (ladders < 5 m)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Traffic safety - lighting, barriers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Brackets, projections - bracing, anchoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Free-standing towers - width to height, ballasting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Protective wall in roof edge protection scaffold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile scaffold tower	Castors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ballasting/widening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identification	Scaffolding marking at the accesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blocking	Demarcate and close off unfinished areas ("No entry")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Design: Standard version / Instructions for Assembly and Use Type testing Individual verification / assembly plan

Notes/comments:

Inspected and approved
 Competent person of scaffolding erector: _____ Competent person of user: _____
 Date, Signature _____ Date, Signature _____

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www.alfix-systems.com

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