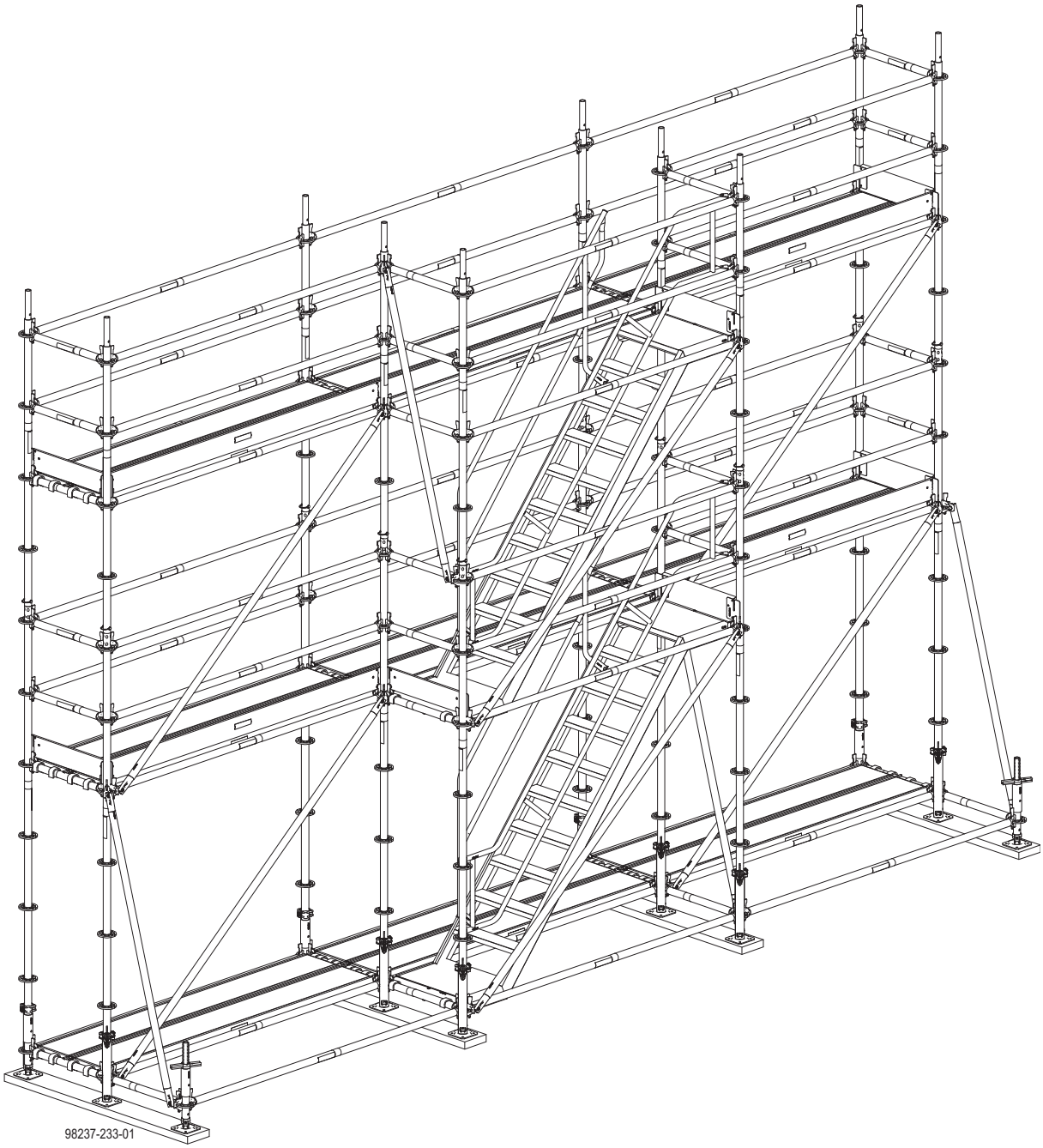
999823702 - 12/2025
en-GB

Ringlock

User Information

Instructions for assembly and use (Method statement)



Contents

Introduction

Elementary safety warnings

User target groups

- This booklet is aimed at all persons who will be working with the AT-PAC product or system that it describes. It contains information on the standard design for setting up this system, and on correct, compliant utilisation of the system.
- All persons working with the product described herein must be familiar with the contents of this booklet and with all the safety instructions it contains.
- Persons who are incapable of reading and understanding this booklet, or who can do so only with difficulty, must be instructed and trained by the customer.
- The customer is to ensure that the information materials provided by AT-PAC (e.g. User Information booklets, Instructions for Assembly and Use, Operating Instruction manuals, plans etc.) are up to date and available to all users, and that they have been made aware of them and have easy access to them at the usage location.
- In the relevant technical documentation and scaffold utilisation plans, AT-PAC shows the workplace safety precautions that are necessary in order to use the AT-PAC products safely in the usage situations shown.
  In all cases, users are obliged to ensure compliance with national laws, standards and regulations throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

- The customer is responsible for drawing up, documenting, implementing and continually updating a hazard assessment at every job-site.
  This booklet serves as the basis for the site-specific hazard assessment, and for the instructions given to users on how to prepare and utilise the system. It does not substitute for these, however.

Remarks on this booklet

- This document can be used as general Instructions for Assembly and Use (Method Statement) or be incorporated into site-specific Instructions for Assembly and Use (Method Statement).
- **The graphics, animations and videos in this document or app sometimes depict partially assembled assemblies and may require additional safety equipment and/or measures to comply with safety regulations.**
  The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics, animations and videos provided.
- The customer must ensure all applicable regulations are complied with, even if they are not shown or implied in the graphics provided.
- **Individual sections contain further safety instructions and/or special warnings as applicable.**
- This document is in compliance with European scaffolding standards. This booklet highlights when other applicable standards should be referenced based on regional annexes.

Planning

- Provide safe workplaces for those using the scaffold (e.g. for when it is being erected/dismantled, modified or repositioned etc). It must be possible to get to and from these workplaces via safe access routes!
- **If you are considering any deviation from the details and instructions given in this booklet, or any application which goes beyond those described in the booklet, then revised static calculations must be produced for checking, as well as supplementary assembly instructions.**

Regulations; industrial safety

- All laws, Standards, industrial safety regulations and other safety rules applying to the utilisation of our products in the country and/or region in which you are operating must be observed at all times.
- If a person or object falls against, or into, the side-guard component and/or any of its accessories, the component affected may only continue in use after it has been inspected and passed by an expert.

Rules applying during all phases of the assignment

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose in accordance with the applicable laws, standards and rules, under the direction and supervision of suitably skilled persons.
  These persons' mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- AT-PAC products are technical working appliances which are intended for industrial / commercial use only, always in accordance with the respective AT-PAC User Information booklets or other technical documentation authored by AT-PAC.
- The stability and load-bearing capacity of all components and units must be ensured during all phases of the construction work!
- Do not step on or apply strain to cantilevers, closures, etc. until suitable measures to ensure their stability have been correctly implemented (e.g. by tie-backs).
- Strict attention to and compliance with the functional instructions, safety instructions and load specifications are required. Non-compliance can cause accidents and severe injury (risk of fatality) and considerable damage to property.
- Sources of fire in the vicinity of the wooden scaffold are prohibited. Heaters are permissible only when used correctly and situated a correspondingly safe distance from the wooden scaffold.
- Customer must give due consideration to any and all effects of the weather on the equipment and regards both its use and storage (e.g. slippery surfaces, risk of slipping, effects of the wind, etc.) and implement appropriate precautionary measures to secure the equipment and surrounding areas and to protect workers.
- All connections must be checked at regular intervals to ensure that they are secure and in full working order.
  In particular threaded connections and wedged connections have to be checked and retightened as necessary in accordance with activity on the jobsite and especially after out-of-the-ordinary occurrences (e.g. after a storm).
- It is strictly forbidden to weld AT-PAC products – in particular anchoring/tying components, suspension components, connector components and castings etc. – or otherwise subject them to heating.
  Welding causes serious change in the microstructure of the materials from which these components are made. This leads to a dramatic drop in the failure load, representing a very great risk to safety.
  The only articles which are allowed to be welded are those for which the AT-PAC literature expressly points out that welding is permitted.

Assembly

- The equipment/system must be inspected by the customer before use, to ensure that it is in an acceptable condition. Steps must be taken to exclude components that are damaged, deformed, or weakened due to wear, corrosion or rot (e.g. fungal decay).
- Using our safety and scaffold systems together with those of other manufacturers can create risks that may lead to injury and damage to property. This requires separate verification by the user.
- The equipment/system must be assembled and erected in accordance with the applicable laws, standards and rules by trained customer personnel whilst maintaining any applicable safety inspections that may be required.
- It is not permitted to modify AT-PAC products; such modifications constitute a safety risk.

Transporting, stacking and storing

- Observe all country-specific regulations applying to the handling of scaffolding.
  Only certified and approved lifting and rigging equipment is to be utilised for the stacking, storing, lifting and transportation of scaffolding.
- When lifting, always make sure that the unit to be lifted and its individual parts can absorb the forces that occur.
- Remove loose parts or secure them so that they cannot slip out of position and drop.
- When lifting scaffold or scaffolding accessories with a crane, no persons must be carried along, e.g. on working platforms or in multi-trip packaging.
- All components must be stored safely, following all the special AT-PAC instructions given in the relevant sections of this document!

Maintenance

- Only original AT-PAC components may be used as spare parts. Repairs may only be carried out by the manufacturer or authorised facilities.

Miscellaneous

The weights as stated are averages for new material; actual weights can differ, depending on material tolerances. Dirt accretions, moisture saturation, etc. can also affect weight.

We reserve the right to make alterations in the interests of technical progress.

Eurocodes at AT-PAC

The permissible values stated in AT-PAC documents (e.g. F_{perm} = 70 kN) **are not design values** (e.g. F_{Rd} = 105 kN), unless specified**!**

- It is essential to avoid confusing permissible values with design values!
- AT-PAC documents will continue to state the permissible values.

Allowance has been made for the following partial factors:

- γ_F = 1.5
- $\gamma_{M,\ timber}$ = 1.3
- $\gamma_{M,\ steel}$ = 1.1
- k_{mod} = 0.9

Consequently, all the design values for an EC design calculation can be determined from the permissible values.

Symbols used

The following symbols are used in this document:

DANGER
This is a notifier drawing attention to an extremely dangerous situation in which non-compliance with this notifier will lead to death or severe, irreversible injury.

WARNING
This is a notifier drawing attention to a dangerous situation in which non-compliance with this notifier can lead to death or severe, irreversible injury.

CAUTION
This is a notifier drawing attention to a dangerous situation in which non-compliance with this notifier can lead to slight, reversible injury.

NOTICE
This is a notifier drawing attention to a situation in which non-compliance with this notifier can lead to malfunctions or damage to property.

Instruction
Indicates that actions have to be performed by the user.

Sight-check
Indicates that you need to do a sight-check to make sure that necessary actions have been carried out.

Tip
Points out useful practical tips.

Reference
Cross-references other documents.

Foreword

Ringlock, the modular scaffolding system from AT-PAC, can be used as a temporary working scaffold for work on a simple façade, on complex industrial construction projects and as a versatile system for the erection of supporting structures.

The engineering is tried and tested and the Ringlock scaffolding system is easy to handle, so widely differing scaffold structures can be erected quickly, efficiently and flexibly.

This User Information booklet describes the safe erection, modification and dismantling of the Ringlock scaffolding system and presents various possible use cases as examples.

Declaration of Conformity and Approvals

The Ringlock working scaffold described in this User Information booklet in association with the AT-PAC brand name is a product of Atlantic Pacific Equipment, LLC AT-PAC. and as the Ringlock system it has National Technical Approval issued by the German Institute of Construction Engineering (Deutsches Institut für Bautechnik, DIBt), approval number Z-8.22-992.

The scaffolding system is compliant with European standards EN 12810 and EN 12811 and can be used for falsework in accordance with EN 12812.

Ringlock is also compliant with the National Access & Scaffolding Confederation (NASC) Code of Practice for System Scaffold within the United Kingdom.

Combination with other-make products

The Ringlock system and its manufacture have been certified in accordance with regulatory standards such as EN 12810 / EN 12811. In addition to this approval, the mixture with the components Layher Allround© according to the certification by the German Mixing approval certificates approved:

- Z-8.22-993 mixture with Layher Allround© K2000 / Layher LY

This means that an assessment and approval has been carried out by an external, accredited body, thereby confirming and validating the full compatibility of these mixed components, in other words:

- A mixing approval describes the specific components that may be used together and applies to both "original certifications" and "mixed approvals". Nothing that there are currently no fundamental legal uncertainties regarding mixing approvals.
- In principle, there is a risk that components not included in a certification (original or mixing approval) may be installed into a scaffolding. It always takes a little time to include all components in such an approval.
- Approvals for scaffolding products need to encompass a "user manual". In the case of a mixed scaffold, the relevant manual will need to be adopted (properties, standard configurations).
- There is no loss in value of the scaffolding material in the case of mixed components when the "original approvals" are modified.
- The inclusion of new components in an original mixing approval does not initially have any impact. New components do not automatically have an immediate effect on the mixing approval: a modification of the mixing approval is required at a later date.
- The risk of "site closure" or liability in accidents exists for unmixed and mixed scaffolds. This principle applies if the respective mixing approval is available and the instructions (for safety) are observed.

Please check the relevant documents relating to the mixing approval of the components concerned and the corresponding standard configurations for each mixing system and the eventual restrictions.

- The AT-PAC Ringlock Modular Scaffolding System has been provided with Plant Design Registration WSV-0150586461 in accordance with Occupational Health and Safety Act 2004, Occupational Health and Safety Regulations 2017, Equipment (Public Safety) Act 1994 and Equipment (Public Safety) Regulations 2017.

Designation

Designation of Ringlock scaffold in accordance with EN 12810-1:

Scaffold EN 12810 - 3D - SW06/307 - H2 - B - LS						
Scaffold EN 12810	3	D	SW06/307	H2	B	LS
	EN 12811-1 load class	Drop tests on decked area: (D) measured with drop tests or(N) without drop tests	EN 12811-1 system width class / bay length in cm	EN 12811-1 headroom class	Cladding: (B) with cladding or (A) without cladding	Vertical access: (LA) by ladder or(ST) by stairway or(LS) both

Standard design

Standard design of Ringlock in accordance with EN 12810-1 as per approval number Z-8.22-992.

Bay length: ≤ 3.07 m

System width: 0.73 m

Max. height of topmost scaffolding level: 24.0 m plus screw-jack extensions

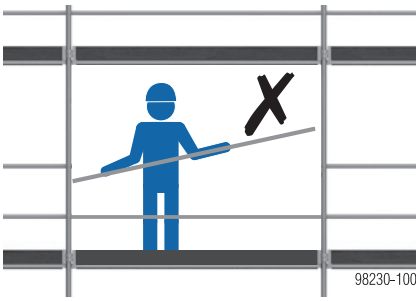
If the actions on the scaffold from the traffic load do not exceed load class 3 as specified in EN 12811-1, the standard design can be used without further statical verification.

NOTICE

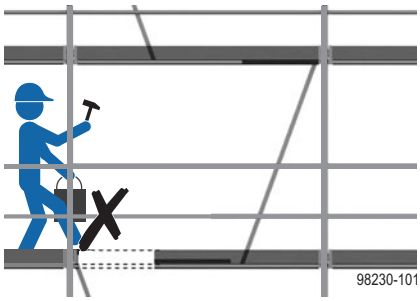
Refer to regional approvals and regulations for further details and specifications applicable to your country.

Safety notices

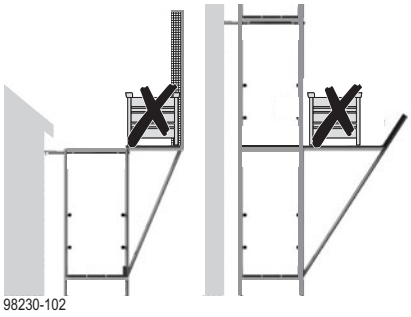
Warnings



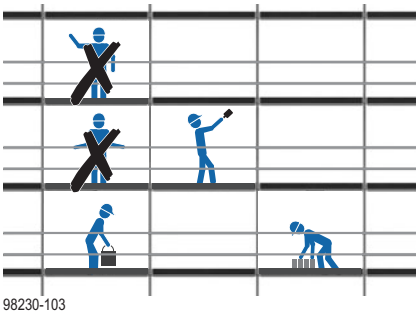
Only the scaffold erector is permitted to make alterations to the scaffold.



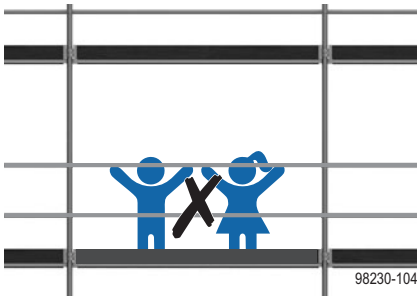
Keep the hatches in the decking closed.



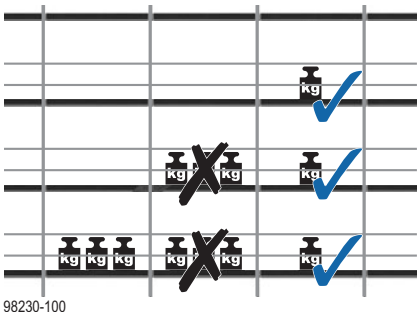
Do not use fall barriers and protective canopies as materials set-down areas.



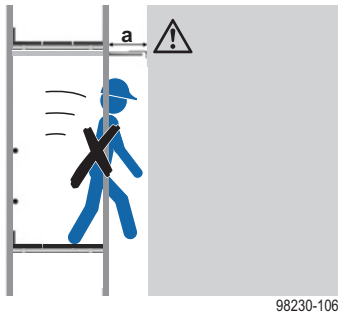
Do not perform operations above one another at the same time.



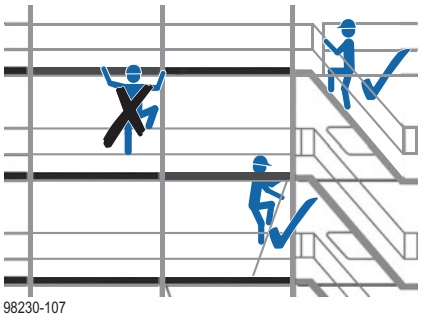
Only adults are permitted in scaffolding.



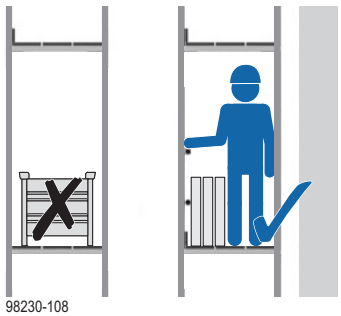
Do not exceed the permitted loads.



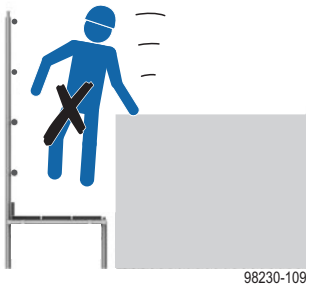
Risk of falls if gap between scaffold and structure is too wide.



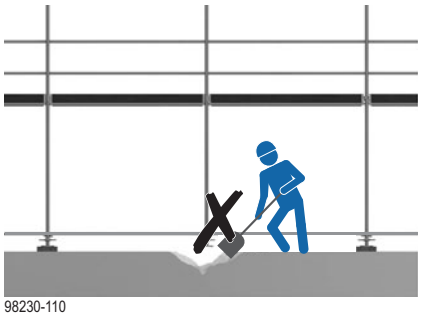
Do not climb on the scaffold! Use ladders or stairways.



Do not obstruct passageways.



Do not jump down on to the scaffold.



Ensure the stability of the scaffold throughout all phases of construction.

Rules applying during all phases of the assignment

- Do not throw any Ringlock scaffold equipment or any other materials up or down.
- Defective / modified equipment is not to be used.
- Scaffold equipment is not to be rested against an object if there is a potential for it to fall.
- The Ringlock scaffold is never to be overloaded.
- Do not overload the scaffold you are erecting, altering or dismantling with spare materials.
- Consider the weight of the materials you are loading on the scaffold and instruct operatives on maximum loading.
- Protect the scaffold from damage by site plant.
- Sheeting or netting to the scaffold has to be approved by the scaffold designer.
- Do not undermine the scaffold by digging trenches or foundations under or adjacent to it.
- Never work on or use a Ringlock scaffold which is being erected or dismantled.
- Never undertake work at height when there is a potential to fall without wearing your safety harness correctly and clipping the lanyard to a secure anchor point.
- For any overhead or street visible work warning signs, or segregating others from the live working zone (barriers) have to be displaying.
- Do not remove any ties except when using trained operatives, working to your agreed site requirements and instructions without technical advice.
- Guardrails, toeboards or brick guards are not to be removed except when using trained operatives, working to your agreed site requirements and instructions.
- Removing components or adapting the Ringlock scaffolding with non-genuine equipment is prohibited.
- Removing Ringlock Steel planks from platform thus leaving an exposed edge and creating a gap is prohibited.
- Ladders or Stair units are not to be removed.

Assembly

- Inspect all scaffold components prior to commencing assembly.
- Prepare the ground for the scaffold and the load it will impose.
- Always consider the use of a tagging system i.e. Scaffold tag.
- Prevent access to incomplete and/or unsafe scaffolds and ensure that you have scaffold not to be used.
- Never leave partly erected or dismantled scaffolds in an unsafe condition (always ensure adequate signage is displayed to warn others).
- Prevent leaving an exposed edge where people or building materials could fall.

Disassembly

- Handle all components with care to minimize possible damage. The safety of those dismantling the scaffold and passers-by should take top priority during dismantling.
- Before starting the dismantling procedure, inspect the entire scaffold to ensure that it is still structurally sound, that is, no parts have been damaged or removed that would endanger workers on the scaffold. If any such damage or missing part is seen, those parts must be replaced before commencing the operation.
- Do not remove a scaffold tie or structure connection until the scaffold components above the tie have been disassembled and lowered to the ground.
- All scaffolders should be wearing safety harnesses and other appropriate PFAS.
- Use ropes and slings to move scaffold parts. Do not throw components.
- Inspect all components to ensure that each one is suitable. Identify all damaged components by tagging or marking them conspicuously.
- Damaged components should be kept separated from all of the other components in a quarantine area.

Transporting, stacking and storing

- Instruct forklift drivers on maximum loading.
- Never put forklift loads directly onto access scaffold (instead, use a loading tower).
- Ensure that you provide agreed storage areas for your Ringlock scaffolding on site to reduce handling and prevent tipping hazards.

Miscellaneous

- Inspect your scaffold each time before use.
- Inspect your scaffolds and issue reports.
- Inform the Scaffolding Manager if the scaffold gets damaged, repairs can then be arranged.
- Instruct the operatives who will be using the scaffold not to make any adaptations.
- Report scaffold defects to scaffolding contractor - you may be saving a life.
- Ensure all on-site users know for what purpose the Ringlock scaffold is intended and the load it is designed to support.

Inspection and documentation

Inspection and release by the scaffold erector

- Release of the working scaffold for use is issued only when the scaffold is handed over by the scaffold erector and has received general acceptance from the ordering party.
- Throughout erection, dismantling and modification operations, the scaffold erector must ensure that the scaffold is clearly marked at all points of access by appropriate 'No unauthorised access' signs and that unauthorised access is appropriately prevented.

- After erection work has been completed, release is issued in the form of a written acceptance record, which must be affixed to the scaffold. Preprinted forms from the national health and safety authorities can be used for this purpose. (For example BG Bau in Germany, AUVA in Austria, SUVA in Switzerland, HSE Executive for UK, SafeWork Australia, corresponding authorities in other countries.)
- On hand-over, the user must receive notification, in the form of instruction, of the hazards associated with use other than intended use.

Please refer to local regulations and standards for additional information.

Daily inspection by the user

The scaffold user must inspect the scaffold for visible defects every day prior to use.

Extraordinary inspection

Every change to the scaffold structure, even in partial areas, must be reported immediately to the scaffold erector. The scaffold erector must conduct an extraordinary inspection of the scaffold and carry out the necessary repairs.

An extraordinary inspection by the scaffold erector is also necessary after out-of-the-ordinary occurrences or influencing events, including for example:

- accidents
- severe natural events (e.g. storms, heavy rainfall, heavy snowfall, icing up, etc.)
- long out-of-use periods

Please refer to local regulations and standards for additional information.

Fall-protection measures

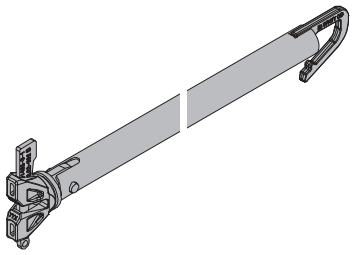
Fall protection during erection, modification and dismantling of the scaffold

Suitable measures to prevent falls:
- Advanced Guardrail (AG).
- Personal fall-arrest system (PFAS).
- Combination of advancing guardrail and PFAS.
- Other appropriate, higher-order protective measures.

Ringlock Advanced Guardrail

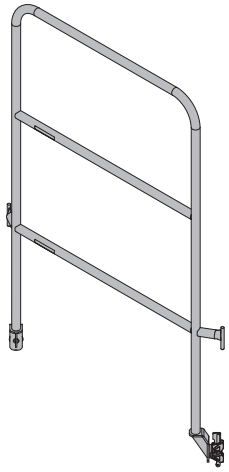
The advanced guardrail consists Ringlock components ’Longitudinal Advanced Guardrail’ and ’End Advanced Guardrail’.

Longitudinal AG



Lengths: 1.57 / 2.07 / 2.57 / 3.07 m

End AG

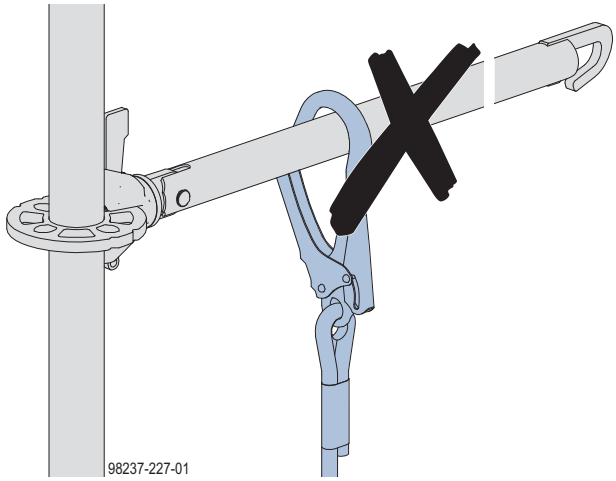


Widths: 0.73 / 1.09 m

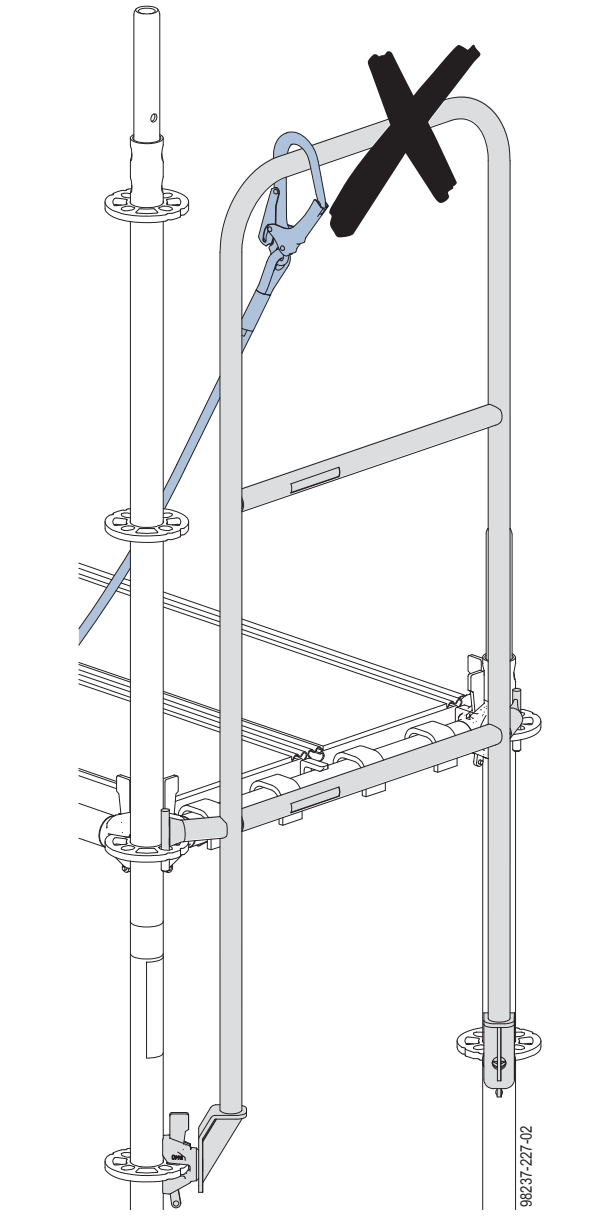
WARNING

➤ Do not use the Advanced Guardrail as attachment point for PFAS.

Attachment of PFAS to Longitudinal AG is not permitted

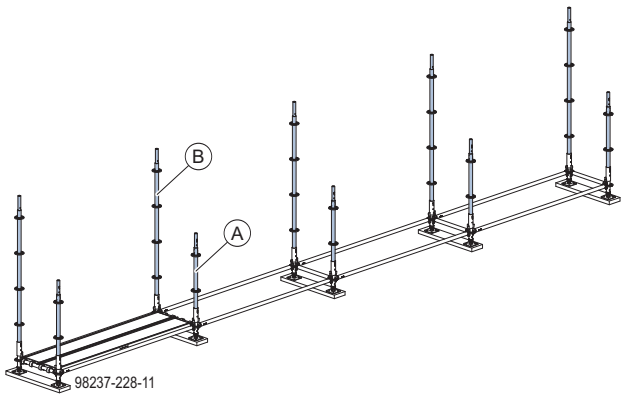


Attachment of PFAS to End AG is not permitted



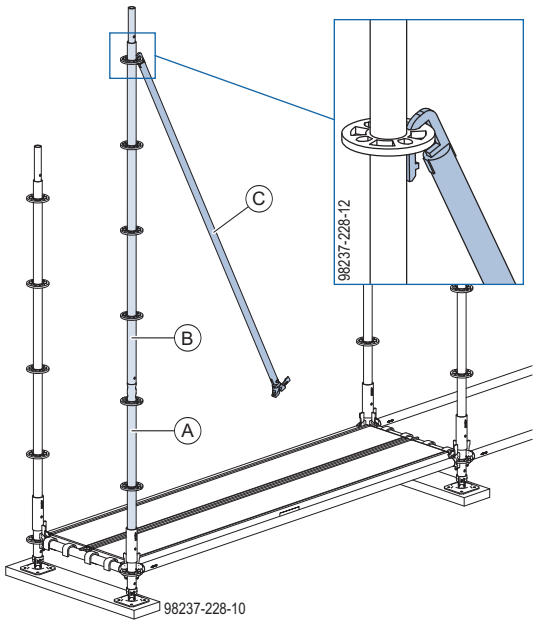
How the Longitudinal Integrated Advanced Guardrail system works

➤ Install standards 1.00m on Starter Base Collars on the outside and standards 2.00m on the inside.



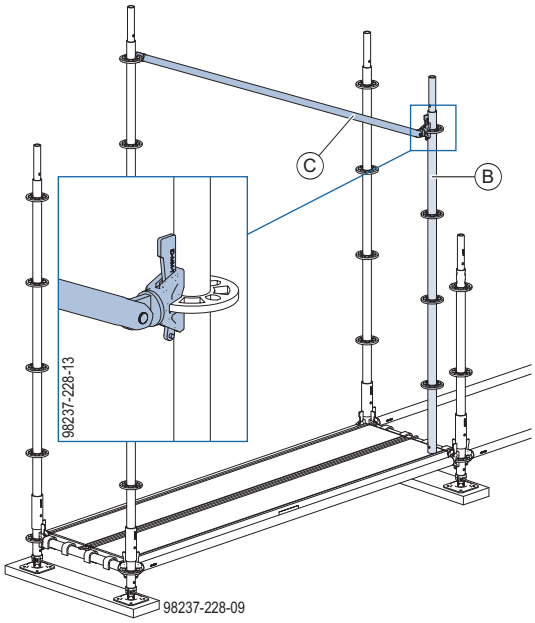
A Standard 1.00m
B Standard 2.00m

➤ Install first standard 2.00m.
➤ Hook Longitudinal Advanced Guardrail into the top-most rosette.



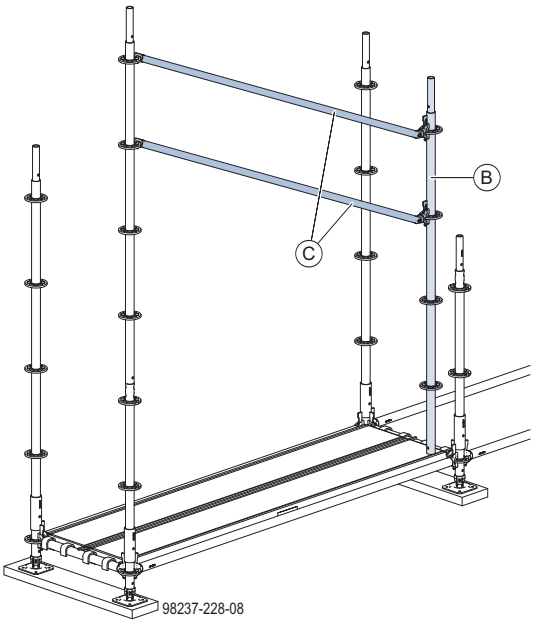
A Standard 1.00m
B Standard 2.00m
C Longitudinal Advanced Guardrail

➤ Attach Longitudinal Advanced Guardrail by its wedge head to the next standard 2.00m.

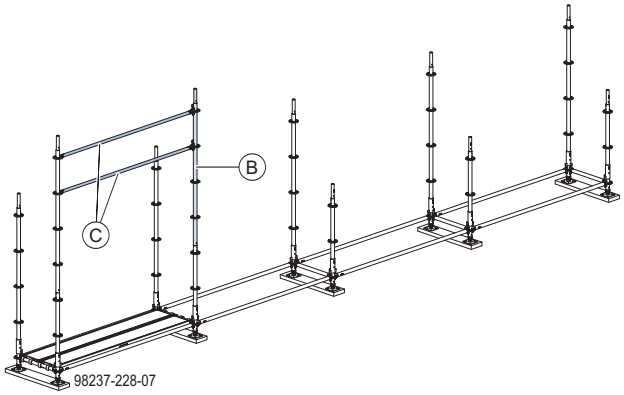


B Standard 2.00m
C Longitudinal Advanced Guardrail

Longitudinal Advanced Guardrails (C) can be installed as top guardrail and intermediate guardrail on the standards 2.00m (B) at the same time.

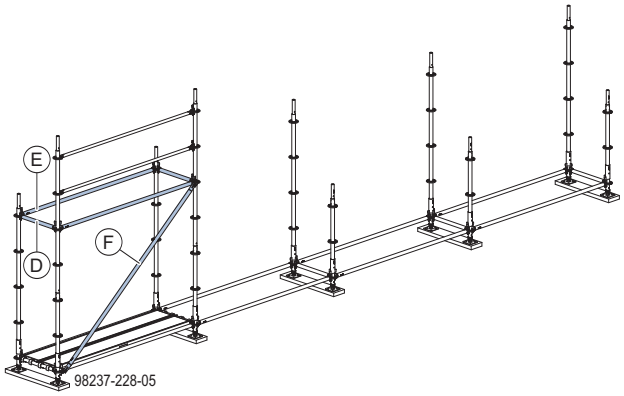


➤ Swing standard 2.00m with Longitudinal Advanced Guardrail attached up and install the standard 2.00m on the standard 1.00m.



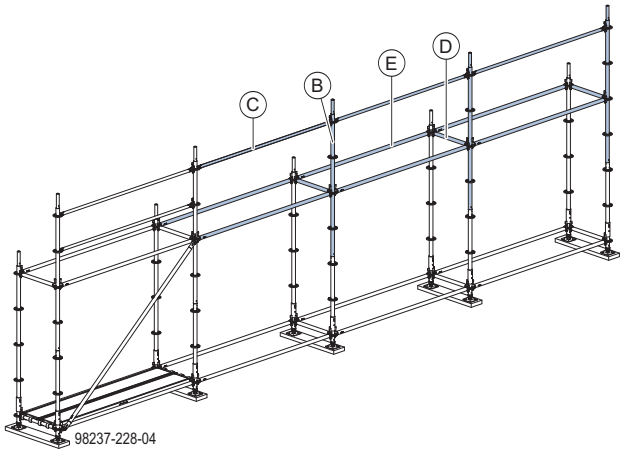
B Standard 2.00m
C Longitudinal Advanced Guardrail

➤ Install transverse ledgers and longitudinal ledgers at height 2.0 m.
➤ Install a bay brace in the first bay.



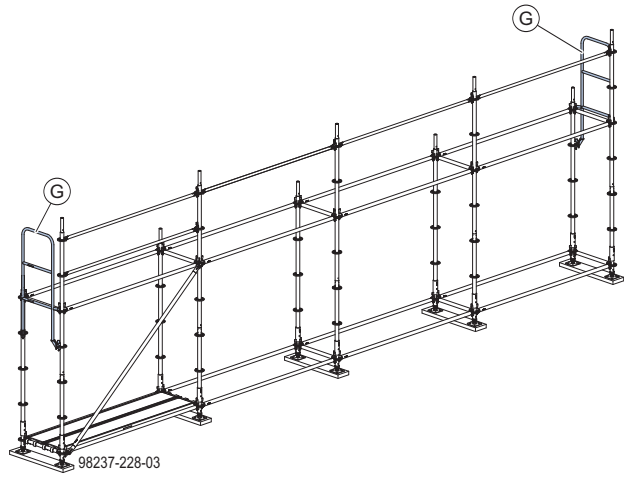
D Transverse ledger
E Longitudinal ledger
F Bay brace

➤ Proceed along the full length of the scaffolding level in the same way as the 1st bay (either 1 or 2 Longitudinal Advanced Guardrails).



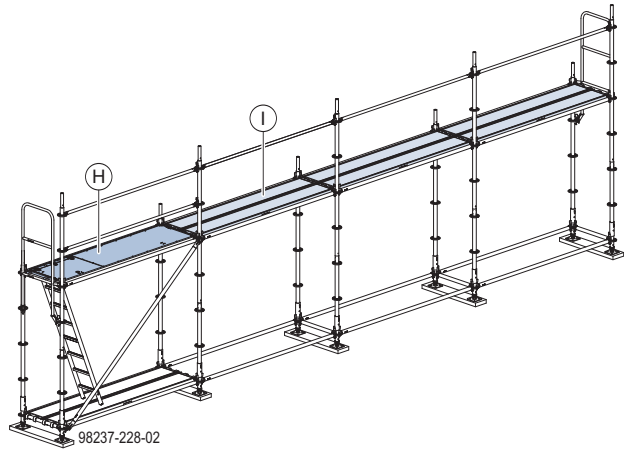
B Standard 2.00m
C Longitudinal Advanced Guardrail
D Transverse ledger
E Longitudinal ledger

➤ Hook End Advanced Guardrail into the rosettes and use the wedge heads to secure it to the standards.



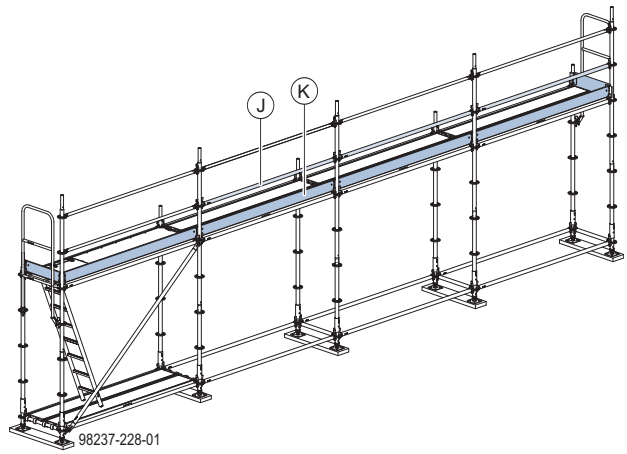
G End Advanced Guardrail

➤ Install alum. ladder hatch deck and steel planks 32cm and secure them against uplift.



H Alum. ladder hatch deck
I Steel plank 32cm

➤ Install three-part side protection.



J Ledger as intermediate guardrail
K Steel toeboard

Anchorage points for personal fall arrest systems (PFAS)

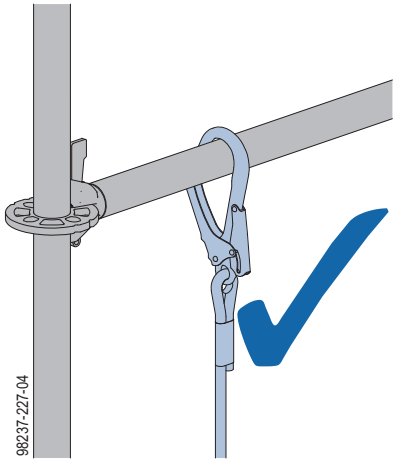
NOTICE

- If a PFAS is to be used, the equipment must be compliant with EN standards 354/355/360/361/362/363.
- Fall arresters compliant with EN 360 may also be used as part of the PFAS.
- Combinations of fall-arrest systems are prohibited.

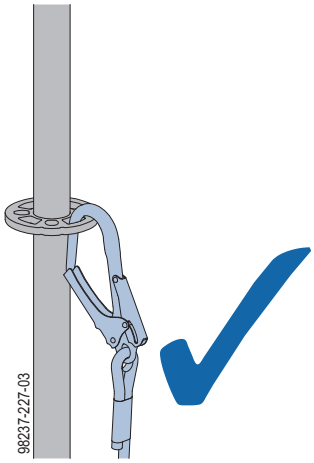
WARNING

➤ Make sure that the attachment point is at or above the required minimum height, as otherwise there will not be sufficient room to arrest a fall.

Attachment to horizontal ledger permitted



Attachment to Ringlock rosette permitted (large and small holes in rosette)



WARNING

➤ Do not use a free-standing standard as attachment point.

➤ It is not permitted for the standard used as attachment point for PFAS to have a butt joint coinciding with the decking level.

➤ The attachment points selected must be as high as possible above the decking level. Minimum height: 1 m above decking

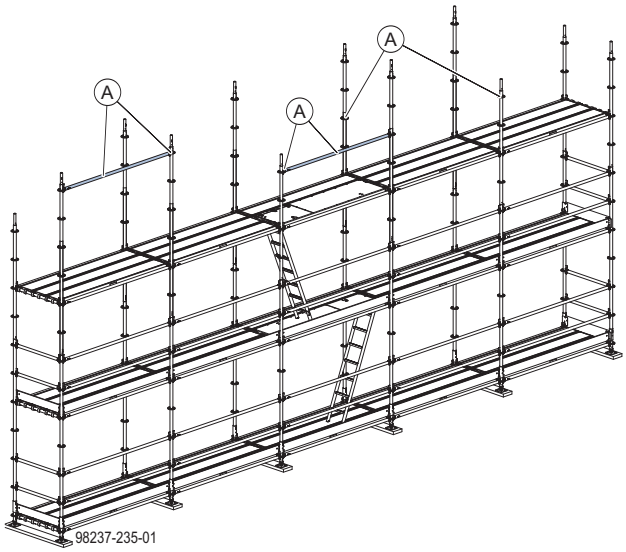
Attachment points for PFAS

All scaffolding work must be carried out in such a way as to minimize the risk of falling. The use of personal fall-arrest system (PFAS) against falls from height may be required by locally applicable health and safety legislation or as a result of a risk assessment.

The regulations and guidelines of German Social Accident Insurance (DGUV) Rule 112-198 'Use of personal protective equipment against falls from a height' in its current version apply. It should be noted that when using when PFAS, there must be adequate clearance below the standing level, depending on the length of the lanyard used, and the ground and/or obstacle below.

Safety harness attachment points can be made either on ledgers up to 2.0 m above the standing level or on the rosettes in the small or large hole up to 1 m above the standing level. When connecting the PFAS to free-standing vertical standards, make sure that the post joint is below the standing level.

Safety harness attachment points in general, the anchorage point should be as high as possible.

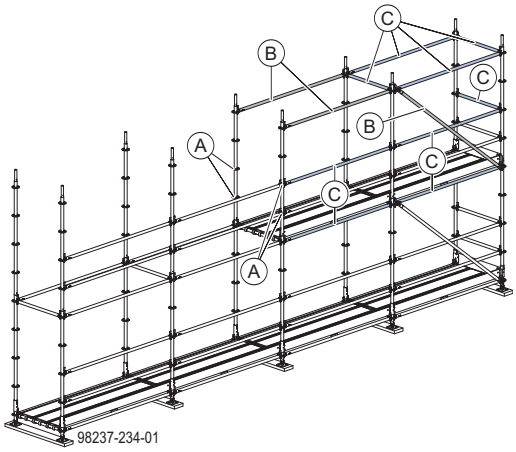


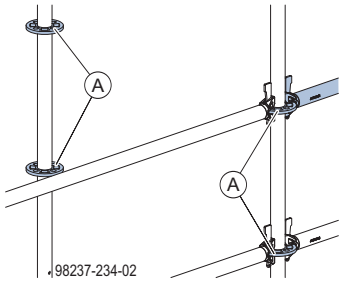
A Attachment points for PFAS

Where to attach your shock absorbing lanyard

Below represents where you can safely attach a scaffold hook/snap hook.

- ➤ Connection locations shown as (B) are not suitable for fixing to.
- ➤ The attachment points shown as (C) are to support shock absorbing lanyard fall arrest equipment.





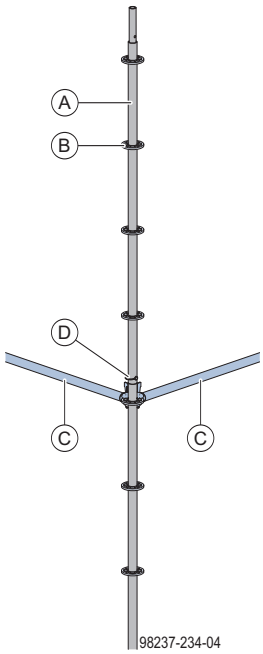
A Attachment points for PFAS

Connection to rosette

- ➤ The rosette on a standard is an approved connection point for the scaffold hook attached to a lanyard.
- ➤ The standard must be continuous to the ground.
- ➤ No more than one person per 2.0m lift can be attached to a single standard.
- ➤ It is recommended to connect the scaffold hook to the large trapezoidal holes to provide a suitable attachment point for the appropriate safety harness.

Connection to standard

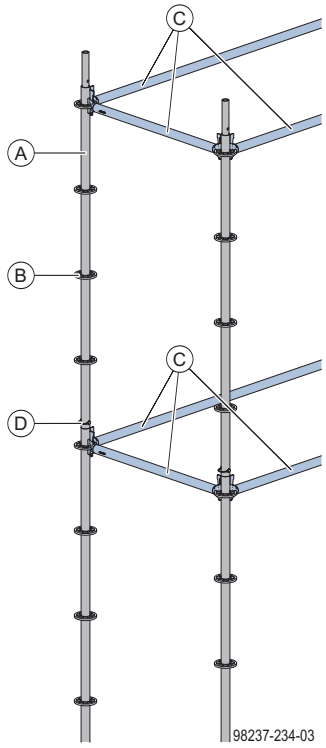
- ➤ To ensure a positive connection is created it is recommended that joints between standards are pinned together (ensure site/local regulations and current legislation are followed).
- ➤ Connection to any rosette up to the third rosette above the ledgers.
- ➤ Do not attach the safety harness lanyard to itself around a standard because the edge of the rosette may cut the fabric or it may slip over the rosette to the next lower rosette increasing the fall distance.



A Standard
B Rosette
C Ledger
D Bolts, spring pins or pigtail pins

Connection to ledger

- The ledger connected to a standard is an approved connection point for the scaffold hook attached to a lanyard.
- No more than one person per 2.0m lift can be attached to a single standard.
- Ledger must be connected at both ends.
- All standards must be connected as stated above and to the ground.
- Anchor points should always be as high as possible, however, this is not always practical in scaffolding which is usually built from the ground up. Our recommendation is that where no higher anchor point is available you should clip to the ledger immediately below your feet.



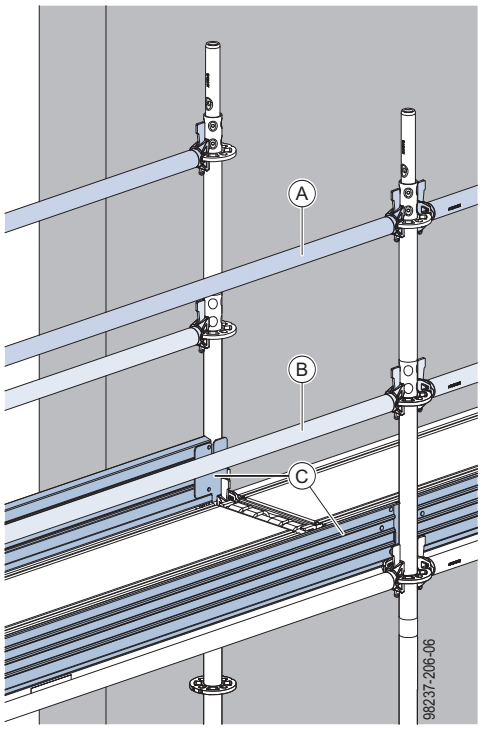
A	Standard
B	Rosette
C	Ledger
D	Bolts, spring pins or pigtail pins

Fall protection for users on the scaffold

Three-part side protection

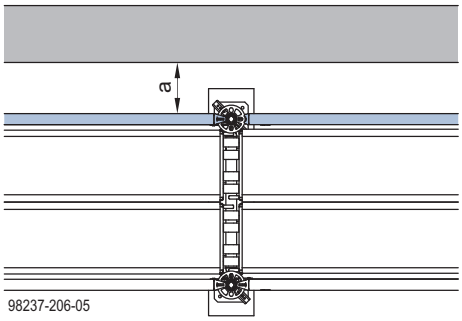
NOTICE

It is imperative to install all-round three-part side protection on all open areas as fall protection for the users of the scaffold.



A	Top guardrail
B	Intermediate guardrail
C	Steel toeboard

Max. distance from wall to scaffolding



Please refer to Annex chapter Max. distance from wall to scaffolding for all the regional standards.

System description

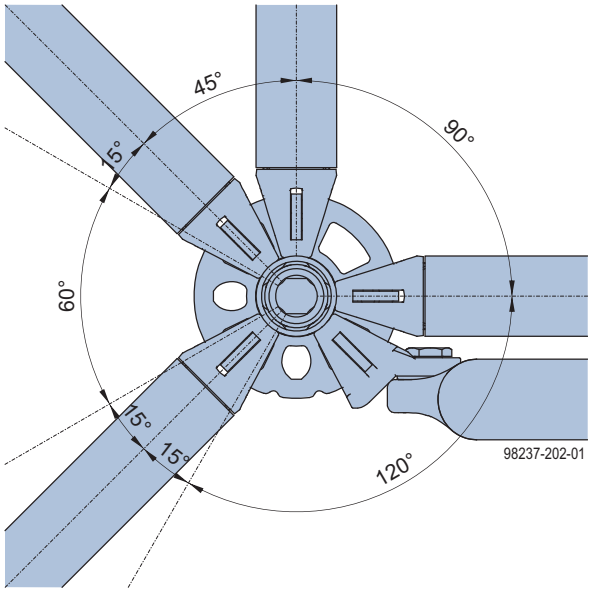
The Ringlock node

Ringlock node connection consists of Standards with rosettes every 0.5 m and horizontal members with a cast end captive wedge (Ledger and Transom).

When connected together, the Ledger end and rosette create a very strong connection. It is this connection that transmits forces throughout the scaffold structure.

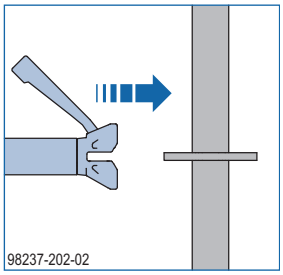
The Ringlock rosette has a diameter of 123 mm and has been manufactured with 8 slots, 4 small and 4 large. The smaller slots represent the 90 degree angle at which Ledgers and Transoms are installed. The larger trapezoidal slots accommodate the Diagonal Bay Braces.

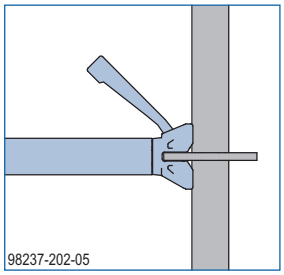
Ledgers can be installed in the larger slots, allowing up to 15 degrees of rotation which provides added flexibility to clear obstacles when necessary.



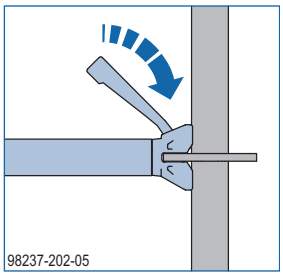
Making the node connection

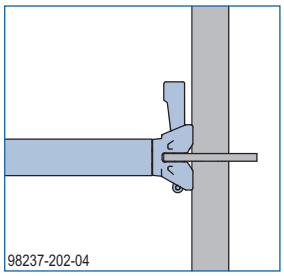
➤ Push the wedge head of the ledger sideways over the rosette.



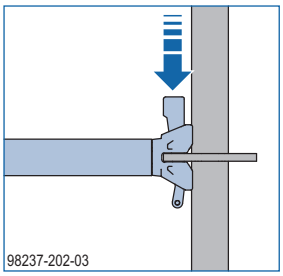


➤ Lock the ledger by inserting the wedge into the rosette.





➤ Hammer in the wedge until the hammer rebounds.



NOTICE

Use a hammer weighing at least 500 g.

Basic components in detail

Base jacks

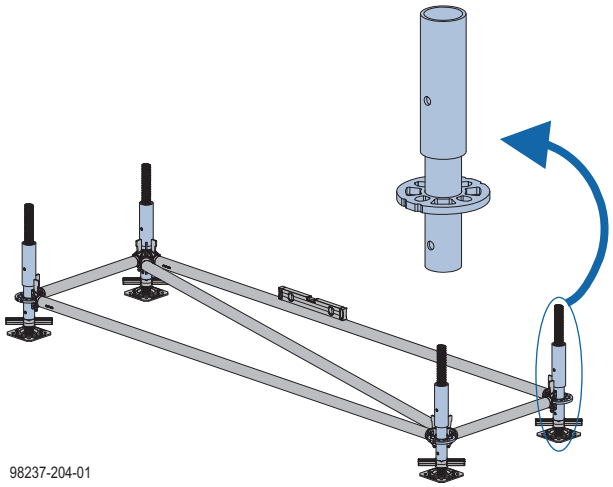
Base jack 60cm	Swivel base jack 78cm
	
Base jacks for levelling at bottom	
Jack height: 4 - 41 cm	Jack height: 10 - 50 cm

NOTICE

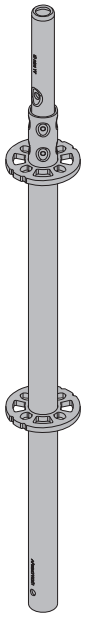
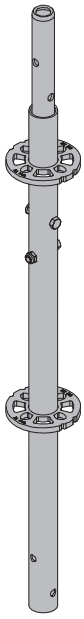
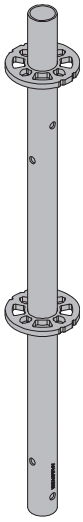
Base jacks must make full-surface contact with the floor. If necessary, secure the jacks to prevent slippage / drift.

Starter base collar

Starter Base Collars are used to construct a sturdy base frame and have the added benefits of enabling brace connection at a lower level along with the ability for single person to setup the bay.

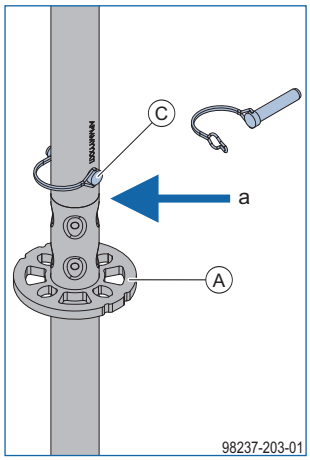


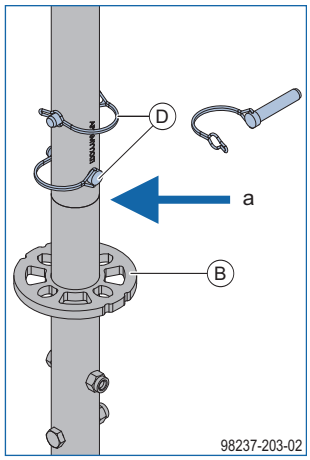
Standards

Standard with crimped spigot	Standard with hanging spigot	Standard without spigot
		
Regular application	For hanging scaffold	For birdcage scaffold
Lengths: 0.50 / 1.00 / 1.50 / 2.00 / 2.50 / 3.00 / 4.00 m		

Standard-to-standard connections

In order to transfer the tensile forces in hanging scaffolds or free-standing scaffolds, the spigots are secured in place in the adjoining standards by bolts or spring pins.



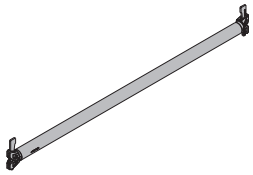


a ... Standard-to-standard joint

A	Standard with crimped spigot
B	Standard with hanging spigot
C	1 spring pin or 1 hexagonal bolt M12x60 8.8 with hexagonal nut
D	2 spring pins or 2 hexagonal bolts M12x60 8.8 with hexagonal nuts

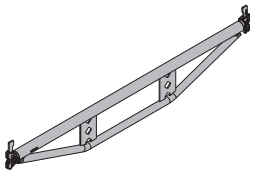
Ledgers O-Type

Ledgers are used as bracing elements, for guardrails and as transoms for decking.
The wedge-head connection ensures form-locked and friction-locked connection with centred load transfer between standard and ledger.

Ledgers

Lengths: 0.15 / 0.45 / 0.39 / 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

NOTICE

Use truss ledgers when the loads on the decking are high or to bridge long spans between vertical standards.

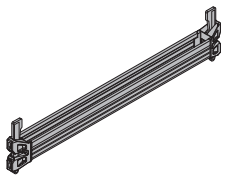
Truss ledgers

Lengths: 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

Do not exceed the maximum permitted loads for ledgers as stated in the section headed ’Structural design’.

Ledgers U-Type

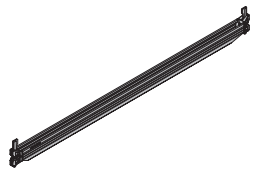
Ledgers U are used as a transom element for decking which have a smaller hook profile than O-Type Steel Planks.

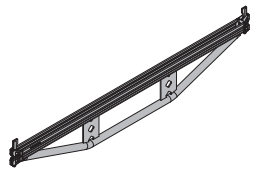
The wedge-head connection ensures form-locked and friction-locked connection with centred load transfer between standard and ledger.

Ledgers U

Lengths: 0.45 / 0.73 / 1.09 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

NOTICE

It might be necessary to use reinforced or truss ledgers when the loads on the decking are high or to bridge long spans between vertical standards.

Ledgers U reinforced

Lengths: 1.09 / 1.40 / 1.57 m

Truss ledgers U

Lengths: 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

Do not exceed the maximum permitted loads for ledgers as stated in the section headed ’Structural design’.

Bay braces

Bay braces stiffen the scaffold in the longitudinal and transverse directions. They must be hooked into the large holes in the rosettes.

Bay braces

Bay height: 1.00 / 1.50 / 2.00 m
Bay length: 0.39 / 0.45 / 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

NOTICE

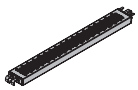
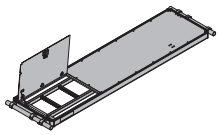
Install braces in accordance with statical requirements.

In accordance with Z-8.22-992, bay braces are not required for scaffold erected in accordance with the design specifications of the DIBt approval. For further details please contact your AT-PAC representative.

Please refer to the chapter "Standard design for Ringlock DIBt approval".

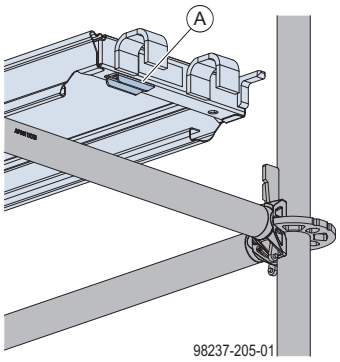
Decking

Decking with O-Type attachment

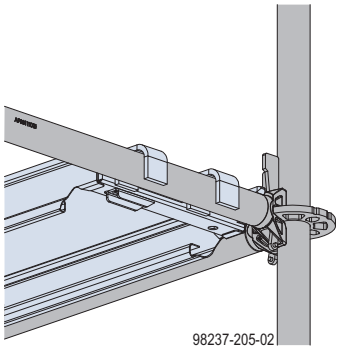
Steel plank 0.32m	Steel plank 0.19m	Alum. hatch deck
		
Steel planks for constructing safe working levels.		Access deck with or without integrated ladder
Integrated anti-uplift guard		
Width: 32 cm	Width: 19 cm	Width: 64 cm
Lengths: 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m		Lengths: 2.07 m without ladder / 2.57 / 3.07 m

Installing decking with O-Type attachment

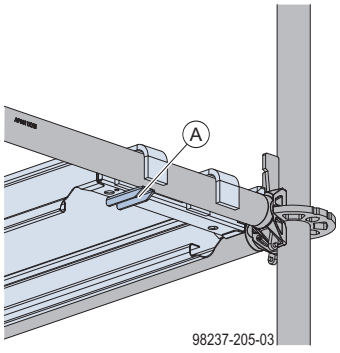
➤ Flip anti-lift-off wind latch back out of the way.



➤ Lay plank on transom.

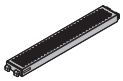
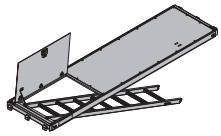


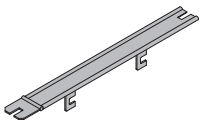
➤ Flip anti-lift-off wind latch forward.



A Anti-lift-off wind latch

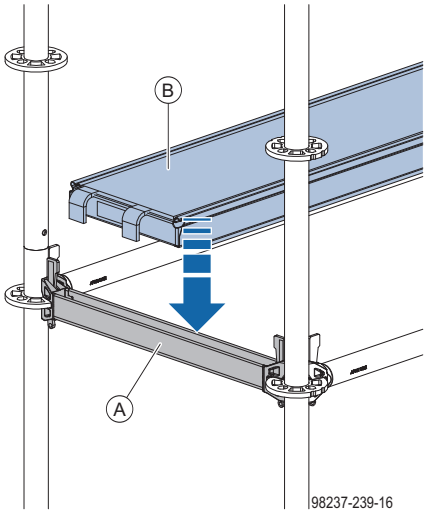
Decking with U-Type attachment

Steel plank 0.32m	Steel plank 0.19m	Alum. hatch deck
		
Steel planks for constructing safe working levels.		Access deck with or without integrated ladder
Requires Deck lock for uplift prevention		
Width: 32 cm	Width: 19 cm	Width: 64 cm
Lengths: 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m		Lengths: 1.57 / 2.07 m without ladder 2.57 / 3.07 m

Deck lock U

Deck locks for prevention of steel plank uplift
Lengths: 0.39 / 0.45 / 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

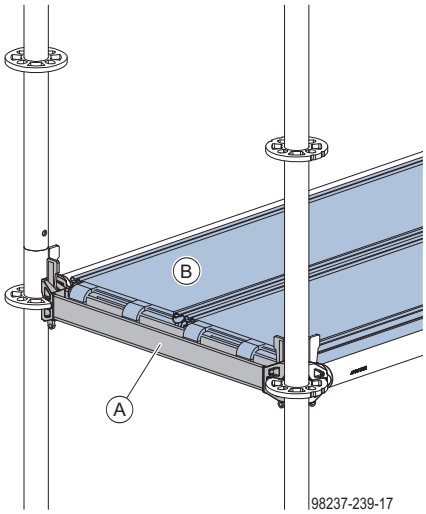
Installing decking with U-type attachment

➤ Install steel plank hook into ledger U profile.



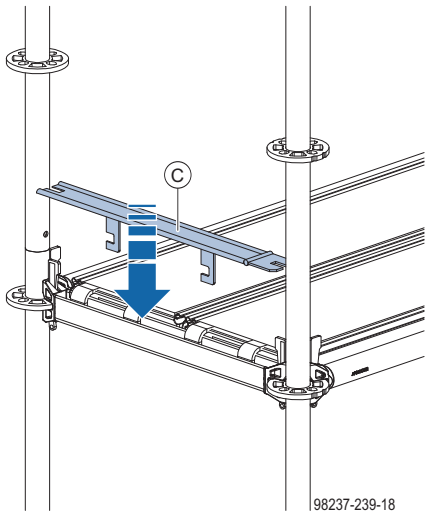
A Ledger U
B Steel plank

➤ Install all remaining steel planks into ledger U.



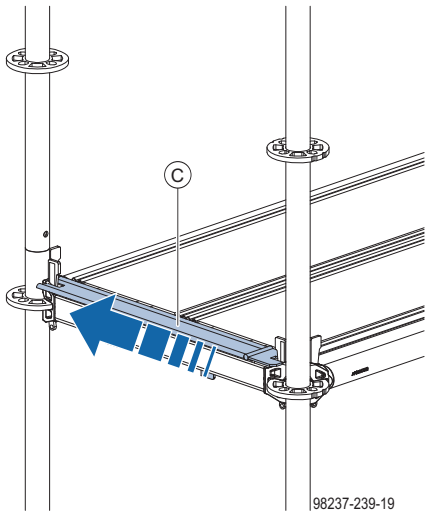
A Ledger U
B Steel plank

➤ Install deck lock U into slots of the ledger U.



C Deck lock U

➤ Slide deck lock U across to secure into slots and install hinged tab at the end of deck lock U.



C Deck lock U

Decking arrangement

NOTICE

Depending on bay length, it might be necessary to combine decking of width 32 cm and 19 cm in order to deck the full width of the working surfaces.

Bay width	Decking 32 cm	Decking 19 cm
0.39 m	-	1
0.73 m	2	-
1.04 m	1	3
1.09 m	3	-
1.40 m	4	-
1.57 m	4	1
2.07 m	6	-
2.57 m	7	1
3.07 m	9	-

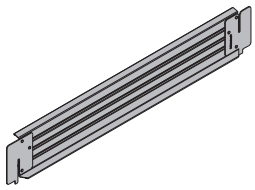
Do not exceed the maximum permitted loads for ledgers as stated in the section "Structural design".

If permitted by national regulations, gaps between the planks and gaps between 2 adjacent bays (e.g. gaps > 8 cm) can be closed with gap filler plates.

Please refer to Annex chapter Max. gap between planks for all the regional standards.

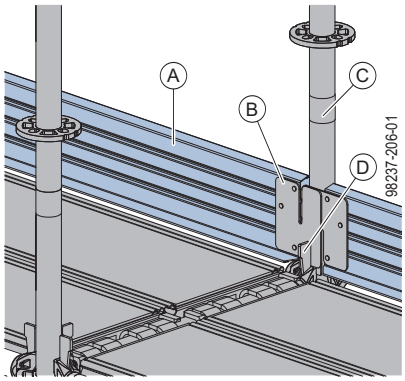
Steel toeboards

The Ringlock steel toeboard is part of the tree-part side protection.

Steel toeboard

Lengths: 0.39 / 0.45 / 0.73 / 1.04 / 1.09 / 1.28 / 1.40 / 1.57 / 2.07 / 2.57 / 3.07 m

Installing steel toebard

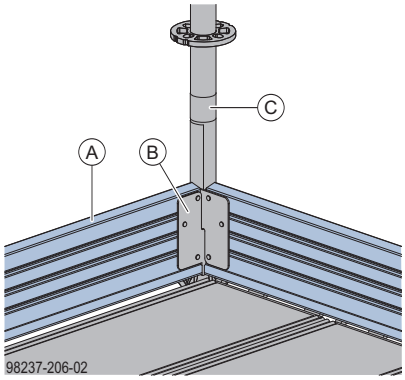
➤ Position the attachment plate of the steel toeboard between wedge and standard.



NOTICE

It is recommended the use of Toeboard retaining clamps to secure the steel toeboards against uplift.

➤ At corners, use the slots to fit the two attachment plates together.



A Steel toeboard
B Attachment plate of steel toeboard
C Standard
D Wedge of the ledger

System-free components supplementing with Ringlock

The Ringlock scaffold can be complemented with the following supplementary components:

- Dia. 48.3 mm scaffold tubes per EN 39
  - Min. wall thickness, aluminium tubes: 4.0 mm
  - Min. wall thickness, steel tubes: 3.2 mm
- Scaffold couplers per EN 74
- Wooden or steel planks

Please refer to regulations and standards for region specific information.

Scaffold tubes and couplers

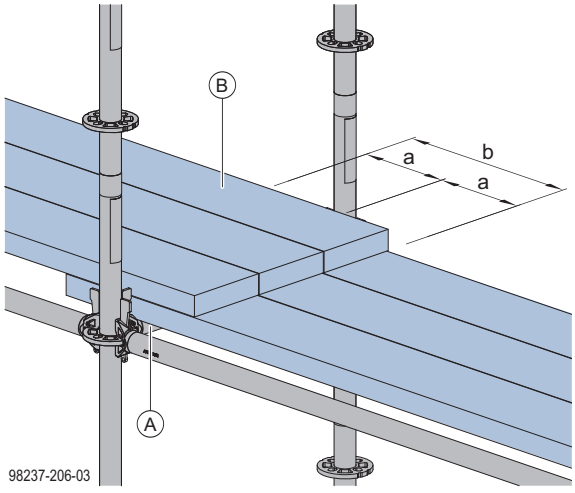
Scaffold couplers can be attached to all Ringlock round-tube components with 48.3 mm diameter, with the exception of the bay braces.

Wooden planks

NOTICE

- Where working surfaces are constructed using overlapping wooden planks, additional guardrails have to be installed to comply with the minimum guardrail height of 95 cm required by EN 12811-1.
- Secure planks against accidental lifting and dislocation (e.g. use ropes).

Overlapping wooden planks

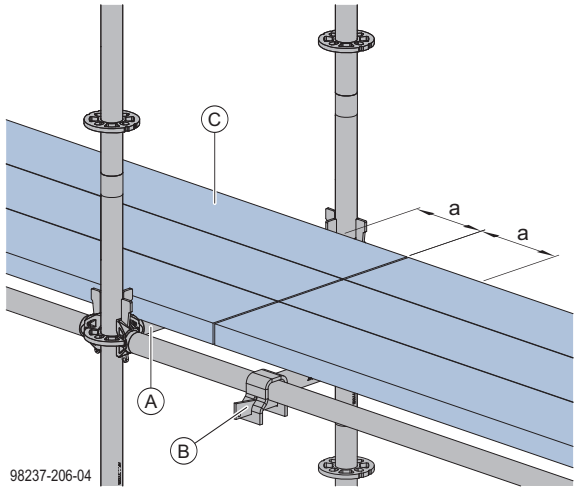


a ... min. 20 cm
b ... min. 40 cm

A Ledger
B Wooden planks

Please refer to regulations and standards for region specific information.

Butting wooden planks



a ... min. 20 cm

A Ledger
B Mid transom
C Wooden planks

Please refer to regulations and standards for region specific information.

Colour coding for bay lengths

Each bay length has its own specific colour and these colours are used as a means of identifying the horizontal components (ledgers and decking planks) and the bay braces.

Overview, colour coding for bay lengths

Bay length	Colour
0.39 m (1'-3")	red
0.45 m (1'-6")	white
0.73 m (2'-5")	yellow
1.04 m (3'-5")	black
1.09 m (3'-7")	purple
1.28 m (4'-3")	yellow
1.40 m (4'-7")	pink
1.57 m (5'-2")	turquoise
2.07 m (6'-10")	blue
2.57 m (8'-6")	green
3.07 m (10'-1")	brown

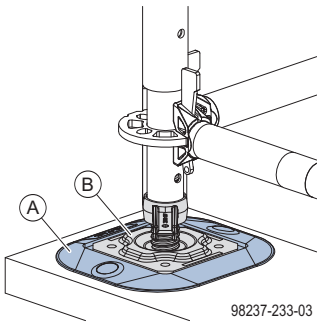
Scaffold protection accessories

To ensure awareness and safety protection accessories are installed onto the Ringlock and supporting accessories to, these accessories can include, but not limited to:

- Rosette covers
- Coupler covers
- Tube end caps
- Horizontal covers
- Base plates

Base plates

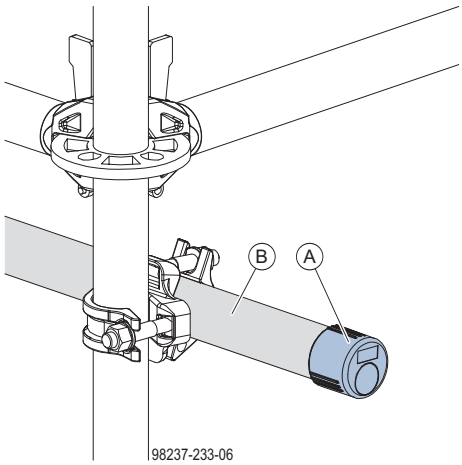
The horizontal covers provide awareness for Base jacks in scenarios such as Gantry scaffolds.



A Base jack pad with reflector
B Base jack

End tube protection

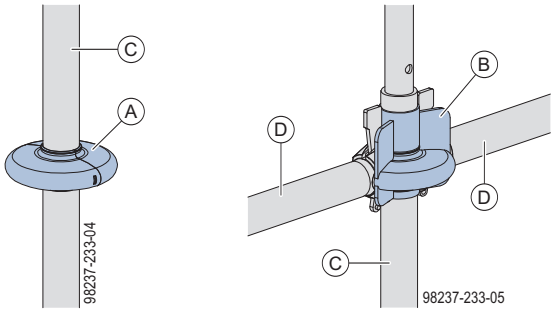
The End tube protections are used on the end of a 48.3 mm tube or open Standard to prevent injury, damage or items being dropped inside.



A End tube protection
B Scaffold tube

Rosette protection

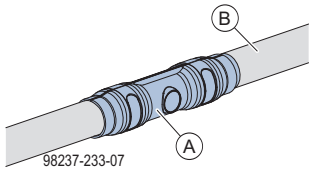
The Rosette protection provides protection and awareness of the Rosette Ledger ends.



A Rosette protection
B Rosette and ledger protection
C Standard
D Ledger

Horizontal covers

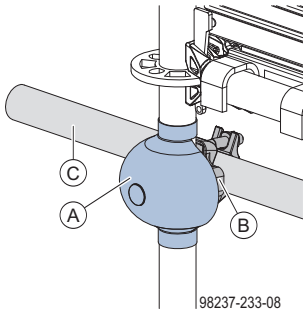
The Straight tube protection with reflector provides protection and awareness for items such as Ledger and Bay braces.



A Straight tube protection with reflector
B Ledger

Coupler protection

The Coupler protections are installed over couplers and clamps and can be utilised with Ringlock and conventional tube & coupler scaffolding.



A Coupler protection
B Coupler
C Scaffold tube

Facade scaffold

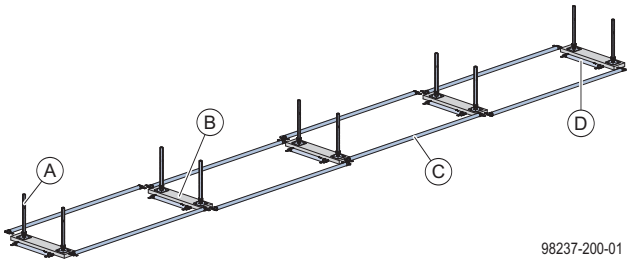
Assembly of facade scaffold without stairway - O-Type

Scaffold base

NOTICE

Make sure that the sub-base is of sufficient load-bearing strength. If necessary, use suitable sole boards to distribute load (e.g. wooden planks).

➤ Distribute the Base jacks 60cm with the necessary sole boards, spacing them correctly.



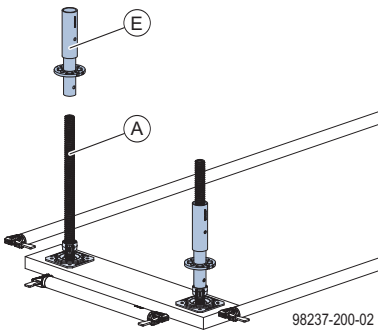
A Base jack 60cm
B Sole board (e.g. plank)
C Longitudinal ledger
D Transverse ledger

WARNING

➤ Position the scaffold so as to comply with the maximum permitted wall-to-scaffold gap as specified by national regulations (e.g. 30 cm) to prevent a fall hazard between wall and scaffold on all scaffolding levels.

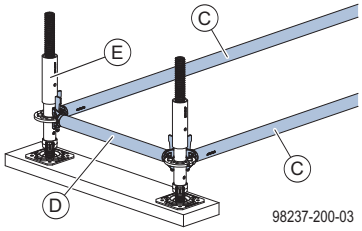
- Laying out the longitudinal ledgers and transverse ledgers in advance makes it easier to space the Base jacks 60cm correctly.
- Spin the nuts of all the Base jacks 60cm down to approx. 5 cm above the base plate. This maximises the range of height adjustment.

➤ Install a Starter base collar on each Base jack 60cm.



A Base jack 60cm
E Starter base collar

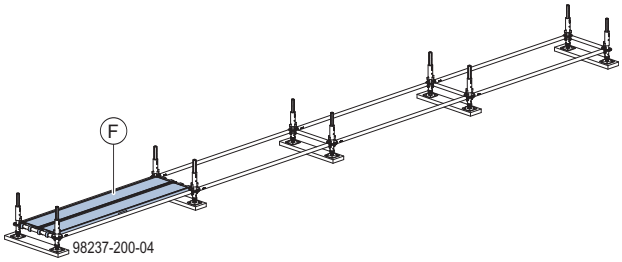
➤ Connect the ledgers to the Starter base collars (leave the wedges loose).



C Longitudinal ledger
D Transverse ledger
E Starter base collar

Check that the bays are square by measuring the bay diagonally.

Engaging decking in the first bay makes it easier to keep the successive scaffold bays correctly squared.

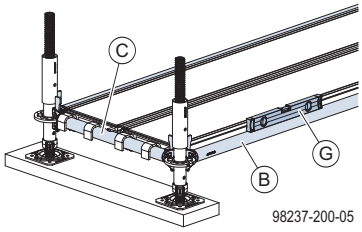


F Decking

NOTICE

The access bay has to be planked to support the ladder foot of the ladder hatch deck of the next lift.

➤ Compensate for differences in grade level by turning the Handle nuts for base jacks. Level and line the scaffold base in the longitudinal and transverse directions.



B Longitudinal ledger
C Transverse ledger
G Spirit level

NOTICE

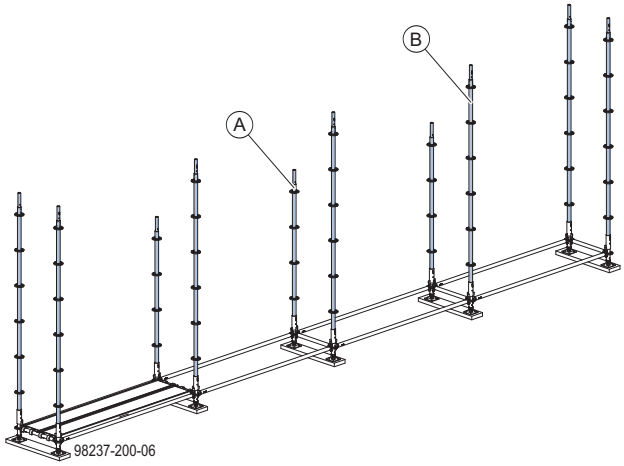
On sloping ground, level the load-spreading sole boards so that the scaffold base plates are horizontal.

- In order to level the scaffold base correctly, start with the Base jack 60cm at the highest point along the run.
- If the slope is pronounced, it is advisable to use Swivel base jacks 78cm.

➤ After aligning the scaffold bays, drive in the wedges of the ledgers.

First scaffolding level

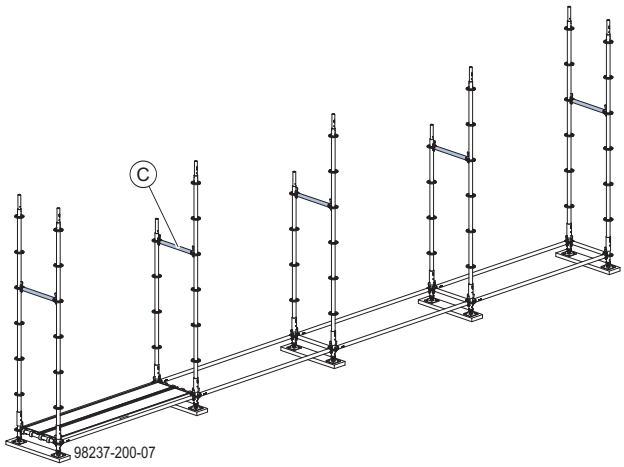
➤ Install standards on Starter base collars.



A Standard 2.00m
B Standard 3.00m

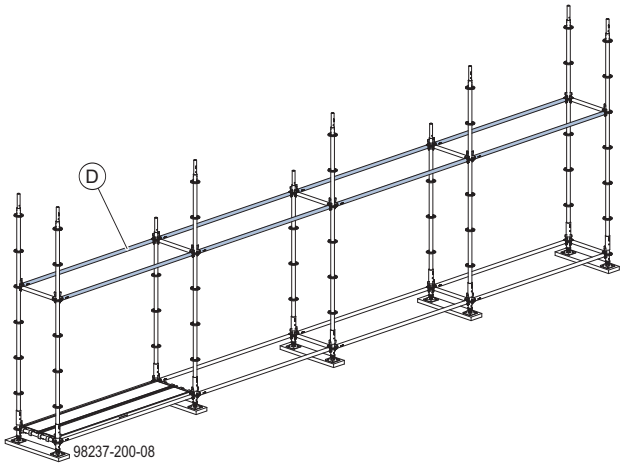
Use 2 standards 3.00 m at each short end so that the three-part side protection can be installed here later on.

➤ Install transverse ledgers at a height of 2.0 m.



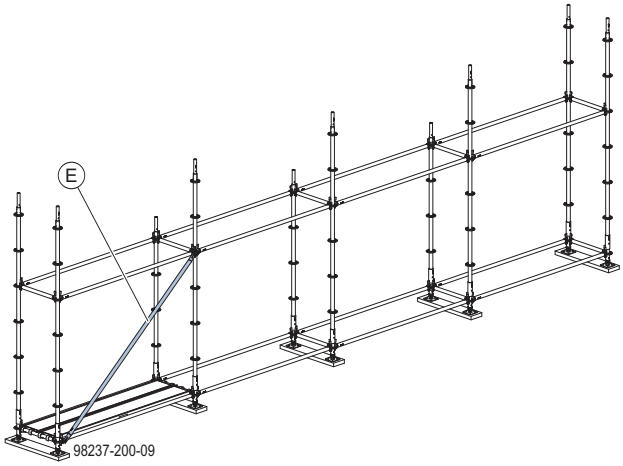
C Transverse ledger

➤ Install longitudinal ledgers.



D Longitudinal ledger

➤ Install bay brace.

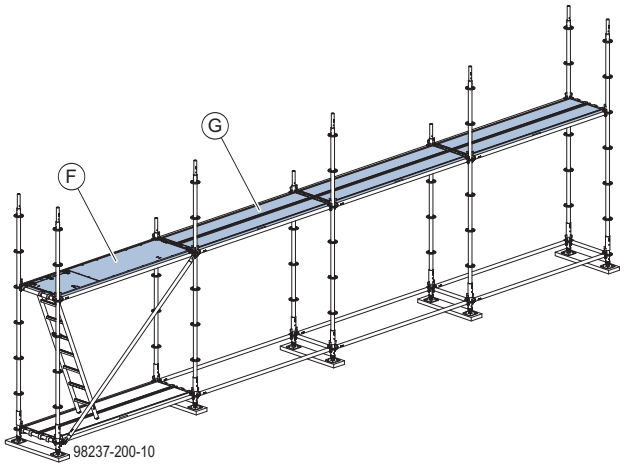


E Bay brace

NOTICE

- Brace at least every 5th bay (4th bay in Australia and North America) with a bay brace.
- Always attach bay braces to nodes where horizontal ledgers are engaged.
- By preference, install the bay braces on the outside of the scaffold.

➤ Install alum. hatch deck and steel planks 32cm and secure against uplift.



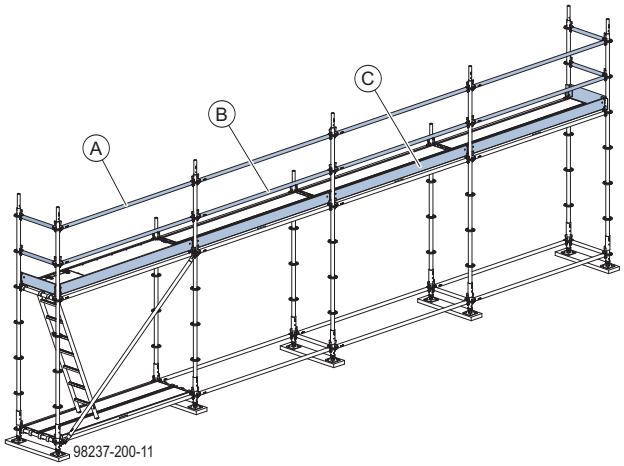
F Alum. hatch deck
G Steel plank 32cm

WARNING
➤ Keep hatches closed at all times except when they have to be opened to allow vertical access!

Successive scaffolding levels

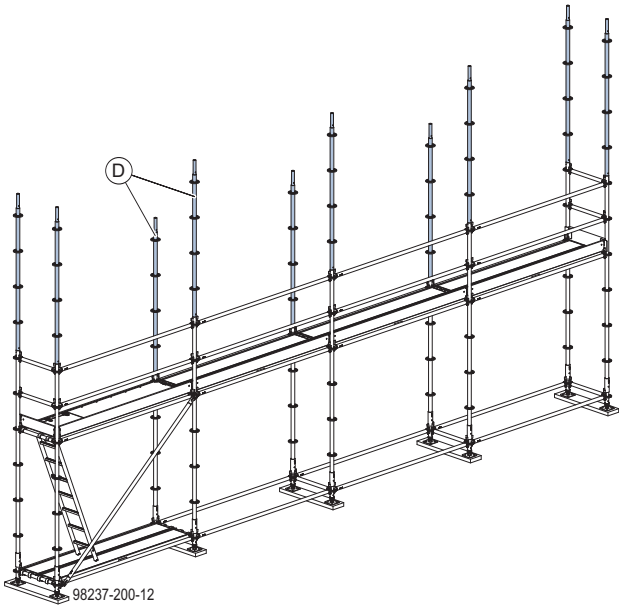
WARNING
For assembly of all remaining scaffolding levels it is essential to implement suitable measures to prevent falls, for example:
➤ Use of a advancing guardrail
➤ Personal fall-arrest system (PFAS)

➤ Install three-part side protection.



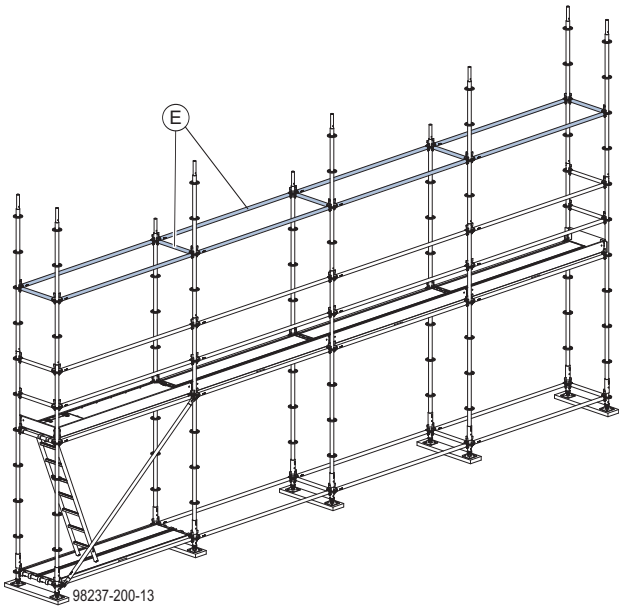
A Ledger as top guardrail
B Ledger as intermediate guardrail
C Steel toeboard

➤ Install standards 2.00m.



D Standard 2.00m

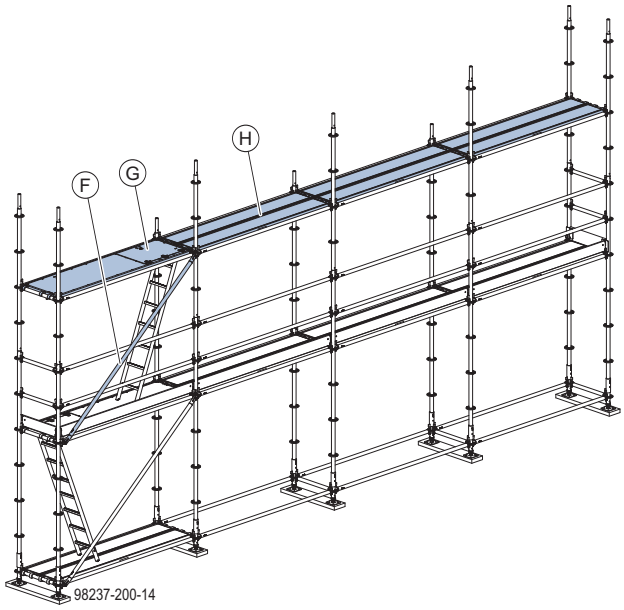
➤ Install transverse ledgers and longitudinal ledgers at a height of 2.0 m above the scaffolding level.



E Transverse ledger and longitudinal ledger

➤ Install bay brace.

➤ Install alum. hatch deck and steel plank 32cm and secure against uplift.



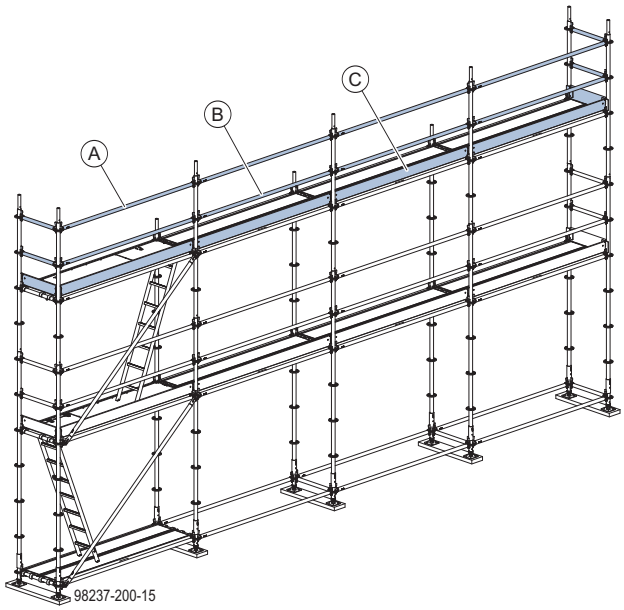
F	Bay brace
G	Alum. hatch deck
H	Steel plank 32cm

Anchoring scaffold to structure

The anchorages necessary for tying to the structure must be installed successively (see the section headed "Anchoring to the structure").

Completing topmost scaffolding level

➤ Install three-part side protection on the topmost working level of the scaffold.



A	Ledger as top guardrail
B	Ledger as intermediate guardrail
C	Steel toeboard

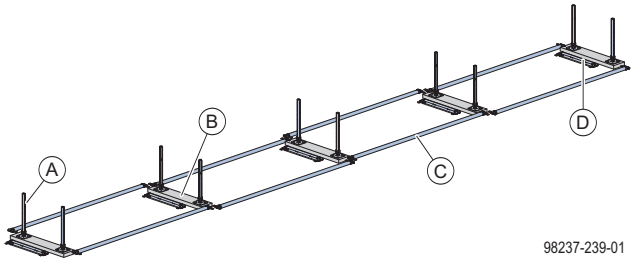
Assembly of facade scaffold without stairway - U-Type

Scaffold base

NOTICE

Make sure that the sub-base is of sufficient load-bearing strength. If necessary, use suitable sole boards to distribute load (e.g. wooden planks).

➤ Distribute the Base jacks 60cm with the necessary sole boards, spacing them correctly.



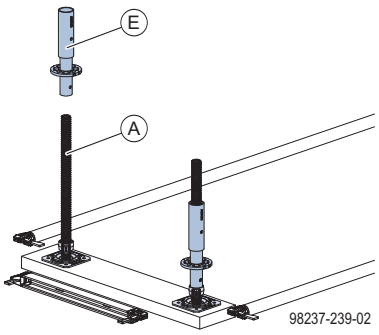
A Base jack 60cm
B Sole board (e.g. plank)
C Longitudinal ledger
D Transverse ledger U

WARNING

➤ Position the scaffold so as to comply with the maximum permitted wall-to-scaffold gap as specified by national regulations (e.g. 30 cm) to prevent a fall hazard between wall and scaffold on all scaffolding levels.

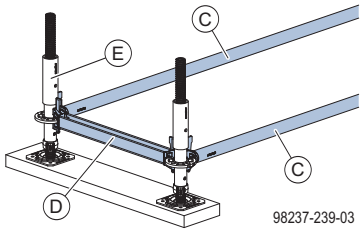
- Laying out the longitudinal ledgers and transverse ledgers in advance makes it easier to space the Base jacks 60cm correctly.
- Spin the nuts of all the Base jacks 60cm down to approx. 5 cm above the base plate. This maximises the range of height adjustment.

➤ Install a Starter base collar on each Base jack 60cm.



A Base jack 60cm
E Starter base collar

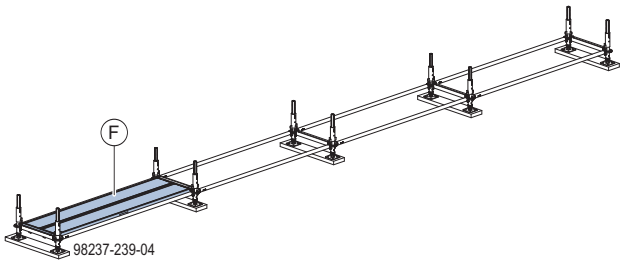
➤ Connect the ledgers to the Starter base collars (leave the wedges loose).



C Longitudinal ledger
D Transverse ledger U
E Starter base collar

Check that the bays are square by measuring the bay diagonally.

Engaging decking in the first bay makes it easier to keep the successive scaffold bays correctly squared.

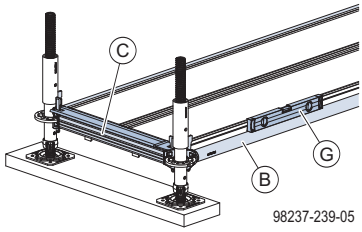


F Decking

NOTICE

The access bay has to be planked to support the ladder foot of the ladder hatch deck of the next lift.

➤ Compensate for differences in grade level by turning the Handle nuts for base jacks. Level and line the scaffold base in the longitudinal and transverse directions.



B Longitudinal ledger
C Transverse ledger
G Spirit level

NOTICE

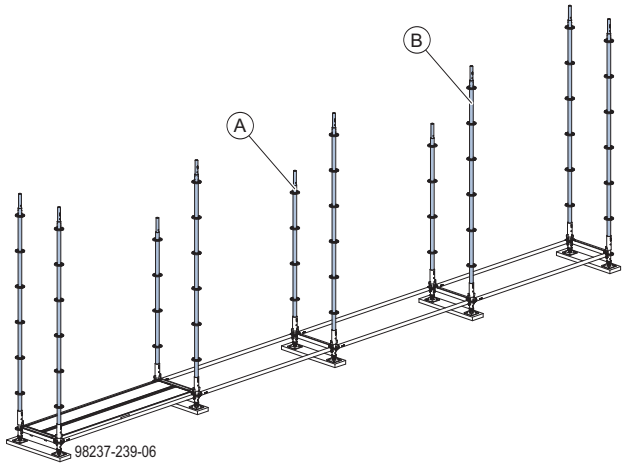
On sloping ground, level the load-spreading sole boards so that the scaffold base plates are horizontal.

- In order to level the scaffold base correctly, start with the Base jack 60cm at the highest point along the run.
- If the slope is pronounced, it is advisable to use Swivel base jacks 78cm.

➤ After aligning the scaffold bays, drive in the wedges of the ledgers.

First scaffolding level

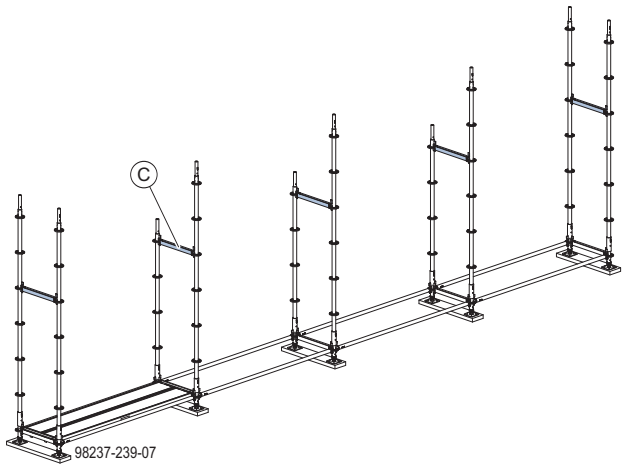
➤ Install standards on Starter base collars.



A Standard 2.00m
B Standard 3.00m

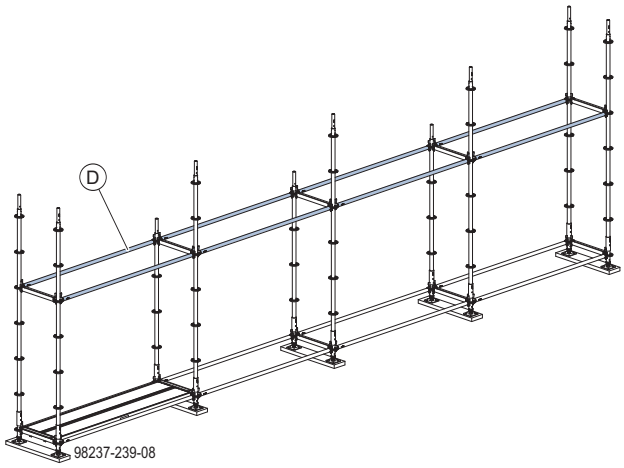
Use 2 standards 3.00 m at each short end so that the three-part side protection can be installed here later on.

➤ Install transverse ledgers U at a height of 2.0 m.



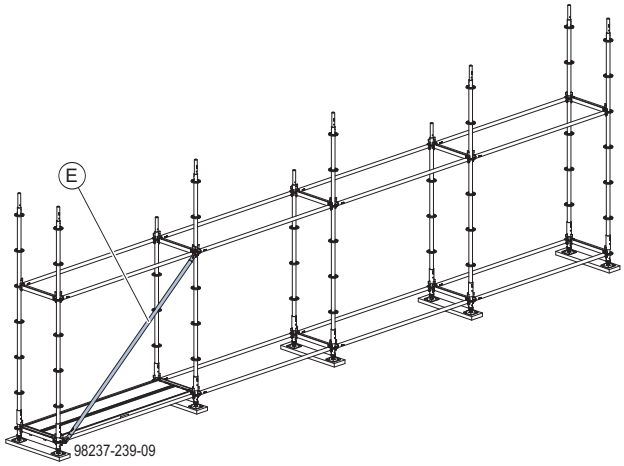
C Ledger U 0.73m

➤ Install longitudinal ledgers.



D Longitudinal ledger

➤ Install bay brace.

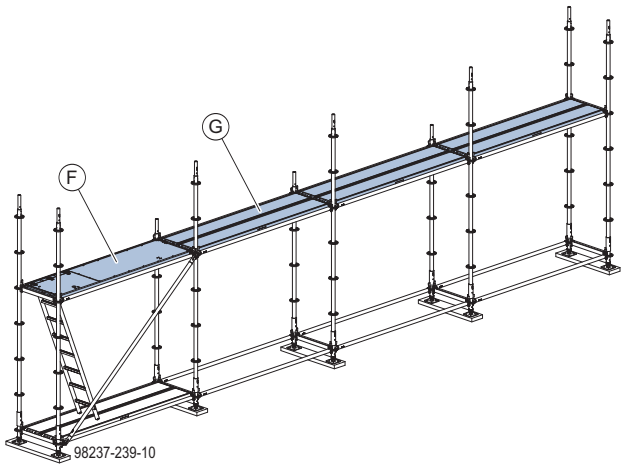


E Bay brace

NOTICE

- Brace at least every 5th bay (4th bay in Australia and North America) with a bay brace.
- Always attach bay braces to nodes where horizontal ledgers are engaged.
- By preference, install the bay braces on the outside of the scaffold.

➤ Install alum. hatch deck and steel planks 32cm and secure against uplift.



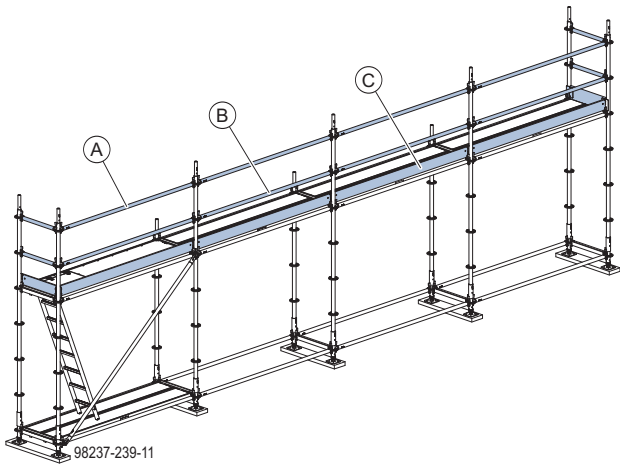
F Alum. hatch deck
G Steel plank 32cm

WARNING
➤ Keep hatches closed at all times except when they have to be opened to allow vertical access!

Successive scaffolding levels

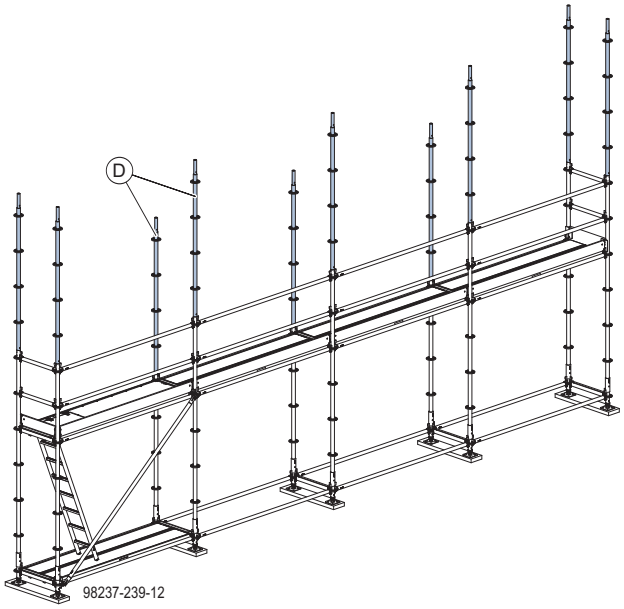
WARNING
For assembly of all remaining scaffolding levels it is essential to implement suitable measures to prevent falls, for example:
➤ Use of a advancing guardrail
➤ Personal fall-arrest system (PFAS)

➤ Install three-part side protection.



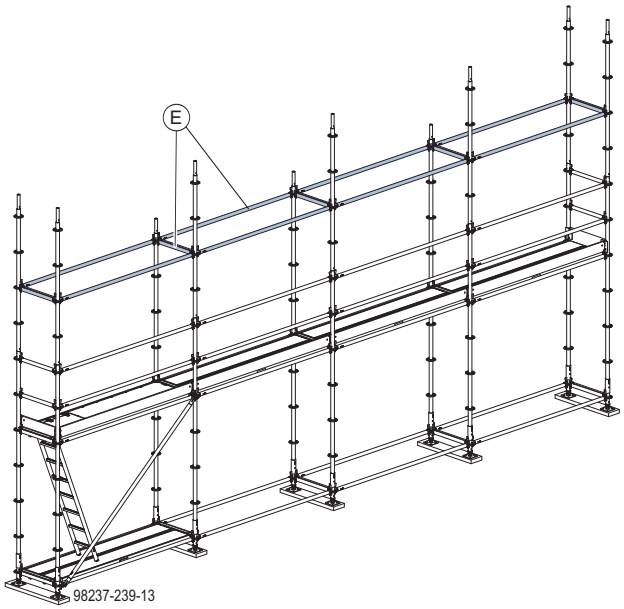
A Ledger as top guardrail
B Ledger as intermediate guardrail
C Steel toeboard

➤ Install standards 2.00m.



D Standard 2.00m

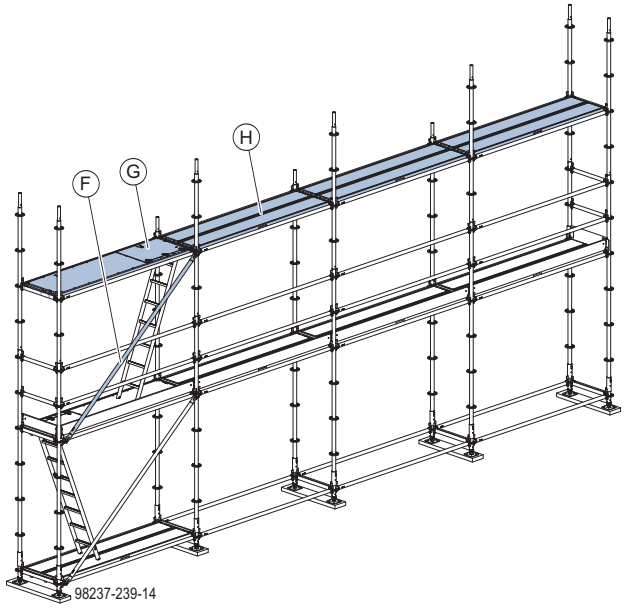
➤ Install transverse ledgers U and longitudinal ledgers at a height of 2.0 m above the scaffolding level.



E Transverse ledger U and longitudinal ledger

➤ Install bay brace.

➤ Install alum. hatch deck and steel plank 32cm and secure against uplift.



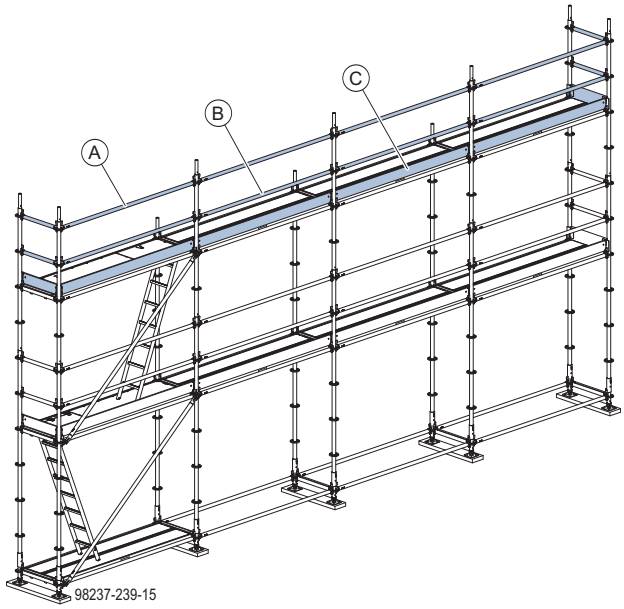
F Bay brace
G Alum. hatch deck
H Steel plank 32cm

Anchoring scaffold to structure

The anchorages necessary for tying to the structure must be installed successively (see the section headed "Anchoring to the structure").

Completing topmost scaffolding level

➤ Install three-part side protection on the topmost working level of the scaffold.



A Ledger as top guardrail
B Ledger as intermediate guardrail
C Steel toeboard

Assembly of facade scaffold with stairway access

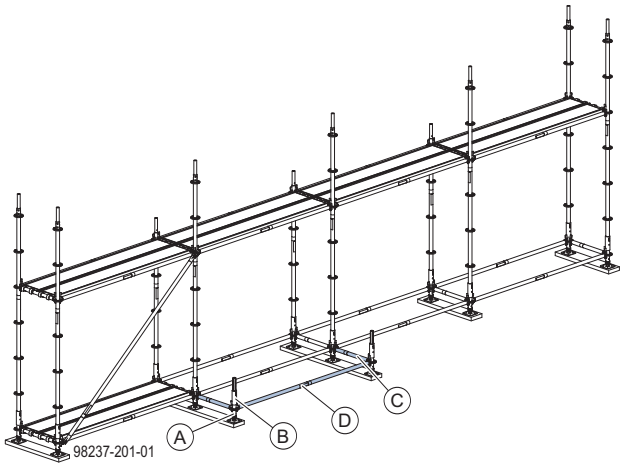
The stairway for a facade scaffold with stairway access is installed in front of an existing scaffold bay of length 2.57 m or 3.07 m (fronting scaffold bay).

Scaffold base and first scaffolding

See the section headed "Assembly of facade scaffold without stairway".

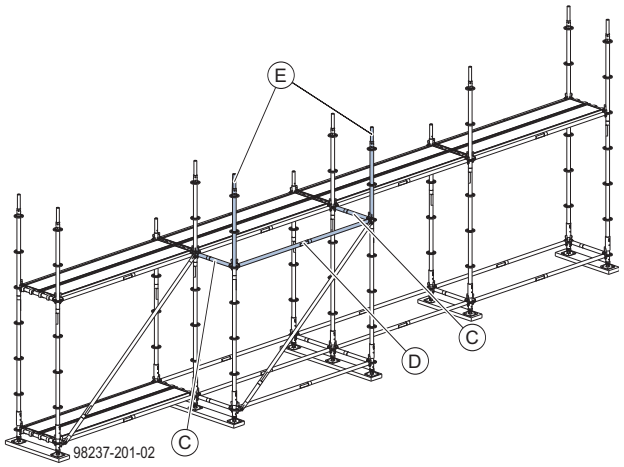
First stairway level

➤ Install, level and align the base frame of the fronting scaffold bay.



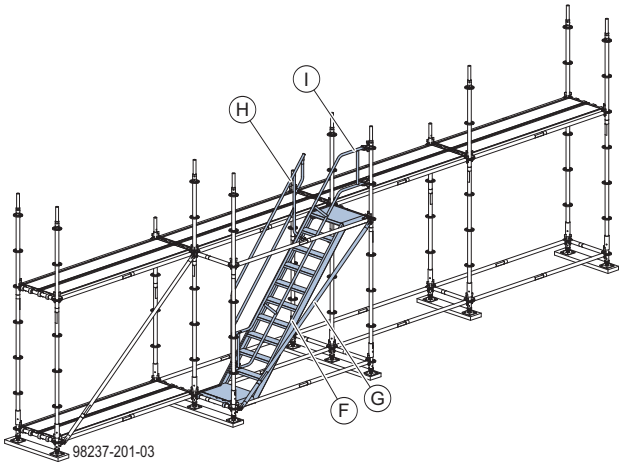
A	Base jack 60cm
B	Starter base collar
C	Ledger 0.73m
D	Ledger 2.57m or Ledger 3.07m

➤ Install standards on Starter base collars.
➤ Install transverse ledgers and longitudinal ledgers at the height of the decking level.



C	Transverse ledger
D	Longitudinal ledger (Ledger 2.57m or Ledger 3.07m)
E	Standard 3.00m

➤ Hook the alum. stair platform into position and secure against uplift.
➤ Install bay brace at the stairway.
➤ Install stair inner guardrail.
➤ Install stair outer guardrail.



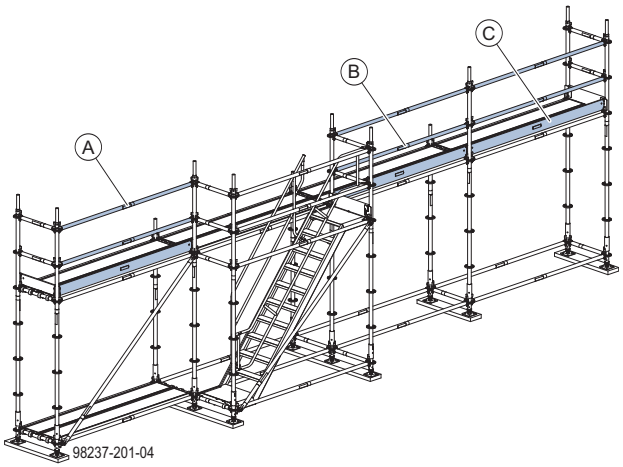
F	Alum. stair platform
G	Bay brace
H	Stair inner guardrail
I	Stair outer guardrail

For further information please refer to chapter "Stairways".

Successive scaffolding levels

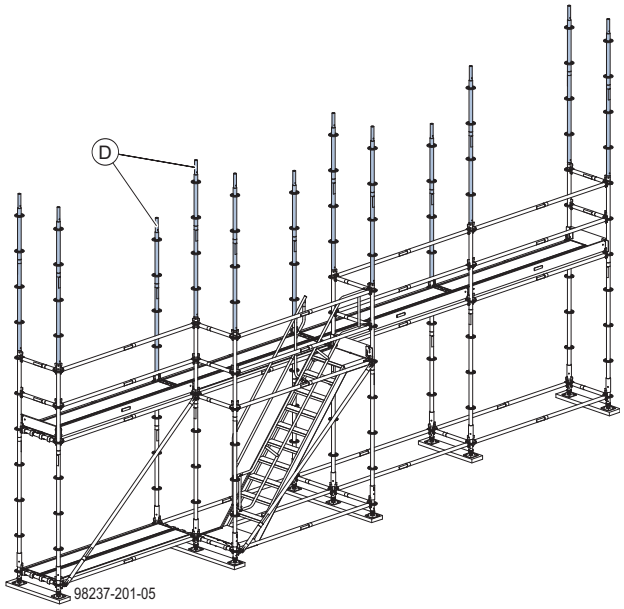
WARNING
For assembly of all remaining scaffolding levels it is essential to implement suitable measures to prevent falls, for example:
➤ Use of a advancing guardrail
➤ Personal fall-arrest system (PFAS)

➤ Install three-part side protection.



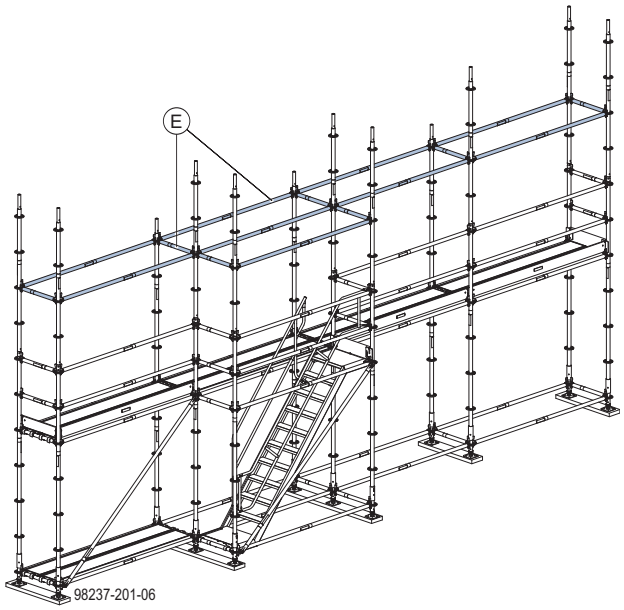
A	Ledger as top guardrail
B	Ledger as intermediate guardrail
C	Steel toeboard

➤ Install standards 2.00m.



D Standard 2.00m

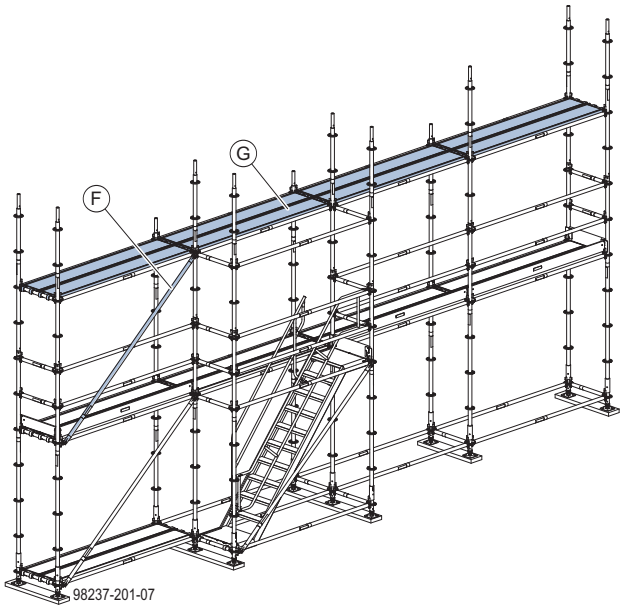
➤ Install transverse ledgers and longitudinal ledgers at a height of 2.0 m above the scaffolding level.



E Transverse ledger and longitudinal ledger

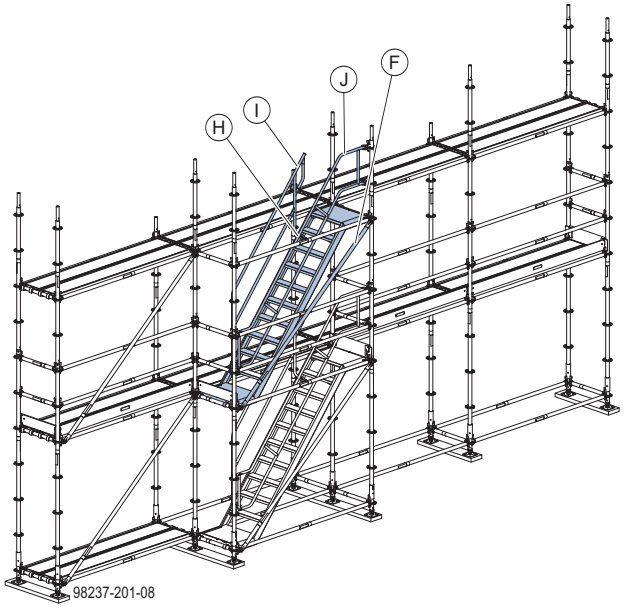
➤ Install bay brace.

➤ Install steel planks 32cm and secure them against uplift.



F Bay brace
G Steel plank 32cm

➤ Hook the alum. stair platform into position and secure against uplift.
➤ Install bay brace at the stairway.
➤ Install stair inner guardrail.
➤ Install stair outer guardrail.



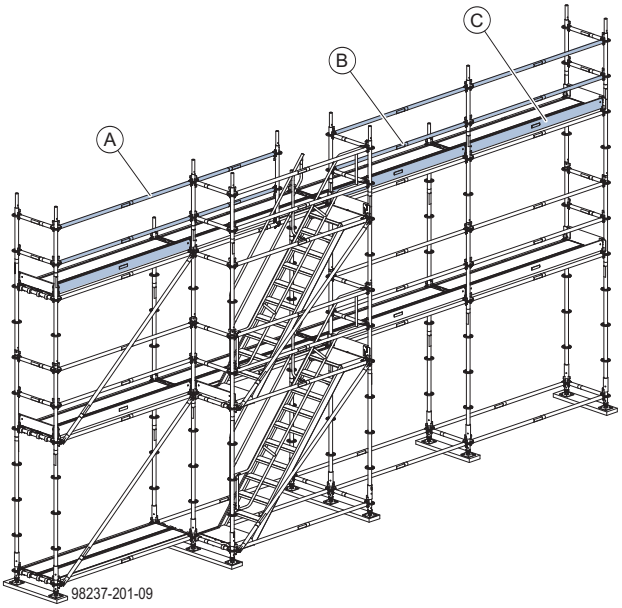
F Bay brace
H Alum. stair platform
I Stair inner guardrail
J Stair outer guardrail

Anchoring scaffold to structure

The anchorages necessary for tying to the structure must be installed successively (see the section headed "Anchoring to the structure").

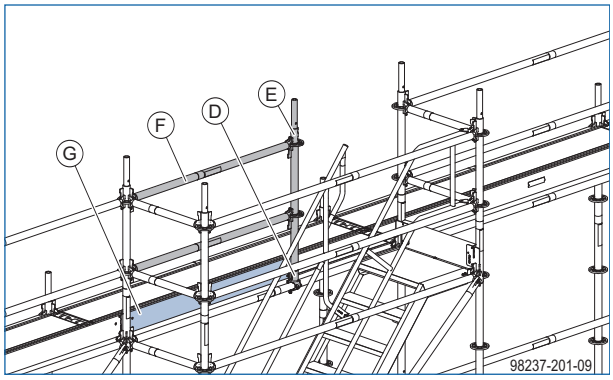
Completing topmost scaffolding level

➤ Install three-part side protection on the topmost working level of the scaffold.



A Ledger as top guardrail
B Ledger as intermediate guardrail
C Steel toeboard

➤ Install fall protection at the stairway.



D Spigot adapter clamp-bolt
E Standard 1.00m
F Ledger 2.07m or Ledger 1.57m
G Steel toeboard 2.08m or Steel toeboard 1.57m

Disassembly of facade scaffold

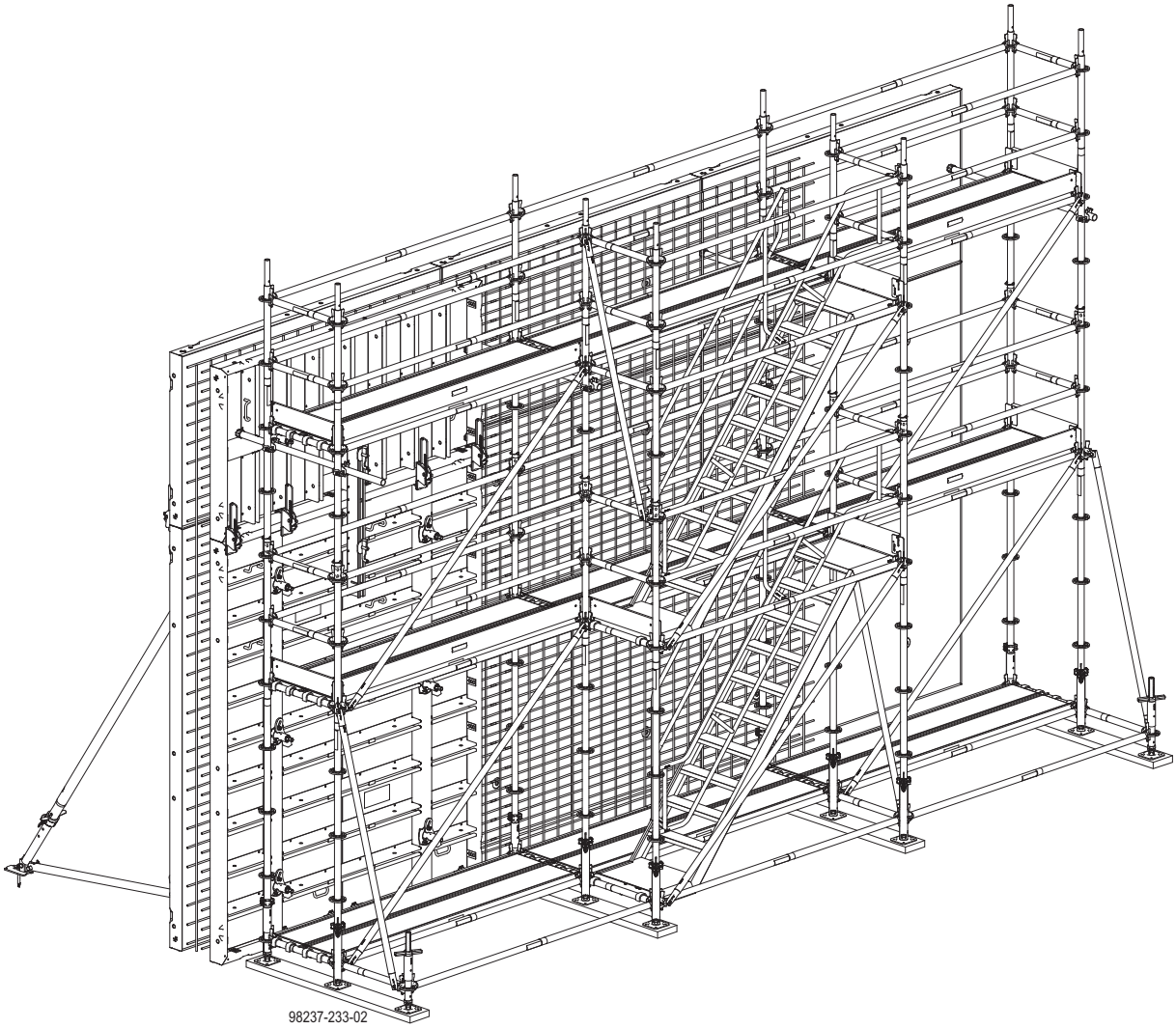
Disassembly of the facade scaffold is the reverse of the assembly procedure.

WARNING

- Each component disengaged must immediately be removed and handed down.
- Do not remove the scaffold anchorages of a scaffolding level until all scaffolding levels above have been fully disassembled.

Rebar scaffold

Rebar scaffolds are crane-liftable working scaffolds used primarily for reinforcing work and for accessing wall formwork.

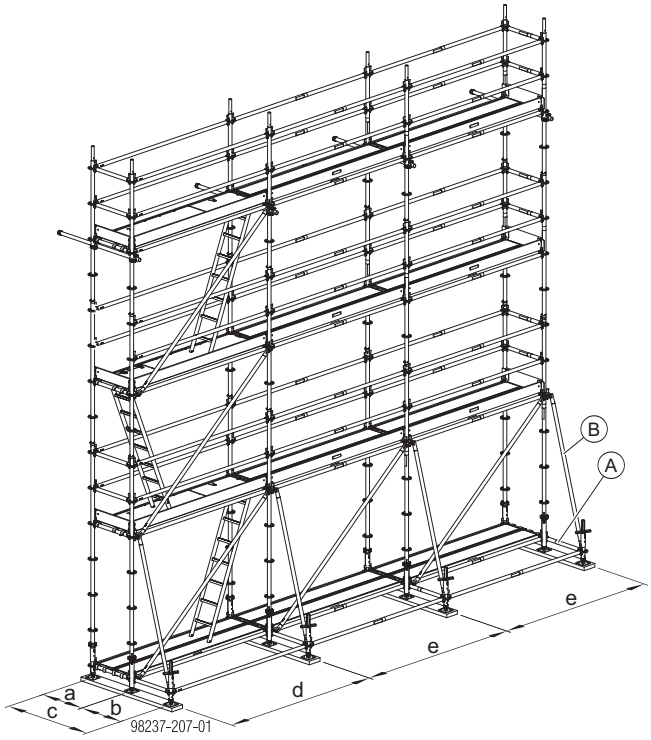


NOTICE

- Crane-lift only rebar scaffold units consisting of max. 3 bays.
- The minimum length of a rebar scaffold bay is 2.57 m.
- Ensure Bay Braces are installed to all bays at the first lift for any proposed lifting.

Rebar scaffold without stairway

Max. topmost deck height 6.50 m



Width:
a ... 0.73 m or 1.09 m
b ... 0.73 m
c ... 1.46 m or 1.83 m

Length of individual bay/access bay:
d ... 2.57 m or 3.07 m

Length of buttress bay:
e ... 1.57 m - 3.07 m

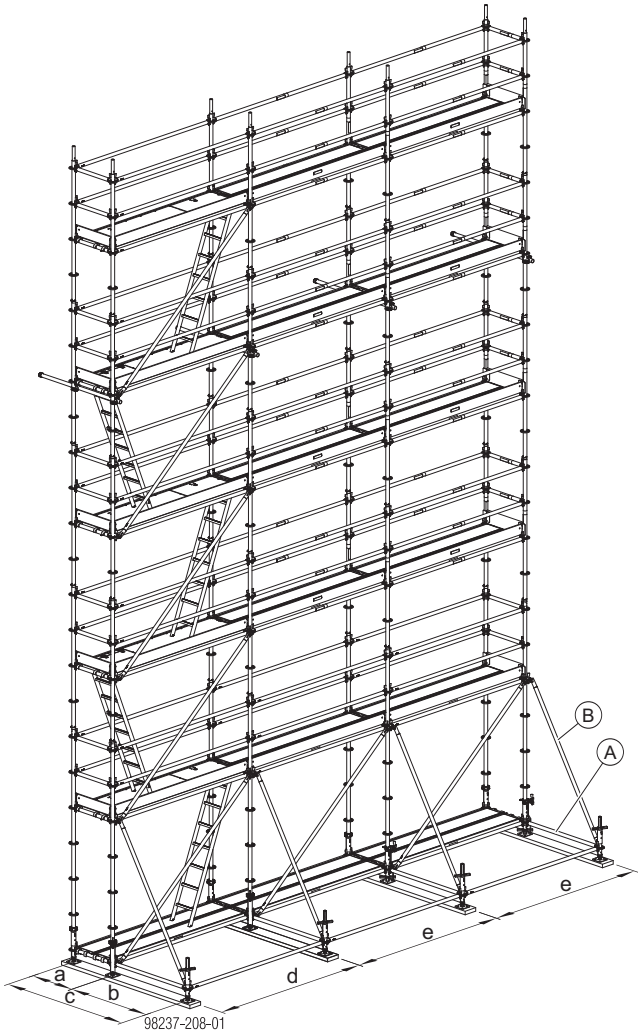
A Ledger 0.73m

B Bay brace 200/73cm

NOTICE

Scaffold not free-standing, adequate ties to be installed to prevent overturning.

Max. topmost deck height 10.50 m



Width:
a ... 0.73 m or 1.09 m
b ... 1.40 m
c ... 2.13 m or 2.49 m

Length of individual bay/access bay:
d ... 2.57 m (only up to height 8.50 m) or 3.07 m

Length of buttress bay:
e ... 1.57 m - 3.07 m

A Ledger 1.40m

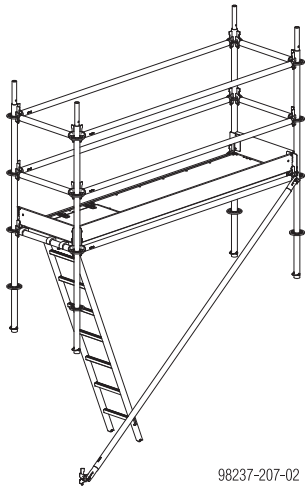
B Bay brace 200/140cm

NOTICE

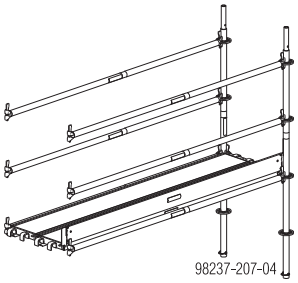
Scaffold not free-standing, adequate ties to be installed to prevent overturning.

Segments

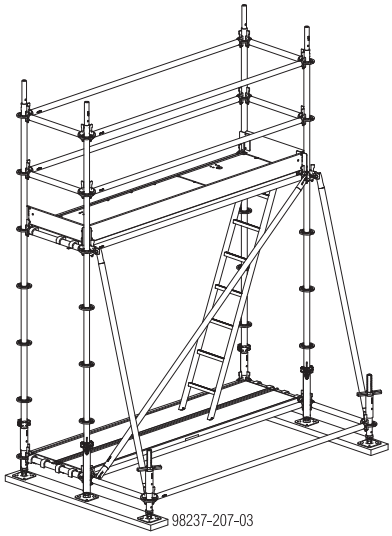
Lift, access bay



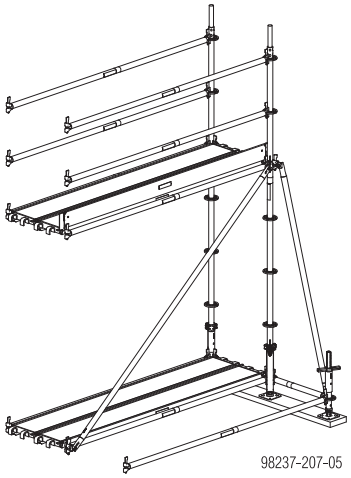
Lift, buttress bay (2.00 m per lift)



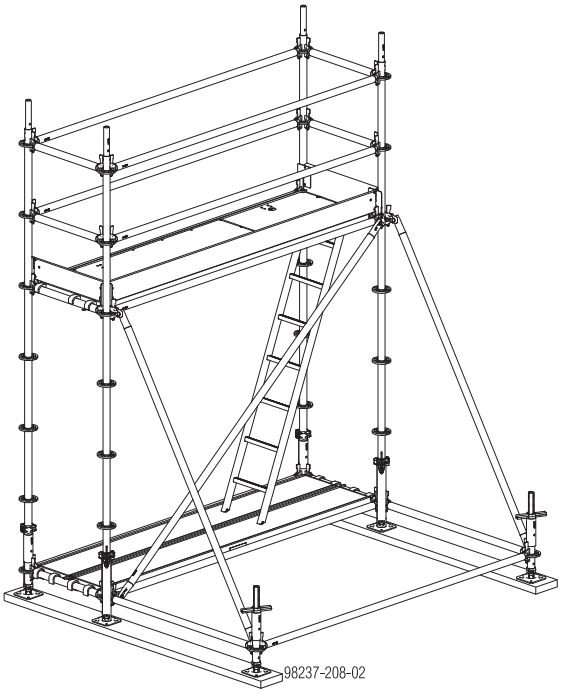
Base access bay up to topmost deck height 6.50 m



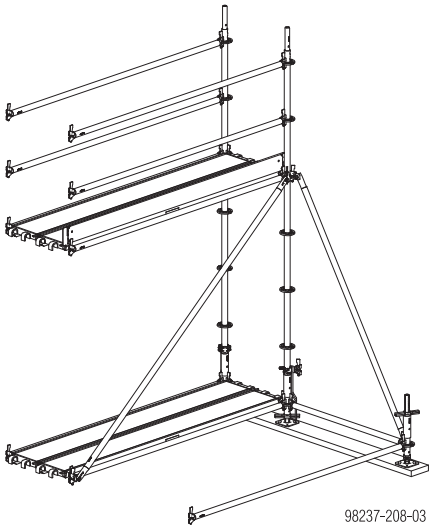
Base buttress bay up to topmost deck height 6.50 m



Base access bay up to topmost deck height 10.50 m

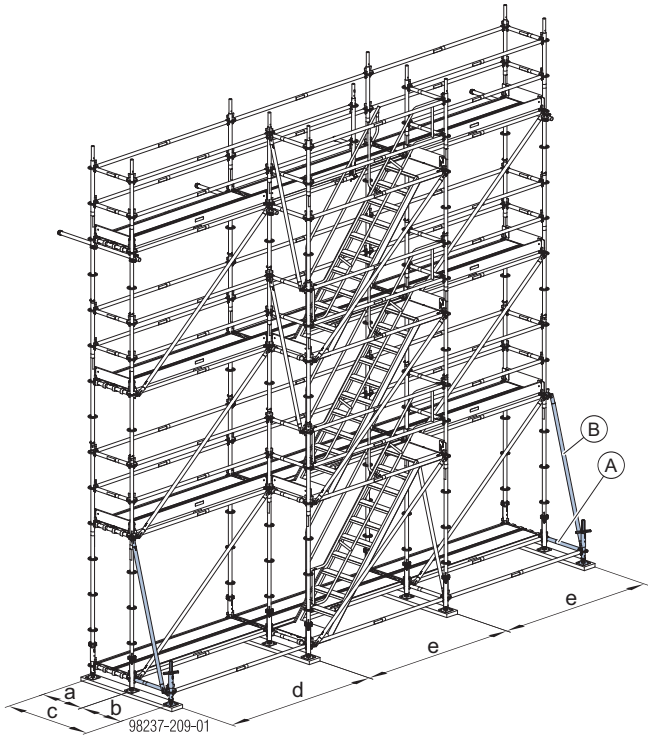


Base buttress bay up to topmost deck height 10.50 m



Rebar scaffold with stairway access

Max. topmost deck height 6.50 m



Width:
a ... 0.73 m or 1.09 m
b ... 0.73 m
c ... 1.46 or 1.82 m

Length, stairway bay:
d ... 2.57 m or 3.07 m

Length of buttress bays:
e ... 1.57 m - 3.07 m

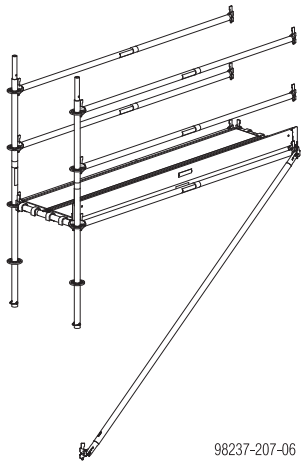
A	Ledger 0.73m
B	Bay brace 200/73cm

NOTICE

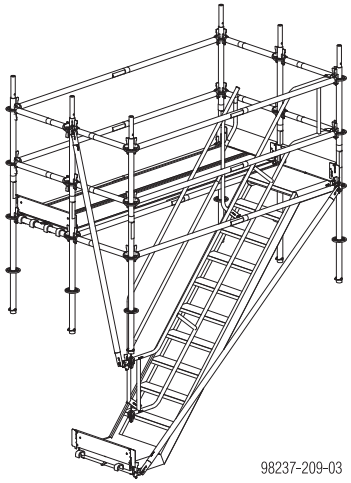
Scaffold not free-standing, adequate ties to be installed to prevent overturning.

Segments

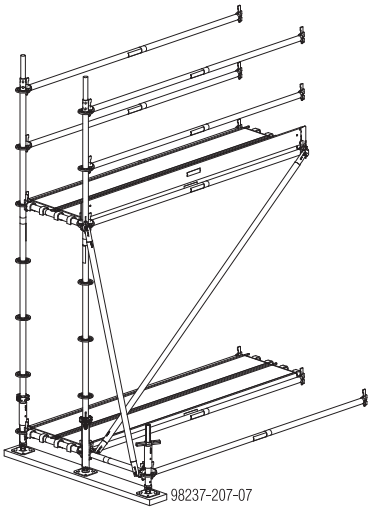
Lift, left buttress bay



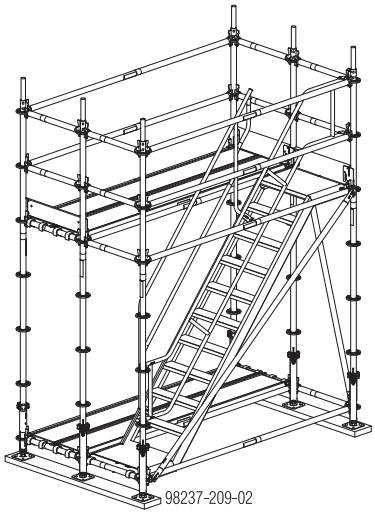
Lift, access bay intermediate level



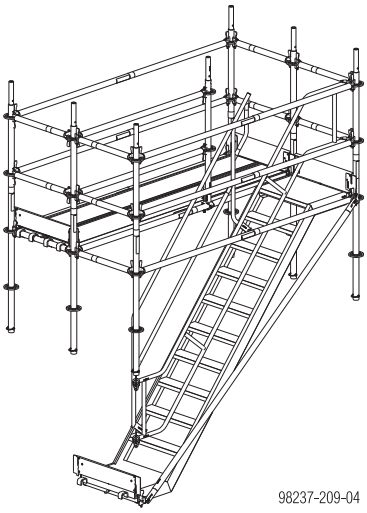
Base, left buttress bay



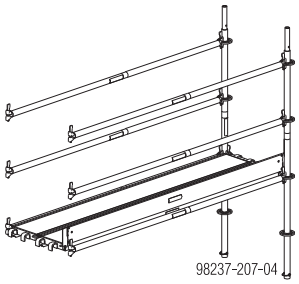
Base access bay



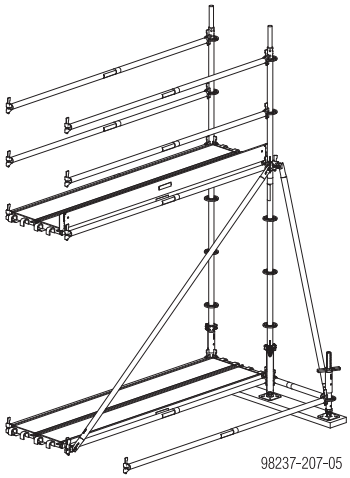
Lift, left access bay topmost level



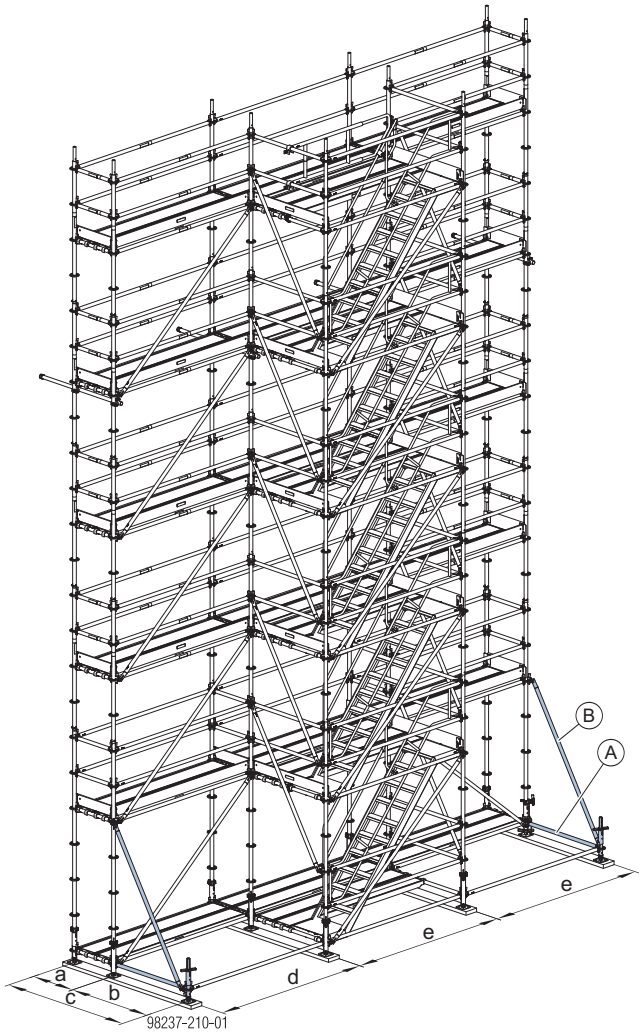
Lift, right buttress bay



Base, right buttress bay



Max. topmost deck height 10.50 m



Width:
a ... 0.73 m or 1.09 m
b ... 1.40 m
c ... 2.13 m or 2.49 m

Length of individual bay/access bay:
d ... 2.57 m (only up to height 8.50 m) or 3.07 m

Length of buttress bay:
e ... 1.57 m - 3.07 m

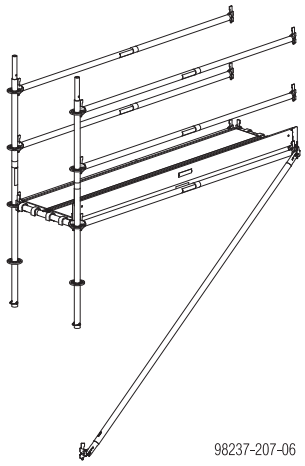
A	Ledger 1.40m
B	Bay brace 200/140cm

NOTICE

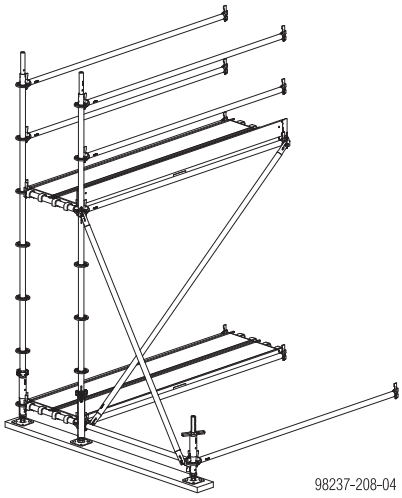
Scaffold not free-standing, adequate ties to be installed to prevent overturning.

Segments

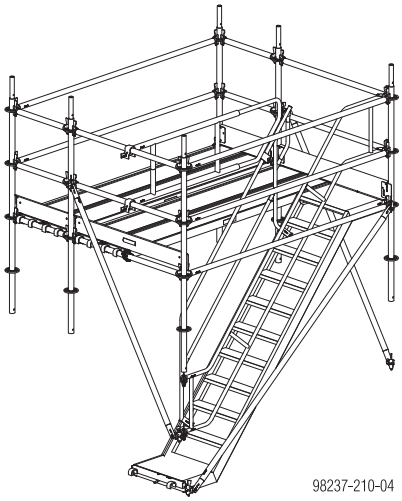
Lift, left buttress bay



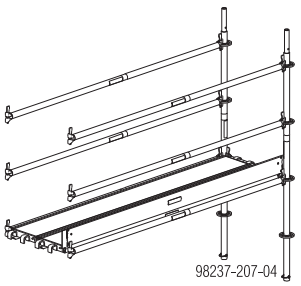
Base, left buttress bay



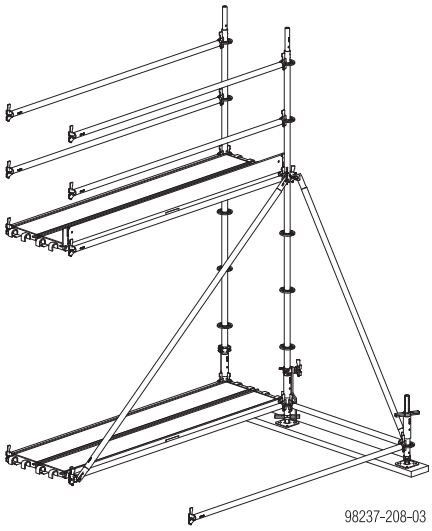
Lift, left access bay topmost level



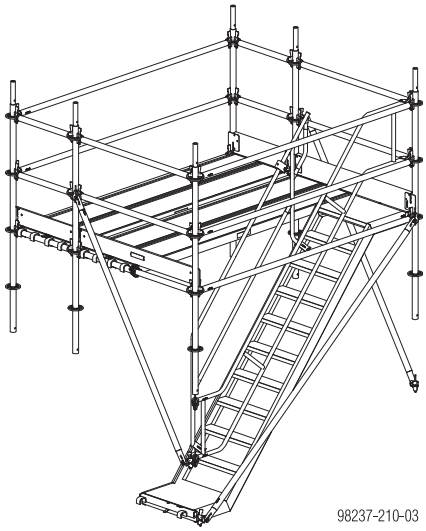
Lift, right buttress bay



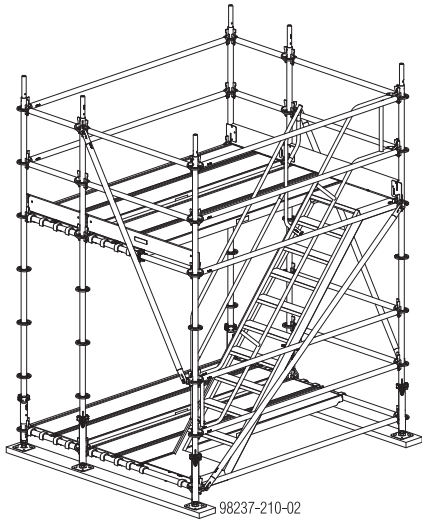
Base, right buttress bay



Lift, access bay intermediate level



Base access bay



Assembly

NOTICE

- Install the outrigger segments to widen the scaffold base, as appropriate for the configuration variant, in the course of the assembly procedure for the first scaffolding level.
- Install braces as appropriate for the configuration variant.

The procedure for assembling a rebar scaffold is similar to that for assembling a facade scaffold (see the section headed ‘Facade scaffold’).

Structural design

NOTICE

The structural design applies for rebar scaffolds consisting of max. 3 bays in front of a closed wall/formwork.

Permitted service load

The rebar scaffolds are designed for the following load classes:

System width	Load class Permitted service load
0.73 m	LC 3 2.0 kN/m² (200 kg/m²)
1.09 m	LC 4 3.0 kN/m² (300 kg/m²)

Please refer to relevant regional Technical Manual or Calculation guide for applicable service load.

Wind pressure

WARNING

If wind speeds > 72 km/h are likely, and when work finishes for the day and before prolonged work-breaks, the scaffold must be appropriately secured.

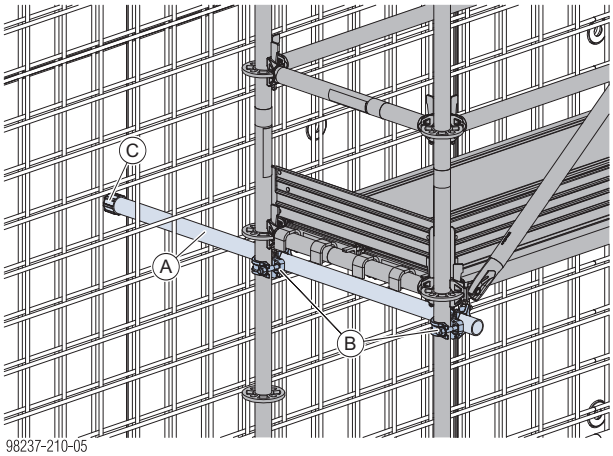
Suitable precautions:

- ➤ Stand 2 rebar scaffolds against each other and interconnect them with tubes and couplers
- ➤ Tie-backs
- ➤ Anchors

Anchoring

WARNING

- ➤ If topmost deck level height is 6.20 m or higher anchoring with pressure ties at each standard is necessary.



A Scaffold tube 48.3mm
B T-bolt right angle clamp
C Tube end cap

Anchoring loads, rebar scaffolds:

Max. topmost deck height [m]	Position of pressure ties	Compressive load [kN]
2.20 - 2.50	No support	
4.20 - 4.50	No support	
6.20 - 6.50	Below 3rd scaffolding level	1.5
8.20 - 8.50		2.0
10.20 - 10.50	Below 4th scaffolding level	2.5

WARNING

- ➤ The load-bearing capacity of the supporting surface for pressure ties must be verified on site.

Use Tube end caps to protect the formwork sheeting against damage.

WARNING

- ➤ Rebar scaffolds that are not standing in front of a closed wall or formwork must be secured against tip-over.

Lifting by crane

Preparation

NOTICE

Crane-lift only scaffold units up to max. 10.5 m in height and consisting of max. 3 bays.

WARNING

Danger from loose and unsecured parts.

➤ Observe the following points before lifting!

Repositioning operation

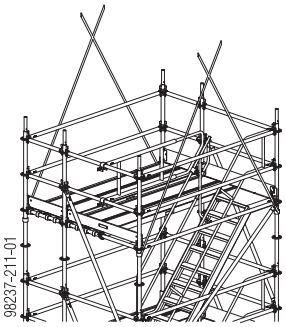
CAUTION

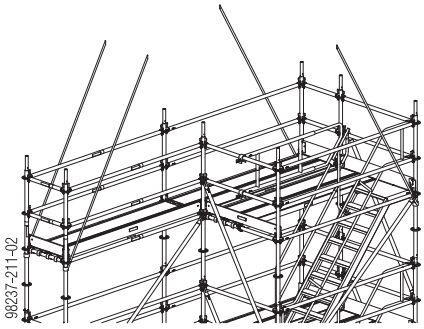
➤ Use textile lifting slings to reposition the scaffold units.

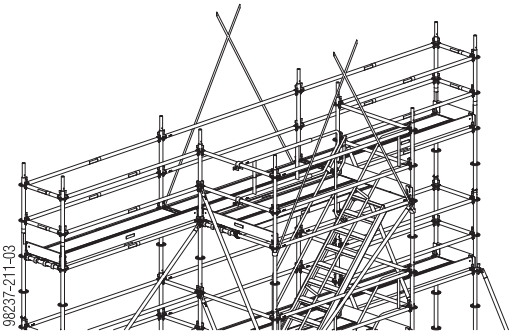
➤ Secure the textile lifting slings only to the standards below the nodes of the topmost scaffold level. Do not attach slings to horizontal ledgers or to braces!

➤ Before and after the repositioning operation, hammer tight the wedges of the ledgers and braces in the area of the lifting-sling attachment points.

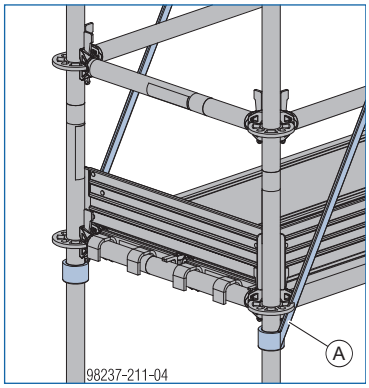
➤ Sling angle β max. 30°.







Close-up



A Lifting sling

Dead weight, rebar scaffolds [kg]:

Scaffold width	Version	Stand width [1]	Max. topmost deck height [m]	Scaffold length		
				1 bay = 3.07 m	2 bays = 6.14 m	3 bays = 9.21 m
0.73 m	Without stair	1.46 m	2.20 - 2.50	370	658	945
			4.20 - 4.50	559	992	1,426
			6.20 - 6.50	747	1327	1907
		2.13 m	8.20 - 8.50	942	1671	2400
			10.20 - 10.50	1130	2006	2881
	With stairway access	1.46 m	2.20 - 2.50	505	793	1081
			4.20 - 4.50	859	1304	1738
			6.20 - 6.50	1176	1778	2358
		2.13 m	8.20 - 8.50	1862	2624	3353
			10.20 - 10.50	-	3176	4051
1.09 m	Without stair	1.82 m	2.20 - 2.50	426	761	1095
			4.20 - 4.50	646	1150	1654
			6.20 - 6.50	865	1540	2214
		2.49 m	8.20 - 8.50	1092	1939	2785
			10.20 - 10.50	1312	2328	3345
	With stairway access	1.82 m	2.20 - 2.50	562	896	1230
			4.20 - 4.50	947	1462	1966
			6.20 - 6.50	1295	1990	2664
		2.49 m	8.20 - 8.50	2003	2884	3730
			10.20 - 10.50	-	3498	4515

The figures in the table give weights in kg.

[1] ... Centre-to-centre distance

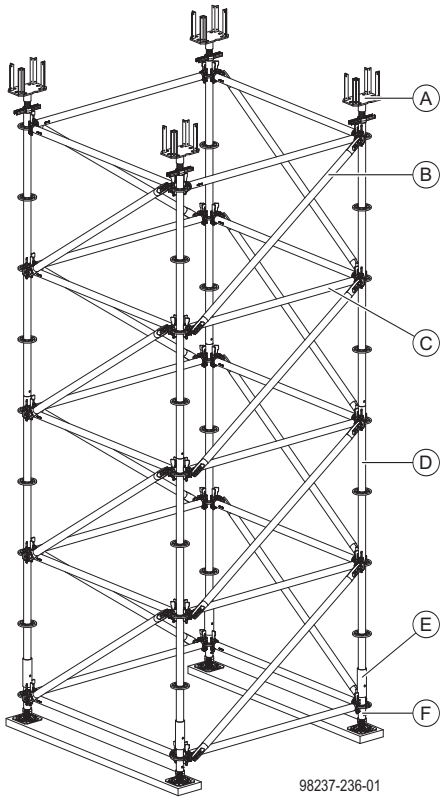
Throughout the repositioning operation, no loose parts such as tools or other items are permitted on the scaffold!

Ringlock Shoring

The illustration below is a generic example of a Ringlock Shoring tower.

The Ringlock system components and shoring accessories are designed to be interchangeable to meet the demands of construction projects around the world and may require the use of heavy-duty base jacks and U-heads.

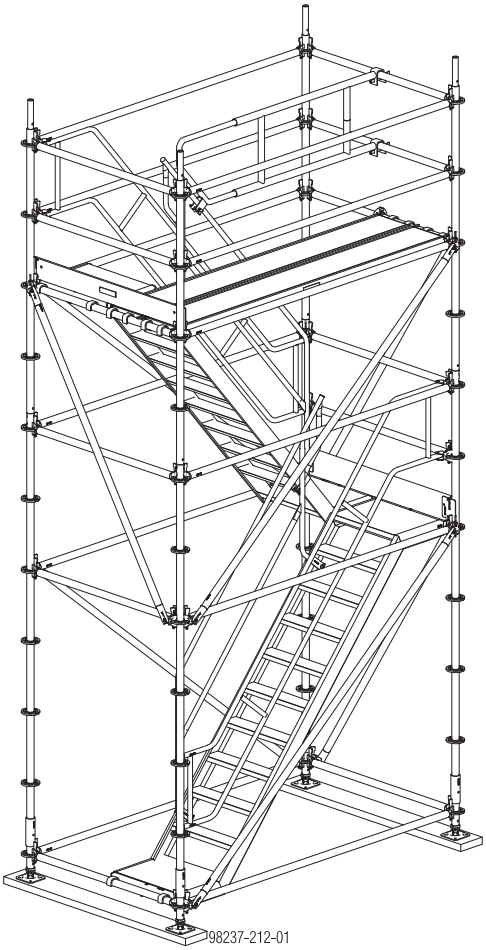
Lift heights can be adjusted to minimize the number of components required to suit load resistance requirements.



A	Head unit
B	Bay brace
C	Ledger
D	Standard
E	Starter base collar
F	Screw / base jack

For more information, see the 'Ringlock Shoring' User Information.

Stairways



The footprint of the stair tower with stair platforms is 2.57 - 3.07 m x 1.40 m.

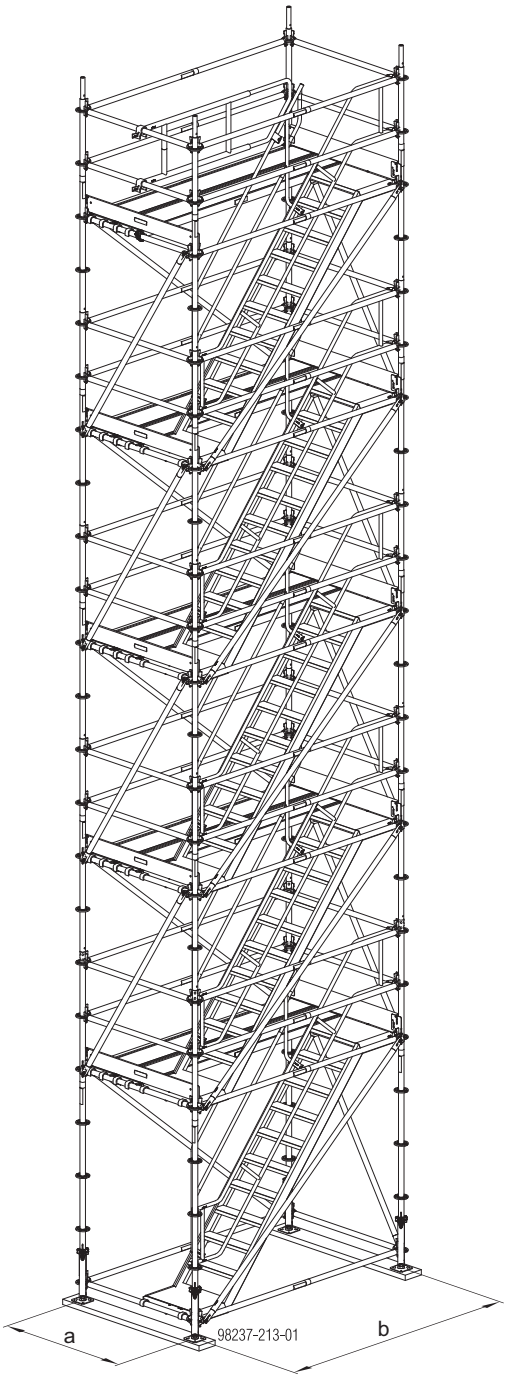
The stairways described below are construction-site stairways:

- Load class 3 to EN 12811-1
- Class A to EN 12811-1

Please refer to local regulations and standards for additional information.

Configuration variants

Stair tower with stairway units in same direction

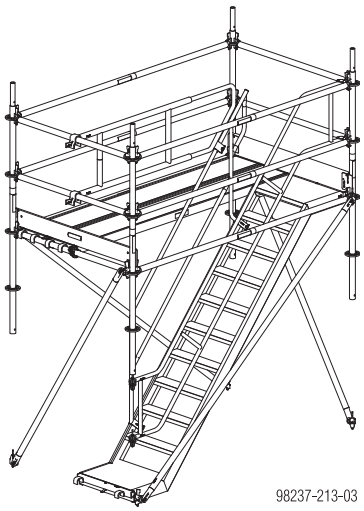


a … 1.40 m
b … 2.57 m or 3.07 m

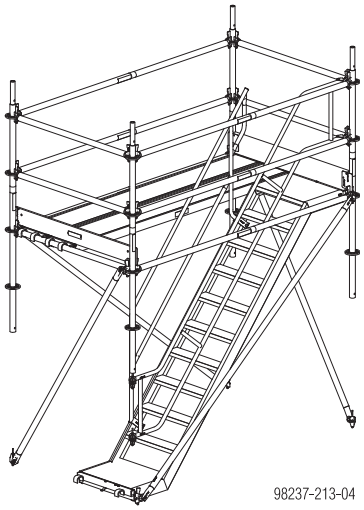
NOTICE

Scaffold not free-standing, adequate ties to be installed to prevent overturning.

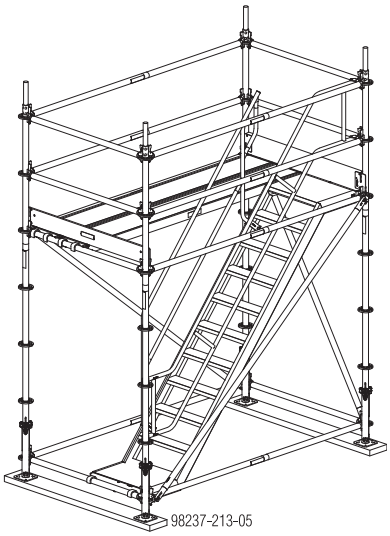
Exit segment



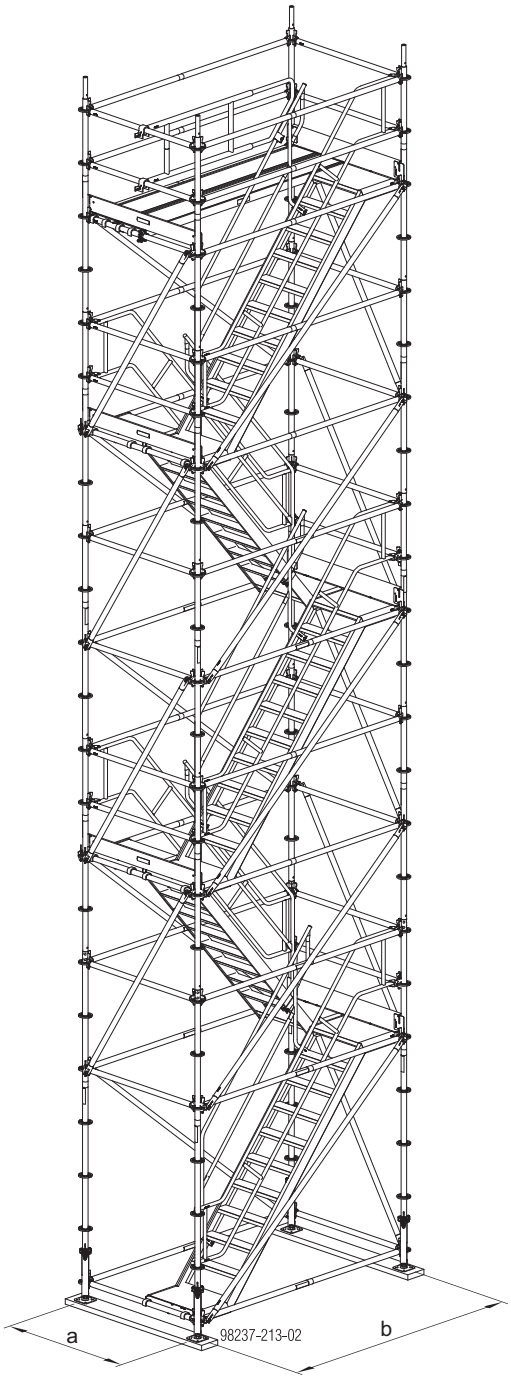
Intermediate segment



Base segment



Stair tower with stairway units in opposite directions

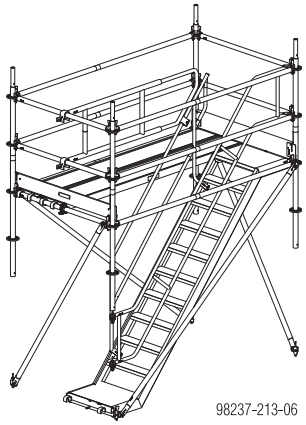


a … 1.40 m
b … 2.57 m or 3.07 m

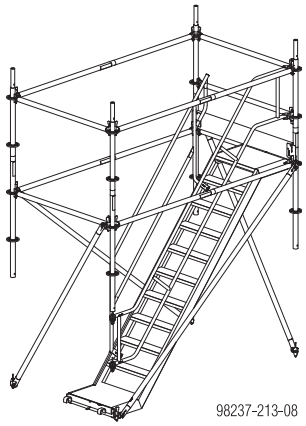
NOTICE

Scaffold not free-standing, adequate ties to be installed to prevent overturning.

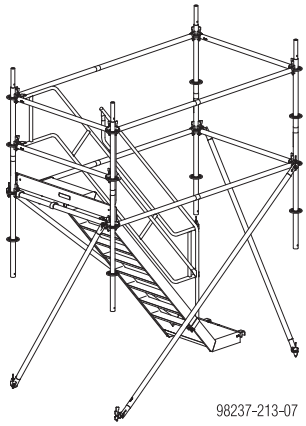
Exit segment



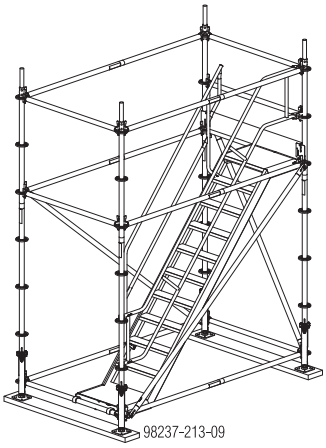
Intermediate segment



Intermediate segment



Base segment



Materials list

Type of stairway	System length	Segments	Base jack 60cm	Starter base collar	Jack retainer for lifting	Standard 2.00m	Standard 3.00m	Spring pin	Ledger 1.40m	Ledger 2.57m	Ledger 3.07m	Bay brace 200/140cm	Bay brace 200/157cm	Bay brace 200/307cm	Steel plank 32/257cm	Steel plank 32/307cm	Steel toeboard yellow 1.40m	Alum. stair platform 200/257cm	Alum. stair platform 200/307cm	Stair outer guardrail 200/257cm	Stair outer guardrail 200/307cm	Stair inner guardrail 200/257cm	Top inner guradrail	Rosette clamp T-bolt horizontal
Stair tower with stairway units in same direction	2.57m	Base segment	4	4	4	-	4	-	8	8	-	1	2	-	2	-	2	1	-	1	-	1	-	-
		Intermediate segment	-	-	-	4	-	4	6	6	-	2	2	-	2	-	2	1	-	1	-	1	-	-
		Exit segment	-	-	-	4	-	4	6	6	-	2	2	-	2	-	2	1	-	1	-	1	1	1
	3.07m	Base segment	4	4	4	-	4	-	8	-	8	1	-	2	-	2	2	-	1	-	1	1	-	-
		Intermediate segment	-	-	-	4	-	4	6	-	6	2	-	2	-	2	2	-	1	-	1	1	-	-
		Exit segment	-	-	-	4	-	4	6	-	6	2	-	2	-	2	2	-	1	-	1	1	1	1
Stair tower with stairway units in opposite directions[1)]	2.57m	Base segment	4	4	4	-	4	-	7	6	-	1	2	-	-	-	1	1	-	1	-	1	-	-
		Intermediate segment	-	-	-	4	-	4	5	4	-	2	2	-	-	-	1	1	-	1	-	1	-	-
		Exit segment	-	-	-	4	-	4	6	6	-	2	2	-	2	-	2	1	-	1	-	1	1	1
	3.07m	Base segment	4	4	4	-	4	-	7	-	6	1	-	2	-	-	1	-	1	-	1	1	-	-
		Intermediate segment	-	-	-	4	-	4	5	-	4	2	-	2	-	-	1	-	1	-	1	1	-	-
		Exit segment	-	-	-	4	-	4	6	-	6	2	-	2	-	2	2	-	1	-	1	1	1	1

The figures in the table give the number of items needed.

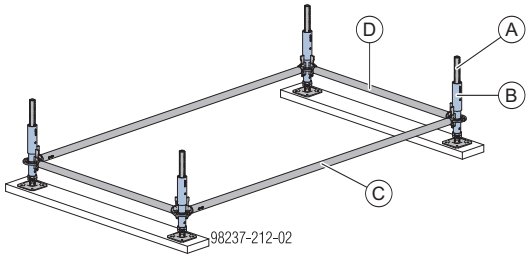
[1)] ... An extra Steel plank 32/140cm is required for carrying out assembly work.

Anchorage to the structure by site.

Assembly

Scaffold base

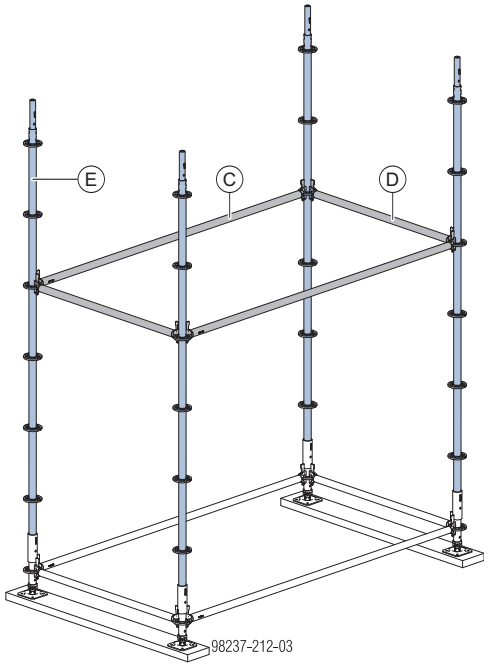
The procedure for assembling the scaffold base is similar to that for assembling a facade scaffold (see the section headed 'Facade scaffold').



A	Base jack 60cm
B	Starter base collar
C	Ledger 2.57m or Ledger 3.07m
D	Ledger 1.40m

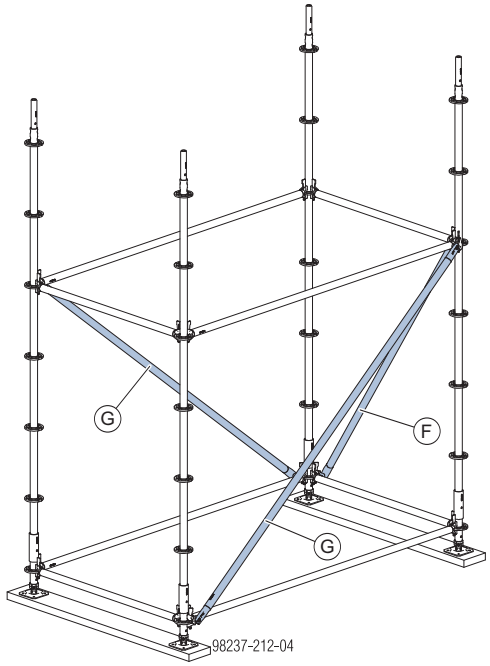
First stairway level

➤ Install standards on Starter base collars.
➤ Install transverse ledgers and longitudinal ledgers at height 2.0m.



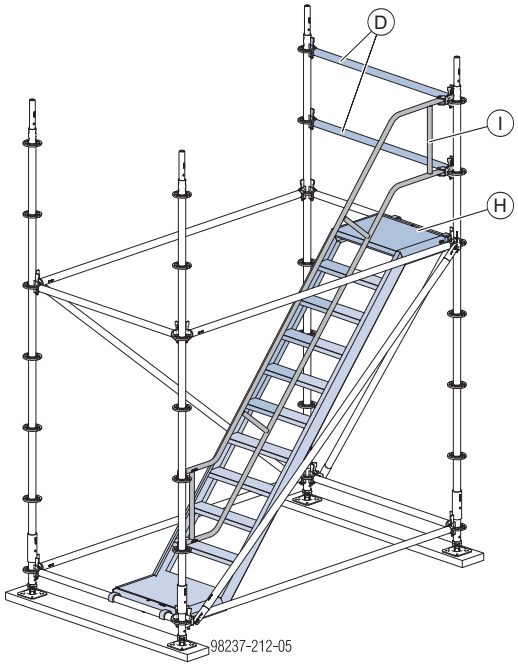
C	Longitudinal ledger (Ledger 2.57m or Ledger 3.07m)
D	Transverse ledger (Ledger 1.40m)
E	Standard 3.00m

➤ Install bay brace.



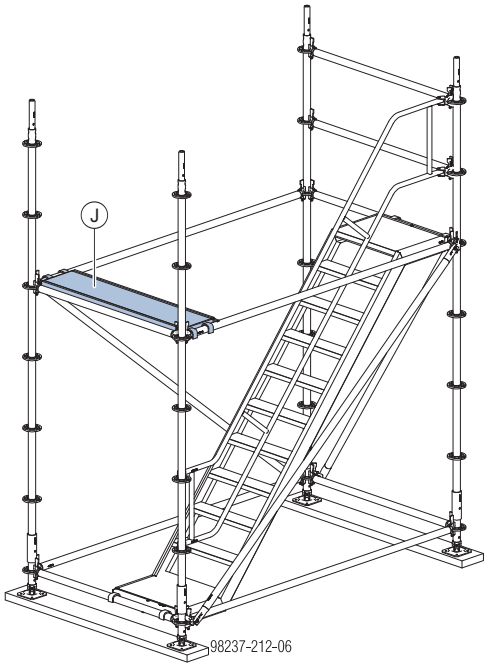
F	Bay brace 200/140cm
G	Bay brace 200/257cm or Bay brace 200/307cm

➤ Hook the alum. stair platform into position and secure against uplift.
➤ Install stair outer guardrail.
➤ Install Ledgers 1.40m as end guardrail.



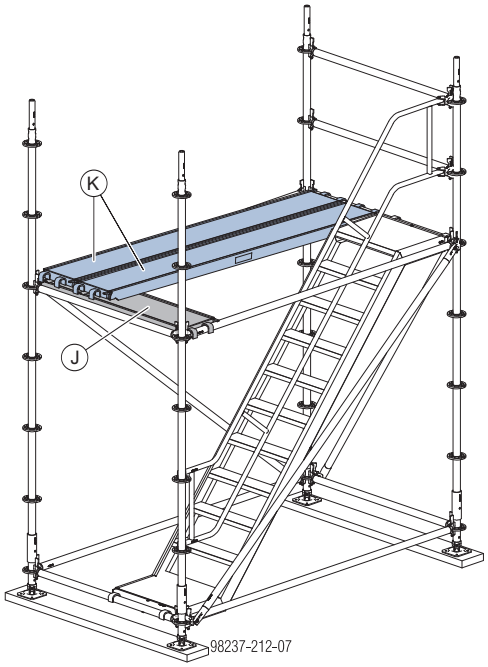
D	Ledger 1.40m
H	Alum. stair platform 200/257cm or Alum. stair platform 200/307cm
I	Stair outer guardrail 200/257cm or Stair outer guardrail 200/307cm

➤ Install Steel plank 32/140cm.



J Steel plank 32/140cm

➤ Install 2 steel planks 32cm parallel with the stair flight.

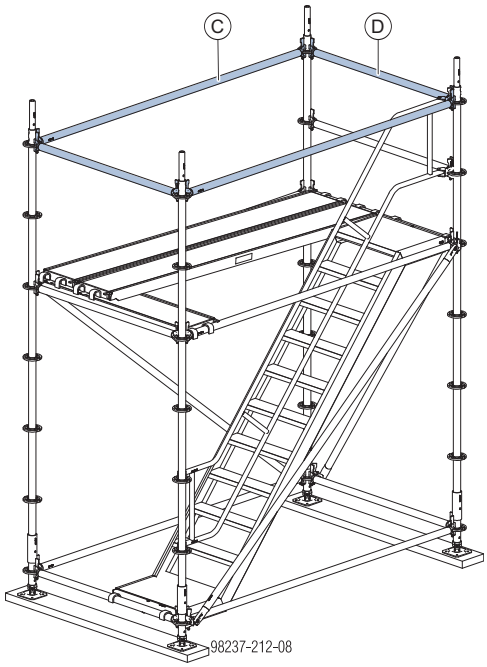


J Steel plank 32/140cm
K Steel plank 32/257cm or Steel plank 32/307cm

NOTICE

At one end the steel planks are only laid on top of the Steel plank 32/140cm.

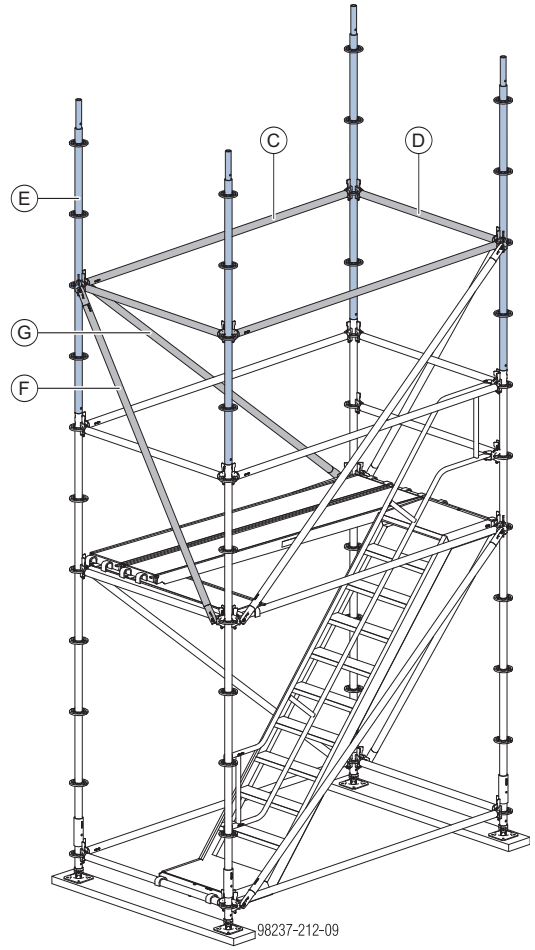
➤ Install ledgers at a height of 1.0 m above the platform.



C Ledger 2.57m or Ledger 3.07m
D Ledger 1.40m

Successive stairway levels

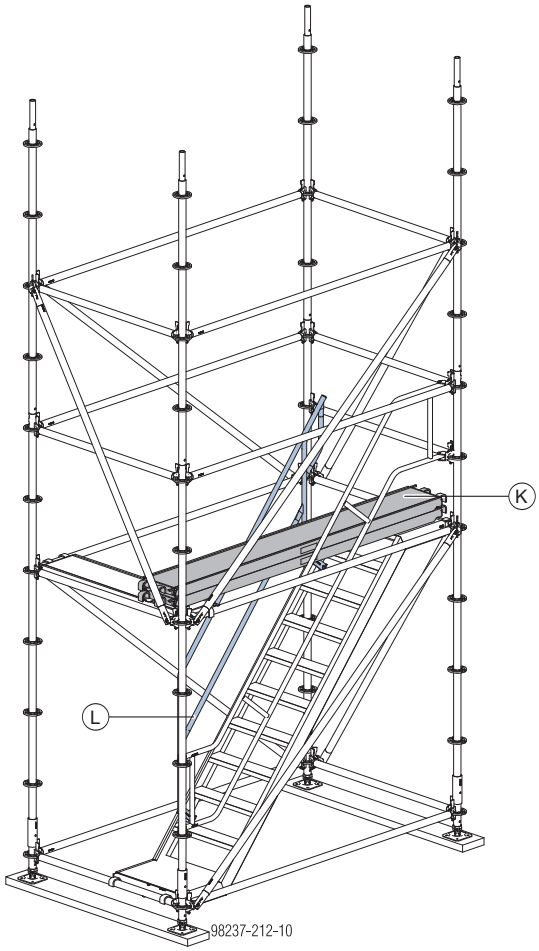
➤ Install standards 2.00m.
➤ Install longitudinal ledgers and transverse ledgers at a height of 2.0 m above the platform.
➤ Install bay braces.



C	Longitudinal ledger (Ledger 2.57m or Ledger 3.07m)
D	Transverse ledger (Ledger 1.40m)
E	Standard 2.00m
F	Bay brace 200/140cm
G	Bay brace 200/257cm or Bay brace 200/307cm

➤ Lay steel planks 32cm on stair platform.

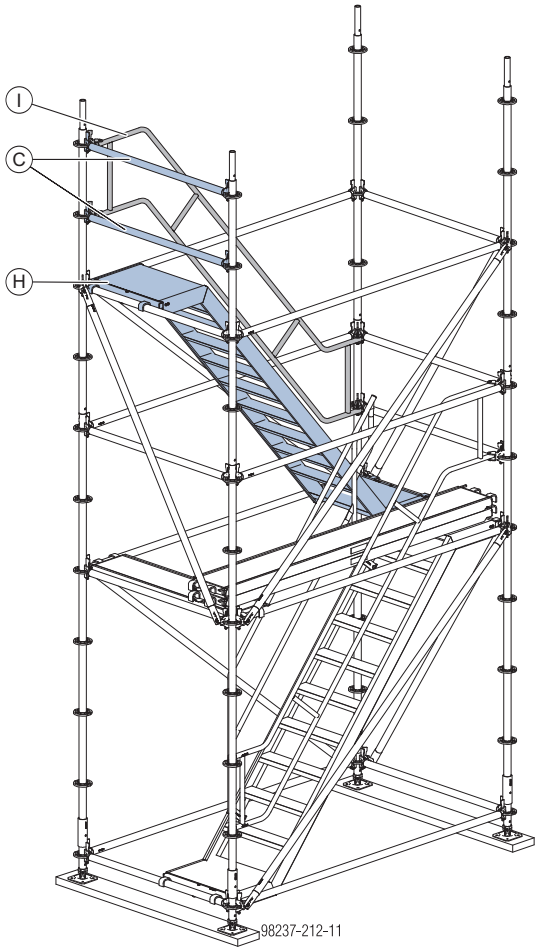
➤ Install stair inner guardrail.



K	Steel plank 32/257cm or Steel plank 32/307cm
L	Stair inner guardrail 200/257cm

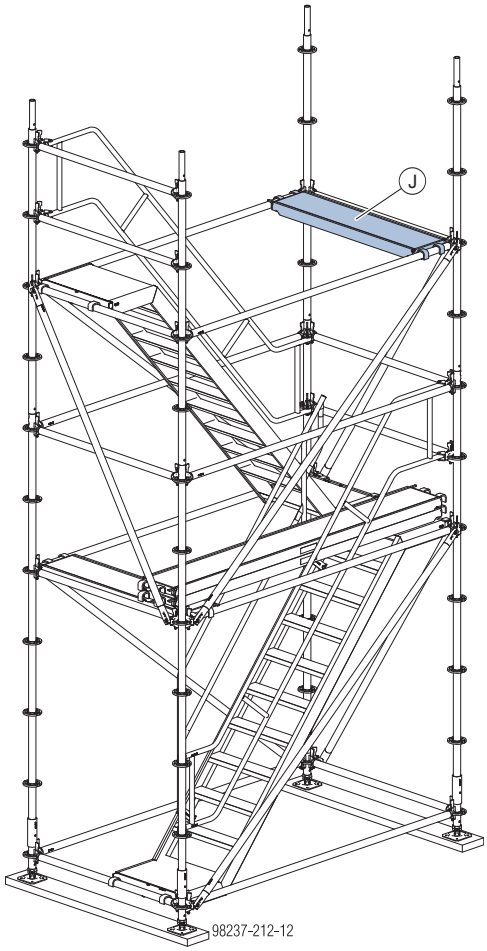
➤ Hook the alum. stair platform into position and secure against uplift.
➤ Install stair outer guardrail.

➤ Install Ledgers 1.40m as end guardrail.



C	Ledger 1.40m
H	Alum. stair platform 200/257cm or Alum. stair platform 200/307cm
I	Stair outer guardrail 200/257cm or Stair outer guardrail 200/307cm

➤ Install Steel plank 32/140cm.



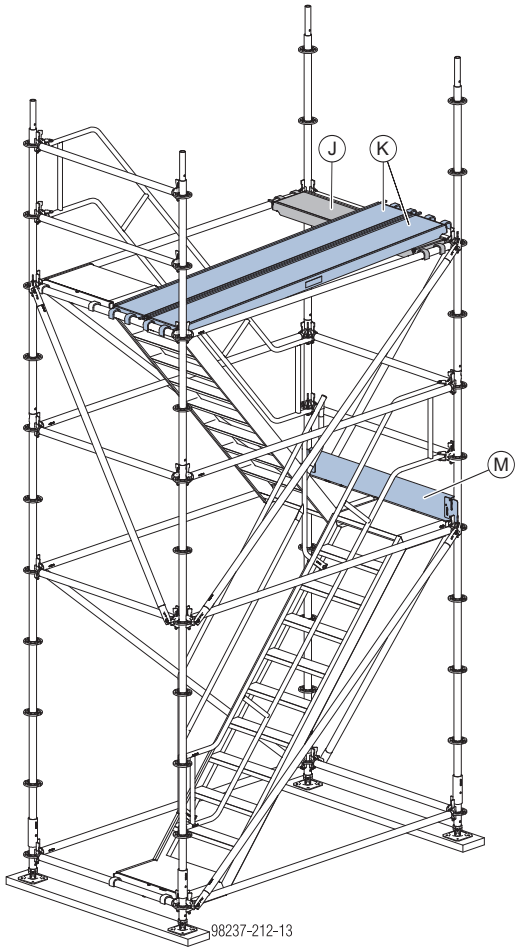
J	Steel plank 32/140cm

➤ Install steel planks 32cm parallel with the stair flight.

NOTICE

At one end the steel planks are only laid on top of the Steel plank 32/140cm.

➤ Install Steel toeboard 1.40m.



J	Steel plank 32/140cm
K	Steel plank 32/257cm or Steel plank 32/307cm
M	Steel toeboard 1.40m

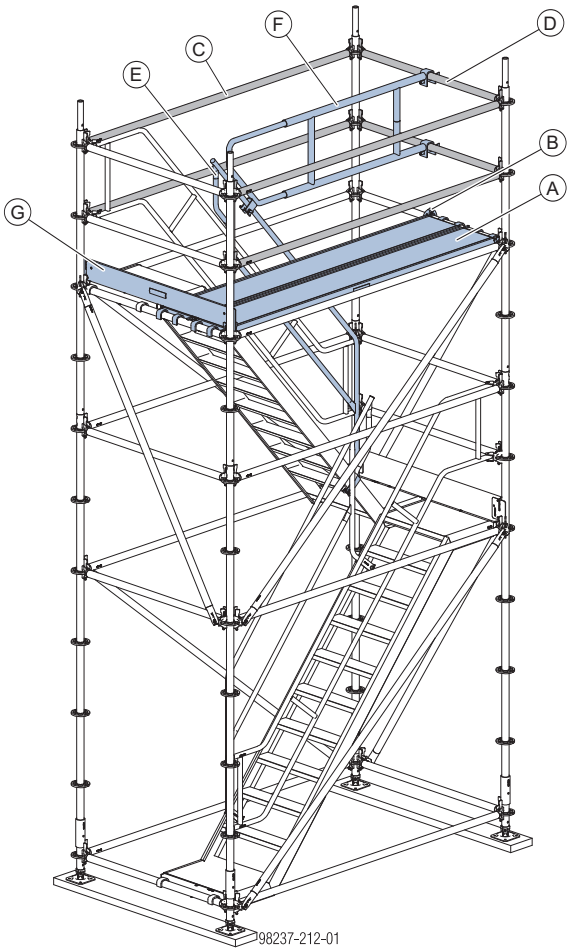
Anchoring stairway

NOTICE

The anchorages necessary for tying to the structure must be installed successively as stairway assembly proceeds (see the section headed ’Structural design, stairways’).

Completing topmost stair level

➤ Install steel plank 32cm parallel with the stair flight.
➤ Install Rosette clamp T-bolt horizontal to hold the steel plank 32cm in place.
➤ Install ledger as side protection.
➤ Install stair inner guardrail 200/257cm.
➤ Hook Top inner guardrail into position and connect it to stair inner guardrail 200/257cm.
➤ Install Steel toeboard 1.40m.



A	Steel plank 32/257cm or Steel plank 32/307cm
B	Rosette clamp T-bolt horizontal or Normal coupler 48mm
C	Ledger 2.57m or Ledger 3.07m
D	Ledger 1.40m
E	Stair inner guardrail 200/257cm
F	Top inner guardrail
G	Steel toeboard 1.40m

Structural design

NOTICE

This structural design applies for the standard-application stair tower without netting or tarpaulin cladding and max. height of 24 m.

Separate statical proof is required for other configurations.

Permitted service load

The stair tower is capable of supporting a uniformly distributed load of 2.0 kN/m² on all treads and platforms within a height of 20 m.

Anchoring to the structure

NOTICE

- Anchoring must proceed step by step as assembly of the stair tower proceeds.
- The stair tower must be anchored at every 2nd lift.
- Make sure that the sub-base for the anchor points is of sufficient load-bearing strength.
- Create an anchor log.

WARNING

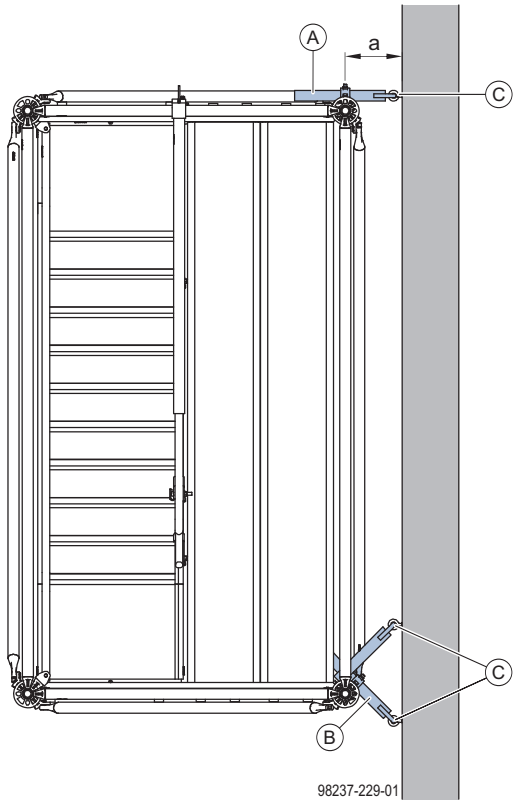
Risk of collapse!

➤ Omitted anchoring or anchoring not in compliance with correct procedure leads to reduced stability of scaffolds.

With eye-bolt

Up to a gap of 30 cm between stair tower and structure, the stair tower can be anchored to the structure with a wall tie tube and a V-anchor on each anchorage level.

Distance a ≤ 0.30 m

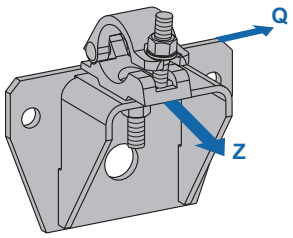


A	Wall tie tube
B	V-anchor (2 wall tie tubes)
C	Eye-bolt

For configurations see the section headed ’Anchoring’.

Required anchoring load 2.9 kN per eye-bolt.

With Anchoring shoe for stair tower



Q ... Shear force
Z ... Tensile force

Permissible force transmission for each Anchoring shoe for stair tower:

- Z = 12 kN perpendicular to the wall
- Q = 6 kN parallel to the wall

Applies when fastened with Cone screw M30 SW50 7cm and Universal climbing cone 15.0 or two anchor-bolts.

Methods for fixing in concrete:

- By using Cone screw M30 SW50 7cm to fix the anchoring shoe to an existing suspension point prepared with Universal climbing cones 15.0 (diameter of holes in anchoring shoe = 32 mm). Hardwood shim (essential for ensuring a firm fit) prevents damage to the concrete (scratch marks).
  This fixing method is possible only with anchoring shoes manufactured from 05/2009 onward.
- By using one or two anchor-bolts (diameter of hole in anchoring shoe = 18 mm).

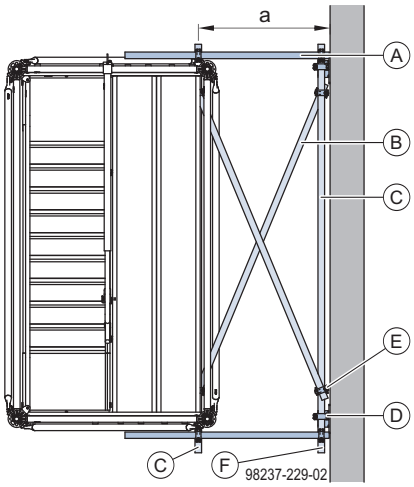
Required load-bearing capacity of the anchor-bolts used:

- Tensile force: $R_d \geq 23.$ kN ($F_{perm} \geq 14.0$ kN)
- Shear force: $R_d \geq 6.6$ kN ($F_{perm} \geq 4.0$ kN)

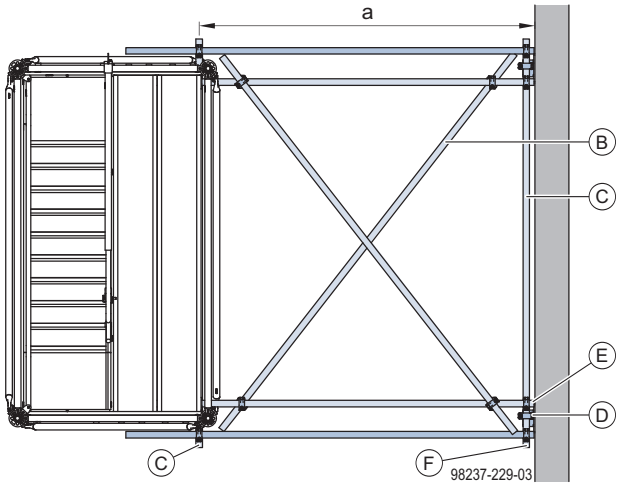
E.g. Hilti HST M16 - in uncracked B30 concrete, or equivalent products from other manufacturers. Follow the manufacturers' applicable fitting instructions.

The stair tower is connected to the Anchoring shoe for stair tower by Scaffold tubes 48.3mm and couplers.

Distance a < 1.00 m



Distance a = 1.00 to 2.50 m



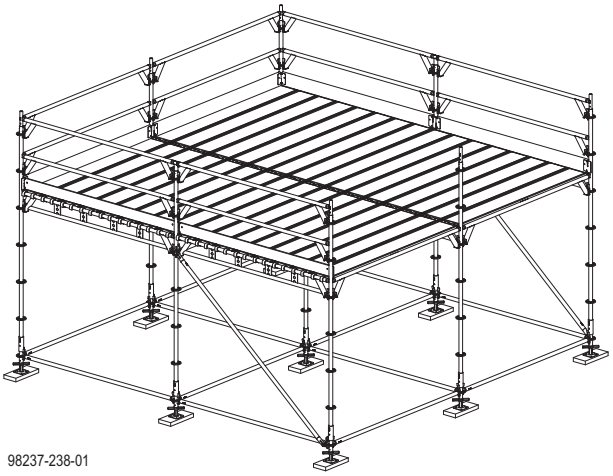
Items needed

Item	Designation	Distance a	
		< 1.00 m	< 2.50 m
A	Scaffold tube 48.3mm (length ≥ distance a)	2	4
B	Scaffold tube 48.3mm (variable length)	2	2
C	Scaffold tube 48.3mm length 3.00 m (tower 2.57 m)	2	2
D	Anchor-bolts for stair tower	2	2
	Anchor-bolts per anchoring shoe	1	2
E	Swivel coupler 48mm	4	4
F	Normal coupler 48mm	6	10

Raised Ledger System (RLS)

The Raised Ledger System (RLS) is compatible with existing Ringlock scaffolds and is a solution four creating seamless, safe working platforms without any protrusions in the platform.

The Raised Ledger System is ideal for the following applications (but not limited to): Birdcages, overhead pavement gantries, suspended platforms, industrial and commercial scaffolds, stage and event scaffolds.



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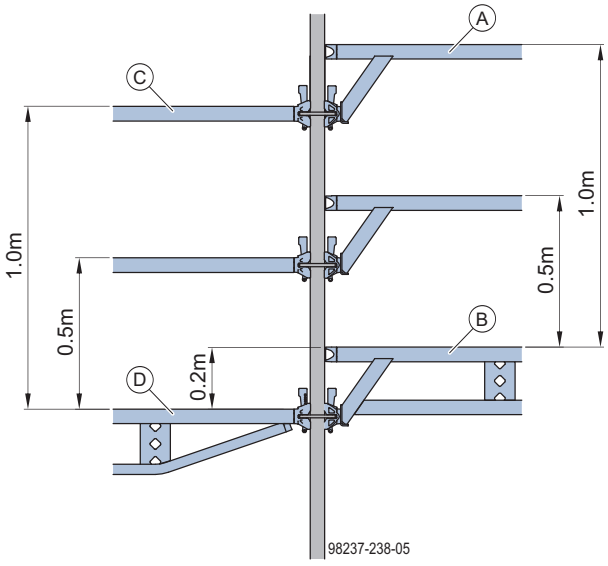
The raised ledger elevates the Ringlock plank 203 mm above a regular Ringlock ledger, therefore the guardrail must also be offset.

The illustration below shows the differences between regular Ringlock ledgers and the raised ledgers.

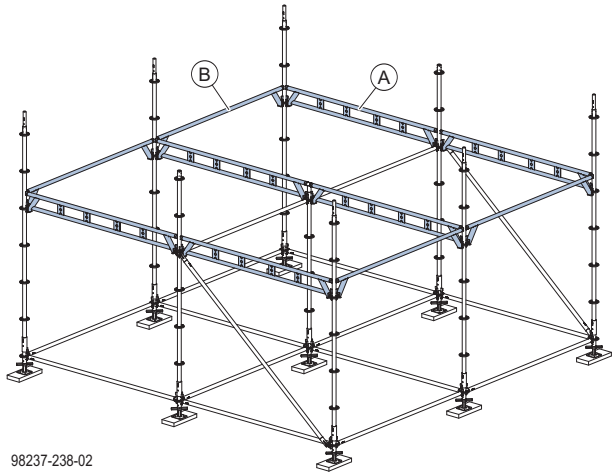


A Raised ledger
B Raised truss ledger
C Ledger
D Truss ledger

How the Raised Ledger System works

➤ Install the Ringlock raised truss ledger onto the rosette at the required location.

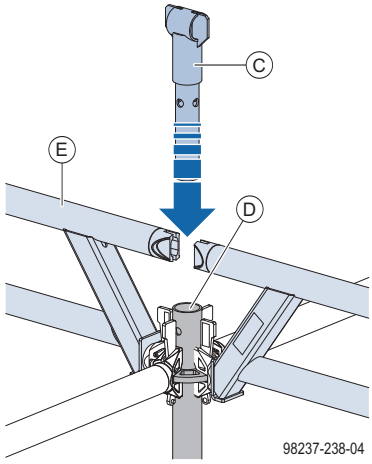
➤ It is recommended to fully wrap the top lift with raised truss ledgers.



A Raised truss ledger
B Raised ledger

➤ When installing a run of raised truss ledgers (where a guardrail is not required) a Ringlock raised ledger capping piece must be installed.

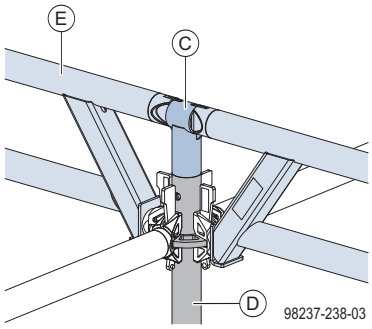
➤ This will create a continuous ledger (bearer) for planks to be installed / secured to.



C Raised ledger capping piece
D Standard with no spigot
E Raised truss ledger

➤ Before installing planks, it is critical to ensure both ends of the raised truss ledger are capped by either a Ringlock standard or the raised ledger capping piece.

➤ Do not install planks until the gap between the ledgers are bridged.

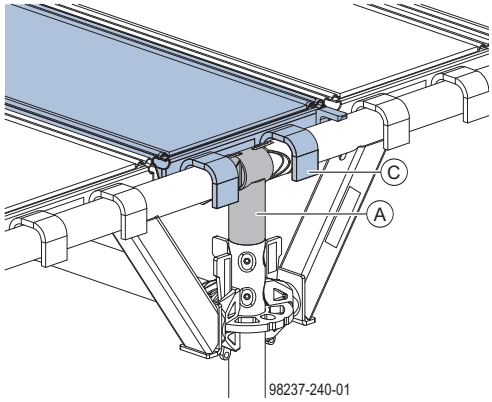


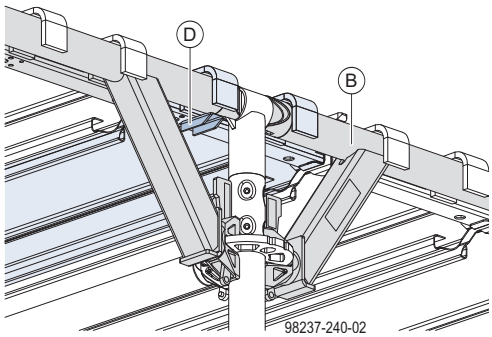
C Raised ledger capping piece
D Standard with no spigot
E Raised truss ledger

➤ Install Ringlock planks over the raised truss ledger and ensure wind latch is engaged.
➤ Install toeboards.

Installing decking onto Raised ledger system

Ringlock Steel planks are installed onto the Raised ledger system in the same way as typical Ledgers.
Steel planks can also be positioned directly onto the Capping piece that creates the continuous Ledger tube.
Wind latches can be rotated into the locked position.

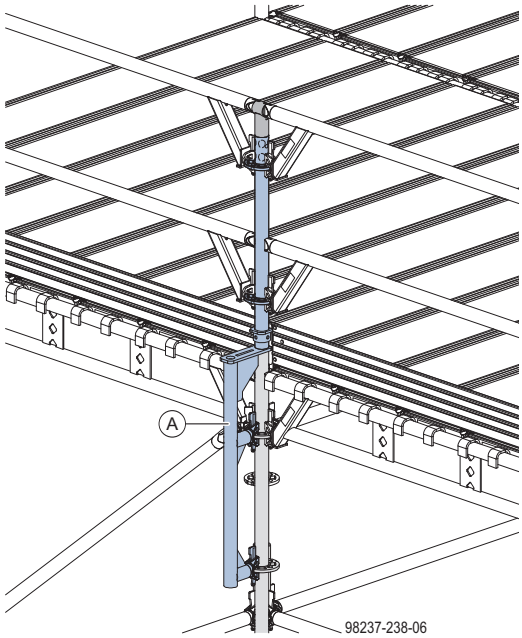




A RLS capping piece
B RLS truss ledger
C Steel plank
D Wind latch

Installation of guardrails

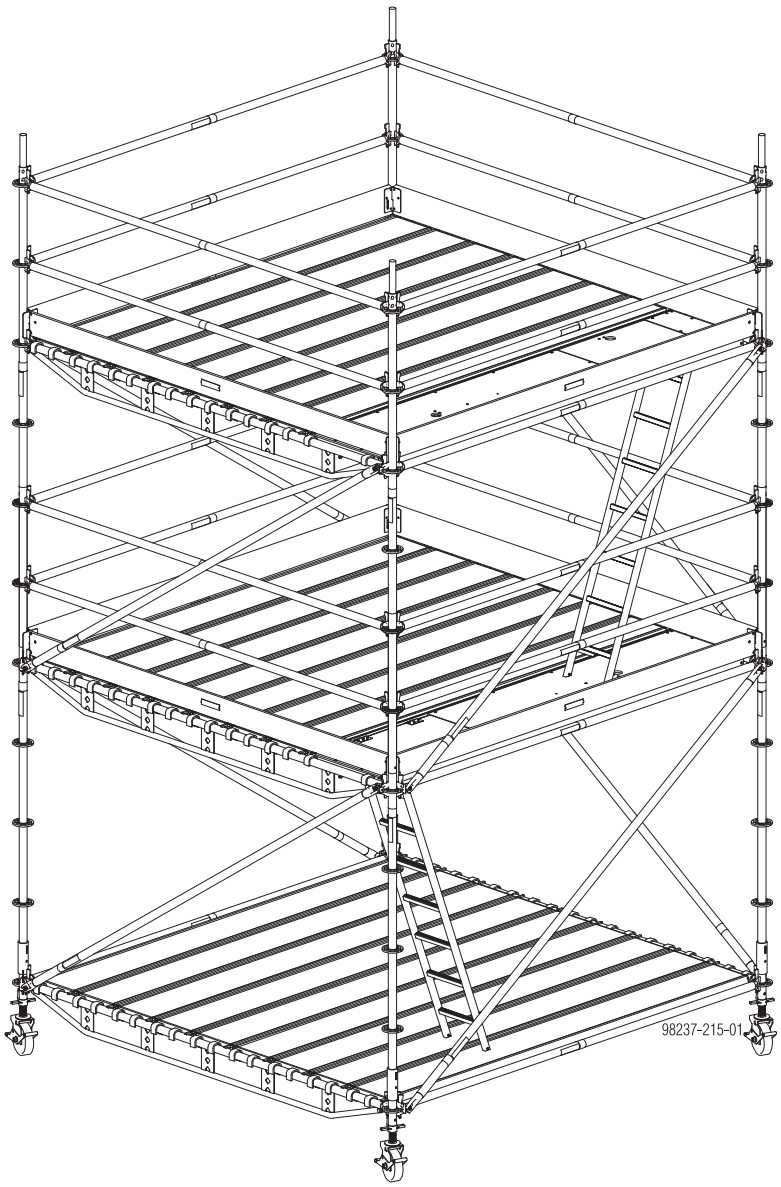
RLS exterior guardrail post to be used when a continuous Ledger tube is formed with a capping piece.



A RLS exterior guardrail post

Mobile scaffold

Mobile scaffolds are movable working scaffolds, which mounted on Castor wheels 10kN, can be wheeled around for easier accessibility at the various locations where they are needed.



WARNING

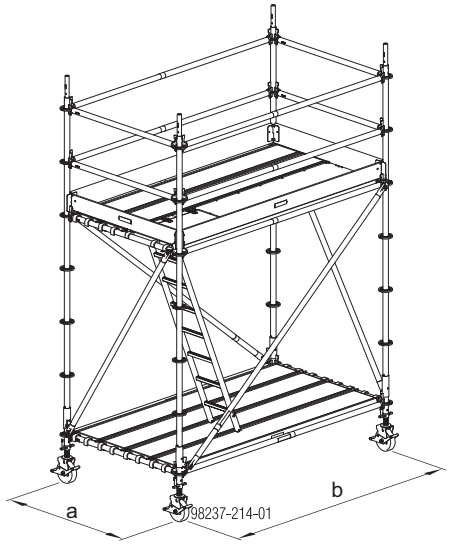
➤ The surface on which mobile scaffolds are erected and moved must be flat and of sufficient load-bearing strength.

NOTICE

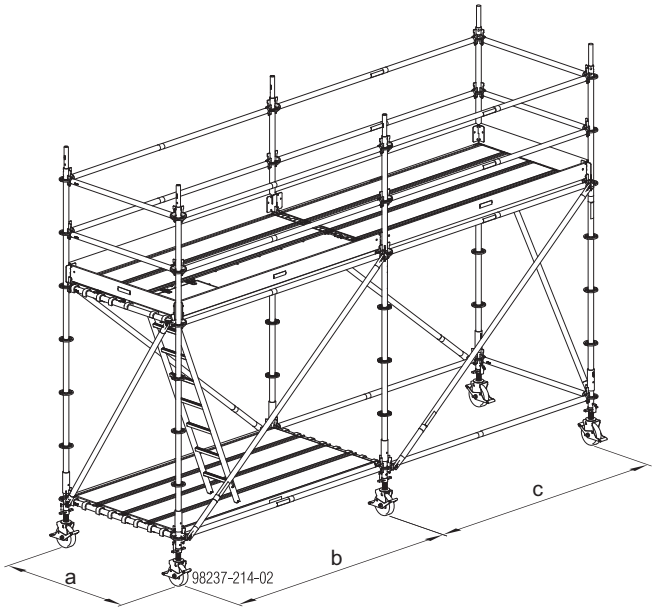
- The minimum width of a mobile scaffold is 1.40 m.
- The minimum length of a mobile scaffold is 2.07 m.
- The maximum topmost deck height is 4.40 m.

Configuration variants

Max. topmost deck height 2.40 m

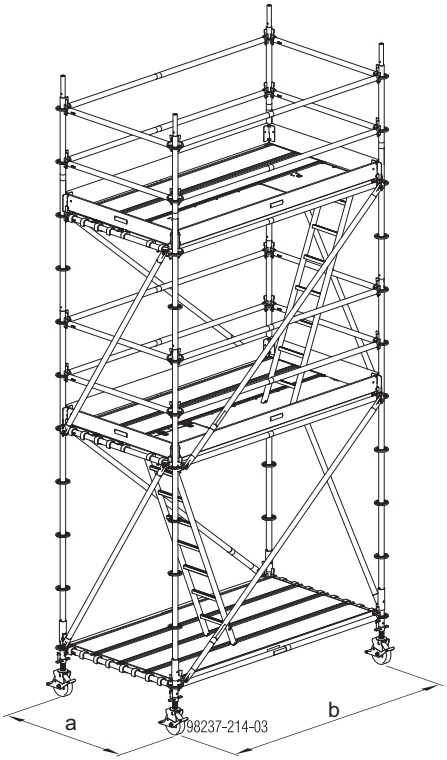


a ... min. 1.40 m
b ... min. 2.07 m

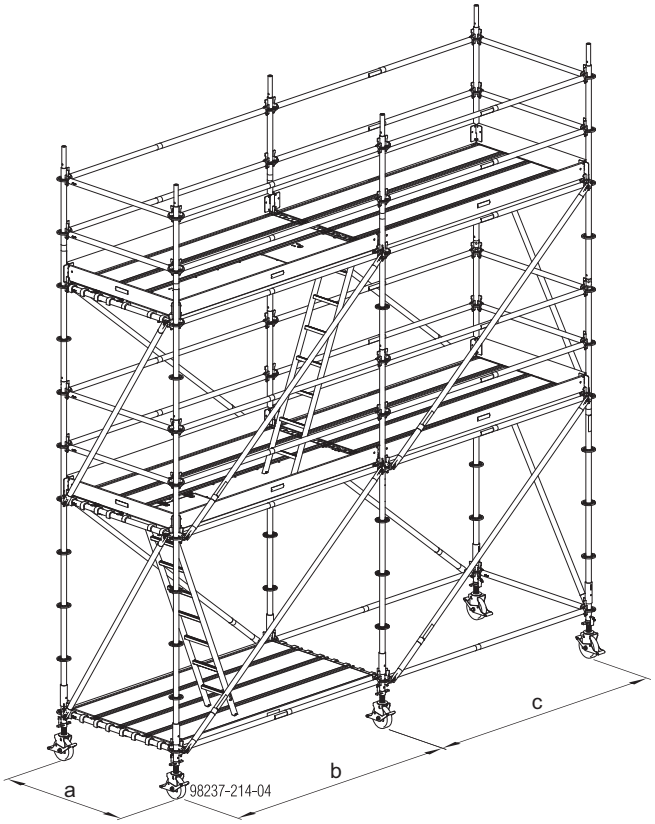


a ... min. 1.40 m
b ... min. 2.07 m
c ... min. 0.73 m

Max. topmost deck height 4.40m



a ... min. 1.40 m
b ... min. 2.07 m



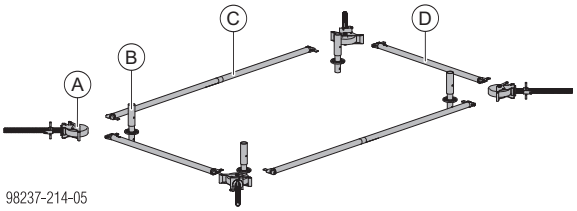
a ... min. 1.40 m
b ... min. 2.07 m
c ... min. 0.73 m

Assembly

Assemble on flat, horizontal surface.

Base frame

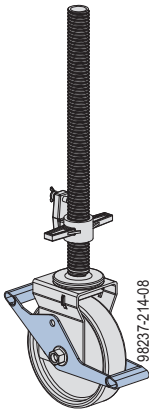
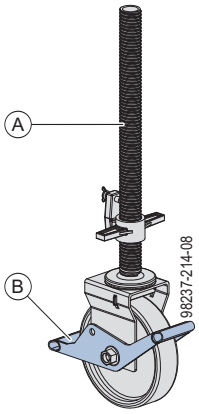
➤ Lay out longitudinal ledgers and transverse ledgers at right angles to each other and position Starter base collars and Castor wheels 10kN at the ends.



A Castor wheel 10kN
B Starter base collar
C Longitudinal ledger (Ledger 2.07m - 3.07m)
D Transverse ledger (Ledger 1.40m)

WARNING
➤ The Castor wheels 10kN have to be braked for assembly.

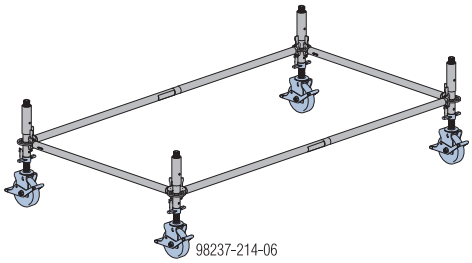
➤ Apply the brake of each Castor wheel 10kN by pushing the brake lever down.

Brake applied	Brake released
	

A Castor wheel 10kN
B Brake lever (marked red)

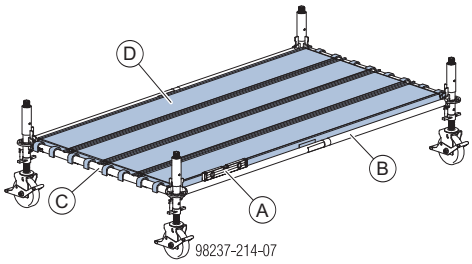
➤ Insert the Castor wheel 10kN into the first Starter base collar and install both ledgers (leave the wedges loose).

➤ Continue round the assembly, connecting the remaining Starter base collars to their Castor wheels 10kN and ledgers.



Lay decking planks in position to ensure that the base frame is squared.

➤ Adjust the Castor wheels 10kN as appropriate to level the base frame.



A Spirit level
B Longitudinal ledger
C Transverse ledger
D Scaffold planking units

➤ After aligning and levelling the base frame, drive in the wedges of the ledgers.

The procedure for assembling the mobile scaffold is similar to that for assembling a facade scaffold (see the section headed 'Facade scaffold').

Structural design

- This structural design applies for mobile scaffolds consisting of max. 2 bays with a system width of 1.40 m.
- The maximum topmost deck height is 4.40 m.
- Other applications require statical verification.

Permitted service load

The mobile scaffolds are designed for the following load classes:

System width	Load class Permitted service load
1.40 m	LC 4 2.0 kN/m² (200 kg/m²)

Please refer to relevant regional Technical Manual for applicable service load.

Wind pressure

WARNING
If wind speeds > 49 km/h are likely, and when work finishes for the day and before prolonged work-breaks, the scaffold must be appropriately secured.
Suitable precautions:
➤ Tie-backs
➤ Anchors

Repositioning

NOTICE

- Throughout the repositioning operation, no persons, loose parts such as tools or other items are permitted on the tower!
- Reposition the mobile scaffold only by hand and only in the longitudinal direction.
- The presence of third persons in the immediate danger zone is prohibited!
- Max. repositioning speed: 2 km/h.
- Max. permitted inclination of rolling surface: 2 %. If inclination is steeper, the permissible inclination of the rolling surface must be determined by statical calculation (risk of tip-over, rolling forces).
- Take special care when wheeling across ledges in the floor (no sharp-edged ledges, max. ledge height = 15 mm).
- Either close floor openings with sufficiently strong planking/boards secured so that they cannot slip away, or cordon off these openings with sufficiently strong barriers!

➤ Release the brakes on all Castor wheels 10kN.

➤ Wheel the scaffold with 2 persons walking one on each side.

➤ After the scaffold unit has been moved, set the brakes of all Castor wheels 10kN to prevent accidental movement!

Before using, check that the mobile scaffold is standing vertical.

WARNING

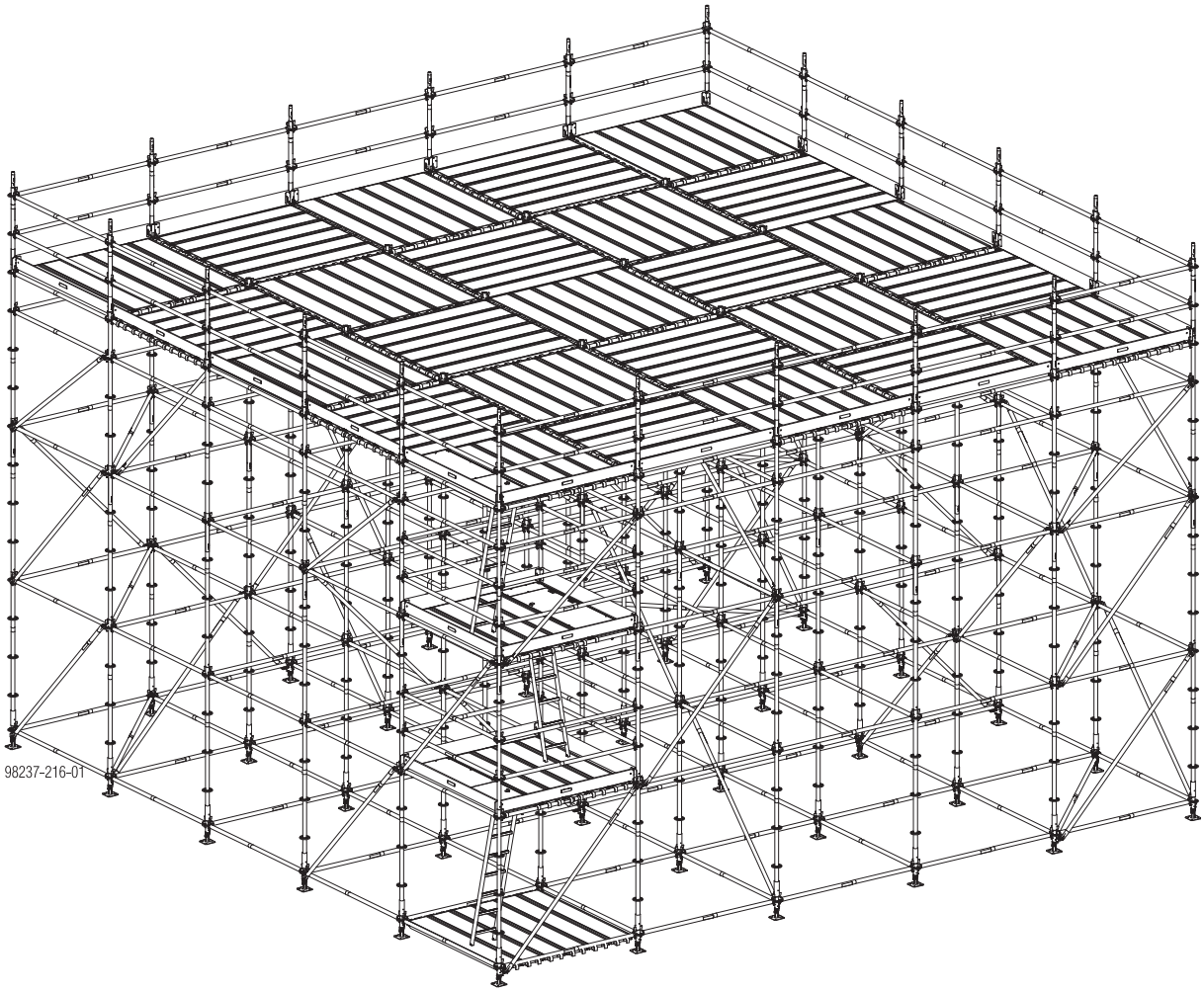
➤ Do not attempt to bridge between the mobile scaffold and another support (e.g. a wall).

➤ Jumping on to or off the platform is prohibited.

➤ All lifting methods to be compliant with all local regulations and safety requirements, consult local documentation before completing any lifting works.

Birdcage scaffold

Birdcage scaffolds are deck-like working scaffolds that are erected for scaffolding slabs. Birdcage scaffolds can also be used as support scaffolding.



WARNING

- The surface on which birdcage scaffolds are erected must be flat and of sufficient load-bearing strength.

NOTICE

EN 12811-1, 9.2.2.6 limits the application of a live load on a birdcage scaffold to an area of 6.00 m^2. A load of 0.75 kN/m^2 is permitted on the remaining area.

Assembly

For installation of the bay braces see the section headed ’Bracing’.

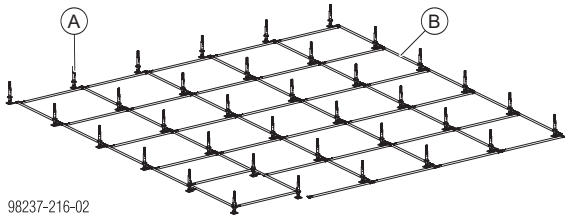
Scaffold base

➤ Distribute the Base jacks 60cm with the necessary sole boards, spacing them correctly.

Laying out the longitudinal ledgers and transverse ledgers in advance makes it easier to space the Base jacks 60cm correctly.

➤ Install a Starter base collar on each Base jack 60cm.

➤ Connect the ledgers to the Starter base collars (leave the wedges loose).



A Base jack + Starter base collar

B Longitudinal ledger and transverse ledger

Spin the nuts of all the Base jacks 60cm down to approx. 5 cm above the base plate.

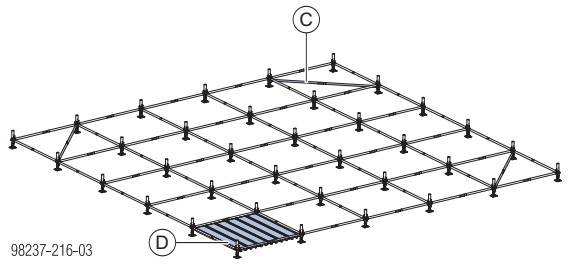
This maximises the range of height adjustment.

➤ Compensate for differences in grade level by adjusting the Handle nuts for base jacks accordingly.

➤ Level the scaffold base in the longitudinal and transverse directions.

NOTICE

- Square the scaffold base horizontally by installing a plan brace in each corner bay.
  Alternatively, fully deck each corner bay with decking planks.
- The access bay has to be planked to support the ladder foot of the alum. ladder hatch deck of the next lift.



C Plan brace

D Steel plank 32cm

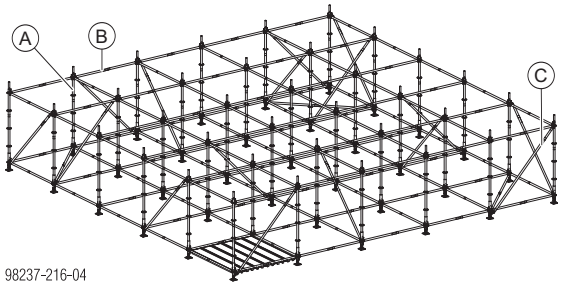
➤ After aligning the scaffold base, drive in all the wedges of the ledgers.

First scaffolding level

➤ Install standards on Starter base collars.

➤ Install longitudinal ledgers and transverse ledgers at height 2.0 m.

➤ Install bay braces.

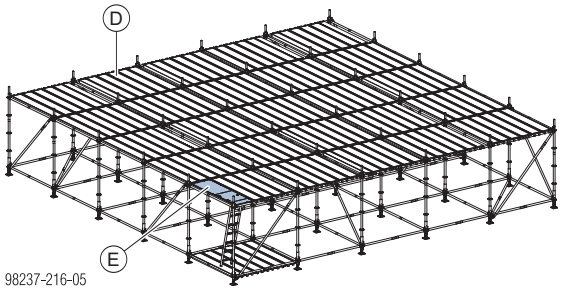


A Standard 2.00m

B Longitudinal ledger and transverse ledger

C Bay brace

➤ Fully deck the first scaffolding level with alum. ladder hatch deck and steel planks (temporary assembly decking).



D Steel plank as temporary assembly decking

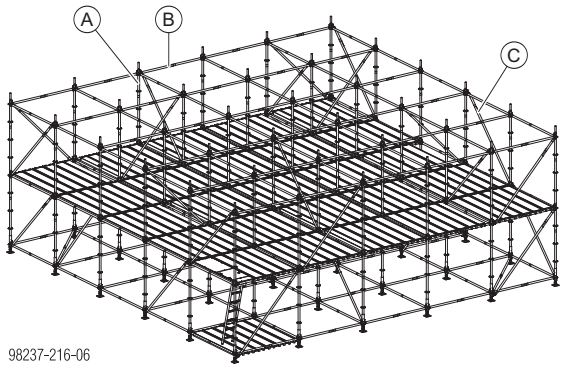
E Alum. ladder hatch deck

NOTICE

In fields with bay braces, install steel planks 19cm in the area of the bay braces.

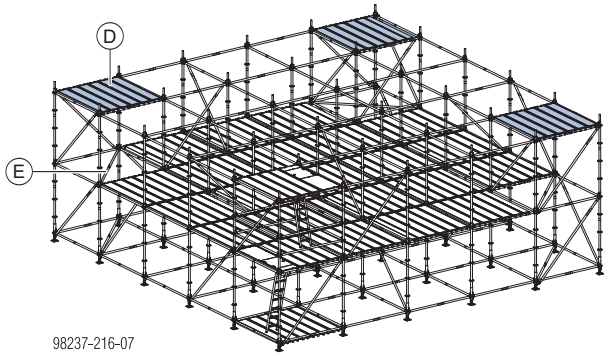
Successive scaffolding levels

➤ Install standards.
➤ Install longitudinal ledgers and transverse ledgers at height 2.0 m.
➤ Install bay braces.



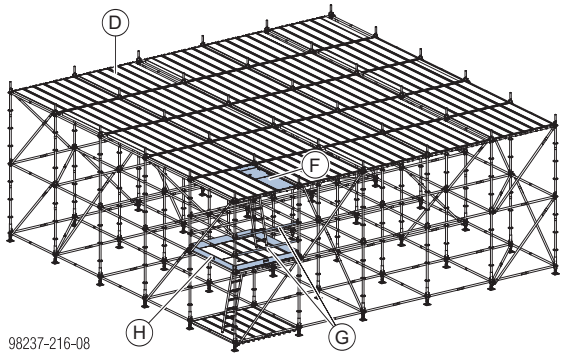
A Standard 2.00m
B Longitudinal ledger and transverse ledger
C Bay brace

➤ Move the temporary assembly decking in the corner bays up to the next scaffolding level and install plan braces.



D Steel plank as temporary assembly decking
E Plan brace

➤ Move the temporary assembly decking on the remaining scaffold bays up to the next scaffolding level.
➤ Install three-part side protection in the access bay.



D Steel plank as temporary assembly decking
F Alum. ladder hatch deck
G Guardrail
H Steel toeboard

NOTICE

In the access bay, install the ladder hatch decks at alternate ends.

Installing topmost scaffolding level

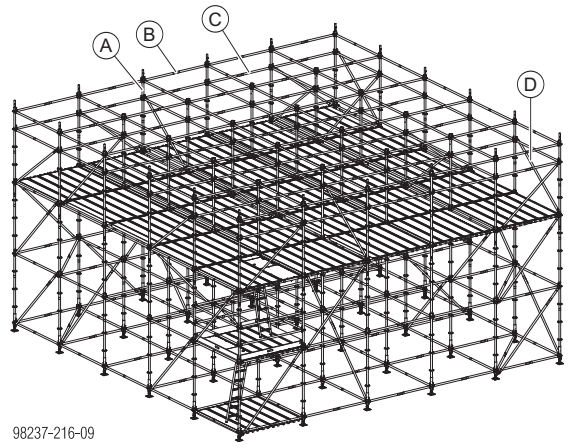
➤ Install standards.

NOTICE

Prevent projecting spigots by using standards without spigots for the topmost scaffolding level.

The use of the 'raised ledge system' can also be integrated for a flush working platform.

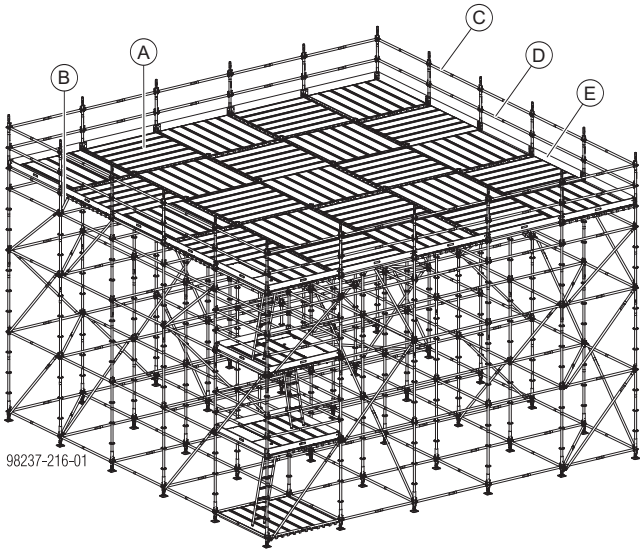
➤ Install longitudinal ledgers and transverse ledgers at the height of the topmost deck level.
➤ Install longitudinal ledgers and transverse ledgers 50 cm below the topmost deck level (working level).
➤ Install bay braces 50 cm below the topmost deck level.



A Standards (length project-specific)
B Ledger at height of deck level
C Ledger 50 cm below deck level
D Bay brace

➤ Move the temporary assembly decking in the corner bays up to the topmost scaffolding level and install plan braces.

➤ Move the temporary assembly decking on the remaining scaffold bays up to the topmost scaffolding level.



A	Steel plank
B	Plan brace
C	Ledger as top guardrail
D	Ledger as intermediate guardrail
E	Steel toeboard

NOTICE

- Deck the entire topmost scaffolding level.
- It is imperative to install three-part side protection at drop edges on the working level as fall protection for the users of the scaffold.
- If required by national regulations, gaps between the planks and gaps between 2 adjacent bays (e.g. gaps > 8 cm) must be closed with gap filler plates.

Depending on national regulations, three-part side protection can be omitted on the inside of the gap between wall and edge if the decking is narrow (e.g. ≤ 30 cm).

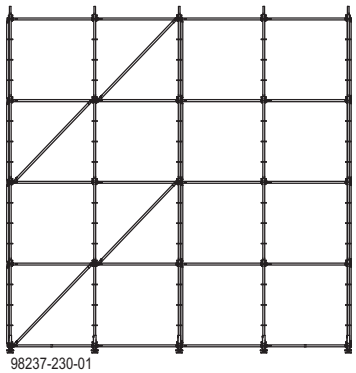
Bracing

NOTICE

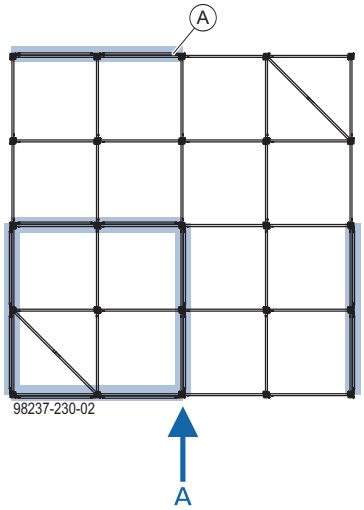
- Arrange bay braces such that every axis of the birdcage scaffold is adequately braced. Install a bay brace in every 5th bay at least.
- Arrange the bay brace from the bottom point straight through to 50 cm below the decking level.
- Arrange the bay braces at least over 2 bays in the longitudinal and transverse directions.
- Always brace every free corner bay with at least one bay brace.

Example 4 x 4 bays

View A



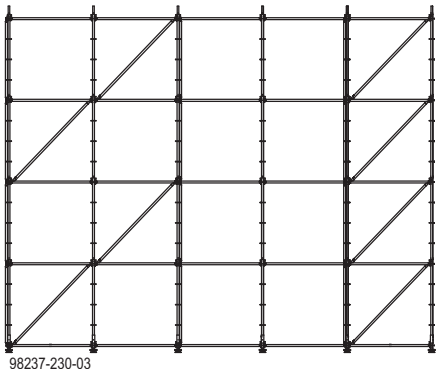
Top view



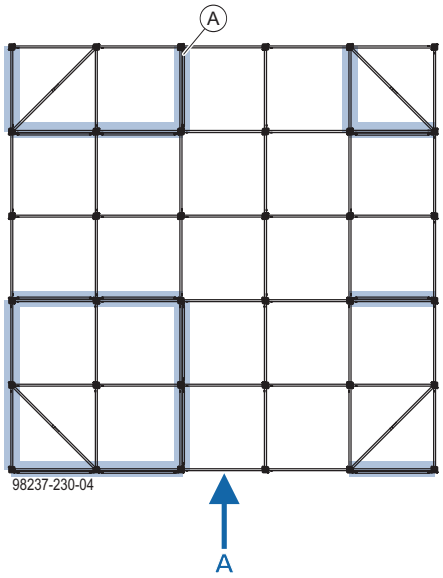
A Bracing

Example 5 x 5 bays

View A



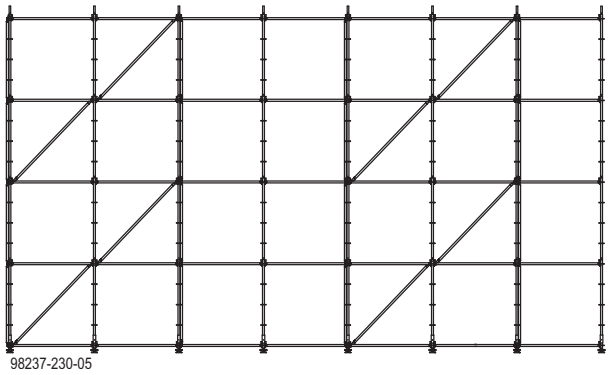
Top view



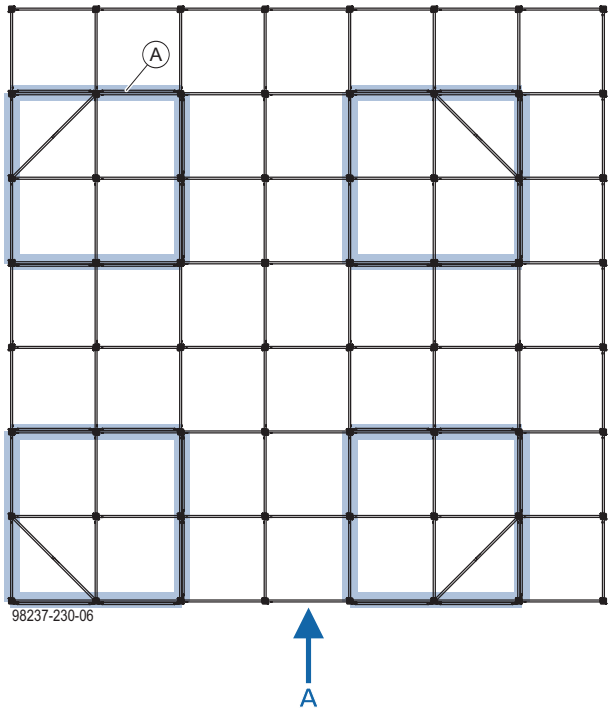
A Bracing

Example 7 x 7 bays

View A



Top view



A Bracing

Arrangement of decking planks

The decking planks can be arranged either in an alternating pattern (chequerboard) or parallel.

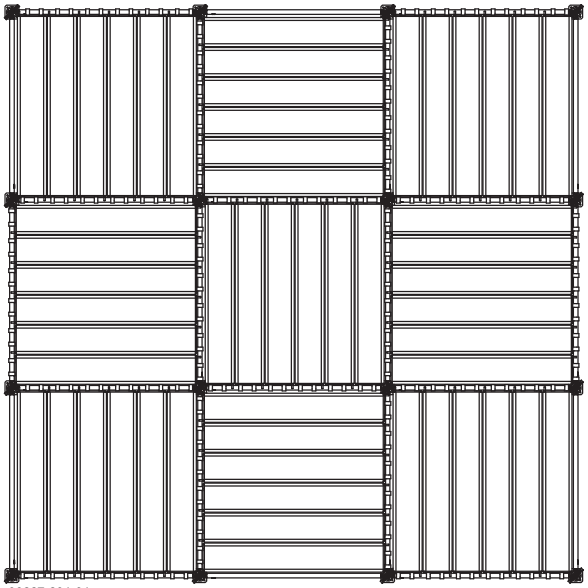
The arrangement of the decking planks depends on the required load class and the size of the bays needed.

NOTICE

Depending on statical requirements, use truss ledgers instead of ledgers.

Alternating arrangement

An alternating pattern (chequerboard) reduces the load introduction area of the ledgers.



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Load class 2: 1.5 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	L
1.57	L	L	L	L	L	L	L
2.07	L	L	L	L	L	L	L
2.57	L	L	L	L	L	L	L
3.07	L	L	L	L	L	TL	TL

Load class 3: 2.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	L
1.57	L	L	L	L	L	L	L
2.07	L	L	L	L	L	L	L
2.57	L	L	L	L	L	TL	TL
3.07	L	L	L	L	TL	TL	TL

Load class 4: 3.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	L
1.57	L	L	L	L	L	L	L
2.07	L	L	L	L	L	L	TL
2.57	L	L	L	L	TL	TL	TL
3.07	L	L	TL	TL	TL	TL	-

Load class 5: 4.5 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	-
1.09	L	L	L	L	L	L	-
1.40	L	L	L	L	L	L	-
1.57	L	L	L	L	L	L	-
2.07	L	L	L	L	TL	TL	-
2.57	L	L	TL	TL	TL	TL	-
3.07	L	TL	TL	TL	-	-	-

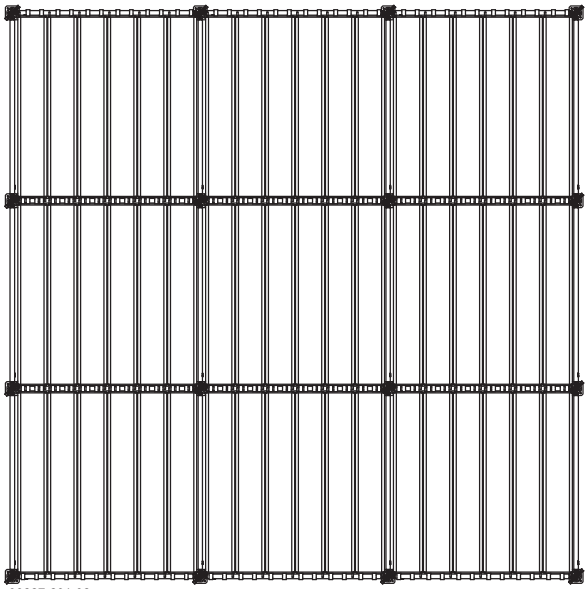
Load class 6: 6.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	-	-
1.09	L	L	L	L	L	-	-
1.40	L	L	L	L	L	-	-
1.57	L	L	L	L	L	-	-
2.07	L	L	L	TL	TL	-	-
2.57	L	TL	TL	TL	-	-	-
3.07	TL	TL	TL	-	-	-	-

L ... Ledger
TL ... Truss ledger

Please refer to local regulations and standards for additional information.

Parallel arrangement



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Load class 2: 1.5 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	L
1.57	L	L	L	L	L	L	L
2.07	L	L	L	L	L	TL	TL
2.57	L	L	L	L	TL	TL	TL
3.07	L	TL	TL	TL	TL	TL	-

Load class 3: 2.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	L
1.57	L	L	L	L	L	L	L
2.07	L	L	L	L	TL	TL	TL
2.57	L	L	TL	TL	TL	TL	-
3.07	L	TL	TL	TL	-	-	-

Load class 4: 3.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	L
1.09	L	L	L	L	L	L	L
1.40	L	L	L	L	L	L	TL
1.57	L	L	L	L	L	TL	TL
2.07	L	L	TL	TL	TL	TL	-
2.57	L	TL	TL	TL	-	-	-
3.07	TL	TL	TL	-	-	-	-

Load class 5: 4.5 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	L	-
1.09	L	L	L	L	L	L	-
1.40	L	L	L	L	TL	TL	-
1.57	L	L	L	TL	TL	TL	-
2.07	L	TL	TL	TL	-	-	-
2.57	TL	TL	-	-	-	-	-
3.07	TL	-	-	-	-	-	-

Load class 6: 6.0 kN/m²

Ledger [m]	Length of O-type decking plank [m]						
	0.73	1.09	1.40	1.57	2.07	2.57	3.07
0.73	L	L	L	L	L	-	-
1.09	L	L	L	L	L	-	-
1.40	L	L	L	TL	TL	-	-
1.57	L	L	TL	TL	TL	-	-
2.07	TL	TL	TL	-	-	-	-
2.57	TL	-	-	-	-	-	-
3.07	-	-	-	-	-	-	-

L ... Ledger
TL ... Truss ledger

Please refer to local regulations and standards for additional information.

Suspended scaffold

The purpose of suspended scaffolds is to optimise the amount of material needed to assemble a scaffold at extraordinary height or when erection of a ground-up supported scaffold is not possible.

Suspension

There are various ways of suspending a scaffold from a structure, for example from overhead slabs or other bearing components, by means of anchor-bolts, beam clamps or chains for suspended scaffold.

WARNING

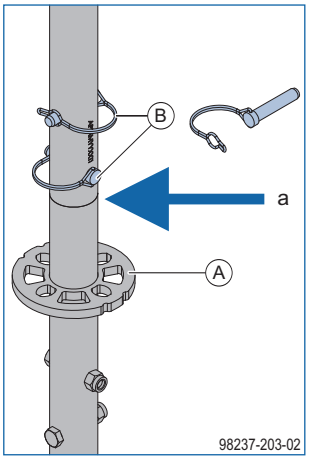
➤ The bearing components from which the scaffold is suspended must be of adequate load-bearing strength.

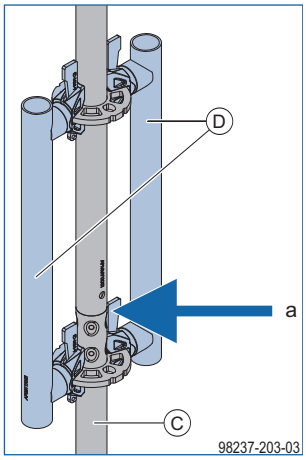
Connections between standards

NOTICE

As a general rule, standards of the bolted-spigot type must be for suspended scaffolds.

Alternatively, the standard-to-standard joint can be secured with leg locks for suspended scaffold.





a ... Standard-to-standard joint

A	Standard with hanging spigot
B	2 spring pins or hexagonal bolts M12x60 8.8 with hexagonal nuts
C	Standard with crimped spigot
D	Leg lock for suspended scaffold

Do not exceed the maximum permissible load of the tensile-load standard-to-standard connection stated in the section headed ’Structural design’.

Bridging solutions, cantilevers and brackets

Bridging solutions

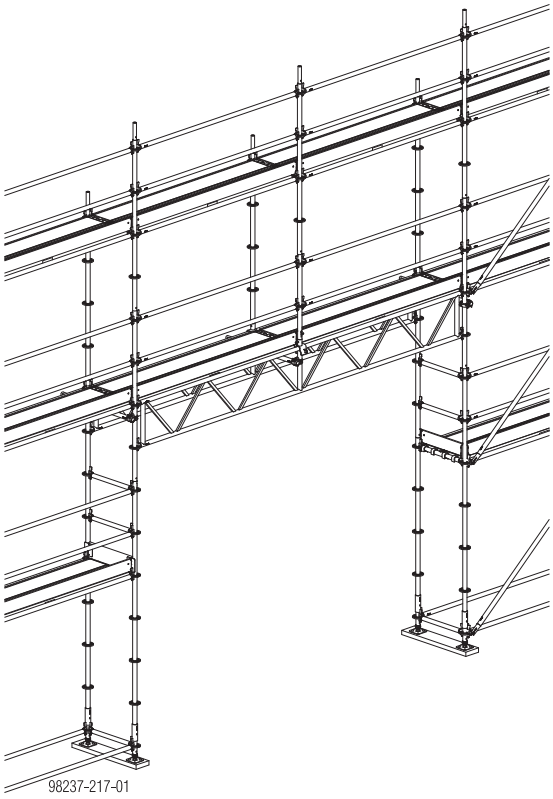
Doorways for vehicular access, balconies, building projections or openings can be bridged by means of lattice girders or trussed scaffold structures.

NOTICE

- Bridging solutions that differ from the standard design for system set-up per DIBt approval require statical verification.
- Always check the required loads being placed on the scaffold prior to erecting
- All Braces, inside and outside, necessary for load transfer must be installed in accordance with the statical requirements.
- A bridging solution built by the balanced cantilever technique requires (ballast installed as necessary as counterweight, all standard-to-standard connections locked to prevent separation).

Bridging solution with lattice girders

The Ringlock lattice girder has a system height of 500 mm. This corresponds to the rosette spacing of the standards. The lattice girder connects directly to the rosettes of the standards.



The lattice girders can also be used to construct birdcage scaffolds.

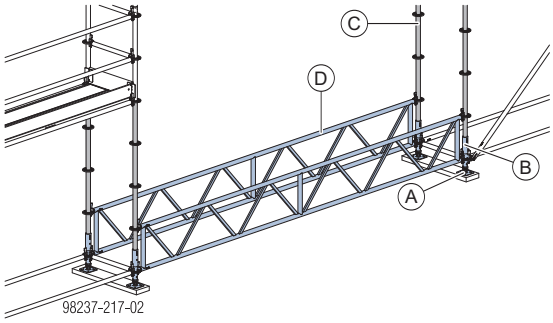
Assembly

Scaffold base

NOTICE

Precision is very important in measuring up the scaffold bays in the area where the bridging solution is to be erected.

Install lattice girders or ledgers in the area of the scaffold base to facilitate lining up and levelling of the base.



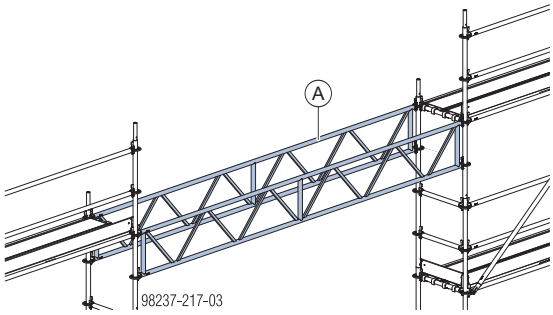
A Base jack 60cm
B Starter base collar
C Standard
D Lattice girder

Bridging bay

NOTICE

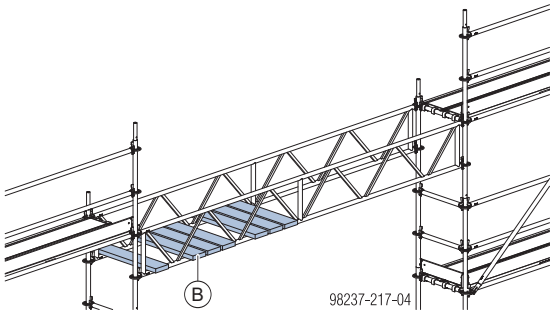
Work only from a safe workplace when installing the lattice girders (scaffoldings level with enclosing guardrail).

➤ Secure the lattice girders into position and hammer in all wedges.



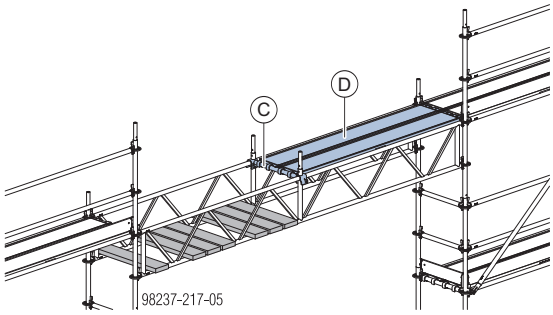
A Lattice girder

➤ Install temporary assembly decking to midway along the lattice girder.



B Temporary assembly decking (Steel plank 32cm or wooden planks)

➤ Installing girder transoms.

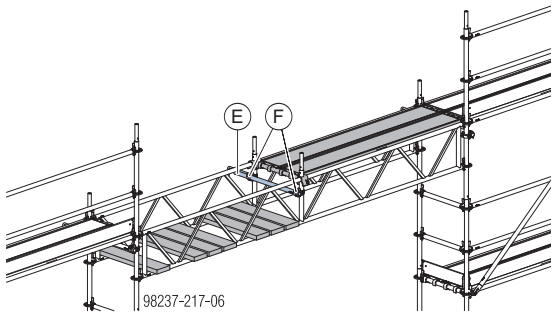


C Girder transom

D Steel plank 32cm

Ascertain the position of the girder transom by laying down the decking from the opposite side.

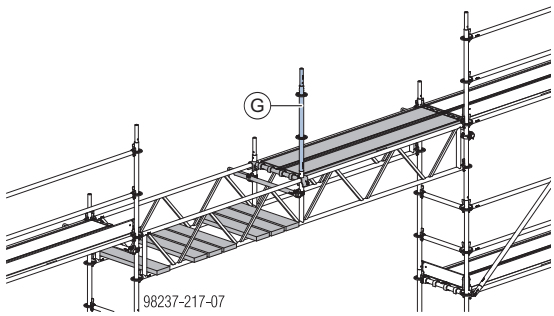
➤ Install wall tie tubes in the same away as for the standard design for system set-up.



E Wall tie tube

F 2 Normal coupler 48mm

➤ Install standard 1.00m on the girder transom.

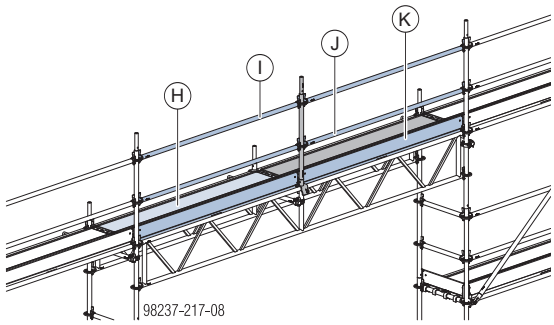


G Standard 1.00m

➤ Remove temporary assembly decking.

➤ Install decking in 2nd bridging bay.

➤ Install three-part side protection.



H Steel plank 32cm

I Ledger as top guardrail

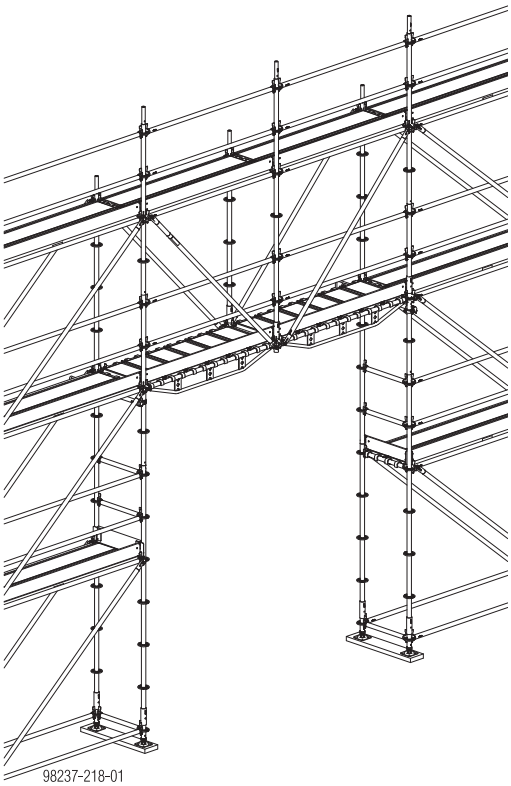
J Ledger as intermediate guardrail

K Steel toeboard

Bridging solution using system components

Bridging solutions can be constructed as trussed scaffolds using system components.

This solution is assembled using the balanced cantilever technique.



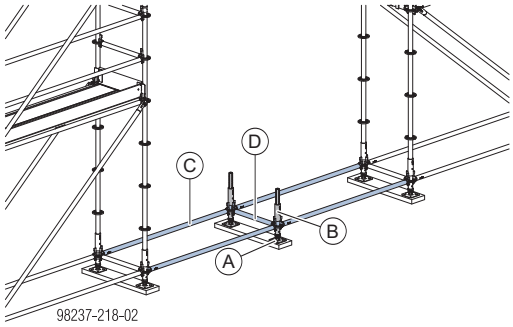
Assembly by balanced cantilever technique

Scaffold base

NOTICE

Precision is very important in measuring up the scaffold bays in the area where the bridging solution is to be erected.

Fully assemble the base frame in the area of the bridging solution. It can subsequently be disassembled and removed.



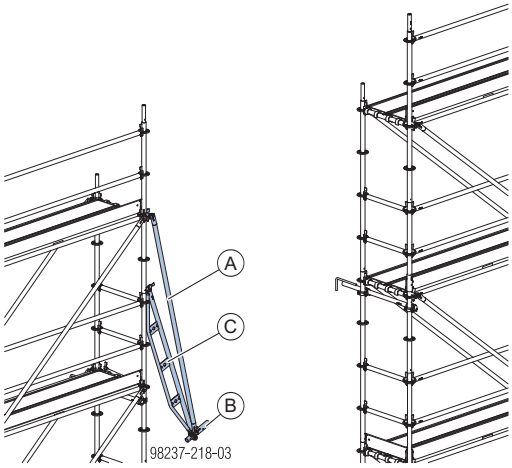
A	Base jack 60cm
B	Starter base collar
C	Longitudinal ledger
D	Transverse ledger

Cantilever

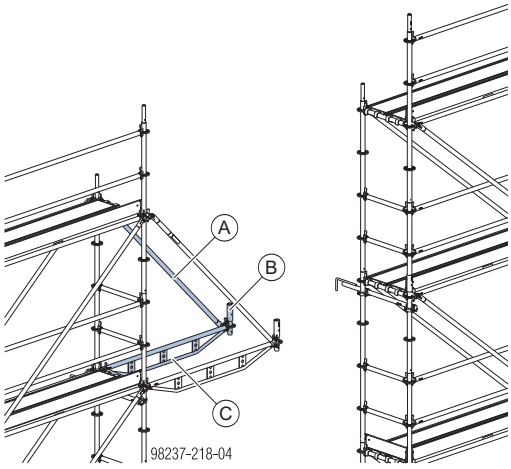
NOTICE

Work only from a safe workplace when erecting the balanced cantilever scaffold (scaffolding level with enclosing guardrail).

➤ Connect a Starter base collar to a bay brace.
➤ Secure bay brace to standard at 2.00 m above the decking level.
➤ Secure truss ledger to Starter base collar.

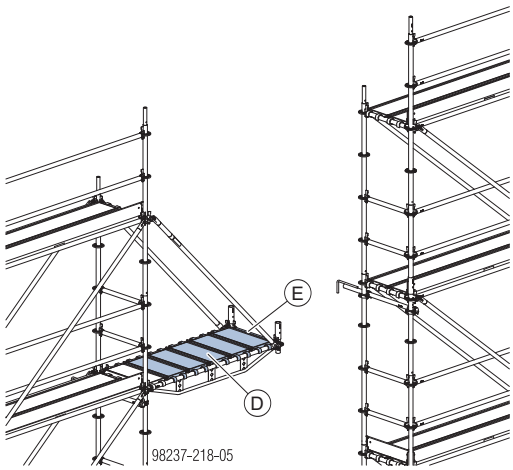


➤ Manoeuvre truss ledger out and install on standard with wedge head.



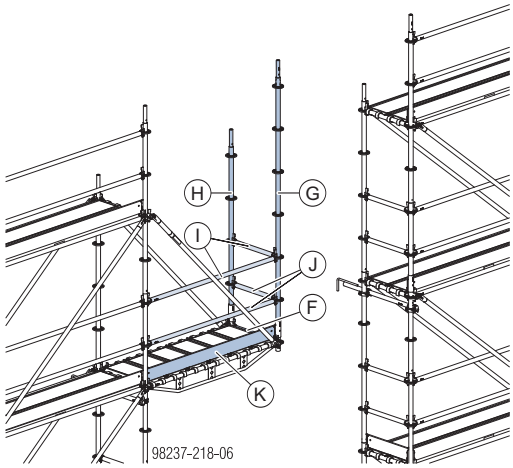
A Bay brace
B Starter base collar
C Truss ledger

➤ Lay decking and install transverse ledger.



D Steel plank 32cm
E Transverse ledger

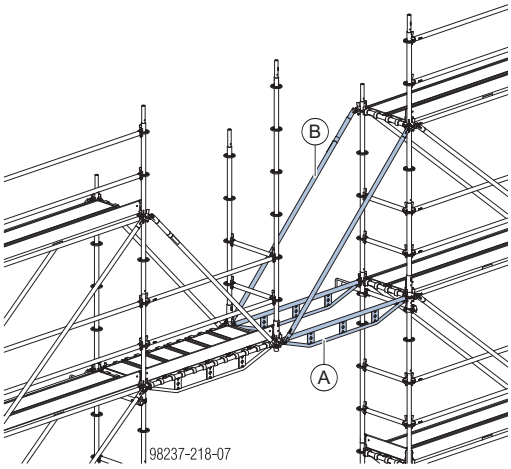
➤ Install transverse ledger between the Starter base collar.
➤ Install standards on Starter base collar.
➤ Install three-part side protection.



F Ledger
G Standard 3.00m
H Standard 2.00m
I Ledger as top guardrail
J Ledger as intermediate guardrail
K Steel toeboard

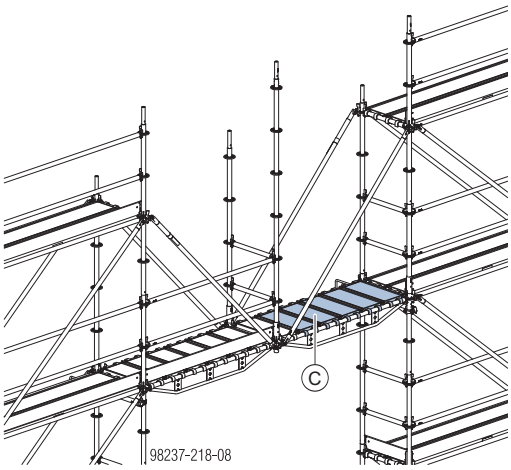
Connecting bay

➤ Install truss ledgers in decking level.
➤ Install bay braces.



A Truss ledger
B Bay brace

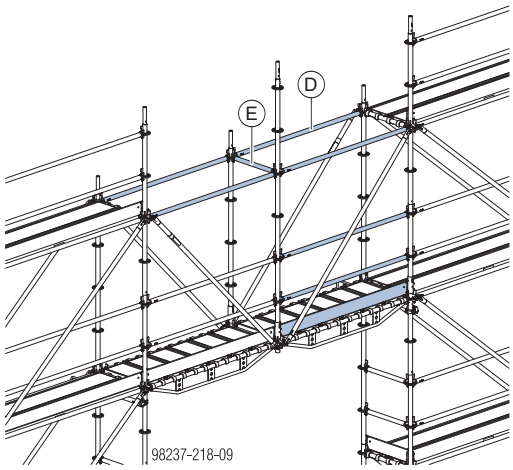
➤ Install decking in the connecting bay.



C Steel plank 32cm

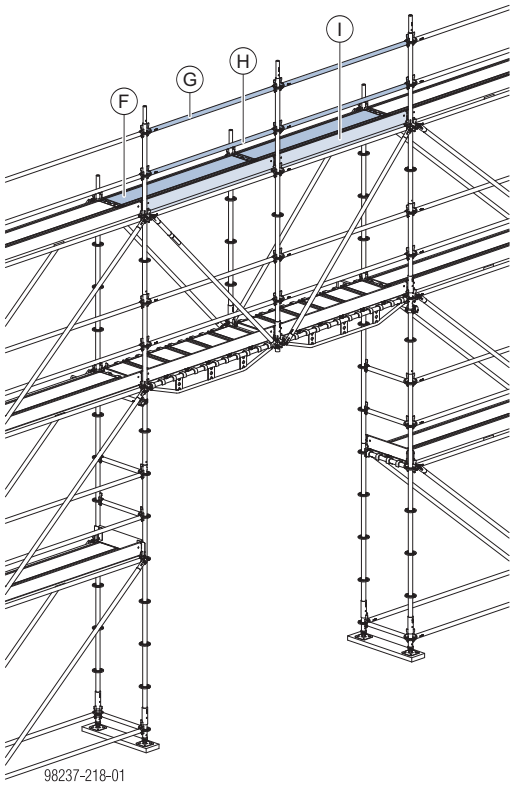
➤ Install three-part side protection in the connecting bay.
➤ Remove side protection previously erected across bridging solution.

➤ Install transverse ledgers and longitudinal ledgers at a height of 2.00 m above decking.



D Longitudinal ledger
E Transverse ledger

➤ Install decking of next scaffolding level.
➤ Install three-part side protection of next scaffolding level.



F Steel plank 32cm
G Ledger as top guardrail
H Ledger as intermediate guardrail
I Steel toeboard

Cantilevers

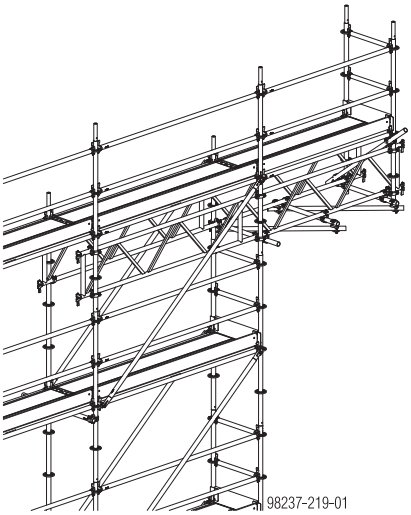
Cantilevers can be constructed with lattice girders or trussed scaffold structures.

NOTICE

- Cantilevers require statical verification. For further details please contact AT-PAC.
- All braces, inside and outside, necessary for load transfer must be installed in accordance with the statical requirements.
- An adequately stable main scaffold is always required for cantilevers or scaffold involving the balanced cantilever assembly technique (Ballasting as necessary).

Cantilever with lattice girders

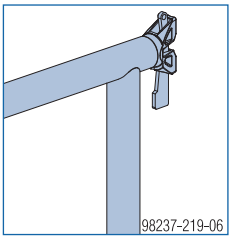
Ringlock lattice girders used for cantilevering must be connected to the standards of the main scaffold by at least 4 Normal couplers 48mm.



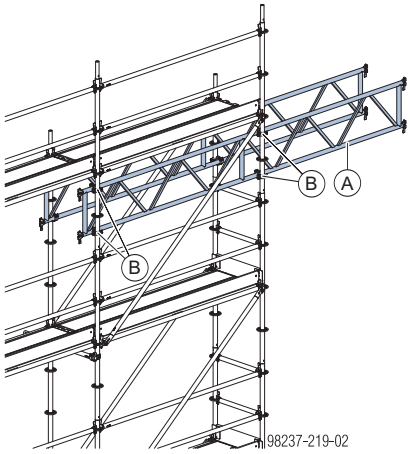
Assembly

NOTICE

- The lattice girder must be carried across at least 2 standard of the main scaffold.
- When used to construct a cantilever, the Ringlock lattice girder must be installed upside down.

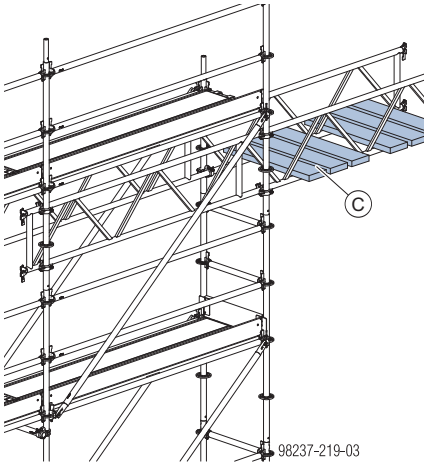


➤ Install lattice girder on the main scaffold.



A Lattice girder
B Normal coupler 48mm (4 for each girder)

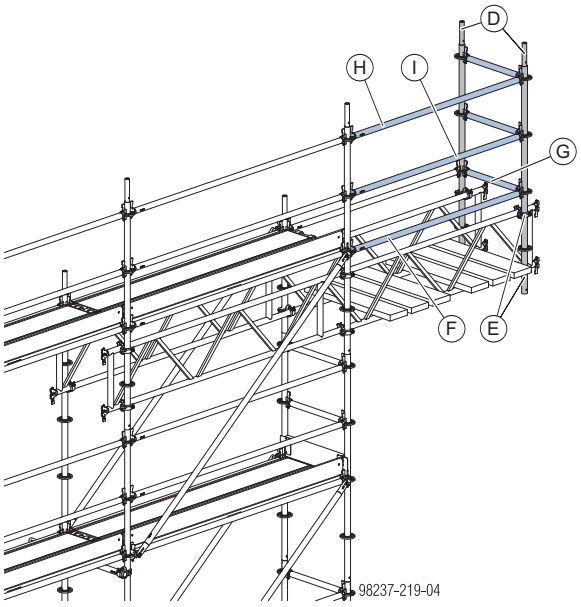
➤ Install temporary assembly decking.



C Temporary assembly decking

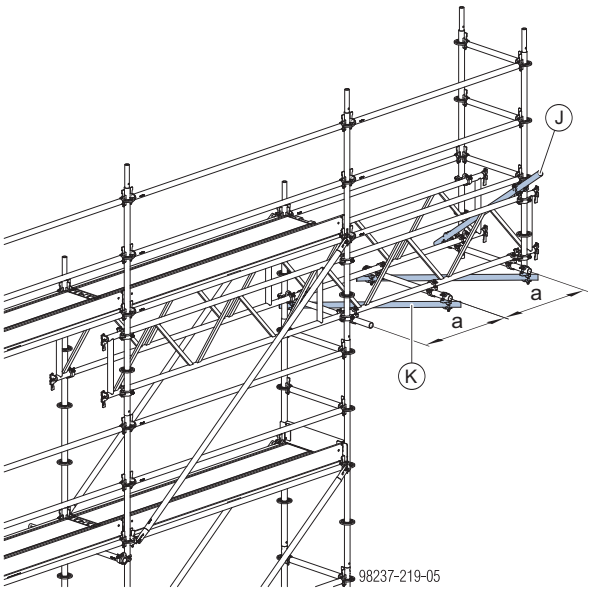
➤ Install standards 2.00m
➤ Install longitudinal ledgers and transverse ledgers in decking level.

➤ Install two-part side protection.



D Standard 2.00m
E Normal coupler 48mm (2 for each standard)
F Longitudinal ledger
G Transverse ledger
H Ledger as top guardrail
I Ledger as intermediate guardrail

➤ Remove temporary assembly decking plank by plank and install bracing in vertical plane at the end of the lattice girders and bracing in horizontal plane of the bottom chords.

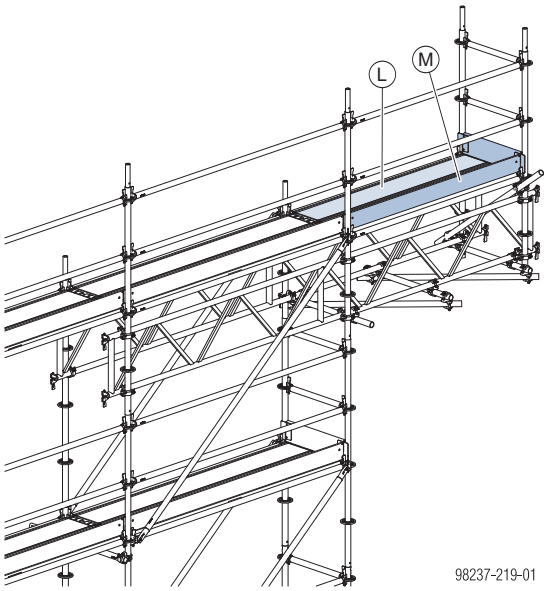


J Scaffold tube 48.3mm as bracing in vertical plane
K Scaffold tube 48.3mm assembly as bracing in horizontal plane

Max. spacing of bracing in horizontal plane: 1.50 m

➤ Install scaffold planking units and secure them against uplift.

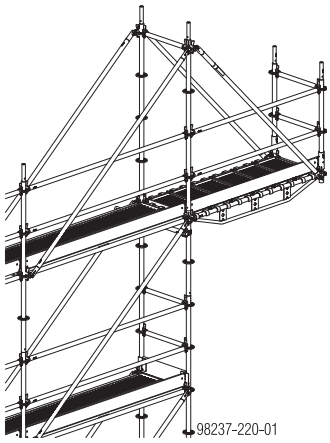
➤ Install steel toeboards to complete the three-part side protection.



L Steel plank 32cm
M Steel toeboard

Cantilevers using system components

Cantilevers can be assembled using system components.



Assembly

NOTICE

Ensure adequate anchoring is installed to prevent overturning.

The assembly procedure is similar to that described for the balanced cantilever technique in the section headed ’Bridging solution using system components’.

Side brackets

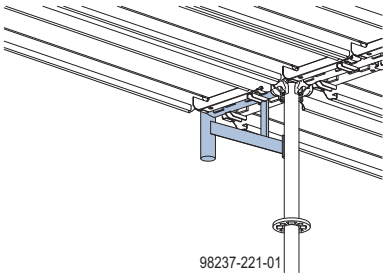
Side brackets are used to extend the decking of the main scaffold.

NOTICE

The work of installing side brackets is done from the next secured level down.

If permitted by national regulations, gaps between the planks and gaps between 2 adjacent bays (e.g. gaps > 8 cm) can be closed with gap filler plates.

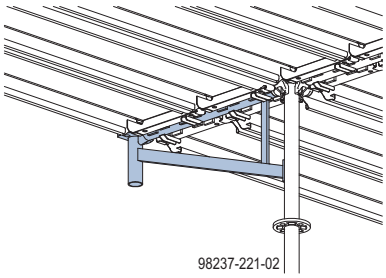
Side bracket 0.39m O-type



Permitted service load

Bay length	Load class Permitted service load
≤ 2.07m	LC 6 6.0 kN/m² (600 kg/m²)
2.57 m	LC 5 4.5 kN/m² (450 kg/m²)
3.07 m	LC 4 3.0 kN/m² (300 kg/m²)

Side bracket 0.73m O-type



Permitted service load

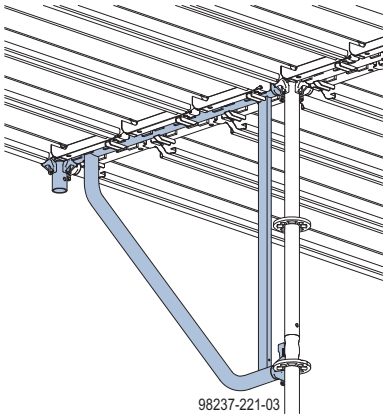
Bay length	Load class Permitted service load
≤ 2.57 m	LC 5 4.5 kN/m² (450 kg/m²)
3.07 m	LC 4 3.0 kN/m² (300 kg/m²)

The load-bearing capacity of the side brackets can be increased by installing side bracket braces.

NOTICE

Connect side bracket braces to braced nodes only.

Console bracket 1.09m O-type



Permitted service load

Bay length	Load class Permitted service load
≤ 2.57 m	LC 4 3.0 kN/m² (300 kg/m²)
3.07 m	LC 3 2.0 kN/m² (200 kg/m²)

Please refer to local regulations and standards for additional information.

Corners

NOTICE

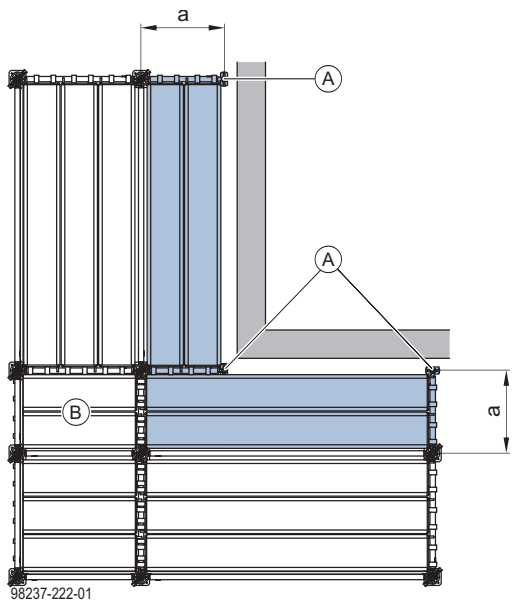
- On all scaffolding levels, the corner decking must be of the same width class as the decking of the main scaffold.
- Construct the corners in succession as assembly of the facade scaffold progresses.

Corner with inside brackets

Corner with 6 standards

NOTICE

- A 4-standard scaffold bay extends a bracket bay.
- The ledger length of the intermediate bay corresponds to the width of the side brackets.

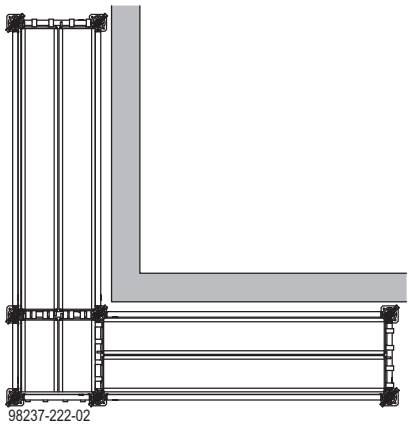


a ... Width of side bracket

A Side bracket
B Ledger for intermediate bay

Corner without side brackets

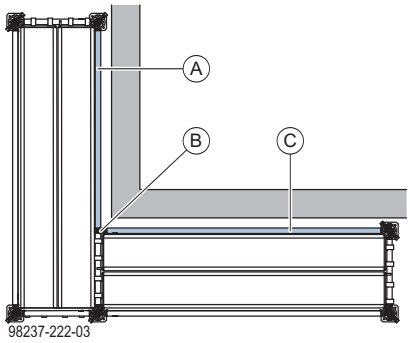
Corner with 4 standards



Corner with 2 standards

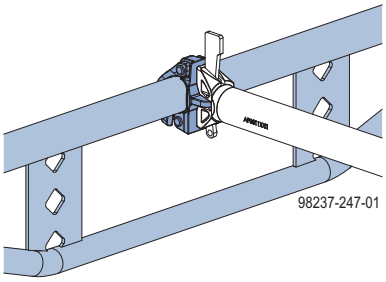
NOTICE

At the inside of the scaffold, the connection between longitudinal ledger and deck-supporting ledger is made with a Rosette clamp T-bolt horizontal.



A Ledger or truss ledger as deck-supporting ledger
B Rosette clamp T-bolt horizontal
C Inside longitudinal ledger

For load class 5 or higher, it is advisable to use a truss ledger as deck-supporting ledger.



Gaps in platforms

The following examples illustrate how to create safe openings or cover unwanted gaps in Ringlock scaffold platforms.

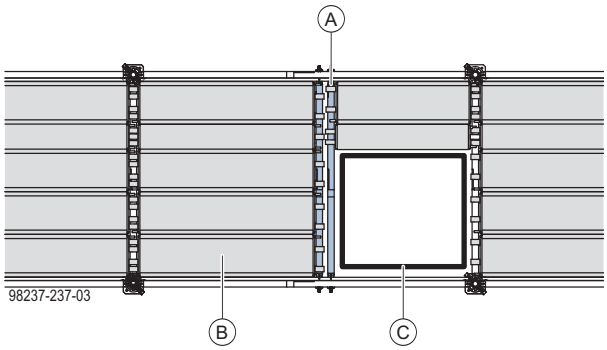
Check safe working loads when using these transoms.

Horizontal rosettes and Ledgers

Use the horizontal rosettes and ledgers to create plank support anywhere within a bay. Install a horizontal rosette onto the supporting ledgers and then connect using the ledger for the bay with.

Note:

An alternative method utilizes Ringlock Mid transoms secured onto the ledgers.

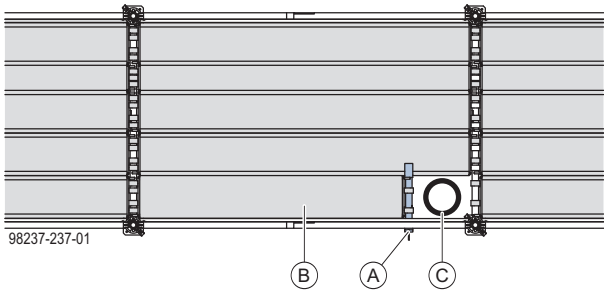


A	Rosette clamp T-bolt horizontal
B	Steel plank
C	Obstruction

Ledger-to-plank transoms

The ledger-to-plank transom method is similar to the mid transom method except the ledger-to-plank transom method secures to a ledger at one end and rests on a Ringlock plank at the other.

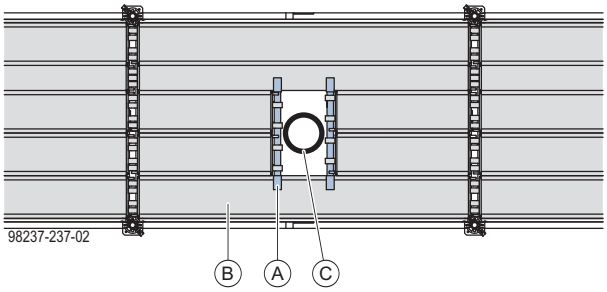
The ledger-to-plank transom method is particularly useful when openings are required next to the edge of a bay.



A	Ledger-to-plank transom
B	Steel plank
C	Obstruction

Plank-to-plank transoms

Install the plank-to-plank transom anywhere along the length of two Ringlock planks. Use this method to create an opening in the middle of a platform.

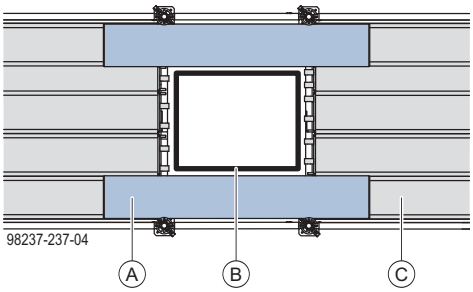


A	Plank-to-plank transom
B	Steel plank
C	Obstruction

Gap filler planks

Install the gap filler plank when there is a requirement to span small openings in the Ringlock platform or between bays.

The plank can easily be installed over a gap and secured to the steel plank to prevent further movement.



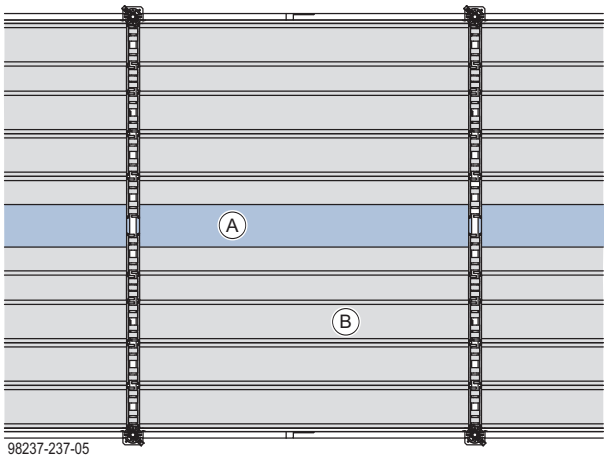
A	Gap filler plank
B	Obstruction
C	Steel plank

Gap filler plates

Install the gap filler plates to fill any unwanted gaps between planks or bays creating continuous platforms.

The gap filler plate can easily be installed in the same method as the infill planks and can be secured to the main planks.

These plates are designed for smaller gaps with spans no greater than 12 cm.

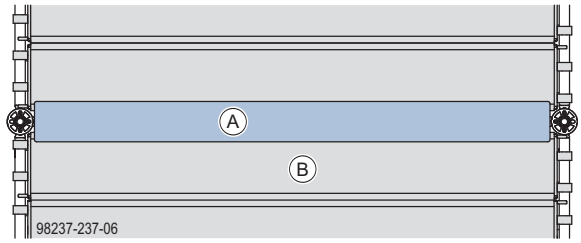


A Gap filler plate
B Steel plank

Infill planks

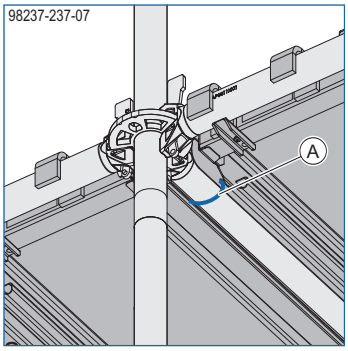
The infill plank covers any unwanted gaps between adjacent bays. Install the Ringlock infill plank over the Ringlock ledger.

Use this method when a Side/Hop-Up bracket is required for extending the working platform or for creating a birdcage with parallel plank arrangements.



A Infill planks
B Steel plank

The infill plank contains two side rails. At each end of the side rail there are two holes. To prevent uplift or displacement of the Infill plank, use the two holes to secure the infill plank to a ledger.



C Infill plank secured to ledger using steel wire or other appropriate means

Fall barriers and sloping-rooftop fall barriers

Facade scaffolds can function as fall barriers / fall protection.

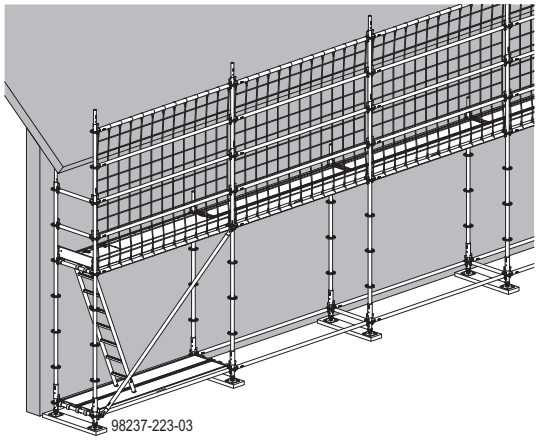
NOTICE

- Fall barriers and sloping-rooftop fall barriers must be erected in compliance with the national regulations applicable, for example, to the width of the scaffold and the distance from the drop edge.
- Every standard of a fall barrier or a sloping-rooftop fall barrier must be anchored to the structure on the topmost anchor level.
- The use of Ringlock steel planks with alum. ladder hatch deck in the decking of the arrest-level lift is permissible.

Brick Guard 2,00 m with netting

WARNING

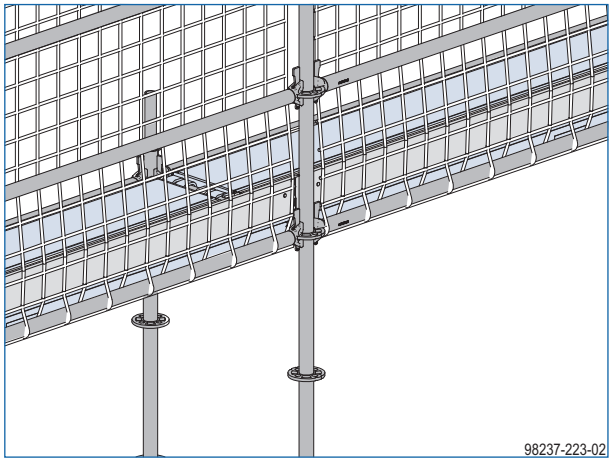
- ➤ If a brick guard is to be erected, the standard-to-standard joints must be at least 50 cm below the decking level.
- ➤ Install ledgers every 50 cm for the brick guard.
- ➤ The brick guard must consist of sufficiently strong safety nets or meshes with a maximum mesh size of 10 cm compliant with EN 1263-1.
  Follow the manufacturer's instructions for use.



Safety nets without quick attachment feature

NOTICE

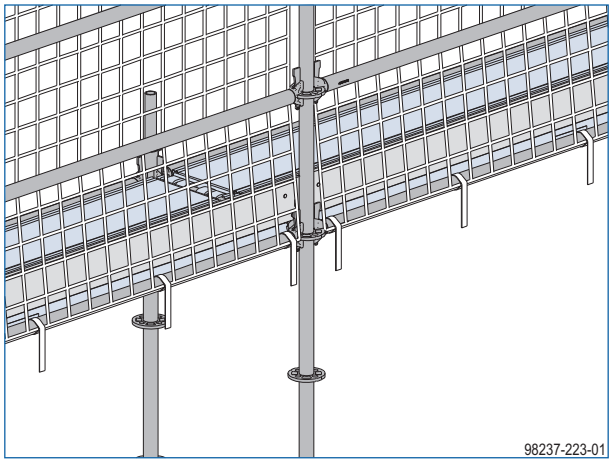
In the course of assembly, slip the ledger at decking level and the topmost ledger through every mesh of the safety net.



Safety nets with quick attachment feature

NOTICE

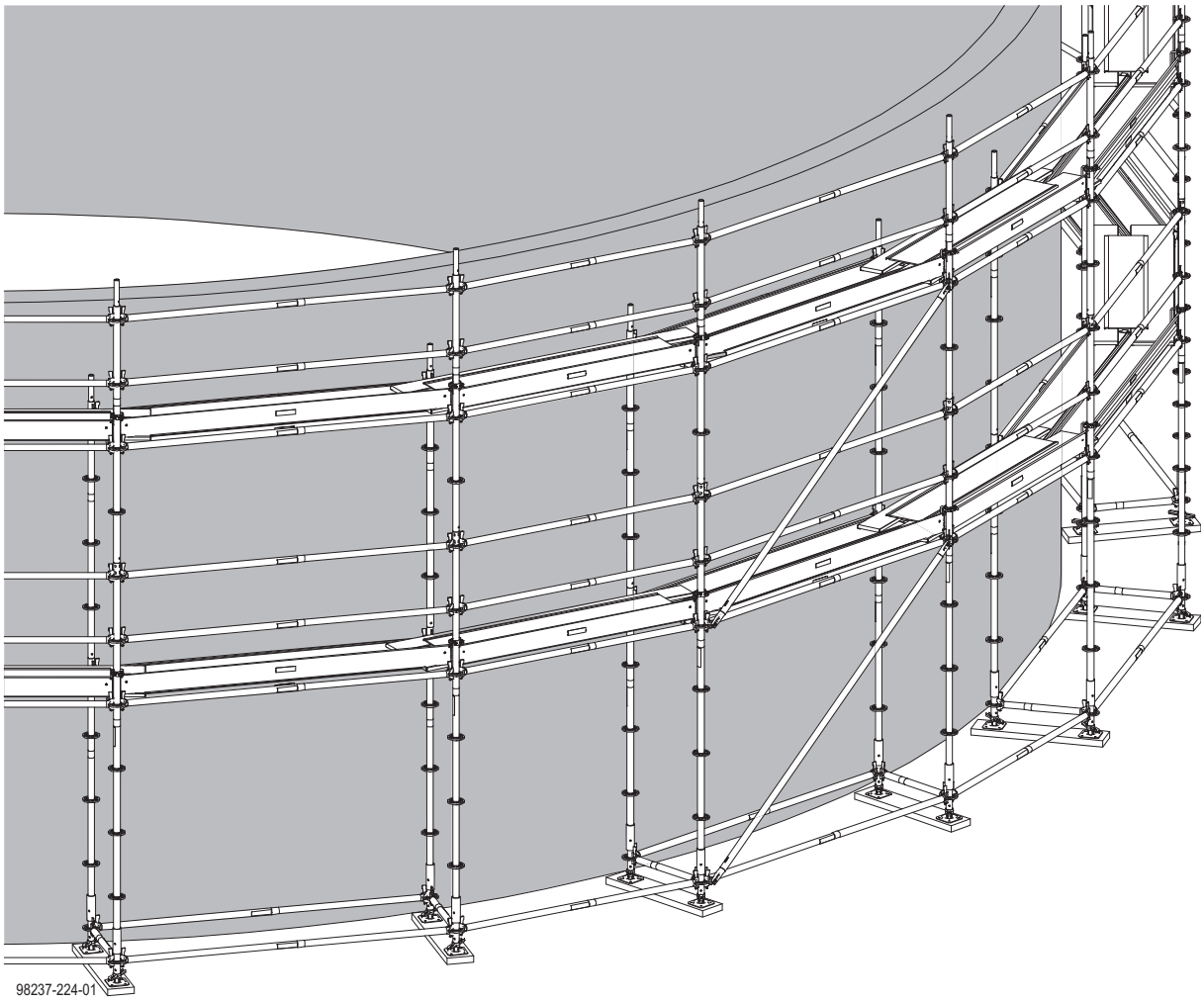
- Secure the safety net to the ledger at decking level and the topmost ledger in accordance with the manufacturer's instructions.
- Do not attach the safety net to the steel toeboard.



Circular scaffold

The Ringlock rosette offers connection variability, so scaffolds for curved geometries are easily erected.

A circular scaffold consists of rectangular main bays and gap-spanning bays.



Assembly

Scaffold base

NOTICE

Make sure that the foundation is of sufficient load-bearing strength. If necessary, use suitable sole boards to distribute load (e.g. wooden planks).

➤ Lay out ledgers in accordance with the geometry of the structure.

Depending on the geometry of the structure, lay out either an outside ledger or an inside ledger for each gap-spanning bay.

➤ Distribute the Base jacks 60cm with the necessary sole boards, spacing them correctly.

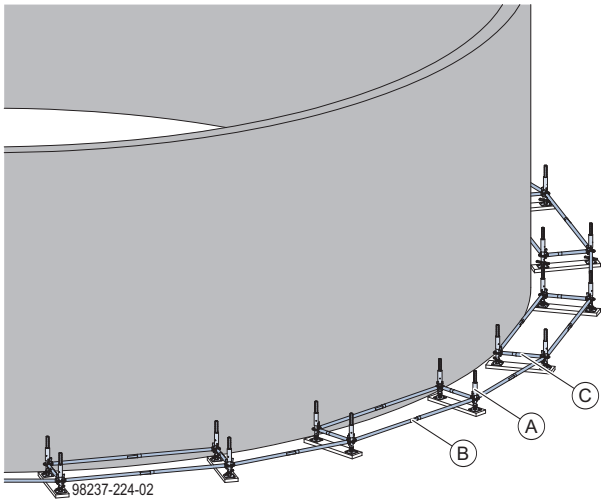
WARNING

➤ Position the scaffold so as to comply with the maximum permitted wall-to-scaffold gap as specified by national regulations (e.g. 30 cm) to prevent a fall hazard between wall and scaffold on all scaffolding levels.

Spin the nuts of all the Base jacks 60cm down to approx. 5 cm above the base plate. This maximises the range of height adjustment.

➤ Install a Starter base collar on each Base jack 60cm.

➤ Connect the ledgers to the Starter base collars (leave the wedges loose).

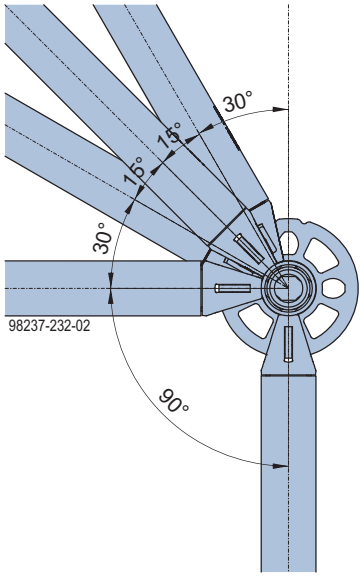


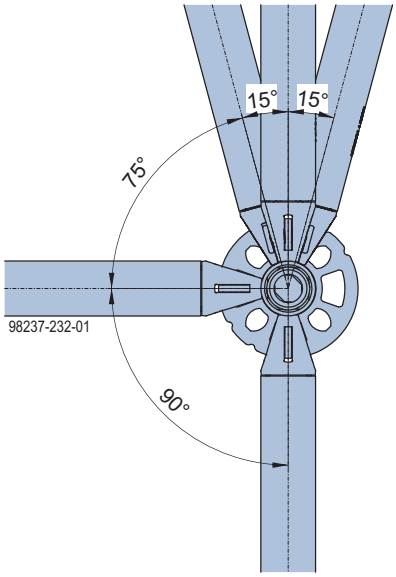
A Base jack 60cm + Starter base collar

B Longitudinal ledger

C Transverse ledger

Depending on the radius of the structure, install the ledgers into either the big or small holes in the rosettes.





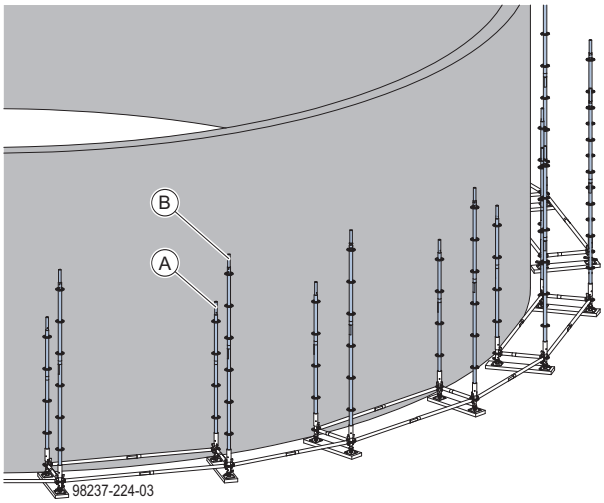
Lining and levelling scaffold base

NOTICE

The procedure for lining and levelling the scaffold base is similar to that for the facade scaffold.

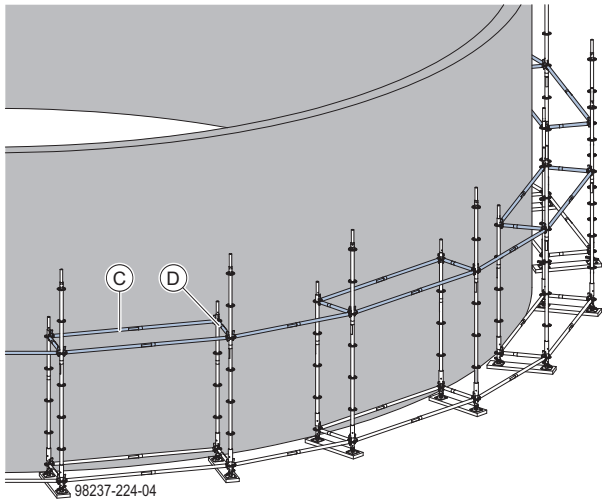
First scaffolding level

➤ Install standards on Starter base collars.



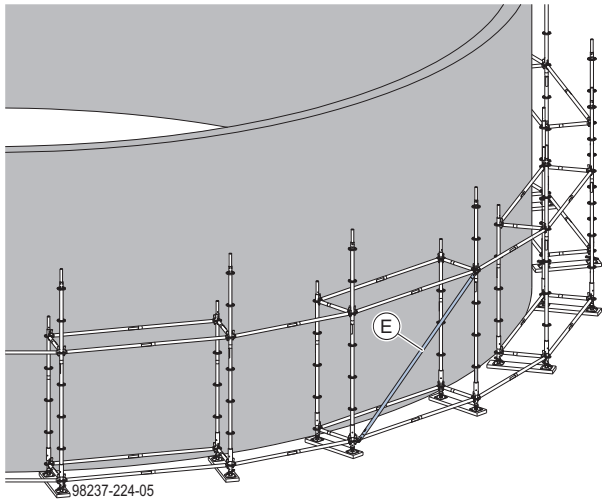
A Standard 2.00m
B Standard 3.00m

➤ Install longitudinal ledgers and transverse ledgers at height 2.0 m.



C Longitudinal ledger
D Transverse ledger

➤ Install bay brace.

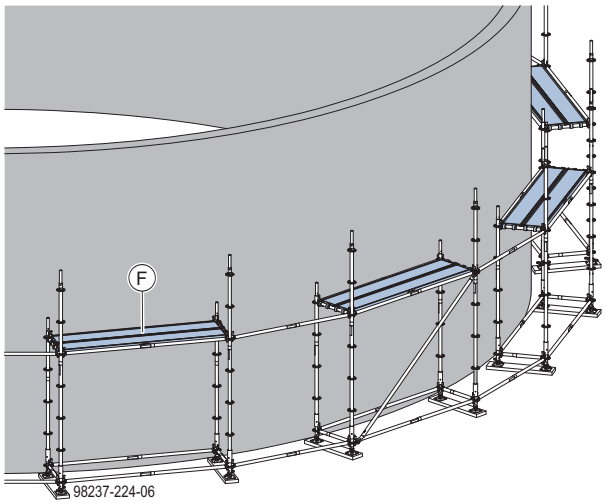


E Bay brace

NOTICE

- Brace at least every 5th bay (4th bay in Australia and North America) with a bay brace.
- Install bay braces in the rectangular main bays only.

➤ Install steel planks 32cm in the rectangular main bays and secure them against uplift.

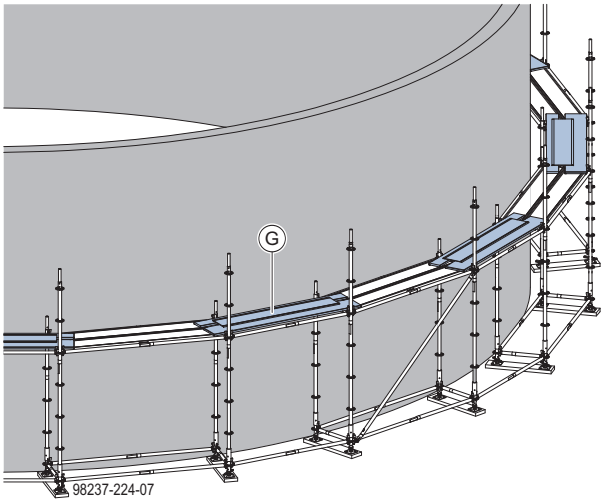


F Steel plank 32cm

WARNING

➤ Keep hatches closed at all times except when they have to be opened to allow vertical access!

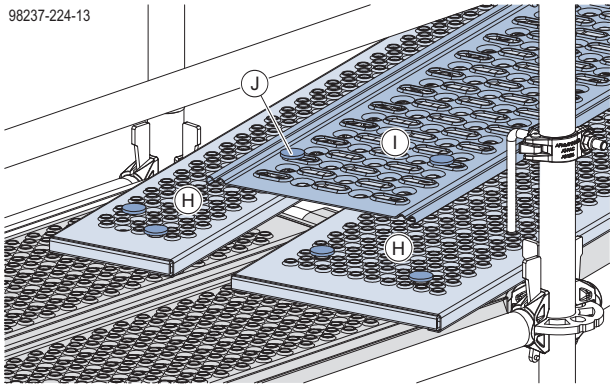
➤ Lay gap filler planks in the intermediate bays.



G Intermediate bay

If permitted by national regulations, gaps between the planks and gaps between 2 adjacent bays (e.g. gaps > 8 cm) can be closed with gap filler plates.

➤ Secure the gap filler planks to keep them from moving and to prevent uplift.

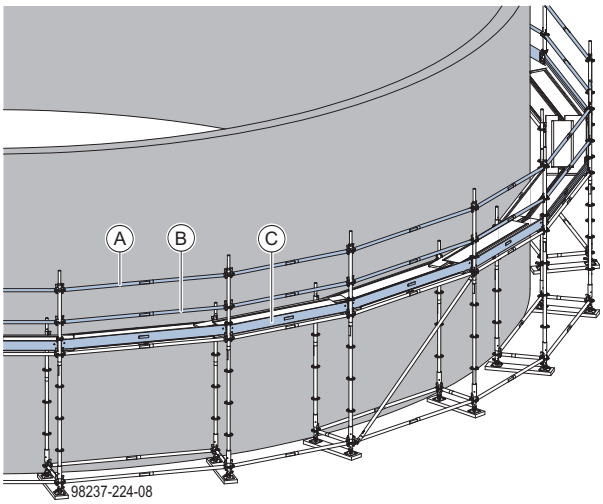


H Gap filler plank 19 or 32cm
I Gap filler plate 32cm (as necessary)
J Decking screw

Successive scaffolding levels

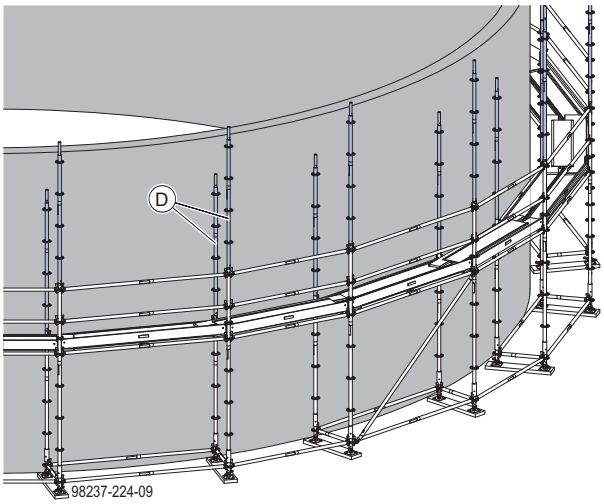
WARNING
For assembly of all remaining scaffolding levels it is essential to implement suitable measures to prevent falls. For example:
➤ Use of a advancing guardrail
➤ Personal fall-arrest system (PFAS)

➤ Install three-part side protection.



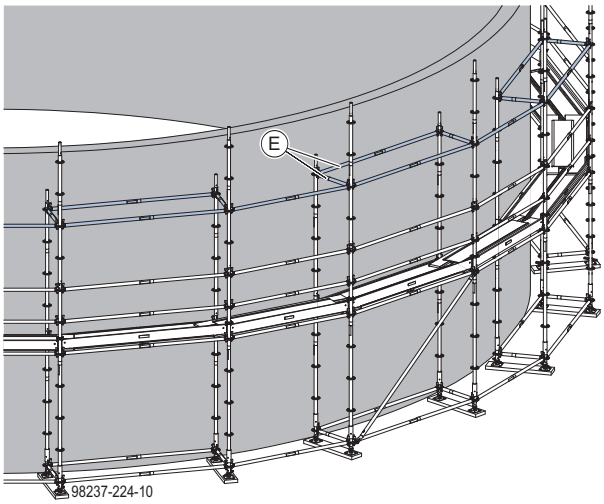
A Top guradrail
B Intermediate guardrail
C Steel toeboard

➤ Install standards 2.00m.



D Standard 2.00m

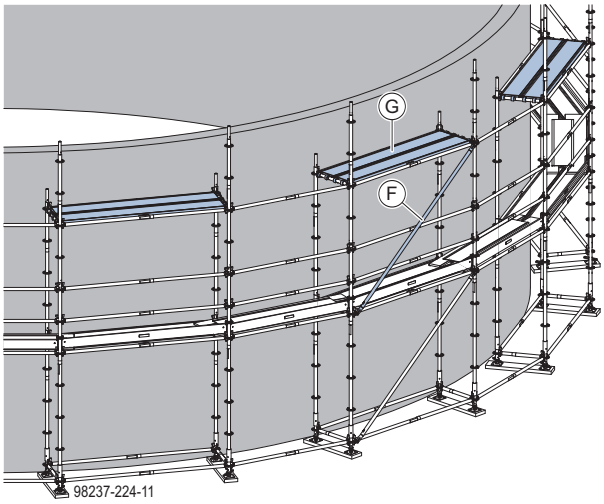
➤ Install transverse ledgers and longitudinal ledgers at a height of 2.0m above the scaffolding level.



E Longitudinal ledger and transverse ledger

➤ Install bay brace.

➤ Install scaffold planking units in the rectangular main bays.

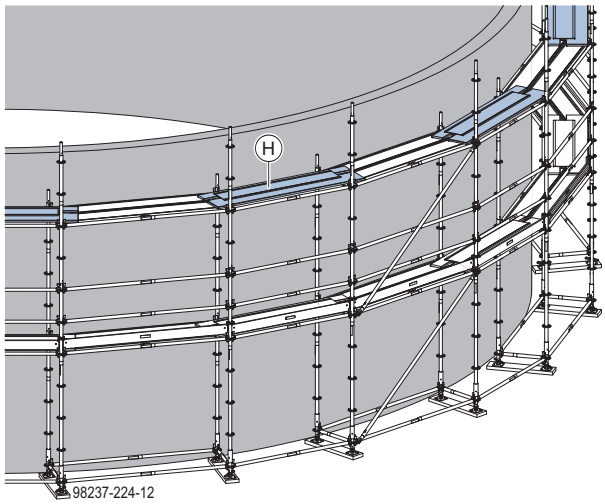


F Bay brace

G Steel plank 32cm

➤ Install gap filler planks in the intermediate bays.

➤ Secure the gap filler planks to keep them from moving and to prevent uplift.



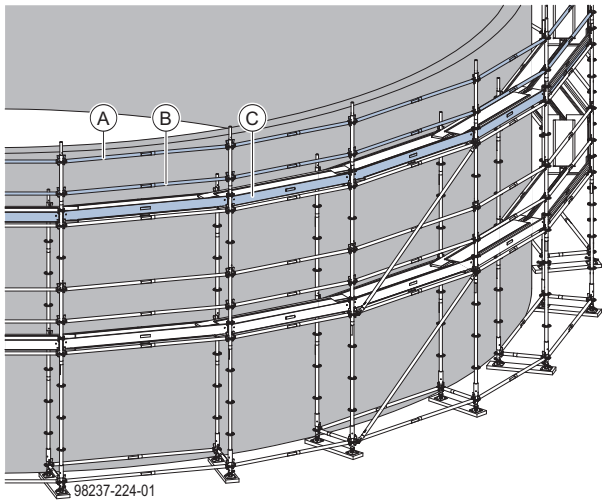
H Intermediate bay

Anchoring scaffold to structure

The anchorages necessary for tying to the structure must be installed successively as scaffold assembly proceeds (see the section headed ’Anchoring to the structure’).

Completing topmost scaffolding level

➤ Install three-part side protection on the topmost working level of the scaffold.



A Top guardrail

B Intermediate guardrail

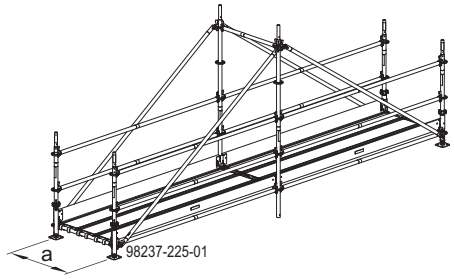
C Steel toeboard

Trench bridges

Trench bridges are erected to bridge trenches, for example water channels or site trenches, and to interconnect stairway towers.

Configuration variants

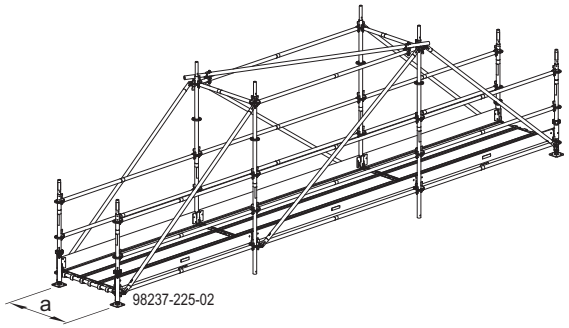
Trench bridge with 2 bays



a ... 1.09 m or 1.40 m

Length [m]	Length, bay 1 [m]	Length, bay 2 [m]
4.14	2.07	2.07
5.14	2.57	2.57
6.14	3.07	3.07

Trench bridge with 3 bays



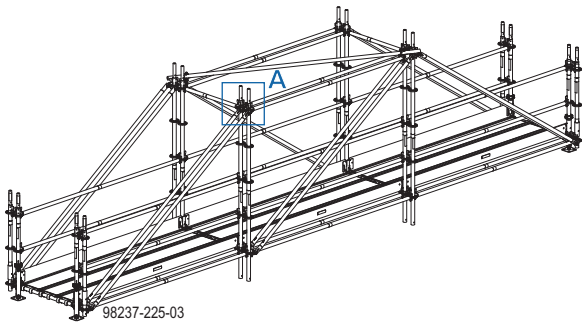
a ... 1.09 m or 1.40 m

Length [m]	Length, bay 1 [m]	Length, bay 2 [m]	Length, bay 3 [m]
7.21	2.57	2.07	2.57
8.21	2.57	3.07	2.57
9.21	3.07	3.07	3.07

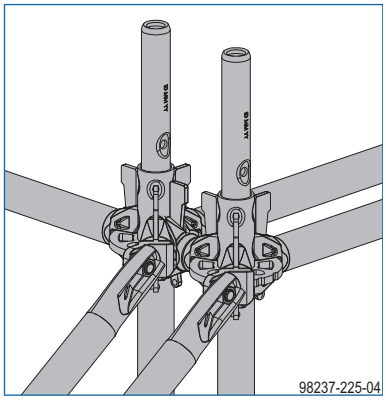
NOTICE

Use double standards and double bay braces for length 9.21 m.

Use 2 Ledgers 0.15m to interconnect the two standards in each double standard leg.



Detail A



Materials list

System width	System length	Base jack 60cm	Starter base collar	Jack retainer for lifting	Standard 1.00m	Standard 2.50m	Ledger 0.15m	Ledger 1.09m	Ledger 1.40m	Ledger 2.07m	Ledger 2.57m	Ledger 3.07m	Bay brace 200/207cm	Bay brace 200/257cm	Bay brace 200/307cm	Steel plank 32/207cm	Steel plank 32/257cm	Steel plate 32/307cm	Steel toeboard yellow 2.07m	Steel toeboard yellow 2.57m	Steel toeboard yellow 3.07m	Swivel coupler 48mm	Scaffold tube 48.3mm 2.50m	Scaffold tube 48.3mm 3.50m
1.09 m	4.14 m	4	4	4	4	2	-	4	-	12	-	-	4	-	-	6	-	-	4	-	-	-	-	-
	5.14 m	4	4	4	4	2	-	4	-	-	12	-	-	4	-	-	6	-	-	4	-	-	-	-	-
	6.14 m	4	4	4	4	2	-	4	-	-	-	12	-	-	4	-	-	6	-	-	4	-	-	-	-
	7.21 m	4	4	4	4	4	-	6	-	8	12	-	2	4	-	3	6	-	2	4	-	2	1	-
	8.21 m	4	4	4	4	4	-	6	-	-	12	8	-	4	2	-	6	3	-	4	2	2	-	1
	9.21 m	4	8	4	8	8	16	6	-	-	-	12	-	-	12	-	-	9	-	-	6	2	-	1
1.40 m	4.14 m	4	4	4	4	2	-	-	4	12	-	-	4	-	-	8	-	-	4	-	-	-	-	-
	5.14 m	4	4	4	4	2	-	-	4	-	12	-	-	4	-	-	8	-	-	4	-	-	-	-	-
	6.14 m	4	4	4	4	2	-	-	4	-	-	12	-	-	4	-	-	8	-	-	4	-	-	-	-
	7.21 m	4	4	4	4	4	-	-	6	8	12	-	2	4	-	4	8	-	2	4	-	2	1	-
	8.21 m	4	4	4	4	4	-	-	6	-	12	8	-	4	2	-	8	4	-	4	2	2	-	1
	9.21 m	4	8	4	8	8	16	-	6	-	-	28	-	-	12	-	-	12	-	-	6	2	-	1

The figures in the table give the number of items needed.

Assembly

NOTICE

- Trench bridges are pre-assembled on the ground.
- Clear an assembly flat +50 cm for the ends of the two outermost scaffold bays.
- Extra Base jacks 60cm are needed as temporary assembly aids for the intermediate scaffold legs.
- The intermediate scaffold legs must be secured throughout assembly so that they cannot fall over.
- A trench bridge with 3 bays requires horizontal stiffening of the intermediate bay with a Scaffold tube 48.3mm at the top.

Structural design

NOTICE

This structural design applies for the standard-application trench bridge with max. 3 bays.

Permitted service load

The trench bridges are designed for the following load classes:

Load classes, trench bridges

System width	Load class Permitted service load
1.09 m	LC 3 2.0 kN/m² (200 kg/m²)
1.40 m	LC 3 2.0 kN/m² (200 kg/m²)

Lifting by crane

Preparation

NOTICE

Reposition trench bridges with max. 3 bays.

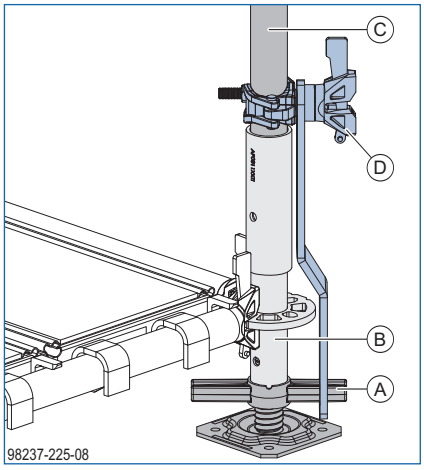
WARNING

Danger from loose and unsecured parts.

➤ Observe the following points before lifting!

Secure Base jacks 60cm to prevent them from dropping out

➤ Slip a Jack retainer for lifting over each Handle nut for base jacks and secure it to the standard with the scaffold-tube coupler.



A Base jack 60cm
B Starter base collar
C Standard
D Jack retainer for lifting

CAUTION

➤ The Base jacks 60cm of the intermediate legs (temporary assembly aid) are not secured to the legs and are left behind on the assembly flat when the trench bridge is lifted clear.

➤ All lifting methods to be compliant with all local regulations and safety requirements, consult local documentation before completing any lifting works.

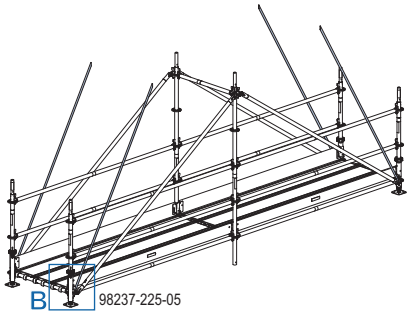
Repositioning operation

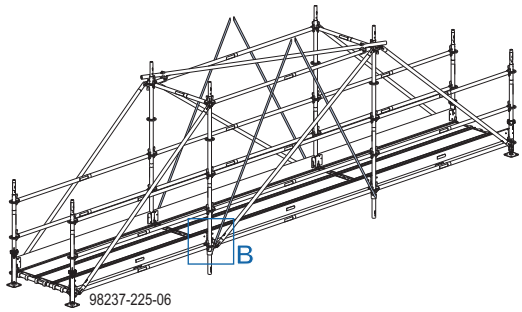
CAUTION

➤ Use textile lifting slings to reposition the trench bridge.

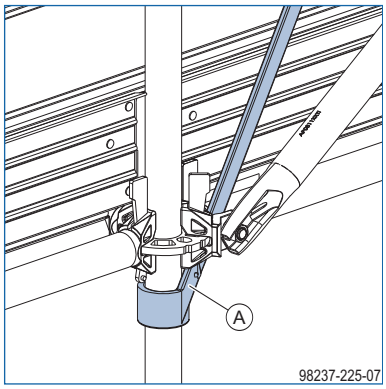
➤ Secure the textile lifting slings only to the standards below the nodes of the decking level. Do not attach slings to horizontal ledgers or to braces!

➤ Sling angle β max. 30°.





Close-up B



A Lifting sling

Throughout the repositioning operation, no loose parts such as tools or other items are permitted on the trench bridge!

Weights for repositioning operation

Length [m]	Width 1.09 m [kg]	Width 1.40 m [kg]
4.14	350	385
5.14	403	445
6.14	456	505
7.21	588	647
8.21	652	718
9.21	955	1028

Lifting and rigging

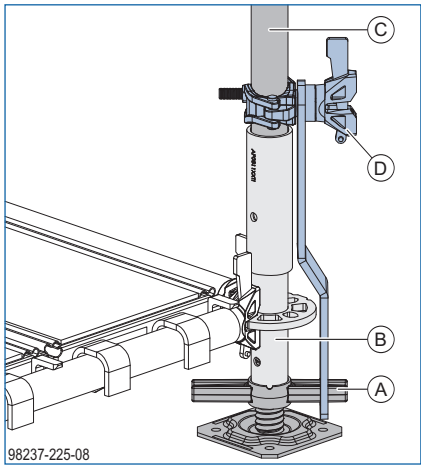
Lifting by crane preparation

AT-PAC Ringlock system can be craned/lifted into position using a crane. It is recommended to prepare the assembly using the following guidelines:

- The scaffold shall not be lifted with wind forces that exceed the local guidelines and regulations.
- Rigging equipment must be inspected prior to use.
- Clear all decks of loose materials.
- Verify that every wedge is fully engaged.
- Secure all standard joins by either bolts M12 8.8, spring pins M12 or leg locks (refer securing the standards to resist pulling apart).
- Install temporary bracing as necessary.
- Base lift to be secured to prevent separation during lifting. Use leg locks and Jack retainers for lifting (refer secure Base jacks to prevent them dropping out).
- All planks must be secured to ledgers (refer Facade scaffold steps) or removed prior to lifting.
- Rigging to be connected to Ringlock lifting lugs or straps connected under Ringlock rosettes with a check coupler fitted above the rosette. (Reference lifting arrangement)
- Only approved lifting slings, chains and associated equipment.
- Use ropes or other devises to guide the scaffold and to prevent its rotation.

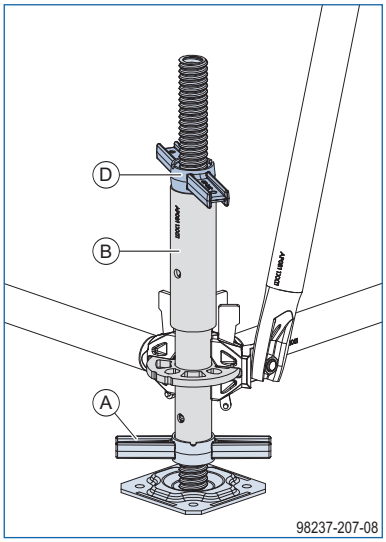
Secure base jacks to prevent them dropping out

➤ Slip a Jack retainer for lifting over each handle nut for base jack and secure it to the standard with the scaffold-tube coupler.



A Base jack
B Starter base collar
C Standard
D Jack retainer for lifting

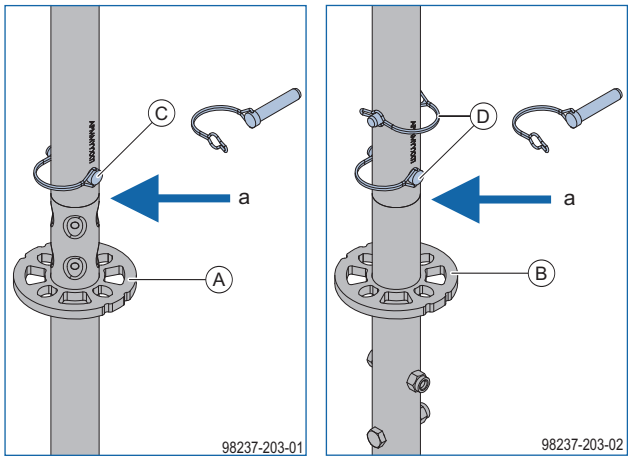
➤ For rebar scaffolds, secure each base jack of the outrigger structure with an extra Handle nut for base jack on the Starter base collar.



A Base jack
B Starter base collar
D Handle nut for base jack

Securing the standards to resist pulling apart

➤ Secure the standards at each Standard-to-Standard joint with spring pins or M12 bolts so that they cannot pull apart.

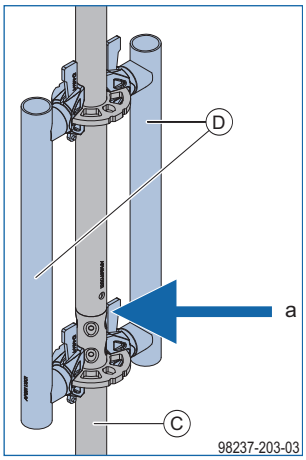


a ... Standard-to-standard joint

A Standard with crimped spigot
B Standard with bolted spigot
C 2 (1) spring pin(s) or 2(1) M12 x 60 8.8 bolt(s) with nut(s)

Do not exceed the maximum permissible load of the tensile-load standard-to-standard connection stated in the section headed ‘Structural design’.

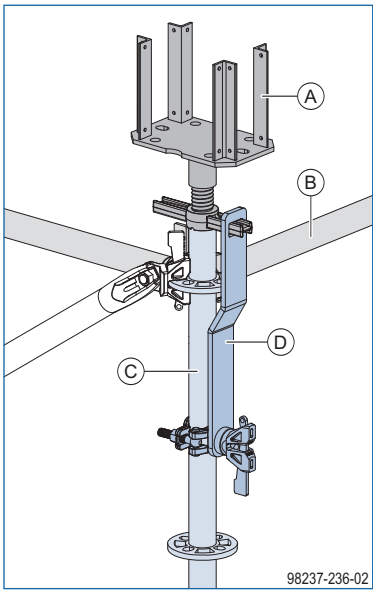
➤ Alternatively, the standard-to-standard joint can be secured with leg locks for suspended scaffold.



C Standard with crimped spigot
D Leg lock

Securing head equipment to prevent drop

➤ Slip a Jack retainer for lifting over each handle nut for U-head or 4-way screw jack head and secure it to the standard with the scaffold-tube coupler.



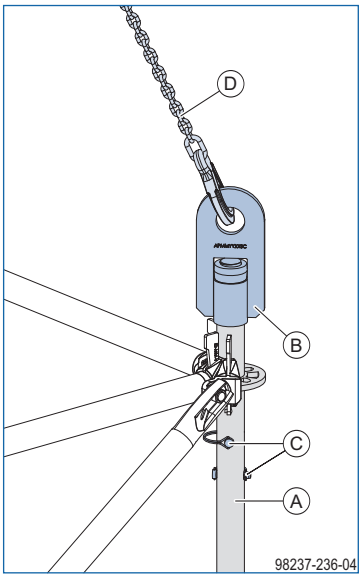
A Head equipment
B Ledger
C Standard
D Jack retainer for lifting

Method of lifting

There are multiple methods to configure the lifting points of a scaffold. Below are some of the typical methods of lifting scaffolds using Ringlock components.

Lifting lug

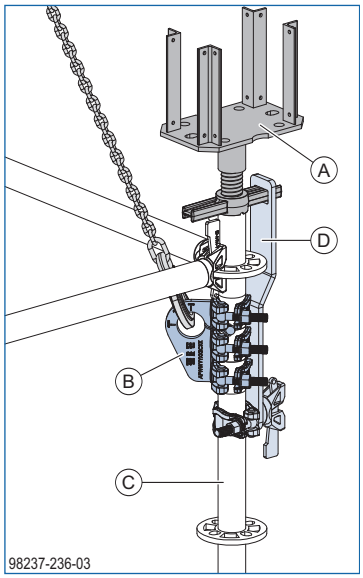
➤ Insert the lifting lug into the top of the standard and connect with spring pins or bolts M12 so that they cannot pull apart.



A	Standard without spigot
B	Lifting lug
C	2 (1) spring pin(s) or 2 (1) bolt(s) M12 x 60 8.8 with nut(s)
D	Example lifting device

Lifting lug coupler

➤ Secure the Lifting lug coupler to the standard by way of the three (3) half couplers and ensure T-bolts tightened.



A	Head equipment
B	Lifting lug coupler
C	Standard
D	Jack retainer for lifting

WARNING

➤ Make sure that the lifting lug coupler is mounted with the hole at the top! So that lifting capacity can be guaranteed.

➤ Any lifting must be done by trained and qualified personnel.

➤ Ensure the installation of a horizontal brace (plan brace or tube and fitting) connected to the rosette above or below the attachment point.

Anchoring to the structure

NOTICE

- Anchoring must proceed step by step as assembly of the scaffold proceeds.
- Set anchors in accordance with the standard design for system set-up per DIBt Approval No. 822-992 or in accordance with statical requirements.
- Make sure that the sub-base for the anchor points is of sufficient load-bearing strength.
- Create an anchor log.

WARNING

Risk of collapse

➤ Omitted anchoring or anchoring not in compliance with correct procedure leads to reduced stability of scaffolds.

Max. required anchoring load in accordance with the standard design for system set-up per DIBt Approval No. 8.22-992 or in accordance with statical requirements.

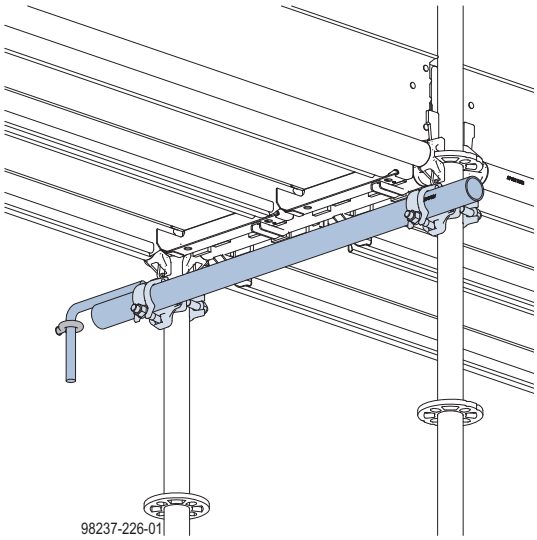
With eye-bolt

NOTICE

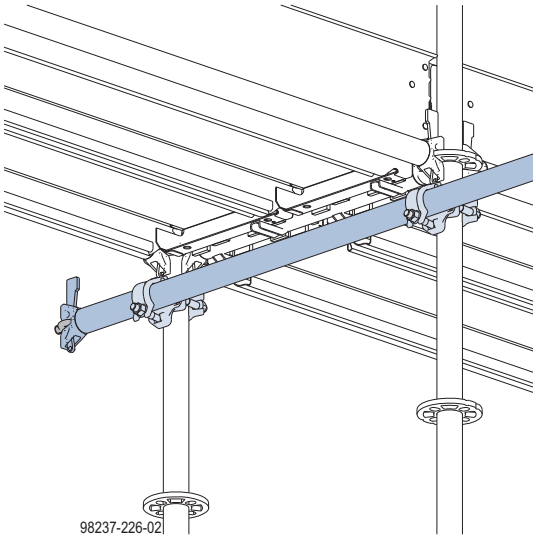
Follow the manufacturer's instructions on correct use of the eye-bolt and the associated anchor-bolt.

Configuration variants

Wall tie tube over 2 standards



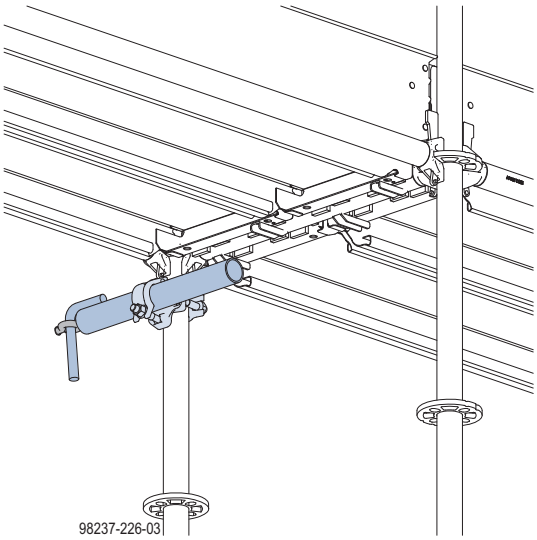
Ledger O-Type over 2 standards



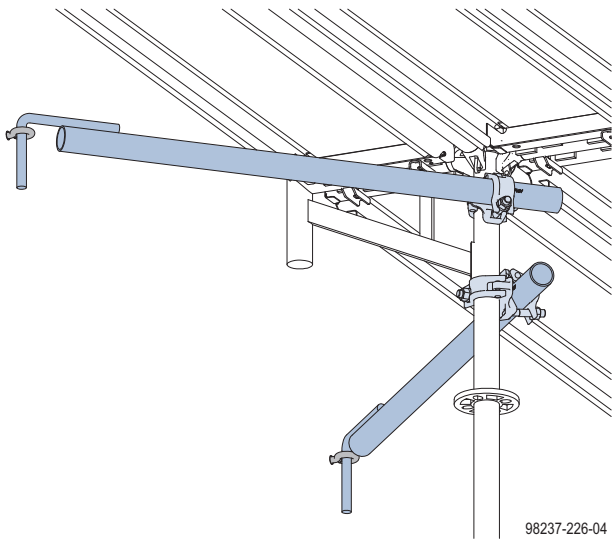
NOTICE

The head of the ledger is secured in the eye-bolt by the wedge.

Wall tie tube over 1 standard



V-anchor



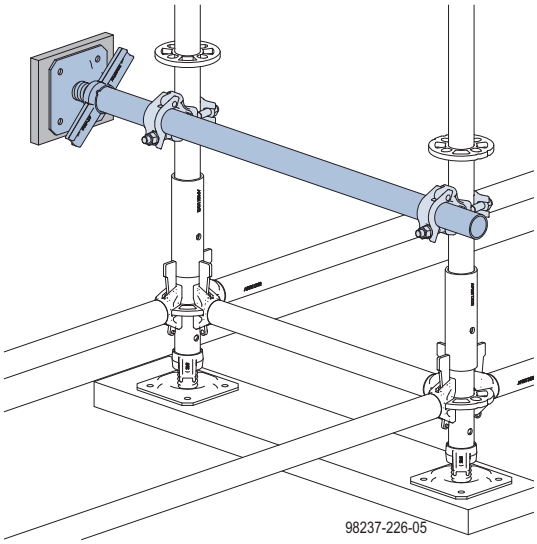
NOTICE

Connect wall tie tubes to the inner scaffold standard at an angle of approx. 45°.

Without eye-bolt

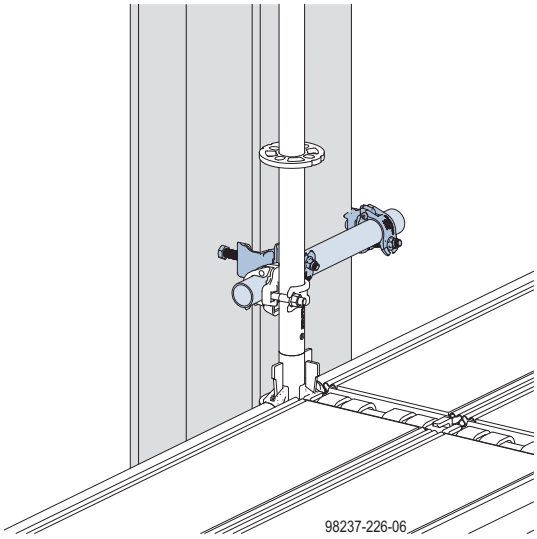
Configuration variants

Pressure tie

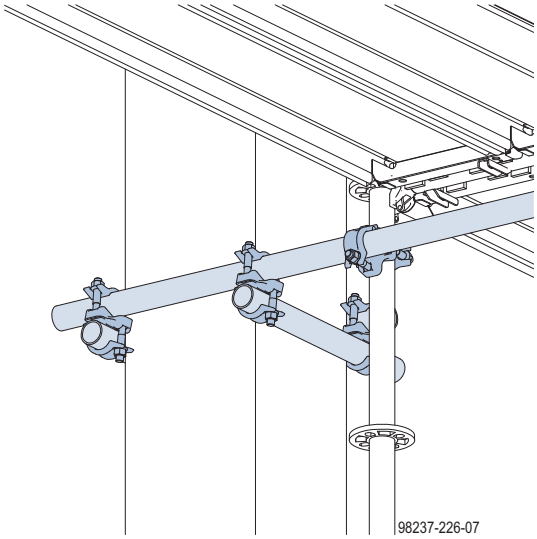


Using rubber, plastic or wooden load spreaders will help prevent damage to the sub-base.

Anchorage with Beam clamp forged rigid



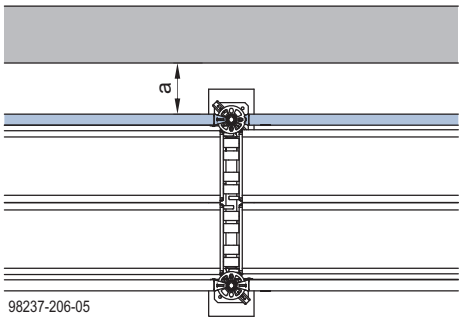
Anchorage with tube-and-coupler assembly



Annex

Annex 1

Max. distance from wall to scaffolding



Region: Europe

Country	Max. gap (a) [mm]	Applicable standard
Austria	300	ÖNORM B 4007
Belgium	300	NBN EN 12811-1
Bulgaria	300	BDS EN 12811-1
Croatia	300	HRN EN 12811-1
Czech Republic	250	Government Regulation No. 362/2005 Coll (Czechia)
Denmark	300	DS / EN 12811-1
Estonia	300	EVS-EN 12811-1
Finland	300	SFS-EN 12811-1
France	300	NF EN 12811-1
Germany	300	DIN EN 12811-1
Greece	300	ELOT EN 12811-1
Hungary	300	MSZ EN 12811-1
Ireland	225	Code of Practice for Access and Working Scaffolds (Ireland)
Italy	300	UNI EN 12811-1
Latvia	300	LVS EN 12811-1
Lithuania	300	LST EN 12811-1
Netherlands	300	NEN EN 12811-1
Norway	300	NS-EN 12811-1
Poland	200	PN-M-47900
Portugal	300	NP EN 12811-1
Romania	300	SR EN 12811-1
Serbia	300	SRPS EN 12811-1
Slovakia	300	STN EN 12811-1
Slovenia	300	SIST EN 12811-1
Spain	300	UNE-EN 12811-1
Sweden	300	SS-EN 12811-1 AFS 2013:4
Switzerland	300	SN EN 12811-1
Ukraine	300	DSTU EN 12811-1
United Kingdom	300	BS EN 12811-1

Region: North America

Country	Max. gap (a) [mm]	Applicable standard
United States	355 (14’’)	OHSA 29 CFR 1926.451
Canada	300	CSA Z797-18

Region: South America

Country	Max. gap (a) [mm]	Applicable standard
Chile	355 (14’’)[1)]	NCh 2501:[2)]
Colombia	355 (14’’)[1)]	Resolution 1409[2)]
Mexico	300	NOM-009-STPS-2011[2)]
Panama	-	[2)]
Peru	-	[2)]

Region: East Asia Pacific

Country	Max. gap (a) [mm]	Applicable standard
Australia	225	AS/NZS 4576:2020
Indonesia	300	SNI 03-1751-2000[1)]
India	355 (14’’)	IS 3696:1987[2)]
Malaysia	300	MS 1462
Philippines	355 (14’’)	OSHS Rule 1414[2)]
Singapore	300	SS 550:2015

Region: Middle East & Africa

Country	Max. gap (a) [mm]	Applicable standard
United Arab Emirates	225	OSHAD-SF Code of Practice 26: Scaffolding
Saudi Arabia	355 (14’’)	Saudi Aramco Scaffold Safety Handbook[2)]
Oman	300	PDO SP-1257: Work at Height and Access
Kuwait	355 (14’’)	KOC-G-007[2)]
Qatar	355 (14’’)	QCS[2)]
Egypt	355 (14’’)	Egyptian Labor Law No. 12 of 2003[2)]
Turkey	300	EN 12811-1

[1)] ... in compliance with EN 12811-1

[2)] ... in compliance with BS EN 12811-1 and OSHA

Annex 2

Max. gap between planks

Region: Europe

Country	Max. gap (a) [mm]	Applicable standard
Austria	25	ÖNORM B 4007
Belgium	25	NBN EN 12811-1
Bulgaria	25	BDS EN 12811-1
Croatia	25	HRN EN 12811-1
Czech Republic	25	ČSN EN 12811-1
Denmark	25	DS / EN 12811-1
Estonia	25	EVS-EN 12811-1
Finland	25	SFS-EN 12811-1
France	25	NF EN 12811-1
Germany	25	DIN EN 12811-1
Greece	25	ELOT EN 12811-1
Hungary	25	MSZ EN 12811-1
Ireland	25	Code of Practice for Access and Working Scaffolds (Ireland)
Italy	25	UNI EN 12811-1
Latvia	25	LVS EN 12811-1
Lithuania	25	LST EN 12811-1
Netherlands	25	NEN EN 12811-1
Norway	25	NS-EN 12811-1
Poland	25	PN-M-47900
Portugal	25	NP EN 12811-1
Romania	25	SR EN 12811-1
Serbia	25	SRPS EN 12811-1
Slovakia	25	STN EN 12811-1
Slovenia	25	SIST EN 12811-1
Spain	25	UNE-EN 12811-1
Sweden	25	SS-EN 12811-1 AFS 2013:4
Switzerland	25	SN EN 12811-1
Ukraine	25	DSTU EN 12811-1
United Kingdom	25	BS EN 12811-1

Region: North America

Country	Max. gap (a) [mm]	Applicable standard
United States	25	OHSA 29 CFR 1926.451
Canada	25	CSA Z797-18

Region: South America

Country	Max. gap (a) [mm]	Applicable standard
Chile	25 (1'')[1)]	NCh 2501:[2)]
Colombia	25 (1'')[1)]	CSA Z797-18[2)]
Mexico	25 (1'')[1)]	NOM-009-STPS-2011[2)]
Panama	-	[2)]
Peru	-	[2)]

Region: East Asia Pacific

Country	Max. gap (a) [mm]	Applicable standard
Australia	10	AS/NZS 4576:2020
Indonesia	25	SNI 03-1751-2000[1)]
India	25 (1'')	IS 3696:1987[2)]
Malaysia	25	MS 1462
Philippines	25 (1'')	OSHS Rule 1414[2)]
Singapore	25	SS 550:2015

Region: Middle East & Africa

Country	Max. gap (a) [mm]	Applicable standard
United Arab Emirates	25	OSHAD-SF Code of Practice 26: Scaffolding
Saudi Arabia	25	Saudi Aramco Scaffold Safety Handbook[2)]
Oman	25	PDO SP-1257: Work at Height and Access
Kuwait	25	KOC-G-007[2)]
Qatar	25	QCS[2)]
Egypt	25	Egyptian Labor Law No. 12 of 2003[2)]
Turkey	25	EN 12811-1

[1)] ... in compliance with EN 12811-1

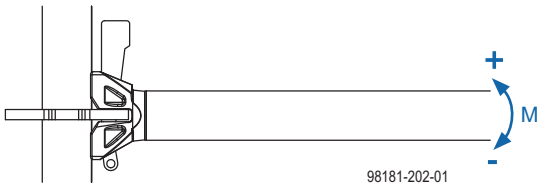
[2)] ... in compliance with BS EN 12811-1 and OSHA

Annex 3

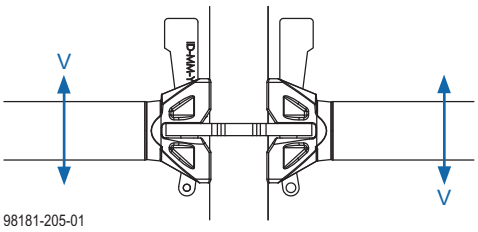
Structural design

Node capacities

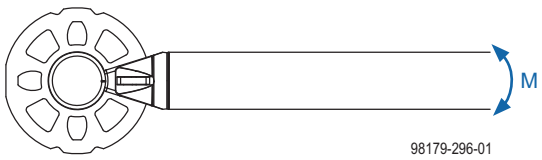
- The Ringlock modular scaffold system may be used as a work and protective scaffold according to EN 12811 with load class 3 and as shoring according to EN 12812.
- The system dimensions of the standard design are bay length l ≤ 3.072 m and bay width b = 0.732 m.
- The maximum height of the top working area is 24 m plus the spindle extension.
- If the actions on the scaffold from the traffic load do not exceed the service value of the loads specified in EN 12811, Table 3, the standard design can be used without further verification.
- According to EN 12810, the following designation must be used for the standard design of the Ringlock scaffold system as a façade scaffold:
  Scaffolding EN 12810-3D-SW06/307-H2-A-LS
- All the platforms of the Ringlock modular scaffold system can be used as overhead protection.



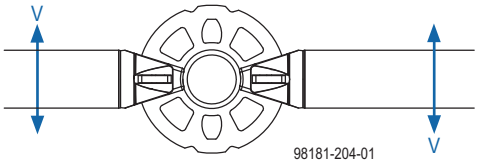
Positive bending moment M^{+}_{y}: 88 kNcm
Negative bending moment M^{-}_{y}: 80.6 kNcm



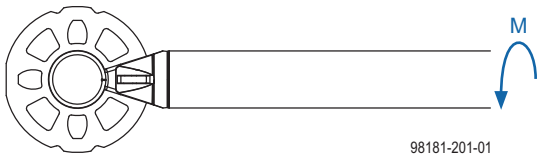
Vertical shear force V_z: 18.2 kN



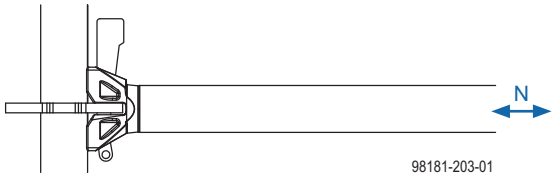
Bending moment M_z: 30.2 kNcm



Horizontal shear force V_y: 7.4 kN



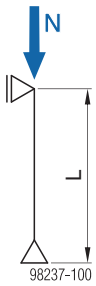
Torsional moment M_T: 39 kNcm



Axial force N: 24.5 kN

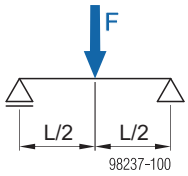
Standards

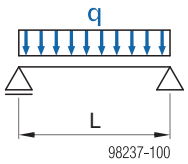
buckling length [m	distance between Standards [cm]	pressure					tensile	
		0,5	1,0	1,5	2,0	3,0	Standard crimped spigot[1)]	Standard bolted spigot[2)]
Nzul, Randstiel [kN]	157,2	67,3	55,1	33,8	23,1	13,6	22,1	45,8
	307,2	67,3	50,1	30,4	20,6	12,0		
Nzul, Innenstiel [kN]	157,2	67,3	66,6	41,6	28,6	17,2		
	307,2	67,3	57,6	35,6	24,4	14,6		

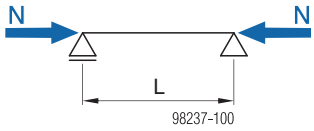


[1)] ... mit 1x Rohrklappstecker EU oder 1x Schraube M12x60 8.8
[2)] ... mit 2 x 2 Schrauben M12x60 8.8

Ledgers







		O-ledger							O-truss ledger				
Length L	[m]	0,73	1,09	1,40	1,57	2,07	2,57	3,07	1,40	1,57	2,07	2,57	3,07
Point load F_{zul}	[kN]	10,20	7,24	5,80	5,24	4,10	3,38	2,87	16,70	13,00	8,36	7,58	6,42
Line load q_{zul}	[kN/m]	30,20	14,50	9,10	7,33	4,37	2,82	1,83	17,80	15,50	9,75	6,37	4,54
Compressive force D_{zul}	[kN]	24,50	24,50	24,50	24,50	24,50	20,00	14,00	24,50	24,50	24,50	20,00	14,00
Tensile force Z_{zul}	[kN]	24,50							24,50				

Bay braces

Lift height H = 2,00 m

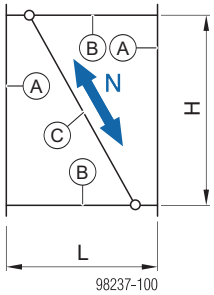
Length L	[m]	0,73	1,09	1,40	1,57	2,07	2,57	3,07
Compressive force $N_{V,zul}$	[kN]	14,30	13,30	12,10	11,50	9,50	7,70	6,30
Tensile force $N_{V,zul}$	[kN]	15,00	15,00	15,00	15,00	14,40	14,30	14,20

Lift height H = 1,50 m

Length L	[m]	0,73	1,09	1,40	1,57	2,07	2,57	3,07
Compressive force $N_{V,zul}$	[kN]	14,90	14,40	13,30	12,80	11,50	9,10	7,10
Tensile force $N_{V,zul}$	[kN]	15,00	15,00	14,90	14,50	14,30	14,10	14,00

Lift height H = 1,00 m

Length L	[m]	0,73	1,09	1,40	1,57	2,07	2,57	3,07
Compressive force $N_{V,zul}$	[kN]	14,70	12,90	12,20	11,90	11,30	10,40	8,00
Tensile force $N_{V,zul}$	[kN]	15,50	14,50	14,30	14,20	14,10	13,50	13,20



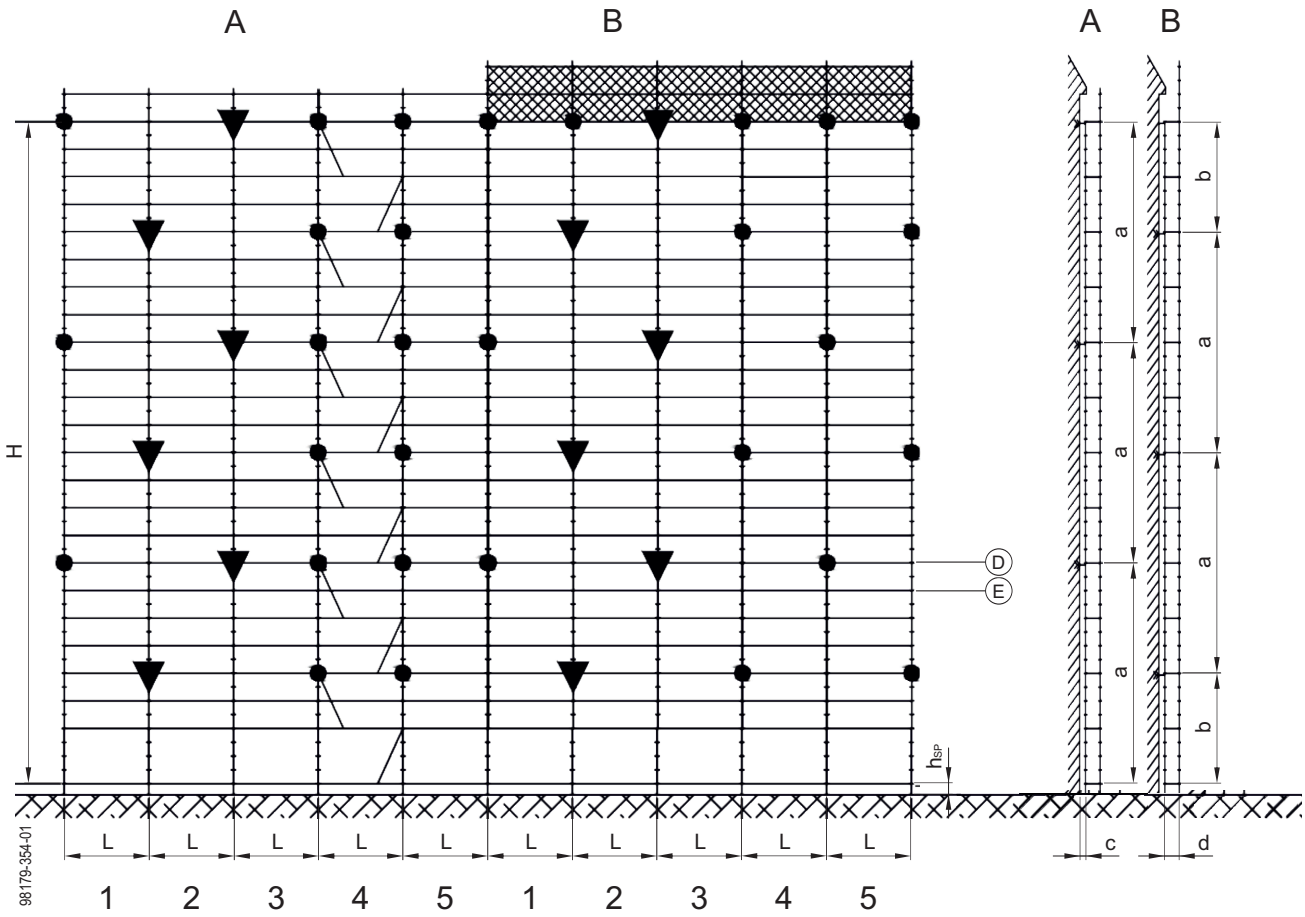
A Standard
B Ledger
C Bay brace

Annex 4

Standard design for system set-up per DIBt approval

Basic configuration with/without protective wall

Partly open facade
Closed facade
Unclad scaffold, load class 3 (EN 12811-1)



H ... ≤ 24 m
L ... ≤ 3.07 m
h_{SP} ... ≤ 29 cm
a ... 8 m
b ... 4 m
c ... ≤ 0.3 m
d ... 0.732 m

▼ ... V-anchor

● ... Short wall tie, with one double coupler

D Decking plane
E Handrail post (ledger)

Note:
Edge protection components are shown only insofar as statically required.

Screw-jack ext. length:
- h_{SP} ≤ 29 cm

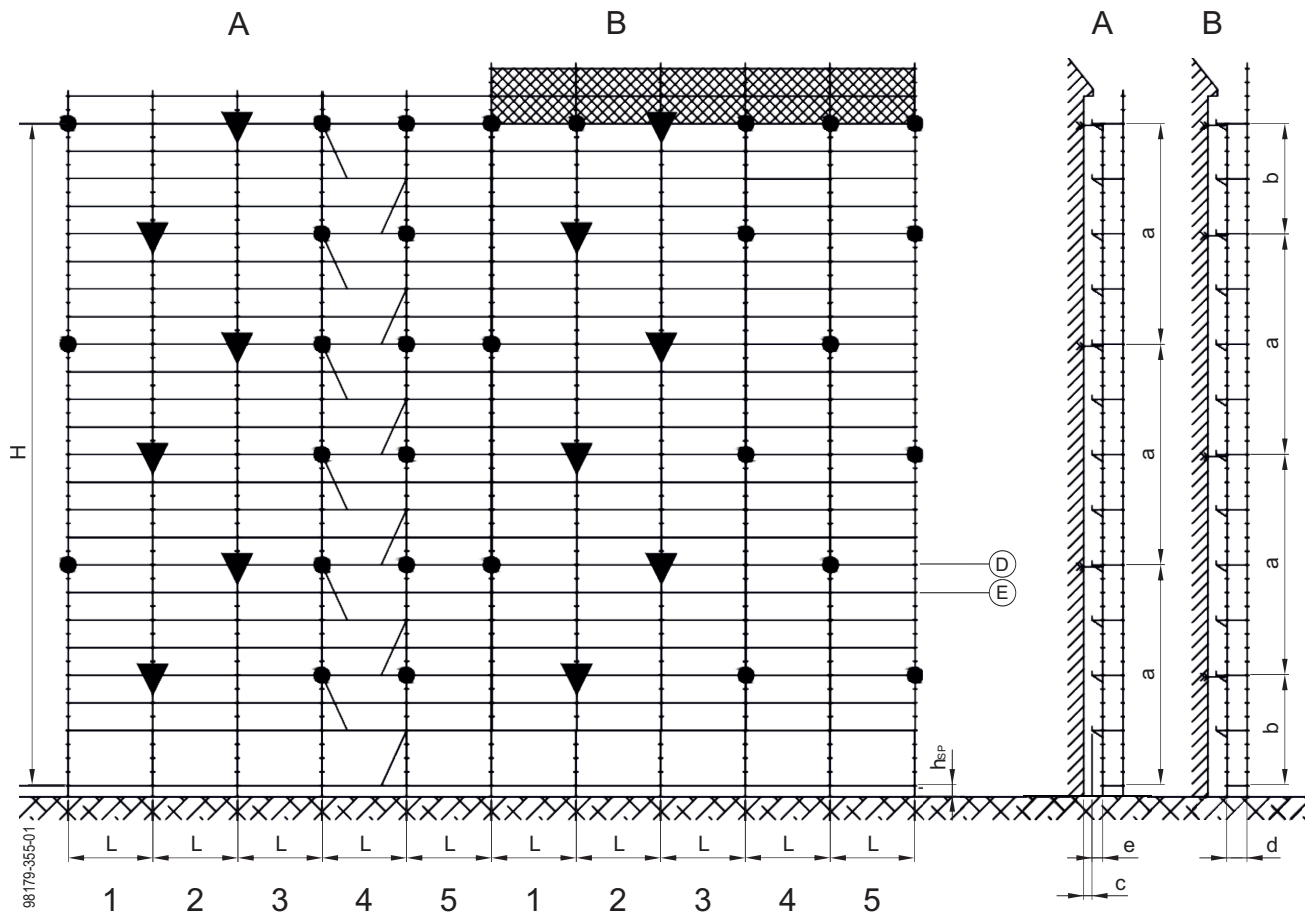
Anchor grid:
- 8 m offset over height.
- At least one 1 V-anchor every 5 bays.
- Protective-wall storey fully anchored.
- Anchor plane offset by 30 cm possible.

Bracing:
- Ledgers inside and outside in every scaffold storey.
- Ledgers as handrail post.

Comment:
- Installation of the wall with standards 1 m.
- If safety netting is used for the protective wall, 3-part edge protection consisting of toeboard, intermediate ledger and handrail ledger is necessary.

Bracket configuration with/without protective wall

Partly open facade
Closed facade
Unclad scaffold, load class 3 (EN 12811-1)



H ... ≤ 24 m
L ... ≤ 3.07 m
h_{SP} ... ≤ 29 cm
a ... 8 m
b ... 4 m
c ... ≤ 0.3 m
d ... 0.732 m
e ... 0.39 m

▼ ... V-anchor

● ... Short wall tie, with one double coupler

D Decking plane
E Handrail post (ledger)

Note:
Edge protection components are shown only insofar as statically required.

Screw-jack ext. length:
- h_{SP} ≤ 29 cm

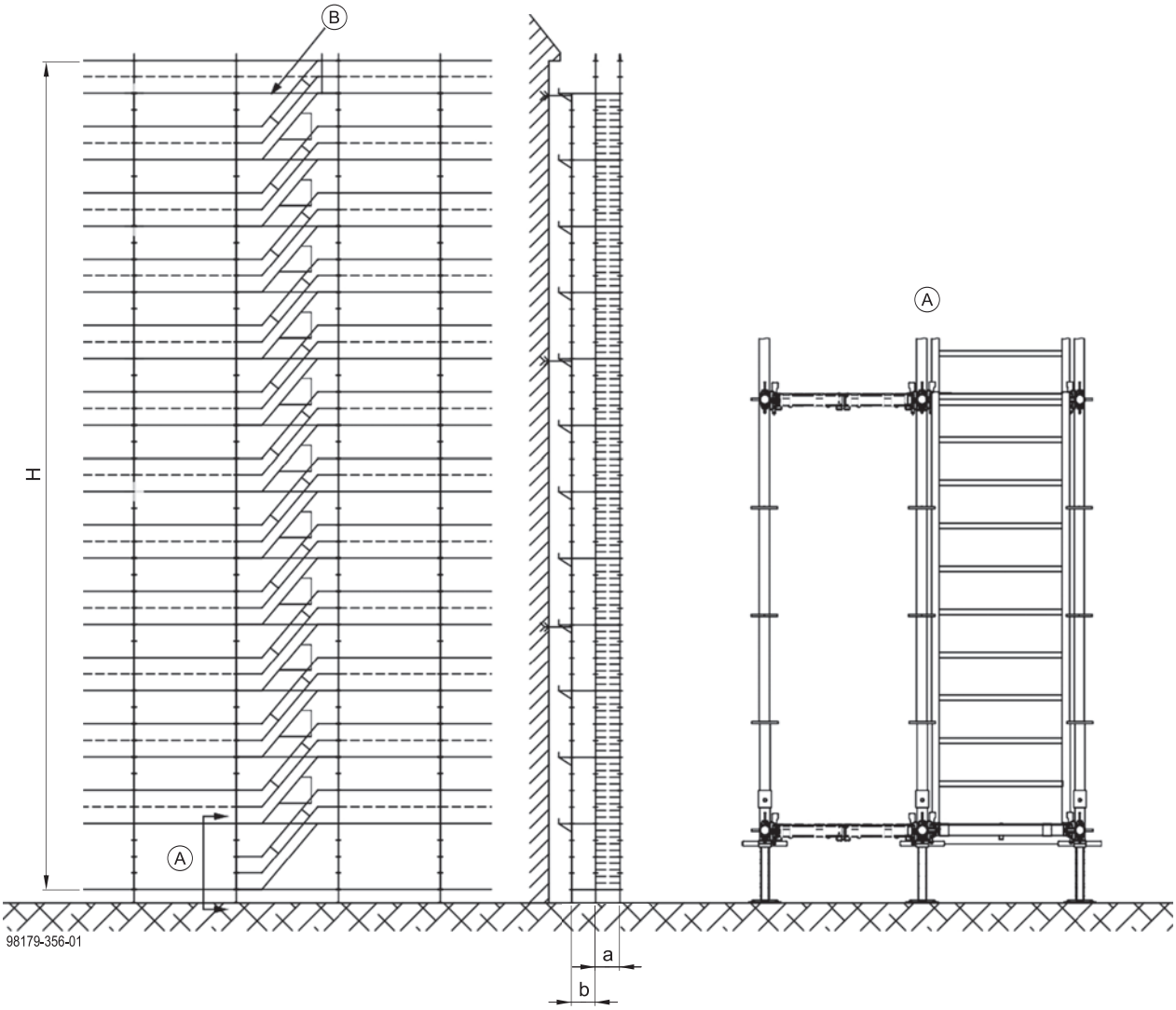
Anchor grid:
- 8 m offset over height.
- At least one 1 V-anchor every 5 bays.
- Protective-wall storey fully anchored.
- Anchor plane offset by 30 cm possible.

Bracing:
- Ledgers inside and outside in every scaffold storey.
- Ledgers as handrail post.

Comment:
- Installation of the wall with standards 1 m.
- If safety netting is used for the protective wall, 3-part edge protection consisting of toeboard, intermediate ledger and handrail ledger is necessary.

Basic configuration and bracket configuration with stairway

Partly open facade
Closed facade
Unclad scaffold, load class 3 (EN 12811-1)



H ... ≤ 24 m
L ... ≤ 3.07 m
h_{SP} ... ≤ 29 cm
a ... 8 m
b ... 4 m

... V-anchor

... Short wall tie, with one double coupler

A Close-up A: Foot area, stairway

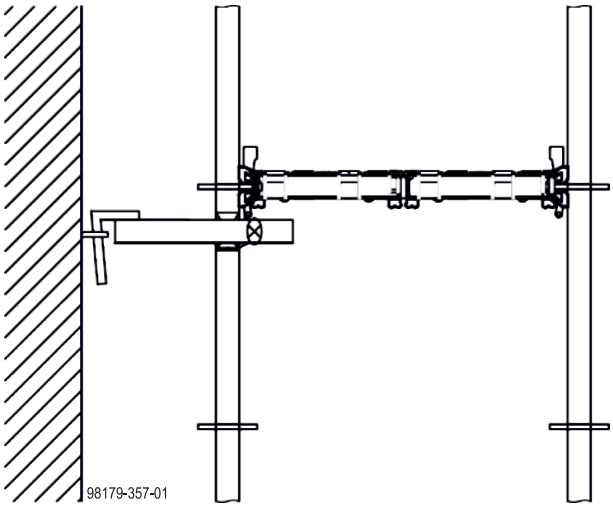
B O-type ledger for stair exit

NOTICE

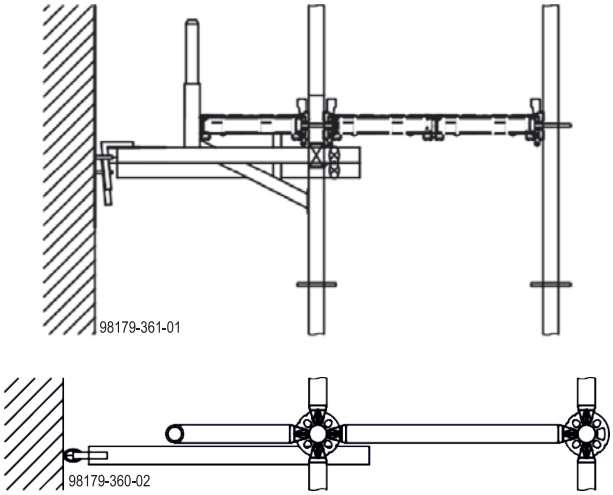
Anchorages same as for corresponding configurations as shown in capter "Basic configuration with/without protective wall" and "Bracket configuration with/withouh protective wall", no other additional measures needed.

Scaffold holder connected to inside standard with normal coupler

Basic configuration:

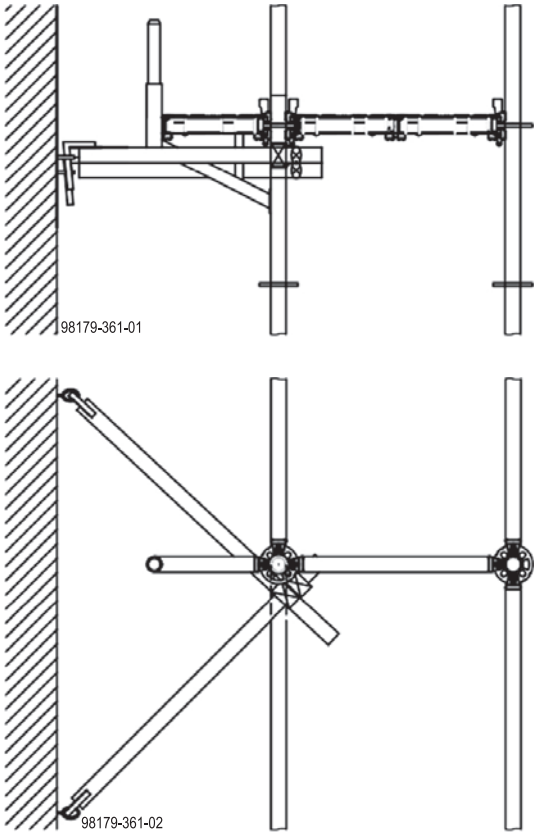


Bracket configuration:



V-anchor

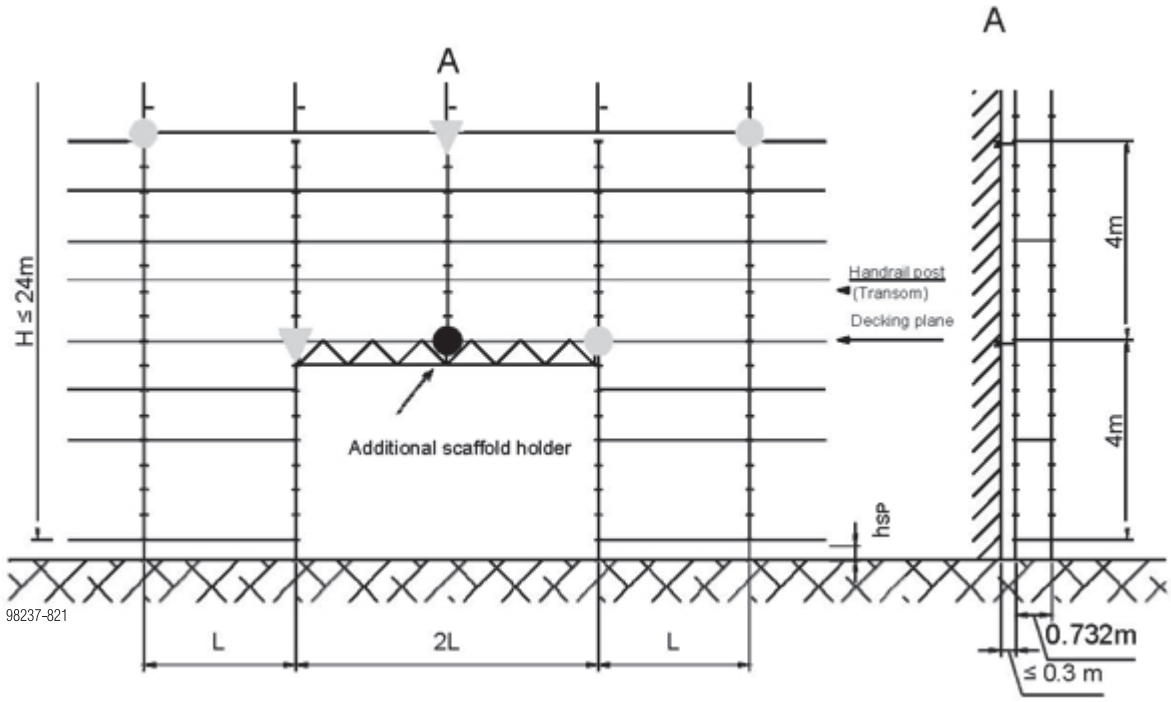
Installation of the V-anchors:



Basic configuration with bridge

Partly open facade
Closed facade
Unclad scaffold, load class 3 (EN 12811-1)

Section with bridge shown



▼ ... V-anchor

● ... Scaffold holder

Screw-jack ext. length:

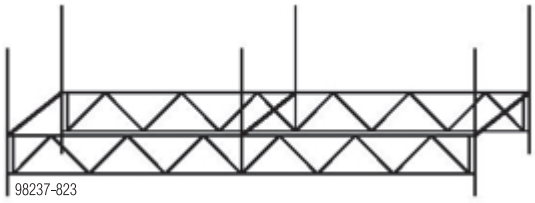
- h_{SP} ≤ 29 cm, see close-up in Annex D, Page 7

Anchor grid:

- 8 m offset over height
- At least 1 V-anchor at the edge of the bridge

Bracing:

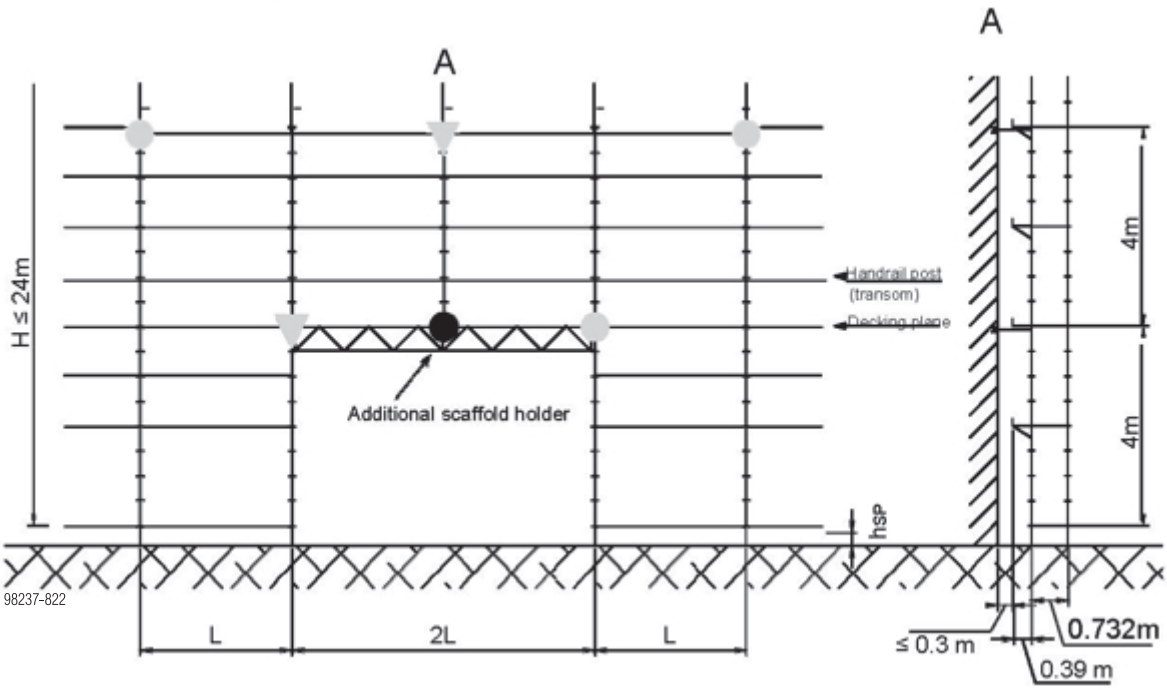
- Transom as handrail post
- No H-structure necessary at the bridge beams



Console configuration with bridge partly

Open facade
Closed facade
Unclad scaffold, load class 3 (EN 12811-1)

Section with bridge shown



▼ ... V-anchor

● ... Scaffold holder

Screw-jack ext. length:

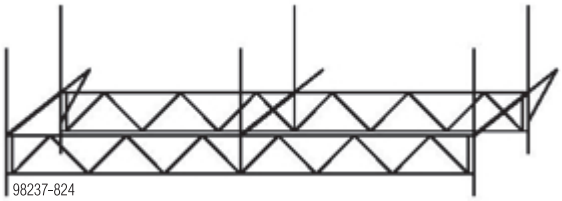
- h_{SP} ≤ 29 cm, see close-up in Annex D, Page 7

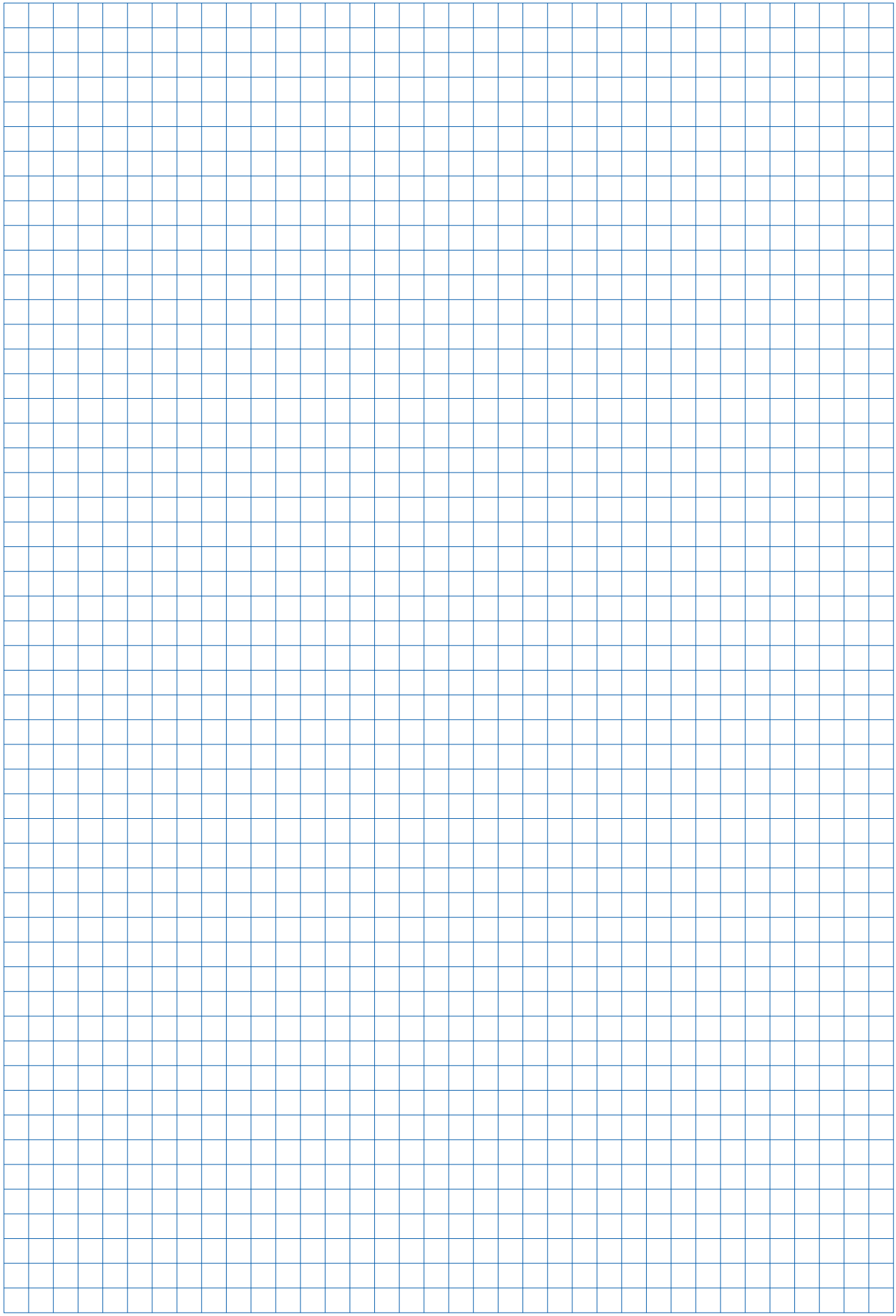
Anchor grid:

- 8 m offset over height
- At least 1 V-anchor at the edge of the bridge

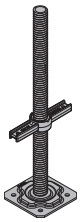
Bracing:

- Transom as handrail post
- No H-structure necessary at the bridge beams



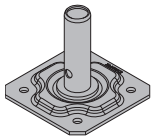


	[kg]	Article N°
Base jack 60cm Fußspindel 60cm	**3.7**	**306010600**

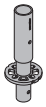


Swivel base jack 78cm Fußspindel schwenkbar 78cm	**5.6**	**306030780**

Base plate system 5cm Fußplatte 5cm	**1.1**	**306042000**

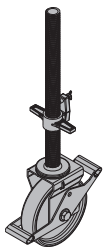


Starter base collar Anfangsstück	**2.4**	**301270000**

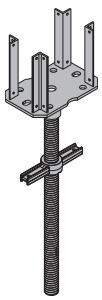


Starter base collar short Anfangsstück kurz	**1.7**	**301270010**

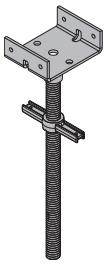
Castor wheel 10kN Lenkrolle 10kN	**7.0**	**307070100**



4-way screw jack head 60cm Vierwegkopfspindel 60cm	**7.2**	**328450600**



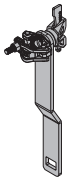
Screw jack U-head 60cm Kopfspindel 60cm	**6.8**	**328460600**



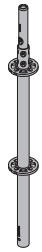
Spring pin	**0.07**	**335150025**
Spring pin EU	**0.07**	**335150024**
Rohrklappstecker		

Leg lock for suspended scaffold Hängegerüstverbinder	**2.8**	**301280000**

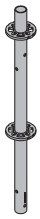
Jack retainer for lifting SW21	**3.7**	**306110005**
Jack retainer for lifting SW22 EU	**3.7**	**306110004**
Jack retainer for lifting SW22 NAM	**3.7**	**306110000**
Jack retainer for lifting SW23	**3.7**	**306110003**
Sicherung Fußspindel		



Standard 0.50m crimped spigot	**3.2**	**301010500**
Standard 1.00m crimped spigot	**5.5**	**301011000**
Standard 1.50m crimped spigot	**7.8**	**301011500**
Standard 2.00m crimped spigot	**10.1**	**301012000**
Standard 2.50m crimped spigot	**12.7**	**301012500**
Standard 3.00m crimped spigot	**15.7**	**301013000**
Standard 4.00m crimped spigot	**19.3**	**301014000**
Stiel Rohrverbinder verpresst		



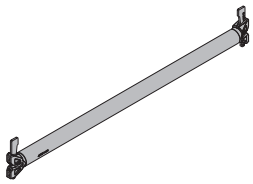
	[kg]	Article N°
Standard 0.50m hanging no spigot	**2.3**	**301790500**
Standard 1.00m hanging no spigot	**4.6**	**301791000**
Standard 1.50m hanging no spigot	**6.9**	**301791500**
Standard 2.00m hanging no spigot	**9.2**	**301792000**
Standard 2.50m hanging no spigot	**11.5**	**301792500**
Standard 3.00m hanging no spigot	**13.9**	**301793000**
Standard 4.00m hanging no spigot	**18.8**	**301794000**
Stiel ohne Rohrverbinder Hängegerüst		



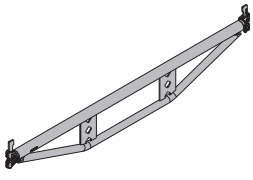
Spigot for hanging scaffold	**1.8**	**335040000**
Rohrverbinder für Hängegerüst		

Standard 1.00m hanging spigot	**6.6**	**301021000**
Standard 1.50m hanging spigot	**8.9**	**301021500**
Standard 2.00m hanging spigot	**11.1**	**301022000**
Standard 2.50m hanging spigot	**13.4**	**301022500**
Standard 3.00m hanging spigot	**15.7**	**301023000**
Standard 4.00m hanging spigot	**20.3**	**301024000**
Stiel Rohrverbinder Hängegerüst		

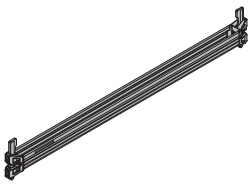
Ledger 0.15m	**1.2**	**301030150**
Ledger 0.39m	**2.1**	**301030395**
Ledger 0.73m	**3.3**	**301030735**
Ledger 1.04m	**4.4**	**301031045**
Ledger 1.09m	**4.5**	**301031095**
Ledger 1.40m	**5.6**	**301031405**
Ledger 1.57m	**6.2**	**301031575**
Ledger 2.07m	**8.0**	**301032075**
Ledger 2.57m	**9.8**	**301032575**
Ledger 3.07m	**11.6**	**301033075**
Riegel		



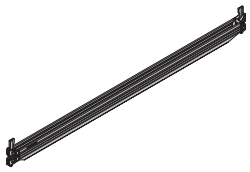
Truss ledger 1.40m	**9.4**	**301181400**
Truss ledger 1.57m	**10.4**	**301181575**
Truss ledger 2.07m	**13.8**	**301182075**
Truss ledger 2.57m	**17.1**	**301182575**
Truss ledger 3.07m	**20.5**	**301183075**
Doppelriegel		



	[kg]	Article N°
Ledger U 0.39m	**2.0**	**301040395**
Ledger U 0.45m	**2.2**	**301040455**
Ledger U 0.73m	**3.2**	**301040735**
Ledger U 1.09m	**4.4**	**301041095**
U-Riegel		

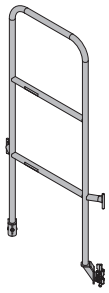


Ledger U 1.09m reinforced	**6.1**	**301051095**
Ledger U 1.40m reinforced	**7.8**	**301051405**
Ledger U 1.57m reinforced	**8.7**	**301051575**
U-Riegel verstärkt		

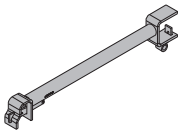


Guardrail IG 1.57m	**3.5**	**301891575**
Guardrail IG 2.07m	**4.3**	**301892075**
Guardrail IG 2.57m	**5.2**	**301892575**
Guardrail IG 3.07m	**6.1**	**301893075**
Geländerriegel IG		

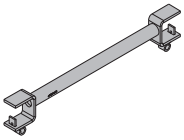
End guardrail IG 0.73m	**8.9**	**301880735**
End guardrail IG 1.09m	**10.4**	**301881095**
Stirngeländer IG		



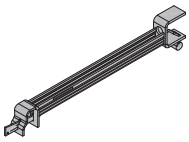
Ledger to plank transom 32cm 1B	**3.7**	**301233205**
Ledger to plank transom 64cm 2B	**4.9**	**301236405**
Ledger to plank transom 96cm 3B	**6.0**	**301239605**
Belagsriegel Riegel-zu-Belag		



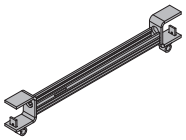
Plank to plank transom 32cm 1B	**4.1**	**301243205**
Plank to plank transom 64cm 2B	**5.3**	**301246405**
Plank to plank transom 96cm 3B	**6.4**	**301249605**
Belagsriegel Belag-zu-Belag		



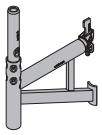
	[kg]	Article N°
Ledger to plank transom U 32cm 1B	**4.1**	**301253205**
Ledger to plank transom U 64cm 2B	**4.7**	**301256405**
Ledger to plank transom U 96cm 3B	**5.8**	**301259605**
U-Belagsriegel Riegel-zu-Belag		



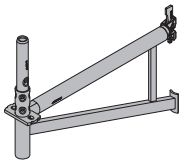
Plank to plank transom U 32cm 1B	**4.1**	**301263205**
Plank to plank transom U 64cm 2B	**5.1**	**301266405**
Plank to plank transom U 96cm 3B	**6.2**	**301269605**
U-Belagsriegel Belag-zu-Belag		



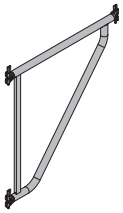
Side bracket 0.39m	**4.8**	**301110395**
Konsole 0,39m		



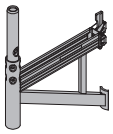
Side bracket 0.73m	**7.5**	**301110735**
Konsole 0,73m		



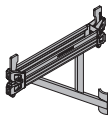
Console bracket 1.09m	**12.5**	**301121095**
Konsole 1,09m		



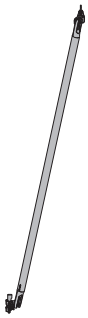
Side bracket U 0.39m	**4.8**	**301130395**
Side bracket U 0.45m	**5.9**	**301130455**
Side bracket U 0.73m	**7.1**	**301130735**
U-Konsole		



Console bracket U 0.45m	**3.5**	**301140450**
Console bracket U 1.09m	**12.1**	**301141095**
U-Konsole		

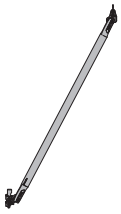


	[kg]	Article N°
Bay brace 200/73cm	**7.2**	**301060735**
Bay brace 200/104cm	**7.4**	**301061045**
Bay brace 200/109cm	**7.5**	**301061095**
Bay brace 200/140cm	**7.9**	**301061405**
Bay brace 200/157cm	**8.1**	**301061575**
Bay brace 200/207cm	**9.0**	**301062075**
Bay brace 200/257cm	**9.8**	**301062575**
Bay brace 200/307cm	**11.0**	**301063075**
Vertikaldiagonale 200cm		



Bay brace 150/73cm	**5.9**	**301070735**
Bay brace 150/104cm	**6.3**	**301071045**
Bay brace 150/109cm	**6.4**	**301071095**
Bay brace 150/140cm	**6.9**	**301071405**
Bay brace 150/157cm	**7.2**	**301071575**
Bay brace 150/207cm	**8.2**	**301072075**
Bay brace 150/257cm	**9.2**	**301072575**
Bay brace 150/307cm	**10.4**	**301073075**
Vertikaldiagonale 150cm		

Bay brace 100/73cm	**4.8**	**301080735**
Bay brace 100/104cm	**5.3**	**301081045**
Bay brace 100/109cm	**5.4**	**301081095**
Bay brace 100/140cm	**6.0**	**301081405**
Bay brace 100/157cm	**6.3**	**301081575**
Bay brace 100/207cm	**7.5**	**301082075**
Bay brace 100/257cm	**8.6**	**301082575**
Bay brace 100/307cm	**9.9**	**301083075**
Vertikaldiagonale 100cm		



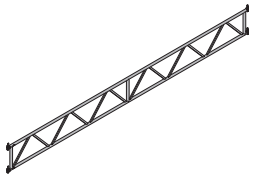
Plan brace square 307/307cm	**16.0**	**301803075**
Plan brace square 257/257cm	**13.5**	**301802575**
Plan brace square 207/207cm	**11.0**	**301802075**
Plan brace square 157/157cm	**8.5**	**301801575**
Plan brace square 140/140cm	**7.7**	**301801405**
Plan brace square 109/109cm	**6.1**	**301801095**
Horizontaldiagonale quadr.		

	[kg]	Article N°
Plan brace 307/73cm	**12.0**	**301840735**
Plan brace 307/109cm	**12.3**	**301841095**
Plan brace 257/73cm	**10.2**	**301830735**
Plan brace 257/109cm	**10.6**	**301831095**
Plan brace 207/73cm	**8.5**	**301820735**
Plan brace 207/109cm	**9.0**	**301821095**
Plan brace 157/73cm	**6.8**	**301810735**
Plan brace 157/109cm	**7.4**	**301811095**

Horizontaldiagonale

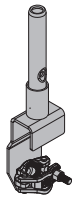
Lattice girder 5.14m	**55.2**	**301165145**
Lattice girder 6.14m	**64.9**	**301166145**
Lattice girder 7.71m	**82.3**	**301167715**

Gitterträger ohne Rohrverbinder



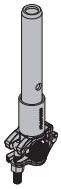
Girder spigot adapter clamp SW21	**3.4**	**305082005**
Girder spigot adapter clamp SW22 EU	**3.4**	**305082004**
Girder spigot adapter clamp SW22 NAM	**3.4**	**305082001**
Girder spigot adapter clamp SW23	**3.4**	**305082003**

Rohrverbinder Gitterträger



Spigot adapter clamp-bolt SW21	**2.1**	**305032005**
Spigot adapter clamp-bolt SW22 EU	**2.1**	**305032004**
Spigot adapter clamp-bolt SW22 NAM	**2.1**	**305032001**
Spigot adapter clamp-bolt SW23	**2.1**	**305032003**

Rohrverbinder mit Kupplung

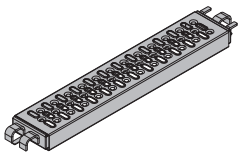


Steel plank 32/73cm	**6.8**	**308030735**
Steel plank 32/109cm	**9.1**	**308031095**
Steel plank 32/140cm	**11.1**	**308031405**
Steel plank 32/157cm	**12.2**	**308031575**
Steel plank 32/207cm	**15.4**	**308032075**
Steel plank 32/257cm	**18.6**	**308032575**
Steel plank 32/307cm	**22.2**	**308033075**

Stahlbelag 32cm

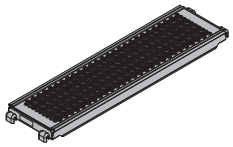
	[kg]	Article N°
Steel plank 19/73cm	**5.0**	**308010735**
Steel plank 19/109cm	**6.6**	**308011095**
Steel plank 19/140cm	**8.1**	**308011405**
Steel plank 19/157cm	**8.9**	**308011575**
Steel plank 19/207cm	**11.3**	**308012075**
Steel plank 19/257cm	**13.6**	**308012575**
Steel plank 19/307cm	**16.2**	**308013075**

Stahlbelag 19cm



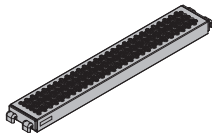
Steel plank U 32/73cm	**6.4**	**308050735**
Steel plank U 32/109cm	**8.8**	**308051095**
Steel plank U 32/128cm	**10.4**	**308051285**
Steel plank U 32/140cm	**10.9**	**308051405**
Steel plank U 32/157cm	**12.3**	**308051575**
Steel plank U 32/207cm	**15.7**	**308052075**
Steel plank U 32/257cm	**19.1**	**308052575**
Steel plank U 32/307cm	**22.5**	**308053075**

U-Stahlbelag 32cm



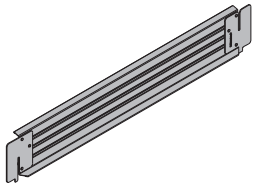
Steel plank U 19/73cm	**4.9**	**308040735**
Steel plank U 19/109cm	**6.3**	**308041095**
Steel plank U 19/128cm	**7.7**	**308041285**
Steel plank U 19/140cm	**7.8**	**308041405**
Steel plank U 19/157cm	**8.8**	**308041575**
Steel plank U 19/207cm	**11.0**	**308042075**
Steel plank U 19/257cm	**13.4**	**308042575**
Steel plank U 19/307cm	**15.6**	**308043075**

U-Stahlbelag 19cm



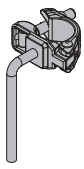
Steel toeboard yellow 0.39m	**1.7**	**308400395**
Steel toeboard yellow 0.73m	**2.6**	**308400735**
Steel toeboard yellow 1.04m	**3.4**	**308401045**
Steel toeboard yellow 1.09m	**3.5**	**308401095**
Steel toeboard yellow 1.40m	**4.3**	**308401405**
Steel toeboard yellow 1.57m	**4.8**	**308401575**
Steel toeboard yellow 2.07m	**6.1**	**308402075**
Steel toeboard yellow 2.57m	**7.4**	**308402575**
Steel toeboard yellow 3.07m	**8.7**	**308403075**

Stahl-Bordbrett gelb

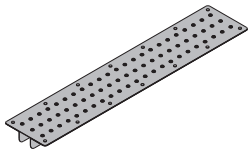


Toeboard retaining clamp SW21	**0.74**	**304160015**
Toeboard retaining clamp SW22 EU	**0.74**	**304160014**
Toeboard retaining clamp SW23	**0.74**	**304160013**

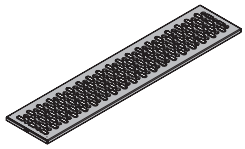
Bordblechhalter



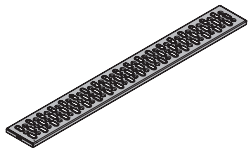
	[kg]	Article N°
Infill plank 0.73m	**2.8**	**308070735**
Infill plank 1.09m	**4.5**	**308071095**
Infill plank 1.40m	**6.0**	**308071405**
Infill plank 1.57m	**6.0**	**308071575**
Infill plank 2.07m	**9.1**	**308072075**
Infill plank 2.57m	**11.5**	**308072575**
Infill plank 3.07m	**13.9**	**308073075**
Spaltblech		



Gap filler plank 32/75cm	**4.5**	**308130755**
Gap filler plank 32/100cm	**5.5**	**308131005**
Gap filler plank 32/125cm	**6.6**	**308131255**
Gap filler plank 32/150cm	**7.8**	**308131505**
Gap filler plank 32/175cm	**8.8**	**308131755**
Gap filler plank 32/200cm	**10.0**	**308132005**
Gap filler plank 32/250cm	**13.3**	**308132505**
Ausgleichsbelag 32cm		

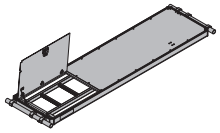


Gap filler plank 19/75cm	**2.9**	**308140755**
Gap filler plank 19/100cm	**3.6**	**308141005**
Gap filler plank 19/125cm	**4.3**	**308141255**
Gap filler plank 19/150cm	**5.1**	**308141505**
Gap filler plank 19/175cm	**5.8**	**308141755**
Gap filler plank 19/200cm	**6.7**	**308142005**
Ausgleichsbelag 19cm		

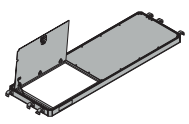


Gap filler plate 32/73cm	**2.2**	**308150735**
Gap filler plate 32/104cm	**3.3**	**308151045**
Gap filler plate 32/109cm	**3.5**	**308151095**
Gap filler plate 32/157cm	**5.2**	**308151575**
Gap filler plate 32/207cm	**7.0**	**308152075**
Gap filler plate 32/257cm	**8.4**	**308152575**
Ausgleichsblech 32cm		

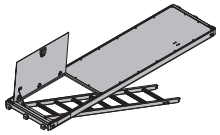
Alum. ladder hatch deck 257cm	**36.0**	**319022575**
Alum. ladder hatch deck 307cm	**38.8**	**319023075**
Durchstieg Alu mit Leiter		



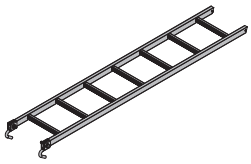
Alum. hatch deck 100cm	**23.5**	**319021005**
Alum. hatch deck 157cm	**25.7**	**319021575**
Alum. hatch deck 207cm	**29.9**	**319022075**
Durchstieg Alu		



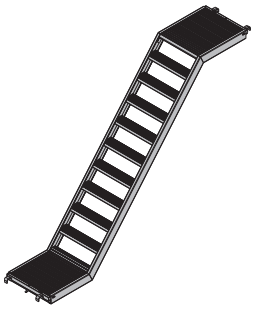
	[kg]	Article N°
Alum. ladder hatch deck U 257cm	**38.6**	**319032575**
Alum. ladder hatch deck U 307cm	**43.7**	**319033075**
U-Durchstieg mit Leiter		



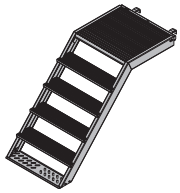
Alum. ladder for hatch deck	**6.7**	**319050015**
Alu-Etagenleiter		



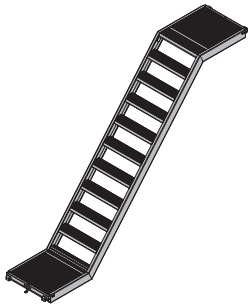
Alum. stair platform 200/257cm	**29.7**	**316012575**
Alum. stair platform 200/307cm	**40.0**	**316013075**
Alu-Podesttreppe		



Alum. stair platform 100/160cm	**26.0**	**316151605**
Alu-Podesttreppe 100/160cm		



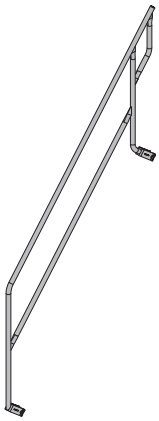
Alum. stair platform U 200/257cm	**35.5**	**316022575**
Alum. stair platform U 200/257cm AU	**28.4**	**316022573**
Alum. stair platform U 200/307cm	**31.6**	**316023075**
Alum. stair platform U 200/307cm AU	**31.6**	**316023073**
U-Alu-Podesttreppe		



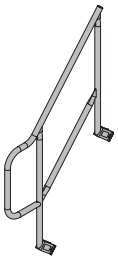
Alum. stair platform U 100/160cm	**24.6**	**316171605**
U-Alu-Podesttreppe 100/160cm		

Alum. stair platform U 150/257cm	**21.5**	**316122575**
U-Alu-Podesttreppe 150/257cm		

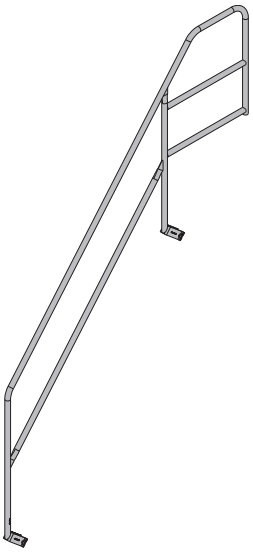
	[kg]	Article N°
Stair inner guardrail 200/257cm Alu-Treppe Innengeländer 200/257cm	**11.2**	**316080005**



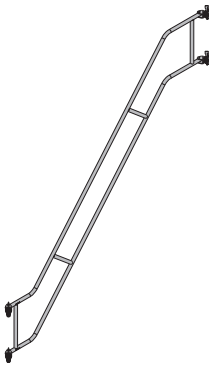
Alum. stair inner guardrail 100/160cm Alu-Treppe Innengeländer 100/160cm	**11.2**	**316161605**



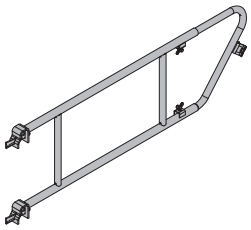
Stair inner ext. guardr. 200/257cm	**14.8**	**316052575**
Stair inner ext. guardr. 200/307cm Alu-Treppe Innengeländer verlängert	**16.0**	**316053075**



Stair outer guardrail 200/257cm	**16.8**	**316062575**
Stair outer guardrail 200/307cm Alu-Treppe Außengeländer	**18.4**	**316063075**

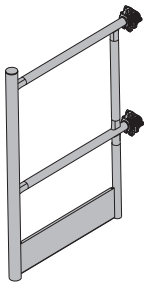


	[kg]	Article N°
Top inner guardrail Podestgeländer	**15.3**	**316110015**

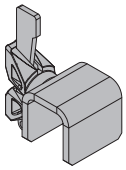


Guard rail standard Crazy Leg 1.63m Geländerstiel gekröpft 1,63m	**8.2**	**301311630**

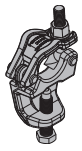
Access barrier SW21	**11.1**	**310067005**
Access barrier SW22 EU Abschrankung	**11.1**	**310067004**



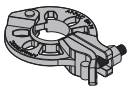
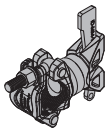
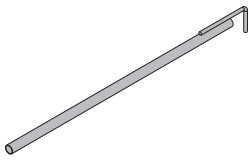
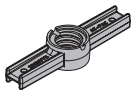
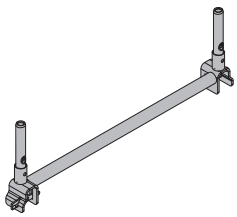
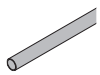
Return ledger hook Riegelanschlusshaken	**1.5**	**301410005**

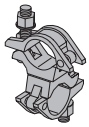
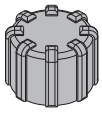
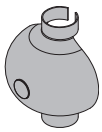
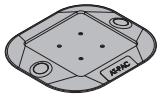
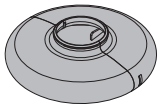


Beam clamp forged rigid SW21	**1.7**	**304032005**
Beam clamp forged rigid SW22 EU	**1.7**	**304032004**
Beam clamp forged rigid SW22 NAM	**1.7**	**304032001**
Beam clamp forged rigid SW23 Trägerkupplung	**1.7**	**304032003**

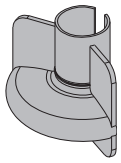


Beam clamp swivel SW21	**1.6**	**304042005**
Beam clamp swivel SW22 EU	**1.6**	**304042004**
Beam clamp swivel SW22 NAM	**1.9**	**304042001**
Beam clamp swivel SW23 Trägerdrehkupplung	**1.6**	**304042003**

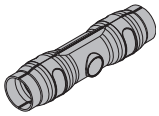
	[kg]	Article N°
Rosette clamp T-bolt SW21	**1.2**	**301300005**
Rosette clamp T-bolt SW22 EU	**1.2**	**301300004**
Rosette clamp T-bolt SW22 NAM	**1.2**	**301300001**
Rosette clamp T-bolt SW23	**1.2**	**301300003**
Lochscheibe		
		
Rosette clamp T-bolt horizontal SW21	**0.84**	**301300015**
Rosette clamp T-bolt horizontal SW22 EU	**0.84**	**301300014**
Rosette clamp T-bolt horizontal SW22 NAM	**0.84**	**301300011**
Rosette clamp T-bolt horizontal SW23	**0.84**	**301300013**
Lochscheibe horizontal		
		
Swivel adapter clamp SW21	**1.8**	**305022005**
Swivel adapter clamp SW22 EU	**1.8**	**305022004**
Swivel adapter clamp SW22 NAM	**1.8**	**305022001**
Swivel adapter clamp SW23	**1.8**	**305022003**
Keilkopfkupplung drehbar		
		
Wall tie tube 0.40m	**1.9**	**338190400**
Wall tie tube 0.80m	**3.3**	**338190800**
Wall tie tube 1.00m	**4.4**	**338191000**
Wall tie tube 1.50m	**6.2**	**338191500**
Wall tie tube 1.80m	**6.8**	**338191800**
Wandankerrohr		
		
Base jack handle	**0.77**	**397320000**
Fußspindelmutter		
		
Girder transom 1.40m	**14.5**	**301651405**
Trägerriegel 1,40m		
		
Scaffold tube 48.3mm 0.50m	**1.7**	**682026000**
Scaffold tube 48.3mm 1.00m	**3.6**	**682014000**
Scaffold tube 48.3mm 1.50m	**5.4**	**682015000**
Scaffold tube 48.3mm 2.00m	**7.2**	**682016000**
Scaffold tube 48.3mm 2.50m	**8.4**	**682017000**
Scaffold tube 48.3mm 3.00m	**10.8**	**682018000**
Scaffold tube 48.3mm 3.50m	**12.6**	**682019000**
Scaffold tube 48.3mm 4.00m	**14.4**	**682021000**
Scaffold tube 48.3mm 4.50m	**16.2**	**682022000**
Scaffold tube 48.3mm 5.00m	**18.0**	**682023000**
Scaffold tube 48.3mm 5.50m	**19.8**	**682024000**
Scaffold tube 48.3mm 6.00m	**21.6**	**682025000**
Scaffold tube 48.3mm .....m	**3.6**	**682001000**
Gerüstrohr 48,3mm		
Galvanised		
		

	[kg]	Article N°
Swivel coupler 48mm	**1.5**	**582560000**
Drehkupplung 48mm		
Galvanised Width-across: 22 mm		
		
T-bolt swivel clamp SW21	**1.2**	**304062025**
T-bolt swivel clamp SW22 EU	**1.2**	**304062024**
T-bolt swivel clamp SW22 NAM	**1.2**	**304062021**
T-bolt swivel clamp SW23	**1.2**	**304062023**
Drehkupplung		
		
Normal coupler 48mm	**1.2**	**682004000**
Normalkupplung 48mm		
Galvanised Width-across: 22 mm		
		
T-bolt right angle clamp SW21	**1.0**	**304052025**
T-bolt right angle clamp SW22 EU	**1.0**	**304052024**
T-bolt right angle clamp SW22 NAM	**1.1**	**304052021**
T-bolt right angle clamp SW23	**1.0**	**304052023**
Normalkupplung		
		
Modul tube cap D48mm	**0.03**	**693769001**
Modul-Rohrkappe D48mm		
Yellow		
		
Coupler protection	**0.12**	**334370010**
Schutzhülle Gerüstrohrkupplung		
		
End tube protection	**0.03**	**334370020**
Gerüstrohrkappe		
		
Base jack pad with reflector	**0.22**	**334370030**
Unterlage Fußspindel mit Reflektor		
		
Rosette protection	**0.08**	**334370040**
Schutzhülle Lochscheibe		
		

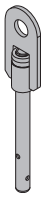
	[kg]	Article N°
Rosette and ledger proctection Schutzhülle Lochscheibe und Riegel	**0.07**	**334370050**



Straight tube protection with reflector Schutzhülle Gerüstrohr mit Reflektor	**0.12**	**334370060**

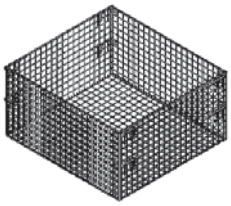


Lifting lug SW21	**6.9**	**301520015**
Lifting lug SW22 EU	**6.9**	**301520014**
Lifting lug SW23 Kranöse	**6.9**	**301520013**

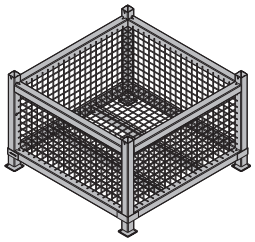


Lifting lug coupler SW22 EU	**3.2**	**301520024**
Lifting lug coupler SW23	**3.4**	**301520023**

Scaffold cage insert Gerüst-Stapelpalette Gittereinsatz	**29.0**	**399010000**



Scaffold storage rack with mesh 1.12x1.12m Gerüst-Stapelpalette mit Gitter 1,12x1,12m	**84.6**	**399200010**



Scaffold storage rack 1.12x1.12m Gerüst-Stapelpalette 1,12x1,12m	**48.1**	**399020000**