

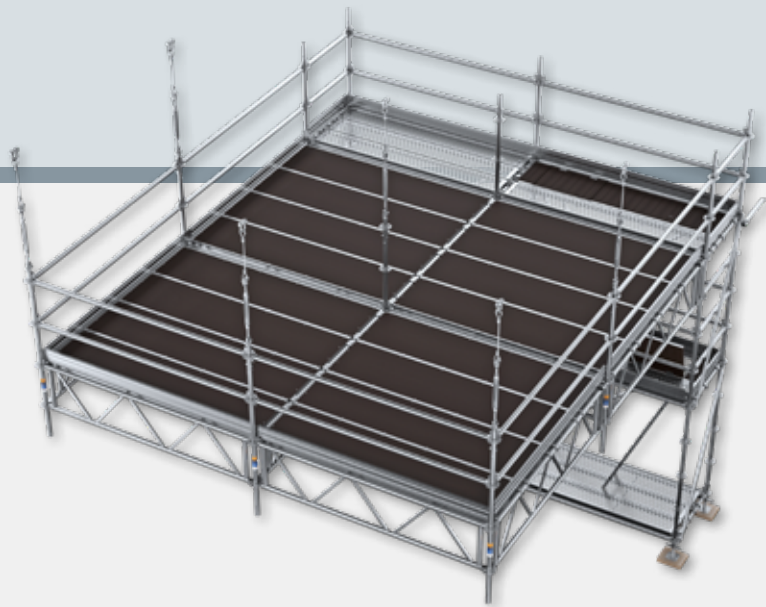


RINGSCAFF SKY SUSPENDED SCAFFOLD

INSTRUCTIONS FOR
ASSEMBLY AND USE



RINGSCAFF | SKY



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2 INTRODUCTION

RINGSCAFF SKY is a cost efficient suspended scaffold consisting of basic components of the established RINGSCAFF modular scaffolding system. Maintenance and repair work on bridges, industrial plants, pipe racks and more can be carried out safely with the RINGSCAFF SKY system. It offers a stable working platform that eliminates the need for risky climbing or attaching components under the working floor. Thanks to the small number of basic components, RINGSCAFF Sky is easy and quick to assemble and requires only few suspension points.

This assembly and user manual provides an overview of the system and instructions for its efficient and effective assembly and use.

The RINGSCAFF SKY suspended scaffold system consists of modular components such as vertical suspension standards, horizontal swing and end girders and (steel) suspension equipment which can be connected to the underside of the objects to which access is to be provided. All modular components are designed in accordance with European standards and regulations.

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

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

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

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

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

Machinery Directive 2006/42/EC: Product requirements that apply to among others suspension accessories, chains, ropes and webbing.

RINGSCAFF SKY can be used to create safe working platforms on the underside of objects. It works for all load classes, but the standard configurations are mainly designed for load class 3 (up to 200 kg/m²) according to EN12811.

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

2.1 Preliminary considerations

The assembly, modification and dismantling of the RINGSCAFF SKY suspended scaffolding system may only be carried out by competent persons who are familiar with the system or under their supervision.

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

The stability of the scaffolding at the construction site is ensured when the scaffolder follows the regulations according to the scaffold approval certificate and the associated requirements contained in these Instructions for Assembly and Use.

All scaffold structures on the construction site must be erected in accordance with the applicable technical requirements, approvals and the prevailing health and safety regulations.

2.2 Designations and fundamental comments

- 2.2.1 With reference to EN12810-1, the RINGSCAFF SKY suspended scaffold system can be classified as: Suspended Scaffold EN12810 – 3N – SW24/307 – B
The designation of the RINGSCAFF SKY suspended scaffold for access, working and protective applications is pending, awaiting final product approval.
- 2.2.2 This specific designation refers to the standard configurations described later in this manual, representing the basis for the RINGSCAFF SKY technical configuration. Deviations from these standard configurations are possible and permitted if, in a specific case, the stability and suitability for use have been verified in writing in accordance with technical regulations and/or building codes and the data and instructions contained in this manual. This manual has been written for people who assemble and work with the RINGSCAFF SKY system. It is intended to assist in the safe and efficient erection of the standard basic scaffolding configurations. For further information on non-standard applications or more complex structures, please contact your technical service department or your supplier.
- 2.2.3 Stability and functional suitability can also be verified on the basis of the planning tables contained in this manual, which have been prepared in accordance with the technical building regulations.
- 2.2.4 Deviations from the alternatives described in this manual are possible if the safety of the erection and dismantling procedures (e.g. fall protection, stability in intermediate stages) has been tested and proven in individual cases.

- 2.2.5 Work relating to the erection, modification and dismantling of scaffolds may only be carried out by suitably qualified and trained scaffolders with appropriate licence and under the supervision of a qualified person (supervisor). This needs to be based on a project-related risk assessment and risk analysis as well as on the assembly instructions.
- 2.2.6 The supervisor and the scaffolders need to be able to access this manual and the product approval on the construction site during erection and dismantling of RINGSCAFF scaffolds.
- 2.2.7 Scaffolding may only be erected or dismantled up to wind force 5 on the Beaufort scale. In stronger winds, the scaffold must be secured immediately, and clearance is recommended. Note: With wind speeds above force 6, simple walking movement through the wind will only be possible with noticeable restrictions and hindrances.
- 2.2.8 For the assembly of the scaffold on site, the scaffolding contractor must provide a plan and a drawing, depending on the complexity of the scaffold, and have them prepared by a qualified person. For this purpose, this manual can be used, supplemented with details for each version of the scaffold.
- 2.2.9 Unfinished scaffolds or scaffold areas must be marked with the prohibition sign "Access prohibited to unauthorised persons". Access to these hazardous zones must be clearly cordoned off.
- 2.2.10 On completion, the scaffolding contractor must inspect the scaffolding for correct assembly and safe operation before handing it over to the user. Inspection and testing must be carried out by a qualified person - if necessary, by the project supervisor or site manager.
- 2.2.11 After completion and inspection, the scaffolding must be marked for handover. This scaffold marking (e.g. with a Scafom-rux Scaff-Tag) should include information about the scaffolding company, type, load and width class. General instructions and information should also be included. The tag is attached to the scaffolding in a clearly visible position e.g. next to the access points.
- 2.2.12 Once the scaffolding has been checked by the scaffolding erector to ensure that it is in proper condition, it can be handed over to the user. It is recommended to carry out the handover and final inspection together with the user and to record this in a checklist or report. The results of the inspection and handover must be documented in the checklist or report and kept for an appropriate period, normally three months longer than the service life of the scaffolding.
- 2.2.13 The scaffold components have been and will be stacked and packed in the appropriate stacking racks and bundles. Inspection and maintenance of the components is carried out in accordance with a maintenance manual. In particular, components with rotating and/or threaded parts require inspection and, if necessary, lubrication. Materials should be stored in accordance with the instructions. In particular, CE marked lifting and suspension parts must be stored in a dry place.
- 2.2.14 This manual has to be available to users throughout the entire service life of the scaffolding.

2.3 WARNINGS BEFORE ASSEMBLY AND USE

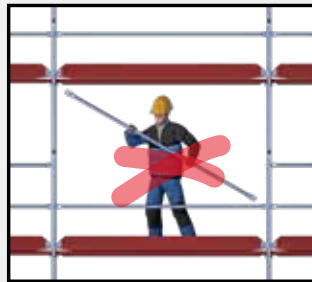


WARNINGS

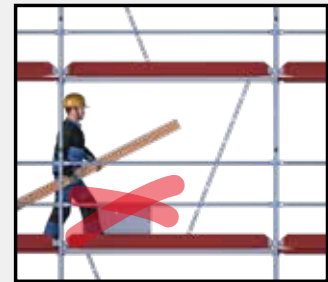
- **Unauthorised access and use of the scaffolding is forbidden.**
- **Any defects or deficiencies must be reported immediately to the scaffold contractor and the scaffolding must be cordoned off and made inaccessible.**



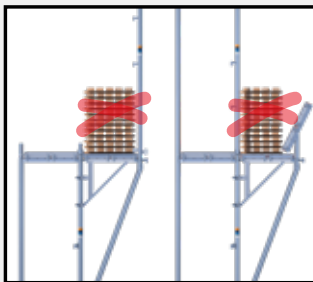
Pay careful attention to the safety instructions



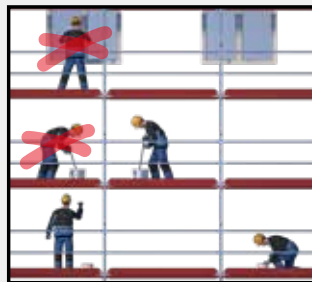
Any modifications to the scaffolding may only be carried out by the scaffold contractor



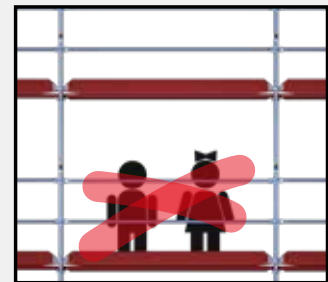
Keep hatches on ascent decks closed



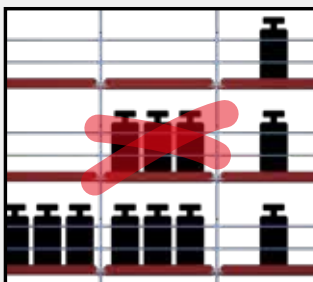
Do not store material on cantilevers with a safety catch or on a protective roof



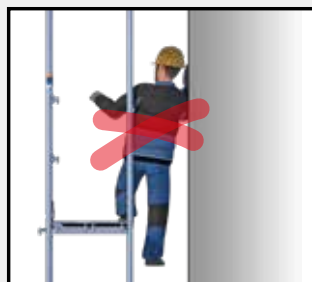
Workplaces must never be located above one another



Keep children away from the scaffolding at all times



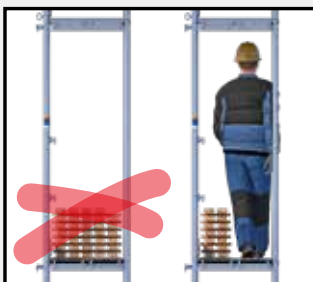
Do not overload scaffold decks



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



Only use fitted ladders or stairways for ascent and descent



When storing material, make sure there is enough room to move along the deck



Do not jump on decks



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

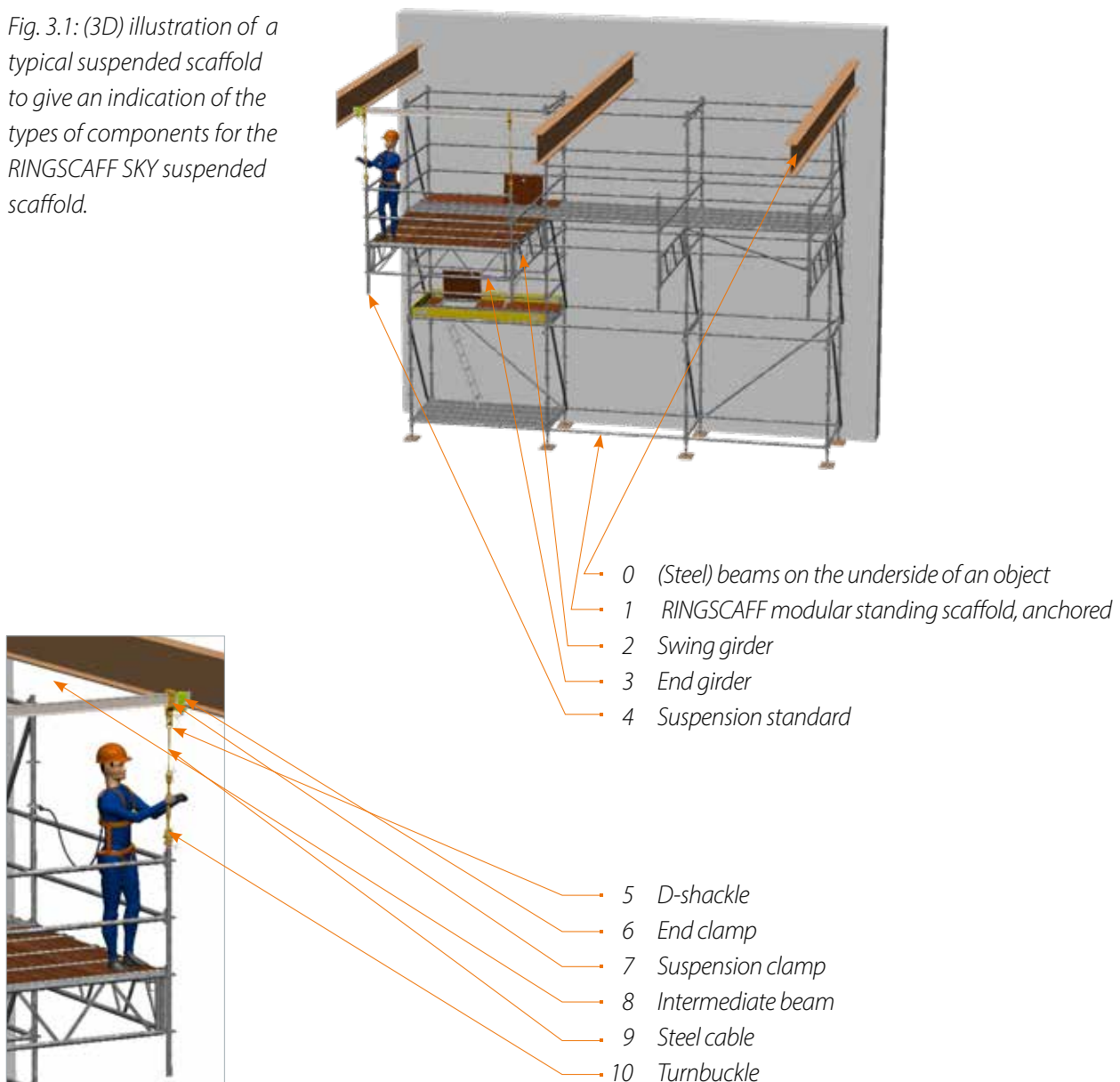
3. SUSPENDED SCAFFOLD SYSTEM - BASIC COMPONENTS

To provide access under fixed objects (bridges, roof structures, pipe racks, oil rigs, etc.), a suspended scaffold platform can be built from modular components:

- 1) RINGSCAFF modular scaffold system;
- 2) RINGSCAFF SKY;
- 3) Ancillary parts.

A brief overview of these components is given below. A full detailed list of available components can be found in Appendix X of this manual.

Fig. 3.1: (3D) illustration of a typical suspended scaffold to give an indication of the types of components for the RINGSCAFF SKY suspended scaffold.



3.1 Standard RINGSCAFF Components

The suspended scaffold consists of the following standard components:

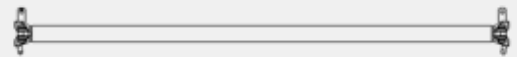
3.1.1 RINGSCAFF standard with / without spigot

The vertical standard bears the loads of the scaffold. The standard tube, with outer diameter of 48,3mm, has rosettes at 0,5m interval and drilled holes at both ends.



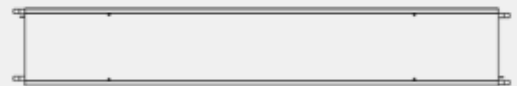
3.1.2 RINGSCAFF ledgers 0,73 - 3,07m

The standard ledger consists of 48,3mm diameter tube and wedge-holding ledger-ends at both ends. The ledger is used in different lengths as support for steel decks or platforms or as a structural element. The ledger is also used as a guard rail for side protection.



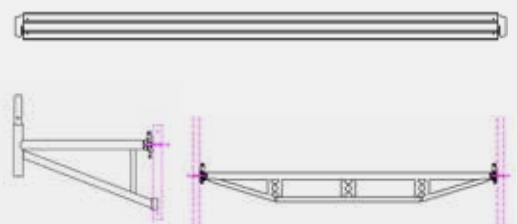
3.1.3 Platform 2,57x0,61m and steel boards 0,32m / 0,19m

The platforms are made of aluminium and plywood. The platforms are placed on the swing girders. As an alternative, steel boards 0,32m and 0,19m can be used.



3.1.4 Ancillary RINGSCAFF components

The standard RINGSCAFF accessories are used to complete the suspended scaffold. They are used at the longitudinal edges of the platform, as well as at the connection to the standing scaffolds and at the edges of the scaffold platform. Ancillary components can be toe boards, brackets, standards, double ledgers, etc.



3.2 RINGSCAFF SKY components

The RINGSCAFF SKY suspended scaffold consists of the following **special** components:

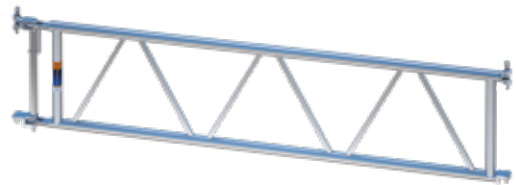
3.2.1 Suspension standard

A regular RINGSCAFF standard is provided with a special spigot for attaching D-shackles or turnbuckles for suspension.



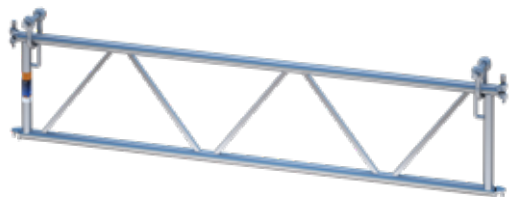
3.2.2 Swing girder 2,57m (alternatives 3,07m – 2,07m – 1,57m)

The swing girder is a lattice girder with an integrated pivot point. This pivot point allows the lattice girder to rotate over an angle of 180 degrees in the horizontal plane. At the bottom side it is provided with 3-way pins for easy connection. On the top side it has ledger ends. The platforms are installed on top of these girders.



3.2.3 End girder 2,57m (alternatives 3,07m – 2,07m – 1,57m)

The end girder is mounted perpendicular to the swing girder. At the bottom it is fitted with pins for easy connection. At the top it has ledger ends.



3.2.4 Horizontal diagonal 2,57x2,57m/3,07m

The horizontal diagonal consists of a 48,3mm diameter tube with connections at both ends. The horizontal diagonal increases the plane-stiffness of the scaffold construction.



Metric or imperial sized main components available on request.

Suspension equipment

In addition to the typical scaffold components, the RINGSCAFF SKY suspended scaffold system can be completed by suspension equipment. This can be fixing-/clamping devices, steel cable equipment, anchor-/tie bar equipment or chain equipment.

Scafom-rux provides standard solutions for the RINGSCAFF SKY system with CE-marked steel cable suspension.

3.2.5 Suspension equipment steel cables

Suspension equipment is used, for example, to attach the scaffold to the structure above. It includes:

- Steel cables
- D-shackles
- Etc.



3.2.6 Spanner / turnbuckle

The spanner is used to level the suspended scaffold. It is connected to the load bearing structure (IPE/ HEB beams) with shackles & beam clamps. At the bottom, the spanner is connected either to the steel cable or directly to the vertical or end girder.



3.2.7 Intermediate beams and clamps

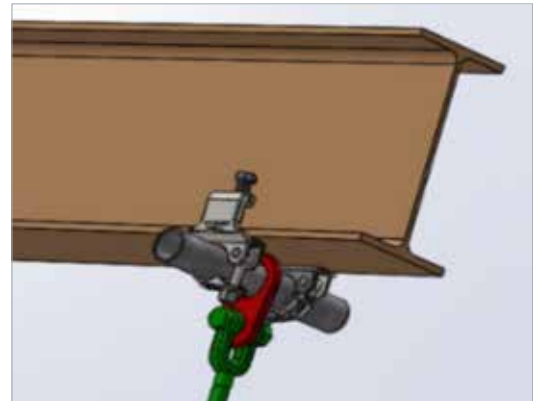
- Intermediate beams (RHS or IPE)
- End beam clamp
- Suspension clamp



3.2.8 Clamping – suspension devices for steel beams

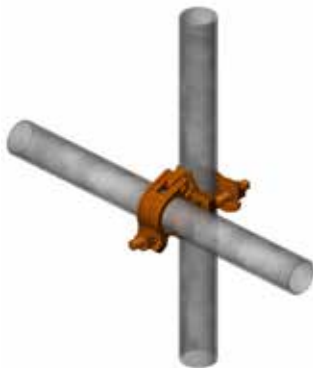
Finally, various devices can be used to attach the suspension equipment to the (steel) structures under which the scaffolding is to be suspended:

- Clamps for the main steel beams
- Girder clamps
- Intermediate beams
- Etc.

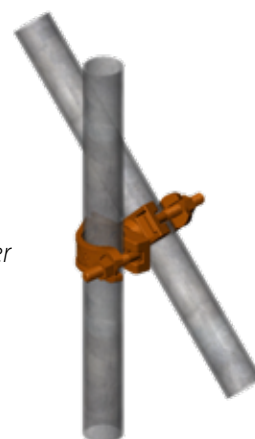
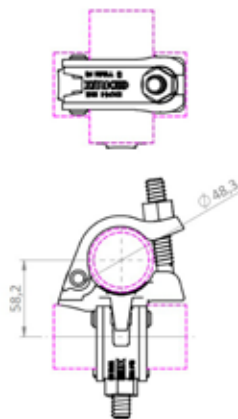


3.3 Ancillary parts

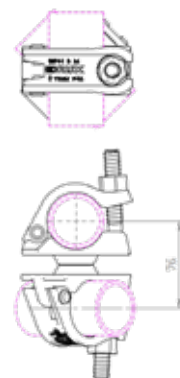
For any adjustments or modification of the scaffold, **EN74 class B couplers** and **EN39 scaffold tubes** can be used.



RA bolt coupler



Swivel bolt coupler



4. SUSPENDED SCAFFOLD SYSTEM – LOAD CAPACITIES & DATA TO BE CONSIDERED

The strength, stiffness and stability of the suspended scaffold are defined by the three basic parts of the suspended scaffold:

- A. The rigidity of the RINGSCAFF node point and the load-bearing capacity of several RINGSCAFF components (verticals, lattice girders, platforms or steel boards). For all the values of the design loads and the node calculations of the node-point, see the German technical approval Z-8.22-869 and Z-zzz.zzz (in preparation).
- B. Clamping devices and intermediate beams, attached to the (steel) structure to which the scaffold is hanging.
- C. Suspension equipment, in between A. and B. , such as steel cables, tie bars or chains.

All stated loads are safe working loads or permissible loads. These loads are defined as the design load (= characteristic strength as determined by statistically evaluated test results) divided by the prescribed load factor (1,5).

The following is included in the calculation of the suspension load:

- Live load, as given in the table below
- Own weight of Ringscaff SKY equipment, ~36 kg/m²
- Possible own weight of platform coverage/cladding (e.g. for complete sealing), ~25kg/m²

The suspended scaffold is designed according to load classes as specified in EN12810/ EN12811 or CAN/CSA-269.2. The table also shows the typical suspension load per vertical.

		Suspension load/vertical from platform loading			
		EN12810/EN12811		CAN/CSA-269	
		class 1 = 0,75 kN/m ²	class 3 = 2,00 kN/m ²	L.D. class = 1,20 kN/m ²	M.D. class = 2,40 kN/m ²
Main grid size	2,57*2,57m	9,0 kN	17,5 kN		
	Optional 2,57*3,07mm	10,5 kN	20,5 kN		
	10' x 7'			12,0 kN	19,6 kN

Table 4.1: Live load classification and suspension load

For loading data – internal forces during assembly, see Appendix Y.

For loading data/characteristics of individual load bearing components, see Appendix W.

For certified steel cable equipment, CE-certified equipment is applied (min. WLL > 23kN).

5. SUSPENDED SCAFFOLD SYSTEM – ASSEMBLY INSTRUCTIONS, SUSPENSION WITH STEEL CABLES/SPANNERS

Step 1: Assemble a starting/standing scaffold

Use standard bay lengths of RINGSCAFF, e.g. 2,57m
(as main bay size or to be specified per project).



CAUTION:

Make sure that the standing scaffold is properly anchored at the back so that it doesn't tip over when the first cantilevered decks are fitted!
Each standard row to which the swing girders will be attached in the next stages should be anchored at platform level as well as one level below.

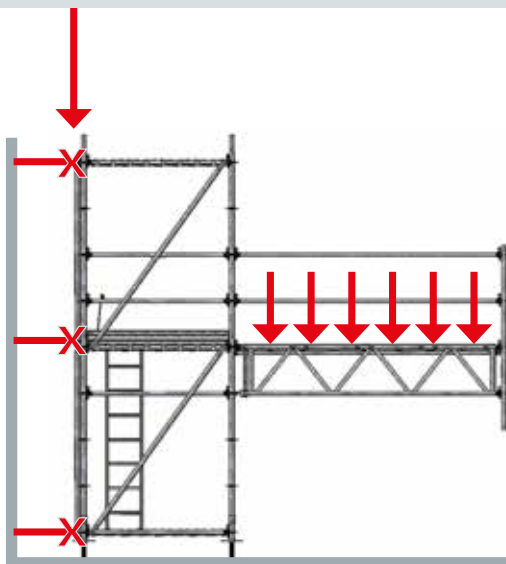


Fig. 5.1a: Configuration of starting scaffold

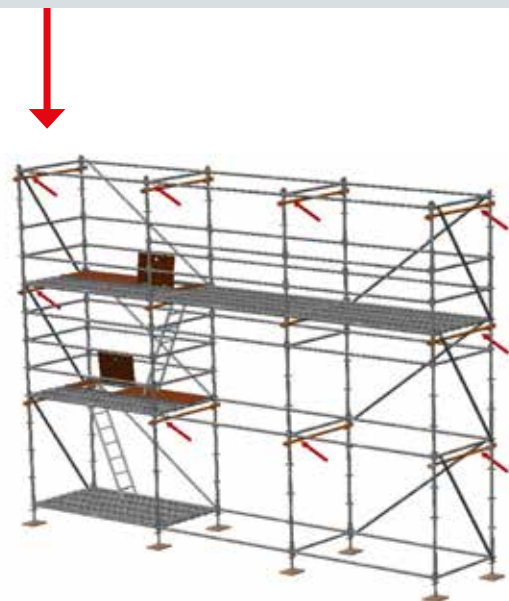


Fig. 5.1b: Configuration standing scaffold

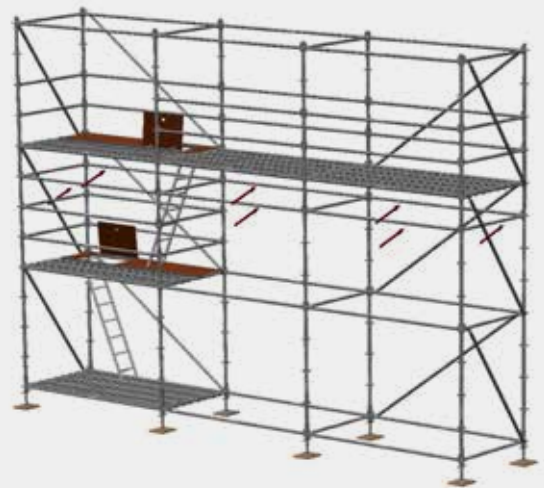
The standing scaffold should be designed as follows:

- The suspended platform should be safely accessible;
- The supply of the materials for the assembly and dismantling of the suspended platform should be safely possible;
- The standing (supply) scaffold should be determined and verified to be able to support the loads during material supply and storage on the scaffold.

Step 2: Add additional ledgers

Install additional ledgers 0.5 m below the working surface of the scaffold. These additional ledgers are necessary to distribute the forces that occur during the assembly of the suspended scaffold.

Fig. 5.2: Additional ledgers 0,5m below working the surface of the scaffold



Step 3: Pre-assemble the standards

The next step is to pre-assemble the standards. Each 2.0m standard has a special suspension spigot. The suspension standards should be ready before the swing girders are positioned.

Fig. 5.3: RINGSCAFF suspension standard with special spigot and eventually D-shackle (in case the steel cable is attached to the standard spigot)



Step 4: Install the swing girder

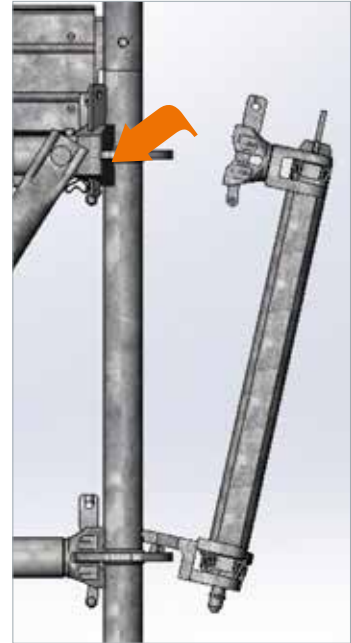


Fig. 5.4: Assembly of first swing girder.

1. Install the pre-assembled swing girders by inserting the bottom piece into the lower rosette. Two scaffolders work together to position the swing girder.
2. Position the girder and insert the ledger end at the top into the rosette at floor level. Then hammer the wedge to secure the girder to the rosette.



Warning:

Care must be taken when working manually and when assembling scaffold components above an open space at height. Scaffolding components must not be thrown off.

Step 5: Install the pre-assembled standard



Fig. 5.5: Assembly of first suspension standard

1. Fit the pre-assembled standard in the same way as the swing girder. Mount the lower rosette under the end of the swing girder (insert the bottom piece into the lower rosette).
2. Position the standard by moving the standard rosette towards the ledger end of the swing girder (fitting the ledger end at the top to the rosette at ground level) and hammer the wedge to secure the girder to the rosette.

To be done before the swing girder is positioned.

Step 6: Install the guardrails

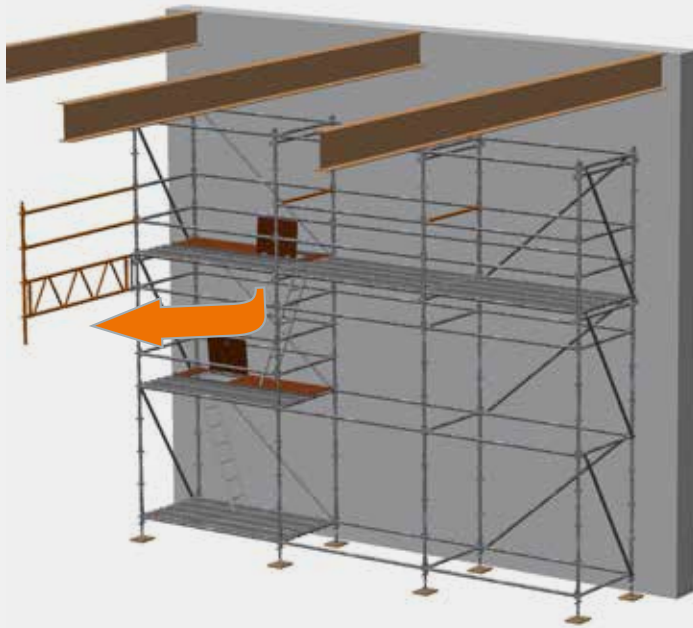
Attach the upper and lower rail to the pre-assembled standard. Depending on the available working height, at least the lower rail should be fitted to enable a safety harness to be attached later.



Fig. 5.6: Assembly of (temporary) guardrail ledgers

Step 7: Position the swing girders and install the horizontal ledgers

Attach the guardrails to the existing standard of the starting scaffold. Swing out the swing girder with a light push. Eventually use the diagonal to push the swing girder into the right position.



Fig's 5.6: Swing-out swing girder



Note: Possibly, but not necessarily, a horizontal diagonal can help to swing out and align the first swing girder (see par. 6.1 for instructions on how to use horizontal bracing).



Step 8: Repeat steps 4, 5 and 6 to position the following swing girders.

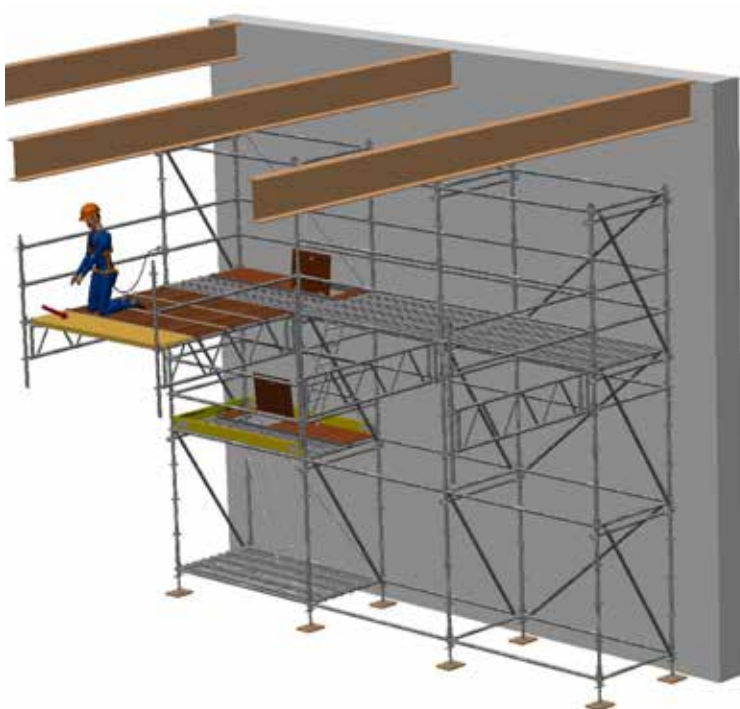
Step 9: Install the platforms

Eventually position the first platform.



Note: A maximum of two people should be standing on the platforms in the bay being erected. Scaffolders must be secured to verticals/ledgers (at tie-off points) that are firmly anchored to the structure (= the solid world). See Chapter 10 for the correct tie-off points.

Fig. 5.7: Assembly of platforms/steel decks as working platform



Step 10: Install the end girder and guard rails

After mounting all scaffold decks in the new bay, the bay is finished by mounting the end girder. This girder is mounted in a similar way as the swing girder: first insert the bottom parts in the lower rosettes, then turn the girder in the correct position and mount the ledger ends to the upper rosette (fixture by hammering the wedges in the rosettes).

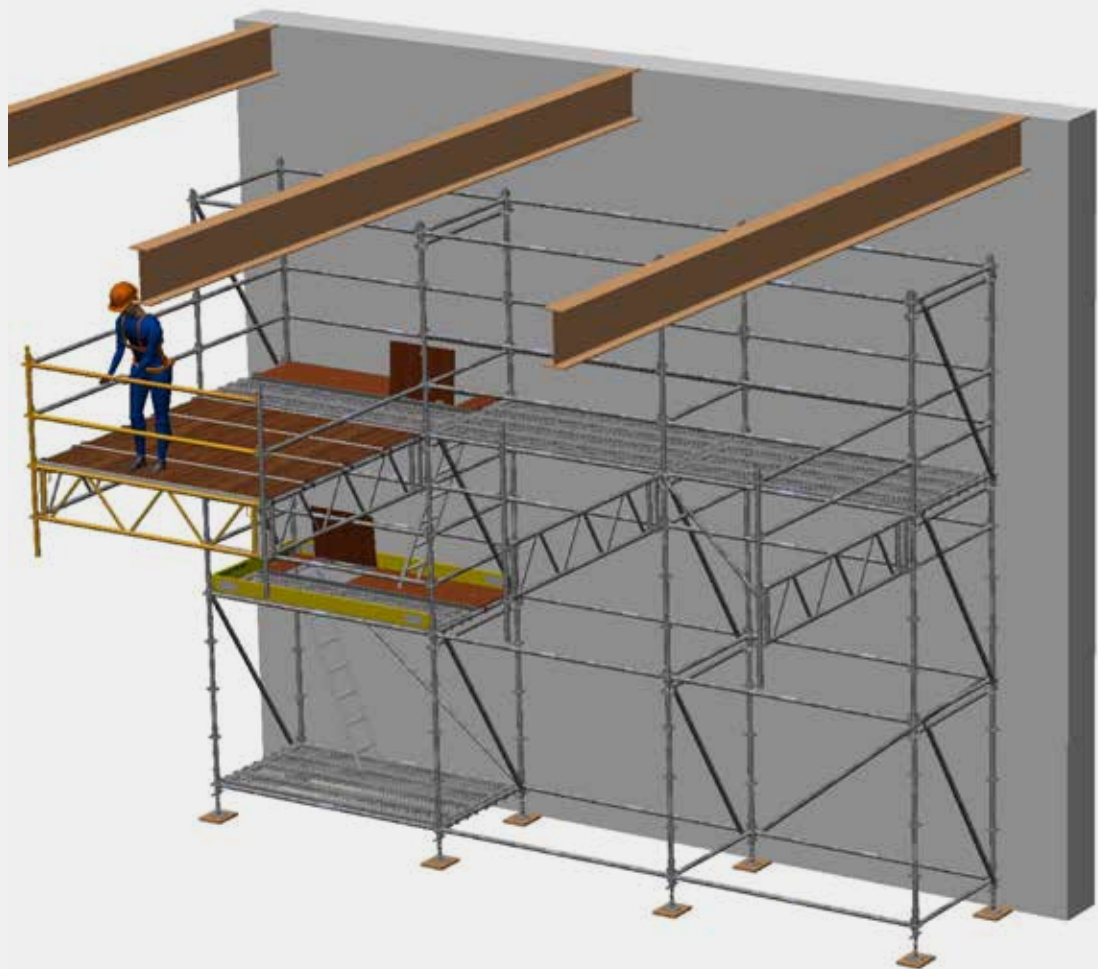


Fig. 5.8: Assembly of end girder (and eventually temporary end guardrails)

Step 11 & 12: Attach cantilevered new bay to support structure

The final step in erecting the new platform bay is to attach it to the bridge or roof above the suspended scaffold.

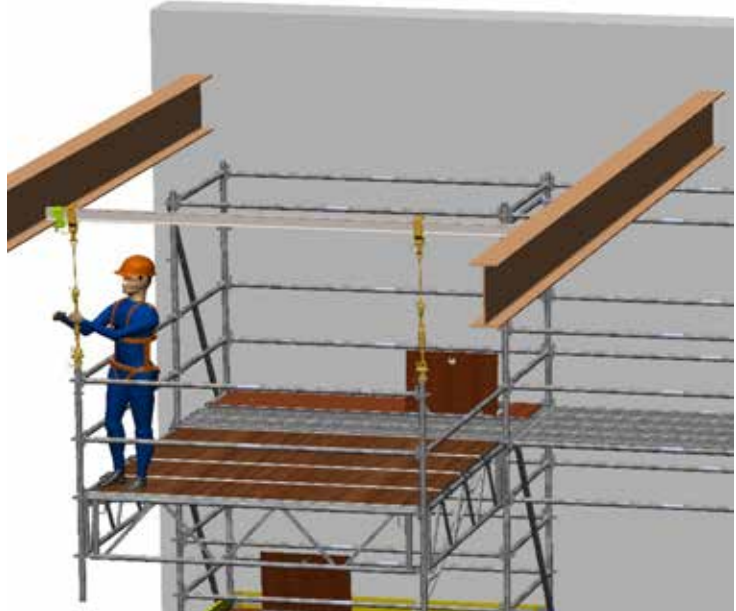


Fig. 5.9: Assembly of intermediate beam on flange of steel girders.

The connection to the bridge structure can be created with intermediate beams, resting on the flanges of the bridge girders.

This can be done with intermediate steel beams with end clamps as shown below.

End clamps are applied in case the intermediate beams need to be secured from sliding off the flanges and besides, to secure the platform against uplift (at the position where the scaffold is pushed/supported against the deck-bottom).

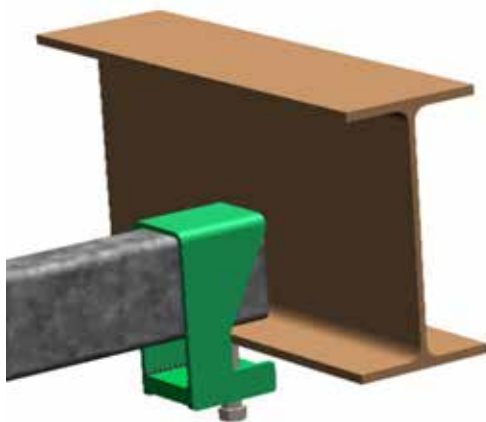


Fig. 5.10: End clamp at the ends of the intermediate beam.

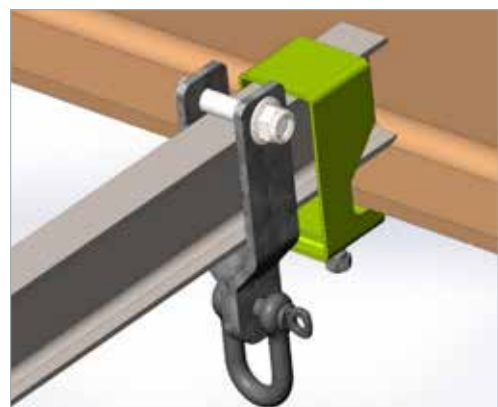


Fig. 5.11: Fixture of suspension clamp to intermediate beam

Step 13: Attach spanner and steel cable between RINGSCAFF suspension standard and D-shackle on suspension clamp

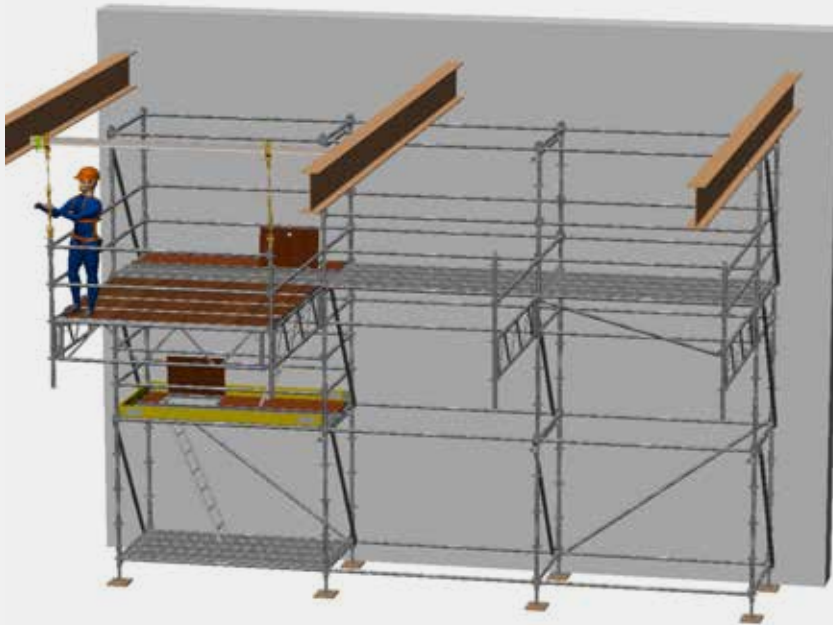


Fig. 5.12: Assembly of turnbuckle and steel cable

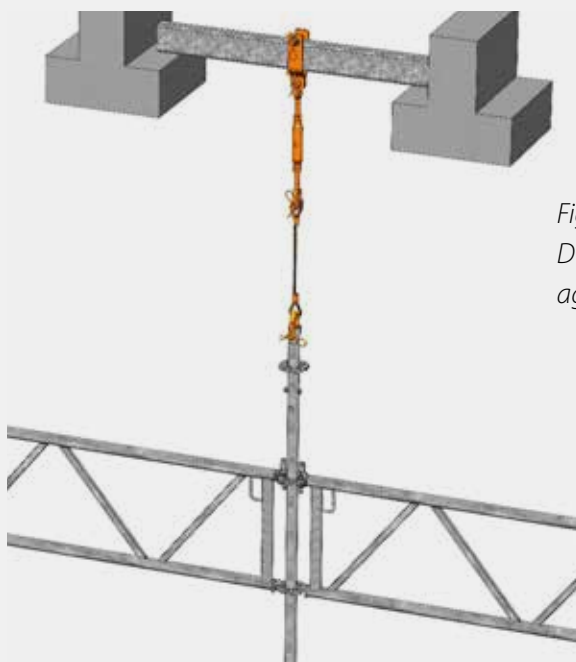


Fig. 5.13: Bolts & nuts of turnbuckles / D-shackles to be secured with spring clip against unintentional loosening.



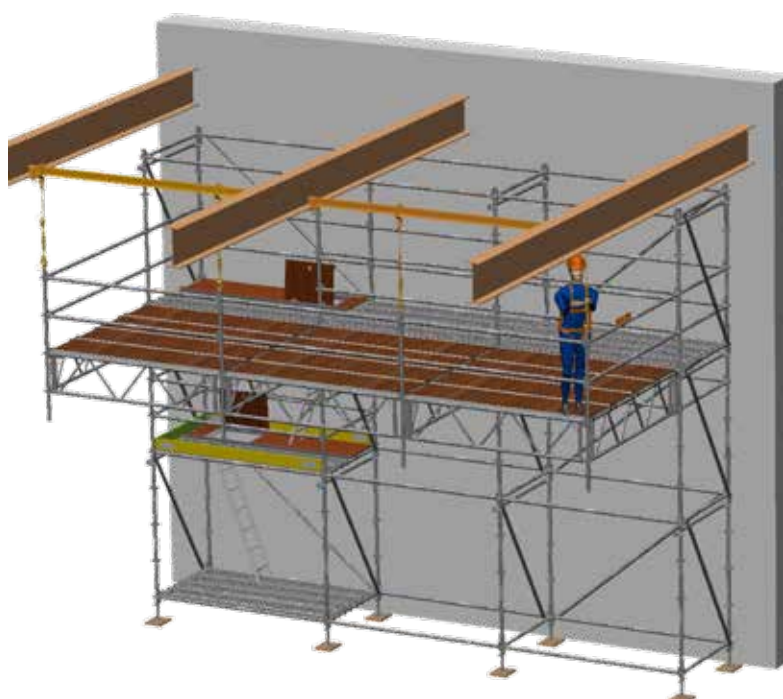
Step 14: Water levelling of the first completed scaffolding bay

The final step for the first bay is to ensure that the suspended field is levelled and secured before proceeding with additional fields.

Level each bay of suspended scaffolding one at a time by adjusting the turnbuckles to the correct length.



Fig. 5.14: Water levelling of the first completed bay by turning the turnbuckle before continuing with adjacent bays.



Step 15: Repeat step 4 – 14 for adjacent bays

The principle of working direction when assembling the RINGSCAFF SKY suspended scaffold is shown in the figure below.

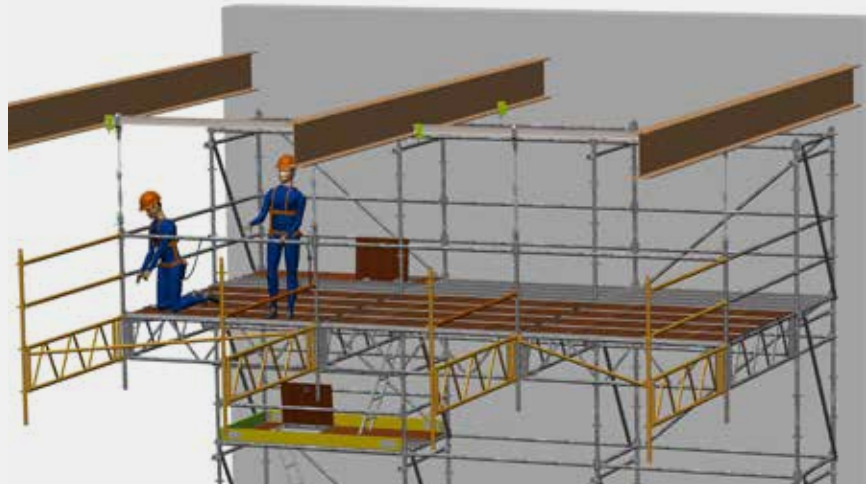


Fig. 5.15: Assembly of next row of platform bays

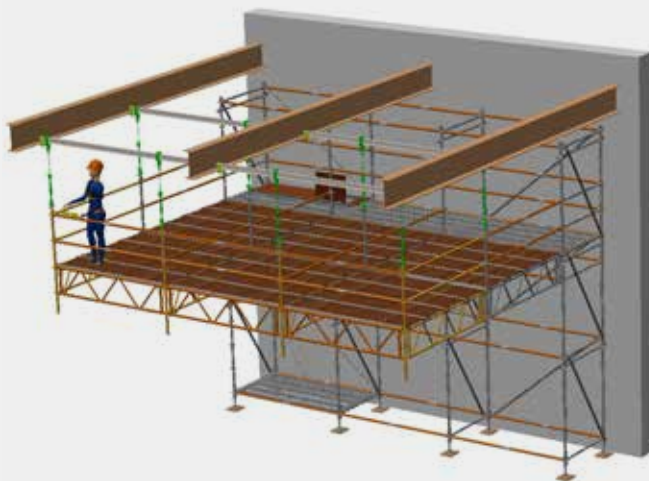
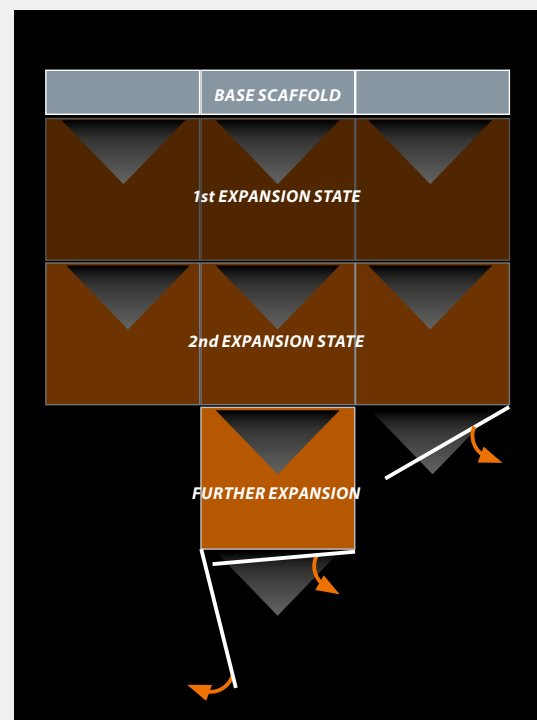


Fig. 5.16: Principle of assembly direction of the RINGSCAFF SKY suspended scaffold platform, row by row.



6. ANCHORING & BRACING OF SCAFFOLD PLATFORM

This chapter focuses on solutions to ensure rigidity, stability and uplift prevention of the suspended platform structure.

To provide rigidity & stability in both horizontal directions, the following solutions are shown:

1. Horizontal bracing
2. Anchoring to solid structure with tubes and couplers
3. To prevent the scaffolding from swaying, bracing can be provided, for example with steel cables and spanners, or more traditionally with tubes and couplers.

6.1 Horizontal bracing

The horizontal brace consists of a 48,3mm diameter tube with pin connections at both ends to connect with RINGSCAFF rosettes. The diagonal can be positioned at the platform level (fits under the scaffold decks). The horizontal brace ensures correct and aligned assembly and increases the plane stiffness of the suspended scaffold construction. Unless otherwise noted, one row of horizontal braces per suspended scaffold platform < 20m1 width is installed.

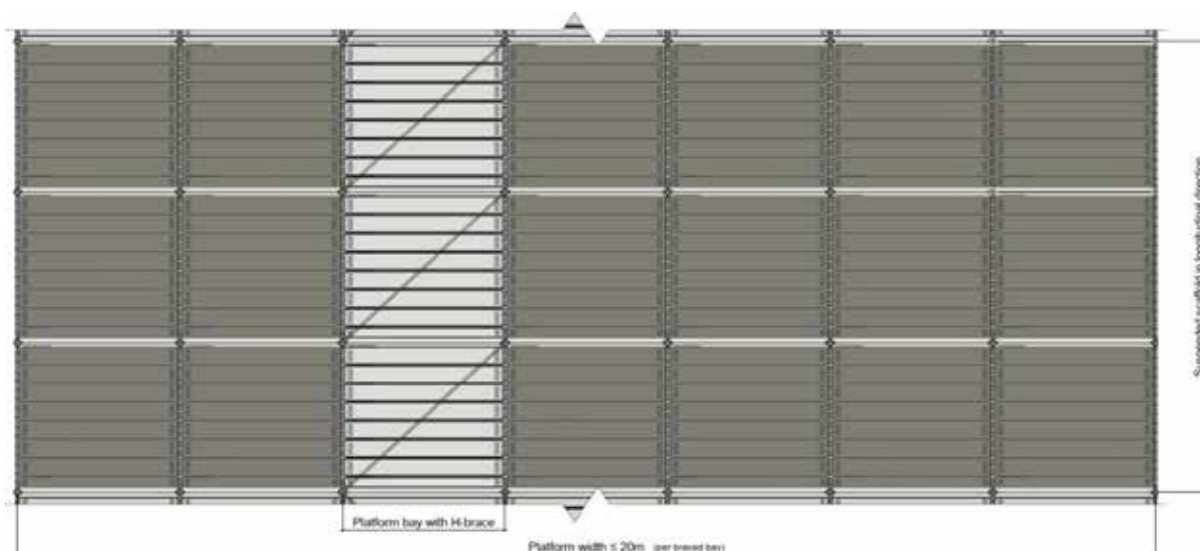


Fig. 6.1: Plan view of suspended scaffold with one row of H-braces.

6.2 Anchoring & bracing to solid structure

To stabilise the scaffold perpendicularly to the bridge heads or piers, longitudinally to the suspended scaffold platform and in line with the direction of the bridge, tie bars are used. These must be tied to each row of standards. The anchors provide global stability for the scaffold (preventing it from overturning) and local stability (reducing the buckling length of the verticals).

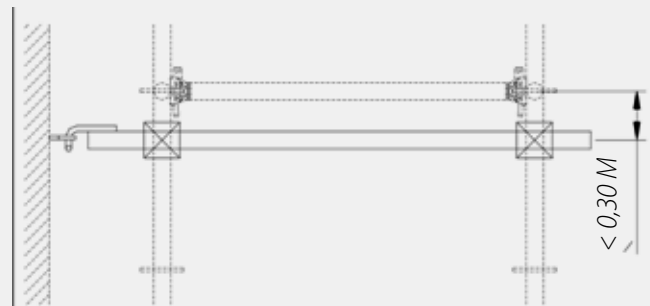
The suspended scaffold is rigidly attached to the (anchored) standing scaffold and therefore stabilized in longitudinal direction.

A tie member consists of:

- An anchor tube with a special hook for fixing to the anchor hook (or eyebolt) in the facade
- Couplers for fixing the anchor tube to the standards of the scaffold.
- An anchor hook (or eyebolt) for fixing the anchor tube to a stable and strong fence

The tie members are preferably mounted with couplers on the inner and outer standard, close ($< 0,30\text{m}$) to the node point of the standard and ledgers (see figure 6.2).

Fig. 6.2: Anchoring of standing scaffold or edge scaffold



To stabilise the scaffold transversely to the direction of the bridge, tie members can be used. These must be tied to each row of standards and fixed rigidly to the solid object structure as shown in Fig. 6.3.

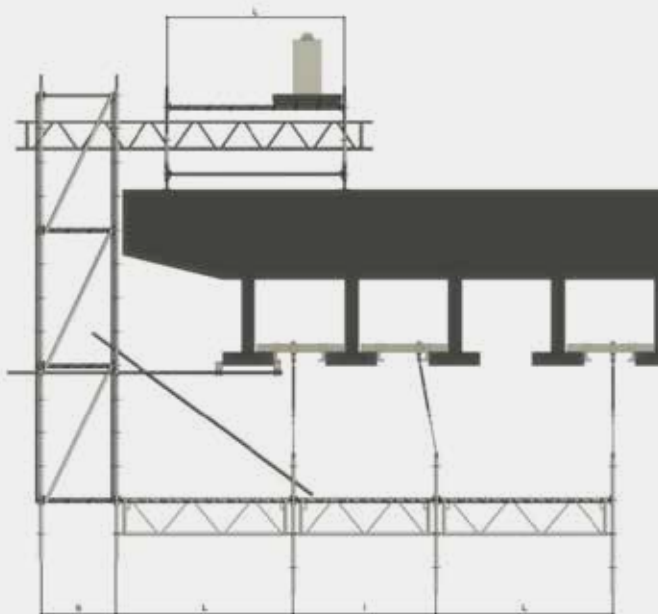


Fig. 6.3: Section view of an example of anchoring using tubes and couplers. The suspended scaffold is braced and anchored to the standing scaffold and bridge girders with a counterweight on the bridge deck.

6.3 Bracing with steel cables

To provide rigidity and stability in both horizontal directions, bracing can be provided, including the use of properly sized steel cables, turnbuckles and cable couplers.

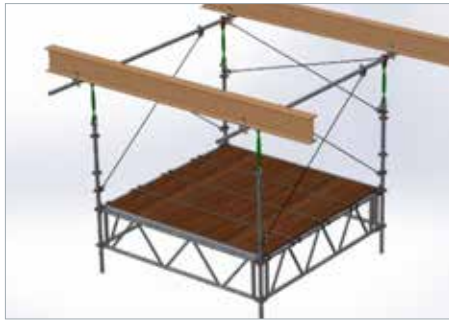


Fig. 6.4: Typical solution to stabilize the suspended scaffold with steel cables.

6.4 Measures to protect suspended scaffolding against unintentional uplifting during storms

There is a risk of the scaffold platform to be lifted due to wind or underpressure in the scaffold compartment. To prevent this, measures can be taken in the event of strong winds using standard RINGSCAFF components.

For every **45 m²** of scaffold platform, **one supporting point** should be created by pushing a base jack against the solid object structure as shown below.

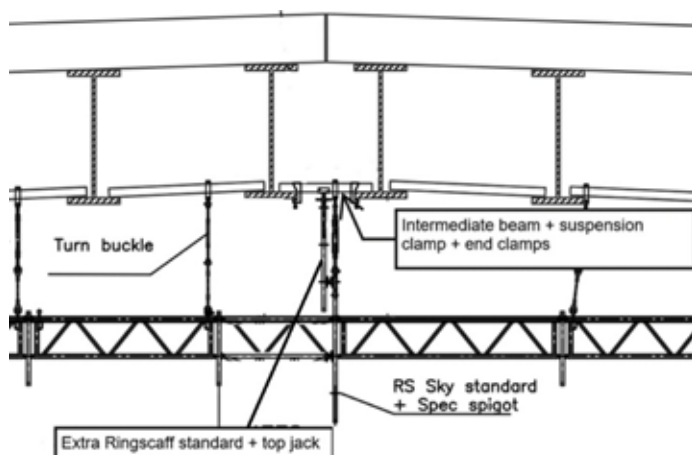


Fig. 6.5: Section view of a suspended scaffold for a typical bridge section. The figure shows a solution against uplift with an additional RINGSCAFF standard plus top jack pushing against an intermediate beam.

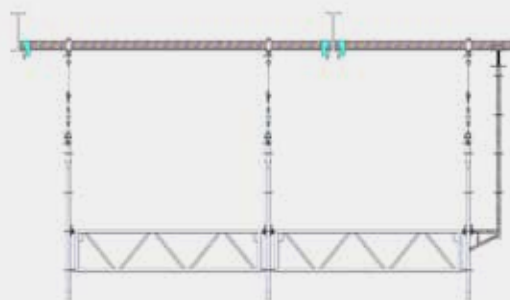
7. EXPANDING AND FINISHING THE PLATFORM

By using the RINGSCAFF SKY system to create a suspended working platform underneath object structures, it is easy and safe to complete the temporary platform structure with standard RINGSCAFF components.

7.1 Suspension points near the edge of the platform

The following components can be used to create a platform along the edges of an object for working underneath:

- Brackets attached to the suspension standards to provide a walkway along the edge of the object

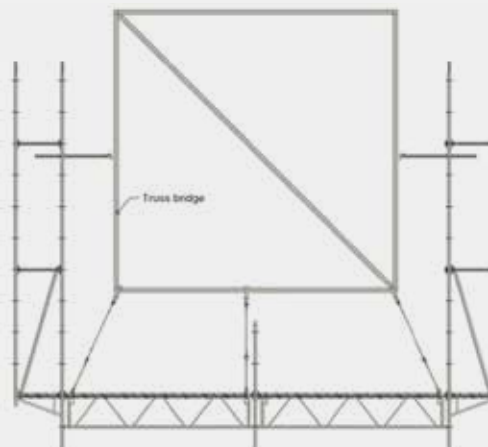


- End girders with wide D-shackles at the ends to create suspension points that are independent of the standards



- Combination of both options

Fig. 7.1: Section view of the RINGSCAFF SKY suspended scaffold using end girders with wide d-shackles as suspension points at the edge of the structure.



7.2 Completion of working platform at the ends

Near the end of the platform, the gap to the standing scaffold or working platform can be covered with system-free boards as shown below.

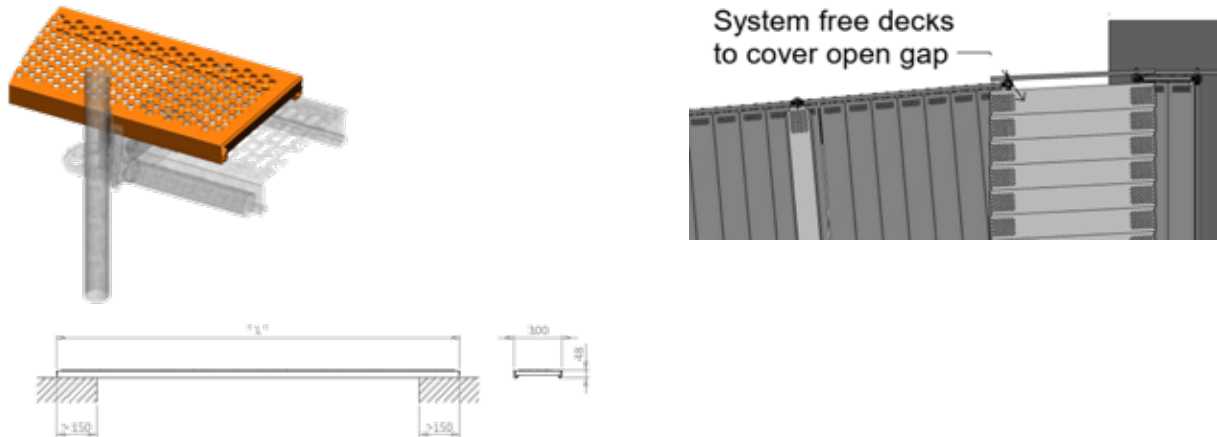


Fig. 7.2: Application of system-free scaffold decks to cover the gap between the suspended scaffold and standing scaffold.

7.3 Closing the platform to limit the openings or crevices

The following standard RINGSCAFF decks can be used to prevent unsafe openings in suspended platforms:

- Steel decks width 0,32m
- Steel decks width 0,19m
- Gap fill planks (working width gap max. 180mm)



Fig. 7.3: Top view of suspended platform showing possible position of gap decks

7.4 Solutions for obstacles in working platform

Suspended scaffolds for bridges, pipe racks or other objects may have to deal with columns or installation pipes that interfere with the working platform. In this case, it is possible to use RINGSCAFF deck-to-deck transoms to cover the openings in the floor around the obstacle.

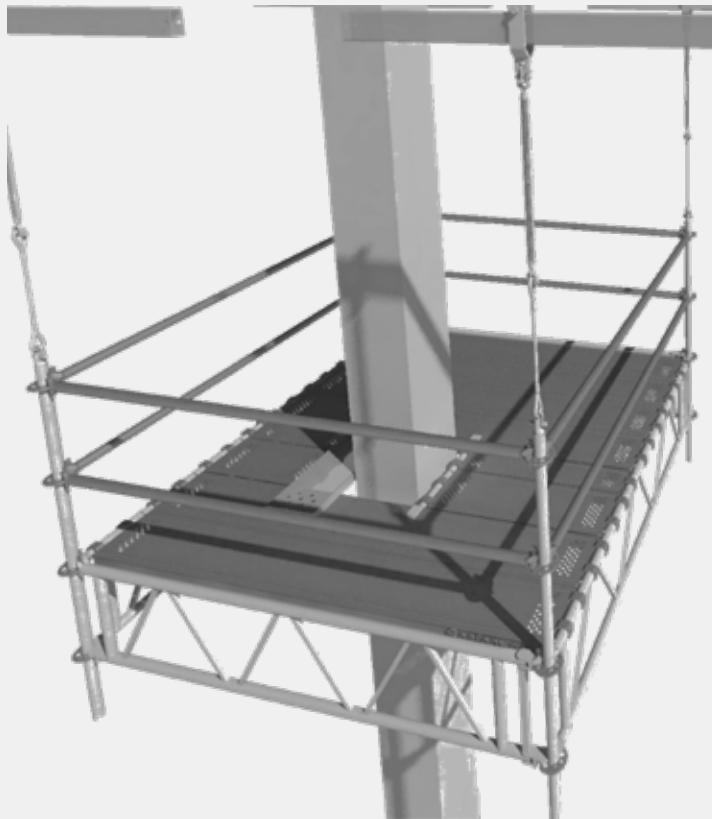
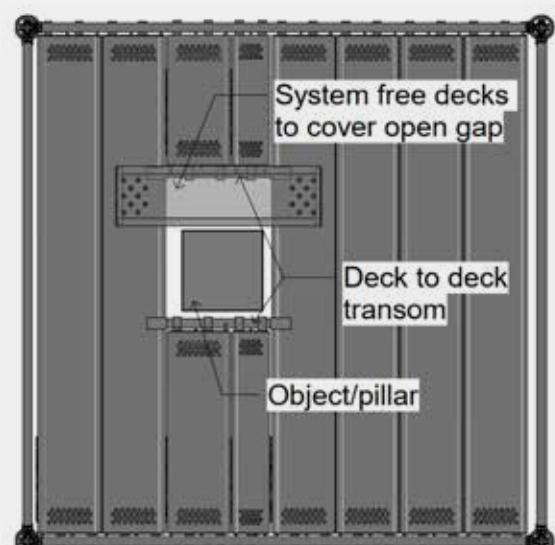


Fig. 7.4: 3D-view and plan view of typical solutions to cover openings in the working platform near obstacles.



8. USE OF SCAFFOLD & TEMPORARY RELEASE OF SUSPENSION POINTS

When using the scaffold, it is required that

- People working on or with the scaffold are well informed of its maximum load capacity. This results from the maximum load on the platform and the maximum number of platforms that can be loaded.
- No alterations to the scaffold must be made without approval of the responsible scaffolding construction engineer.
- The scaffold must not be used in severe weather conditions such as storms (wind force > 6 Beaufort), thunder, lightning, snow, hailstorms or freezing rain.
- The scaffold must be inspected on a regular basis, especially after severe weather conditions.

If the contact points between the suspended scaffold and the object or structure being (re) built or renovated also need to be treated with a corrosion-resistant coating, it is possible to temporarily loosen one suspension point at a time.

A trained scaffolder can remove the suspension point so that a painter can clean and paint the contact point and then reattach the suspension point.

Two bay length, two bay width, without central anchoring, load 0.75 kN/m² or 2x1,5 kN in the most unfavorable position.

Missing anchorings 

Two bay length, two bay width, without frontal anchoring, load 0.75 kN/m² or 2x1,5 kN in the most unfavorable position.

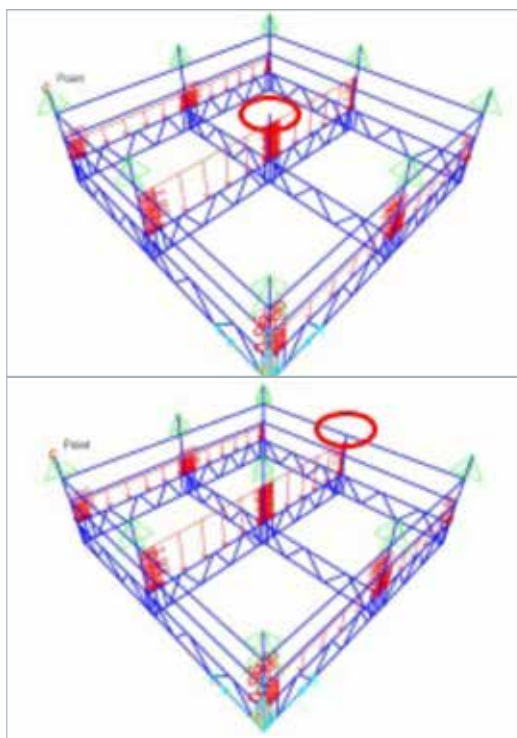


Table 8.1: Typical load situations, tested and suitable for temporary loosening of the suspension point

9. DISMANTLING OF SUSPENDED SCAFFOLDS

Safe dismantling of the RINGSCAFF SKY suspended scaffold system is based on the following basic operations and controls:

- A)** All platforms should be cleared of loose materials and the scaffold should be checked to ensure that it is still in the correct erected condition, e.g. components, anchors or suspension points have not been removed or incorrectly reattached. The "Scaff-Tag" on the scaffold must indicate that the scaffold is no longer approved for use.
- B)** Dismantle the suspended scaffold in the reverse order of assembly. When dismantling or altering the scaffold, it must always be kept in a stable, safe and secure condition.
- C)** Remove loose components from the suspended scaffold via the standing scaffold or adjacent loading platform. First check that all previously attached components have been removed.
- D)** When the suspended scaffold platform has been completely dismantled and removed, continue with the dismantling of the standing scaffold by removing the standards connected above the platform level. First check that all components previously attached to the standards have been removed.
- E)** Working from a temporary platform below the top platform, remove the (steel) planks of the top platform.
- F)** Remove all ledgers and transoms of the top platform level.
- G)** Always work from a platform no more than 2 metres below the level from which components are to be removed, and dismantle the tower in stages in the order described above.
- H)** Remove ties progressively as the scaffold is dismantled.



Note: Anchors should not be removed until they would prevent further dismantling of the scaffold.

Components should be lowered to the ground in a careful and safe manner by hand or by a suitable safe lowering method such as a rope, crane, hoist, etc.

10. TIE-OFF POINTS FOR SECURED FALL PROTECTION

When assembling a suspended scaffold platform underneath objects at height, the risk of falling must always be considered. The assembly work must be carried out in such a way that fall hazards are avoided and that the remaining risks are reduced to a minimum. The scaffolder / scaffolding contractor must carry out an appropriate risk assessment for each individual case or for each stage of assembly to ensure safety.

Possible safety measures include:

- Assure that scaffolders are working or standing on the scaffold decks or platform only
- Scaffolders must not be hindered by loose (scaffolding) parts lying on the scaffolding bay section that has not yet been hung/fixed at the 4 corners
- Use of appropriate personal protective equipment (PPE) such as safety harnesses
- Combination of the above-mentioned protective measures

When working with safety harnesses, a height rescue plan must be available at the construction site.

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

When using a safety harness, it is important to use the correct attachment points for connecting the suspension hook (= tie-off points). Figure 10.2 and Figure 10.3 show the correct attachment points for the connection to a tubular ledger or a rosette.

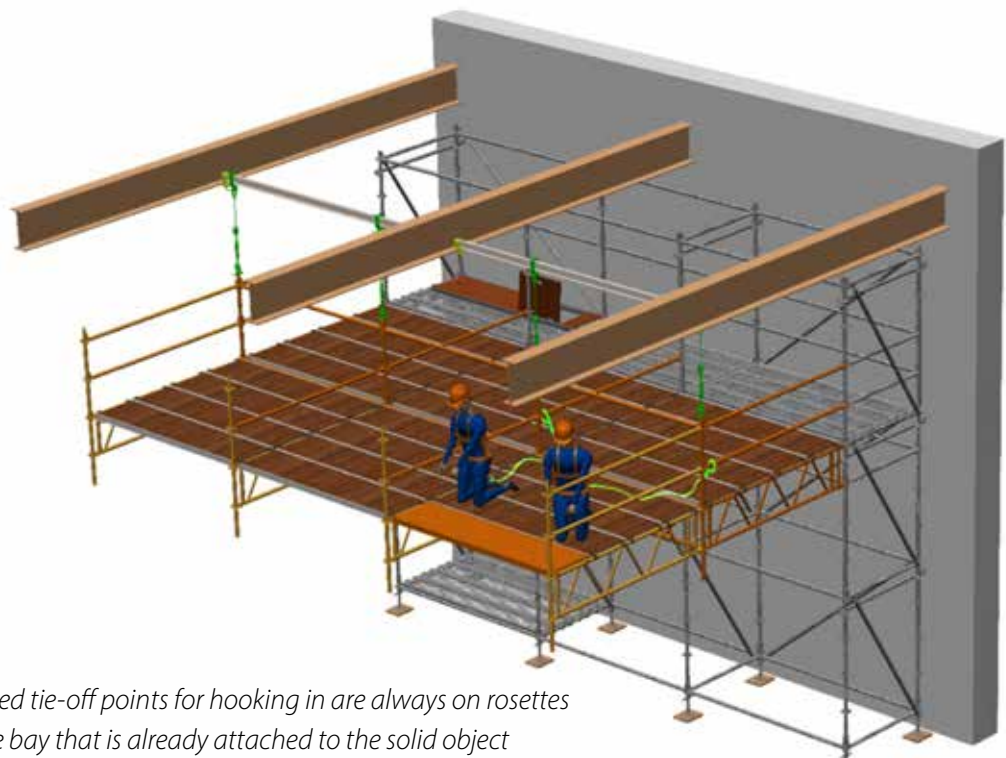


Figure 10.1: Secured tie-off points for hooking in are always on rosettes and ledgers in the bay that is already attached to the solid object



Fig.10.2: Safe tie-off points at ledgers (red lines) which are already mounted in a stabilized scaffold bay.

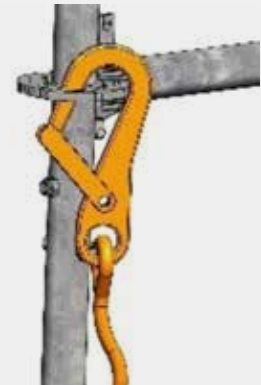


Fig.10.3: Safe tie-off points (red circles) at rosettes of suspended standards which are already mounted in a stabilized scaffold bay.

- The tie-off points should always comply with the local regulations and guidelines issued by the professional associations.
- The tie-off points always need to be as high as possible above the actual working level and at a minimum height of 0.5m above it.
- The snap hook on the safety harness may only be connected to closed parts of the scaffolding to ensure that the hook cannot slip off. Open sections such as e.g. tube ends may not be used as attachment points for the safety harness.
- The use of a safety harnesses with shock absorbing line is only permitted if the height of fall is at least 5.75 m when measured vertically from the attachment point to the ground.

11. CE-CERTIFIED SUSPENSION EQUIPMENT

RINGSCAFF SKY uses CE-certified equipment as the connection between the suspension clamps and the suspension standards to complete the full suspension of the scaffold:

See Appendix W for details of CE-certified suspension equipment

E04RS8026	Steel cable 0,60m fixed
E04RS8025	Spanner 520-792mm, wll 2,36ton + steelwire + security pin
E04RS8031	Spanner 543-892mm, wll 3,27ton + steelwire + security pin
E04RS8030	Spanner 695-1197mm, wll 3,27ton + steelwire + security pin
E04RS8024	D-shackle 16mm, swl 2,5ton + steelwire
E04RS8028	Wide D-shackle 25mm end girder + steelwire + security pin



Each of these suspension components should be provided with a factory certificate on item number & traceability code. The CE certificate is issued according to the regulations of the EC machinery directive 2006/42/EG.

The suspension components are CE marked with the WLL class number, manufacturer's name, symbol or code and traceability code.

The inspection, maintenance and use of these specific items are carried out in accordance with local standards and regulations.

12. ADJUSTMENT SOLUTIONS FOR THE CONNECTION OF SUSPENDED PLATFORMS TO (BRIDGE) ABUTMENTS

If the bridge abutment or pier is not perpendicular to the direction of the bridge, it is possible to use an angled scaffold bay to match the actual shape of the structure under which the suspended scaffold is to be placed.

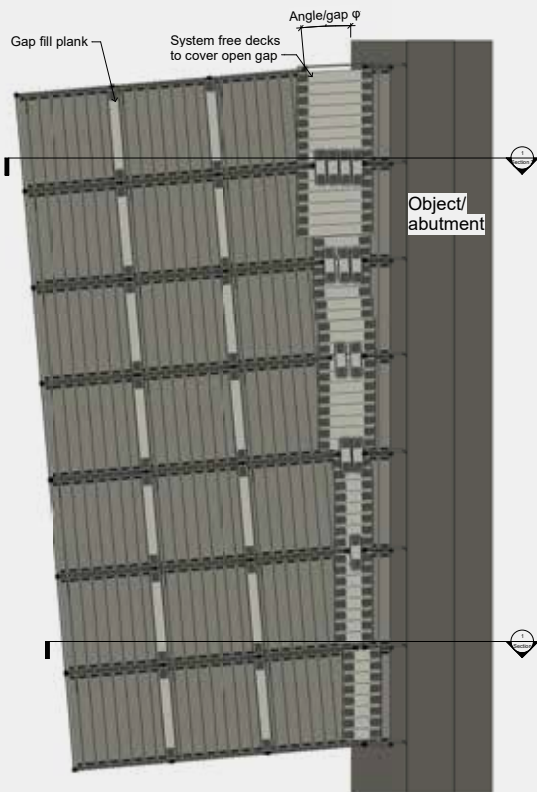
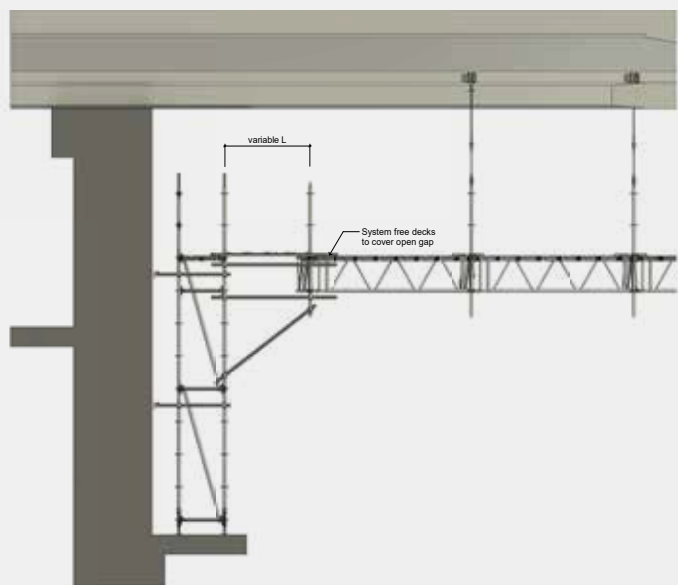
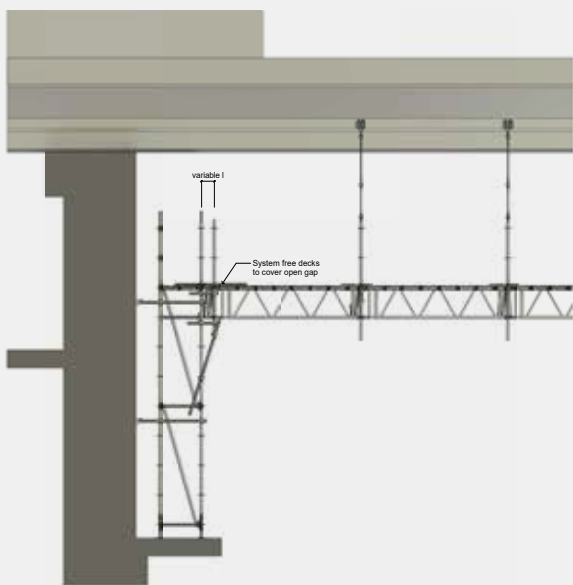


Fig.12.1: Plan view and section views of a typical solution to adopt a suspended scaffold platform with the abutment / object end.



13. SOLUTIONS FOR HEIGHT ADJUSTMENT – ARCHED AREAS

The RINGSCAFF SKY scaffolding system can also be used for buildings or structures with a curved underside.

For an underside with only a slight curvature, you can work within the system itself, using the marginal play in the system's lattice girders as shown below.

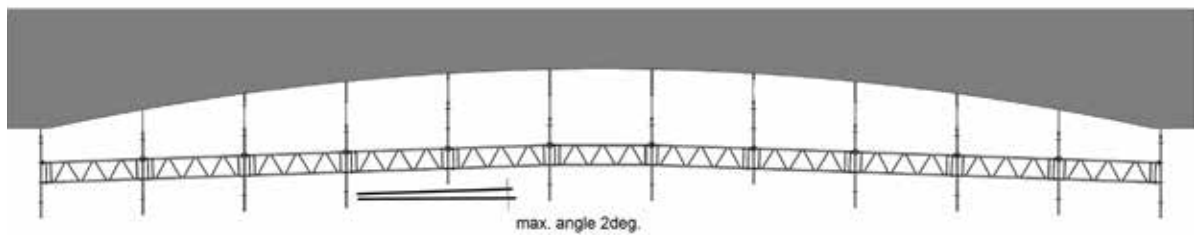


Fig. 13.1: Typical solution for a suspended scaffold underneath a slightly curved object (angle $< \sim 2^\circ$)

If the curvature of the underside of the object is greater, the height differences can be 'bridged' in 0.5m increments. This is done by assembling the swing girders as shown below.

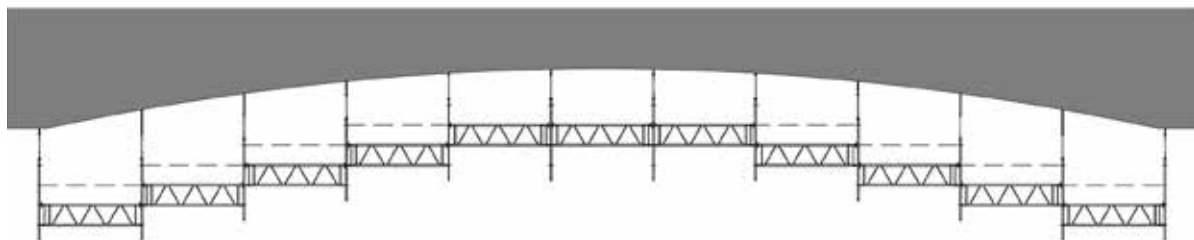


Fig. 13.2: Typical solution for a suspended scaffold underneath a curved object with max. 0,5m increments per bay length



Note: An additional ledger will be used at 0,5m above the platform before the next higher swing girder is fitted.

For further explanation and specially prepared designs, please contact the Scafom-rux Engineering Department.

14. SOLUTIONS FOR SUSPENSION TO CONCRETE BRIDGES

Concrete objects that need access and working platforms underneath the deck, can be serviced by the RINGSCAFF SKY system.

Typical concrete bridge structure designs, for which attachment points to suspend on, are:

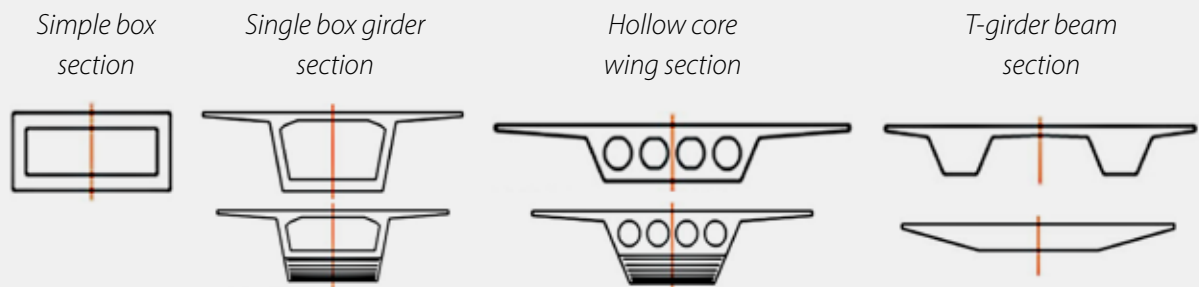


Fig. 14.1: Typical concrete bridge deck designs for which anchors can be used

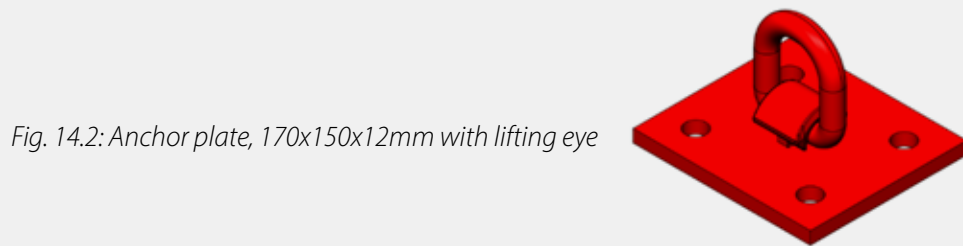


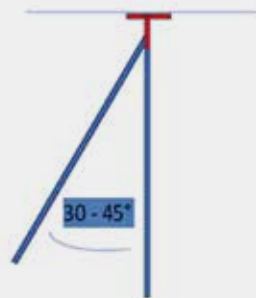
Fig. 14.2: Anchor plate, 170x150x12mm with lifting eye

The anchor plate for RINGSCAFF SKY meets the following requirements:

- Suitable for taking WLL loads required for the RINGSCAFF SKY system (min. WLL > 23kN);
- The anchor plate can be attached to a D-shackle 16mm (E04RS8024) or Spanner (e.g. E04RS8030).
- The anchor plate can be installed by hand with light tools and parts;
- Anchor plate must be fixed with 4 anchor bolts Ø12mm to the concrete deck.

The anchor plate is designed for tensile forces 23,2kN (total FOS 2,37 on failure of plate), when the plate is fixed with 4 anchor bolts to concrete deck/blocks (average quality concrete C20/25):

1. Force direction 90° - perpendicular to plate
2. Force direction 30 - 45° to plate



Note : for data of the proposed lifting eye and typical anchor bolts; check appendix W or ask your supplier.

APPENDIX W SUSPENSION EQUIPMENT – CHARACTERISTICS

Typical spec's for suspension equipment (as example, to ensure safety and quality):

Item Description: RINGSCAFF SKY D-shackle 16mm 3,25T
with steel wire and security pins

Item Number: E04RS8024

Product description



Product number	Item	WLL	Weight
E04RS8024	D-shackle 16mm, 3,25T with wire & pin	$\geq 32\text{kN}$	3,4 kg

Material Specification

D-shackle 16mm, manufactured to EN13889 or US FS RR-C-271, drop-forged and completed with bolt&nut, hot-dip galvanized, intended to be used in combination with steel cables and spanners for suspended scaffolds.

Safe working load D-shackle assembly $\geq 32\text{kN}$ (3,25T), safety factor 6.

Item Marking: WLL - Supplier code - steel grade - traceability code - CE.

Shackle jaws with bolts & nuts; inner width of jaw min. 27mm, bolt with extra hole for security pin .

D-shackle completed with security steel cable 150mm with end loops (at one end tightly around the jaw so that it cannot slide over the knot) and safety pin 3mm.

Certificate

Factory certificate on item nr. / traceability code for D-shackle; CE certificate according to regulations of EC-machinery directive 2006/42/EG, material certificate 3.1-model EN10204.

Additional Requirements

Easy to adjust bolt and nut in D-shackle assembly by hand.

Item Description: RINGSCAFF SKY Spanner 0,52 - 0,80m
with steel wire and security pins

Item Number: E04RS8025

Product description



Product number	Item	WLL	Weight
E04RS8025	Spanner 0,52 - 0,80m	$\geq 23\text{kN}$	3,4 kg

Material Specification

Spanner / turnbuckle with jam nuts, manufactured to ASTM F1145-92, drop-forged body and end jaws and threaded bolts, hot-dip galvanized, intended to be used for applying tension to steel cables and -clamps in suspended scaffolds.

Working length per spanner: closed 520mm - fully open 795mm.

Safe working load spanner assembly $\geq 23\text{kN}$ (2,36T), safety factor 5 - EN13414-1.

Item Marking: WLL - Supplier code - thread diameter - traceability code.

Spanner jaws with bolts & nuts; inner width of jaw min. 27mm, bolt with extra hole for security pin. Spanner completed at both ends with security steel cable 150mm with end loops (at one end tightly around the jaw so that it cannot slide over the knot) and safety pin 3mm.

Certificate

Factory certificate on item nr. / traceability code for spanner / turnbuckle; certificate according to regulations of EC-machinery directive 2006/42/EG.

Additional Requirements

Threaded bars, after assembly, lightly lubricated and secured against unintentional disengagement, easy to adjust spanner assembly by hand.

Item Description: RINGSCAFF SKY Steel cable 0,6m

Item Number: E04RS8026

Product description



Product number	Item	WLL	Weight
E04RS8026	Steel cable 0,60m	$\geq 25\text{kN}$	0,7 kg

Material Specification

Steel wire rope cable 14 mm, 6x36 wire steel + steel core, nominal strength 1960 N/mm², galvanized b/z 4* sleeves/ thimbles super splice clamped.

Working length per cable: 0,600 m

Safe working load $\geq 25\text{kN}$ (2,50T) Safety factor 5 - EN13414-1

Marking on sleeve - EN13414-1

Certificate

Factory certificate for cable and thimbles, EN13414-1

Additional Requirements

Item Description: RINGSCAFF SKY Wide D-shackle 25mm 4,75T

Item Number: E04RS8028

Product description



Product number	Item	WLL	Weight
E04RS8028	Wide D-shackle 25mm, 4,75T	$\geq 46,5\text{kN}$	2,1 kg

Material Specification

D-shackle 25mm, manufactured to EN 13889 or US FS RR-C-271, drop-forged and completed with bolt&nut, hot-dip galvanized, intended to be used in combination with steel cables and spanners for suspended scaffolds.

Safe working load D-shackle assembly $\geq 46,5\text{kN}$ (4,75T), safety factor 6.

Item marking: WLL - supplier code - steel grade- traceability code - CE

Shackle jaws with bolt & nut, inner width of jaw min. 63mm, bolt with extra hole for security pin 3mm.

Certificate

Factory certificate on item nr. / traceability code for D-shackle; CE certificate according to regulations of EC-machinery directive 2006/42/EG, material certificate 3.1-model EN10204.

Additional Requirements

Easy to adjust bolt and nut in D-shackle assembly by hand.

To be completed with security pin 3mm in bolt.

Item Description: RINGSCAFF SKY Spanner 0,70 - 1,20m
with steel wire and security pins

Item Number: E04RS8030

Product description



Product number	Item	WLL	Weight
EORSB030	Spanner 0,70 -1,20m	$\geq 32\text{kN}$	4,9 kg

Material Specification

Spanner / turnbuckle with jam nuts, manufactured to ASTM F1145-92, drop-forged body and end jaws and threaded bolts, hot-dip galvanized, intended to be used for applying tension to steel cables and -clamps in suspended scaffolds. Working length per spanner: closed 695mm - fully open 1195mm Safe working load spanner assembly $\geq 32\text{kN}$ (3,27T), safety factor 5 - EN13414-1 Item Marking: WLL - Supplier code - thread diameter - traceability code.

Spanner jaws with bolts & nuts; inner width of jaw min. 27mm, bolt with extra hole for security pin Spanner completed at both ends with security steel cable 150mm with end loops (at one end tightly around the jaw so that it cannot slide over the knot) and safety pin 3mm.

Certificate

Factory certificate on item nr. / traceability code for spanner / turnbuckle; certificate according to regulations of EC-machinery directive 2006/42/EG.

Additional Requirements

Threaded bars, after assembly, lightly lubricated and secured against unintentional disengagement, easy to adjust spanner assembly by hand.

Body at one side - type length marked with ochre yellow / orange colour paint.

Item Description: RINGSCAFF SKY Spanner 0,54 - 0,90m
with steel wire and security pins

Item Number: E04RS8031

Product description



Product number	Item	WLL	Weight
E04RS8031	Spanner 0,54 - 0,90m	$\geq 32\text{kN}$	3,7 kg

Material Specification

Spanner / turnbuckle with jam nuts, manufactured to ASTM F1145-92, drop-forged body and end jaws and threaded bolts, hot-dip galvanized, intended to be used for applying tension to steel cables and -clamps in suspended scaffolds. Working length per spanner: closed 540mm - fully open 890mm. Safe working load spanner assembly $\geq 32\text{kN}$ (3,27T), safety factor 5 - EN 13414-1
Item Marking: WLL - Supplier code - thread diameter - traceability code.

Spanner jaws with bolts & nuts; inner width of jaw min. 27mm, bolt with extra hole for security pin Spanner completed at both ends with security steel cable 150mm with end loops (at one end tightly around the jaw so that it cannot slide over the knot) and safety pin 3mm.

Certificate

Factory certificate on item nr. / traceability code for spanner / turnbuckle; certificate according to regulations of EC-machinery directive 2006/42/EG.

Additional Requirements

Threaded bars, after assembly, lightly lubricated and secured against unintentional disengagement, easy to adjust spanner assembly by hand.

Body at one side - type length marked with purple colour paint.

APPENDIX W CONT'D

Weld-on ring for anchor plate:



Material: Foot: Mild steel, Ring Ø18mm: Alloy steel.

Grade: 8

Marking: CE

Finish: Red painted.



Note: Welding may only be done by a qualified welder, according to EN 287-1, and in accordance with the DIN 5817, resp. 15429 standard.

WLL: 32kN

Safety factor: 4:1

Example of (DIN-certified) anchor bolt for concrete:

Fastener dimensions and marking HUS4-H(F)

Anchor size		12
Type	HUS4	H
Outer diameter of screw thread	d_t [mm]	14,70
Diameter of integrated washer	d_i [mm]	23,60
Length of the screw (min/max)	L [mm]	70/150

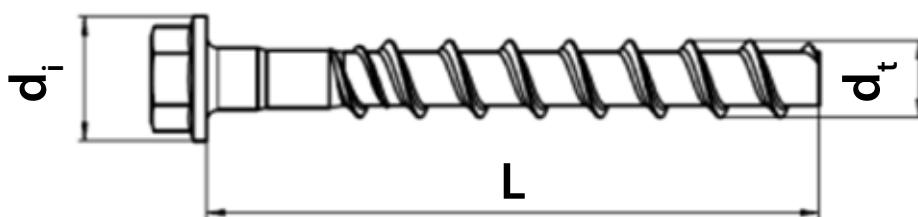
Example of a concrete anchor bolt Hilti HUS4 H12

HUS4: Universal Screw

H: Hexagonal head

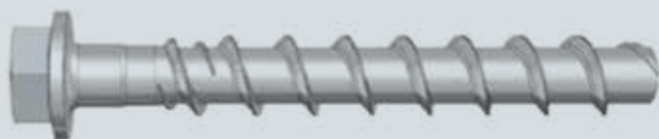
10: Screw diameter

100: Total length of the screw



Head configuration

Type	Part
HUS4-H HUS4-HF	Hexagonal Head



Check the supplier's data on SWLs and instructions for use.






APPENDIX X COMPONENTS

X.1 List of standard RINGSCAFF SKY components





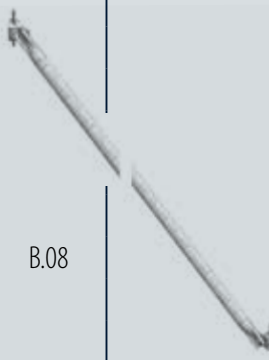
Item	Item description	Weight (kg)
E04RS8003	RINGSCAFF SKY STANDARD WITH SPEC SPIGOT 2,000M	10,6
E04RS8000	RINGSCAFF SKY SWING GIRDER 2,572M	26,9
E04RS8017	RINGSCAFF SKY SWING GIRDER 3,072M	29,7
E04RS8002	RINGSCAFF SKY END GIRDER 2,072M	17,9
E04RS8001	RINGSCAFF SKY END GIRDER 2,572M	21,5
E04RS8023	RINGSCAFF SKY END GIRDER 3,072M	25,5
E04RS8019	RINGSCAFF SKY HORIZONTAL DIAGONAL 2,572*3,072M	13,3
E04RS8004	RINGSCAFF SKY HORIZONTAL DIAGONAL 2,572*2,572M	10,4
E04RS8006	RINGSCAFF SKY INTERMEDIATE BEAM 1,10M RHS80*60MM	7,0
E04RS8005	RINGSCAFF SKY INTERMEDIATE BEAM 1,600M RHS120*60MM	21,0
E04RS8006	RINGSCAFF SKY INTERMEDIATE BEAM 1,900M RHS100*60MM	25,1
E04RS8015	RINGSCAFF SKY INTERMEDIATE BEAM 2,100M RHS120*60MM	33,4
E04RS8007	RINGSCAFF SKY BEAM CLAMP END RHS120*60MM	3,2
E04RS8008	RINGSCAFF SKY SUSPENSION CLAMP RHS120*60MM	2,6
E04RS8026	RINGSCAFF SKY STEEL CABLE 0,600M 14MM - SWL 2,7T	0,7
E04RS8025	RINGSCAFF SKY TURNBUCKLE 0,5-0,8M GP 16MM SWL 2,36T	3,4
E04RS8031	RINGSCAFF SKY TURNBUCKLE 0,54-0,90M GP SWL 3,27T	3,7
E04RS8030	RINGSCAFF SKY TURNBUCKLE 0,7-1,2M GP SWL 3,27T	4,9
E04RS8028	RINGSCAFF SKY WIDE MOUTH SHACKLE GP 4,75T	2,1
E04RS8024	RINGSCAFF SKY D-SHACKLE GP 16MM SWL 3,25T	0,6
E04RS8027	CHAIN WINCH 1,50t - 3m (assembly tool)	4,0
E04RS8029	RINGSCAFF SKY CHAIN ASSEMBLY 2,50T+SHORT HOOK (alt. suspension)	8,0
E04RS1932	RINGSCAFF SKY anchor plate 3,20T	2,5

X.2 List of standard RINGSCAFF scaffold components





Date: 13th of January 2023

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

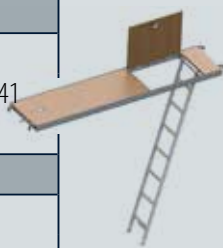




RINGSCAFF SKY | SUSPENDED SCAFFOLD INSTRUCTIONS FOR ASSEMBLY AND USE







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

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

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

RINGSCAFF SKY | SUSPENDED SCAFFOLD INSTRUCTIONS FOR ASSEMBLY AND USE

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

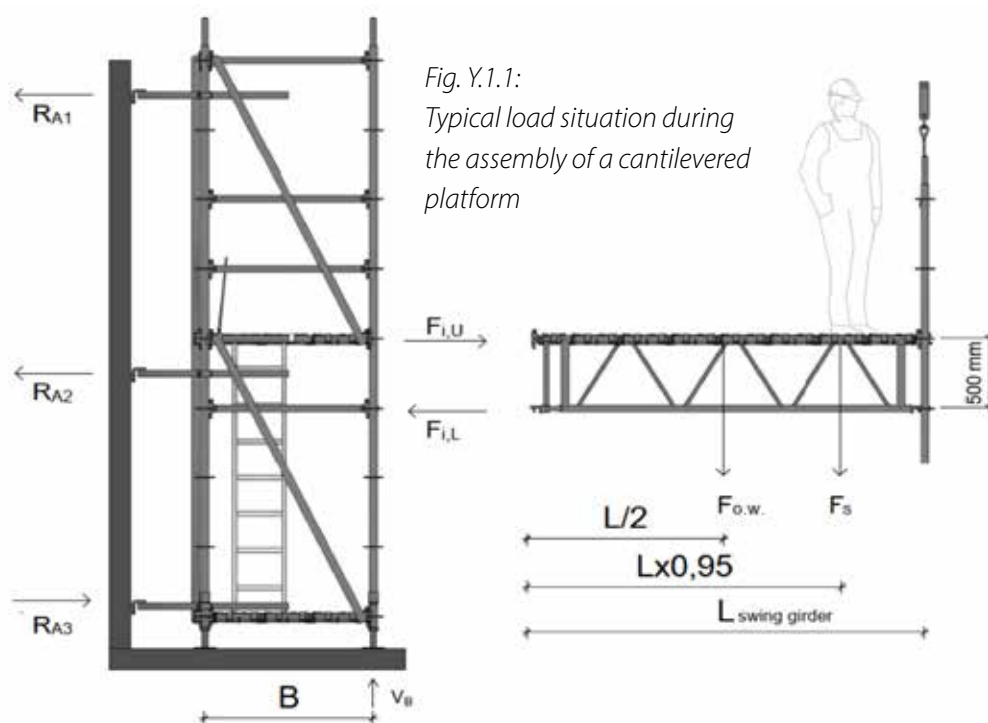
Article nr. 2023 O-support	Description of RINGSCAFF Components:	Weight (kg)	Drawing nr:	Reference to product approval Z-8.22-869 Appendix B Page	Typical picture
E04RS0020	RINGSCAFF INTERMEDIATE TRANSOM 0,732M	3,6	E04RS0020		
E04RS0039	RINGSCAFF INTERMEDIATE TRANSOM 1,088M	5,3	E04RS0020		
E04RS0053	RINGSCAFF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

APPENDIX Y STANDARD CONFIGURATION

Y.1 Interplay of forces during (dis)assembly of suspended scaffold

During (dis)assembly of the suspended scaffold platform, that is acting as a cantilever, one should be aware and take measures for the internal forces that occur per scaffolding stand row, per bay.

In this section, these force values are indicatively assessed and given broadly rounded off, assuming a dead weight of the platform of 0,36 kN/m², following this scheme:



Forces (kN)		Scaffolder	Own Weigth	Inner forces		Reaction forces			
Config.		F_s	$F_{o.w.}$	$F_{i,u}$	$F_{i,L}$	$R_{A,2}$	$R_{A,1}$	$R_{A,3}$	V_B
L Swing girder (m)	Bay width (m)								
2,57	2,57	1,0	~2,5	11,3	11,3	~6,0	~3,0	~3,0	~6,0
2,57	3,07	1,0	~3,0	12,9	12,9	~7,0	~3,5	~3,5	~6,5
3,07	2,57	1,0	~3,0	15,3	15,3	~8,0	~4,0	~4,0	~6,0

Table Y.1.2: Indication of internal forces & reaction forces during assembly of cantilevered platform per scaffold standard row.

Y.2 RINGSCAFF Sky standard configurations

More information will be available here soon or on request. Please contact:

T. +31 (0) 495 497 204

E. info@scafom-rux.com

APPENDIX Z PRODUCT CERTIFICATES

Internet Certificaat
Internet Certificate

CERTIFICAAT STAALKABELS
Certificate of Wire Ropes


Ondergetekende verklaart namens zijn firma, dat onderstaande gegevens juist zijn en dat de omschreven staalkabel of het staalkabel samenstel overeenkomen met de bepalingen van de EG Machine Richtlijn 2006/42/EG, bijlage II-A. Het samenstellen en het onderzoek en de beproeving is uitgevoerd door een bevoegd persoon onder zijn toezicht, volgens de EKH-Werkvoorschriften.

The undersigned certifies on behalf of his company, that below particulars are correct and that the described wire rope or complete gear are according to the regulations of the EG Machinery Directive 2006/42/EG, appendix II-A. The assembling, examination and test was carried out under his supervision by a competent person, according to the EKH-Code of practice.

Referentie van klant <i>Reference customer</i>	RINGSKAFF	Certificaat nummer <i>Certificate number</i>	SCB4
Opdrachtnummer <i>Order number</i>	519648	Registratie merk en nummer <i>Distinguishing mark and number</i>	SCB4

Werklast in kg (WLL) <i>Working load limit</i>	: 2510 kg
Omschrijving <i>Description</i>	: Verzinkte staalkabel
Afwerking van kabeleinden <i>Confectioning of rope ends</i>	: b/z 4" kous supersplice geklemd
Overige gebruikte onderdelen samenstel <i>Other used parts of complete gear</i>	:

Afmetingen <i>Dimensions</i>	Nominale kabelmiddellijn <i>Nominal wire rope diameter</i>	: 14 mm
	Lengte van geleverde staalkabel <i>Length of supplied wire rope</i>	: 1 mtr
Constructie <i>Construction</i>	Aantal strengen x aantal draden + kernen <i>Number of strands x number of wires + cores</i>	: 6x36ws+stk
	Slagrichting en slagwijze <i>Direction and type of lay</i>	: kruisslag rechts
	Voorgevormd <i>Preformed</i>	: Ja
Materiaal <i>Material</i>	Treksterkteklasse <i>Tensile grade</i>	: 1960 N/mm ²
	Afwerking van draadoppervlak <i>Surface finishing of wires</i>	: Nagetrokken verzinkt
Sterkte <i>Strength</i>	Minimum breekkracht van kabel in kN (BL) <i>Minimum breaking strength of wire rope</i>	: 137
	Proefbelasting bij trekproef in kN (PL) <i>Proofload applied</i>	: kN
	Datum van beproeving <i>Date of test</i>	: 29-05-2018
Toepassing <i>Application</i>		: Algemeen
	Staalkabel vervaardigd volgens norm <i>Wire rope manufactured according standard</i>	: EN 13414-1
	Kenmerk/Fabrieks/haspelnummer <i>Identification/Production number/Reel number</i>	: V2936
	Naam en adres fabrikant <i>Name and adres of manufacturer</i>	: KW
	Staalkabel geleverd aan <i>Wire rope supplied to</i>	: Scafom-Rux Holding, De Kempen 5 6021 PZ BUDEL, NEDERLAND

Leveringsdatum <i>Date of delivery</i>	Naam en adres van leverancier <i>Name and adres of supplier</i>	Gegevens betreffende levering <i>Note of delivery</i>	Handtekening gemachtigde <i>Signature of authorised person</i>
29-05-2018	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>	Ordernr: 519648 Mennens id: 807870 Referentie klant: RINGSKAFF	 D. van Deuzen

NOTES

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[illegible]

NOTES

[illegible]

[illegible]

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