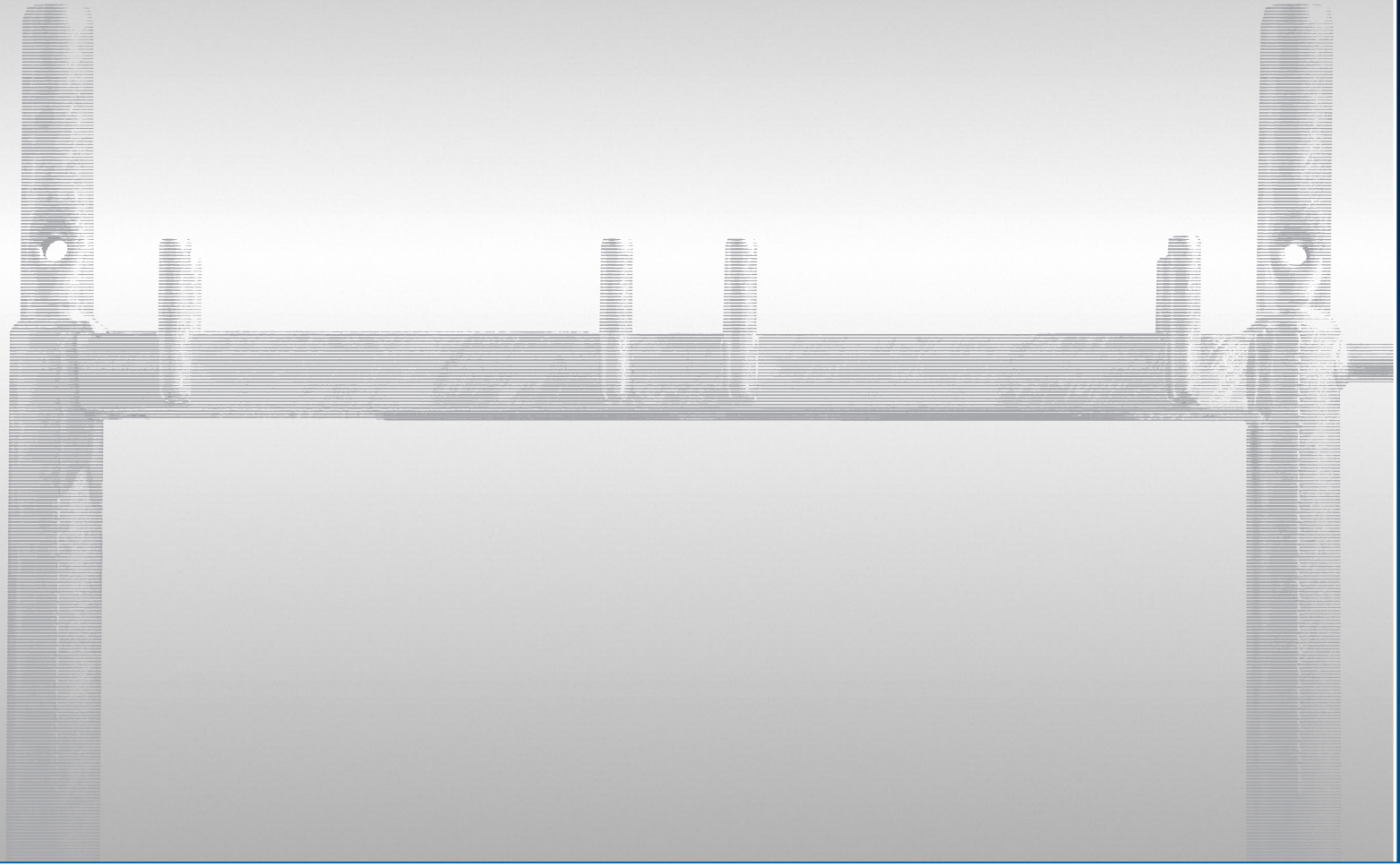


SUPER 65 *FAÇADE SCAFFOLDING*

RUX GmbH
Neue Straße 7
D-58135 Hagen

Phone +49 2331 4709-0
Fax +49 2331 4709-202
www.rux.de · info@rux.de

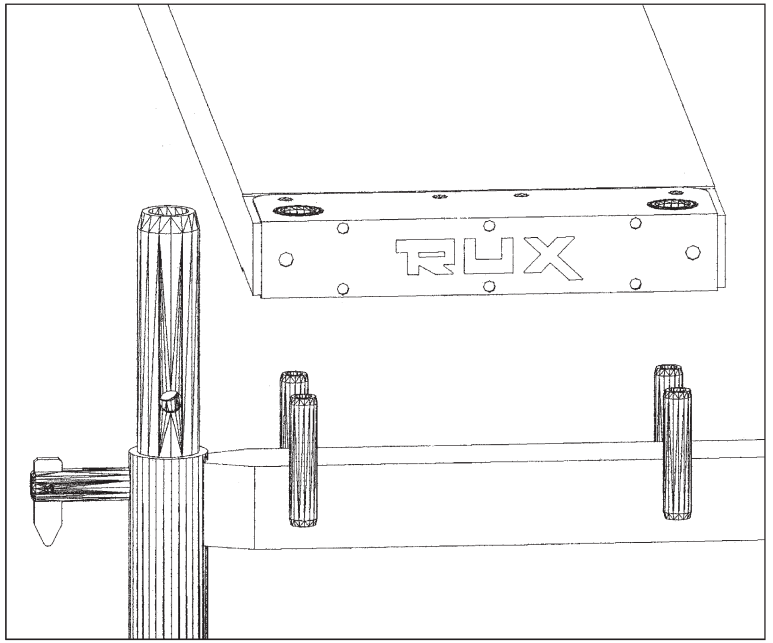
Hotline
+49 2331 4709-180

Instructions for erection and use

A Scafom international company
Scafom INTERNATIONAL

Instructions for erection and use of the RUX-SUPER 65 Rapid-Erection Scaffolding

- Standard Design -



Status: January 2007

Attention! Any instructions for erection and use issued at an earlier date are no longer valid.

These instructions for erection and use are valid only for the original RUX-SUPER 65 fast-erection scaffolding system from RUX GmbH, RUX SALES & SERVICES GmbH and GÜNTER RUX GmbH. They are not valid for any scaffolds consisting imitation copies of system components or combinations of original parts with imitation components.

Contents

1 General

Preliminary advice concerning these instructions for erection and use of the RUX-SUPER 65 scaffolding system in standard design:
In connection with the instructions for erection and use contained herein, please note in particular that scaffolds may only be erected, dismantled or converted by sufficiently qualified staff and under professional supervision. For the erection and use of scaffolds we refer to the provisions under the general regulations for occupational health and safety. As part of these instructions for erection and use, we provide erectors and users with the necessary information derived from our own accident hazard analyses to comply with the regulations for occupational health and safety in each particular situation of assembly and/or use. The technical details given in these instructions for erection and use, which are intended to assist erectors and users in complying with occupational health and safety regulations, do not constitute any mandatory specifications. Erectors and/or users must carry out their own accident hazard analyses and take all necessary precautions to comply with occupational health and safety regulations according to their own best judgement. Here, the special conditions of each individual project must be taken into account. The basic requirement in all cases is strict adherence to the instructions for erection and use contained herein, as well as the general instructions for handling work and safety scaffolds issued by the Employers' Liability Insurance Association, Building Construction (BGI 663; March 2005, issued by BG Bau).
All statements made in these instructions apply only to original components supplied by RUX GmbH, RUX SALES & SERVICES GmbH and GÜNTER RUX GmbH. The use of components from other manufacturers may lead to safety deficiencies and insufficient stability of the structure.

In addition to these instructions for erection and use, the approval notification for the scaffolding system must also be observed.

To have any questions concerning these instructions answered and to obtain structural analyses in cases of divergence from the standard designs, please contact:

IBS Ingenieur- & Sachverständigen-Büro für den Gerüstbau
Dipl.-Ing. Joachim Specht
Unterm Ried 5
D-58579 Schalksmühle / Germany
Tel.: +49 (0) 23 55-40 08 67
Fax.: +49 (0) 23 55-40 08 69
E-mail: IBSpecht1@aol.com

The RUX-SUPER 65 Rapid Erection Scaffolding is a steel frame scaffold with a system width of 0.65 m and consisting of prefabricated components. The bay lengths are 1.50 m, 2.00 m, 2.50 m and 3.00 m (l = 4.00 m in the bridging bay). Short lengths of 0.65 and 1.00 m are also available. The frames have a height of 2.00 m thus determining the vertical spacing of the individual lifts. They are slipped onto one another by means of tube connectors arranged at the same level as the planks (decking).The diagonals and guardrails are fixed to the standards with the aid of gravity locks or lugs. The decking is held horizontally by tubular spigots, on the bearers, and serves to stiffen the scaffold both at a right angle as well as parallel to the facade.

The manufacture and identification of the components is regulated in the general certificate of approval No. Z-8.1-185.1 issued by the Institute for Construction Technology.

The RUX-SUPER 65 Rapid-Erection Scaffolding is classed in Scaffold Group 3 and can be used as work and protection scaffolding.

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

1 General

The topmost lift, in the standard design, is to be at a maximum of 24 m plus jack extension length above the ground.

The erection and dismantling of the RUX-SUPER 65 is only to be carried out by fully qualified and authorised personnel.

The erection, modification and dismantling of the facade scaffolding RUX-SUPER 65 must always be done under the supervision of a qualified person and by staff who has been trained for this work and instructed according the special requirements of the current working site. The rules of the Work Safety Regulations have to be respected whenever carrying out scaffolding operations. Before starting the work, the entrepreneur has to make a hazard analysis.
This manual describes the erection and dismantling of the standard design scaffolding. If the scaffolding system is used for scaffolds that deviate from the standard design, then such deviations must be accessible in accordance with the technical construction stipulations and the regulations contained in the certificate of approval No. Z-8.1-185.1 and verified in individual cases. Verification can be waived when the deviations can be accessed on the basis of expert experience. The scaffolding has only to be erected, rebuild and dismantled according to the instructions and with the components described in the listing that is integral part of these instructions. Other erection schemes are allowed, but must be proven individually. The scaffolding has to be checked preliminary every mounting and use by skilled persons. This verification must be recorded in written. During erection, rebuilding and dismantling the scaffolding has to be marked with the prohibitory sign "Access denied" and restricted with appropriate barriers that avoid access to the danger zones (Annex 2, section 5.2.5 Work Safety Regulations).

The planks for the RUX SUPER 65 rapid-erection scaffolding have been verified, as per Table 1 on page 4, for the live loads of the scaffold groups in accordance with DIN 4420 Part 1: 1990-12, Table 1 as well as for the use in safety scaffolds and roof safety barrier scaffolds with drop heights of up to 2.0 m.

Rapid-Erection Scaffolding RUX-SUPER 65

1 General

Table 1: Matching of decking with scaffold groups and suitability of various types of decking for safety scaffolds and roof safety barriers

Designation	Scaffold design	Use on safety scaffolds and roof safety barriers	Bay width l [m]	Use with scaffold group
Timber plank	9	permissible	2,0	≤ 5
			2,5	≤ 4
		permissible*	3,0	≤ 3
Profiled timber plank	10	permissible	2,5	≤ 5
			3,0	≤ 4
Aluminium plank	12	permissible	2,5	≤ 6
			3,0	≤ 5
			4,0	≤ 3
Aluminium board	13	permissible	2,5	≤ 5
			3,0	≤ 4
Steel plank	14	permissible	2,0	≤ 6
			2,5	≤ 5
			3,0	≤ 4
Aluminium ladder frame with integrated veneer plywood ladder, building construction standard (BFU 100G)	45	permissible	2,5	≤ 4
			3,0	≤ 3
Aluminium ladder frame with integrated aluminium ladder	46	permissible	2,5	≤ 4
			3,0	≤ 3
Solid timber plank, d = 45 mm	55	permissible	2,0	≤ 4
			2,5	≤ 3
		not permissible	3,0	
Solid timber plank, d = 48 mm	56	permissible	2,0	≤ 5
			2,5	≤ 4
		not permissible	3,0	≤ 3
Aluminium plank	57	permissible	2,0	≤ 6
			2,5	≤ 4
			3,0	≤ 3

*) suitable for use in safety scaffolds and roof safety barriers, only solid timber classified as MS 10; additional marking on the metal fittings according to appendix 9 required

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2 Erection of the RUX-SUPER 65 scaffolding

2.1 General requirements

The RUX-SUPER 65 components are to be visually checked for damage prior to erection. Damaged components must not be used.

Only components bearing appropriate markings may be used!

The RUX-SUPER 65 scaffolding is to be erected in the sequence of the following chapters.

2.2 Erection of the first bay

2.2.1 Load-dispersing base

The RUX-SUPER 65 scaffolding is only to be erected on sufficiently firm ground capable of bearing loads. If the ground is not of sufficiently load-bearing nature, load-dispersing supports such as planks, square timber blocks or steel beams must be placed underneath (Illustrations 1a and 1b).

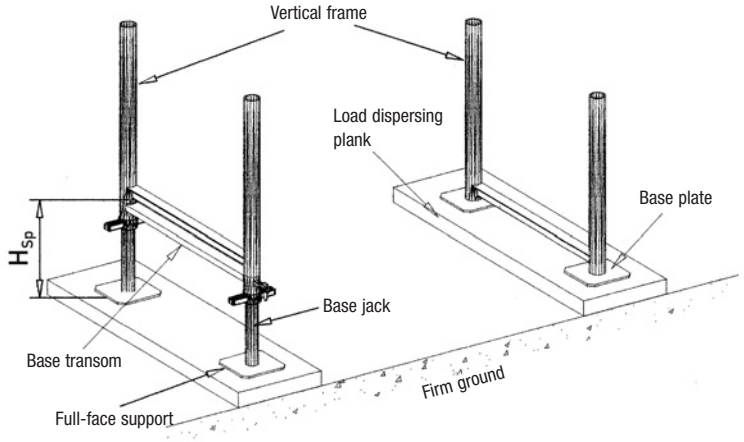


Illustration 1a Load-dispersing foundation with scaffold planks.

2 Erection of the RUX-SUPER 65 scaffolding

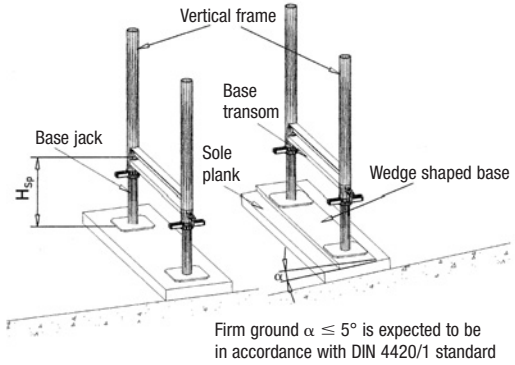


Illustration 1b Examples of supports (as per DIN 4420/1)

2.2.2 Base plates, jacks, base transoms and longitudinal tubes (guard rail)

A base jack or base plate is to be fitted under each standard (refer to Ill. 1a and 1b). The base jacks, or base plates, are to be placed, full-face, in pairs, on firm, good load-bearing ground. Inclines are to be compensated by wedge shaped supports. The local load input is to be verified on inclines of more than 5° (Ill. 1b). The standard base jacks are, normally, only to be extended up to a maximum of 295 mm. The jack screw extension length corresponds to the distance between the bottom edge of the vertical frame to the bottom edge of the base jack (Ill. 1a, 1b: H sp). The screws are classed as per the approval certificate No. Z-8.1-185.1 in Group A in accordance with Chapter 6 of DIN 4425.

The base transoms are then fitted and a longitudinal tube attached, by means of the gravity locks, in order to align the first bay both longitudinally and crosswise (Ill.2).

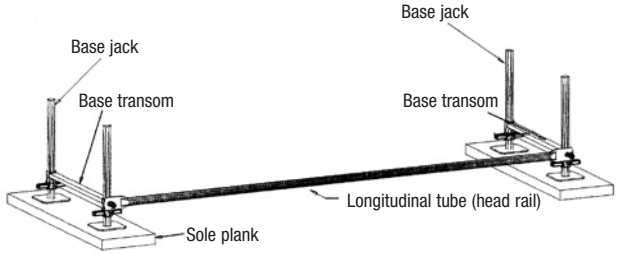


Illustration 2 Alignment of the base using base transoms and longitudinal tubes (guardrail).

2 Erection of the RUX-SUPER 65 scaffolding

2.2.3 Adapter Frames

If there are large variances in the height of the terrain on which the scaffold is to be located, or if heights different to that of the base frame height H = 2.00 m are required, then adapter frames can be fitted. Vertical adapter frames are available in heights of 0.50 and 1.00 m (Ill.3).

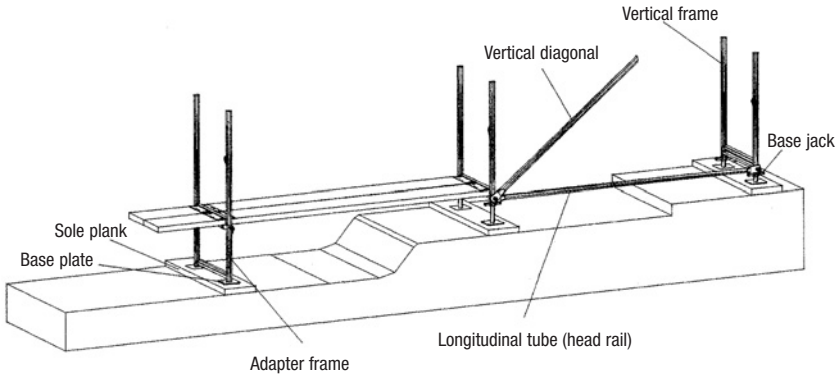


Illustration 3 Assembly with vertical adapter frame

If vertical diagonals are planned for a bay, then diagonals must also be fitted between the adapter frames.

Tubes of 48.3 Ø x 3.2 are to be used and connected by swivel couplers to the standards.

Rapid-Erection Scaffolding RUX-SUPER 65

2 Erection of the RUX-SUPER 65 scaffolding

2.2.4 Vertical frames

The vertical frames and passage frames are placed perpendicular, at the required distance from the wall i. e. the clear space between plank and facade must be a maximum of 0.30 m, on the base plates or base jacks with transoms, and secured against falling over with the aid of a vertical diagonal (Ill.4). External gravity locks are fitted at the top of the frame and on the base cross bar for locating the diagonals. Care is to be taken to ensure that the outer hole is used on the side with the double holes.

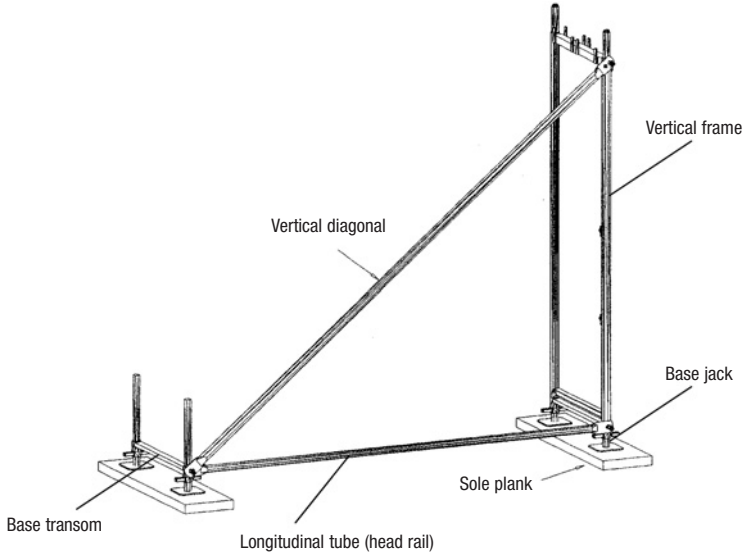


Illustration 4 Fitting the vertical frame and simultaneous securing by means of vertical diagonals.

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2 Erection of the RUX-SUPER 65 scaffolding

2.2.5 Fitting the planks

System planks are to be used exclusively on the RUX-SUPER 65 scaffolding. Two system planks of timber, steel or aluminium with a width of 29 cm, or a 59 cm wide aluminium batten, must be fitted.
The planks are held, horizontally, by tubular spigots on the bearers of the vertical frames and stiffen the scaffold both at a right angle as well as parallel to the facade (Ill.5).

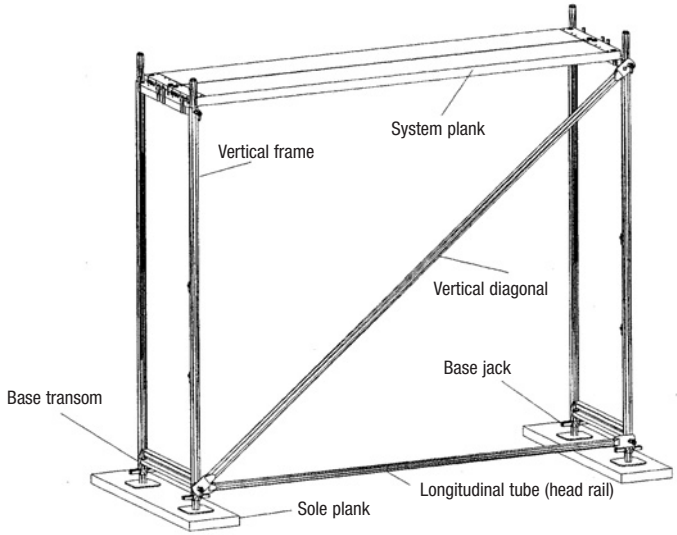


Illustration 5 The first bay is complete (base bay)

2.2.6 Braces

The longitudinal braces are to be fitted to the outer side of the scaffold.
The vertical diagonals and longitudinal tubes serve to create stability and onward transmission of the forces into the ground underneath the outer scaffold face that runs parallel to the facade.

2.2.7 Alignment

The first bay must be aligned both perpendicular and horizontally. The distance from the wall should be checke i. e. the maximum distance between the planks and the facade must not exceed 30 cm if a guardrail is not fitted.

2.3 Erection of the subsequent bays

2.3.1 Standard bays

When the base bay has been completed with braces and aligned, the next bays can be assembled. The same procedures are to be adopted as described in Chapter 2.2. By fitting the vertical diagonals, the RUX-SUPER 65 rapid erection scaffold aligns automatically in the perpendicular. Care must be taken to ensure that a diagonal brace is fitted in every fifth bay (Ill.6) Additional diagonals are required in the longitudinal and cross directions on a number of different modes of assembly (refer to Chapter 2.5)

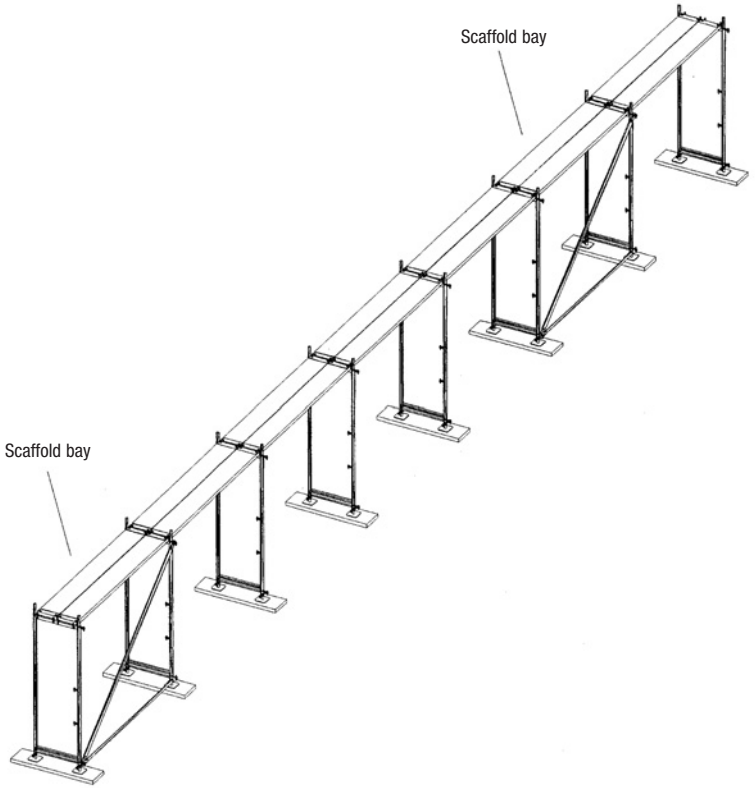


Illustration 6 Assembly of the bottom scaffold lift

2.3 Erection of the subsequent bays

2.3.2 Building corners

There are a number of various ways of creating corners on the longitudinal facade scaffolding. If the vertical faces of the scaffold (longitudinal side and end side) meet directly, then the connection can be made with the help of additional scaffold tubes (Ill.7a) or the outer frame standards are connected by two swivel couplers at a vertical distance of H = 4.00 m (Ill.7b). The base jack, or base plate, for a vertical frame standard can be dispensed with.

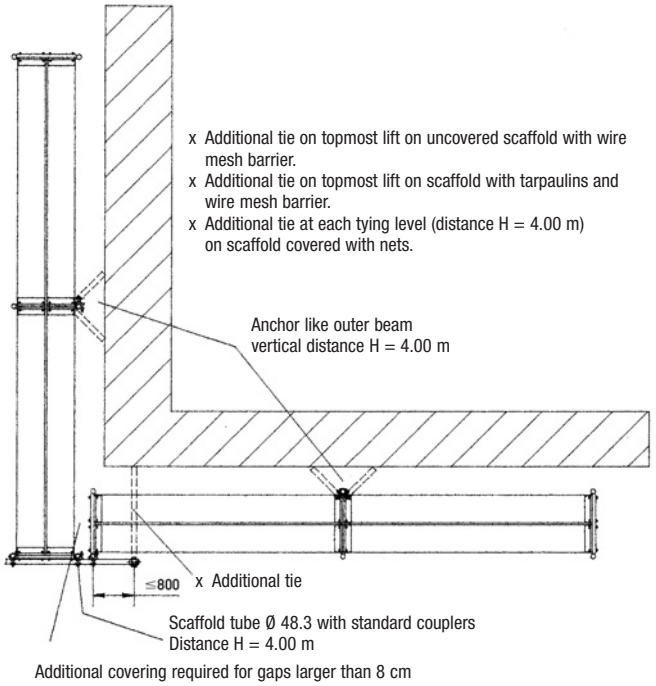


Illustration 7a Creation of a corner by connecting the frame standards using scaffold tubes and standard couplers. An additional tie is required at the corner of the topmost lift when fitting a wire mesh barrier.

Rapid-Erection Scaffolding RUX-SUPER 65

2.3 Erection of the subsequent bays

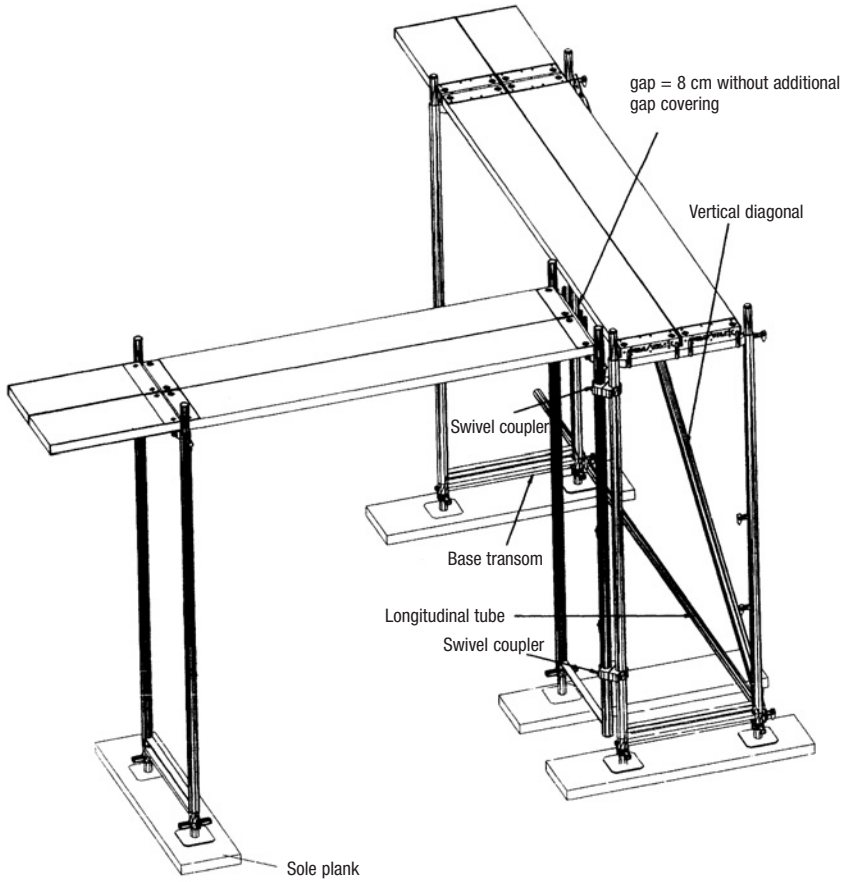


Illustration 7b Creation of a corner by using swivel couplers

No ties are required at the facade corner as long as the scaffold lifts are constructed in the proper manner (exception see Ill. 7a). Each of the subsequent vertical frame columns, on each side, is to be tied to the facade, in the manner of a perimeter frame, at height intervals of H = 4.00 m (Ill.7a).

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.3 Erection of the subsequent bays

2.3.3 Scaffold access ladders

The access ladders are to be fitted before work starts on the first lift. For this purpose, the RUX-SUPER 65 system scaffolding employs an interior ladder frame with integrated ladder. Care must be taken, when assembling, to ensure that the opening, together with the ladders, is arranged alternately from side to side (Ill.8). The two columns of vertical frames must be tied at a space of H = 4.00 m. Planks are to be fitted on additional planks bearers immediately above the screws, which are slotted on over the base jacks prior to the vertical frames being erected. Bays are to be used for the assembly and use of the facade scaffolding that guarantee hazard-free access.

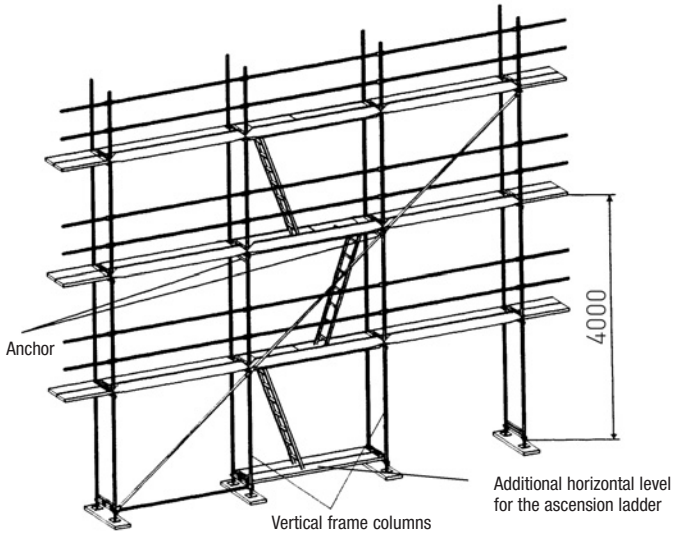


Illustration 8 Scaffold with interior access ladder

2.4 Erection of the next lifts

The measures to improve safety standards during erection, dismantling and conversion of scaffolds described in the following chapter are to be understood as suggestions for erectors of scaffolds, not as mandatory instructions.
The measures suggested hereunder have been devised by a committee consisting of scaffolding contractors, leading German scaffold manufacturers and the German Federal Association of Scaffolding Contractors on the basis of a joint risk analysis. Although current accident statistics in the erection, dismantling and conversion of scaffolds do not call for mandatory changes in current scaffolding practices, the objective of the committee's work was to improve scaffolding safety standards in areas where, in theory, a danger of falls could exist.

2.4 Erection of the next lifts

III. 9a

Erection, dismantling and conversion of scaffolds always involves a risk of falls.

Work on scaffolds must be carried out in such a way as to minimise the risk of falls. Prior to commencement of work, scaffolding contractors (or principals) must have a risk analysis carried out for each individual project and take appropriate precautions to minimise the danger of falls.

Since collective protective measures must always take priority over individual measures, the lateral safety barriers incorporated in the scaffolding system must always be mounted as soon as technically feasible.

It is the task of supervisors responsible for the erection and dismantling of scaffolds to take appropriate precautions against falls and their consequences for the life and health of workers in order to ensure maximum safety, taking into consideration all aspects of practical feasibility, expediency and the actual risks involved.

Possible preventive measures are:

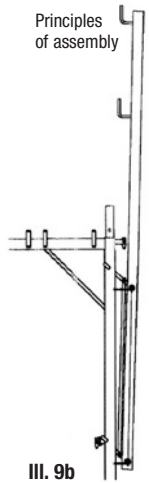
– employment of qualified workers who have been familiarized with the specific risks involved, are supervised by a competent person and are themselves aware of the actual danger of falls in each case
– use of appropriate personal safety equipment (PSE)
– use of an assembly guard rail for the ascent
– or a combination of these measures.

It must be remembered that none of these alternatives is a collective protective measure.

Erection and dismantling of the basic standard scaffolding system with the help of an assembly guard-rail system

For scaffolds without external brackets or bridges which conform to the basic standard system, Rux recommends using the Rux assembly guard-rail system in the ascent bay during erection and dismantling of the scaffold. Other measures may be taken as an alternative if they provide a comparable degree of safety.
The Rux assembly guard-rail system has been developed for scaffold frame structures to provide improved protection against falls for workers taking part in the assembly and dismantling of such structures.

The system consists of the following parts:
Assembly guard-rail posts and assembly rails that can be mounted as hand rails and/or knee rails. It is an "advanced guard-rail" that can be mounted following the assembly of the top horizontal level of any scaffold frame from the horizontal level immediately beneath it.



III. 9b

2.4 Erection of the next lifts

Special warning:

Please note that Rux assembly guard-rail systems are never sufficient to prevent all risks of falls occurring during the assembly or dismantling of scaffolds!
It remains the task of supervisors responsible for the assembly and dismantling of scaffolds to take additional or other precautions against falls and their consequences for the lives and health of workers involved, in order to provide maximum safety, taking into account all aspects of practical feasibility, expediency and the actual risks involved. Such precautions may include certain prescribed sequences of assembly and dismantling work, personal safety equipment or the employment of specially trained staff.

Following erection of the first scaffold level, the guard-rail system, consisting of two posts and a hand rail, is attached to the outside of the frame standards in the bay of ascent, so that the bottom hooks on the posts are locked into the rail couplers of the vertical frames at a height of 1.00 m, and the assembly guard-rail is fixed app. 1.00 m above the top horizontal level.
Attention! The assembly guard-rail system must be mounted from below in the bay of ascent before the assemblyman steps onto the next level of the scaffold.

The assemblymen ascend through the bay secured by the assembly guard-rail. Starting from the secured bay, the assembly of frames and rails is continued to the left and/or to the right. Following the assembly of each frame, the three-part lateral safety barrier, consisting of hand rail, knee rail and toe board, must be immediately put in place in that bay. It must be kept in mind that during the assembly of each outermost frame, the assemblymen are working in an unsecured area for a short period (prior to assembly of the lateral safety barriers), where there is an acute danger of falling. Before the commencement of work, assemblymen must be instructed accordingly. After completion of the next horizontal level, the assembly guard-rail posts must be removed individually, one by one, and then attached with their bottom hooks at the height of the back rail to the external standards of the row of frames already secured.
Dismantling of the assembly guard rail is not necessary, since the rail system is telescopic, thanks to a slotted hole.
For the dismantling of scaffolds, the sequence in the use of the system is reversed.

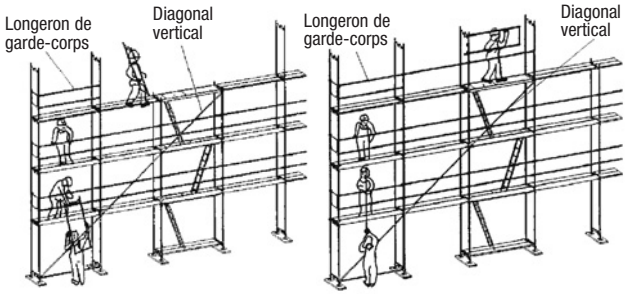


Figure 9c

2.4 Erection of the next lifts

Assembly and dismantling without an advanced assembly guard-rail system, with PSE:

For the assembly and dismantling of scaffolding structures deviating from the basic standard system and special scaffolding structures not described in these instructions for the erection of scaffolds, the use of personal safety equipment is recommended, where this is expedient for the local conditions of the building site. Alternatively, other preventive measures providing at least an equal level of safety may be taken.

Attachment points for personal safety equipment (PSE)

Illustration 9d

Illustration 9e

In RUX-SUPER-65 fast-erection scaffolds, PSE may only be attached to the standards and the top horizontal transoms of the vertical frames.

Back rails, diagonals, toe boards and rail posts are unsuitable as PSE attachment points.

Attachment of PSE to standard scaffolds is permissible only if such scaffolds are sufficiently anchored.
The use of PSE on standard scaffolds that have not yet been anchored is prohibited, because it would involve the risk of the whole scaffolding structure being pulled down by the fall of one person.

The use of PSE is recommended only from the 3rd level of a scaffold or from a minimum height of 5.00 m upwards, since a person falling from a lesser height would already touch the ground prior to the safety mechanism taking effect, due to the length of rope involved plus his own body height.
Basically, the maximum length of attachment rope permissible for PSE is 3.00 m.
If PSE hooks are attached to standards of scaffold frames, the hooks may come to lie on rails mounted to the scaffold. In the case of the person secured by this device falling down, such hooks may be subjected to horizontal bending, which some hooks found on building sites are unable to withstand. Therefore the user must ascertain from the manufacturer of his PSE whether the hooks have a sufficient load capacity for their being attached in such positions.

Basically, only attachment devices according to DIN EN 362 may be used.

Prior to the use of any PSE, an individual analysis must be carried out on how, in the event of an accident, a person who has fallen and is secured by PSE can be rescued.
A person who has fallen from the scaffold will be suspended in his PSE harness either in front of a horizontal level or between two such levels. The rescuers must pull such a person onto the scaffold level within easiest reach. This makes it necessary for the rescuers to attach themselves with their own PSE and possibly to remove the lateral safety barriers of the bay involved. Only after the person who has had the accident has been brought to a safe position and the catch-rope has been completely freed from the load, the hook may be detached from the attachment point (if necessary, the rope must be severed!). After having withstood one fall, the rope, attachment device and fall impact absorber may not be used again.

2.4 Erection of the next lifts

Erection of scaffolds without advanced rail system and without PSE:
In such cases only specially trained staff who are familiarized with the risks involved and not affected by heights may carry out the work. Persons working in scaffold areas with a danger of falls must be both physically and mentally able to carry out work that is necessary in such areas.
Users of the scaffold must keep away from areas without a collective lateral safety barrier consisting of back rail, knee rail and toe board.

2.4.1 Transportation of scaffold components

In cases where the bay height exceeds 8 m (height of decking above ground level),lifts must be used to assist in erection and dismantling. Manually operated cable hoists also count as site lifts.
Lifts can be dispensed with when the bay height does not exceed 14 m and the length of the scaffolding is not more than 10 m.
On bays where components are conveyed vertically by hand, guardrails and intermediate rails must be in place. At least one operator must be present on each individual lift (deck) in the event of manual handling of components (Ill.9c).

2.4.2 Assembly of the vertical frames

Vertical frames must be mounted starting from the bay in which vertical transportation takes place. The rail bar must be attached immediately following the assembly and positioning of the necessary frame.

2.4.3 Planks (decking)

Fit the RUX-SUPER 65 system planks of timber, aluminium or steel in line with the instructions contained in Chapter 2.2.5. Decking is to be installed over the full width of the scaffold. Normally the system planks are secured against unintentional dislocation by the bottom cross bar of the vertical frames, or on the topmost lift, by the guardrail post with bar, or guardrail posts and plank retainers or wire mesh safety barrier supports.

2.4.4 Braces

The braces (vertical diagonals), are to be fitted in the outer scaffold face parallel to the facade as erection progresses. They are attached by means of the gravity locks located on the outer side of the frames. Attention must be paid to the instructions for assembly contained in Chapter 2.2.4. A run of diagonals should cover a maximum of 5 bays. Examples are to be found in Chapter 2.5. The direction of inclination of the vertical diagonals can be selected at random.

Rapid-Erection Scaffolding RUX-SUPER 65

2.4 Erection of the next lifts

2.4.5 Guards

Missing intermediate rails and toe boards, as well as the complete guarding, at the ends of the scaffold, are to be fitted at all levels not used for the erection of the scaffold.

The guard rails and intermediate rails are attached to the inside gravity locks on the vertical frames which point in the direction of the decking or, in the case of vertical frames with lugs, to the lugs. Gravity locks that do not point in the direction of the decking (e.g. locks for vertical diagonal connection) must not be used for fitting guardrails and intermediate rails. Guarding on the topmost lift consists of the railing post with transom providing plank retention or the plain railing post. In this case, appropriate plank retention is to be provided. The guardrail frame (end guardrail frame) with integrated intermediate rail and additional toe board is to be used at the ends (ill. 10b). Care is also to be taken to ensure that the gravity locks for fitting the guard rails and intermediate rails point in the direction of the decking (planks). In cases where outer brackets with wire mesh supports are used on the topmost lift, tubes of diameter 48.3 x 3.2 with standard couplers are fitted at the ends to form guardrails and intermediate rails (ill. 10a). The toe boards and their end fittings are slotted in between the outer standards of the vertical frames or the rail posts. Attention must be paid here to ensuring the correct position of the inner and outer sides (refer to the marking on the end fittings of the toe boards).

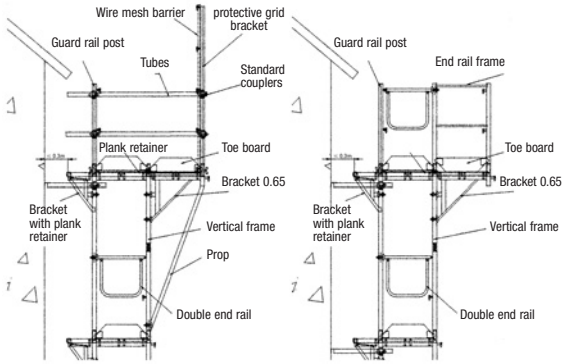


Illustration 10a **Illustration 10b**

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.4 Erection of the next lifts

2.4.6 Ties (spacing and forces)

Attention! Scaffolds not sufficiently anchored are prone to collapse or to fall over.

The spacing and the appropriate forces can be taken from Table 1. Ties must be introduced, in line with the tie locations specified, as erection progresses.
Use bolts of at least 12 mm diameter, or equivalent means, to fasten the ties to the facade. In the event that ties must be replaced prematurely, equivalent substitutes must be provided beforehand.

– Tying when fitting access ladders
The perimeter standards of the access ladder are to be tied to the facade at each tying level. The vertical spacing of the ties must not exceed 4.0 m
– Ties in corner areas
When a safety wire mesh barrier is used on the topmost lift, an additional tie is required in the vicinity of the corner or at each tying level on scaffolds covered with tarpaulins (Ill. 7a). The vertical columns of frames following the corner are to be tied like perimeter standards at a maximum vertical spacing of H = 4.00 m using triangular tie bars (Ill. 7a)

Table 2: Tie spacing and maximum tie forces
(working loads without safety coefficient)

Tie spacing	Covering	Bay length [m]	Open facade			Closed facade		
			$F_{\perp}$ [kN]	max. $F_{\perp pull}$ [kN]	F_{II} [kN]	$F_{\perp}$ [kN]	max. $F_{\perp pull}$ [kN]	F_{II} [kN]
8 m offset	none	2.50	2.94		3.36	1.09		3.36
		3.00	3.40	–	3.62	1.26	–	3.62
4 m contin-uous	net	2.50	3.36		2.70	1.16		2.16
		3.00	4.07	–	3.09	1.39	–	2.34
2 m	tarpaulin	2.50	4.83	- 4.35	3.36	5.08	- 1.36	3.36
		3.00	5.80	- 5.22	3.65	6.09	- 1.63	3.65

Rapid-Erection Scaffolding RUX-SUPER 65

2.4 Erection of the next lifts

2.4.7 Scaffold tie bars

The tie bars are to be fixed in the immediate vicinity of the node i.e. at the intersection of the standard tube and top cross bar of the vertical frame, using standard couplers.

2.4.7.1 Short tie bars

Short tie bars are attached only to the internal standards. They primarily absorb tie forces generated at a right angle to the facade. Force absorption, parallel to the facade, is limited by the torsion-resistant stiffness of the coupler (Ill.11).

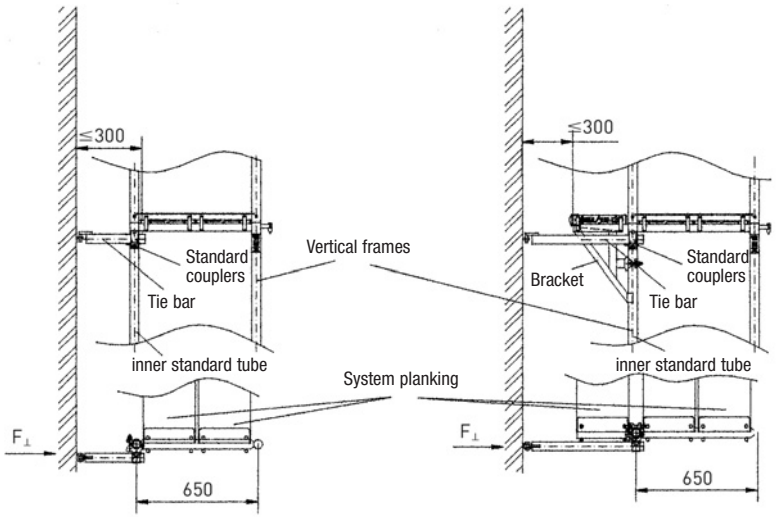


Illustration 11 Short tie bars

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.4 Erection of the next lifts

2.4.7.2 Long tie bars

Long tie bars are attached to the inner and outer standards of the vertical frames by means of standard couplers. They absorb forces both at right angles and parallel to the facade (Ill. 12).

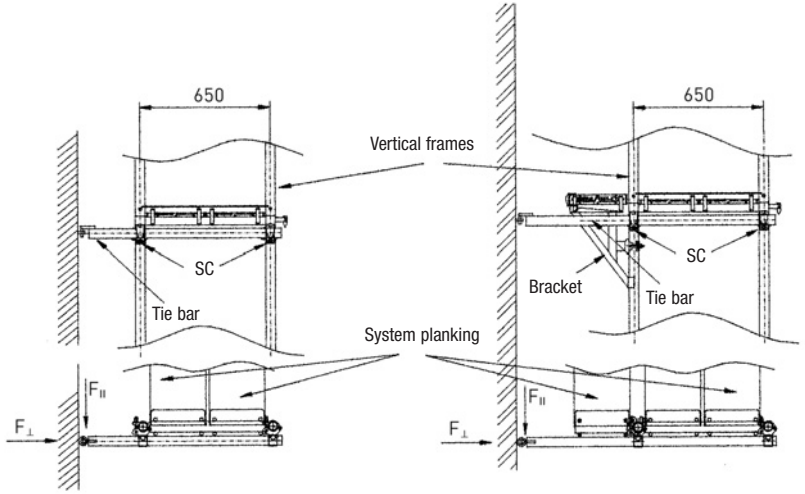


Illustration 12 Long length tie bar

2.4 Erection of the next lifts

2.4.7.3 Triangular tie bars

Triangular tie bars consist of two short bars fitted at an angle of max. 45° to the facade, in the horizontal, by means of standard couplers on the inner standards of the vertical frames. They absorb forces both at right angles and parallel to the facade (Ill.13).

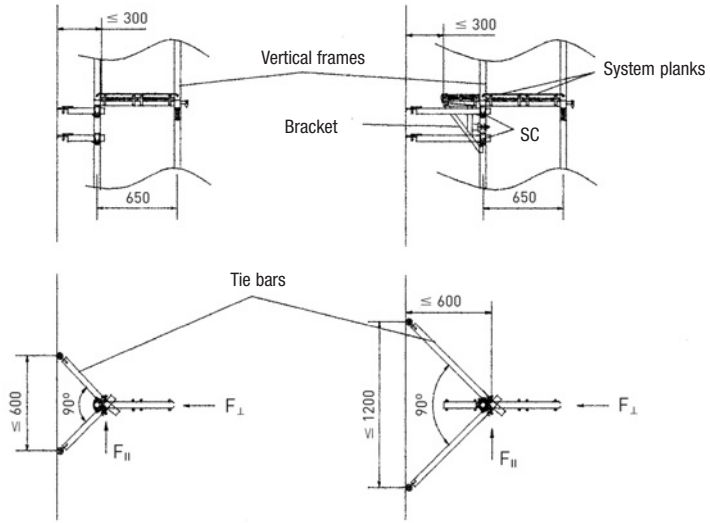


Illustration 13 Triangular tie bars

2.4.8 Tying the scaffold

Tying of the scaffolds is to be carried out in accordance with Chapters 7.6.2. and 7.6.3. of the “Safety Regulations for Work, Protection and System Scaffolds” (frame and module scaffolds) (ZH 1/534.1)

2.5 Various modes of erection and fitting of ancillary components

2.5 Various modes of erection and fitting of ancillary components

2.5.1 General

This chapter describes the various modes of erecting the RUX SUPER 65 rapid erection scaffolding. Both “old” and “new” design vertical frames – also mixed – can be used for the erection of a longitudinally oriented scaffold. The visual distinguishing features are summarised in table 3 and additionally depicted in illustration 14. In the event that “old” design vertical frames are fitted to the first two lifts, then it is possible that additional measures will be necessary and which are dealt with in detail in Chapters 2.5.2.4 and 2.5.3.4. Furthermore, the fitting of ancillary components such as passage frames, bridge girders, widening brackets, protective roofs and protective walls is also described.

– Tying patterns
The tying patterns and the loads on the tie points are dependent on the portion of the facade that is open. In this case, we distinguish between “closed facade” and “open facade”.

Table 3: Vertical frame distinguishing features

Vertical frame	Top cross bar	Bottom cross bar
“New” design (Appendix 1; 4; 48; 49)	Rectangular hollow profile (RHP) 52 x 40 x 2.0	T-section T 35 x 35 x 4.5
“Old“ design (approval No. Z-8.1-185.1; Appendices 52 to 54)	Square hollow profile (SHP) 50 x 2.5	Rectangular hollow profile (RHP) 40 x 20 x 1.5

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

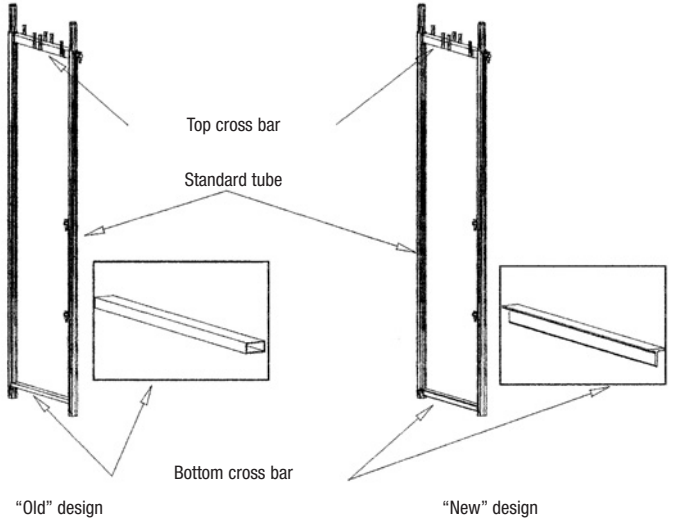


Illustration 14 “Old” and “new” vertical frame designs

Within the framework of the standard design, a “closed facade” has now openings whereas on an “open facade”, the proportion of openings may amount to a maximum of 60% of the total facade surface area.

The tying patterns and the loads on the individual tie points are, however, also dependent on the type of facade scaffold, i.e. either the scaffold is uncovered or is covered by nets or tarpaulins. In the case of scaffolds covered with nets, the permissible tying patterns and the measures to be taken for stiffening the scaffold depend to a large degree on the dynamic behaviour of the nets used. It is therefore necessary to have certificates available that indicate the aerodynamic force value of the net. The approved erection modes in the standard design are based on aerodynamic force values of $c_{f\perp} = 0.6$ and $c_{f||} = 0.2$. Nets to which higher force values apply are to be classified as tarpaulins. The aerodynamic force values for tarpaulins are $c_{f\perp} = 1.3$ and $c_{f||} = 0.1$.

The perimeter frames and the frames that limit the bay with the inner ladder frame are to be tied at a vertical distance of maximum 4 m.

The bearing forces or loads resulting from self-weight and live load and depending on the make-up of the scaffold are depicted in simplified form in Table 4.

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

Table 4: Self-weight and vertical live load

Decking	Bay length [m]	Outer standard [kN]	Wall standard [kN]	
			No bracket	With bracket
Timber	1.50	0.33	0.22	0.38
	2.00	0.38	0.24	0.41
	2.50	0.46	0.29	0.52
	3.00	0.54	0.34	0.60
Aluminium	1.50	0.28	0.18	0.30
	2.00	0.32	0.20	0.33
	2.50	0.37	0.23	0.38
	3.00	0.42	0.24	0.41
Steel	1.50	0.36	0.22	0.38
	2.00	0.43	0.25	0.44
	2.50	0.50	0.29	0.52
	3.00	0.60	0.35	0.64
Live load $p = 2.0\ kN/m^2$	1.50	0.87	0.87	1.74
	2.00	1.16	1.16	2.32
	2.50	1.45	1.45	2.90
	3.00	1.74	1.74	3.48

Calculation of the vertical standard load from n lifts for one bay standard:

$F_{\text{outer standard}}$ = n x self-weight + 1.5 x live standard
wall standard

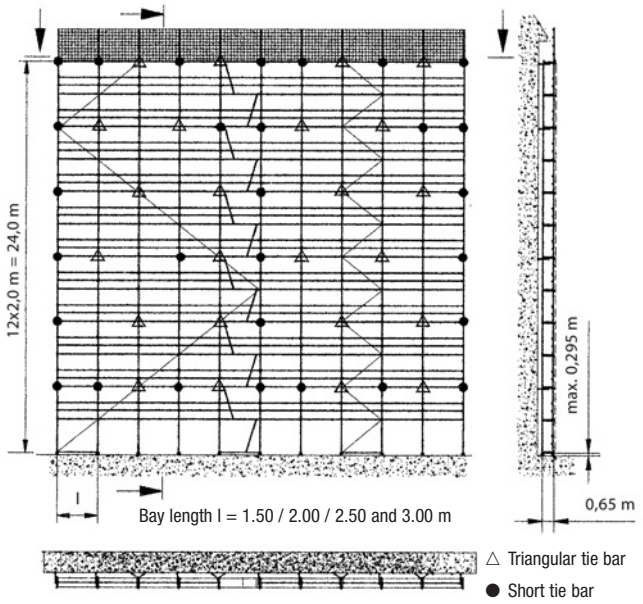
2.5 Various modes of erection and fitting of ancillary components

2.5.2 Tying in front of open facades

2.5.2.1 Uncovered scaffold in front of open facade

- Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Tie pattern: 8 m offset; each vertical frame column is tied at the second and at the topmost lift
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay
- Bay is tied on the perimeter standards vertically at a distance of H = 4.00 m
- Scaffold with access ladders is tied vertically at every second lift
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m



Topmost lift depicted

Illustration 15

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets

- Tie pattern: 8 m offset; each vertical frame column is tied at the second and at the topmost lift
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay; 2 additional diagonal fields up to the second lift for every 5 bays.
- Bay is tied on the perimeter standards vertically at a distance of H = 4.00 m
- Scaffold with access ladders is tied vertically at every second lift
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m

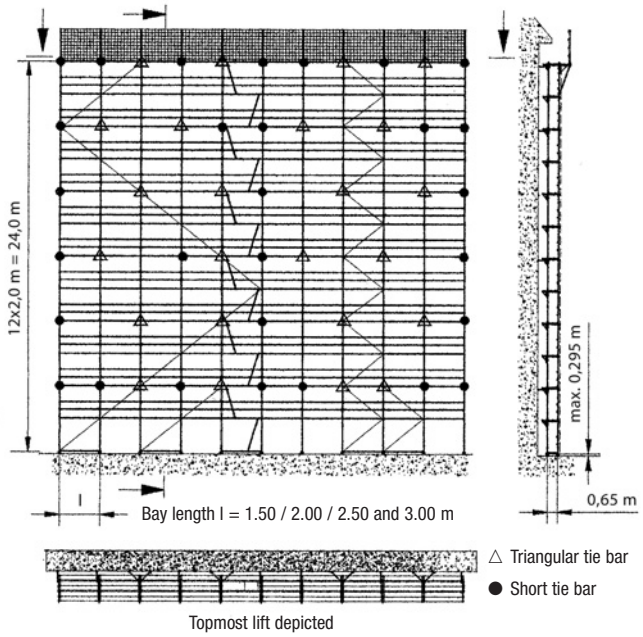


Illustration 16

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;
with protective roof bracket (3-plank);

- Tie pattern: 8 m offset; each vertical frame column is tied at the second and topmost lift. Additional tying of the scaffold lift directly below the protective roof.

Note:
a) continued erection as described on page 29 depicted in illustration 17.
b) also corresponds to the erection in front of a closed facade.

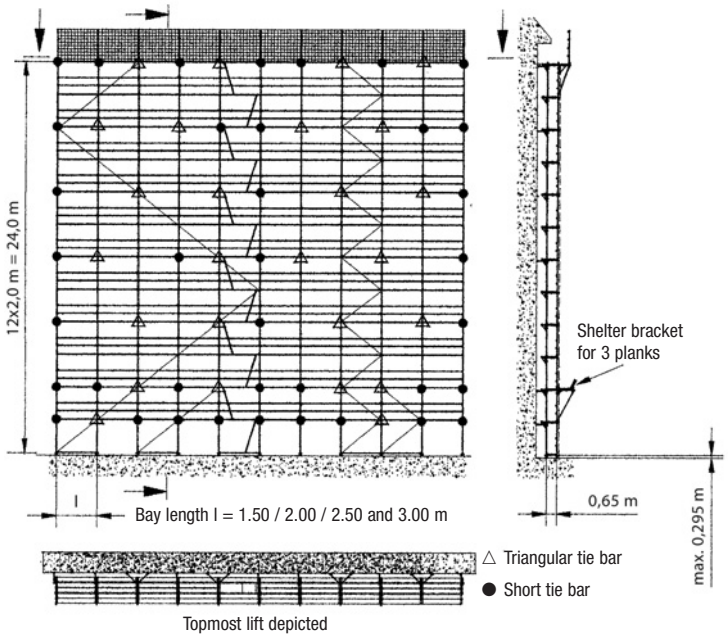


Illustration 17

2.5 Various modes of erection and fitting of ancillary components

Basic mode with no wire mesh barrier with inner and outer brackets;
with protective roof bracket (2-plank);
outer bracket and protective roof bracket with no prop;

- Tie pattern: 8 m offset; each vertical frame column is tied at the second and topmost lift. Additional tying of the scaffold lift directly below the outer bracket and the protective roof.

Note: a) continued erection as described on page 29 and depicted in illustration 18
b) also corresponds to the erection in front of closed facade

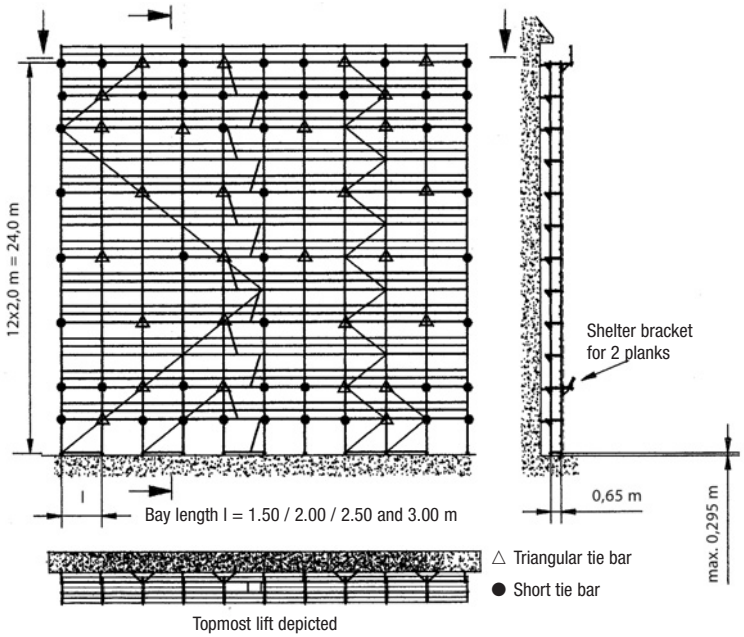


Illustration 18

2.5 Various modes of erection and fitting of ancillary components

2.5.2.2 Scaffold covered by nets in front of open facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium up to l = 2.50 m
- Vertical diagonals: continuous column of diagonals for 5 bays or in tower form in every 5th bay. One additional run of diagonals up to the second lift every 5 bays
- Three triangular tie bars are required for 5 bays.
- Maximum screw extension length H_{Sp} = 0.295 m
- Further erection as depicted in Ill. 19 (including nets)

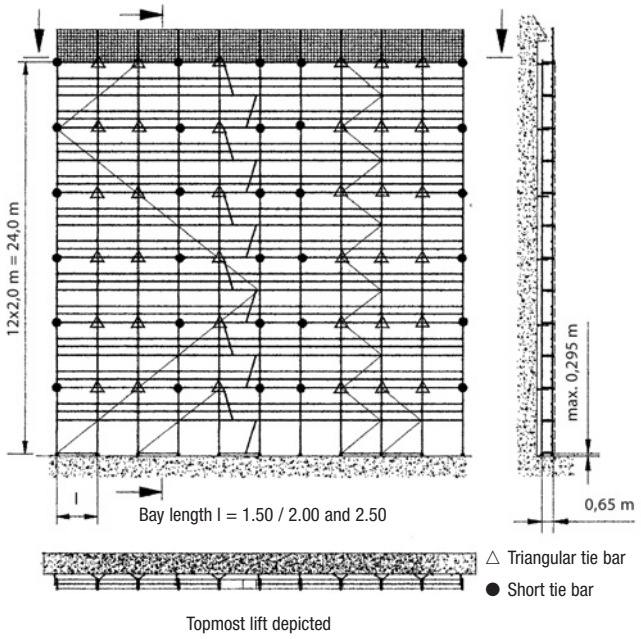


Illustration 19

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium up to l = 2.50 m
- Vertical diagonals: continuous column of diagonals for 5 bays or in tower form in every 5th bay. One additional run of diagonals up to the second lift every 5 bays; an additional diagonal is to be fitted at the first vertical frame level.
- Three triangular tie bars are required for every 5 bays
- Maximum screw extension length H_{Sp} = 0.295 m
- Further erection as depicted in Ill. 20 (including nets)

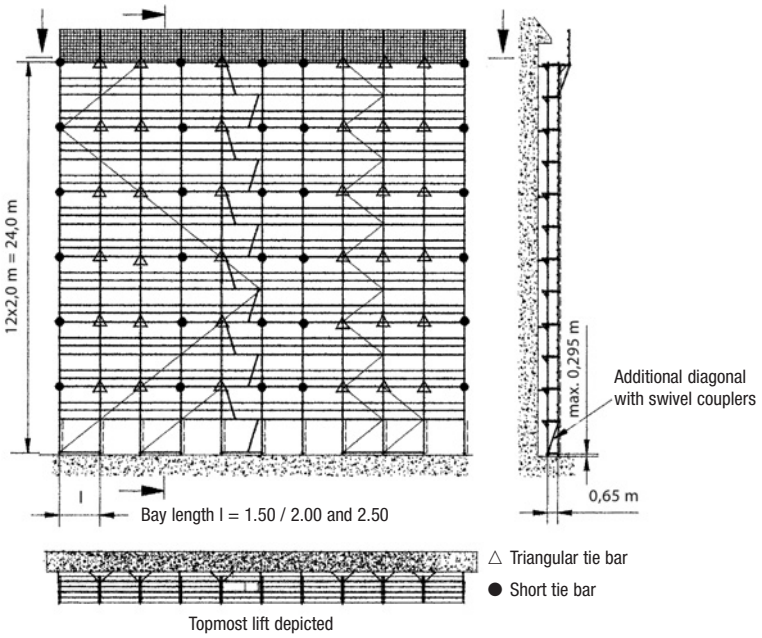


Illustration 20

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium l = 3.00 m
- Vertical diagonals: continuous column of diagonals for 5 bays or in tower form in every 5th bay; One additional run of diagonals up to the second lift every 5 bays; an additional vertical diagonal is to be fitted at the first vertical frame level.
- Three triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m
- Further erection as depicted in Ill. 21 (including nets)

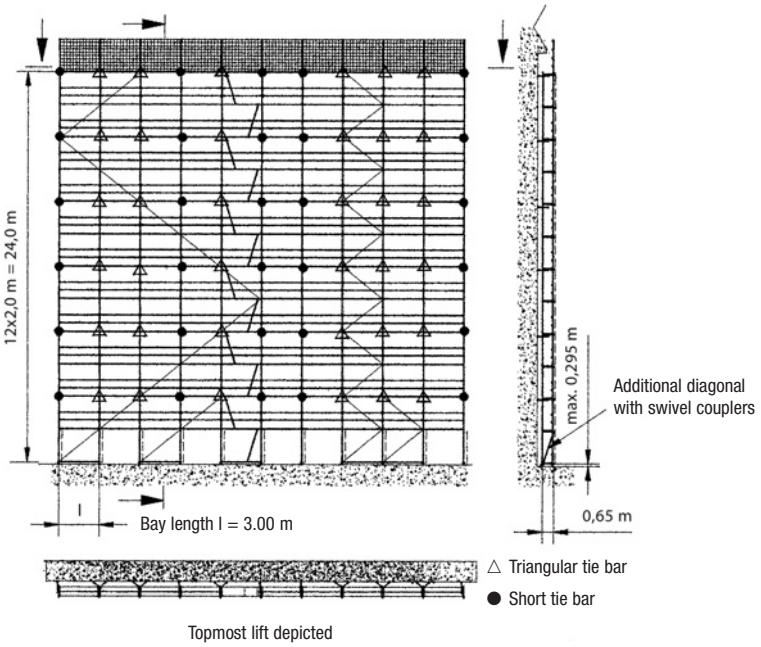


Illustration 21

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium l = 3.00 m

Note: further erection as depicted in Ill.22 and as described on page 33 (including nets)

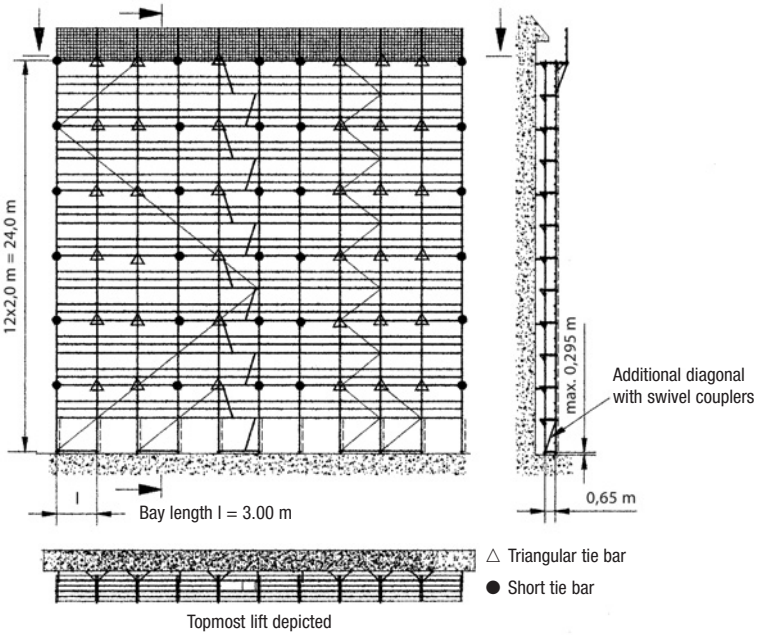


Illustration 22

2.5 Various modes of erection and fitting of ancillary components

2.5.2.3 Scaffold covered by tarpaulins in front of open facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Tie pattern: each scaffold node is tied
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m

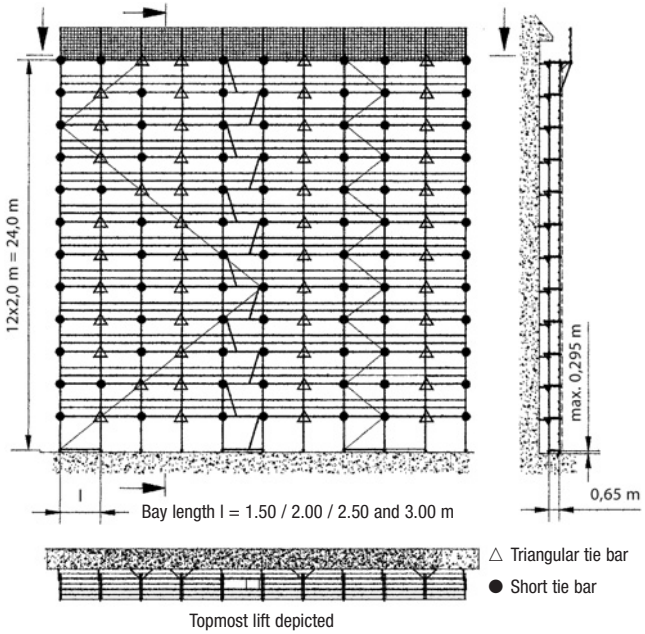


Illustration 23

2.5 Various modes of erection and fitting of ancillary components

2.5.2.4 Fitting of “old” design vertical frames in front of open facade

The following instructions should be observed when erecting facade scaffolds with “old” design vertical frames in front of open facades.

Two possible uses are viewed:

1. Erection of the facade scaffold complete with “old” design vertical frames.

2. Erection of the facade scaffold using a mix of “old” and “new” design vertical frames.

2.1 Fitting of “old” design vertical frames at random points in the facade scaffold.

2.2 Fitting of “old” design vertical frames starting above the first tie level and then at random points.

The following notes should be observed for random fitting of “old” design vertical frames in the case of uncovered scaffolds and scaffolds covered with nets or tarpaulins. Generally, the maximum screw extension length for this mode of erection is 0.20 m.

In cases where in mixed use of “old” design vertical frames, fitting is effected after the first tie level (section 2.2), then the modes of erection of the “new” design vertical frames prevail (Chapters 2.5.2.1 and 2.5.2.3).

2.5 Various modes of erection and fitting of ancillary components

Uncovered scaffold in front of open facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Additional reinforcement for the bottom cross bar at the first vertical frame level using scaffold tube and standard coupler connection or intermediate cross bar
- Maximum screw extension length H_{Sp} = 0.200 m

Note: Further erection as depicted in Ill. 24 and described on page 29.

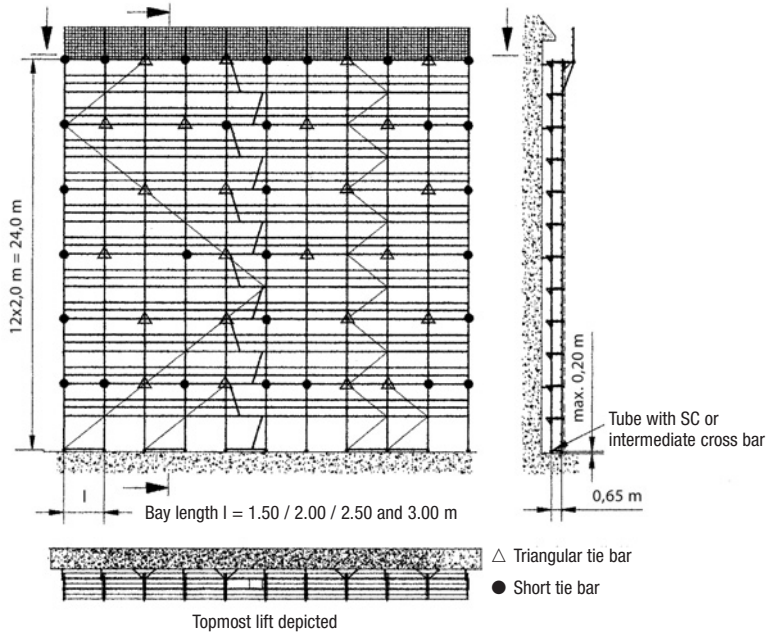


Illustration 24

2.5 Various modes of erection and fitting of ancillary components

Scaffolds covered with nets in front of open facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: an additional diagonal with standard couplers (SC) is connected at the first vertical frame level
- Maximum screw extension length H_{Sp} = 0.200 m

Note: Further erection as depicted in Ill. 25 and described on page 33

Erection mode „a“

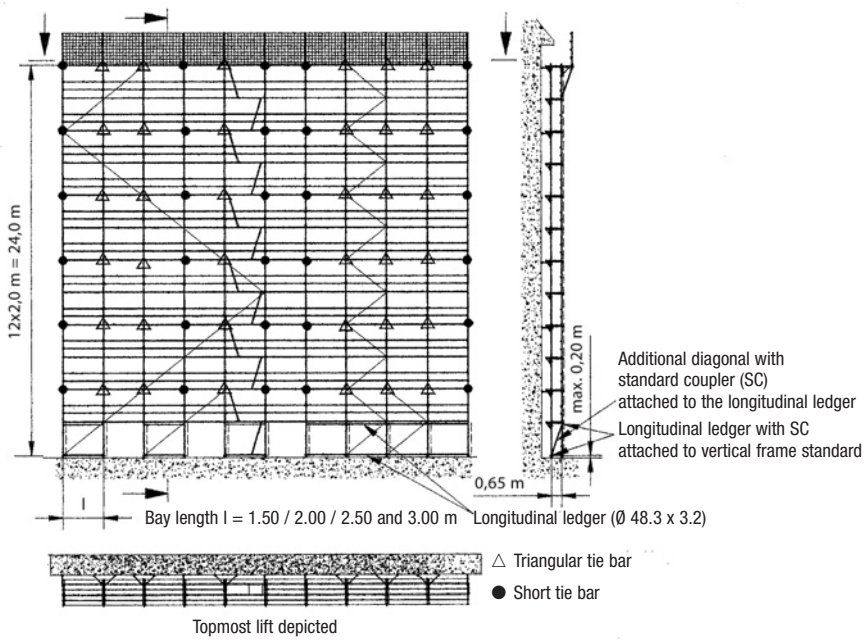


Illustration 25

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: Continuous tying is effected at the first scaffold level instead of the additional diagonals
- Maximum screw extension length H_{Sp} = 0.200 m

Note: Further erection as depicted in Ill. 26 and described on page 33

Erection mode „b“

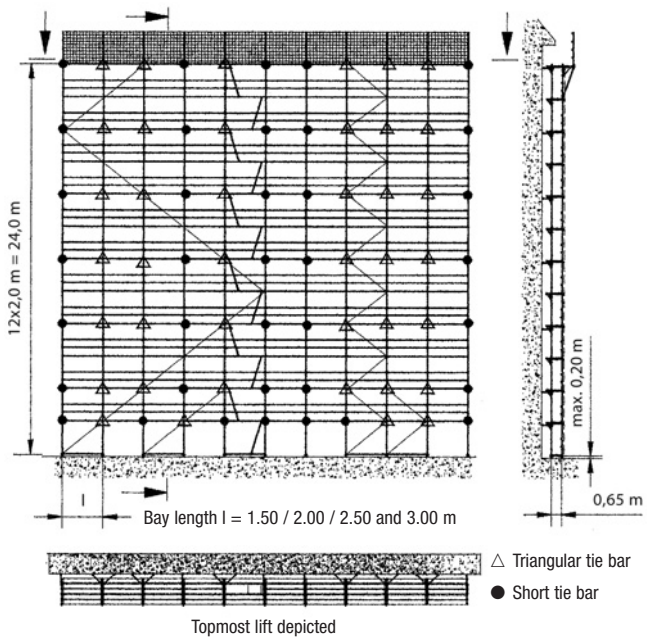


Illustration 26

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

Scaffold covered with tarpaulins in front of open facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Maximum screw extension length H_{Sp} = 0.200 m

Note: Further erection as depicted in Ill. 27 and described on page 36

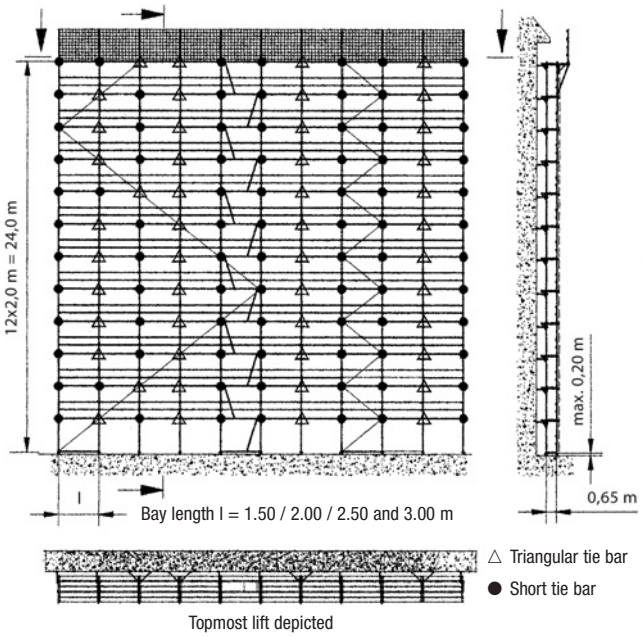


Illustration 27

2.5 Various modes of erection and fitting of ancillary components

2.5.3 Ties in front of closed facades

2.5.3.1 Uncovered scaffold in front of closed facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Tie pattern: 8 m offset
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay
- Bay is tied on the perimeter standards vertically at a distance of H = 4.00 m
- Scaffold with access ladders is tied vertically at every second lift
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m

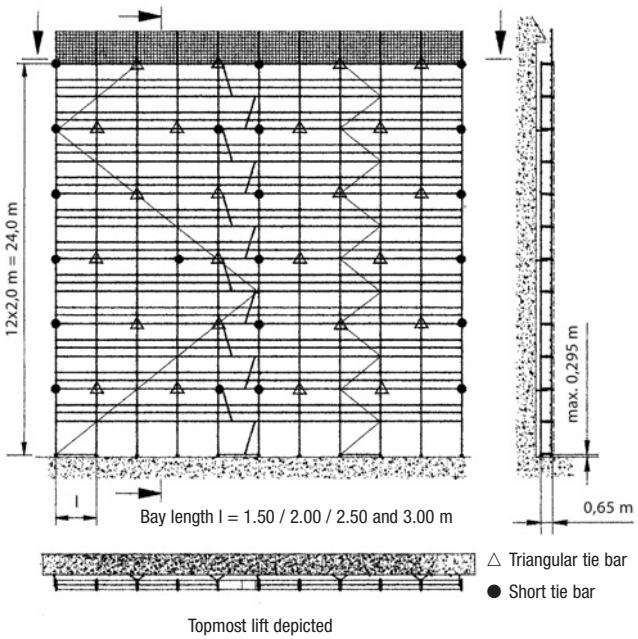


Illustration 28

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Tie pattern: 8 m offset; each run of vertical frames tied at the second and topmost lifts
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay; one additional run of diagonals up to the second lift every 5 bays
- Bay is tied on the perimeter standards vertically at a distance of H = 4.00 m
- Scaffold with access ladders is tied vertically at every second lift
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m

Note: Mounting of protective roofs is carried out similar to work in front of an open facade as described on pages 30 and 31 in section 2.5.2.1.

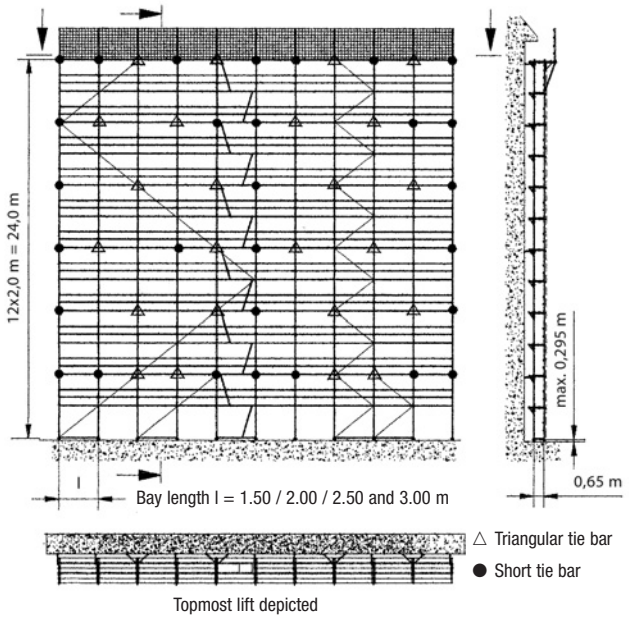


Illustration 29

2.5 Various modes of erection and fitting of ancillary components

2.5.3.2 Scaffold covered by nets in front of closed facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m
- Further erection as depicted in Ill. 30 (including nets)

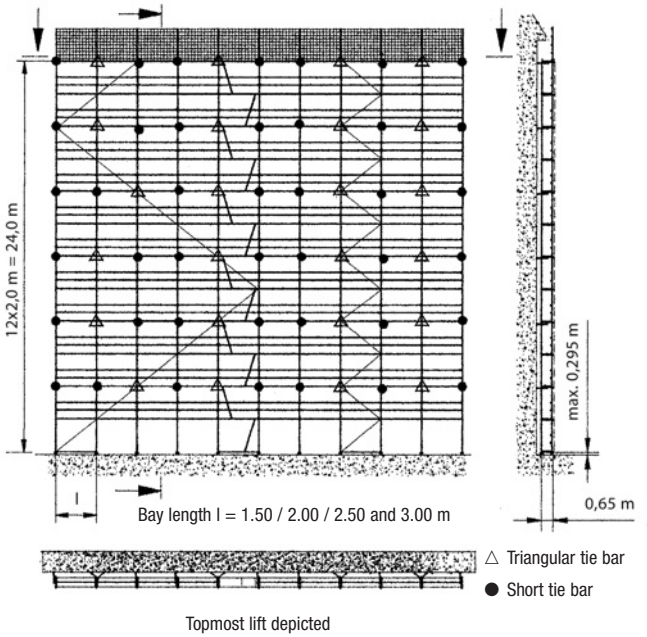


Illustration 30

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets

- Planks: timber, steel, aluminium up to l = 2.50 m

Note: Further erection as depicted in Ill. 31 and described on page 44

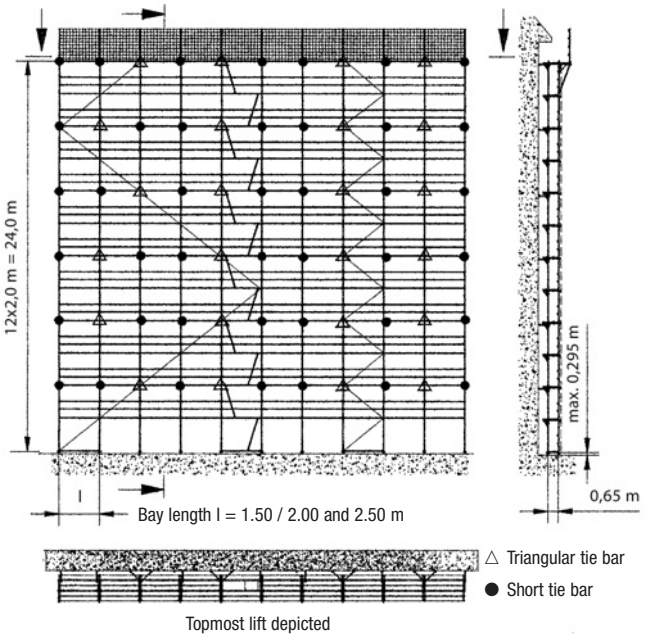


Illustration 31

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets

- Tie pattern: each vertical column of frames continuously tied at H = 4.00 m
- Planks: timber, steel, aluminium l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay; one additional run of diagonals up to the second lift every 5 bays

Note: Further erection as depicted in Ill. 32 and described on page 44

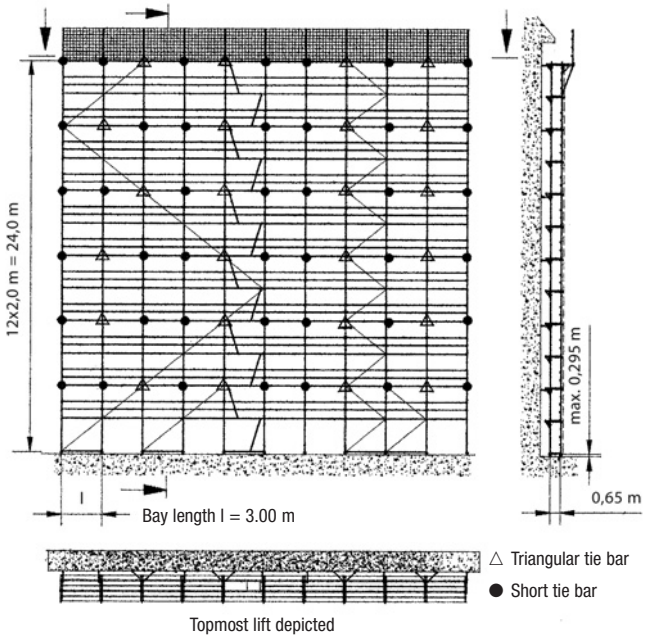


Illustration 32

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

2.5.3.3 Scaffold covered by tarpaulins in front of closed facades

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Tie pattern: each scaffold node is tied
- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: line of diagonals for 5 bays continuous or in tower form in every 5th bay
- Two triangular tie bars are required for 5 bays
- Maximum jack extension length H_{Sp} = 0.295 m

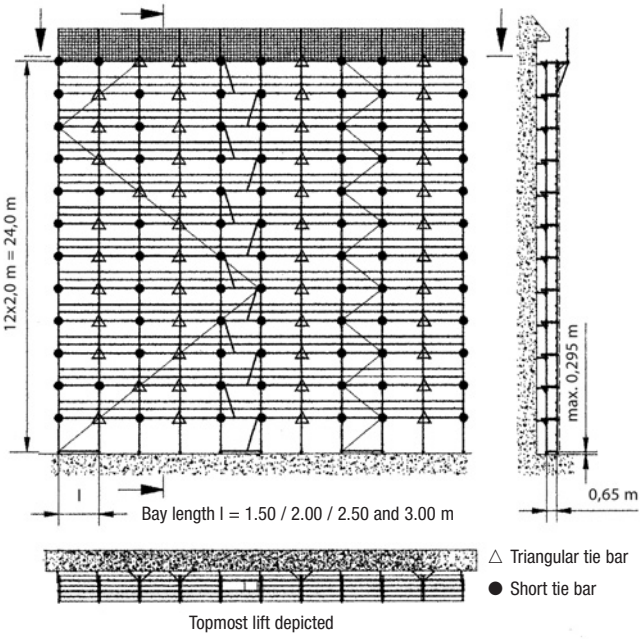


Illustration 33

2.5 Various modes of erection and fitting of ancillary components

2.5.3.4 Fitting of “old” design vertical frames in front of closed facade

The following instructions are to be observed for the erection of facade scaffolds using “old” design vertical frames in front of closed facades.

Two possible uses are viewed:

1. Erection of complete facade scaffold using “old” design vertical frames

2. Erection of facade scaffold using a mix of “old” and “new” design vertical frames

2.1 Fitting of “old” design vertical frames at random points in the facade scaffold

2.2 Fitting of “old” design vertical frames starting at the first tie level and then at random points.

The following notes are to be observed for random fitting of “old” design vertical frames in facade scaffold in case of uncovered or scaffolds covered by nets or tarpaulins. Generally, the maximum screw extension length for this mode of erection is 0.20 m.

In cases where in mixed use of “old” design vertical frames, fitting is effected after the first tie level (section 2.2), then the modes of erection of the “new” design vertical frames prevail (Chapters 2.5.2.1 and 2.5.2.3).

2.5 Various modes of erection and fitting of ancillary components

Uncovered scaffold in front of closed facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);

- Planks: timber, steel, aluminium up to l = 3.00 m
- Maximum jack extension length H_{Sp} = 0,20 m

Note: Further erection as depicted in Ill. 34 and described on page 42

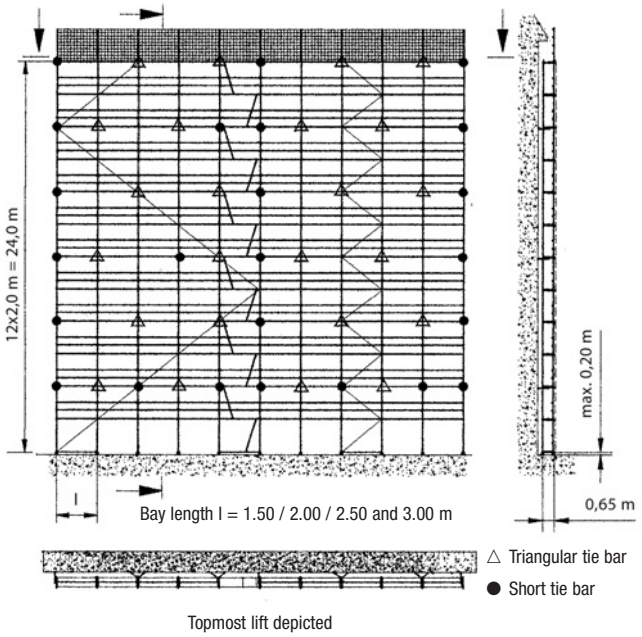


Illustration 34

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium l = 3.00 m
- Additional reinforcement for the bottom cross bar of the first vertical frame level using scaffold tube and standard coupler (SC) or intermediate cross bar
- Maximum jack extension length H_{Sp} = 0,20 m

Note: Further erection as depicted in Ill. 35 and described on page 43

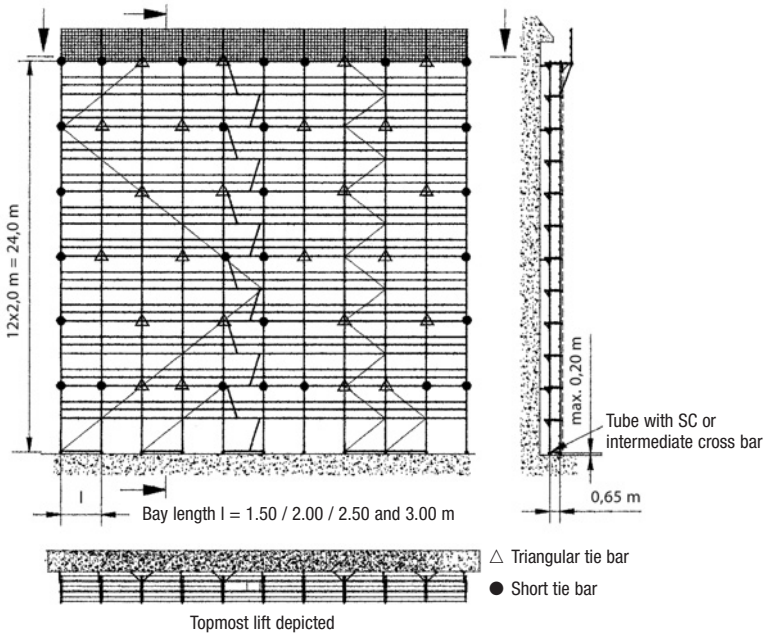


Illustration 35

2.5 Various modes of erection and fitting of ancillary components

Scaffold covered with nets in front of closed facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: Additional diagonal with swivel couplers (DK) is connected at the first vertical frame level
- Maximum jack extension length H_{Sp} = 0,20 m

Note: Further erection as depicted in Ill. 36 and described on page 44

Erection mode „a“

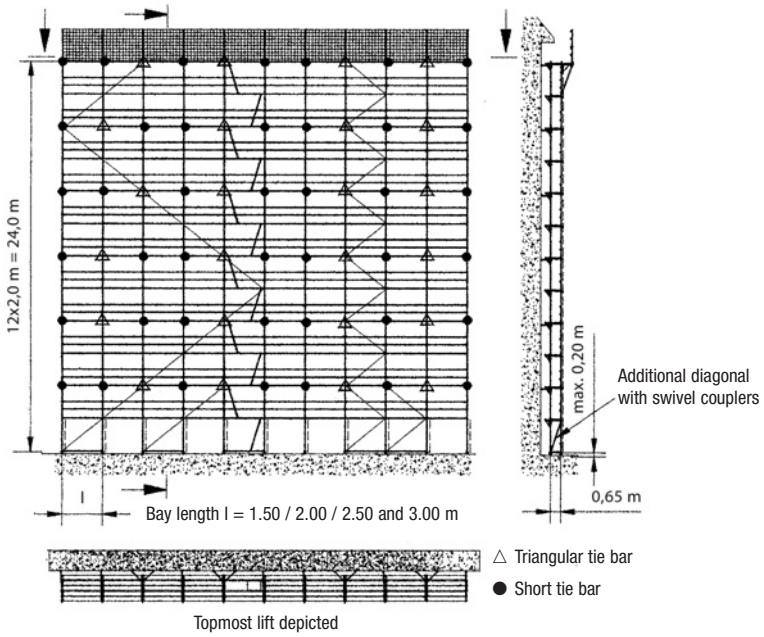


Illustration 36

2.5 Various modes of erection and fitting of ancillary components

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium up to l = 3.00 m
- Vertical diagonals: a continuous row of ties is put in place at the first level instead of the additional diagonals
- Maximum jack extension length H_{Sp} = 0,20 m

Note: Further erection as depicted in Ill. 37 and described on page 44

Erection mode „b“

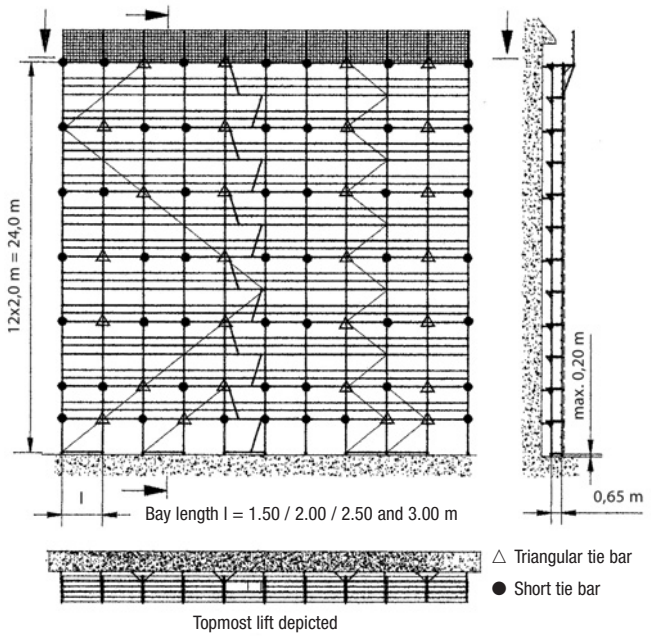


Illustration 37

2.5 Various modes of erection and fitting of ancillary components

Scaffold covered with tarpaulins in front of closed facade

Basic mode with and without wire mesh barrier (max h = 2.00 m);
with inner and outer brackets;

- Planks: timber, steel, aluminium l = 3.00 m
- Maximum jack extension length H_{Sp} = 0,20 m

Note: Further erection as depicted in Ill. 38 and described on page 47

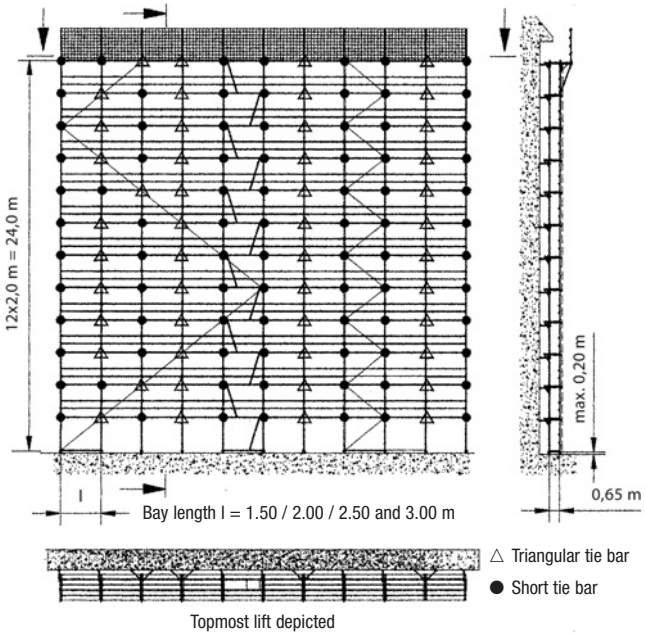


Illustration 38

2.5 Various modes of erection and fitting of ancillary components

2.5.4 Passage frames

The RUX-SUPER 65 passage frames are made up of the frame connector and two frame standards bolted together. When the passage frame has been pre-assembled, further work procedures can be conducted analogue to the installation of the vertical frames. A base plate, or base jack, is to be fitted underneath each standard. The jack may only be extended to a maximum of 295 mm (standard design). The passage frames are to be installed vertically and at an appropriate distance from the facade i.e. the clear distance between plank and facade must not exceed 0.30 m (Ill. 40).

To stabilise and disperse forces in the area of the passage frames, the inner and outer scaffold levels in the longitudinal direction should be constructed with diagonal braces and longitudinal tubes (guardrails) in the longitudinal axis. The diagonals are to be latched onto the bottom gravity lock of the frame standards and onto the gravity lock of the frame connector. A longitudinal tube (guardrail) is to be fitted at the base and a longitudinal tube at the bottom of the frame connector.

Only RUX-SUPER 65 system planks are to be used for the work levels. Either five system planks (timber, steel, aluminium) with a width of 29 cm, or a 59 cm wide aluminium batten and three 29 cm wide planks, are to be fitted to each scaffold bay. The planks are held horizontally by tubular spigots located on the bearing transom (top cross bar) of the frame connector, thus enhancing the rigidity of the structure. To maintain stability, it is necessary for each column of frames to be tied to the facade at a point level with the second scaffold lift (Ill.40).

The passage frames of max. b = 1.65 m width have a clear height of 2.09 m plus extended screw length. The unit height is 2.40 m. The RUX-SUPER 65 frames are designed such that they slipped on at the side immediately facing the facade. The third tube connector is for optional fitting of the RUX-SUPER 100 frame. The planks located here, provide a protective roof and are held in place by the appropriate retainer (Ill.40)

The frame connectors are available in “new” and “old” design (Ill.39). The visual distinctions are summarised in Table 5. The various modes of erection depicted in illustrations 41a and 41e can be employed for the passage frames with the “old” and “new” connectors. It is not necessary to differentiate between the two.

2.5 Various modes of erection and fitting of ancillary components

Table 5: Passage frame distinguishing features – frame connectors

Frame connectors (bars)	Top chord	Bottom chord	Braces (diagonal bars)
"New" design (Appendix 38)	Square hollow profile (SHP) 52 x 2.0	Rectangular hollow profile (RHP) 40 x 20 x 3.0	Rectangular hollow profile (RHP) 40 x 20 x 3.0
"Old" design (approval No. Z-8.1-185.1; Appendix 67)	Rectangular hollow profile (RHP) 50 x 2.5	Circular hollow profile (CHP) Tube Ø 33.7 x 2.9	Circular hollow profile (CHP) Tube Ø 33.7 x 2.9

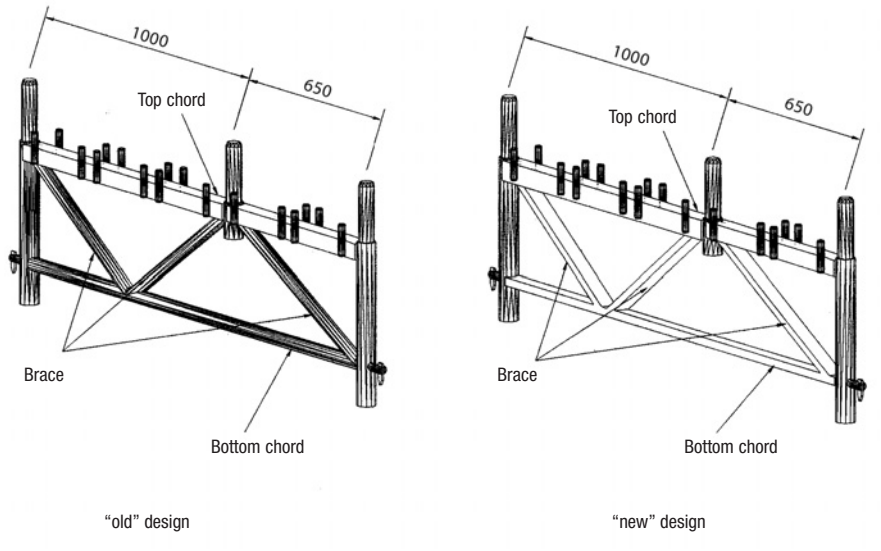


Illustration 39 Frame connectors "old" and "new" designs

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

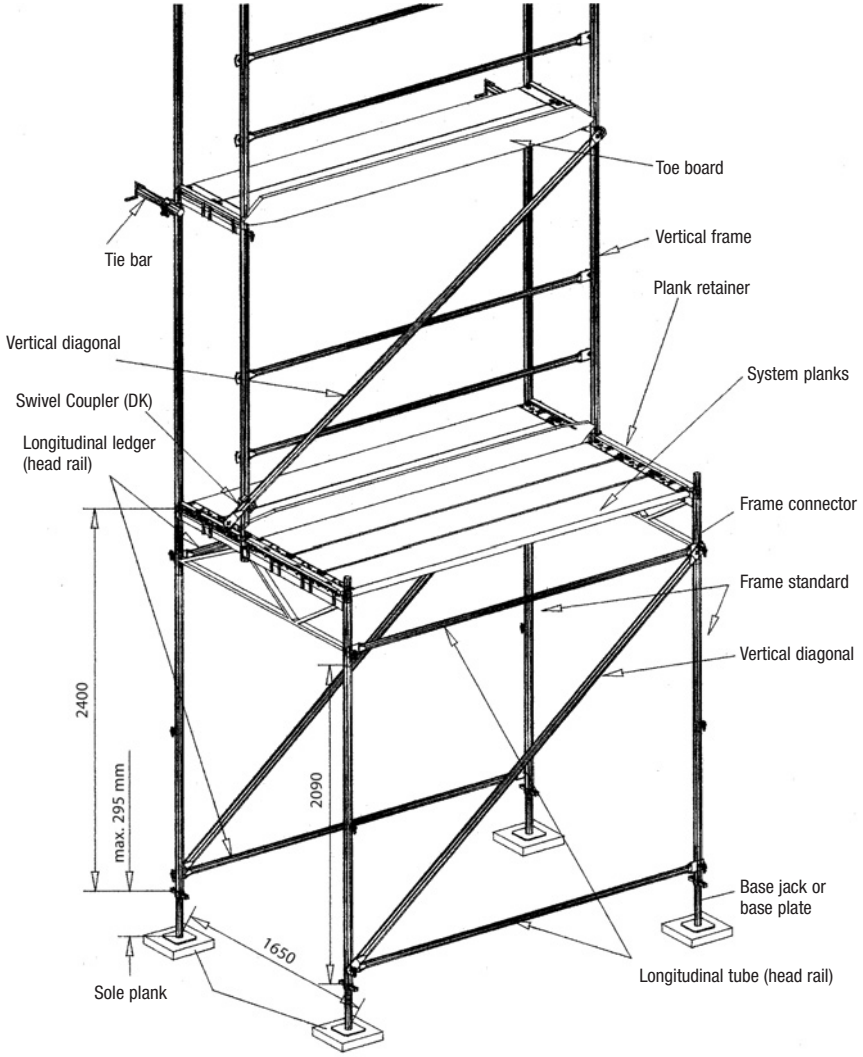
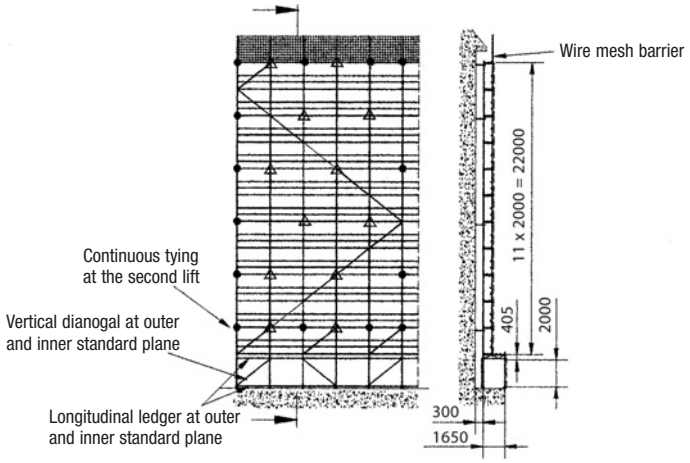


Illustration 40 Passage frame fitted with vertical frame

2.5 Various modes of erection and fitting of ancillary components

The illustration 41 a, 41 b and 41 c depict the various modes of erection for uncovered scaffolds with continuous tying at the second lift (refer to Chapters 2.5.2 and 2.5.3 for details on further ties).



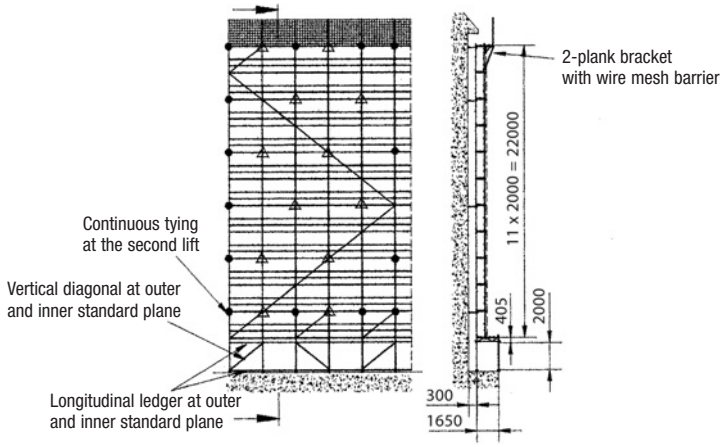
Applies to all decking

Bay length l = 1500 / 2000 / 2500 and 3000 mm

Illustration 41a Uncovered scaffold in front of open or closed facade, with or without wire mesh barrier, no brackets.

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components



Applies to all decking

Bay length l = 1500 / 2000 and 2500

Illustration 41b Uncovered scaffold in front of open or closed facade, with outer brackets, with and without wire mesh barrier

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

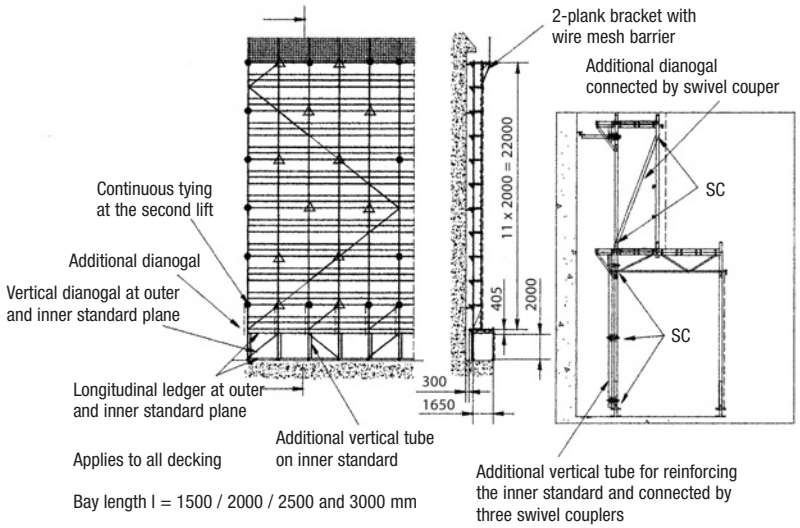


Illustration 41c Uncovered scaffold in front of open or closed facade with inner and outer brackets, with and without wire mesh barrier

2.5 Various modes of erection and fitting of ancillary components

The illustrations 41d and 41e show the various modes of erection for uncovered scaffolds with continuous tying at the first lift (for further tying operations refer to Chapters 2.5.2 and 2.5.3).

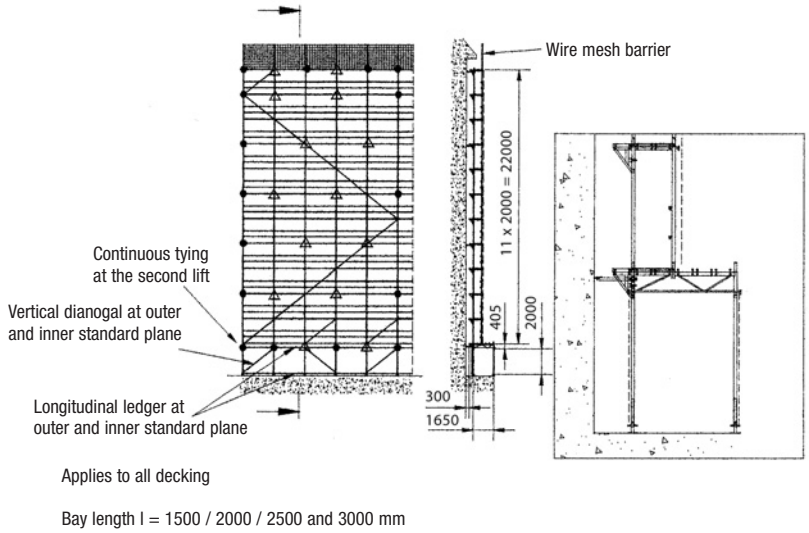


Illustration 41d Uncovered scaffold in front of open or closed facade with inner brackets, with and without wire mesh barrier

2.5 Various modes of erection and fitting of ancillary components

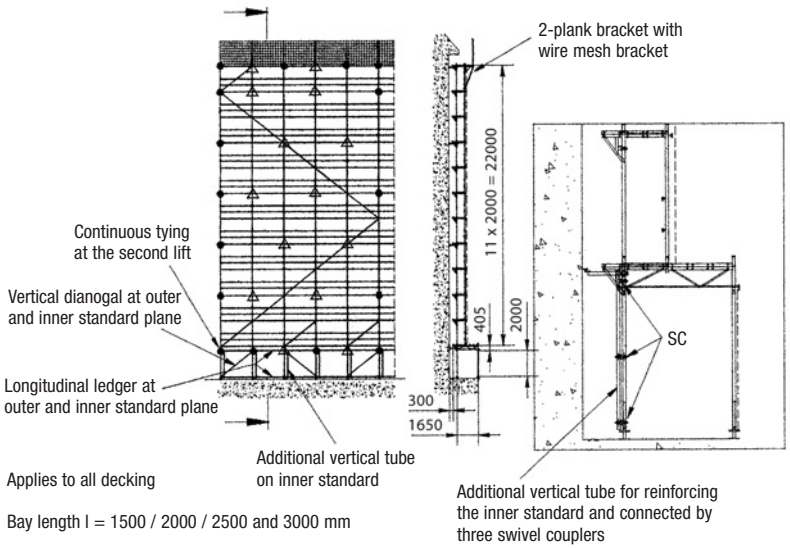


Illustration 41e Uncovered scaffold in front of open or closed facade with inner and outer brackets, with and without wire mesh barrier

2.5 Various modes of erection and fitting of ancillary components

2.5.5 Widening brackets

Inner widening bracket, inner (single-plank)

The 0.30 m widening bracket is an inner, single-plank bracket, with and without supports, and can be fitted at all lifts with the tie patterns described in the various modes of erection. A plank retainer is built in, or created, by the guardrail post which, with the aid of a welded flat bar, secures the plank against dislocation (Ill. 10a, 10b).

Outer widening bracket, outer (2-plank)

The 0.65 m widening bracket is a 2-plank outer bracket that is normally only to be fitted at the topmost lift to the outer vertical frame standards. A diagonal prop can be dispensed with when 3-part guarding is mounted on the widening bracket. It is then, however, necessary to additionally tie the scaffold lift below (Ill. 10a, 10b and 42).

An appropriate plank retainer is to be fitted at the top.

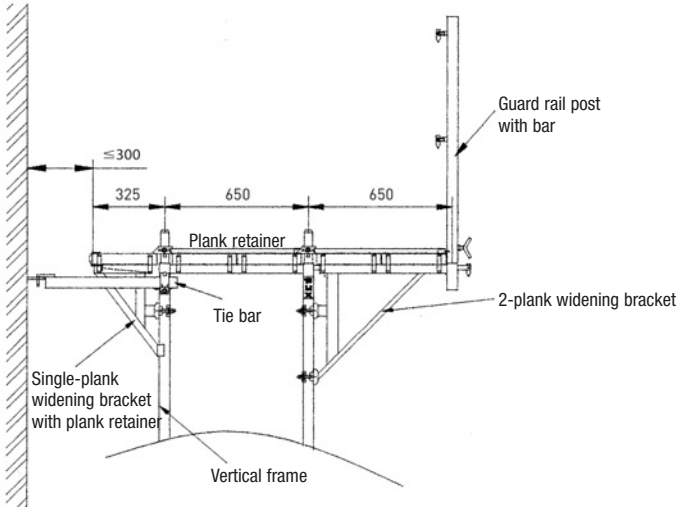


Illustration 42 Arrangement of the widening brackets at the topmost lift

2.5 Various modes of erection and fitting of ancillary components

2.5.6 Lattice bridge girders

The bridge girders support a RUX-SUPER 65 frame column. They are normally fitted at +4 m (Ill. 43a and 43b). They are located in the plane of the standards and fixed such that the central tube connectors are at the same level as those of the frame. A bearer transom is to be located at the centre, on the tube supports, for accommodating the planks and for intermediate heights.

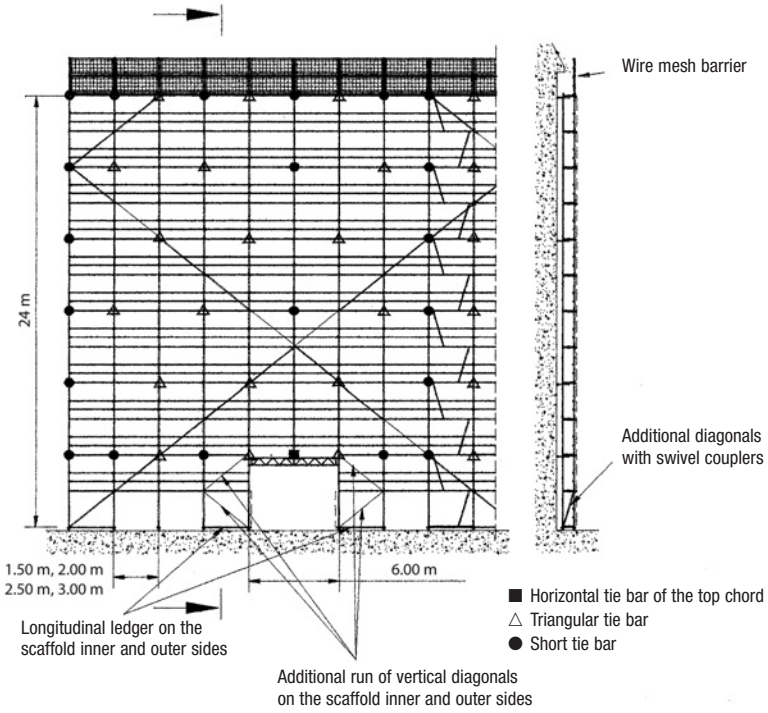


Illustration 43a Bridge girder fitted L = 5.00 m (with no props, uncovered scaffold)

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

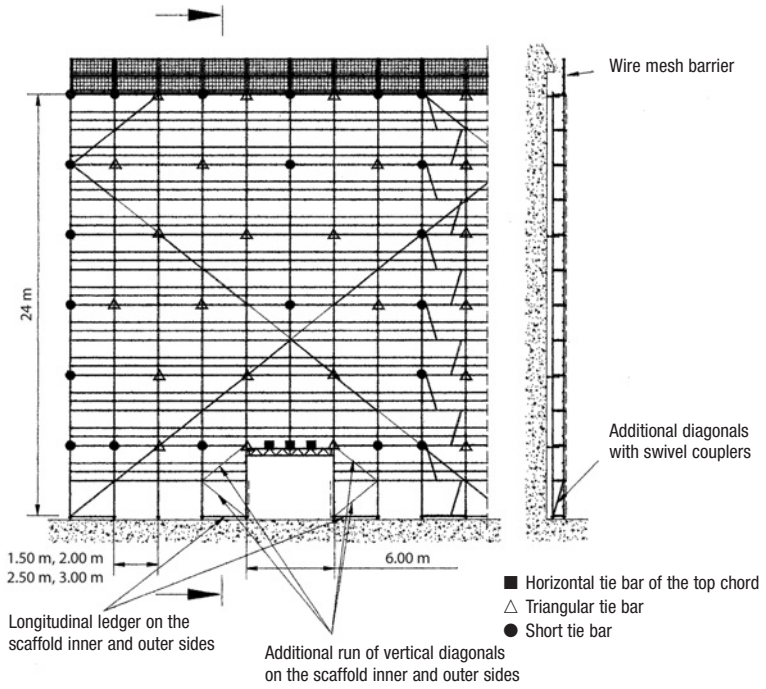


Illustration 43b Lattice girder fitted L = 6.00 m (with no props, uncovered scaffold)

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

For stiffening, the bridge girders are to be tied to the facade at top chord level (Ill. 44a and 44b) or be fitted with horizontal latticework at top chord level (Ill. 45a and 45b). Fitting of horizontal latticework is only possible on uncovered scaffoldings.

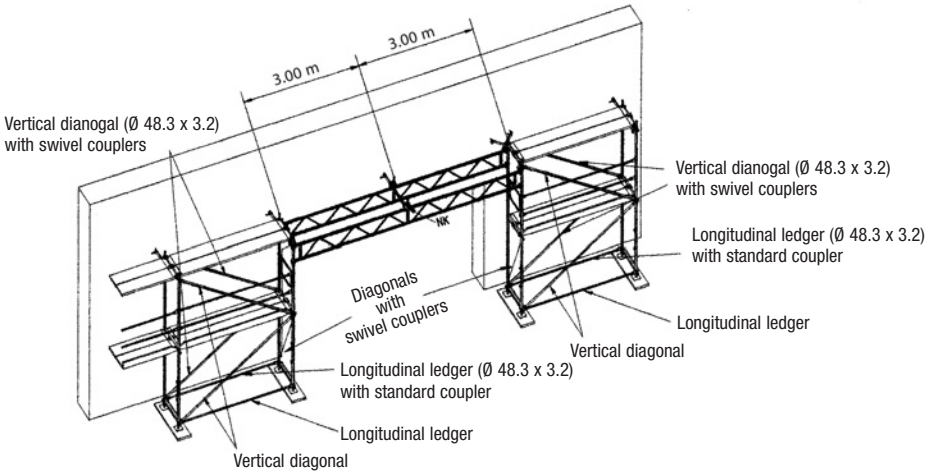


Illustration 44a Stiffening of the top chord level by tying to the facade; bay length l = 2.50 m

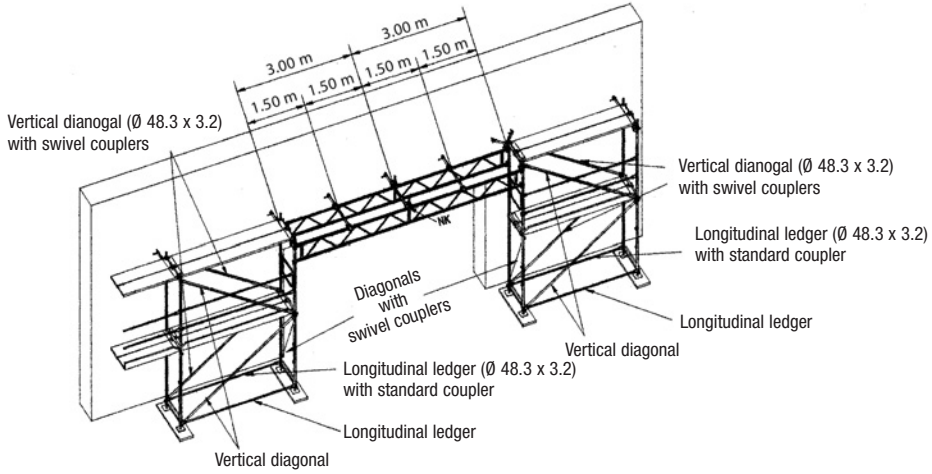


Illustration 44b Stiffening of the top chord level by tying to the facade; bay length l = 3.00 m

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

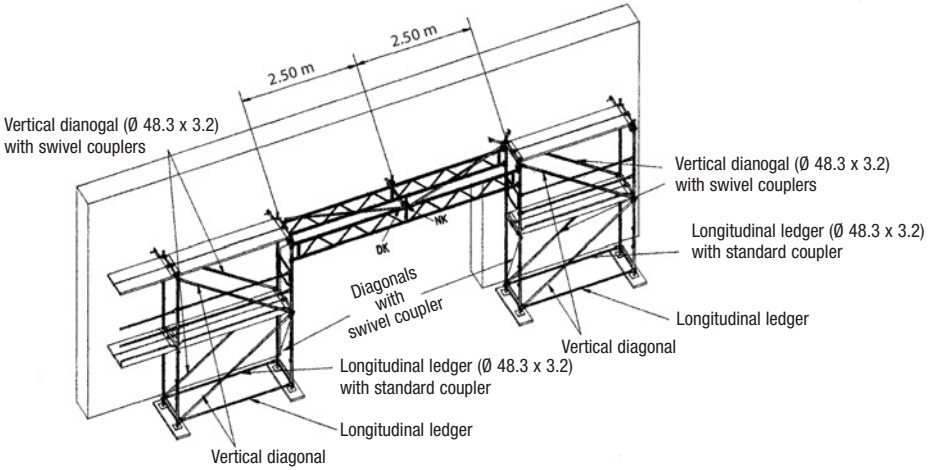


Illustration 45a Stiffening of the top chord level with horizontal latticework; bay length l = 2.50 m (for uncovered scaffolds only)

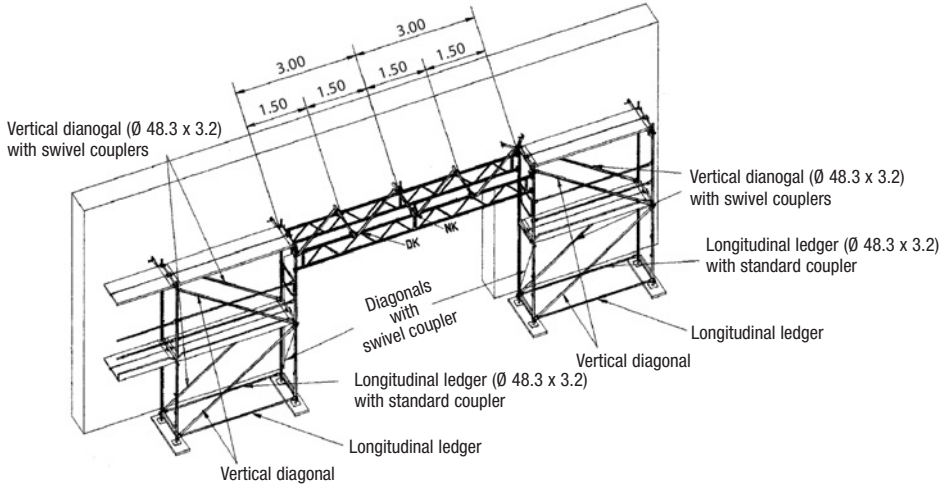


Illustration 45b Stiffening of the top chord level with horizontal latticework; bay length l = 3.00 m (for uncovered scaffolds only)

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

Additional diagonal props are to be fitted for accepting heavier loads.

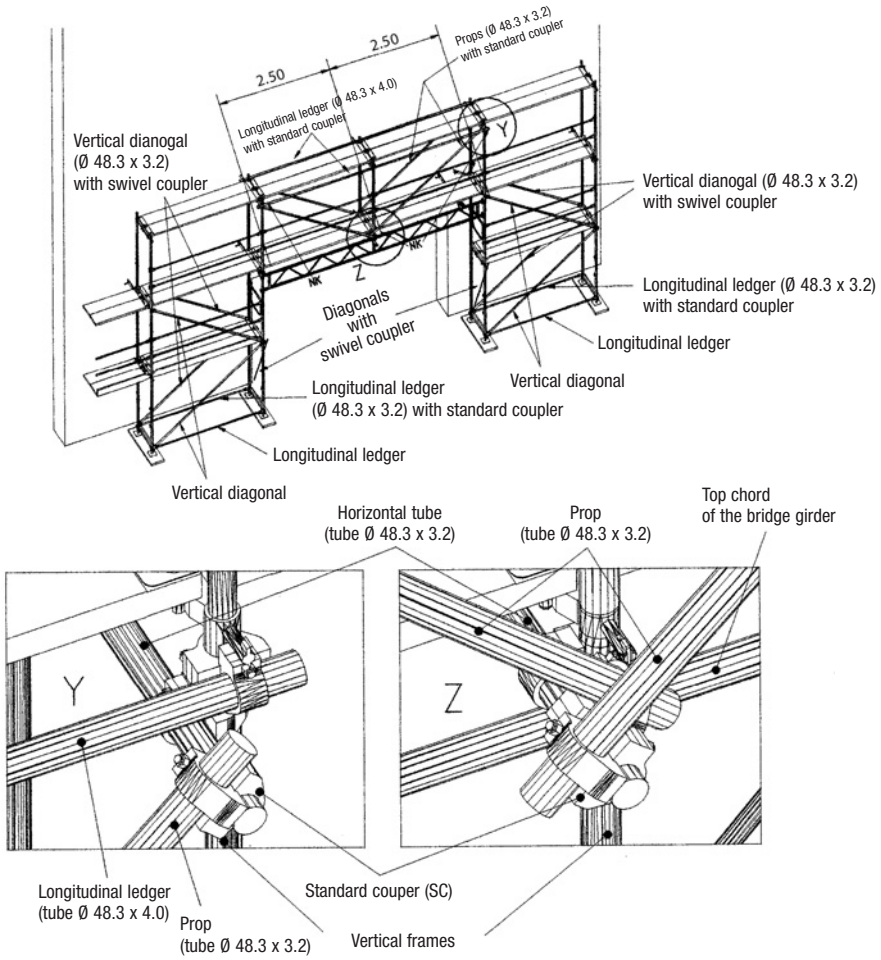


Illustration 46a Assembly with support props; stiffening of the top chord level by tying to the facade or by fitting horizontal latticework; bay length l = 2.50 m

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

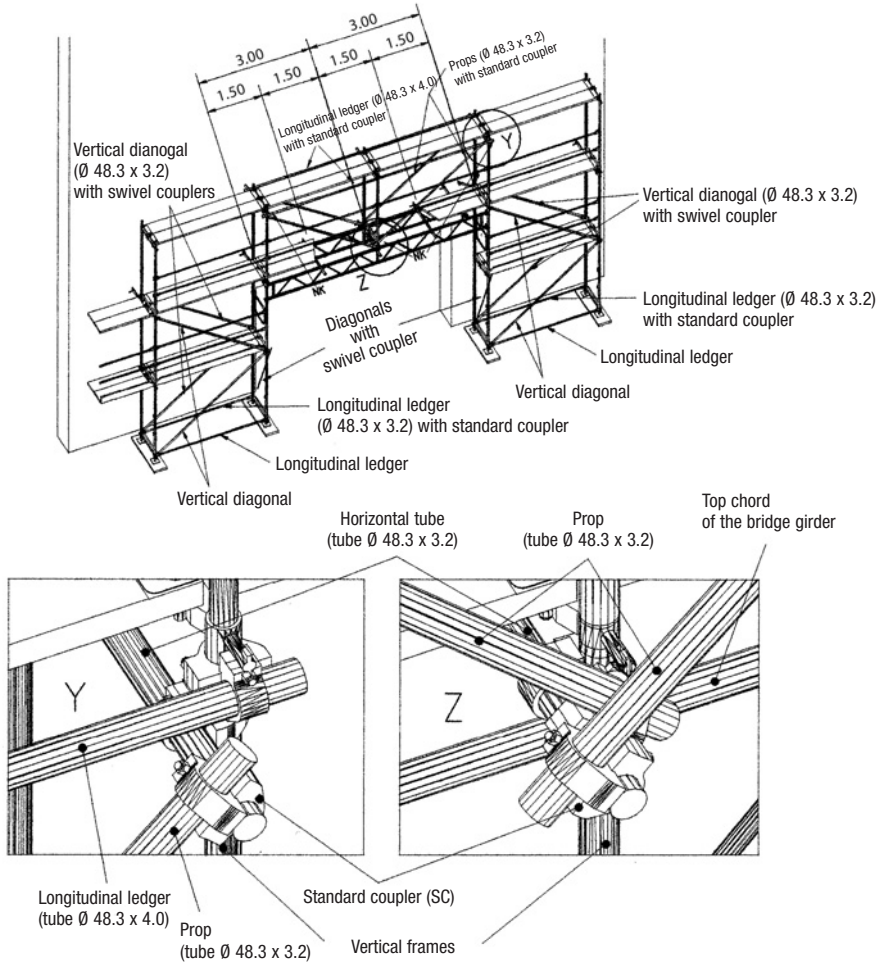


Illustration 46b Assembly with support props; stiffening of the top chord level by tying to the facade or by fitting horizontal latticework; bay length L = 3.00 m (stiffening interval a = 1.50 m)

2.5 Various modes of erection and fitting of ancillary components

Notes are provided, in the Tables 5 and 6, on the required structural design for various modes of scaffold assembly in relation to (or depending on) the length of the bridge.

Table 6: Fitting of the bridge girder L = 5.00 m at a scaffold height of H = 24.00 m

Erection modes	No diagonal prop	With diagonal prop (inner and outer)
Facade scaffold with no brackets but with wire mesh barriers	Illustration 44 a Illustration 45 a	Not applicable
Facade scaffolding with inner brackets only and wire mesh barriers	Illustration 44 a Illustration 45 a	Not applicable
Facade scaffolding with inner and outer brackets and wire mesh barriers	–	Illustration 46 a
Facade scaffolding with inner bracket, 3-plank protective roof and wire mesh barriers	–	Illustration 46 a
Facade scaffolding with inner and outer bracket, 2-plank protective roof and wire mesh barriers	–	Illustration 46 a

Table 7: Fitting of the bridge girder L = 6.00 m at a scaffold height of H = 24.00 m

Erection modes	No diagonal prop	With diagonal prop (inner and outer)
Facade scaffold with no brackets but with wire mesh barriers	Illustration 44 b Illustration 45 b	Not applicable
Facade scaffolding with inner brackets only and wire mesh barriers	–	Illustration 46 b
Facade scaffolding with inner and outer brackets and wire mesh barriers	–	Illustration 46 b
Facade scaffolding with inner bracket, 3-plank protective roof and wire mesh barriers	–	Illustration 46 b
Facade scaffolding with inner and outer bracket, 2-plank protective roof and wire mesh barriers	–	Illustration 46 b

2.5 Various modes of erection and fitting of ancillary components

2.5.7 Bridging bay with a length of l = 4.00 m

Erection of a bay with l = 4.00 m in the form of a bridging bay in the facade scaffold can be carried out using aluminium planks exclusively.

When fitting aluminium planks for the bay length of l = 4.00 m, care is to be taken to ensure that the immediately neighbouring planks are reinforced by so-called plank connectors at the third points in order to achieve a combined load carrying effect of the planks (Ill. 47). It should also be noted that the vertical frames in the vicinity of the bridging bay must be tied at a vertical spacing of 4 m and the arrangement of the diagonal braces on the outer side of the scaffold only refers to four bays. Additionally, a second run of diagonals is to be fitted up to the second lift (Ill. 48).

The instructions for erection refer to an uncovered scaffold in front of open or closed facade with inner and outer brackets and protective nets, or wire mesh barriers, at the topmost lift.

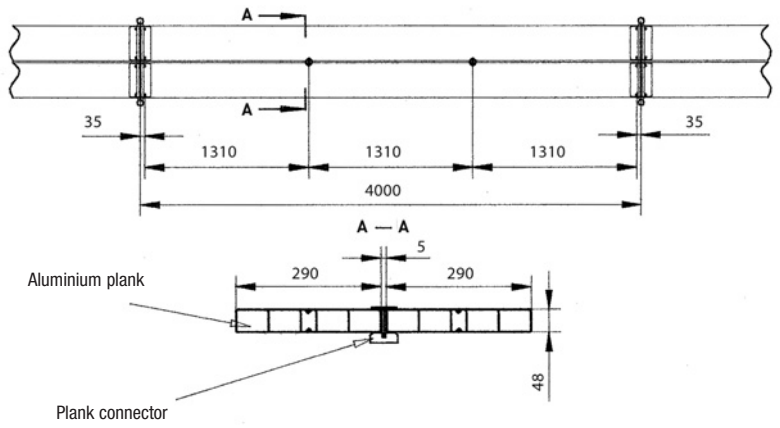


Illustration 47 Arrangement of the plank connectors

2.5 Various modes of erection and fitting of ancillary components

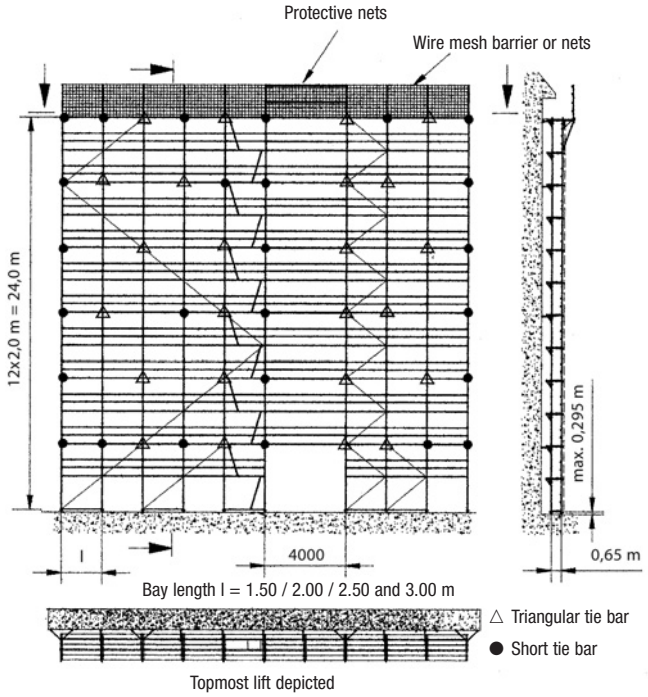


Illustration 48 Uncovered scaffold in front of open or closed facade with bridging bay l = 4.00 m, with inner and outer brackets, with or without wire mesh barrier or nets.

2.5 Various modes of erection and fitting of ancillary components

2.5.8 Access ladders

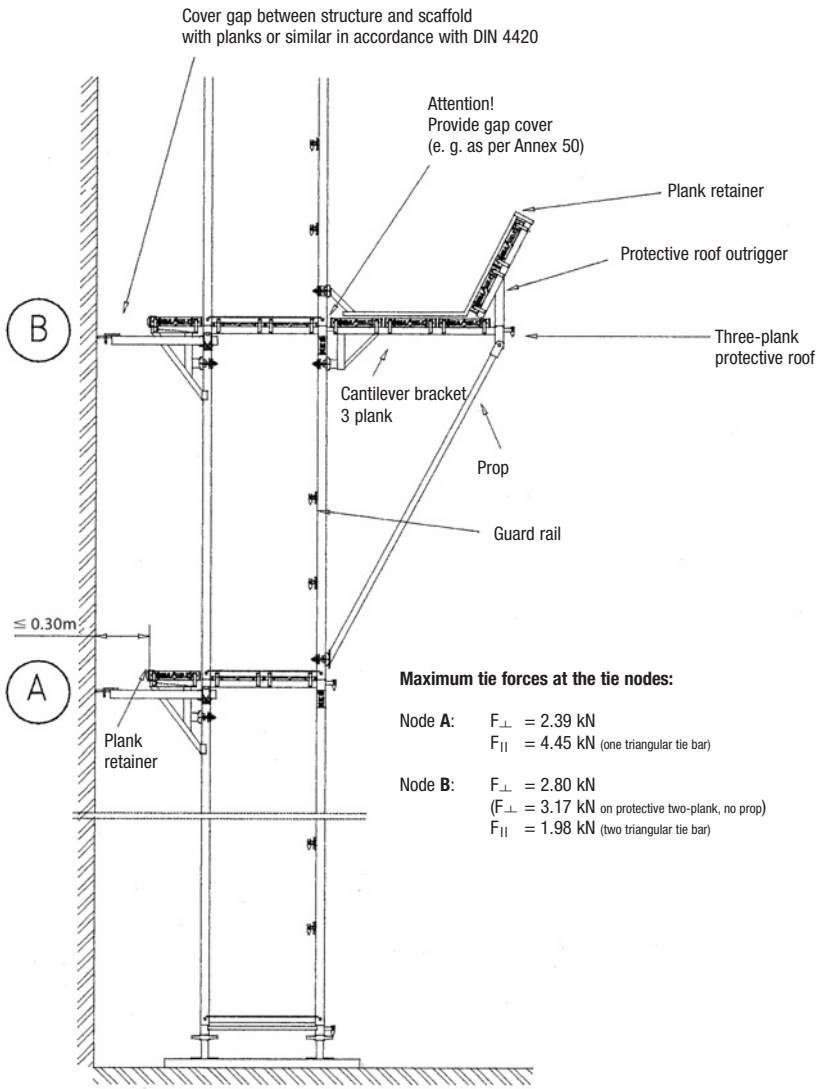
The access ladders are installed as described in Chapter 2.3.3. Tie the RUX-SUPER 65 frames, in the vicinity of the ladders, at spaces of 4 m (refer to chapters 2.5.2 and 2.5.3). When installing the bottom ladder, fit plank bearers on both sides of the bay and deck with timber, steel or aluminium planks or an aluminium batten.

2.5.9 Protective roof

The protective roof (Ill.49) consists of a 2 or 3-plank bracket with slotted-on cap and a prop when the 3-plank bracket is used. The cap serves the purpose of mounting 2 inclined planks held in place by an appropriately formed retainer. No materials are to be stored on the roof. The planks in the vicinity of the protective roof are to be placed close to the facade and the remaining gap, in the area of the frame, covered.

The protective roof can be installed at any random height on the RUX-SUPER 65 scaffolding. At this level, each frame must be tied at the top and bottom (Ill.49).

2.5 Various modes of erection and fitting of ancillary components



Maximum tie forces at the tie nodes:

Node **A**: $F_{\perp}$ = 2.39 kN
F_{II} = 4.45 kN (one triangular tie bar)

Node **B**: $F_{\perp}$ = 2.80 kN
($F_{\perp}$ = 3.17 kN on protective two-plank, no prop)
F_{II} = 1.98 kN (two triangular tie bar)

Illustration 49 Protective roof outrigger

2.5 Various modes of erection and fitting of ancillary components

2.5.10 Roof safety barrier

The roof safety barrier consists of a post (wire mesh support) and a barrier (wire mesh or net). The post is fitted - and forms the top of the scaffold – depending upon the size of the eaves projection - either to the RUX-SUPER 65 vertical frame or to the 0.65 m widening bracket (Ill.50). The cross leg of the post (wire mesh support) is to be secured against dislocation by means of insert pin or screw. The widening bracket 0.65 m is to be supported by a prop.

The distance of the barrier from the edge of the eaves must be at least 0.70 m.

Note! b1 + h2 minimum 1.50 m
h1 minimum 1.00 m
h maximum 1.50 m

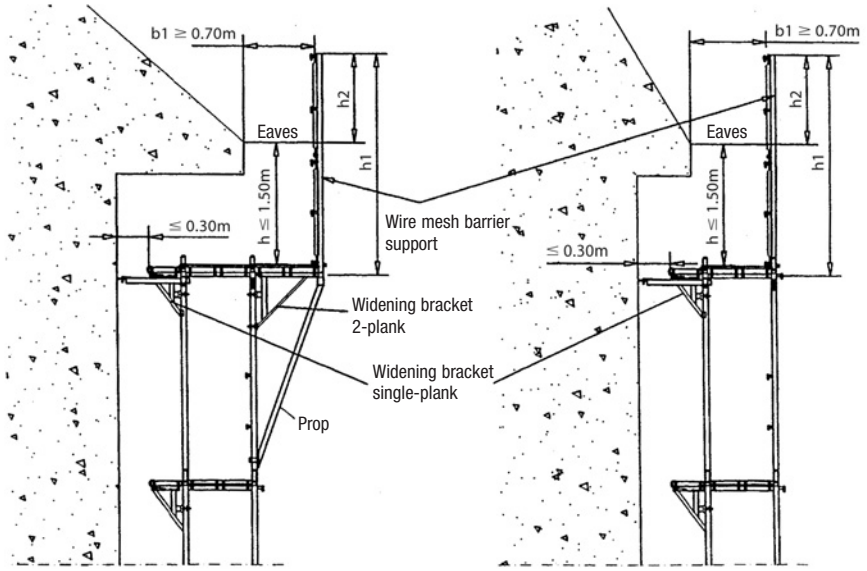


Illustration 50 Roof safety barrier

2.5 Various modes of erection and fitting of ancillary components

Tie each RUX-SUPER 65 frame at the topmost level (with the exception of the mode “Uncovered scaffold with no brackets in front of closed facade”, Ill. 28). The ties are to be performed in accordance with the various modes of erection described in Chapters 2.5.2 and 2.5.3. All RUX system planks can be fitted. For bay lengths of L = 3.00 m, besides the steel and aluminium planks, the solid timber plank (grade MS 10) as well as the profiled, timber plank can be used.

The barrier consists, optionally, of two hooked-on wire mesh guards located one above the other, or approved protective nets. The nets are to be threaded either mesh for mesh, or by quick-action straps, to two guardrails fixed to the top and bottom gravity locks of the barrier posts Ill.51).

The nets can also be attached by using steel tubes of 3.2 mm or aluminium tubes of 4.0 mm wall thickness and an outside diameter of 48.3 mm. These are fixed in position by standard couplers at the top and bottom of the wire mesh supports. The netting is also to be threaded, mesh for mesh, to the scaffold tube.

Only the aluminium plank with connector is to be used in conjunction with the bridging bay length of L = 4.00 m. The safety barrier is made up exclusively of approved nets.

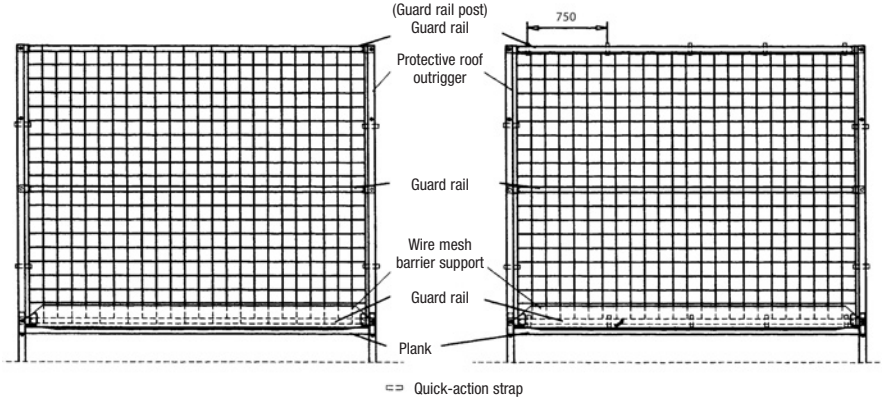


Illustration 51 Safety barrier with approved nets

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

2.5.11 Securing the components against dislocation

The planks are secured by the bottom cross bar of the frame above them. On the topmost lift, the job of securing the components is taken over by the cross leg of the guardrail post support or, when the plain guardrail post is used, by the top plank retainer. The outriggers and the passage frames are equipped with appropriate plank retainers.

Tensional interconnection of the RUX-SUPER 65 frames, for statical reasons, is not required on the standard design. If necessary, however, this can be done by using drop pins or M 10 hexagon bolts in the standard holes provided in the tube connector and at the bottom of the standards.

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

2.5.12 Interim condition – topmost lift not tied

When erecting the RUX-SUPER 65 rapid erection scaffold on a facade, it can happen that interim conditions will occur at which time the two topmost horizontal scaffold lifts are not tied.
To guarantee stability, the vertical frames located at the upper lifts on top of one another are to be tightened, e.g. by screwing together or using insert pins. The number of vertical frames to be connected to one another depends on the particular erection mode and the appropriate tying patterns.

• Uncovered scaffold (tie pattern 8 m offset)

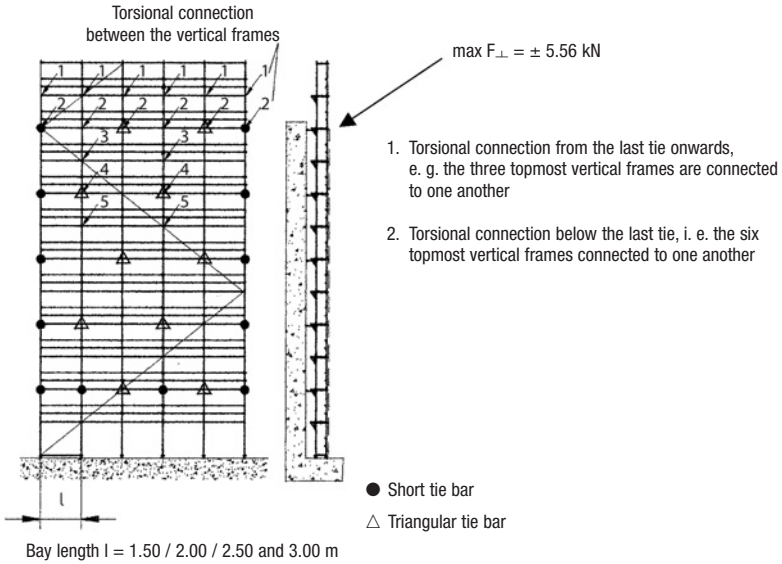


Illustration 52 Free-standing lifts above the last tie;
uncovered scaffold with inner brackets in front of open facade

Rapid-Erection Scaffolding RUX-SUPER 65

2.5 Various modes of erection and fitting of ancillary components

• Scaffold covered with nets

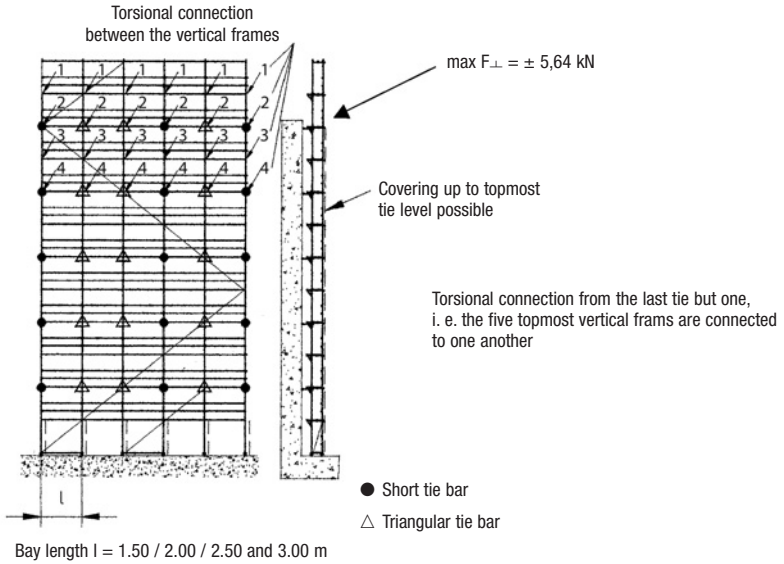


Illustration 53 Free-standing lifts above the last tie;
scaffold covered with nets and with inner brackets in front of open facade

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!

2.5 Various modes of erection and fitting of ancillary components

• Scaffold covered with tarpaulins

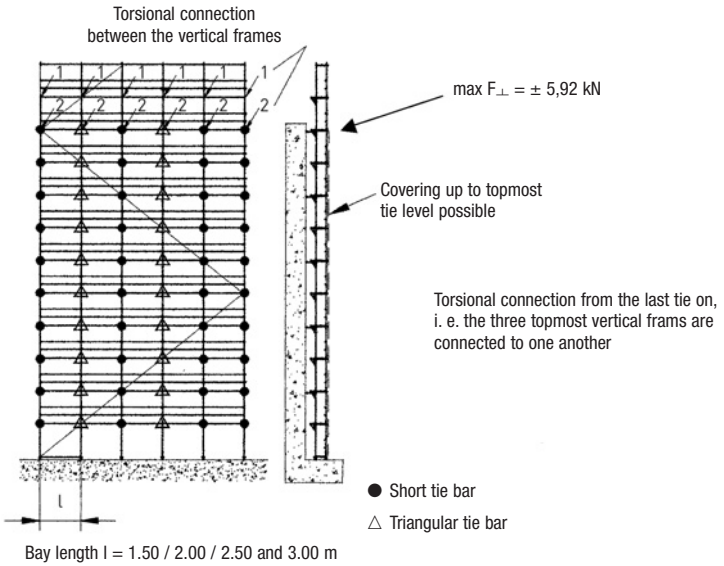


Illustration 54 Free-standing lifts above the last tie;
scaffold covered by tarpaulins and with inner brackets

3 Dismantling the RUX-SUPER 65 Rapid-Erection Scaffolding

To dismantle the scaffolding, adopt the procedures described in Chapters 2.1 to 2.5 in reverse order.

Scaffolding components must never be thrown down from lifts or scaffolds.

4 Use of the RUX-SUPER 65 Rapid-Erection Scaffolding

The RUX-SUPER 65 Rapid-Erection Scaffolding can be used in conformity with Group 3 and in line with the stipulations of the „Safety regulations for Work, Safety and System scaffolds (frame and module scaffolds)“ (ZH 1/534.1).

These instructions for erection and use apply exclusively to the original RUX-SUPER 65 fast-erection scaffold from RUX GmbH, Hagen!