Layher SpeedyScaf® System
Technical Brochure

The standard system for scaffolding construction

Made of hot-dip-galvanised steel or aluminium

General construction approvals Z-8.1-16.2, Z-8.1-840 and Z-8.1-844

Certification according to DIN ISO 9001/EN 29 001 by TÜV-CERT

SpeedyScaf®

Fast. Safe. Complete.

This PDF file is only a small extract of the complete Speedy Scaf® System Technical Brochure. The whole brochure contains 40 pages with more hints & tricks for the everyday use of the Speedy Scaf® System.
Ask your next Layher dealer for your personal copy.

Layher®

More Possibilities. The Scaffolding System.

Layher SpeedyScaf®: So simple.

The sum of all advantages cleverly combined: that's the secret behind the success of Layher SpeedyScaf® – and hence the secret behind the success of every single user – every single day.

Simple technology with a convincing mix of perfected and detailed solutions:

- uncomplicated insertion system for fast and effortless assembly,
- just a few basic elements,
- logical expansion possibilities and rapid extendability,
- complete safety including during assembly,
- ergonomically advantageous and easy to handle,
- minimum maintenance.

With just 6 basic elements and a few manual operations, this classic Layher equipment will "speedily" provide a secure platform for all work. Established on the market for several decades as the frame scaffolding equipment that leads the field, you can cater for almost every requirement with this unbeatably lightweight yet sturdy and stable system:

With the maximum safety that comes from building authority approvals for SpeedyScaf 0.73 m wide in steel, SpeedyScaf 0.73 m wide in aluminium, SpeedyScaf 1.09 m wide in steel, in Germany and many other countries all over the world.

In addition to the comprehensive engineering concept, perfected down to the last detail, and the proven precision production methods used by Layher, a delivery availability, stock capacity and after-sales service that are second to none will provide you with further support.

Assembly

Standard assembly

Simple, safe, fast and very strong – those are the requirements placed on modern scaffolding: SpeedyScaf meets all these requirements. With its basic components – assembly frame, adjustable base plates, scaffolding decks, guardrails, diagonal braces and toe boards – scaffolding is assembled for the facade in a logical sequence. Depending on the roof projection, optimum adjustment is achieved using console brackets.

Gable scaffolding

7

Alignment and assembly

7 For gable scaffolding, the middle scaffolding bays (preferably the access bays) are aligned with the ridge.

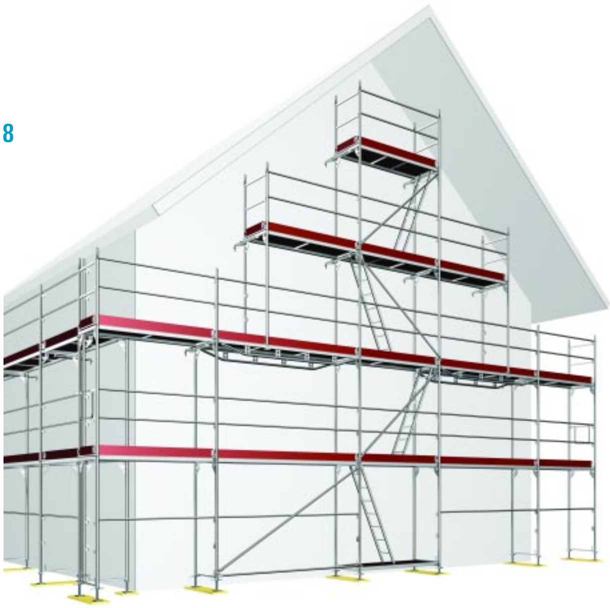
Further assembly, usually symmetrical, follows on both sides.

The scaffolding is optimally adjusted to the roof angle by appropriate selection of the bay lengths.

Aluminium Bridging-ledger

8 For large roof overhangs, the installation of aluminium bridging ledgers is ideal. Spigots on aluminium bridging ledgers hold the assembly frames above them and permit a step-by-step reduction of the bay width.

8



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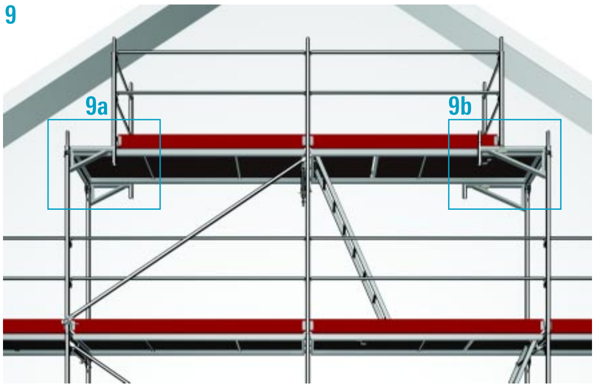


9a Reduction with 0.5 m bracket.

9b Alternative: Reduction with 0.73 m bracket and bolted-on spigot for channel section.

Console bracket 0.5 m / 0.73 m

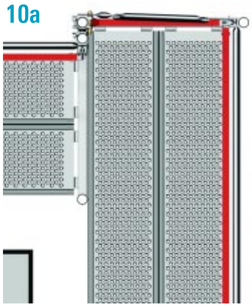
9 By installing 0.5 m (or 0.73 m brackets with bolted-on spigot), the existing bay width can be reduced by 0.5 m.

Assembly

Outside corners

The examples show the standard application. Any length adjustment needed is performed as shown on page 19.

10 For a gap-free transition at the corner the frames are positioned flush.

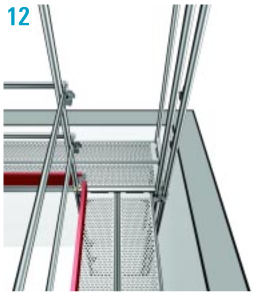


10a View from above.

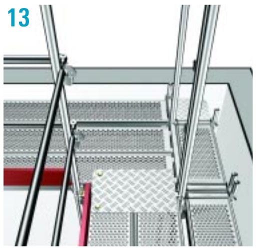
11 Widening at the top level is possible with the use of a swivelling and a fixed bracket together on one upright tube. This avoids any height mismatch in the scaffolding deck levels.

11a Scaffolding widening, view from below.

Inside corners



12 For a gap-free transition at the corner the frames are positioned flush. In the overlapping bay, side protection is afforded with a telescopic guard rail or tube and couplers, and with a correspondingly long toe board.



13 0.36 m bracket on the inside: The corner is closed by the fitting of a corner deck, 0,36 m (special part, Art. No. 0707.308), which helps to maintain the permissible distance from the wall.

13a View of corner area from below.

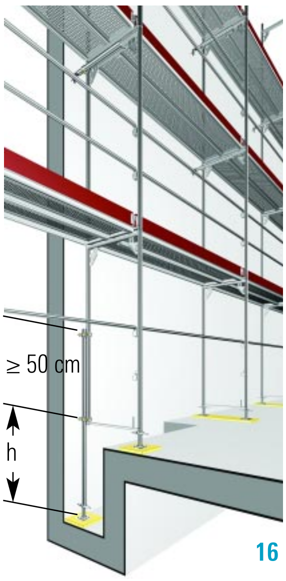
14 Version with 0.73 m bracket on the outside: If the scaffolding is widened with a 0.73 m bracket in the closing level, a flat and gap-free transition in the corner area is possible in conjunction with a 1.57 m long bay fitted at the end.

14a Version as above, seen from below.

Height adjustment

15

15 In the case of inclined terrain, assembly starts at the highest point. In conjunction with adjustment frames – 0.66 m, 1.0 m and 1.5 m – problem-free adjustment of the scaffolding to the lie of the ground is possible. The installation of the swivelling adjustable base 60 is recommended for even transmission of the loads.



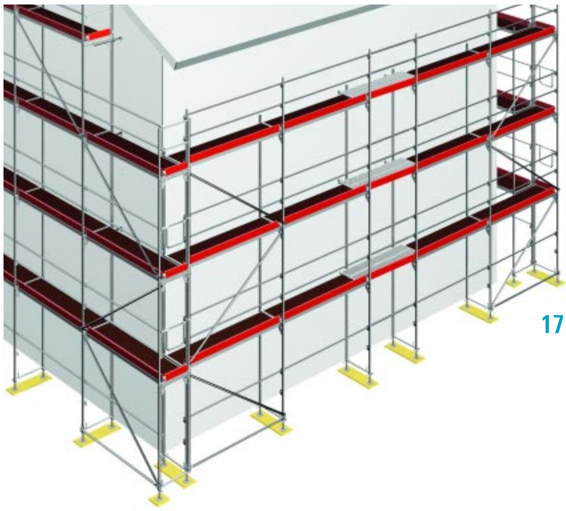
16

16 If an assembly frame standard has to be extended, this is done by connecting a steel scaffolding tube using two swivel couplers with a spacing of at least 50 cm. For permissible loading as a function of the height h see table.

Tab. 3 Permissible loading as a function of height h

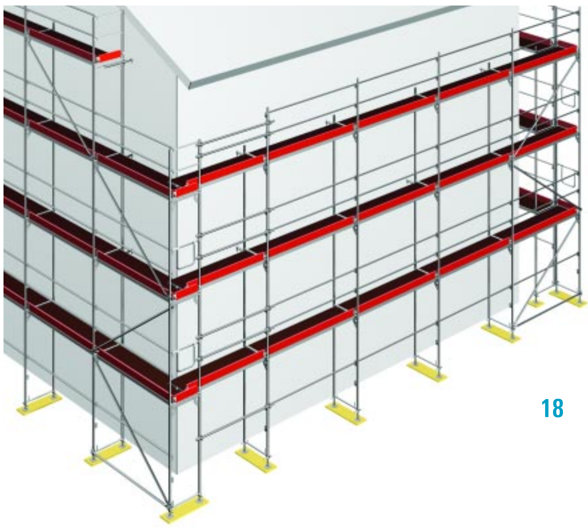
Height h [m]	0.5	0.7	0.9	1.1
Perm. standard load [kN]	9.7	8.5	7.5	6.6

Length adjustment



17

17 Length adjustment in the middle of the scaffolding depending on bay lengths: The scaffolding is positioned left and right, with the fitted bay in approximately the centre of the scaffolding. In the adjustment bay, lapped steel planks or scaffolding boards are used for the deck, with telescopic guard rail or with tubes and couplers fitted as side protection.



18

18 Length adjustment at the scaffolding corner depending on the bay lengths: The scaffolding section with the fitted bay is assembled with the level offset by the deck thickness. The deck of the fitted bay is suspended on one side from the assembly frame and on the other side rests on the deck of the second scaffolding section.

Anchoring

The anchoring of the scaffolding is in accordance with building authority approval or with the individual verification of structural strength or respective to local regulations.

In addition to the required number of anchors, particular care must be taken that the wall inserts used are suitable for the base material. A pull-out test must be conducted and recorded in the appropriate form and for the application in question.

19 SpeedyScaf wall tie with double coupler

20 V-type wall tie with double coupler

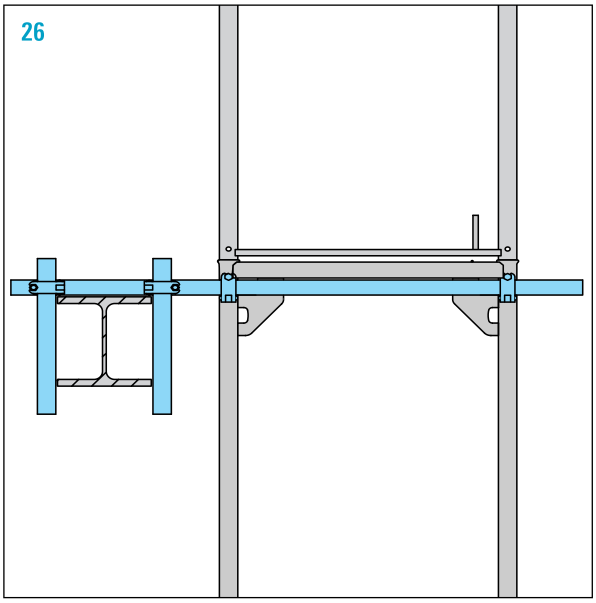
21 Wall tie with connector coupler

22 SpeedyScaf wall tie and inclined wall tie with double coupler

23 Allround ledger attached to scaffold with double couplers (wedge secures tie in ring)

24 Clamping coupler on steel support

25 Anchoring with short wall tie



26 Physical tie on steel girder or concrete balustrade with scaffolding tube and double couplers

Application technology

Scaffolding access

27 Internal ladder access

27 For scaffolding access, internal ladder access (standard solution), access decks with integrated or separate ladder, or external platform stairs are available.

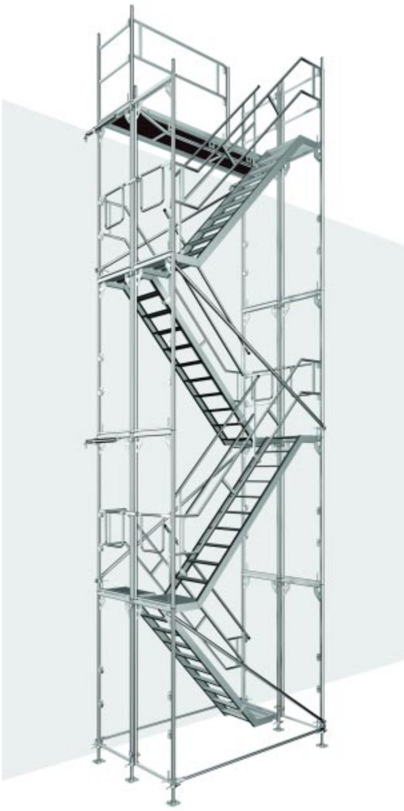
28 The external platform stair access is the appropriate alternative when craftsmen of various trades are working on the scaffolding. Decks are provided in full for the working platform.

29 The SpeedyScaf stairway tower is the preferred access to higher working areas.

The stairs are installed in parallel (Fig. 28) or alternating (Fig. 29) directions, and permit rapid and safe access to the working area.

28 External platform stair access (stairs in parallel direction)

29 SpeedyScaf stairway tower (stairs in alternating direction)



Brick guards

Brick guards must be used when there is any risk of slipping on the roof.

Either brick guards or protection nets can be attached to the brick guard support.

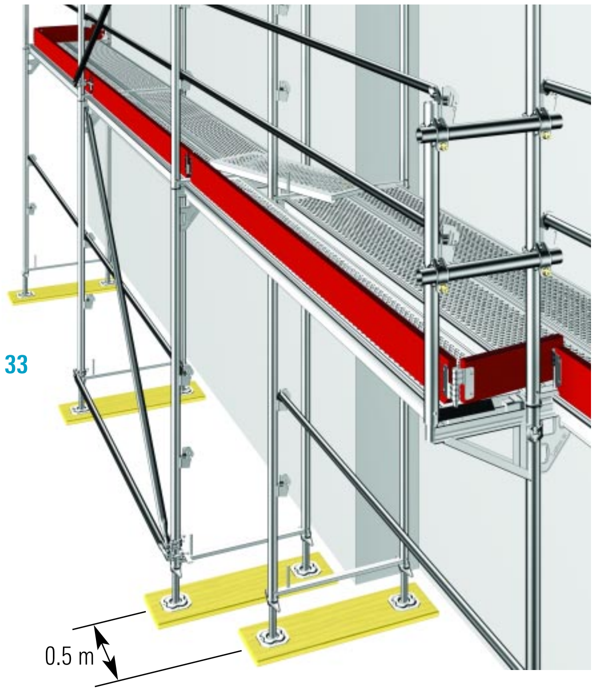
30

31 The deck in the assembly frame must be secured by a lock against lift-off.

32 A fan provides protection against falling objects. The surfaces must be covered with system decks.

Building offset

Facades with projections can be scaffolded when scaffolding sections are offset: The last assembly frame of the inner scaffolding section and the first frame of the outer section are 0.5 m apart. In this way the system lengths can be maintained. A bracket of the appropriate width is attached to the last-but-one assembly frame of the inner scaffolding section. The remaining inner gap between the assembly frame is covered by a lapped steel plank.



33

34

34 Projections, e.g. oriel windows or balconies, are easily provided with scaffolding using brackets of appropriate length. On the projecting sections decks of the required length (max. 4.14 m), cover the space between the brackets.

Application technology

Dormers

Dormers can be quickly and safely scaffolded with standard material; expensive structures using tubes and couplers can be dispensed with.

35

35 The assembly frames on the brackets must be secured with locking pins.

36

36 Connect lattice girders to the assembly frame and then fasten U transoms (with spigot and half-coupler Art. No. 1766.719) to it. Secure the assembly frames of the last and last-but-one levels using locking pins.

37

37 The side walls of dormers are easily scaffolded using SpeedyScaf aluminium U-double transoms. Assembly frames from the last scaffolding level must be secured with locking pins.

38

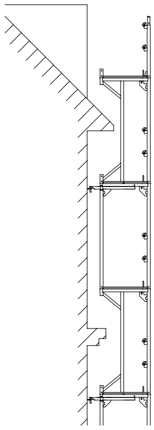
38 SpeedyScaf and Allround scaffolding can be combined thanks to standardized dimensions.

Dormers

39 The SpeedyScaf frame for balustrades in use for a dormer.

39

40



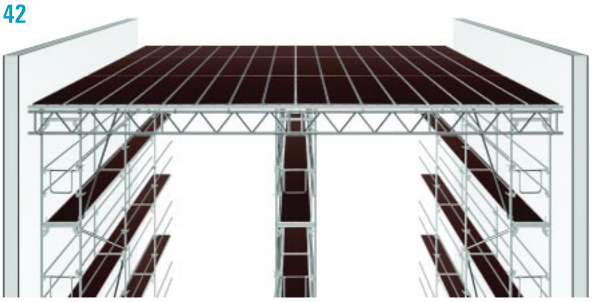
40 2 m Speedy Frames for balustrades are available for work on dormers and walls.

Birdcage scaffolding

41

41 The SpeedyScaf bridging ledger (special part Art. No. 0700.367) of 2.57 m or 3.07 m length permits rapid and system-conforming construction of birdcage scaffolding. They offer a full-surface scaffolding deck and a permissible load-bearing capacity of 2.0 kN/m^2 over the entire surface.

42



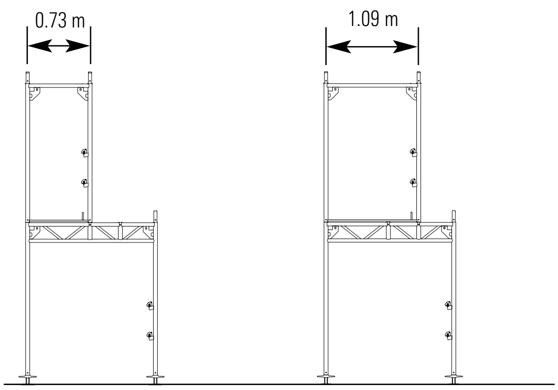
42 An even and gap-free scaffolding deck surface can be obtained by placing 15 cm long butt tubes on the spigots of the top assembly frame. The lattice girders are attached to the butts and to the assembly frame standard using double couplers.

In any case, structural strength verification is required for the supporting scaffolding underneath. Support and additional bracing must be provided in accordance with structural requirements and with local conditions.

Gantry frame

43

43 Gantry frames are used to construct pedestrian passageways underneath scaffolding. Complete covering with scaffolding decks protects passers-by. The remaining construction can be continued with 0.73 m or 1.09 m wide scaffolding. Stiffening of the gantry frames and anchoring of the scaffolding should be in accordance with German approval.



Dead weights of the scaffolding

Tab. 4 Dead weights of facade scaffolding per scaffolding bay

Dead weights of facade scaffolding Bay height 2.00 m		Bay length								
		2,07 m			**2,57 m**			**3,07 m**		
		per level and standard		per m² visible area*	per level and standard		per m² visible area*	per level and standard		per m² visible area*
Deck/system	Width	Inner standard g_i	Outer standard g_a		Inner standard g_i	Outer standard g_a		Inner standard g_i	Outer standard g_a	
		[kg]	[kg]	[kg/m²]	[kg]	[kg]	[kg/m²]	[kg]	[kg]	[kg/m²]
SpeedyScaf, steel	**0.73 m**									
Robust deck	0.61 m	21.5	36.9	8.9	23.5	42.6	8.3	25.8	48.5	7.9
Robust deck	0.32 m	24.8	40.2	9.7	28.0	47.1	9.1	29.3	52.0	8.5
Steel deck	0.32 m	28.7	44.1	10.6	32.0	51.1	9.9	35.5	58.2	9.5
Stalu deck	0.61 m	20.9	36.3	8.8	22.5	41.6	8.1	24.1	46.8	7.6
Stalu deck	0.32 m	22.5	37.9	9.1	24.6	43.7	8.5	26.6	49.3	8.0
Solid wood deck	0.32 m	26.8	42.2	10.2	32.8	51.9	10.1	38.2	60.9	9.9
EuroSpeedy, steel	**0.73 m**									
Robust deck	0.61 m	20.2	35.6	8.6	22.2	41.3	8.0	24.5	47.2	7.7
Robust deck	0.32 m	23.5	38.9	9.4	26.7	45.8	8.9	28.0	50.7	8.3
Steel deck	0.32 m	27.4	42.8	10.3	30.7	49.8	9.7	34.2	56.9	9.3
Stalu deck	0.61 m	19.7	35.1	8.5	21.3	40.4	7.8	22.8	45.5	7.4
Stalu deck	0.32 m	21.2	36.6	8.8	23.3	42.4	8.2	25.3	48.0	7.8
Solid wood deck	0.32 m	25.5	40.9	9.9	31.5	50.6	9.8	36.9	59.6	9.7
Euro Speedy, aluminium	**0.73 m**									
Robust deck	0.61 m	15.1	25.3	6.1	17.1	30.3	5.9	19.4	34.7	5.6
Robust deck	0.32 m	18.4	28.6	6.9	21.6	34.8	6.8	22.9	38.2	6.2
Stalu deck	0.61 m	14.6	24.8	6.0	16.2	29.4	5.7	17.7	33.0	5.4
Stalu deck	0.32 m	16.1	26.3	6.3	18.2	31.4	6.1	20.2	35.5	5.8
SpeedyScaf, steel	**1.09 m**									
Steel deck	0.32 m	39.2	56.8	13.7	44.1	65.5	12.7	49.4	74.3	12.1
Deck frame + deck	1.00 m	42.0	59.7	14.4	51.6	73.0	14.2	54.4	79.4	12.9

* for the outer standard row

Tab. 5 Scaffolding groups as per DIN 4420 / HD 1000

Scaffolding group	Fig. 1			Fig. 2		
	Scaffolding group evenly distributed load p	Conc. load p_1 0.5 x 0.5 m	Conc. load p_2 0.2 x 0.2 m	Partial area load		Minimum width of deck surface
				pc	Partial area	
	[kN/m²]	[kN]	[kN]	[kN/m²]	[m²]	[m]
1	0.75	1.50	1.00	not required		0.50[1)]
2	1.50	1.50	1.00	not required		0.60[1)]
3	2.00	1.50	1.00	not required		0.60[1)]
4	3.00	3.00	1.00	5.00	$(0.4 \times A_B)$[2)]	0.90
5	4.50	3.00	1.00	7.50	$(0.4 \times A_B)$[2)]	0.90
6	6.00	3.00	1.00	10.00	$(0.5 \times A_B)$[2)]	0.90

1) Toe board can be included in computation

2) A_B = deck surface

Fig. 1

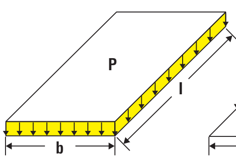
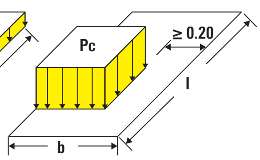
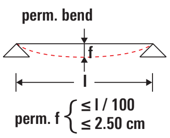


Fig. 2

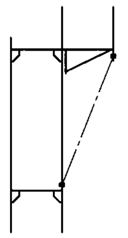




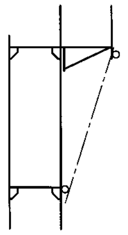
Erection height on cantilever brackets

Tab. 6a Steel SpeedyScaf 0.73 m with 0.73 m bracket, scaffolding group 3: 2.0 kN/m²

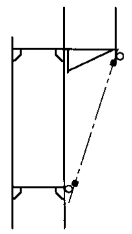
Type of strengthening	Diagonal brace with swivel couplers, with section brace							
Deck	Steel deck		Alu deck, perforated		Robust deck		Solid wood frame board	
Bay width [m]	2.57	3.07	2.57	3.07	2.57	3.07	2.57	3.07
Number of levels	4	3	5	3	5	3	4	2



Type of strengthening	Scaffolding tube diag. brace with double couplers + longitudinal tube							
Deck	Steel deck		Alu deck, perforated		Robust deck		Solid wood frame board	
Bay width [m]	2.57	3.07	2.57	3.07	2.57	3.07	2.57	3.07
Number of levels	11	9	14	11	14	11	11	8

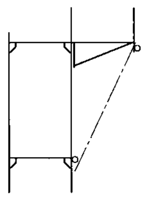


Type of strengthening	Scaffolding tube diagonal brace with double coupler + outer coupler + longitudinal tube							
Deck	Steel deck		Alu deck, perforated		Robust deck		Solid wood frame board	
Bay width [m]	2.57	3.07	2.57	3.07	2.57	3.07	2.57	3.07
Number of levels	22	19	27	23	28	23	21	17

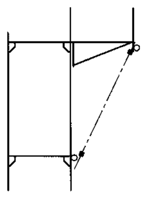


Tab. 6b Steel SpeedyScaf 1.09 m with 1.09 m bracket, scaffolding group 4: 3.0 kN/m²

Type of strengthening	Scaffolding tube diag. brace with double coupler + longitudinal tube					
Deck	Steel deck		Solid wood frame board		Deck frame with wood deck	
Bay width [m]	2.57	3.07	2.57	3.07	2.57	3.07
Number of levels	3	–	2	–	2	–

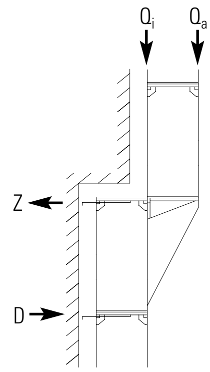


Type of strengthening	Scaffolding tube diagonal brace with double coupler + outer coupler + longitudinal tube					
Deck	Steel deck		Solid wood frame board		Deck frame with wood deck	
Bay width [m]	2.57	3.07	2.57	3.07	2.57	3.07
Number of levels	9	9	8	4	8	5



The anchoring and the scaffolding underneath the bracket must in any case be structurally verified.

Calculating the anchor forces*
(working loads)
– simplified verification



For scaffolding group 3, the following applies:

$Z = D = Q_a \times 0.73 / 2 =$ ___ kN

$Q_a = G_a + P_a =$ ___ kN

P_a[1] $= 2.4$ kN for L[3] $= 2.57$m

P_a[1] $= 2.8$ kN for L[3] $= 3.07$m

$G_a = g_a \times n$

For scaffolding group 4, the following applies:

$Q_a = G_a + P_a =$ ___ kN

P_a[2] $= 3.6$ kN for L[3] $= 2.57$m

P_a[2] $= 4.2$ kN for L[3] $= 3.07$m

$G_a = g_a \times n$

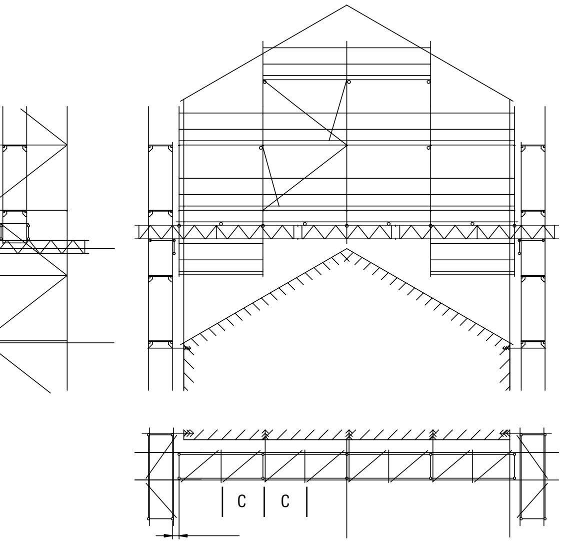
g_a as per table page 26
n number of levels on the bracket
[1] **P_a** useful load (2.0 kN/m²) from loading on 1.5 levels
[2] **P_a** useful load (3.0 kN/m²) from loading on 1.5 levels
[3] **L** bay width

*** The calculated anchor forces result solely from the vertical load, without the additional influence of the wind load. Wind loadings also have to be considered.**

Application technology

Gable bridging with 0.45 m or 0.75 m lattice girder

44



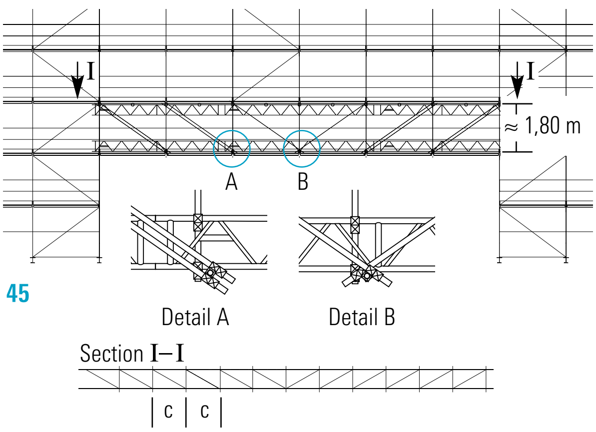
Tab. 7a Lattice girder 0.45 m / 0.75 m

		Steel lattice girder 0.45 m with type-testing	Heavy-duty lattice girder 0.75 m
Spacing c [m] of lateral compression chord support		1.2	1.3
Number of levels as a function of the span l lattice girder [1]	l = 8.0 m (3 x 2.57 m)	14	20
	l = 10.5 m (4 x 2.57 m)	3	12
Live load		2.0 kN/m² on 1.5 levels	
Lattice girder anchoring		every 2.57 m	
Scaffolding anchoring		according to approval	

[1] Above the bridging.
[2] The scaffolding underneath the bridging must be design checked.

Bridging with framework structure

45



All connections as per details A and B with double and outer coupler.

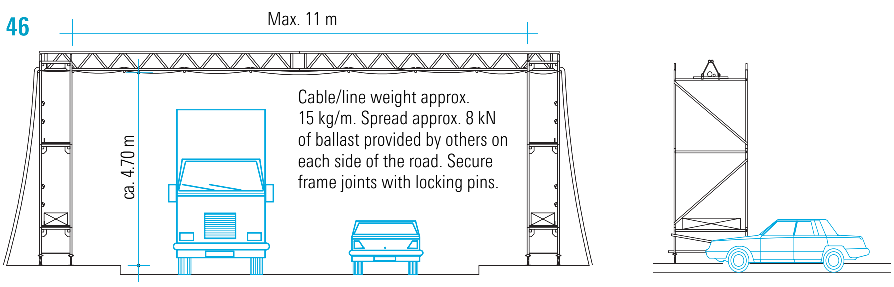
Tab. 7b Framework bridging

	Span [m]			
	12.85	15.42	17.99	20.56
Spacing c [m] of lateral compression chord support	1.2 m	1.2 m	1.2 m	1.2 m
Number of levels [1]	16	10	6	4
Supporting force of lattice girder [kN] (working load)	28.5	24.9	22.0	21.2
Live load	2.0 kN/m² on 1.5 levels			
Lattice girder anchoring / top chord	every 2.57 m			
Scaffolding anchoring	according to approval			

Version with type-tested steel lattice girders 0.45 m.
[1] Above the bridging.
[2] The scaffolding underneath the bridging must be design checked.

Cable routing on SpeedyScaf scaffolding system 70 steel

46

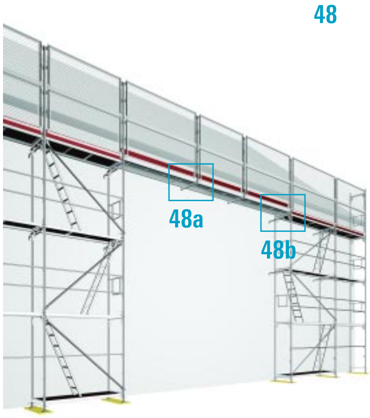


2 lattice girders must be connected at their top chord with swivel couplers, and at the bottom chord with 1 m tubes and double couplers.

Alu Stage 600

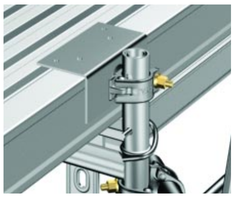
47

48



48a

48b



The Alu Stage 600 with a max. length of 10 m is used for bridging in work* **47** and safety **48** scaffolding structures. With a permissible loading capacity of 2.0 kN/m^2 up to 7 m and 1.5 kN/m^2 up to 10 m length it meets all the requirements placed on work and safety scaffolding. Up to 9.15 m length the staging is also available as a folding variant.

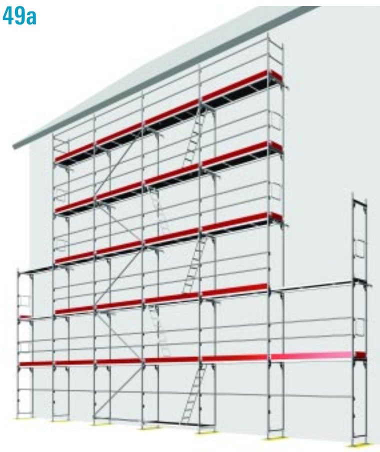
* If only the top layer of the work scaffolding is used, the toe boards can be dispensed with in the lower levels; comply to local regulations.

48a Attachment of the brick guard support.

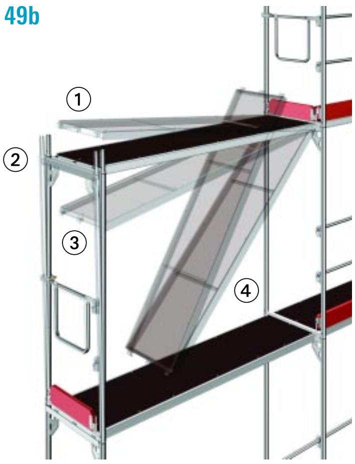
48b Alu stages are secured with squared-timber couplers against shifting and tilting.

Removal or attachment of scaffolding bays

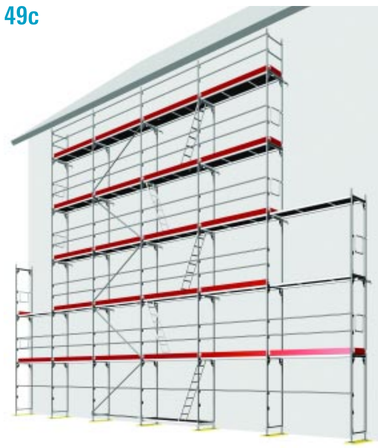
49a



49b

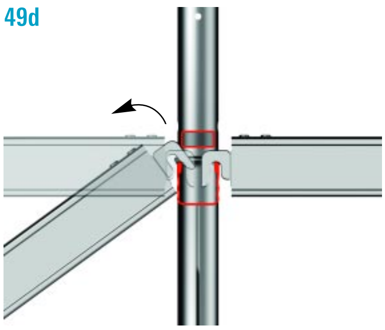


49c



With SpeedyScaf, it is easy to attach or remove individual scaffolding bays. The scaffolding frame is, once the deck has been slightly lifted ① tilted slightly outwards ② and the deck to be removed is, while still suspended on the other side ③ set down on the existing scaffolding deck ④. The deck can now be simply detached (Fig. **49d**). Attachment is in the reverse sequence.

49d

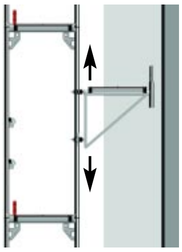


Niche brackets, hook-over

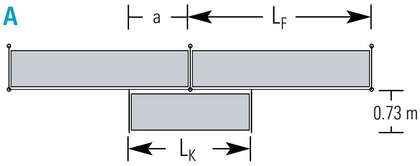
Tab. 8a Scaffolding groups for arrangement A					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3	3	3	3	3
1.09	3	3	3	3	3
1.57	3	3	3	3	–
2.07	3	3	3	–	–
2.57	3	3	2	–	–
3.07	3	3	2	–	–

Tab. 8b Scaffolding groups for arrangements B and C					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3*	3	3	3	3*
1.09	–	3*	3	3	3**
1.57	–	–	3*	3	–
2.07	–	–	–	3*	3*
2.57	–	–	–	–	3*

Use (vertically adjustable) of niche bracket, 0.73 m, "hook over"
(Art. No. 4005.073)

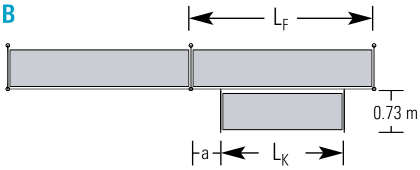


A



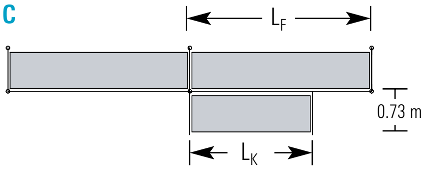
$a \leq L_K$

B



$a \leq L_F - L_K$

C



$a = 0$

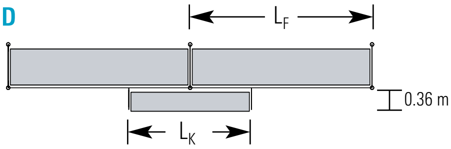
* Scaffolding group 3 for arrangement B with $a \leq 30$ cm and C.
** Scaffolding group 3 only permissible for arrangement C.

Tab. 8c Scaffolding groups for arrangements E and F					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3	3	3	3	3
1.09	–	3	3	3	3
1.57	–	–	3	3	3
2.07	–	–	–	3	3
2.57	–	–	–	–	3

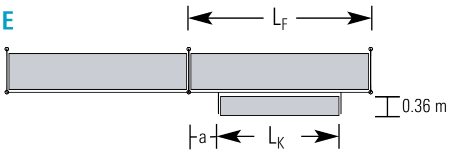
Arrangement D: For all combinations of bay lengths and the bracket bay length L_K scaffolding group 3 applies.

Use of niche bracket, 0.36 m, "hook over"
(Art. No. 4005.036)

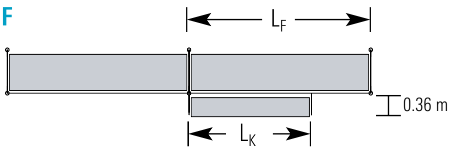
D



E



F



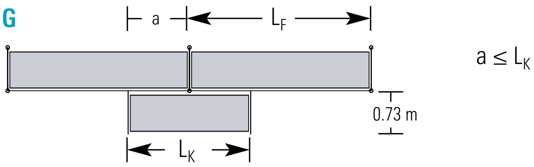
Niche brackets, curved

Tab. 8d Scaffolding groups for arrangement G					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3	3	3	3	3
1.09	3	3	3	3	3
1.57	3	3	3	2	–
2.07	3	3	2	–	–
2.57	3	2	1	–	–
3.07	2	1	1	–	–

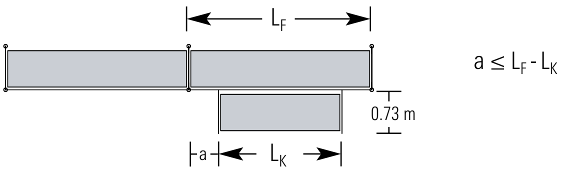
Tab. 8e Scaffolding groups for arrangements H and I					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3	3	3	3	3*
1.09	–	3	3	3	2**
1.57	–	–	3	2	–
2.07	–	–	–	3	–
2.57	–	–	–	–	2

Use of niche bracket, 0.73 m, "curved"
(Art. No. 4006.073)

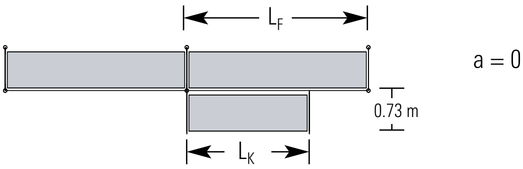
G



H



I



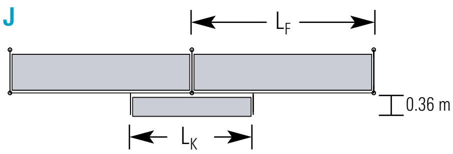
* Scaffolding group 3 for arrangement H with $a \leq 40$ cm and I.
** Scaffolding group 2 only permissible for arrangement I.

Tab. 8f Scaffolding groups for arrangements K and L					
Bracket bay length L_K [m]	Bay length L_F [m]				
	1.09	1.57	2.07	2.57	3.07
0.73	3	3	3	3	3
1.09	–	3	3	3	3
1.57	–	–	3	3	3
2.07	–	–	–	3	3
2.57	–	–	–	–	3

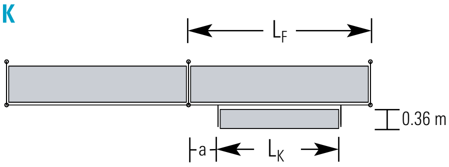
Arrangement J: For all combinations of bay lengths and the bracket bay length L_K scaffolding group 3 applies.

Use of niche bracket, 0.36 m, "curved"
(Art. No. 4006.036)

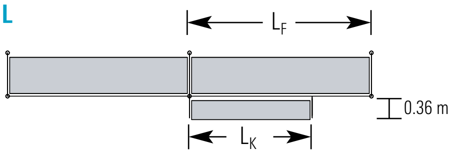
J



K



L



Freestanding scaffolding

Freestanding scaffolding is required when it cannot or may not be anchored to the facade.

Here the basic rules of standard DIN 4420, Section 5.4, must be complied with.

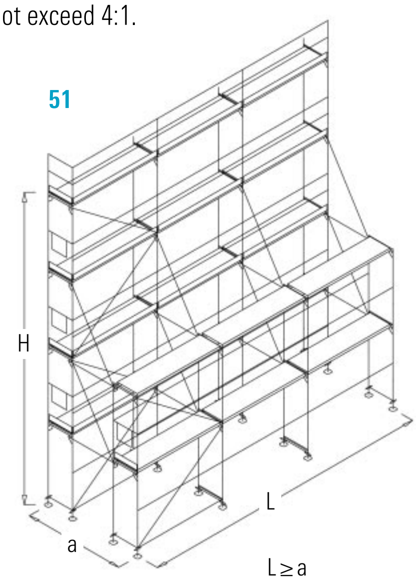
In the open: up to a maximum platform height of 12 m the ratio of height to smallest base side length must not exceed 3:1.

In closed areas: up to a platform height of 20 m the ratio of height to smallest base side length must not exceed 4:1.

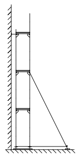
The ratios quoted apply only for scaffolding with steel assembly frames.

Tab. 9 Basic rules for erection		
In the open	$\frac{H}{a} \leq \frac{3}{1}$	$H_{max.} = 12$ m
In closed areas	$\frac{H}{a} \leq \frac{4}{1}$	$H_{max.} = 20$ m

51

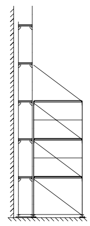


50a

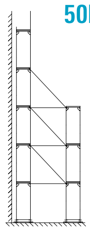


50c

Section

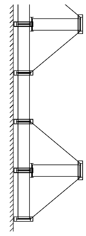


50b



50c

Plan view



50a Tube raker
50b Second scaffolding section as buttress
50c Projecting scaffolding bay as buttress

Rolling towers as per DIN 4420

Rolling towers made of SpeedyScaf parts are assembled with steel or aluminium assembly frames,

- by connecting together assembly frames using swivel couplers, or alternatively with tubes and couplers
- by connecting together assembly frames with lattice girders
- by using mobile beams (Art. No. 1338.320)

The permissible erection heights and any ballast necessary must be taken into account.

Tab. 10 Required number of ballast weights of 10 kg each

	Platform height [m]		
	6.5	8.5	10.5
In closed areas central lateral	 0 2	 0 6	 0 10
In the open central lateral	 0 10	 x x	 x x

x = not permissible
The relevant safety rules must be complied with.

52a

52a One-sided or two-sided widening with an assembly frame and swivel couplers.

52b

52b Two scaffolding sections connected by tubes and couplers.

52c

52c Two scaffolding sections connected by lattice girders, tubes and couplers

52d

52d Scaffolding with mobile beam 3.2 m, adjustable (Art. No. 1338.320) and spigot, adjustable (Art. No. 1337.000).