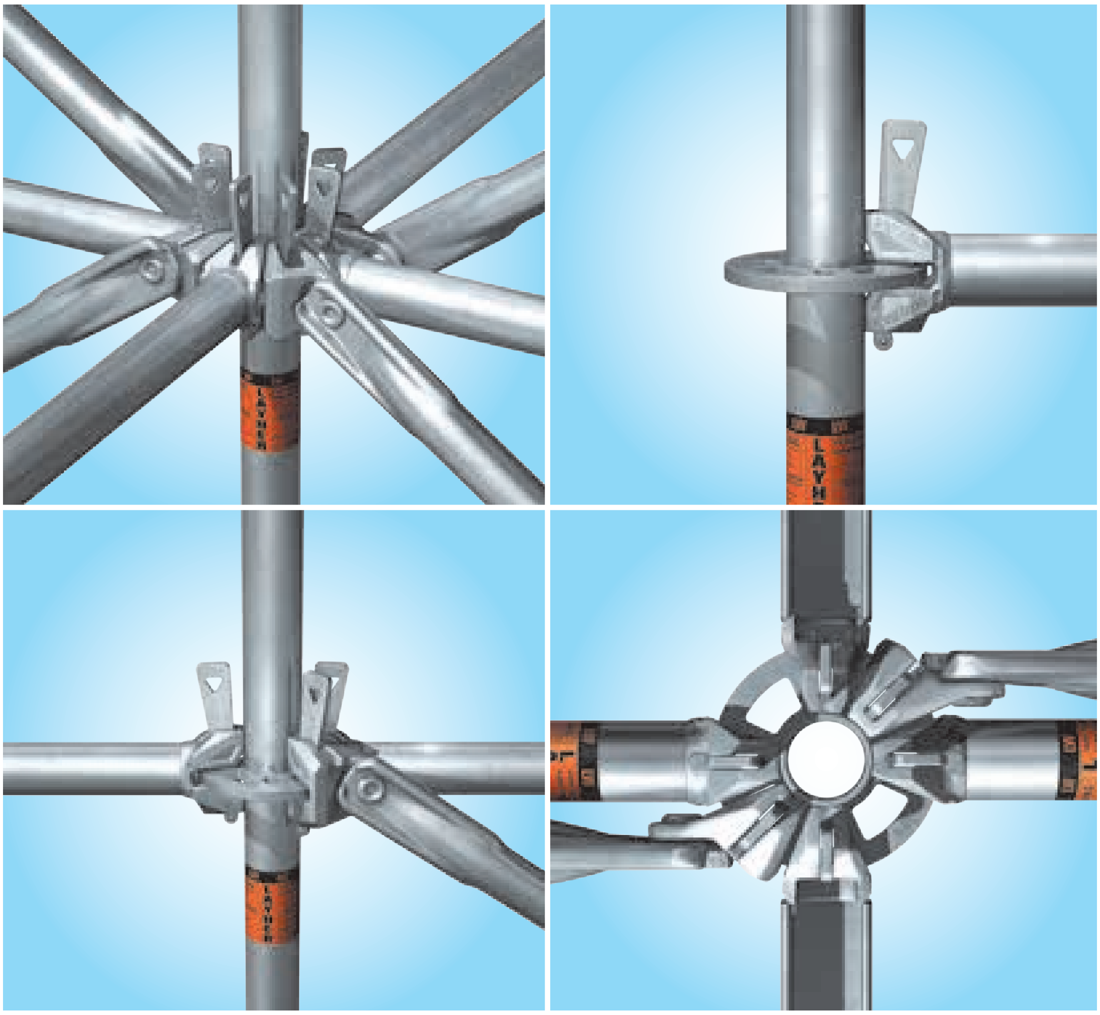
Layher®

More Possibilities. The Scaffolding System.

LAYHER ALLROUND SCAFFOLDING®
TECHNICAL BROCHURE



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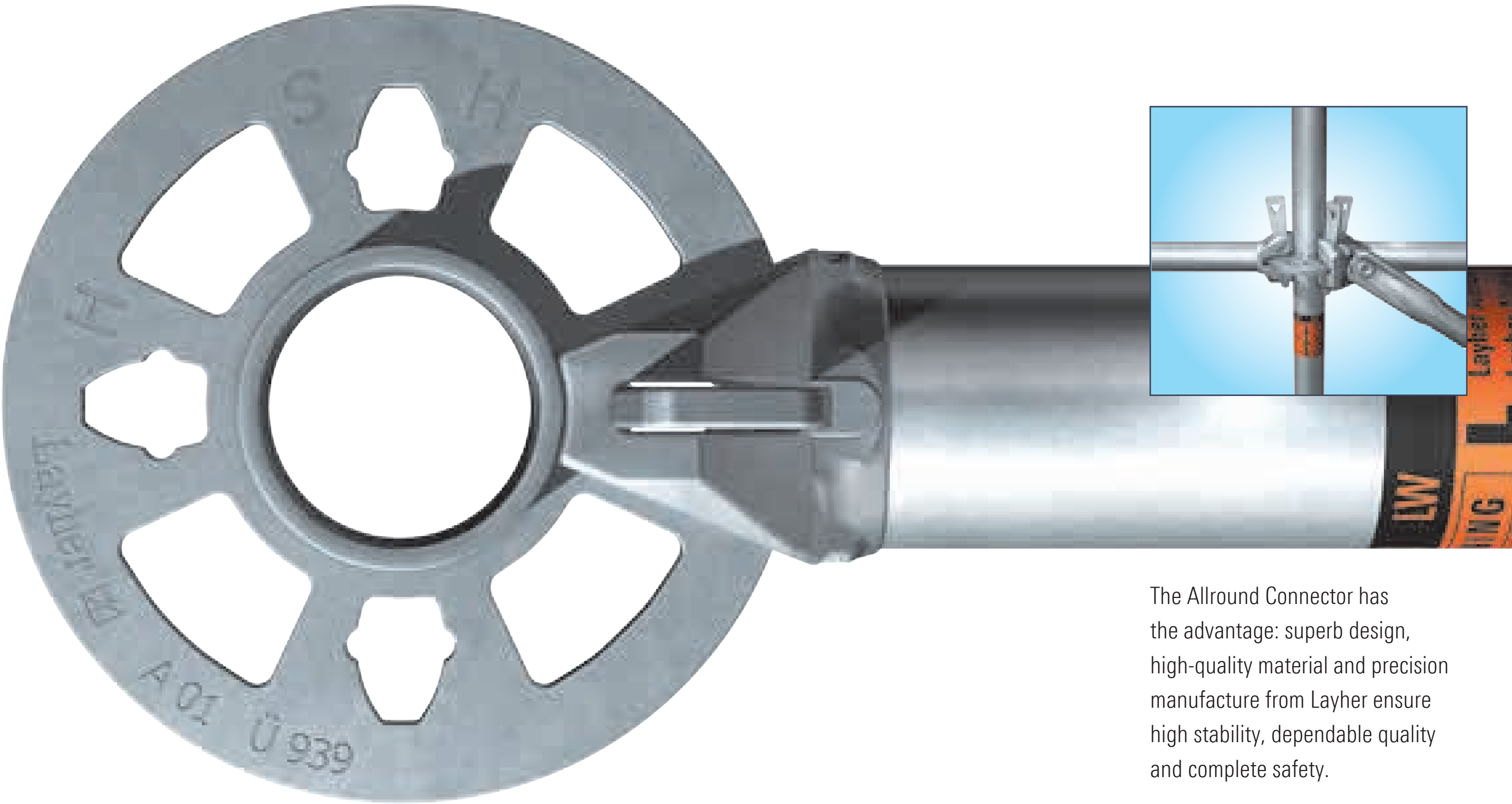
THE ORIGINAL ALLROUND SCAFFOLDING – AND ITS INGENIOUS ALLROUND TECHNOLOGY



The Allround Connector has the advantage: superb design, high-quality material and precision manufacture from Layher ensure high stability, dependable quality and complete safety.

The original Layher Allround Scaffolding offers a large variety of uses, fast assembly, and a profitability that's always persuasive, particularly in structural and engineering scaffolding assembly – that's to say, in applications where conventional scaffolding technology cannot be optimally used. And all this is due not least to a comprehensive range of series-produced expansion parts: this is the unrestricted Allround versatility as a modular system.

The proven combination of positive and non-positive connections in rapid bolt-free system technology with AutoLock function permits connections that are automatically right-angled, obtuse-angled and acute-angled, with built-in safety at the same time. The Layher Allround Scaffolding has become a synonym in the marketplace for modular scaffolding.

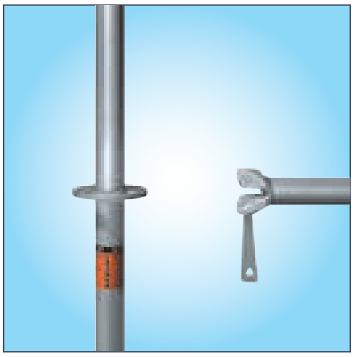
With Layher Allround Scaffolding – in steel or in aluminium – you are investing in a perfected and complete system with all the approvals required for rapid, safe, very profitable and highly flexible scaffolding construction.

THE ALLROUND POWER CONNECTOR DOES THE JOB.

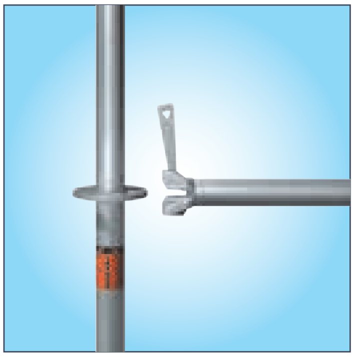
Whether it's used in industry, chemical plants, power stations, aircraft factories, shipyards, theatres or arenas, on every site and on every structure the "original" does justice to its reputation as an "Allrounder".

As work scaffolding and safety scaffolding at the façade, as birdcage, trestle and suspended scaffolding, or as a rolling tower – the right scaffolding at all times and for every job and requirement.

For very difficult ground plans and anchoring conditions, for very irregular structures, and for jobs with increased safety requirements.



It's this easy: Turning the ledger and slightly tilting it before assembly activates the AutoLock function.



As the wedge head is pushed over the rosette, the wedge drops automatically into the recess and is **immediately secured against any possibility of shifting or dropping out.**
That means:
Safe one-man assembly,
whatever the height.

The flat rosette without recesses or bulges prevents it getting clogged with the dirt, whatever the type, that makes assembly difficult.

A hammer blow on the wedge transforms the positive connection into an unsurpassed non-positive one.

Qualitäty management certified according to ISO 9001:2008 by TÜV-CERT

Member of the IIOC.

Approval for the Allround modular system in steel:
Z-8.22.64, Z-8.22.939

Approval for the Allround Connector in aluminium:
Z-8.22-64.1

Approval for the Allround modular system in steel:
235/032/2010

Approval for the Allround modular system in steel:
00001/115/2010

Approval for the Allround modular system in steel:
A34/000006

Approval for the Allround Connector and the standard assembly:
07 P

Approval for the Allround Connector in steel:
G-215/91

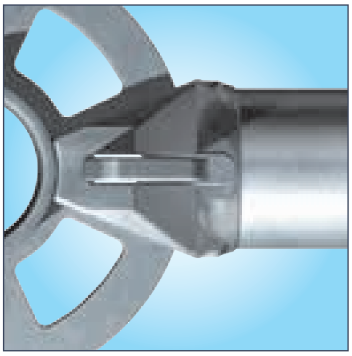
Approval for the standard assembly in steel:
G-215/91

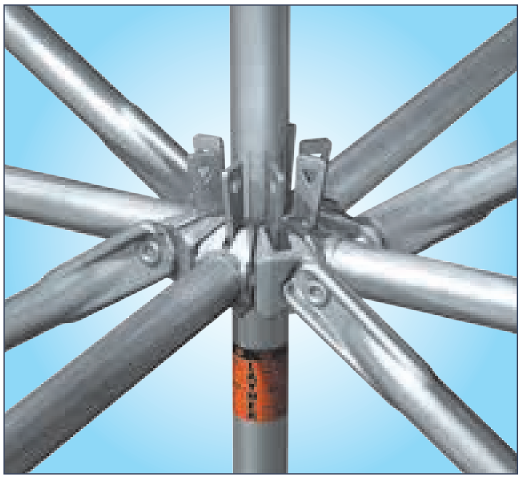
Approval for the Allround Scaffolding system:
broj 11-DD-0940

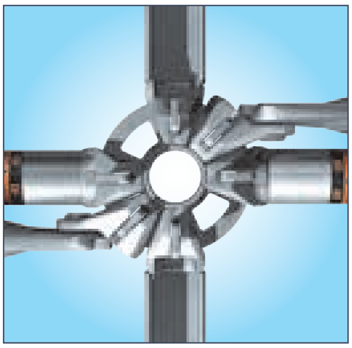
The wedge-head is precisely matched to the radius of the standard at the front end – so forces are applied over a wide surface and always centrally into the standard.

What's the good of a bolt-free connection if the time you save is lost again by having to measure the right angles?

The result of superior design:
up to 8 connections can be made in the structurally ideal Allround® Connector on one level and at various angles. How the system is assembled is self-explanatory.







Built-in assembly speed: the 4 narrow openings in the rosette automatically centre the ledgers in the correct dimensions and at right angles – the 4 wide openings permit alignment of ledgers and diagonal braces at the angles required.

You can forget …
… tiresome measurement,
… time-consuming bolting work,
… repeated adjustment,
… tube-coupler construction,
… hard-to-understand structural force ratios …

Approval for the Allround modular system in steel: 20036/OM-4 and supplements

Ministero del Lavoro e della Previdenza Sociale

Approval for the the standard assembly in steel: 76/02

Norwegian Labour Inspection Authority

Approval for the standard assembly in steel: 154801

Approval for the standard assembly in alu minium: 154806

SP Typkontrollerad SPCR 064 enligt Arbetmiljöverkets krav AFS 1990:12

Approval for the Allround Connector in steel: B/02/033/07

Approval for the Allround system in steel and aluminium: POCC DE.AB28.H12479

Approval for the Allround system in steel UA1.082.0076413-11

Approval for the Allround system in aluminium: UA 1.082.0053933-10

Further approvals and type tests worldwide, which the user can access at any time.

GUARANTEED WITH APPROVAL

SAFE. CERTIFIED. TESTED.

Z-8.22-64: THE ALLROUND MODULAR SYSTEM IN STEEL, (VARIANT K 2000+ AND EARLIER VARIANT [VARIANT II])

Z-8.22-939: THE ALLROUND LIGHTWEIGHT IN HIGH-STRENGTH STEEL

The Layher Allround LW Connector was developed as an optimisation of the K2000+ variant, and the Allround Connector, proven since 1974.

The Layher Allround LW Connector offers, in comparison with the previous Connector variant,

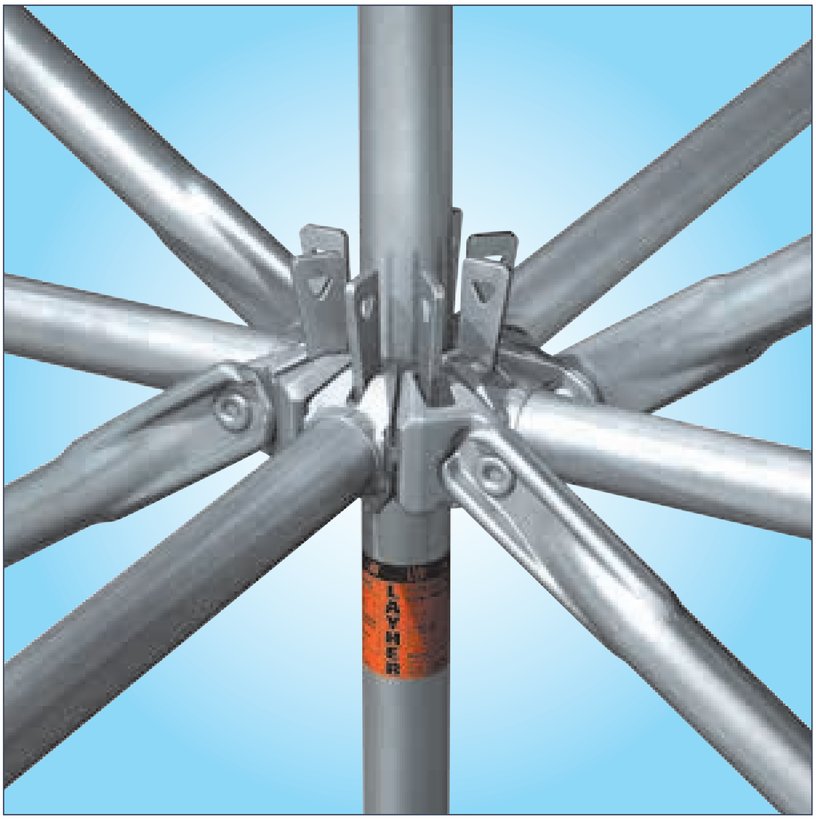
- substantially higher loading capacities
- bending torque of ledger connection: + 18.8 %

And that means: material savings.

More possibilities.

- Combinability with Allround material of the previous designs is in general assured, and regulated by approval.

That means: existing material is "upgraded".



Layher Allround Scaffolding has – in addition to its German approval – other national approvals in every European country in which an approval system exists.

The advantage is in the Allround Connector: superb design, high-quality material and precision manufacture from Layher ensure high stability, dependable quality and complete safety.

Unless otherwise noted in the tables, all the load values printed in this brochure have been obtained from Layher's unverified internal calculations. They have been prepared to the best of our knowledge and belief by structural engineers qualified to do so. The specifications of the following technical rulebooks provide the foundation for these calculations:

- DIN EN 12810-1:2004-03
- DIN EN 12811-1:2004-03 in association with the "Application guideline for work scaffolding in accordance with DIN EN 12811-1"
- DIN 4420-1:2004-03
- DIN 4420-3:2006-01
- DIN 4421:1982-08

along with the issues of the Layher approvals applicable at the time of going to press.
The dimensioning for steel construction is based on DIN 18800-1:1990-11 and DIN 18800-2:1990-11 standards. Aluminium components have been dimensioned on the basis of the May 1996 edition of the "DIBt approval principles for the dimensioning of aluminium components in scaffolding construction".

Please note that the underlying calculations – in particular those for the dimensioning – have not yet been converted to the Eurocodes and DIN EN 12812:2008-01.

APPROVAL FOR THE STANDARD ASSEMBLY

SAFE. CERTIFIED. TESTED.

Z-8.22-64 / Z-8.22-939

- **Approval for the standard assembly as façade scaffolding.**

In addition to the approval for the scaffolding connectors, the Allround Scaffolding is also **approved for assembly as fasade scaffolding,** which means that it can be assembled without further verification.
No vertical diagonal braces are required in the standard assembly according to the approval.

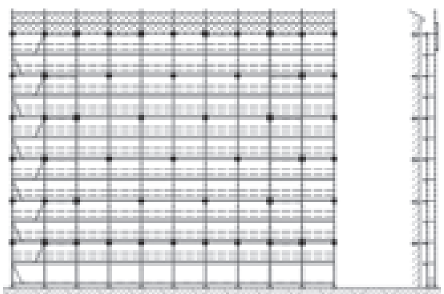
- **The Allround Scaffolding also offers the proven Allround advantages to the façade:**

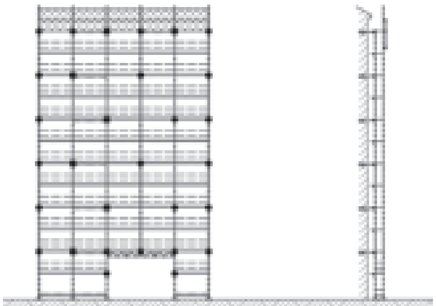
- Little tendency to clogging
- "Automatic" rectangular assembly
- Flexibility
- High loading capacity
- Decks can be fitted or removed at any point and at any time

- **Allround Scaffolding as an intelligent and profitable solution**

Particularly irregular façades and structures with curving ground plan can be enclosed economically and safely using Allround Scaffolding.

This is where Allround Scaffolding, with its great adaptability, offers an intelligent and economical alternative.





ALLROUND CONNECTORS MADE OF ALUMINIUM

SAFE. CERTIFIED. TESTED.

Z-8.22-64.1

Possible applications in which the specific advantages of the Layher Allround Scaffolding systems made of aluminium can be used to particular advantage, in terms of both profitability and design, include

- rolling towers
- suspended scaffolding
- as scenery in theatres
- in the trade fair and events field
- A ground contact area insufficient to absorb the forces of a steel scaffolding construction.
- Historic natural stone masonry – starting to crumble under the influence of the environment – has to be renovated, and is no longer able to support a steel scaffolding.
- In boilers, power stations etc. with manhole feeding

These are all scenarios in which the use of the Layher aluminium Allround Scaffolding system is useful.

And in addition,

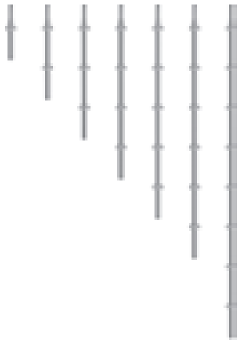
- faster assembly
- less physical strain on the fitters
- low loading weight

are specific reasons for using the aluminium version of the Layher Allround Scaffolding.

ALLROUND SCAFFOLDING – INDIVIDUAL PARTS

Three basic elements – standard, ledger, diagonal brace – in practically-minded dimensions, together with application-oriented expansion parts, make up the Allround system. All parts are made at Layher's own certified production facility, out of steel – hot-dip galvanized – or aluminium, depending on the function. According to the specifications of the approvals. Proven, high quality thanks to continuous monitoring, starting at goods reception and continuing during every phase of manufacture. Short delivery times from plentiful stocks, and reliable availability thanks to the special transporters in the company's own large vehicle fleet, as well as additional stocks held for you in a tight-knit network of delivery warehouses.

VERTICAL SUPPORT ELEMENTS IN STEEL AND ALUMINIUM



Standard
with integrally cast spigot
Length 0.50 – 4.00 m;

Standard
without spigot
Length 0.50 – 4.00 m

HORIZONTAL SUPPORT ELEMENTS, SIDE PROTECTION

O-ledger, steel/aluminium
Lengths 0.25 m – 4.14 m

U-ledger, steel/aluminium
Lengths 0.45 m, 0.50, 0.73 m, 1.09 m LW (steel only), 1.40 m LW (steel only)

U-ledger, reinforced, aluminium
Lengths 1.09 m and 1.40 m

U-bridging ledger,
aluminium
Lengths 1.57 m, 2.07 m, 2.57 m, 3.07 m

U-ledger LW reinforced,
steel
Lengths 1.40 m,1.57 m, 2.07 m, 2.57 m, 3.07 m

U-ledger
Steel deck – steel deck
Lengths 0.32 m, 0.64 m, 0.96 m

U-ledger
Steel deck – O-ledger
Lengths 0.32 m, 0.64 m, 0.96 m

U-lift-off preventer
Lengths 0.39 m – 3.07 m

U-toe board, wood
Lengths 0.73 m – 4.14 m

U-toe board, aluminium
Lengths 0.73 m – 3.07 m

U-steel toe board
Lengths 0.73 m – 3.07 m

DIAGONAL BRACING

Diagonal brace, steel/aluminium
Story height 0.50 m – 2.00 m.
For bay lengths of:
0.73 m, 1.04 m, 1.09 m, 1.40 m, 1.57 m, 2.07 m, 2.57 m, 3.07 m, 4.14 m

O-ledger, horizontal-diagonal, steel
Lengths 2.22 m – 4.34 m
for various applications

SCAFFOLDING DECKS, HATCH-TYPE ACCESS DECKS

U-steel deck T4, 0.32 m wide
Lengths 0.73 m, 1.09 m, 1.29 m, 1.40 m, 1.57 m, 2.07 m, 2.57 m, 3.07 m, 4.14 m
perforated, non-slip

U-steel deck, 0.19 m wide
Lengths 0.73 m, 1.09 m, 1.40 m, 1.57 m, 2.07 m, 2.57 m, 3.07 m
perforated, non-slip

U-Xtra-N deck, 0.61 m wide
Lengths 0.73 m – 3.07 m

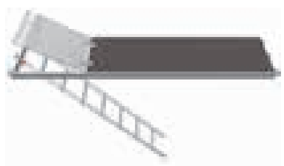
U-robust deck, 0.61 m wide
Lengths 0.73 m – 3.07 m

U-robust deck, 0.32 m wide
Lengths 1.57 m – 3.07 m

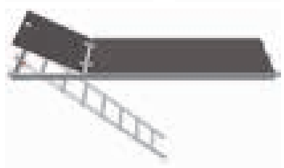
U-stalu deck, 0.61 m wide
Lengths 1.57 m, 2.07 m, 2.57 m, 3.07 m

U-stalu deck, 0.32 m wide
Lengths 1.57 m, 2.07 m, 2.57 m, 3.07 m, 4.14 m

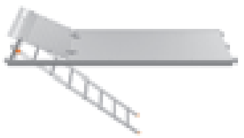
U-stalu deck, 0.19 m wide
Lengths 1.57 m, 2.07 m, 2.57 m, 3.07 m



U-Xtra-N access deck, 0.61 m wide, with integrated storey ladder
Lengths 2.57 m, 3.07 m



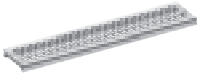
U-Robust access deck, 0.61 m wide, with integrated access ladder
Lengths 2.57 m, 3.07 m



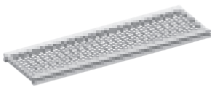
U-access deck, aluminium, 0.61 m wide, with integrated access ladder
Lengths 2.57 m, 3.07 m

U-access deck, steel, 0.64 m wide
Lengths 2.07 m, 2.57 m

Access ladder
For access deck
Length 2.15 m

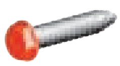


Steel plank 0.20 m
Lengths 1.00 m, 1.50 m, 2.00 m, 2.50 m, height 45 mm



Steel plank 0.30 m
Lengths 1.00 m, 1.50 m, 2.00 m, 2.50 m, height 45 mm

Version with safety clip on one or both sides.



Locking screw, red
Length 80 mm; WS 19/22
for use with steel decks on steel decks, or steel planks on steel decks

Locking screw, blue
Length 40 mm; WS 19/22
for use with gap covers on steel decks

SCAFFOLDING SPINDLES

Base plate 60
Length 0.60 m

Base plate 80, reinforced
Length 0.80 m

Base plate 60, swivelling, reinforced
Length 0.60 m

Head jack 45, swivelling, solid
Length 0.45 m

Wedge swivel coupler
for bracing scaffolding spindles

Base collar
Steel

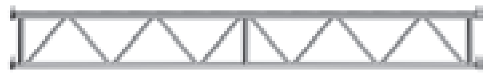
BRACKETS

U-bracket,
0.28 and 0.39 m wide

U-bracket,
0.73 m wide

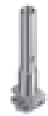
LATTICE BEAM

O-lattice beam
Lengths 2.07 m, 2.57 m, 3.07 m, 4.14 m, 5.14 m, 6.14 m, 7.71 m



U-lattice beam
Lengths 2.07 m, 2.57 m, 3.07 m, 4.14 m, 5.14 m, 6.14 m

Spigot for U-section
Lattice beam, incl. 2 pins



Spigot for O-section
with half-couplers,
19 WS or 22 WS

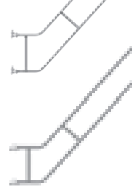
STAIRWAY/LADDER ACCESS

U-platform stairway, 2.00 m high, aluminium
Lengths: for 2.57 m bay
for 3.07 m bay

U-platform stairway, 1.50 m high, aluminium
Lengths: for 2.57 m bay

U-platform stairway, 2.00 m high, aluminium
Lengths: for 2.57 m bay
for 3.07 m bay

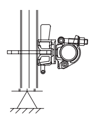
Stairway guardrail, 2.00 m high
with swivelling wedge-heads
Lengths: for 2.57 m bay
for 3.07 m bay



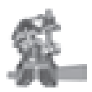
Stairway guardrail, 2.00 m high
with U-prongs
Lengths: for 2.57 m bay
for 3.07 m bay

Stairway guardrail adaptor

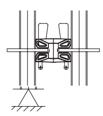
COUPLERS

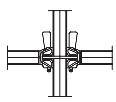
Wedge-head coupler, rigid
19 WS or 22 WS



Wedge-head coupler, swivelling
19 WS or 22 WS

Wedge-head coupler, double

Rosette

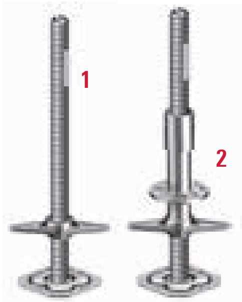
ANCHORING

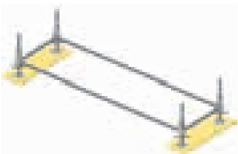
Allround wall tie
Length 0.80 m

See the Layher Allround Scaffolding price list for more information.
WS = Wrench size

THE ASSEMBLY

The Allround wedge-head system provides positive connection to every joint between standards, ledgers and diagonal braces as soon as they are assembled. This fundamental security stays with the assemblers and users of the scaffolding all the way up. The required non-positive connection is achieved with the specified hammer blow (500 g hammer until the blow bounces).

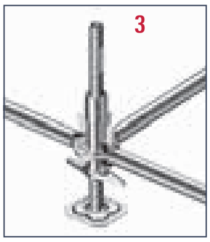




(1) Install spindles in the configuration dimension. Use load-distributing bases if the ground is not sufficiently firm.

Approved loads and max. spindle extension h (cf. pp. 18 and 19)

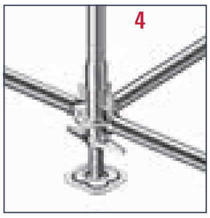
(2) Push the base collar onto the base plate.

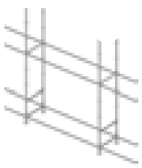


(3) Connect the base collars in the longitudinal and transverse directions by ledgers appropriate for the spacing.

For **rectangular** connections, use the **small holes** in the rosette.

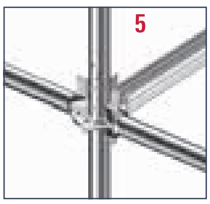
Now align the base level horizontally, starting at the highest ground point, by adjusting the spindle nuts.



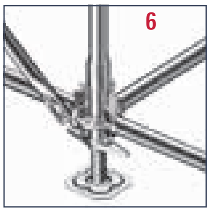


(4) Push on the standards, and on the next deck level, maximum 2.00 m, connect using one transom and two longitudinal ledgers (with plank decking) or with a U-ledger and standard deck.

Install the second bottom transom 0.50 m above the lowest transom (in the case of façade scaffolding structures and more than 60% of the permissible standard load).

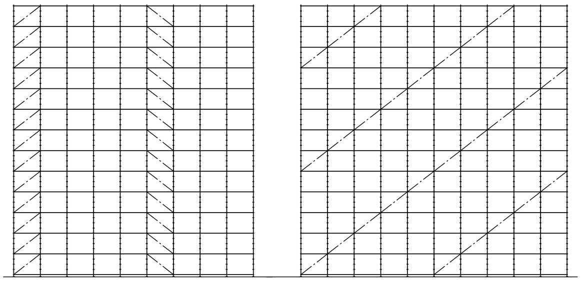


(5) Choose the lengths of the standards such that the standard joints are at a deck level or the level of a braced ledger.
The horizontal ledgers can be omitted when installing system decks.



(6) Install diagonal braces according to the structural strength requirement. Diagonal braces are not required in the standard assembly according to the approval. If diagonal braces are required, they can be fitted in every fifth bay, like a tower **(6 a)** or continuously **(6 b)**.

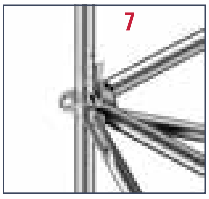
Diagonal brace guides Allround façade scaffolding for structures other than the standard version



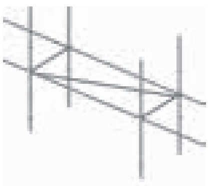
(6 a) Diagonal braces uni-directional tower-like

(6 b) Diagonal braces continuous

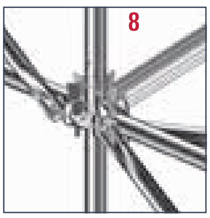
(shown without anchorings)



(7) All wedge connections must be knocked in with a 500 g hammer until the blow bounces.



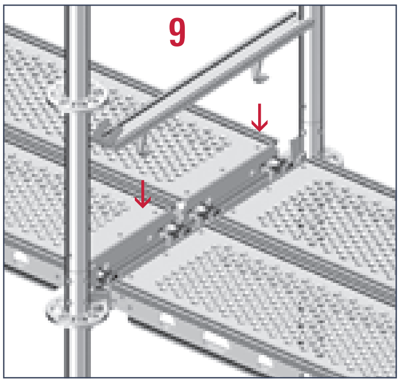
For plank decks or when no decks are installed, longitudinal ledgers must be installed and, in every fifth bay, horizontal-diagonal braces.

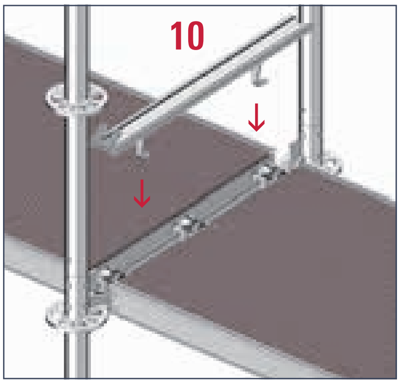


(8) For all kinds of scaffolding, construction work continues by repeating points **(4)**, **(5)**, **(6)** and **(7)**. Plank decks must be laid if required. Insert standard decks as stiffeners every 2.00 m apart in the upward direction as building work progresses.

THE SCAFFOLDING DECK

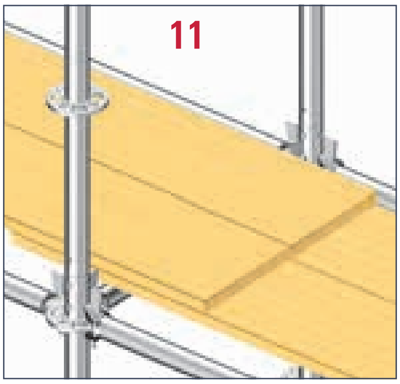
In the Layher system, depending on the type of application and load class, but also in accordance with your working requirements, choose from decks made of hot-dip galvanized steel, aluminium, solid wood or an aluminium frame with laminated wooden board. Common to all Layher decks is the horizontally bracing effect in the scaffolding, longitudinal ledgers can be omitted, see **(9)**.





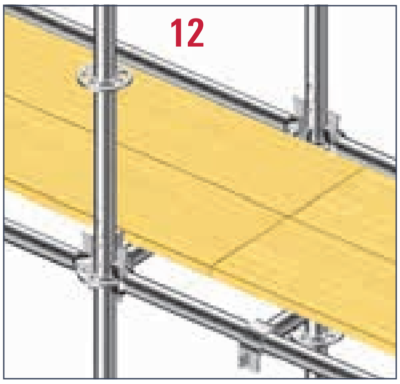
Standard decks

(9) and **(10)** Suspend the decks in the U-ledger and secure them with U-lift-off preventer. Deck selected depending on loading and column spacing.



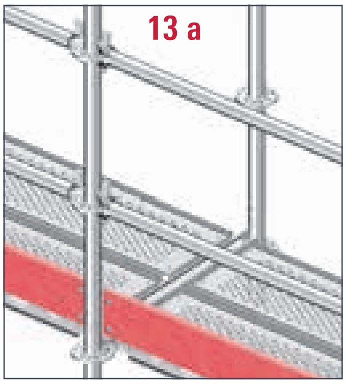
(11) Overlapping on transoms

Plank decking according to Table 2, DIN 4420, T. 3

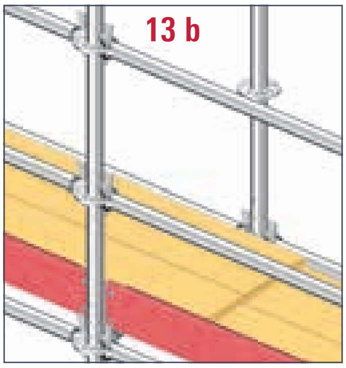


(12) Without height offset, butt-joined on support ledger with due consideration of support points. (Distance of ledger – support ledger ≤ 0.50 m, or according to local regulations.) The planks are secured by the customer.

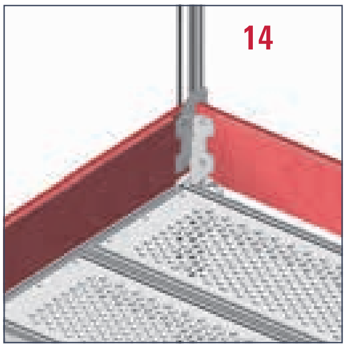
THE 3-PIECE SIDE PROTECTION.



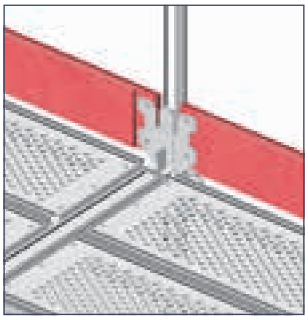
(13 a) Install 1 ledger at 0.50 m as an intermediate rail and at 1.00 m as a guardrail, as well as a toe board in the scaffolding bay and at the ends.



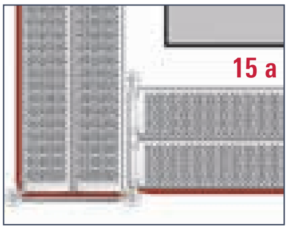
(13 b) In the case of plank decking with covering, and with a guard-rail height of less than 95 cm, install another ledger at a height of 1.50 m.



(14) Place longitudinal and end toe boards behind wedges.

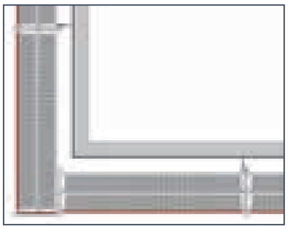


THE PRACTICAL CORNER DESIGN



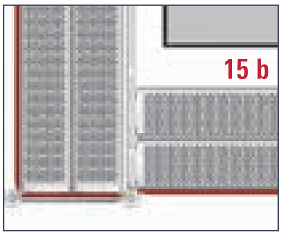
With standard deck

(15 a) Construct a corner with 3 standards as illustrated.

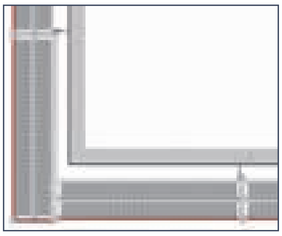


Sketch showing the principle

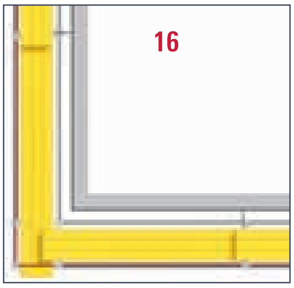
or



(15 b) at every deck level install a U-bridging ledger as illustrated, hang the decks in place and secure them with a suitable U-lift-off preventer.



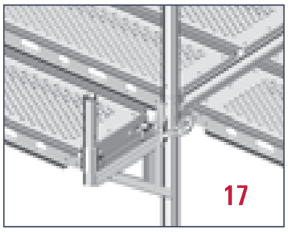
Sketch showing the principle



With plank decking

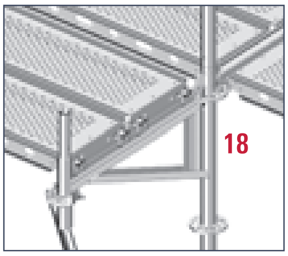
(16) Construct a corner with 4 standards as illustrated.

THE FURTHER EXPANSION

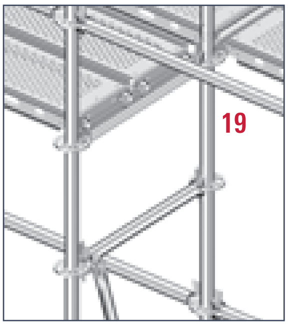


Bracket widening

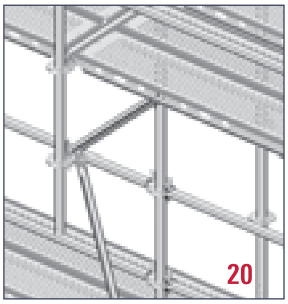
(17) 0.30 m bracket widening with Allround brackets + series decks or scaffolding plank.



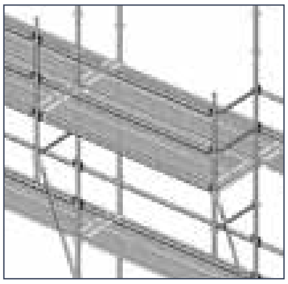
(18) Bracket widening 0.70 m with Allround bracket + bracket brace.



(19) Diagonal brace connection, as illustrated in the last bay of the projection.

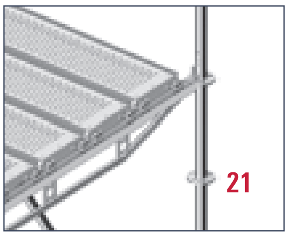


(20) The support is provided in the intermediate bays of the projection by means of an Allround diagonal brace 0.50 m lower, or by connecting a bracket brace.



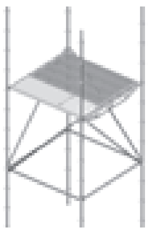
Secure the Layher bracket decks with U-lift-off preventer to prevent unwanted liftin, see also Figure **(9)**.

Illustration making clear the applications, Figs. **(19)** and **(20)**

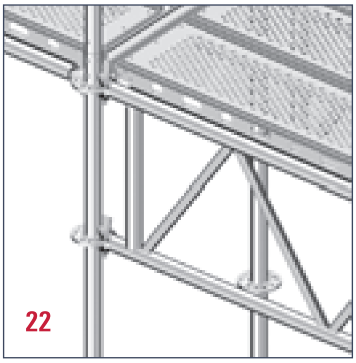


Trestle and birdcage scaffolding

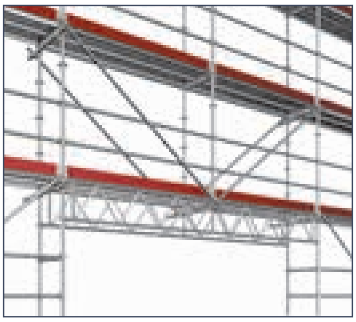
(21) Use of U-bridging ledgers and U-lattice beams (see page 13).



Allround bridges
A bridge of up to 4.14 m can be built using steel or aluminium decks with appropriate guardrails and toe boards.
Bridging of gate entrances, building projections, balconies or openings using Allround lattice beams (see bridging variant B) or strengthening with vertical diagonal braces (see bridging variant A).



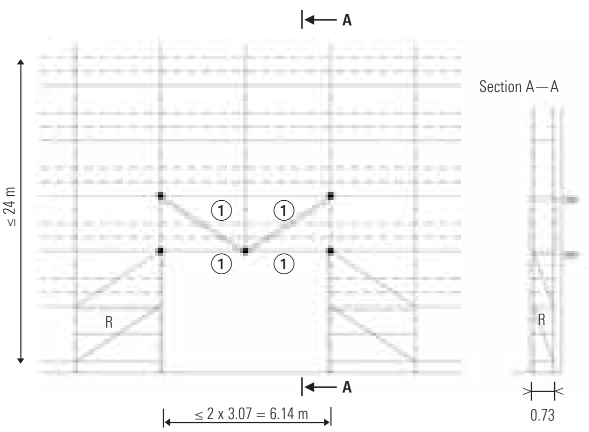
(22) Allround lattice beams: top chord and bottom chord
to be connected with wedge-head to the rosette.
For bridges according to bridging variant B.



For higher loads:
strengthening the lattice beam with vertical diagonal braces.

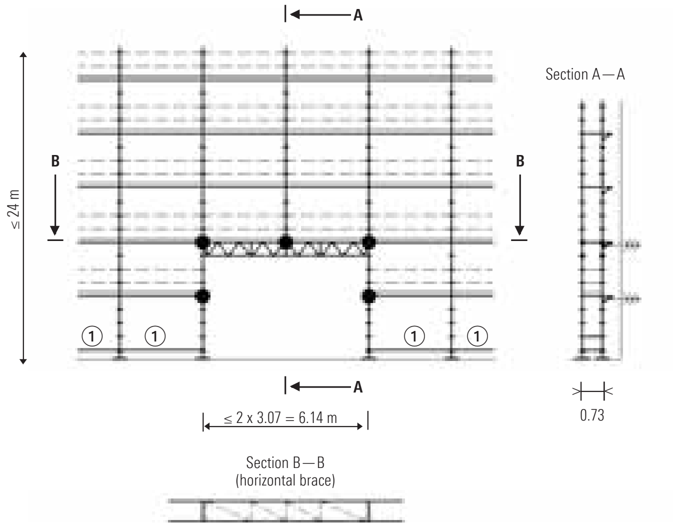
BRIDGING VARIANT A

for load class 3
(Scaffolding width: 0.73 m) up to 24.00 m height



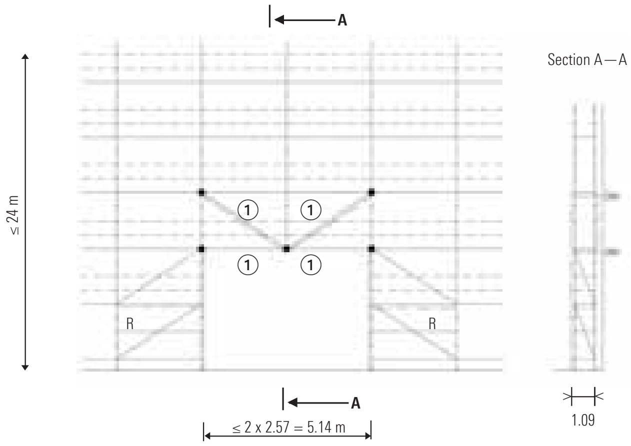
BRIDGING VARIANT B

for load class 3
(Scaffolding width: 0.73 m) up to 24.00 m height



BRIDGING VARIANT A

for load class 4
(Scaffolding width: 1.09 m) up to 24.00 m height, applies only to K 2000+ diagonal braces



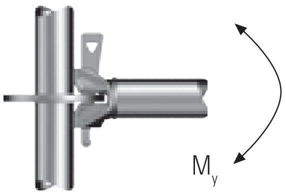
● Anchoring point
R Scaffolding tube dia. 48.30 x 3.20 as horizontal-diagonal brace
① Ledger inside and outside
Position of the vertical diagonal braces:
_______ outside
– – – – inside

CONNECTION VALUES

LOAD-BEARING CAPACITIES* IN ALLROUND LEDGER AND DIAGONAL BRACE CONNECTION

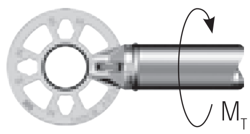
Z-8.22-939: LIGHTWEIGHT

Bending moment



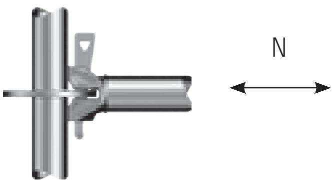
Bending moment
$M_{y, Rd} = \pm 120.0$ kNcm

Torsional moment



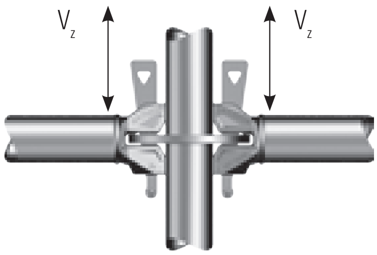
$M_{T, Rd} = \pm 52.5$ kNcm

Normal force



$N_{Rd} = \pm 35.1$ kN

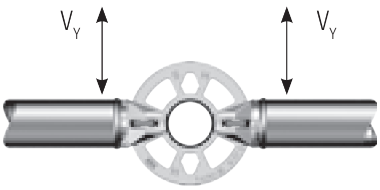
Vertical lateral force



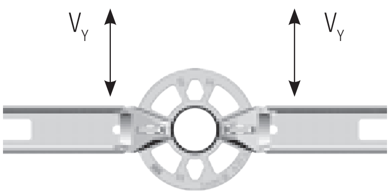
Vertical lateral force, single connection
Vz, Rd = ± 31.7 kN

Vertical lateral force per rosette
∑ Vz, Rd = ± 117.0 kN

Horizontal lateral force

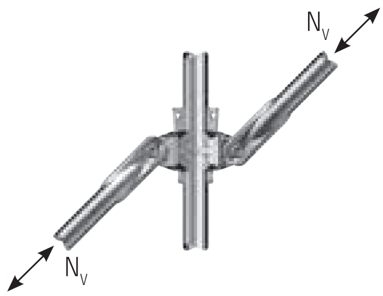


O-ledger: $V_{y, Rd} = \pm 16.6$ kN



U-ledger: $V_{y, Rd} = \pm 16.6$ kN

Normal force, diagonal braces



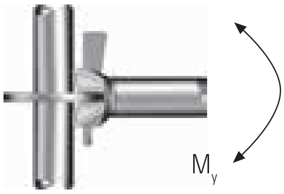
Load-bearing capacities of the **LW** vertical diagonal braces for bay height 2.00 m:

	Pressure								Tension
Bay length [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07	4.14	all bay length
$N_{V,Rd}$ [kN]	-16.1	-16.8	-15.5	-14.8	-12.4	-10.2	-8.3	-5.3	+17.9

LW components can be mixed with components from the K2000+, Variant II and Variant I versions.
See approval Z-8.22-949 for load-bearing capacities.

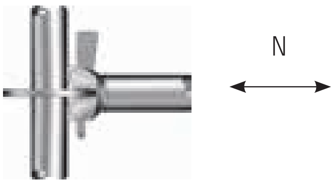
Z-8.22-64: K 2000+

Bending moment



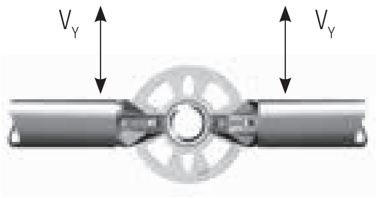
Bending moment
$M_{y, Rd} = \pm 101.0$ kNcm

Normal force

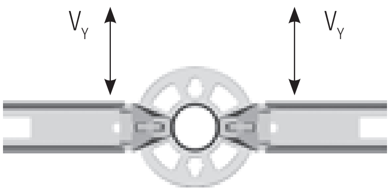


$N_{Rd} = \pm 31.0$ kN

Horizontal lateral force

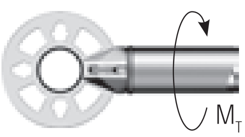


O-ledger: $V_{y, Rd} = \pm 10.0$ kN



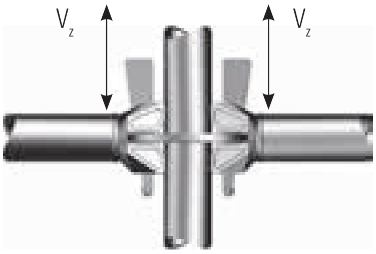
U-ledger: $V_{y, Rd} = \pm 5.9$ kN

Torsional moment



$M_{T, Rd} = \pm 52.5$ kNcm

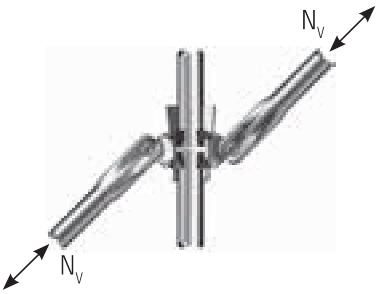
Vertical lateral force



Vertical lateral force, single connection
Vz, Rd = ± 26.4 kN

Vertical lateral force per rosette
∑ Vz, Rd = ± 105.6 kN

Normal force, diagonal braces



Load-bearing capacities of the vertical diagonal braces for bay height 2.00 m for **K 2000+:**

	Pressure								Tension
Bay length [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07	4.14	all bay lenth
$N_{V,Rd}$ [kN]	-16.1	-16.8	-15.5	-14.8	-12.4	-10.2	-8.3	-5.3	+17.9

K 2000+ components can be mixed with components from the LW, Variant II and Variant I versions. See the approvals Z-8.22-64 and Z-8.22-949 for load-bearing capacities.

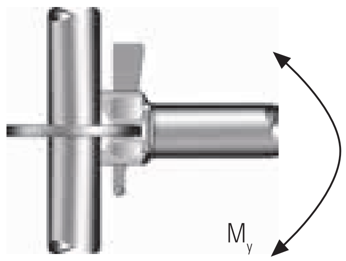
Rd = stress capacity,
(incorporates part safety coefficient γM)

*"Permissible loads" or "working loads" are obtained by dividing the load-bearing capacity by 1.5 (= γF)

Z-8.22-64: VARIANT II

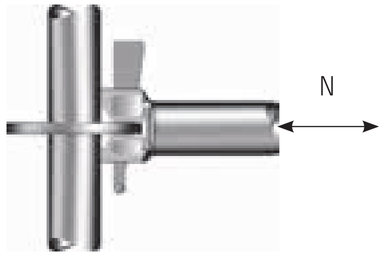
(vertical standards, ledgers and diagonal braces of earlier construction types)

Bending moment



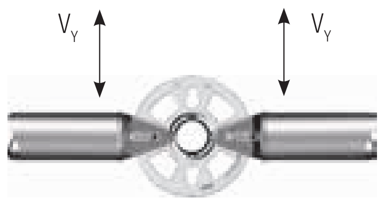
Bending moment
$M_{y,\,Rd} = \pm\ 68.0$ kNcm

Normal force



$N_{Rd} = \pm\ 22.7$ kN

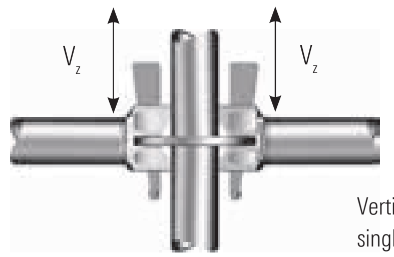
Horizontal lateral force



O-ledger: $V_{y,\,Rd} = \pm\ 6.7$ kN
U-ledger: $V_{y,\,Rd} = \pm\ 5.9$ kN

Rd = stress capacity,
(incorporates part safety coefficient γ_M)

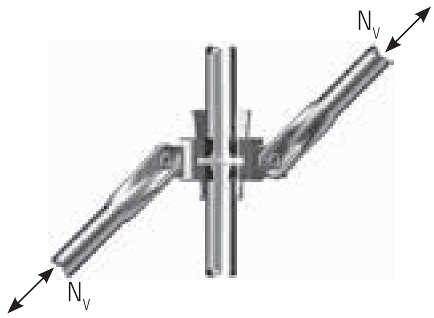
Vertical lateral force



Vertical lateral force, single connection
Vz, Rd = ± 17.4 kN

Vertical lateral force per rosette
$\sum$ Vz, Rd = ± 69.5 kN

Normal force, diagonal braces



Load-bearing capacities of the vertical diagonal braces for bay height 2.00 m for **Variant II:**

	Pressure								Tension
Bay length [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07	4.14	all bay lengths
$N_{V,Rd}$ [kN]	-8.4	-8.4	-8.4	-8.4	-8.4	-8.4	-8.4	-5.3	+8.4

Variant II components can be mixed with components from the LW, K 2000+ and Variant I versions. See the approvals Z-8.22-64 and Z-8.22-949 for load-bearing capacities.
"Permissible loads" or "working loads" are obtained by dividing the load-bearing capacity by 1.55 (= γ_F)

LOADING CAPACITY TABLES

ALLROUND STEEL, ALL THE GIVEN LOADS ARE WORKING LOADS.

LIGHTWEIGHT

on Allround Lightweight standards

Tab. Allround O-ledger LW							
Ledger length (system dimension) [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	29.2	14.1	8.8	7.0	4.1	2.7	1.9
Individual load (P) in bay centre [kN]	10.1	7.1	5.7	5.1	4.0	3.3	2.7

LIGHTWEIGHT

on K 2000+ standards

Tab. 2 Load-bearing capacity of O-ledger LW							
Ledger length (system dimension) [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	29.2	14.1	8.8	7.0	4.1	2.3	1.5
Individual load (P) in bay centre [kN]	10.1	7.1	5.7	5.1	4.0	3.3	2.7

K 2000+
on K 2000+ standards

Tab. 3 Load-bearing capacity of O-ledger K 2000+							
Ledger length (system dimension) [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	22.1	10.4	6.5	5.3	3.1	2.1	1.5
Individual load (P) in bay centre [kN]	7.4	5.2	4.2	3.8	3.0	2.4	2.1

Tab. 4 Load-bearing capacity of diagonal braces, LW H = 2.00 m								
Bay length [m]	Load-bearing capacity perm. D [kN]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Diagonal brace dia. 48 mm		+11.9 - 10.7	+11.9 - 11.2	+11.9 - 10.3	+11.9 - 9.9	+11.9 - 8.3	+11.9 - 6.8	+11.9 - 5.5

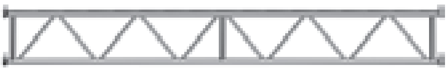
Tab. 5 Load-bearing capacity of diag. braces, K 2000+ H = 2.00 m								
Bay length [m]	Load-bearing capacity perm. D [kN]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Diagonal brace dia. 48 mm		+11.9 - 10.7	+11.9 - 11.2	+11.9 - 10.3	+11.9 - 9.9	+11.9 - 8.3	+11.9 - 6.8	+11.9 - 5.5

VARIANT II
at Variant II standards

Tab. 6 Load-bearing capacity of O-ledger Variant II							
Ledger length (system dimension) [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	22.1	8.8	4.6	3.5	1.8	1.1	0.7
Individual load (P) in bay centre [kN]	7.4	5.2	4.1	3.5	2.4	1.8	1.4

Tab. 7 Load-bearing capacity of diag.l braces, Variant II H = 2.00 m								
Bay length [m]	Load-bearing capacity perm. D [kN]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Diagonal brace dia. 48 mm		± 5.6	± 5.6	± 5.6	± 5.6	± 5.6	± 5.6	± 5.6

K 2000+
on K 2000+ standards



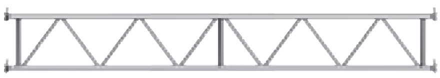
Tab. 8 Load-bearing capacity of U-lattice beams, K 2000+						
Beam length [m]	2.07	2.57	3.07	4.14	5.14	6.14
Evenly distributed line load (q) [kN/m]*	17.3	12.5	10.2	7.3	5.2	4.3
Individual load (P) in bay centre [kN]*	25.1	26.6	8.2[1] / 19.5[2]	16.2	15.9	10.9

[1] Individual load exactly in the centre of the lattice beam (= between the two central posts)
[2] Individual load above one of the central posts

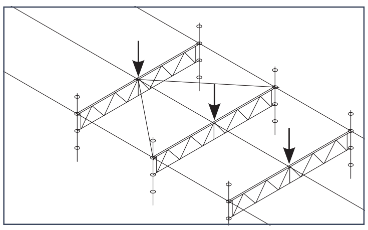
Tab. 9 Load-bearing capacity of U/O horizontal bridging ledger								
Ledger type [m]	U 1.57	U 2.07	U 2.57	U 3.07	O 1.57	O 2.07	O 2.57	O 3.07
Evenly distributed line load (q) [kN/m]	15.2	8.7	5.1	3.6	14.5	8.6	5.4	3.6
Individual load (P) in bay centre [kN]	8.0	6.9	5.3	5.2	10.6	6.9	4.6	3.6

* Lattice beam laid out over the whole area of the series decks, secured with lift-off preventer. Alternatively the top chords of the lattice beam – except for the U-lattice beam 2.57 m – can also be braced by a combination of tubes and couplers connected to the lattice beam posts. Example: Bracing the 4.14 metre lattice beam, see diagram below.

K 2000+
on K 2000+ standards



Tab. 10 Load-bearing capacity of O-lattice beams, K 2000+						
Beam length [m]	2.07	2.57	3.07	4.14	5.14	6.14
Evenly distributed line load (q) [kN/m]*	16.7	12.7	10.1	7.3	3.7	3.1
Individual load (P) in bay centre [kN]*	25.4	26.7	11.2[1] / 23.3[2]	25.9	13.9	9.4



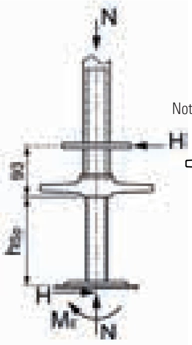
Bracing the 4.14 m lattice beam

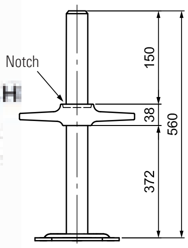
LIGHTWEIGHT, K 2000+ AND VARIANT II

Tab. 11 a Load-bearing capacity of U/O-ledger LW reinforced											
Ledger type	U-LW-V					O-LW-V					
Length [m]	1.40	1.57	2.07	2.57	3.07	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	17.1	17.7	13.0	8.4	5.0	21.4	17.1	17.7	13.0	8.4	5.0
Individual load (P) in bay centre [kN]	19.2	17.1	12.9	10.4	8.7	19.6	19.2	17.1	12.9	10.4	8.7

Tab. 11 b Load-bearing capacity of U-ledger (U), reinforced ledger (V), O-ledger (O)							
Ledger type and length [m]	U 0.73	U-V 1.09	U-V 1.40	O-V 1.09	O-V 1.29	U-LW 1.09	U-LW 1.40
Evenly distributed line load (q) [kN/m]	19.0	17.3	10.4	21.8	15.6	17.5	10.8
Individual load (P) in bay centre [kN]	6.1	8.8	6.8	11.0	9.3	8.6	6.4

BASE PLATE 60





Substitute cross-sectional values of the spindle

A = 3.84 cm²
W_{el} = 2.61 cm³
W_{pl} = 3.26 cm³
I = 3.74 cm⁴

Material: EN 10219-S235JRH
→ Rolled thread: $f_{y,k}$ = 280.0 N/mm²

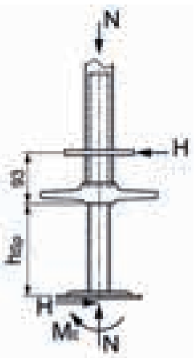
Tab. 12 Base plate loading

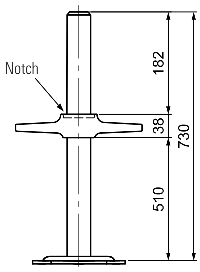
Spindle extension length h_{Sp} [cm]	Permissible vertical spindle load N [kN]* with simultaneous effect of a horizontal load H [kN]																										Perm. Horizontal load H [kN] if N = 0
	H = 0.0		H = 0.5		H = 1.0		H = 1.5		H = 2.0		H = 2.5		H = 3.0		H = 3.5		H = 4.0		H = 4.5		H = 5.0		H = 5.5		H = 6.0		
	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	
0	39	53	39	51	39	51	39	51	39	50	39	49	39	49	38	–	38	–	37	–	36	–	36	–	35	–	26.3
5	39	52	39	51	39	50	39	48	38	–	37	–	36	–	35	–	34	–	33	–	32	–	31	–	30	–	7.8
10	39	51	39	49	38	–	37	–	36	–	34	–	33	–	30	–	29	–	28	–	26	–	25	–	–	–	4.6
15	39	49	38	–	36	–	35	–	33	–	31	–	29	–	–	–	–	–	–	–	–	–	–	–	–	–	3.2
20	38	–	36	–	34	–	32	–	29	–	27	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.5
25	37	–	34	–	31	–	28	–	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0
30	35	–	31	–	27	–	21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.7
35	32	–	27	–	21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.5
37	30	–	25	–	17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.4

*The permissible vertical loads are calculated by application of the calculation model according to DIN EN 12811-1, para. 10.2.3.2. To obtain the bending stiffness of the upright tube, the internal force components from second-order theory and the maximum load-bearing capacity of the uprights, the following birdcage scaffolding with configuration dimension 2.57 x 2.57 m was considered:
2.00 m level height for compression forces in the standard $N_1 \leq 39$ kN
1.50 m level height for compression forces in the standard 39 kN $< N_2 \leq 54$ kN

(–) With this combination of spindle extension length and horizontal load, the bending stress capacity of the spindle is exceeded.

BASE PLATE 80 REINFORCED





Substitute cross-sectional values of the spindle

A = 4.71 cm²
W_{el} = 2.97 cm³
W_{pl} = 3.71 cm³
I = 4.29 cm⁴

Material: EN 10219-S235JRH
→ Rolled thread: $f_{y,k}$ = 280.0 N/mm²

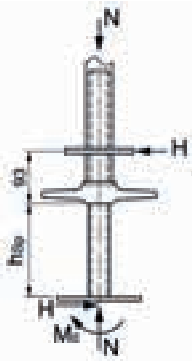
Tab. 13 Base plate loading

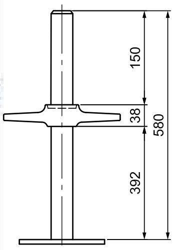
Spindle extension length h_{Sp} [cm]	Permissible vertical spindle load N [kN]* with simultaneous effect of a horizontal load H [kN]																																						Perm. Horizontal load H [kN] if N = 0
	H = 0			H = 0.5			H = 1.0			H = 1.5			H = 2.0			H = 2.5			H = 3.0			H = 3.5			H = 4.0			H = 4.5			H = 5.0			H = 5.5			H = 6.0			
	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	N_1	N_2	N_3	
0	39	54	69	39	54	69	39	54	68	39	54	68	39	53	–	39	53		39	53	–	39	52	–	38	–	–	38	–	–	38	–	–	38	–	–	38	–	–	30.0
5	39	54	68	39	53	–	39	53	–	39	52	–	38	–	–	38	–	–	38	–	–	37	–	–	37	–	–	37	–	–	35	–	–	35	–	–	34	–	–	8.9
10	39	53	–	39	52	–	38	–	–	38	–	–	38	–	–	38	–	–	36	–	–	35	–	–	34	–	–	32	–	–	29	–	–	29	–	–	–	–	–	5.2
15	39	53	–	38	–	–	38	–	–	37	–	–	36	–	–	35	–	–	33	–	–	31	–	–	29	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.7
20	38	–	–	38	–	–	37	–	–	36	–	–	33	–	–	31	–	–	28	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.8
25	38	–	–	37	–	–	35	–	–	33	–	–	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.3
30	37	–	–	36	–	–	33	–	–	28	–	–	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.0
35	36	–	–	33	–	–	27	–	–	17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.7
40	34	–	–	30	–	–	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.5
45	32	–	–	26	–	–	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.3
51	27	–	–	18	–	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.2

*The permissible vertical loads are calculated by application of the calculation model according to DIN EN 12811-1, para. 10.2.3.2. To obtain the bending stiffness of the upright tube, the internal force components from second-order theory and the maximum load-bearing capacity of the uprights, the following birdcage scaffolding with configuration dimension 2.57 x 2.57 m was considered:
2.00 m level height for compression forces in the standard $N_1 \leq 39$ kN
1.50 m level height for compression forces in the standard 39 kN $< N_2 \leq 54$ kN
1.00 m level height for compression forces in the standard 54 kN $< N_3 \leq 76$ kN

(–) With this combination of spindle extension length and horizontal load, the bending stress capacity of the spindle is exceeded.

BASE PLATE 60 SOLID





Substitute cross-sectional values of the spindle

A = 8.80 cm²
W_{el} = 3.84 cm³
W_{pl} = 4.79 cm³
I = 6.51 cm⁴

Material: EN 10025-2-S355J2
→ Rolled thread: $f_{y,k}$ = 360,0 N/mm²

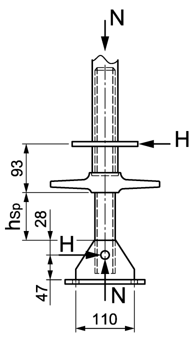
Tab. 14 Base plate loading

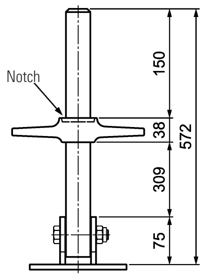
Spindle extension length h_{Sp} [cm]	Permissible vertical spindle load N [kN]* with simultaneous effect of a horizontal load H [kN]																										Perm. Horizontal load H [kN] if N = 0
	H = 0		H = 0.5		H = 1.0		H = 1.5		H = 2.0		H = 2.5		H = 3.0		H = 3.5		H = 4.0		H = 4.5		H = 5.0		H = 5.5		H = 6.0		
	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	
0	54	69	54	69	54	68	54	67	53	–	53	–	53	–	52	–	52	–	51	–	51	–	50	–	50	–	43.6
5	54	68	53	–	53	–	52	–	52	–	51	–	50	–	49	–	48	–	48	–	47	–	46	–	45	–	14.1
10	53	–	53	–	52	–	49	–	49	–	48	–	47	–	46	–	45	–	44	–	42	–	41	–	40	–	8.4
15	53	–	51	–	50	–	48	–	47	–	47	–	44	–	43	–	41	–	39	–	38	–	36	–	34	–	6.0
20	51	–	50	–	48	–	46	–	44	–	42	–	40	–	38	–	36	–	35	–	–	–	–	–	–	–	4.7
25	50	–	48	–	45	–	43	–	41	–	39	–	37	–	34	–	–	–	–	–	–	–	–	–	–	–	3.8
30	48	–	45	–	43	–	40	–	38	–	34	–	15	–		–	–	–	–	–	–	–	–	–	–	–	3.2
35	45	–	42	–	40	–	36	–	27	–	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.8
39	42	–	39	–	35	–	25	–	13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.5

*The permissible vertical loads are calculated by application of the calculation model according to DIN EN 12811-1, para. 10.2.3.2. To obtain the bending stiffness of the upright tube, the internal force components from second-order theory and the maximum load-bearing capacity of the uprights, the following birdcage scaffolding with configuration dimension 2.57 x 2.57 m was considered:
2.00 m level height for compression forces in the standard $N_1 \leq 39$ kN
1.50 m level height for compression forces in the standard 39 kN < $N_2 \leq 54$ kN

(–) With this combination of spindle extension length and horizontal load, the bending stress capacity of the spindle is exceeded.

BASE PLATE 60, SWIVELLING, REINFORCED





Substitute cross-sectional values of the spindle

A = 4.71 cm²
W_{el} = 2.97 cm³
W_{pl} = 3.71 cm³
I = 4.29 cm⁴

Material: EN 10219-S235JRH
→ Rolled thread: $f_{y,k}$ = 280.0 N/mm²

Tab. 15 Base plate loading

Spindle extension length h_{Sp} [cm]	Permissible vertical spindle load N [kN]* with simultaneous effect of a horizontal load H [kN]**																										Perm. Horizontal load H [kN] if N = 0
	H = 0		H = 0.5		H = 1.0		H = 1.5		H = 2.0		H = 2.5		H = 3.0		H = 3.5		H = 4.0		H = 4.5		H = 5.0		H = 5.5		H = 6.0		
	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	N_1	N_2	
0	39	44	38	44	38	44	37	44	37	44	36	44	36	44	35	44	35	44	34	44	34	44	33	41	32	38	14.3
5	38	44	37	44	37	44	36	44	35	44	34	43	33	39	31	36	28	–	25	–	21	–	16	–	11	–	6.7
10	37	44	36	44	35	43	33	38	29	38	25	–	20	–	14	–	8	–	–	–	–	–	–	–	–	–	4.3
15	36	44	33	40	29	34	25	–	19	–	12	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	3.2
20	33	39	28	32	23	–	17	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.5
25	29	–	23	–	17	–	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.1
30	25	–	19	–	12	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.8
31.5	23	–	17	–	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.7

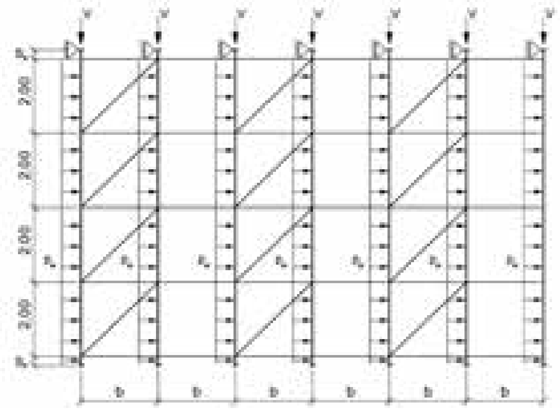
* The permissible vertical loads are calculated by application of the calculation model according to DIN EN 12811-1, para. 10.2.3.2. To obtain the bending stiffness of the upright tube, the internal force components from second-order theory and the maximum load-bearing capacity of the uprights, the following birdcage scaffolding with configuration dimension 2.57 x 2.57 m was considered:
2.00 m level height for compression forces in the standard $N_1 \leq 39$ kN
1.50 m level height for compression forces in the standard 39 kN < $N_2 \leq 54$ kN

** The vertical loads N and horizontal loads H act at the pivot bolt. The force components resulting from twisting the base plate are not considered.

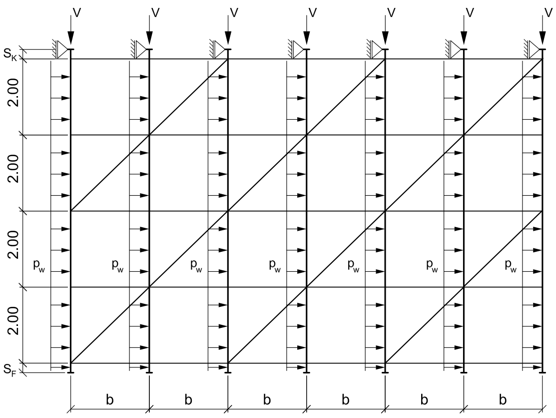
(–) With this combination of spindle extension length and horizontal load, the bending stress capacity of the spindle is exceeded.

K 2000+ – SCAFFOLDING ATTACHED TO THE TOP | BASE PLATE 60

Diagonal tower construction



or continuous



One diagonal brace for two bays.

s_F Spindle extension of the base plate [cm]

s_K Spindle extension of the head jack [cm]

$\mathbf{s_K = 2/3 * s_F}$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. $\mathbf{p_w = q * c_f * A}$
The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates.
The quantity of ballast must be determined.

(–) Failure of the standard or spindle due to horizontal force

You will find dimensioning aids for prefabricated formwork supports of wood for conventional ceiling formwork in the **instructions for assembly in use for the Layher TG 60 shoring**. That document also contains loading tables for the TG 60 shoring tower according to type testing TP-11-017.

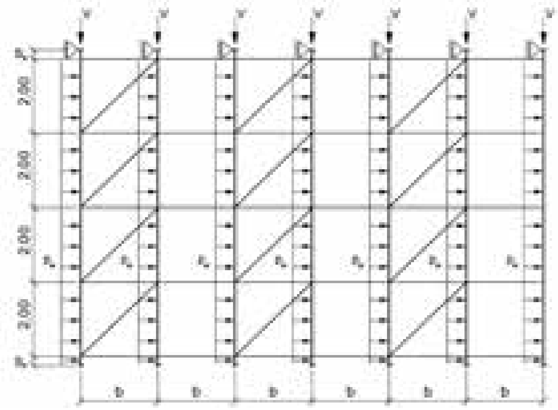
Tab. 16 Permissible loads in the standard

BASE PLATE 60		Permissible vertical loads in each standard in [kN] for a scaffolding attached above											
		$s_F \leq 15$ cm, $s_K \leq 10$ cm				$s_F \leq 25$ cm, $s_K \leq 16.70$ cm				$s_F \leq 37.20$ cm, $s_K \leq 24.80$ cm			
Width [m]	Height [m]	Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure			
		q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²
b = 0.73 m	3 x 2.00	26	22	20	18	23	18	15	12	19	13	10	6
	4 x 2.00	26	21	18	15	23	16	12	8	19	12	7	-
	5 x 2.00	25	19	15	10	21	14	9	-	18	10	-	-
	6 x 2.00	25	18	13	7	21	13	6	-	18	8	-	-
	7 x 2.00	25	16	10	-	21	11	-	-	18	5	-	-
	8 x 2.00	25	15	8	-	21	10	-	-	18	-	-	-
	9 x 2.00	25	12	-	-	21	7	-	-	18	-	-	-
	10 x 2.00	25	11	-	-	21	5	-	-	18	-	-	-
b = 1.09 m	3 x 2.00	26	23	21	19	23	18	16	13	19	14	11	7
	4 x 2.00	26	22	19	16	23	17	13	9	19	12	8	-
	5 x 2.00	26	21	17	13	22	15	11	6	18	10	1	-
	6 x 2.00	26	20	16	11	22	14	8	-	18	9	-	-
	7 x 2.00	25	18	13	-	22	12	-	-	18	7	-	-
	8 x 2.00	25	18	11	-	22	12	-	-	18	2	-	-
	9 x 2.00	25	15	8	-	22	9	-	-	18	-	-	-
	10 x 2.00	25	15	-	-	22	8	-	-	18	-	-	-
b = 1.57 m	3 x 2.00	26	23	22	20	23	19	16	14	19	14	11	7
	4 x 2.00	26	22	20	17	23	17	14	10	19	12	8	-
	5 x 2.00	26	21	18	14	22	16	11	7	18	11	5	-
	6 x 2.00	26	20	17	12	22	15	10	-	18	10	-	-
	7 x 2.00	25	19	14	9	22	13	6	-	18	7	-	-
	8 x 2.00	25	18	13	-	22	12	-	-	18	5	-	-
	9 x 2.00	25	16	10	-	22	10	-	-	18	-	-	-
	10 x 2.00	25	16	9	-	22	9	-	-	18	-	-	-
b = 2.07 m	3 x 2.00	26	23	22	20	23	19	16	14	19	14	11	7
	4 x 2.00	26	22	20	18	23	18	14	11	19	13	8	-
	5 x 2.00	25	21	18	15	22	16	12	7	18	11	5	-
	6 x 2.00	25	20	17	13	22	15	10	-	18	10	-	-
	7 x 2.00	25	19	15	11	22	13	7	-	18	7	-	-
	8 x 2.00	25	19	14	9	22	13	-	-	18	6	-	-
	9 x 2.00	25	17	12	-	22	11	-	-	18	-	-	-
	10 x 2.00	25	17	11	-	22	10	-	-	18	-	-	-
b = 2.57 m	3 x 2.00	26	24	22	20	23	19	17	14	19	14	11	7
	4 x 2.00	26	22	20	18	23	18	15	11	19	13	8	2
	5 x 2.00	25	21	18	15	22	16	12	7	18	11	5	-
	6 x 2.00	25	20	17	14	22	15	11	-	18	10	-	-
	7 x 2.00	25	19	15	12	22	14	7	-	18	8	-	-
	8 x 2.00	25	19	14	9	22	13	-	-	18	6	-	-
	9 x 2.00	25	18	12	-	22	12	-	-	18	2	-	-
	10 x 2.00	25	17	11	-	22	11	-	-	18	-	-	-
b = 3.07 m	3 x 2.00	26	24	22	20	23	19	17	14	19	14	11	7
	4 x 2.00	26	22	20	18	23	18	15	11	19	13	8	3
	5 x 2.00	25	21	18	15	22	16	12	8	18	11	5	-
	6 x 2.00	25	20	17	14	22	15	11	-	18	10	-	-
	7 x 2.00	25	19	15	12	22	14	8	-	18	8	-	-
	8 x 2.00	25	19	14	-	22	13	5	-	18	6	-	-
	9 x 2.00	25	18	12	-	22	12	-	-	18	2	-	-
	10 x 2.00	25	17	-	-	22	11	-	-	18	-	-	-

K 2000+ – SCAFFOLDING ATTACHED ABOVE | BASE PLATE 80 REINFORCED

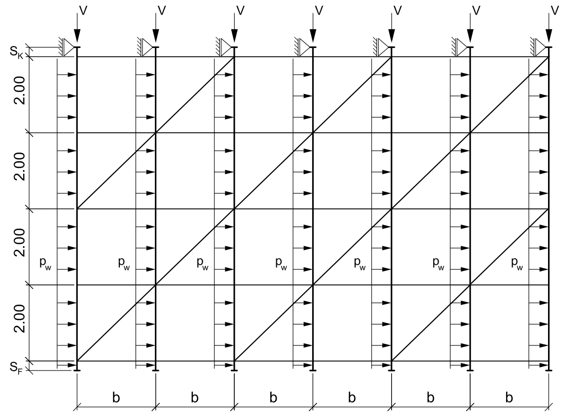
Tab. 17 Permissible loads in the standard													
BASE PLATE 80 REINFORCED		Permissible vertical loads in each standard in [kN] for a scaffolding attached above											
		$s_F \le 15$ cm, $s_K \le 10$ cm				$s_F \le 25$ cm, $s_K \le 16.70$ cm				$s_F \le 51$ cm, $s_K \le 34$ cm			
Width [m]	Height [m]	Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure			
		q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²
b = 0.73 m	3 x 2.00	29	25	23	20	26	21	18	14	19	12	8	1
	4 x 2.00	29	24	21	17	25	19	15	11	19	11	2	-
	5 x 2.00	28	22	18	14	25	17	12	7	18	8	-	-
	6 x 2.00	28	21	16	11	25	16	10	-	18	5	-	-
	7 x 2.00	28	19	13	5	24	13	6	-	18	-	-	-
	8 x 2.00	28	18	11	-	24	12	-	-	18	-	-	-
	9 x 2.00	28	15	8	-	24	10	-	-	17	-	-	-
	10 x 2.00	28	15	-	-	24	9	-	-	17	-	-	-
b = 1.09 m	3 x 2.00	30	26	24	22	26	21	18	16	19	13	8	3
	4 x 2.00	30	25	22	19	26	20	16	12	19	11	4	-
	5 x 2.00	29	24	20	16	25	18	13	8	18	8	-	-
	6 x 2.00	29	23	19	14	25	17	12	-	18	7	-	-
	7 x 2.00	29	21	15	10	25	15	8	-	18	2	-	-
	8 x 2.00	29	21	14	-	25	14	-	-	18	-	-	-
	9 x 2.00	29	18	11	-	25	12	-	-	18	-	-	-
	10 x 2.00	29	18	10	-	25	11	-	-	18	-	-	-
b = 1.57 m	3 x 2.00	30	26	24	22	26	22	19	16	19	13	8	3
	4 x 2.00	30	25	23	20	26	20	17	13	19	11	5	-
	5 x 2.00	29	24	21	17	25	18	14	10	18	9	-	-
	6 x 2.00	29	23	20	16	25	17	12	6	18	7	-	-
	7 x 2.00	29	22	17	12	25	16	10	-	18	3	-	-
	8 x 2.00	29	21	16	10	25	15	8	-	18	-	-	-
	9 x 2.00	28	20	13	-	24	13	-	-	17	-	-	-
	10 x 2.00	28	20	12	-	24	12	-	-	17	-	-	-
b = 2.07 m	3 x 2.00	30	27	25	23	26	22	19	16	19	12	8	3
	4 x 2.00	30	26	23	20	26	20	17	13	19	11	5	-
	5 x 2.00	29	24	21	18	25	19	15	10	18	8	-	-
	6 x 2.00	29	23	20	16	25	18	13	8	18	7	-	-
	7 x 2.00	28	22	18	13	24	16	10	-	18	5	-	-
	8 x 2.00	28	22	17	11	24	15	8	-	18	-	-	-
	9 x 2.00	28	20	14	8	24	13	-	-	17	-	-	-
	10 x 2.00	28	20	14	-	24	13	-	-	17	-	-	-
b = 2.57 m	3 x 2.00	30	27	25	23	26	22	19	16	19	13	8	3
	4 x 2.00	30	26	23	21	26	20	17	14	19	11	5	-
	5 x 2.00	29	24	21	18	25	19	15	11	18	8	-	-
	6 x 2.00	29	24	20	17	25	18	13	8	18	7	-	-
	7 x 2.00	28	22	18	14	24	16	11	-	18	5	-	-
	8 x 2.00	28	22	17	13	24	16	9	-	18	1	-	-
	9 x 2.00	28	21	15	-	24	14	-	-	17	-	-	-
	10 x 2.00	28	20	14	-	24	13	-	-	17	-	-	-
b = 3.07 m	3 x 2.00	29	27	25	23	26	22	19	16	19	13	8	3
	4 x 2.00	29	26	23	21	26	21	17	14	19	11	5	-
	5 x 2.00	28	24	21	18	25	19	15	11	18	8	-	-
	6 x 2.00	28	24	20	17	25	18	13	8	18	7	-	-
	7 x 2.00	28	22	19	14	24	16	11	-	18	5	-	-
	8 x 2.00	28	22	17	-	24	15	9	-	18	2	-	-
	9 x 2.00	28	21	15	-	24	14	6	-	18	-	-	-
	10 x 2.00	28	20	-	-	24	13	-	-	18	-	-	-

Diagonal tower construction



One diagonal brace for two bays.

or continuous



One diagonal brace for two bays.

s_F Spindle extension of the base plate [cm]

s_K Spindle extension of the head jack [cm]

$\mathbf{s_K = 2/3 * s_F}$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. $\mathbf{p_w = q * c_f * A}$

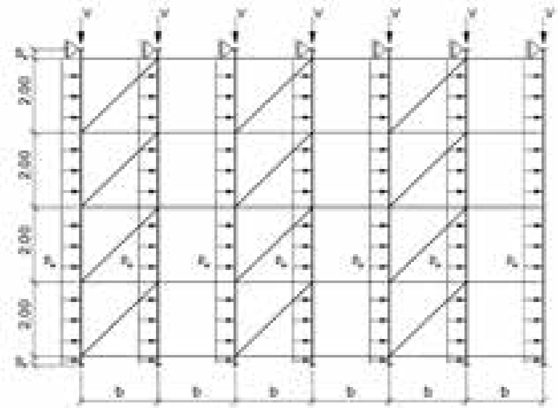
The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates.

The quantity of ballast must be determined.

(–) Failure of the standard or spindle due to horizontal force

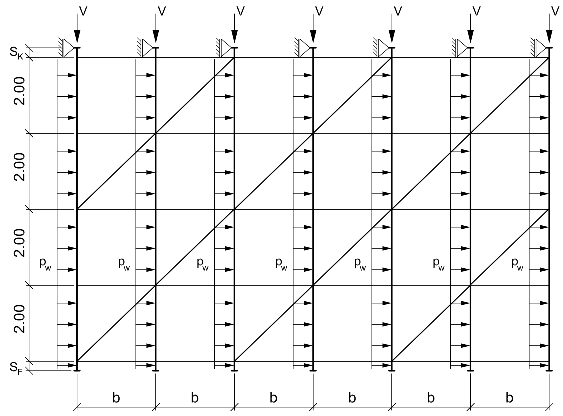
K 2000+ – SCAFFOLDING ATTACHED ABOVE | BASE PLATE 60 SOLID

Diagonal tower construction



One diagonal brace for two bays.

or continuous



One diagonal brace for two bays.

Tab. 18 Permissible loads in the standard

BASE PLATE 60 SOLID		Permissible vertical loads in each standard in [kN] for a scaffolding attached above											
		$s_F \le 15$ cm, $s_K \le 10$ cm				$s_F \le 25$ cm, $s_K \le 16.70$ cm				$s_F \le 39.20$ cm, $s_K \le 26.10$ cm			
Width [m]	Height [m]	Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure			
		q = 0.0 kN/m^2	q = 0.5 kN/m^2	q = 0.8 kN/m^2	q = 1.1 kN/m^2	q = 0.0 kN/m^2	q = 0.5 kN/m^2	q = 0.8 kN/m^2	q = 1.1 kN/m^2	q = 0.0 kN/m^2	q = 0.5 kN/m^2	q = 0.8 kN/m^2	q = 1.1 kN/m^2
b = 0.73 m	3 x 2.00	32	27	24	22	30	25	22	18	26	21	17	13
	4 x 2.00	32	25	21	18	30	23	19	14	26	19	14	10
	5 x 2.00	30	23	19	14	28	21	16	10	25	16	11	-
	6 x 2.00	30	22	16	10	28	19	13	7	25	15	6	-
	7 x 2.00	30	20	13	6	28	16	10	-	24	12	-	-
	8 x 2.00	30	18	11	-	28	15	7	-	24	11	-	-
	9 x 2.00	30	15	5	-	28	12	-	-	24	9	-	-
	10 x 2.00	30	14	1	-	28	11	-	-	24	7	-	-
b = 1.09 m	3 x 2.00	33	29	27	24	31	26	23	21	27	22	19	15
	4 x 2.00	33	28	25	21	31	25	21	18	27	21	16	12
	5 x 2.00	31	26	22	17	29	23	18	13	26	18	13	2
	6 x 2.00	31	25	20	15	29	22	16	10	26	16	11	-
	7 x 2.00	31	23	17	10	29	19	12	5	25	15	3	-
	8 x 2.00	31	23	15	7	29	19	10	-	25	14	-	-
	9 x 2.00	31	20	11	1	28	16	7	-	25	12	-	-
	10 x 2.00	31	20	9	-	28	16	-	-	25	10	-	-
b = 1.57 m	3 x 2.00	33	29	27	25	31	27	24	22	27	22	19	16
	4 x 2.00	33	28	25	22	31	25	22	19	27	21	17	12
	5 x 2.00	31	27	23	19	29	23	19	15	26	19	14	5
	6 x 2.00	31	26	22	17	29	23	17	13	26	17	12	-
	7 x 2.00	31	24	20	13	29	21	15	8	26	15	5	-
	8 x 2.00	31	24	17	10	29	20	13	-	25	14	-	-
	9 x 2.00	31	22	15	4	29	19	9	-	25	13	-	-
	10 x 2.00	31	22	13	1	29	18	7	-	25	12	-	-
b = 2.07 m	3 x 2.00	33	30	28	25	31	27	24	22	27	22	19	16
	4 x 2.00	33	29	27	24	31	26	22	19	27	21	17	13
	5 x 2.00	31	27	24	21	29	23	19	16	26	19	14	8
	6 x 2.00	31	26	22	19	29	23	18	13	26	18	12	-
	7 x 2.00	31	24	20	14	29	21	16	9	25	16	7	-
	8 x 2.00	31	24	18	12	29	20	14	-	25	15	-	-
	9 x 2.00	31	23	16	9	28	19	11	-	25	13	-	-
	10 x 2.00	31	22	15	-	28	18	9	-	25	12	-	-
b = 2.57 m	3 x 2.00	33	30	28	26	31	27	25	22	27	22	19	16
	4 x 2.00	33	29	27	24	31	26	23	20	27	21	17	13
	5 x 2.00	31	27	24	21	29	23	21	17	26	19	14	8
	6 x 2.00	31	26	22	19	29	23	18	14	26	18	12	-
	7 x 2.00	31	24	20	15	29	21	16	10	25	16	9	-
	8 x 2.00	31	24	19	13	29	20	14	-	25	15	-	-
	9 x 2.00	31	23	17	-	28	19	12	-	25	14	-	-
	10 x 2.00	31	22	16	-	28	18	10	-	25	13	-	-
b = 3.07 m	3 x 2.00	33	30	28	26	31	27	25	22	27	22	19	16
	4 x 2.00	33	29	27	24	31	26	23	20	27	21	17	13
	5 x 2.00	31	27	24	21	29	23	21	17	26	19	13	9
	6 x 2.00	31	26	22	19	29	23	18	14	26	18	12	-
	7 x 2.00	31	24	20	15	29	21	16	10	25	16	10	-
	8 x 2.00	31	24	19	-	29	20	14	-	25	15	3	-
	9 x 2.00	30	23	17	-	28	19	12	-	25	14	-	-
	10 x 2.00	30	22	-	-	28	18	-	-	25	13	-	-

s_F Spindle extension of the base plate [cm]
s_K Spindle extension of the head jack [cm]
$\mathbf{s_K = 2/3 * s_F}$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. $\mathbf{p_w = q * c_f * A}$
The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates. The quantity of ballast must be determined.

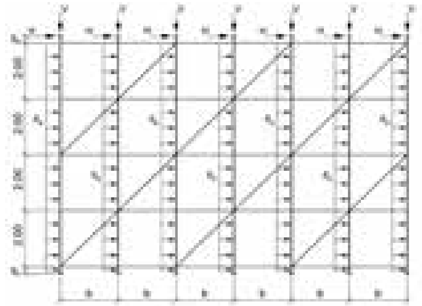
(–) Failure of the standard or spindle due to horizontal force

K 2000+ – FREE-STANDING SCAFFOLDING | BASE PLATE 60

Tab. 19 Permissible loads in the standard

BASE PLATE 60			Permissible vertical loads in each standard in [kN] for a free-standing scaffolding																	
			H = 0.0 kN						H = 0.2 kN						H = 0.3 kN					
			$s_F \le 15$ cm, $s_K \le 10$ cm			$s_F \le 25$ cm, $s_K \le 16.70$ cm			$s_F \le 15$ cm, $s_K \le 10$ cm			$s_F \le 25$ cm, $s_K \le 16.70$ cm			$s_F \le 15$ cm, $s_K \le 10$ cm			$s_F \le 25$ cm, $s_K \le 16.70$ cm		
Width [m]	Height [m]		Dynamic wind pressure			Dynamic wind pressure			Dynamic wind pressure			Dynamic wind pressure			Dynamic wind pressure			Dynamic wind pressure		
			q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²
b = 1.09 m	3 x 2.00	max	27	20	15	23	16	-	26	18	13	22	13	-	24	16	-	21	9	-
		min	0	2	3	0	2	-	1	3	4	1	3	-	1	3	-	2	3	-
	4 x 2.00	max	28	17	-	25	10	-	26	15	-	23	-	-	24	13	-	21	-	-
		min	0	3	-	0	3	-	1	4	-	1	-	-	2	5	-	2	-	-
	5 x 2.00	max	26	13	-	24	-	-	24	9	-	22	-	-	22	-	-	20	-	-
		min	0	5	-	0	-	-	1	6	-	1	-	-	2	-	-	2	-	-
	6 x 2.00	max	26	-	-	24	-	-	24	-	-	22	-	-	22	-	-	19	-	-
		min	0	-	-	0	-	-	2	-	-	2	-	-	3	-	-	3	-	-
	7 x 2.00	max	25	-	-	23	-	-	23	-	-	20	-	-	20	-	-	18	-	-
		min	0	-	-	0	-	-	2	-	-	2	-	-	3	-	-	3	-	-
b = 1.57 m	3 x 2.00	max	29	23	18	25	16	7	28	21	16	23	14	-	26	19	14	22	12	-
		min	0	2	2	0	2	6	1	2	3	1	2	-	1	2	3	1	2	-
	4 x 2.00	max	29	20	13	24	13	-	28	18	-	23	10	-	26	17	-	22	-	-
		min	0	2	5	0	2	-	1	3	-	1	3	-	1	2	-	1	-	-
	5 x 2.00	max	28	16	-	24	7	-	27	14	-	23	-	-	25	13	-	21	-	-
		min	0	3	-	0	5	-	1	4	-	1	-	-	2	4	-	2	-	-
	6 x 2.00	max	28	13	-	24	-	-	27	11	-	23	-	-	25	-	-	21	-	-
		min	0	4	-	0	-	-	1	5	-	1	-	-	2	-	-	2	-	-
	7 x 2.00	max	27	-	-	24	-	-	25	-	-	22	-	-	23	-	-	20	-	-
		min	0	-	-	0	-	-	1	-	-	1	-	-	2	-	-	2	-	-
b = 2.07 m	3 x 2.00	max	29	24	19	24	17	-	28	23	18	23	15	-	26	21	16	21	13	-
		min	0	1	2	0	1	-	1	2	2	1	2	-	1	2	2	1	2	-
	4 x 2.00	max	29	22	15	24	14	-	28	20	13	23	12	-	26	19	11	21	9	-
		min	0	2	3	0	2	-	1	2	3	1	2	-	1	2	3	1	3	-
	5 x 2.00	max	29	19	-	24	9	-	28	17	-	23	-	-	26	15	-	21	-	-
		min	0	2	-	0	2	-	1	3	-	1	-	-	1	3	-	1	-	-
	6 x 2.00	max	29	16	-	24	-	-	28	14	-	23	-	-	26	13	-	21	-	-
		min	0	3	-	0	-	-	1	4	-	1	-	-	1	4	-	2	-	-
	7 x 2.00	max	29	12	-	24	-	-	27	-	-	23	-	-	25	-	-	21	-	-
		min	0	4	-	0	-	-	1	-	-	1	-	-	2	-	-	2	-	-
b = 2.57 m	3 x 2.00	max	29	25	20	24	18	10	28	24	19	23	16	-	26	22	17	21	14	-
		min	0	1	2	0	1	2	1	1	2	1	1	-	1	2	2	1	2	-
	4 x 2.00	max	29	23	16	24	15	-	28	21	14	23	13	-	26	20	13	21	10	-
		min	0	2	2	0	2	-	1	2	2	1	2	-	1	2	3	1	2	-
	5 x 2.00	max	29	20	9	24	11	-	28	19	-	23	7	-	26	17	-	21	-	-
		min	0	2	6	0	2	-	1	2	-	1	2	-	1	3	-	1	-	-
	6 x 2.00	max	29	18	-	24	-	-	28	16	-	23	-	-	26	15	-	21	-	-
		min	0	3	-	0	-	-	1	3	-	1	-	-	1	3	-	1	-	-
	7 x 2.00	max	29	15	-	24	-	-	27	13	-	23	-	-	26	-	-	21	-	-
		min	0	3	-	0	-	-	1	4	-	1	-	-	1	-	-	1	-	-
b = 3.07 m	3 x 2.00	max	29	25	21	24	18	11	28	24	19	23	16	-	26	23	18	21	15	-
		min	0	1	1	0	1	1	1	1	2	1	1	-	1	1	2	1	1	-
	4 x 2.00	max	28	23	15	23	15	-	28	22	8	23	13	-	26	21	-	21	11	-
		min	0	1	2	0	1	-	1	2	2	1	2	-	1	2	-	1	2	-
	5 x 2.00	max	28	21	-	23	12	-	28	20	-	23	8	-	26	16	-	21	-	-
		min	0	2	-	0	2	-	1	2	-	1	2	-	1	2	-	1	-	-
	6 x 2.00	max	28	18	-	23	-	-	27	12	-	22	-	-	26	-	-	21	-	-
		min	0	2	-	0	-	-	1	3	-	1	-	-	1	-	-	1	-	-
	7 x 2.00	max	28	8	-	23	-	-	27	15	-	22	-	-	26	-	-	21	-	-
		min	0	3	-	0	-	-	1	-	-	1	-	-	1	-	-	1	-	-

Diagonal tower construction



One diagonal brace for two bays.

s_F Spindle extension of the base plate [cm]

s_K Spindle extension of the head jack [cm]

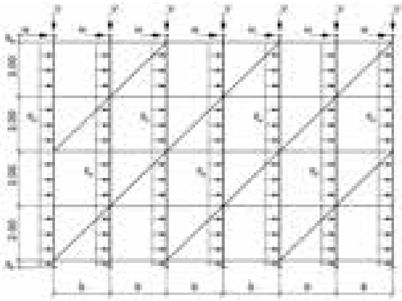
$s_K = 2/3 * s_F$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. $p_w = q * c_f * A$ The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates. The quantity of ballast must be determined.

(–) Failure of the standard or spindle due to horizontal force

K 2000+ – FREE-STANDING SCAFFOLDING | BASE PLATE 80 REINFORCED

Diagonal tower construction



One diagonal brace for two bays.

Tab. 20 Permissible loads in the standard

BASE PLATE 80 REINFORCED			**Permissible vertical loads in each standard in [kN] for a free-standing scaffolding**																	
			H = 0.0 kN						**H = 0.2 kN**						**H = 0.3 kN**					
			$s_F \le 15$ cm $s_K \le 10$ cm			**$s_F \le 25$ cm $s_K \le 16.70$ cm**			**$s_F \le 15$ cm $s_K \le 10$ cm**			**$s_F \le 25$ cm $s_K \le 16.70$ cm**			**$s_F \le 15$ cm $s_K \le 10$ cm**			**$s_F \le 25$ cm $s_K \le 16.70$ cm**		
Width [m]	**Height [m]**		**Dynamic wind pressure**			**Dynamic wind pressure**			**Dynamic wind pressure**			**Dynamic wind pressure**			**Dynamic wind pressure**			**Dynamic wind pressure**		
			q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²
b = 0.73 m	3 x 2.00	max	26	20	11	23	16	-	24	18	-	22	11	-	23	15	-	20	-	-
		min	0	3	6	0	3	-	1	4	-	1	4	-	2	5	-	2	-	-
	4 x 2.00	max	26	16	-	23	7	-	24	12	-	22	-	-	23	-	-	20	-	-
		min	0	5	-	0	7	-	2	8	-	2	-	-	3	-	-	3	-	-
	5 x 2.00	max	24	-	-	23	-	-	22	-	-	22	-	-	21	-	-	19	-	-
		min	0	-	-	0	-	-	2	-	-	2	-	-	3	-	-	3	-	-
	6 x 2.00	max	23	-	-	23	-	-	22	-	-	21	-	-	20	-	-	19	-	-
		min	0	-	-	0	-	-	2	-	-	2	-	-	4	-	-	4	-	-
	7 x 2.00	max	23	-	-	23	-	-	21	-	-	20	-	-	18	-	-	17	-	-
		min	0	-	-	0	-	-	3	-	-	3	-	-	5	-	-	5	-	-
b = 1.09 m	3 x 2.00	max	29	24	19	25	19	8	28	22	17	24	17	-	27	20	14	23	13	-
		min	0	2	3	0	2	7	1	3	4	1	3	-	1	3	6	2	3	-
	4 x 2.00	max	29	20	-	25	15	-	28	19	-	24	11	-	27	17	-	23	-	-
		min	0	3	-	0	3	-	1	4	-	1	5	-	2	5	-	2	-	-
	5 x 2.00	max	29	16	-	25	-	-	27	14	-	24	-	-	25	-	-	23	-	-
		min	0	5	-	0	-	-	1	6	-	1	-	-	2	-	-	2	-	-
	6 x 2.00	max	29	13	-	25	-	-	27	-	-	24	-	-	25	-	-	23	-	-
		min	0	9	-	0	-	-	2	-	-	2	-	-	3	-	-	3	-	-
	7 x 2.00	max	28	-	-	25	-	-	26	-	-	24	-	-	24	-	-	21	-	-
		min	0	-	-	0	-	-	2	-	-	2	-	-	3	-	-	3	-	-
b = 1.57 m	3 x 2.00	max	31	26	22	27	21	12	30	25	20	25	19	8	29	23	18	24	16	-
		min	0	2	2	0	2	2	1	2	3	1	2	8	1	2	3	1	2	-
	4 x 2.00	max	31	24	17	27	17	-	30	22	14	25	14	-	29	20	11	24	11	-
		min	0	2	3	0	2	-	1	3	5	1	3	-	1	3	10	1	4	-
	5 x 2.00	max	31	20	-	26	12	-	30	18	-	25	7	-	28	16	-	24	-	-
		min	0	3	-	0	3	-	1	4	-	1	7	-	2	4	-	2	-	-
	6 x 2.00	max	31	17	-	26	-	-	30	15	-	25	-	-	28	16	-	24	-	-
		min	0	4	-	0	-	-	1	5	-	1	-	-	2	8	-	2	-	-
	7 x 2.00	max	30	13	-	26	-	-	29	-	-	25	-	-	27	-	-	24	-	-
		min	0	7	-	0	-	-	1	-	-	1	-	-	2	-	-	2	-	-
b = 2.07 m	3 x 2.00	max	31	28	24	27	22	14	30	26	22	26	20	11	30	25	20	24	18	-
		min	0	1	2	0	1	2	1	2	2	1	2	3	1	2	2	1	2	-
	4 x 2.00	max	30	26	19	26	18	-	30	24	17	25	16	-	30	23	15	24	14	-
		min	0	2	3	0	2	-	1	2	3	1	2	-	1	2	4	1	3	-
	5 x 2.00	max	30	22	13	26	15	-	30	21	-	25	11	-	29	19	-	24	-	-
		min	0	2	5	0	3	-	1	3	-	1	4	-	1	3	-	1	-	-
	6 x 2.00	max	30	20	-	26	9	-	30	18	-	25	-	-	29	17	-	24	-	-
		min	0	3	-	0	7	-	1	4	-	1	-	-	1	4	-	2	-	-
	7 x 2.00	max	30	17	-	26	-	-	30	15	-	25	-	-	28	12	-	24	-	-
		min	0	4	-	0	-	-	1	5	-	1	-	-	2	8	-	2	-	-
b = 2.57 m	3 x 2.00	max	31	29	24	27	22	15	30	27	23	25	20	12	29	26	21	24	18	8
		min	0	1	2	0	1	2	1	1	2	1	1	2	1	2	2	1	2	5
	4 x 2.00	max	30	27	20	27	19	-	29	25	19	25	17	-	29	24	17	24	15	-
		min	0	2	2	0	2	-	1	2	2	1	2	-	1	2	3	1	2	-
	5 x 2.00	max	30	24	16	26	16	-	29	23	-	25	13	-	29	21	-	24	9	-
		min	0	2	3	0	2	-	1	2	-	1	2	-	1	3	-	1	6	-
	6 x 2.00	max	30	22	-	26	10	-	29	20	-	25	-	-	29	18	-	24	-	-
		min	0	3	-	0	4	-	1	3	-	1	-	-	1	3	-	1	-	-
	7 x 2.00	max	30	19	-	26	-	-	29	17	-	25	-	-	29	10	-	24	-	-
		min	0	3	-	0	-	-	1	4	-	1	-	-	1	4	-	1	-	-
b = 3.07 m	3 x 2.00	max	30	29	25	26	22	16	30	28	24	25	21	13	29	27	18	24	19	10
		min	0	1	1	0	1	1	1	1	2	1	1	2	1	1	2	1	1	4
	4 x 2.00	max	29	27	-	26	19	-	29	26	-	25	17	-	29	24	-	24	15	-
		min	0	1	-	0	1	-	1	2	-	1	2	-	1	2	-	1	2	-
	5 x 2.00	max	29	25	-	26	16	-	29	24	-	25	14	-	29	17	-	24	10	-
		min	0	2	-	0	2	-	1	2	-	1	2	-	1	2	-	1	4	-
	6 x 2.00	max	29	23	-	25	12	-	29	-	-	25	-	-	28	-	-	24	-	-
		min	0	2	-	0	2	-	1	-	-	1	-	-	1	-	-	1	-	-
	7 x 2.00	max	29	20	-	25	-	-	29	-	-	25	-	-	28	-	-	24	-	-
		min	0	3	-	0	-	-	1	-	-	1	-	-	1	-	-	1	-	-

s_F Spindle extension of the base plate [cm]
s_K Spindle extension of the head jack [cm]
$s_K = 2/3 * s_F$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. **$p_w = q * c_f * A$**
The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates. The quantity of ballast must be determined.

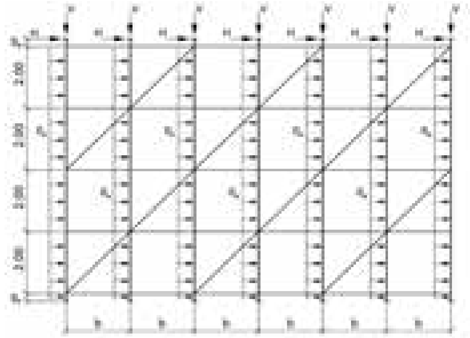
(–) Failure of the standard or spindle due to horizontal force

K 2000+ – FREE-STANDING SCAFFOLDING | BASE PLATE 60 SOLID

Tab. 21 Permissible loads in the standard

BASE PLATE 60 SOLID			Permissible vertical loads in each standard in [kN] for a free-standing scaffolding																							
			H = 0.0 kN								H = 0.3 kN								H = 0.6 kN							
			$s_F \le 15$ cm $s_K \le 10$ cm				$s_F \le 25$ cm $s_K \le 16.70$ cm				$s_F \le 15$ cm $s_K \le 10$ cm				$s_F \le 25$ cm $s_K \le 16.70$ cm				$s_F \le 15$ cm $s_K \le 10$ cm				$s_F \le 25$ cm $s_K \le 16.70$ cm			
Width [m]	Height [m]		Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure				Dynamic wind pressure			
			q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²	q = 0.0 kN/m²	q = 0.5 kN/m²	q = 0.8 kN/m²	q = 1.1 kN/m²
b = 0.73 m	3 x 2.00	max	26	20	14	-	25	20	10	-	24	14	-	-	23	13	-	-	18	-	-	-	18	-	-	-
		min	0	3	5	-	0	3	6	-	2	5	-	-	2	6	-	-	4	-	-	-	4	-	-	-
	4 x 2.00	max	25	17	-	-	25	15	-	-	21	9	-	-	21	-	-	-	18	-	-	-	17	-	-	-
		min	0	5	-	-	0	5	-	-	2	9	-	-	3	-	-	-	5	-	-	-	5	-	-	-
	5 x 2.00	max	25	12	-	-	25	-	-	-	21	-	-	-	20	-	-	-	16	-	-	-	16	-	-	-
		min	0	9	-	-	0	-	-	-	3	-	-	-	3	-	-	-	7	-	-	-	7	-	-	-
	6 x 2.00	max	25	-	-	-	25	-	-	-	19	-	-	-	19	-	-	-	14	-	-	-	14	-	-	-
		min	0	-	-	-	0	-	-	-	4	-	-	-	4	-	-	-	9	-	-	-	9	-	-	-
	7 x 2.00	max	25	-	-	-	25	-	-	-	18	-	-	-	18	-	-	-	12	-	-	-	12	-	-	-
		min	0	-	-	-	0	-	-	-	5	-	-	-	5	-	-	-	11	-	-	-	12	-	-	-
b = 1.09 m	3 x 2.00	max	29	27	23	17	27	25	19	-	27	24	20	-	25	21	12	-	26	20	12	-	23	16	-	-
		min	0	2	3	5	0	2	3	-	1	3	4	-	2	3	5	-	3	4	7	-	3	5	-	-
	4 x 2.00	max	29	25	18	-	27	22	10	-	27	21	9	-	25	17	-	-	25	17	-	-	23	-	-	-
		min	0	3	5	-	0	3	7	-	2	5	9	-	2	5	-	-	3	6	-	-	3	-	-	-
	5 x 2.00	max	29	21	-	-	27	18	-	-	27	16	-	-	25	10	-	-	24	-	-	-	23	-	-	-
		min	0	5	-	-	0	5	-	-	2	7	-	-	2	9	-	-	4	-	-	-	4	-	-	-
	6 x 2.00	max	29	17	-	-	27	13	-	-	25	-	-	-	25	-	-	-	22	-	-	-	22	-	-	-
		min	0	7	-	-	0	7	-	-	3	-	-	-	3	-	-	-	5	-	-	-	5	-	-	-
	7 x 2.00	max	29	12	-	-	27	-	-	-	26	-	-	-	25	-	-	-	22	-	-	-	21	-	-	-
		min	0	11	-	-	0	-	-	-	3	-	-	-	3	-	-	-	6	-	-	-	6	-	-	-
b = 1.57 m	3 x 2.00	max	31	30	27	22	29	28	22	13	30	28	24	18	27	25	17	-	28	25	20	-	25	21	12	-
		min	0	1	2	3	0	1	2	3	1	2	3	4	1	2	3	-	2	3	4	-	2	3	6	-
	4 x 2.00	max	31	29	23	13	29	25	15	-	30	28	18	-	28	22	-	-	28	22	14	-	25	16	-	-
		min	0	2	3	6	0	2	3	-	1	3	4	-	1	3	-	-	2	4	7	-	2	4	-	-
	5 x 2.00	max	30	25	17	-	28	22	-	-	29	21	-	-	27	17	-	-	28	18	-	-	25	10	-	-
		min	0	3	5	-	0	3	-	-	2	4	-	-	2	4	-	-	3	6	-	-	3	6	-	-
	6 x 2.00	max	30	22	-	-	28	18	-	-	29	18	-	-	27	12	-	-	28	14	-	-	25	-	-	-
		min	0	4	-	-	0	4	-	-	2	5	-	-	2	7	-	-	3	9	-	-	3	-	-	-
	7 x 2.00	max	30	18	-	-	28	13	-	-	29	14	-	-	27	-	-	-	27	-	-	-	25	-	-	-
		min	0	6	-	-	0	6	-	-	2	8	-	-	2	-	-	-	4	-	-	-	4	-	-	-
b = 2.07 m	3 x 2.00	max	31	31	29	24	29	29	23	16	30	29	26	21	27	26	19	9	28	27	23	-	26	22	14	-
		min	0	1	2	2	0	1	2	2	1	2	2	3	1	2	2	7	2	2	3	-	2	3	3	-
	4 x 2.00	max	31	31	25	15	29	26	18	-	30	28	21	-	27	22	13	-	28	25	-	-	26	18	-	-
		min	0	2	3	3	0	2	3	-	1	2	3	-	1	3	4	-	2	3	-	-	2	3	-	-
	5 x 2.00	max	30	27	20	-	28	23	11	-	29	24	11	-	27	19	-	-	28	21	-	-	25	14	-	-
		min	0	2	4	-	0	3	5	-	1	3	5	-	1	3	-	-	2	4	-	-	2	4	-	-
	6 x 2.00	max	30	25	-	-	28	20	-	-	29	22	-	-	27	15	-	-	28	18	-	-	25	-	-	-
		min	0	3	-	-	0	3	-	-	1	4	-	-	2	4	-	-	2	5	-	-	3	-	-	-
	7 x 2.00	max	30	21	-	-	28	16	-	-	29	18	-	-	27	9	-	-	28	-	-	-	25	-	-	-
		min	0	4	-	-	0	4	-	-	2	6	-	-	2	8	-	-	3	-	-	-	3	-	-	-
b = 2.57 m	3 x 2.00	max	31	30	30	25	29	28	24	17	30	29	27	14	27	26	20	11	28	28	19	-	26	23	16	-
		min	0	1	2	2	0	1	2	2	1	2	2	2	1	2	2	3	1	2	2	-	1	2	2	-
	4 x 2.00	max	30	30	26	-	28	27	19	-	29	29	16	-	27	23	13	-	28	26	-	-	26	19	-	-
		min	0	2	2	-	0	2	2	-	1	2	3	-	1	2	3	-	2	3	-	-	2	3	-	-
	5 x 2.00	max	30	29	13	-	28	24	12	-	29	26	-	-	27	20	-	-	28	18	-	-	25	15	-	-
		min	0	2	3	-	0	2	3	-	1	3	-	-	1	3	-	-	2	3	-	-	2	4	-	-
	6 x 2.00	max	30	27	-	-	28	21	-	-	29	19	-	-	27	17	-	-	28	-	-	-	25	-	-	-
		min	0	3	-	-	0	3	-	-	1	3	-	-	1	4	-	-	2	-	-	-	2	-	-	-
	7 x 2.00	max	30	21	-	-	28	17	-	-	29	-	-	-	27	-	-	-	28	-	-	-	25	-	-	-
		min	0	3	-	-	0	4	-	-	1	-	-	-	1	-	-	-	2	-	-	-	2	-	-	-
b = 3.07 m	3 x 2.00	max	30	30	30	14	28	28	24	11	29	29	19	-	27	25	16	-	28	23	-	-	26	21	-	-
		min	0	1	1	2	0	1	1	2	1	1	2	-	1	1	2	-	1	2	-	-	1	2	-	-
	4 x 2.00	max	30	30	16	-	27	27	13	-	29	27	-	-	27	24	-	-	28	15	-	-	25	13	-	-
		min	0	1	2	-	0	1	2	-	1	2	-	-	1	2	-	-	1	2	-	-	1	2	-	-
	5 x 2.00	max	30	29	-	-	27	24	-	-	29	17	-	-	27	15	-	-	28	-	-	-	25	-	-	-
		min	0	2	-	-	0	2	-	-	1	2	-	-	1	2	-	-	2	-	-	-	2	-	-	-
	6 x 2.00	max	29	19	-	-	27	17	-	-	29	-	-	-	26	-	-	-	28	-	-	-	25	-	-	-
		min	0	2	-	-	0	2	-	-	1	-	-	-	1	-	-	-	2	-	-	-	2	-	-	-
	7 x 2.00	max	29	-	-	-	27	-	-	-	29	-	-	-	26	-	-	-	28	-	-	-	25	-	-	-
		min	0	-	-	-	0	-	-	-	1	-	-	-	1	-	-	-	2	-	-	-	2	-	-	-

Diagonal tower construction



One diagonal brace for two bays.

s_F Spindle extension of the base plate [cm]

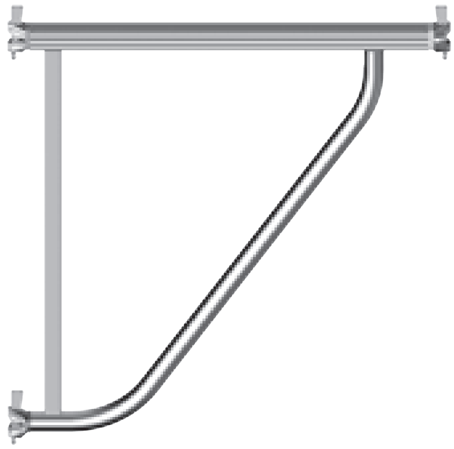
s_K Spindle extension of the head jack [cm]

$s_K = 2/3*s_F$

Wind loads: The effective dynamic pressure, without a reduction for service life, is taken as the dynamic pressure; the area exposed to wind for all the bay widths is calculated for a bay length of 3.07 m. **$p_w = q*c_f*A$** The dead weight of the tower itself was not considered; the permissible loading must be reduced by the dead weight and the ballast weight. When wind acts on the towers, a minimum superimposed load is required to rule out sliding of the base plates. The quantity of ballast must be determined.

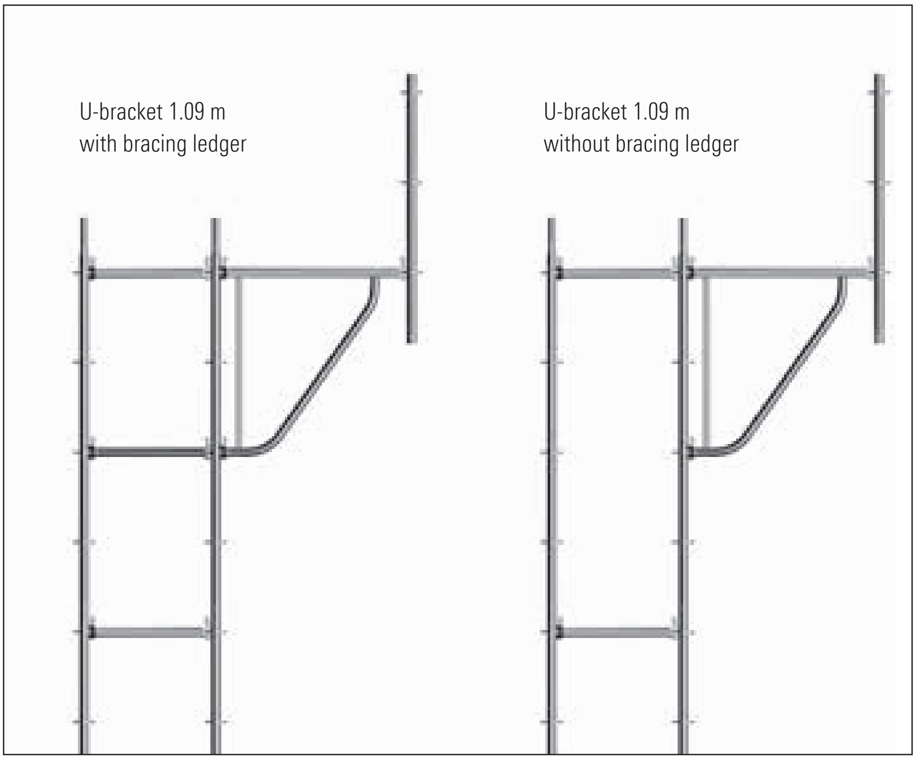
(–) Failure of the standard or spindle due to horizontal force

ALLROUND BRACKETS



Tab. 22 Load-bearing capacity of Allround brackets, K 2000+													
Bay length w [m]	Bracket 0.39 m			Bracket 0.73 m				U-bracket 1.09 m with bracing ledger			U-bracket 1.09 m without bracing ledger		
				without bracing			with bracing						
	perm. individual load on spigot [kN]	perm. useful load on bracket deck [kN/m²]	Load class	perm. individual load on spigot [kN]	perm. useful load on bracket deck [kN/m²]	Load class	Load class*	perm. individual load [kN]	perm. useful load on bracket deck [kN/m²]	Load class	perm. individual load [kN]	perm. useful load on bracket deck [kN/m²]	Load class
2.07		6.7	5		3.4		6		4.2			2.1	3
2.57	2.6	5.2	4	2.2	2.6	3	5	5.2	3.3	3	2.6	1.6	2
3.07		4.3	4		2.1		4		2.7			1.3	1

Please note: The individual loads quoted and the useful load on the bracket deck must **not act simultaneously!** The load classes quoted apply to the use of steel decks. The permissible loads quoted apply to two-sided deck covering. *) Nominal load only, not a partial area load



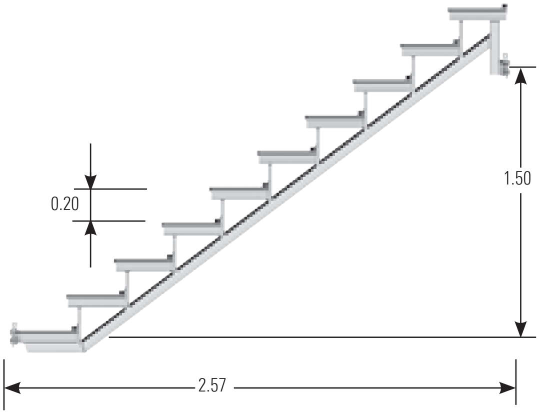
STAIRWAY STRINGER 200

Rectangular tube 60 x 50 x 2.00 mm
Material: EN 10219-S235JRH

Tab. 23 Live load of the stairway stringer 200	
Length of the steps [m]	Steel deck, one side perm. p [kN/m²]
1.09	2.7
1.29	2.2
1.40	2.0
1.57	1.7
2.07	1.3
2.57	1.0

With the Allround construction stairway tower 200, 12-standard, each stairway is assembled from 2 separate U-stairway stringers 200, with standard decks used as steps.

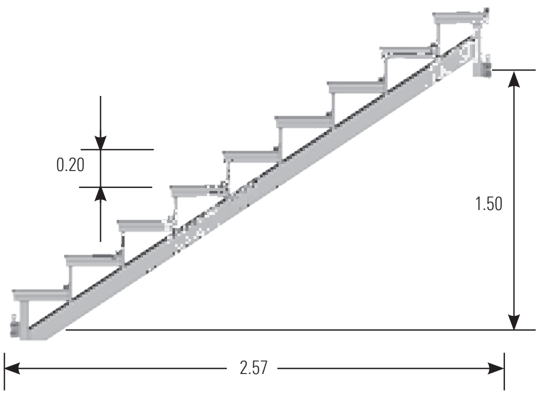
On the one hand this makes the weight/volume of the individual parts lower, the proportions of standard material higher, and the additional costs lower, and on the other hand permits even more variants in the stairway width.



Stairway dimensions: riser s = 20.00 cm; tread a = 24.10 cm; undercut u = 7.90 cm

STAIRWAY STRINGER 500

The stairway tower 500 is intended for temporary stairway structures with higher live loads. It is preferably used as a construction stairway tower, e.g. for access to the site or as a road crossing not open to the public during construction work, but also at buildings as an additional escape stairway tower. Under certain circumstances, the stairway tower 500 can also be used for public access during construction work or as a mandatory escape stairway tower.



Stairway dimensions: riser s = 20.00 cm; tread a = 27.50 cm; undercut u = 4.50 cm

PRODUCTION UNTIL 2012
Rectangular tube 100 x 50 x 3.60 mm
Material: EN 10219-S235JRH

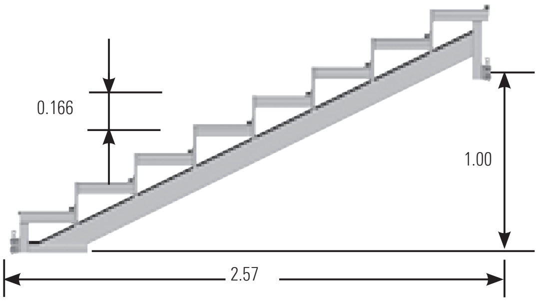
Tab. 24 Live load of the stairway stringer 500		
Length of the steps [m]	perm. p [kN/m²]	
	Steel deck, one side	Steel deck, both sides
1.09	11.2	5.5
1.40	8.8	4.2
1.57	7.8	3.7
2.07	5.9	2.8
2.57	4.7	2.2
3.07	4.0	1.8

PRODUCTION STARTING 2012
Rectangular tube 100 x 50 x 2.50 mm
Material: EN 10219-S355JRH

Tab. 25 Live load of the stairway stringer 500		
Length of the steps [m]	perm. p [kN/m²]	
	Steel deck, one side	Steel deck, both sides
1.09	11.9	5.8
1.40	9.2	4.5
1.57	8.2	3.9
2.07	6.1	2.9
2.57	4.9	2.3
3.07	4.1	1.9

STAIRWAY STRINGER 750

The stairway tower 750 with child-safety guardrail is intended, in view of its riser dimensions, for both temporary and permanent stairway structures in public areas. Typical applications are as road-crossings during building work, as stairways inside buildings for the duration of the construction work, as a mandatory escape stairway tower or as a construction stairway tower. For the events field, the stairway tower 750 has a high load-bearing capacity, allowing it to be used for accessing stands and stages.



Stairway dimensions: riser s = 16.60 cm; tread a = 31.00 cm; undercut u = 1.00 cm

PRODUCTION UNTIL 2012
Rectangular tube 120 x 50 x 4.00 mm
Material: EN 10219-S235JRH

Tab. 26 Live load of the stairway stringer 750		
Length of the steps [m]	perm. p [kN/m²]	
	Steel deck, one side	Steel deck, both sides
1.09	15.1	7.4
1.40	11.7	5.7
1.57	10.4	5.1
2.07	7.8	3.8
2.57	6.3	3.0
3.07	5.0	2.5

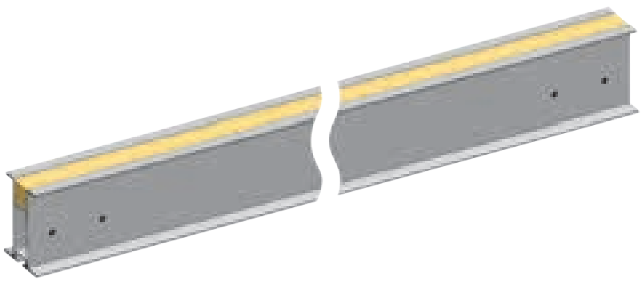
PRODUCTION STARTING 2012
Rectangular tube 120 x 50 x 3.00 mm
Material: EN 10219-S355JRH

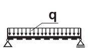
Tab. 27 Live load of the stairway stringer 750		
Length of the steps [m]	perm. p [kN/m²]	
	Steel deck, one side	Steel deck, both sides
1.09	18.8	9.3
1.40	14.5	7.1
1.57	12.9	6.3
2.07	9.7	4.8
2.57	7.8	3.8
3.07	6.5	3.1

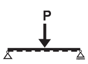
ALUMINIUM SECTION BEAM WITH WOOD

The aluminium section beam with wood is a lightweight aluminium beam with low overall height for birdcage scaffolding, walkways and bridging.

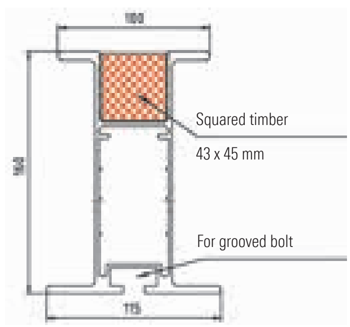
Specifications:
Double-web beam of aluminium, 160 mm high. 1 flange 115 mm wide, with T-groove for connections with grooved bolts. 1 flange 100 mm wide, with replaceable wood section insert, for nailed or bolted connections.







Tab. 28 Load-bearing capacity of aluminium section beams with wood						
Span l [m]	3.00	4.00	5.00	6.00	7.00	8.00
perm. line load q [kN/m]*	12.0	6.7	4.3	3.0	2.2	1.7
Sag [cm]	2.5	4.4	6.8	9.8	13.4	17.5
perm. individual load P in bay centre [kN]*	17.9	13.4	10.7	9.0	7.7	6.7
Sag [cm]	2.0	2.5	5.5	7.9	10.7	14.0



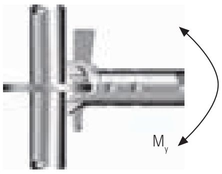
Note: The permissible loads were calculated including a safety factor of γ_F = 1.5; sag on the basis of γ_F = 1.0.

CONNECTION VALUES

LOAD-BEARING CAPACITIES IN ALLROUND LEDGER AND DIAGONAL BRACE CONNECTION

Z-8.22-64.1: ALLROUND ALUMINIUM

Bending moment

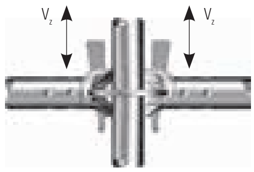


a) f the normal force Nst [kN] in the standard is ≤ 45 kN: $M_{y,Rd} = 60$ kNcm

b) If the normal force Nst [kN] in the standard is > 45 kN:

$$M_{y,Rd} = \pm\left[\frac{60 \times (63 - Nst)}{18}\right] \text{ [kNcm]}$$

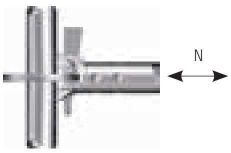
Vertical lateral force



a) Vertical lateral force single connection VZ, Rd = ± 18.1 kN

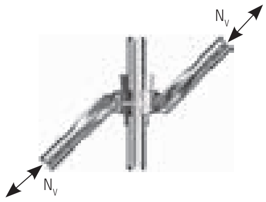
b) Vertical lateral force at each rosette ∑ VZ, Rd = 46.4 kN

Normal force



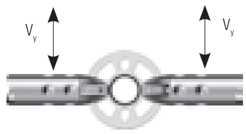
$N_{Rd} = \pm 18.5$ kN

Normal force, diagonal braces



$N_{V,Rd} = \pm 9.0$ kN

Horizontal lateral force



$V_{y,Rd} = \pm 6.0$ kN

LOADING CAPACITY TABLES

ALLROUND ALUMINIUM, ALL THE GIVEN LOADS ARE WORKING LOADS.

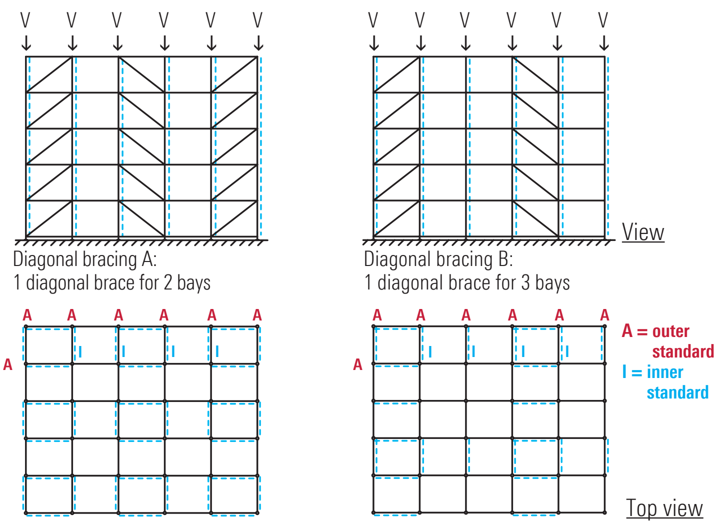
Tab. 29 Inner standard 2.00 m level height

Bay width [m]	0.73		1.09	1.57	2.07	2.57	3.07
Diagonal bracing	A	B	A, B	A, B	A, B	B	B
Permissible vertical load V_I [kN]	15.5	13.7	14.7	14.6	14.4	14.2	14.0

Tab. 30 Outer standard 2.00 m level height

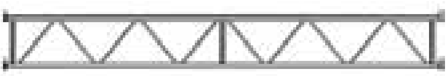
Bay width [m]	0.73		1.09	1.57	2.07	2.57	3.07
Diagonal bracing	A	B	B	B	B	B	B
Permissible vertical load V_A [kN]	13.5	11.5	12.5	12.5	12.1	11.9	11.7

Load-bearing capacity of the aluminium Allround standard



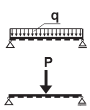
Tab. 31 Load-bearing capacity of aluminium U-ledger (U) and U-ledger reinforced (U-V)

Ledger type and length [m]	0.73 (U)	1.09 (U-V)	1.40 (U-V)
Evenly distributed line load (q) [kN/m]	17.8	10.7	8.4
Individual load (P) in bay centre [kN]	5.9	7.2	5.7



Tab. 32 Load-bearing capacity of aluminium U-double lattice beam

Bay width [m]	2.57	3.07	4.14	5.14
Evenly distributed line load (q) [kN/m]	7.7	6.0	4.1	3.2
Individual load (P) in bay centre [kN]*	6.7	11.4	8.9	8.0



Tab. 33 Load-bearing capacity of aluminium U-double horizontal ledger

Bay width [m]	1.57	2.07
Evenly distributed line load (q) [kN/m]*	6.9	3.7
Individual load (P) in bay centre [kN]*	6.2	2.3

Tab. 34 Load-bearing capacity of aluminium ledger

Bay width [m]	0.73	1.09	1.40	1.57	2.07	2.57	3.07
Evenly distributed line load (q) [kN/m]	18.7	7.4	3.9	2.9	1.5	0.9	0.6
Individual load (P) in bay centre [kN]	6.3	4.5	3.4	2.9	2.0	1.5	1.2

* Completely covered with scaffolding decks

STANDARD DECKS

Tab. 35 a Steel decks

Load class EN 12811-1	Steel deck T4 0.32 m wide, Art. No. 3812								Steel deck 0.19 m wide, Art. No. 3801				Steel access deck, Art. No. 3813	
	0.73	1.09	1.40	1.57	2.07	2.57	3.07	4.14	1.57	2.07	2.57	3.07	2.07	2.57
perm. q [kN/m²]	61.4	31.8	25.70	17.7	11.4	7.5	5.0	2.0	17.7	11.4	7.5	5.0	–	–
1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	–	•	•	•	•	•	•
5	•	•	•	•	•	•	–	–	•	•	•	–	–	–
6	•	•	•	•	•	–	–	–	•	•	–	–	–	–
Standard brick guard and roof brick guard	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Tab. 35 b Robust decks

Load class EN 12811-1	Robust deck 0.61 m wide, Art. No. 3835, Xtra-N deck, 0.61 m wide, Art. No. 3866						Robust deck 0.32 m wide, Art. No. 3836				Robust access deck Art. No. 3838	
	0.73	1.09	1.57	2.07	2.57	3.07	1.57	2.07	2.57	3.07	2.57	3.07
1	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•	•	•
4	–	–	–	–	–	–	•	•	•	–	–	–
5	–	–	–	–	–	–	•	•	–	–	–	–
6	–	–	–	–	–	–	•	–	–	–	–	–
Standard brick guard and roof brick guard	•	•	•	•	•	•	•	•	•	•	•	•

Tab. 35 c Stalu decks

Load class EN 12811-1	Stalu deck 0.61 m wide, Art. No. 3850				Stalu deck 0.32 m wide, Art. No. 3856					Stalu deck 0.19 m wide, Art. No. 3857			
	1.57	2.07	2.57	3.07	1.57	2.07	2.57	3.07	4.14	1.57	2.07	2.57	3.07
1	•	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•	–	•	•	•	•
5	•	•	•	–	•	•	•	–	–	•	•	•	–
6	•	•	–	–	•	•	–	–	–	•	•	–	–
brick guard Standard brick guard	•	•	•	•	•	•	•	•	•	•	•	•	•

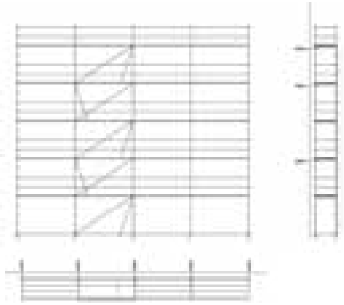
Tab. 35 d Aluminium decks

Load class EN 12811-1	Aluminium deck 0.32 m wide, Art. No. 3803,						Aluminium deck 0.19 m wide, Art. No. 3824		
	0.73	1.09	1.57	2.07	2.57	3.07	1.57	2.07	2.57
1	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	–	•	•	•
5	•	•	•	•	–	–	•	•	–
6	•	•	•	–	–	–	•	–	–
Standard brick guard and roof brick guard	•	•	•	•	•	•	•	•	•

- Approved for use in the load class.

(–) Not approved for this load class.

USE AS FAÇADE SCAFFOLDING



Only with plank decking horizontal-diagonal brace at least in every 5th bay + longitudinal ledger at deck level.

Vertical diagonal braces according to structural strength requirements. No vertical diagonal braces are required in the standard assembly according to the approval. Other assembly variants can, with structural strength verification, also be assembled without vertical diagonal braces, depending on the height of the scaffolding, the anchoring configuration, the presence of covering, the loading and the width of the scaffolding. Experience suggests that assembly variants other than the standard version can be implemented with vertical diagonal braces in every 5th bay.

Tab. 36 Use as façade scaffolding

Load class EN 12811-1	Useful load (kN/m²)	Partial area load		Individual load [kN]	Application	Scaffolding width b [m]	Scaffolding bay length [m]	Support ledger	Deck type
		kN/m²	Partial area A_c [1)] m²						
1	0.75	Not required		1.5	Inspection purposes. Working with light tool, without building materials storage.	0.73	3.07	U-ledger LW, O-ledger LW, U-ledger, O-ledger	All standard decks, scaffolding planks acc. to DIN 4420-3
2	1.5	Not required		1.5	Inspection work. Only work with materials that are consumed immediately, e.g. painting, stone cleaning, grouting, plastering etc.	0.73	3.07	U-ledger LW, O-ledger LW, U-ledger, O-ledger	All standard decks, scaffolding planks acc. to DIN 4420-3
3	2.0	Not required		1.5					
4	3.0	5.0	0.4* · A[2)]	3.0	Bricklaying. Attachment of prefabricated concrete parts, plastering etc.	1.09	3.07	U-ledger LW, O-ledger LW, U-ledger, O-ledger reinforced	Steel decks, stalu decks, scaffolding planks acc. to DIN 4420-3
						1.40	3.07	U-ledger LW, U-ledger LW reinforced, U-bridging ledger	
						1.40	2.57	U-ledger LW, U-ledger reinforced	Steel decks, stalu decks, robust decks (0.32 m wide), aluminium decks (0.32 m wide)
						1.09	2.07	O-ledger LW, O-ledger	
						1.09	2.57	U-ledger LW, O-ledger LW, O-ledger reinforced	
						1.57	3.07	U-ledger LW reinforced, U-bridging ledger	Steel decks, stalu decks, scaffolding planks acc. to DIN 4420-3
5	4.5	7.5	0.4* · A[2)]	3.0		1.09	2.07	O-ledger LW, U-ledger reinforced	Steel decks, stalu decks, robust decks (0.32 m wide), aluminium decks (0.32 m wide)
						1.40	2.07	U-ledger LW reinforced	
						1.40	1.57	U-ledger, reinforced	
						1.57	2.07	U-ledger LW reinforced, U-bridging ledger	
						1.57	2.57	U-ledger LW reinforced, U-bridging ledger	Steel decks, stalu decks
6	6.0	10.0	0.5* · A[2)]	3.0	Heavy bricklaying or natural stonework. Storage of a large quantity of building materials or components	1.09	1.57	O-ledger LW, U-ledger reinforced	Steel decks, stalu decks
						1.09	2.07	U-ledger, reinforced	
						1.40	1.57	U-ledger LW reinforced, U-bridging ledger	
						1.57	1.57	U-ledger LW reinforced, U-bridging ledger	

[1)] A_c = partial area, [2)] A = deck surface

*Deck selection according to the “Standard decks” section, page 30)

Information on load-bearing capacity

Select the Layher scaffolding decking according to the necessary load class and scaffolding width from Table 34 (standard decks); wooden planks from Table 36. If scaffolding planks are used in brick guard structures and for double decks, the information in Table 2 of DIN 4420-1 shall apply.

Tab. 37 Permissible span in m for scaffolding decks made of wooden planks or boards (according to Tab. 2, DIN 4420, T.3)

Load class EN 12811-1	Board or plank width [cm]	Board or plank thickness [cm]				
		3.00	3.50	4.00	4.50	5.00
1, 2, 3	20	1.25	1.50	1.75	2.25	2.50
	24) and 28)	1.25	1.75	2.25	2.50	2.75
4	20	1.25	1.50	1.75	2.25	2.50
	24) and 28)	1.25	1.75	2.00	2.25	2.50
5	20, 24, 28	1.25	1.25	1.50	1.75	2.00
6	20, 24, 28	1.00	1.25	1.25	1.50	1.75

Load classes for Layher steel planks

Tab. 38 Load classes of the steel planks

Plank width [cm]	Plank length [m]			
	1.00	1.50	2.00	2.50
20	6	6	5	3
30	6	6	5	3

The support length must be at least 10 cm on each support.

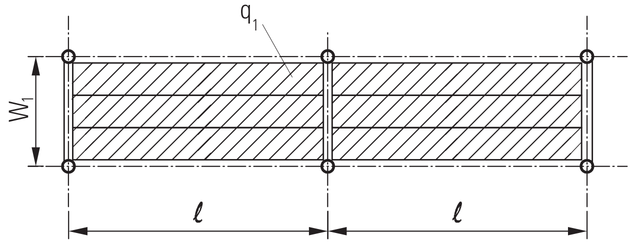
PERMISSIBLE LOAD CLASSES OF THE LAYHER ALLROUND SYSTEM LEDGERS

Tab. 39 Load classes for system ledgers

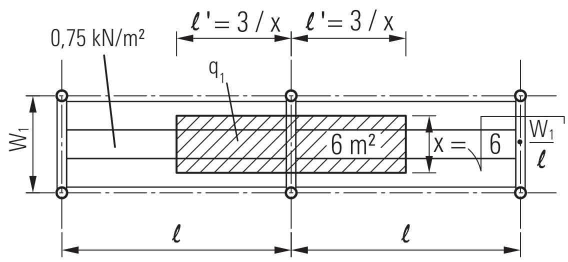
Ledger connection to standard/ type	Ledger type	Ledger length [m]	perm. line load [kN]	Steel deck alternating (one-sided loading)												Steel deck unidirectional (two-sided loading)											
				permitted load class with deck length [m]												permitted load class with deck length [m]											
				1.57			2.07			2.57			3.07			1.57			2.07			2.57			3.07		
				NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL	NL	6 m²	TL
Allround standard of the "K2000+" or "II" variant	O-ledger	0.73	22.07	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^+
		1.09	10.44	6	6	6	6	6	6	6	6	5	5^+	5^+	4^+	6	6	5	5	5	4	4	4	4	4	4	-
		1.40	6.54	6	6	6	6	6	5	5	5	4	4	4	4	4	4	4	3	3	-	3	3	-	2	3	-
		1.57	5.26	6	6	5	5	5	4	4	4	4	4	4	-	4	4	-	3	3	-	2	2	-	2	2	-
		2.07	3.12	4	4	4	3	3	-	3	3	-	2	2	-	2	2	-	1	1	-	1	1	-	1	1	-
		2.57	2.06	3	3	-	2	2	-	1	1	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-
		3.07	1.46	2	2	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O-ledger reinforced	1.09	21.82	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^+
	O-bridging ledger	1.57	14.46	6	6	6	6	6	6	6	6	5	5^+	5^+	4^{++}	6	6	6	6	6	5	5	5	5	5	5	4
		2.07	8.63	6	6	6	6	6	6	6	6	5	5	5	4^+	5	5	5	4	4	4	4	4	-	3	4	-
		2.57	5.37	6	6	5	5	5	5	4	4	4	4	4	4	4	4	-	3	3	-	2	3	-	2	2	-
		3.07	3.53	4	4	4	4	4	-	3	3	-	3	3	-	3	3	-	1	2	-	1	1	-	1	1	-
	O-ledger LW	0.73	29.24	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}
		1.09	14.09	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	5	5	5	5	4	4	4
		1.40	8.76	6	6	6	6	6	6	6	6	5	5	5	4^+	5	5	5	4	4	4	4	4	-	3	3	-
		1.57	7.03	6	6	6	6	6	5	5	5	5	4	4	4	4	4	4	4	4	-	3	3	-	3	3	-
		2.07	4.09	5	5	5	4	4	4	3	3	-	3	3	-	3	3	-	2	2	-	1	1	-	1	1	-
		2.57	2.33	3	3	-	3	3	-	2	2	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-
		3.07	1.48	2	2	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	U-ledger	0.73	19.01	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5	5^+	5^+	4^+
	U-ledger, reinforced	1.09	17.34	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^+	6	6	6	6	6	6	6	6	5	5	5^+	4^+
		1.40	10.42	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^+	6	6	5	5	5	4	4	4	4	4	4	-
	U-ledger LW	1.09	17.55	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5	5	5	4^+
		1.40	10.84	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^+	6	6	5	5	5	5	4	4	4	4	4	4
	U-ledger LW reinforced	1.40	19.80	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5	5^+	5^+	4^+
		1.57	17.70	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5	5	5^+	4^+
		2.07	13.00	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	5	5	5	4	4	5	4
		2.57	8.40	6	6	6	6	6	6	6	6	5	5	5	4^+	5	5	5	4	4	4	4	4	-	3	4	-
		3.07	5.00	6	6	5	5	5	4	4	4	4	4	4	-	3	4	-	3	3	-	2	3	-	1	2	-
	U-bridging ledger	1.57	15.16	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	5	5	5	5	5	5	4
		2.07	8.65	6	6	6	6	6	6	6	6	5	5	5	4^+	5	5	5	4	4	4	4	4	-	3	4	-
		2.57	5.12	6	6	5	5	5	4	4	4	4	4	4	-	4	4	-	3	3	-	2	3	-	1	2	-
		3.07	3.59	4	4	4	4	4	-	3	3	-	3	3	-	3	3	-	2	2	-	1	1	-	1	1	-
Allround LW standard	O-ledger LW	0.73	29.24	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}
		1.09	14.09	6	6	6	6	6	6	6	6	5^+	5^+	5^+	4^{++}	6	6	6	6	6	5	5	5	5	4	4	4
		1.40	8.76	6	6	6	6	6	6	6	6	5	5	5	4^+	5	5	5	4	4	4	4	4	-	3	3	-
		1.57	7.03	6	6	6	6	6	5	5	5	5	4	4	4	4	4	4	4	4	-	3	3	-	3	3	-
		2.07	4.09	5	5	5	4	4	4	3	3	-	3	3	-	3	3	-	2	2	-	1	1	-	1	1	-
		2.57	2.65	4	4	-	3	3	-	2	2	-	2	2	-	1	2	-	1	1	-	1	1	-	-	-	-
		3.07	1.85	3	3	-	2	2	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-

NL Nominal load according to EN 12811-1 Table 3, as evenly distributed area load
TL Partial area load according to EN 12811-1 Table 3, for load classes 4, 5 and 6
6 m² Nominal load limited to 6 m² in birdcage scaffolding according to EN 12811-1 Section 6.2.2.6: "the loads acting on the supporting components of a birdcage scaffolding may be determined assuming an area subject to the effect of the load of 6 m² with nominal load, and a load of 0.75 kN/m² on the rest of the area".
\+ The load-bearing capacity of the steel deck has been achieved, the ledger is classified one load class higher.
++ The load-bearing capacity of the steel deck has been achieved, the ledger is classified two load classes higher.

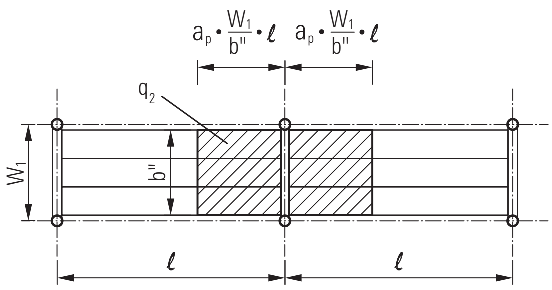
NL: Nominal load q1 according to Table 3 EN 12811-1, evenly distributed



6 m²: Nominal load q1 according to Table 3 EN 12811-1 limited to 6 m², rest of the area subject to 0.75 kN/m² loading.

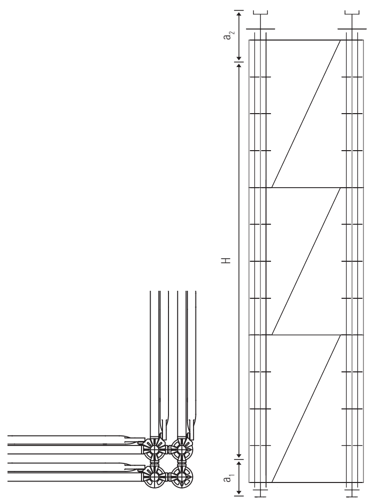


TL: Partial area load q2 according to Table 3 EN 12811-1



The dead weight is considered in all three load configurations.

USE AS ALLROUND HEAVY-DUTY TOWER AND SUPPORT



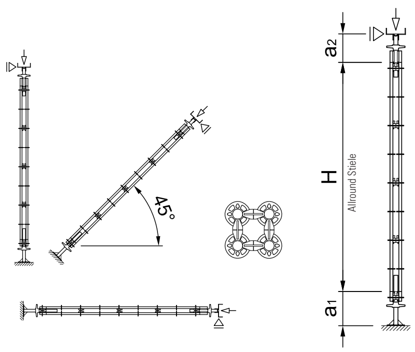
Tab. 40 Allround heavy-duty Tower 1.09 x 1.09 m, perm. loads in kN

Tower height H [m]		attached at the top	free-standing						
			0*	1.6*	3.2*	4.8*	6.4*	8*	9.6*
4.00	no wind	632.8	655.2	641.6	576.0	494.4	404.0	301.6	171.2
	with wind	632.8	655.2	641.6	573.6	490.4	399.2	292.0	145.6
6.00	no wind	667.2	694.4	646.4	572.8	492.0	402.4	301.6	178.4
	with wind	667.2	674.4	596.0	512.0	424.0	321.6	192.8	–
8.00	no wind	672.8	680.8	642.4	564.8	482.4	392.8	292.8	173.6
	with wind	672.8	610.4	523.4	439.2	340.8	215.2	–	–
10.00	no wind	687.2	665.6	629.6	552.0	469.6	381.6	280.8	–
	with wind	641.6	–	–	–	–	–	–	–
12.00	no wind	687.2	651.2	615.2	537.6	456.0	367.2	267.2	–
	with wind	572.8	–	–	–	–	–	–	–
16.00	no wind	677.6	620.0	580.8	504.8	421.6	331.2	–	–
	with wind	440.0	–	–	–	–	–	–	–
20.00	no wind	669.6	584.8	535.2	461.6	367.8	–	–	–
	with wind	304.0	–	–	–	–	–	–	–

* Resultant H-load at the support head [KN]
The specified tower loads are working loads. Spindle extension ≤ 0.25 m
Spacing between the double wedge-head couplers: 1.00 m

Tab. 41 Permissible loading of the Allround heavy-duty supports in kN

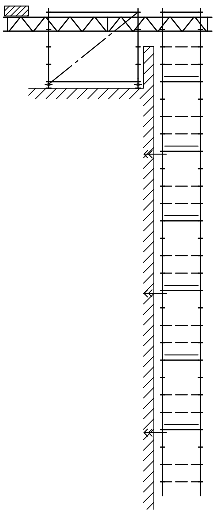
Support height H [m]	Spacing between the double wedge couplers: 0.50 m			Spacing between the double wedge couplers: 1.00 m		
	Vertical installation	Installation below 45°	Horizontal installation	Vertical installation	Installation below 45°	Horizontal installation
2.00	223.4	219.2	218.0	215.8	211.8	210.2
3.00	212.0	205.2	203.0	191.0	182.4	179.4
4.00	195.6	182.8	178.0	146.6	133.4	129.0
5.00	170.0	150.2	142.0	121.2	102.2	95.4
6.00	147.2	123.4	112.4	104.0	81.8	72.0
7.00	133.6	100.6	89.0	88.2	62.4	–
8.00	112.8	–	–	74.0	–	–

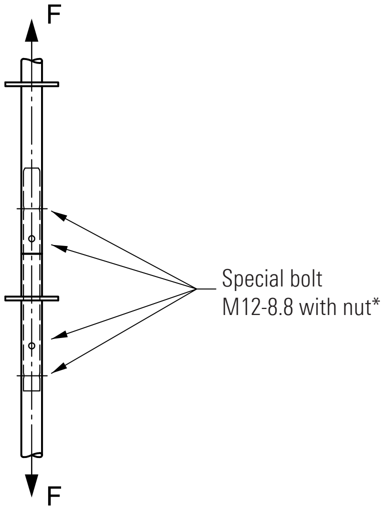


$0.77 \text{ m} \leq (a_1 + a_2) \leq 1.27 \text{ m}$

Maximum spindle extension of the base plate ≤ 0.25 m; maximum spindle extension of the head jack ≤ 0.25 m

USE AS SUSPENDED SCAFFOLDING





Tab. 42 Permissible tension in the bolted spigot		
Steel Allround	**Steel Allround LW**	**Aluminium Allround**
55.9 kN	61.5 kN**	42.2 kN

* only two special M12-8.8 nuts are required for the Allround LW.
** value provisional until the approval procedure is complete. The final value may be higher.

Tab. 43 Suspended scaffolding with Layher lattice beam 450, steel		Maximum suspension force[1] in kN	
Lattice beam span [m]	**Distance from the upper chord stiffening [m]**	**Single-bay beam**	**Multiple-bay beam**
4.00	2.00	9.6	20.2
6.00	1.50	13.4	27.9

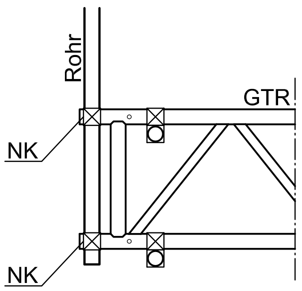
[1] The values are to be understood as not including safety factors.

SUSPENDED SCAFFOLDING WITH LAYHER LATTICE BEAM 450 STEEL

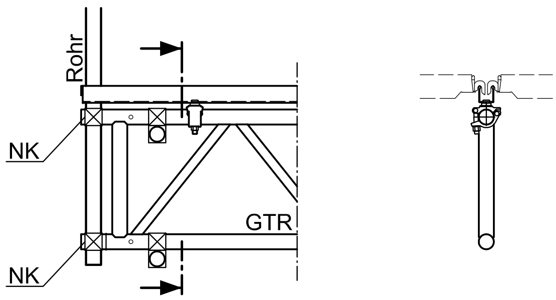
Load class 3 EN 12811-1 (p = 2.0 kN/m² over 6 m²; remaining area with 0.75 kN/m²)
Deck: steel deck; aluminium deck; stalu deck; robust deck, wooden planks d = 4.50 cm

Comments:
Decks must be secured to prevent lifting out.
The suspended scaffolding must be secured to prevent swinging.

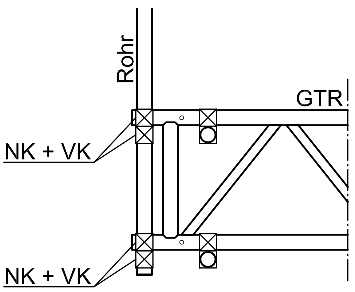
Detail A — Variant: Wooden planks.



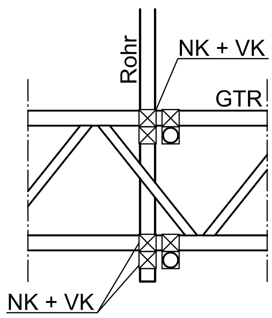
Detail A1 — Variant: Aluminium channel section with half-couplers for decks



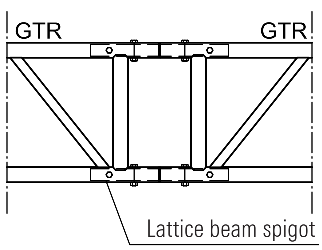
Detail B



Detail C

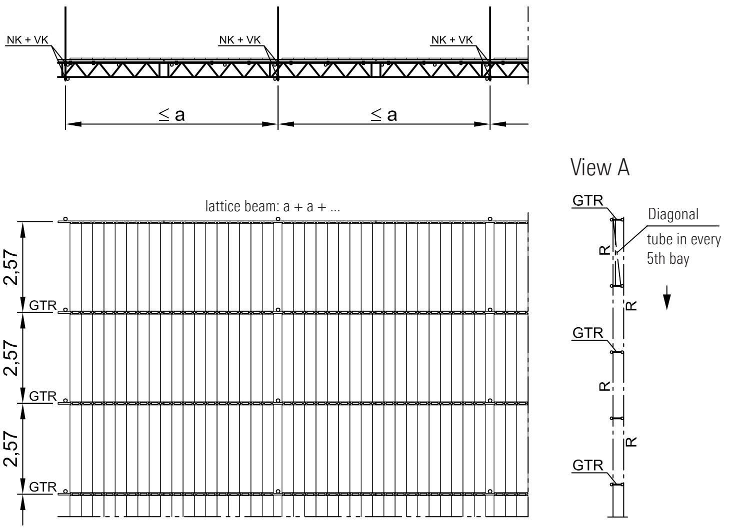


Detail of beam joint

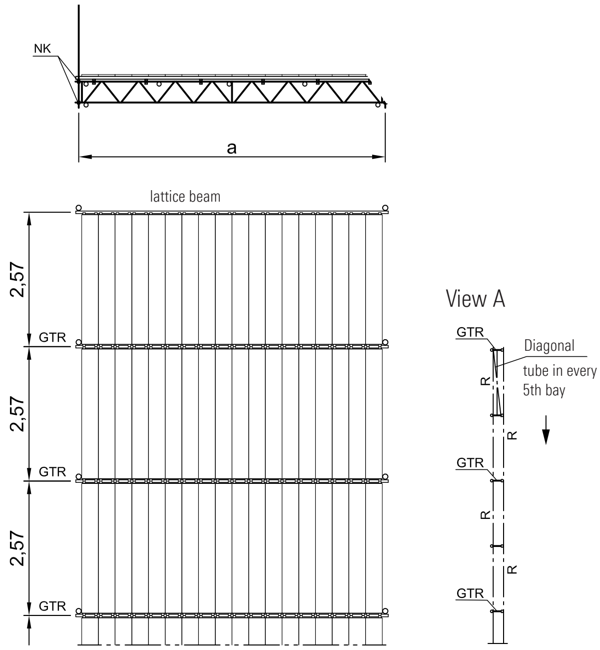


GTR = lattice beam
NK = double coupler
R = tube
VK = additional coupler

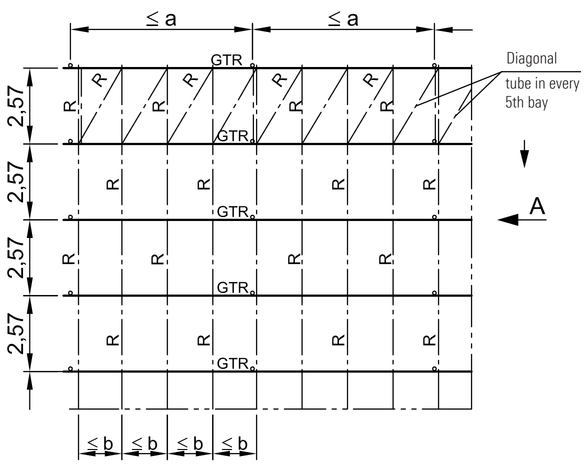
Multiple-bay beam



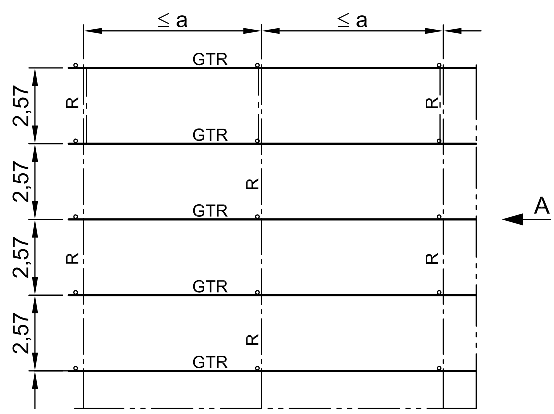
Single-bay beam



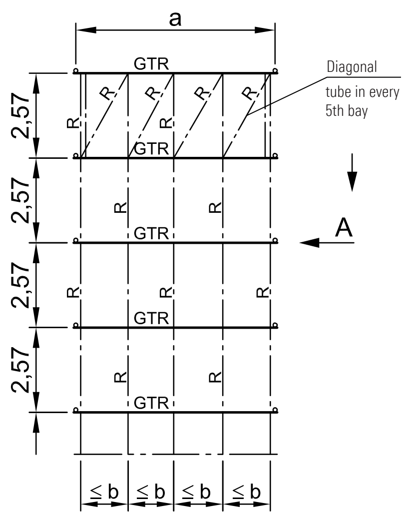
Bracing of top chord



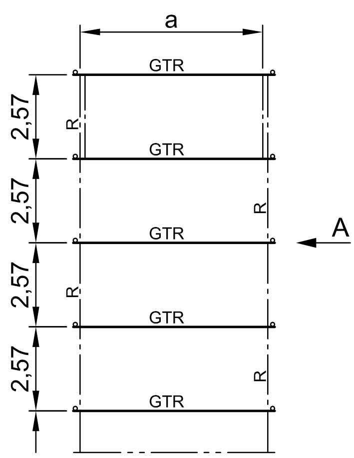
Bracing of bottom chord



Bracing of top chord



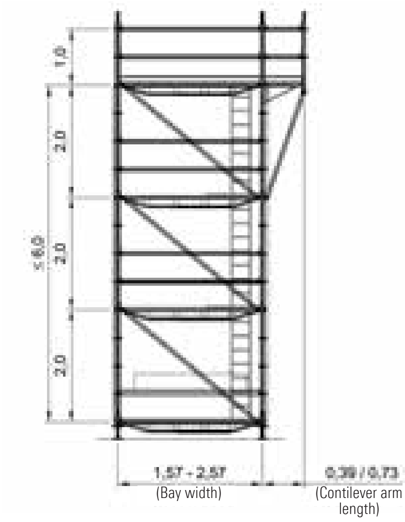
Bracing of bottom chord

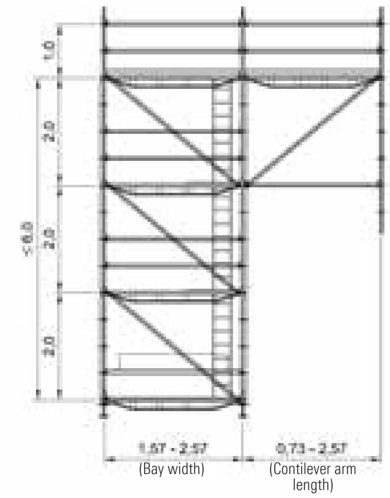


GTR = lattice beam
NK = double coupler
R = tube
VK = additional coupler

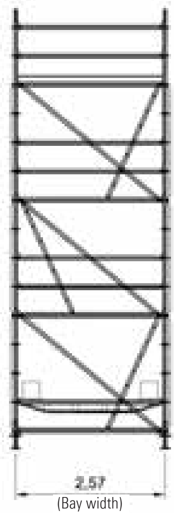
FREE-STANDING TOWERS

Side view





Front view



Tab. 44 Free-standing towers Platform height: 2.25 m Bay length L: 2.57 m					
		In the open		In closed areas	
Bay width a [m]	Cantilever arm length k [m]	Ballast total [kg]	max. standard load* [kN]	Ballast total [kg]	max. standard load* [kN]
1.57	0.39 (K)	370	6.4	-	5.2
	0.73 (K)	490	8.2	45	6.9
2.07	0.39 (K)	100	6.4	-	6.0
	0.73 (K)	190	8.1	-	7.5
2.57	0.00	-	5.5	-	5.4
	0.39 (K)	-	6.9	-	6.9
	0.73 (K)	-	8.3	-	8.3
Platform height: 4.25 m	**Bay length L: 2.57 m**				
1.57	0.39 (K)	1400	10.4	-	6.2
	0.73 (K)	1515	12.2	-	7.8
	0.73 (A)	1595	12.8	95	8.4
2.07	0.39 (K)	745	9.2	-	6.9
	0.73 (K)	835	10.9	-	8.4
	0.73 (A)	895	11.4	-	8.8
	1.09 (A)	1050	13.5	115	10.8
	1.57 (A)	1340	16.8	780	15.1
2.57	0.00	275	7.4	-	6.4
	0.39 (K)	330	8.9	-	7.7
	0.73 (K)	405	10.4	-	9.2
	0.73 (A)	450	10.9	-	9.5
	1.09 (A)	580	12.8	-	11.1
	1.57 (A)	810	15.8	360	14.5
	2.07 (A)	1330	19.8	1090	19.5
	2.57 (A)	2230	25.1	2025	24.6

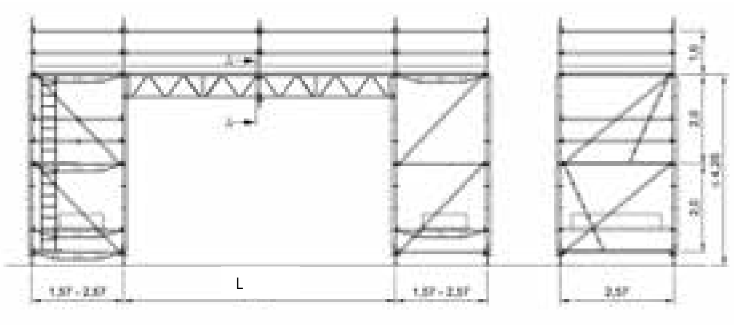
* Dimensioning principles: Service life ≤ 2 years, max. WZ 3

Tab. 45 Free-standing towers					
Platform height: 6.25 m	Bay length L: 2.57 m				
		In the open		In closed areas	
Bay width a [m]	Cantilever arm length k [m]	Ballast total [kg]	max. standard load* [kN]	Ballast total [kg]	max. standard load* [kN]
1.57	0.39 (K)	2980	17.7	-	7.2
	0.73 (K)	3095	18.6	-	8.8
	0.73 (A)	3175	19.2	70	9.4
2.07	0.39 (K)	1880	13.8	-	7.9
	0.73 (K)	1970	15.3	-	9.4
	0.73 (A)	2030	15.8	-	9.8
	1.09 (A)	2190	17.9	40	11.7
	1.57 (A)	2480	21.1	715	16.1
2.57	0.00	1150	11.1	-	7.5
	0.39 (K)	1200	12.5	-	8.8
	0.73 (K)	1270	14.1	-	10.3
	0.73 (A)	1320	14.6	-	10.7
	1.09 (A)	1445	16.4	-	12.3
	1.57 (A)	1680	19.4	265	15.4
	2.07 (A)	1985	22.9	1000	20.1
	2.57 (A)	2395	27.0	1950	25.7

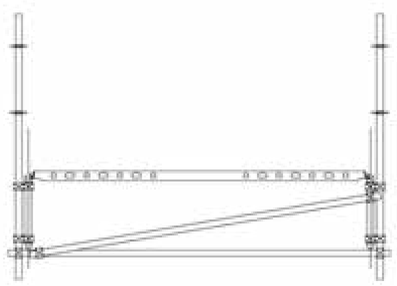
* Dimensioning principles: Service life ≤ 2 years, max. Wind zone

BRIDGING

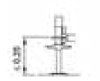
Front and side view



Section A-A (bracing with tube and coupler)



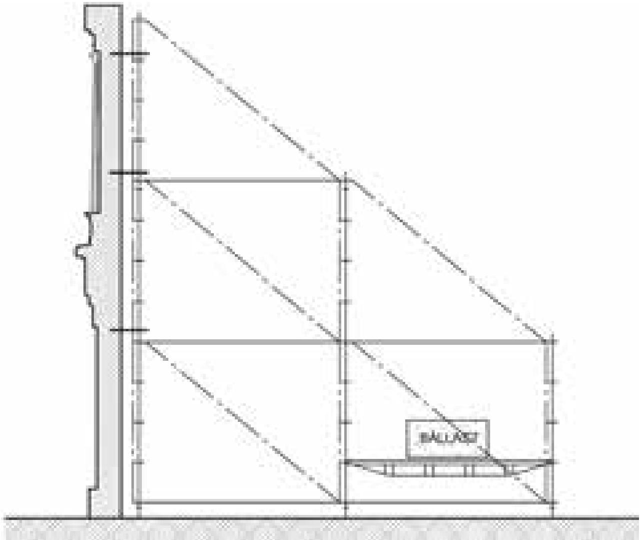
Detail of base point



Tab. 46 Bridging					
Platform height: 4.25 m					
		In the open		In closed areas	
Bay width a [m]	Bay length L [m]	Ballast total [kg]	max. standard load* [kN]	Ballast total [kg]	max. standard load* [kN]
1.57	4.14 (2 x 2.07)	820	10.4	-	10.8
	5.14 (2 x 2.57)	930	11.9	-	12.6
	6.14 (2 x 3.07)	1040	13.1	-	14.2
	7.71 (3 x 2.57)	1200	13.8	--	11.3
2.07	4.14 (2 x 2.07)	920	10.9	-	11.8
	5.14 (2 x 2.57)	1030	12.3	-	13.6
	6.14 (2 x 3.07)	1140	13.4	-	15.2
	7.71 (3 x 2.57)	1290	13.9	-	11.9
2.57	4.14 (2 x 2.07)	1020	11.8	-	12.8
	5.14 (2 x 2.57)	1140	13.2	-	14.6
	6.14 (2 x 3.07)	1240	14.3	-	16.3
	7.71 (3 x 2.57)	1400	14.7	-	12.5

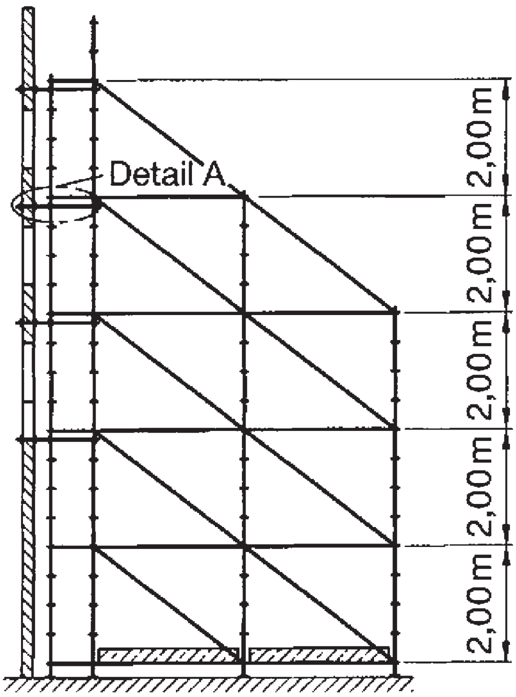
* Dimensioning principles: Service life ≤ 2 years, max. Wind zone

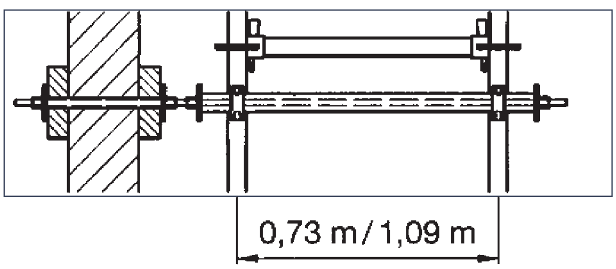
SUPPORTING A FREE-STANDING FAÇADE WITH ALLROUND SCAFFOLDING



Example of support scaffolding for a free-standing façade

A free-standing façade can be supported very effectively with Allround Scaffolding, e.g. when renovating historic buildings. The scaffolding must sustain the wind loads on the façade. This requires individual structural strength calculations.
The scaffolding must be connected to the façade, as shown below right.





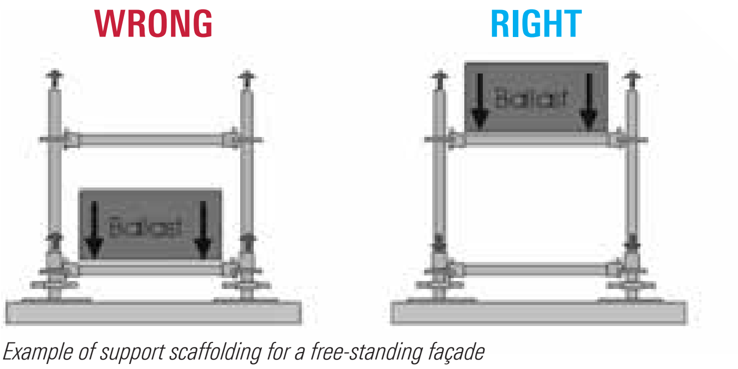
Connection of the scaffolding to the free-standing façade

Support scaffolding has to be suitably ballasted in order to ensure its **stability**.

The support scaffolding must always use Allround standards with screw-in spigots or bolted LW standards!

The type and the weight of the ballast here depends largely on:

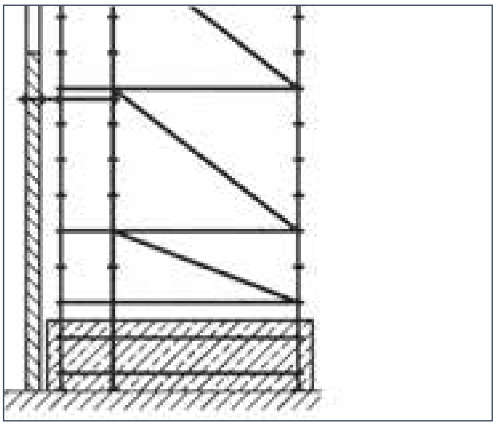
- the height of the wall
- the space available on the ground for widening the scaffolding
- the wind load



Example of support scaffolding for a free-standing façade

- Do not place the ballast at the height of the base collars (as this does not allow any tensile forces to be transferred) (see Figure above)
- Do not use liquid or granular ballast
- Structural strength calculations are required

If the permissible load-bearing capacity of the standing surface, standards or deck ledgers is exceeded by the wind load and the dead weight of the scaffolding and the ballast, the scaffolding standards can be cast in a concrete foundation (see diagram below).



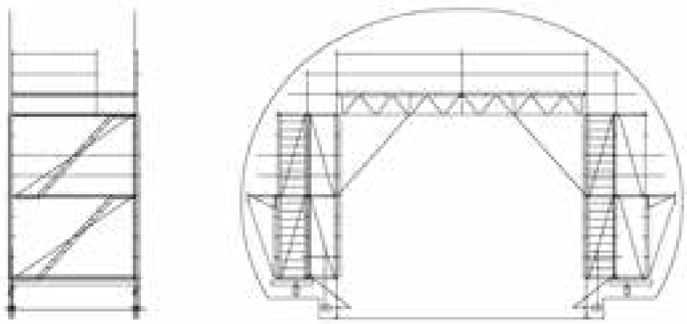
Casting the scaffolding standards in a concrete foundation

LAYHER ALLROUND SCAFFOLDING® IN ALL-ROUND USE

THE ALLROUND SCAFFOLDING INCREASES SAFETY

The Layher Allround Scaffolding shortens assembly times, lowers costs, increases safety when enclosing churches, monuments and all kinds of towers – scaffolding on and in boilers, storage tanks and pipelines, scaffolding over workplaces and traffic routes, around machines and/or under bridges – construction scaffolding or rolling tunnel structures: There is no job that can't be done more quickly, more economically and more safely with the Layher Allround system.

The building industry is making increased demands for load-bearing capacity and assembly variability in scaffolding. This is where Allround Scaffolding is setting new standards: one system, as bricklayers' scaffolding, work scaffolding, safety scaffolding or falsework, with bay widths of 0.73 m, 1.09 m or 1.40 m, with selectable level heights and live loads up to 6 kN/m², depending on the bay width. Or assembled as shoring, formwork scaffolding or support scaffolding: with Allround Scaffolding you're prepared for anything.



Mobile tunnel scaffolding

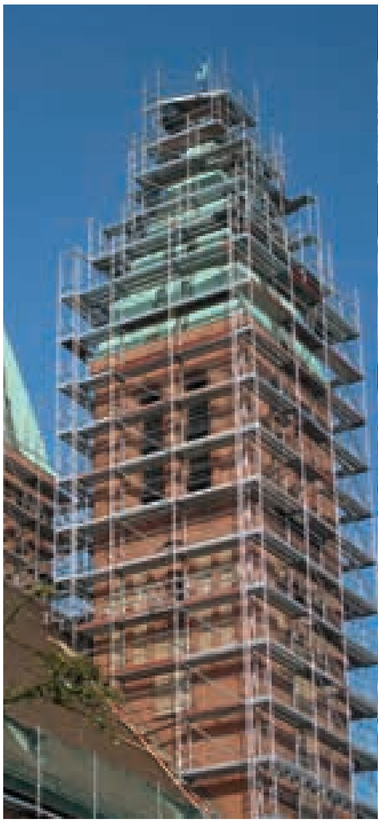
LAYHER ALLROUND SCAFFOLDING® – BIRDCAGE SCAFFOLDING

INTERIOR RENOVATION

Building renovation will be the challenge of the next few years. With Allround Scaffolding you can get on with any job. Concrete renovation on large buildings just as much as the renovation of old half-timbered buildings, enclosing interiors or exteriors for asbestos removal, as well as for the restoration of valuable ceilings in palaces and museums.

ENGINEERING SCAFFOLDING – CHURCH TOWERS

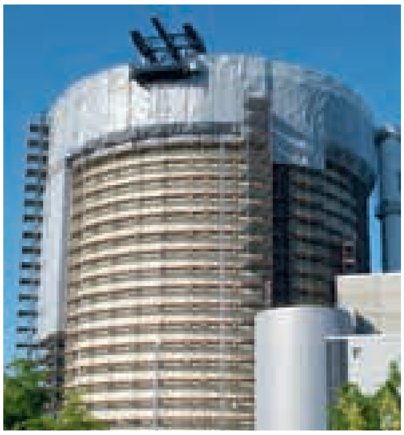
SCAFFOLDING FOR IRREGULAR BUILDING SHAPES



For scaffolding around and inside churches in particular, Allround Scaffolding offers impressive flexibility plus simpler and safer handling. With its particular benefits, such as rapid assembly without bolts, positive and non-positive connections, dimensional accuracy and stiffness, you can rapidly create safe workplaces for roofers, masons, carpenters, plasterers, plumbers, painters and glaziers – both indoors and outdoors – even at extreme heights.

INDUSTRIAL SCAFFOLDING

SAFE WORKPLACES AND ASSEMBLY PLACES

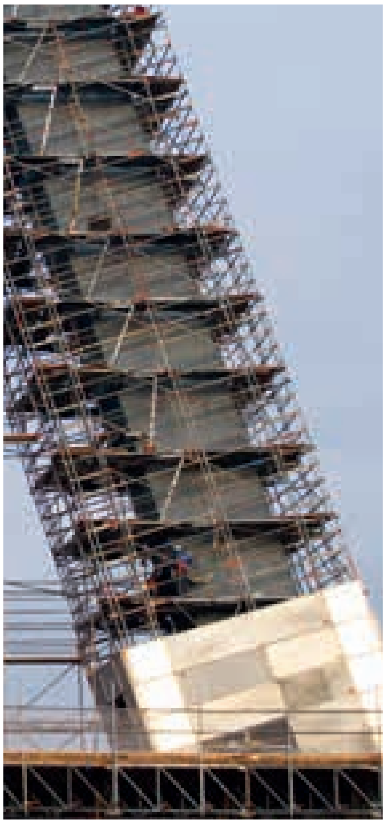
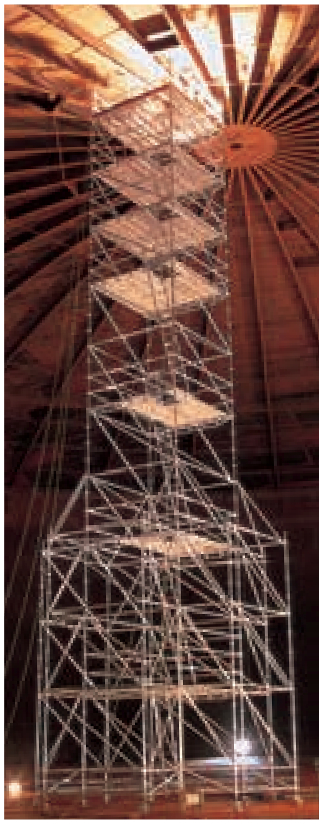


Tall machinery and plant has to be serviced and repaired, apparatus and equipment has to be fitted, electrical units have to be replaced and much more; inside and outside:

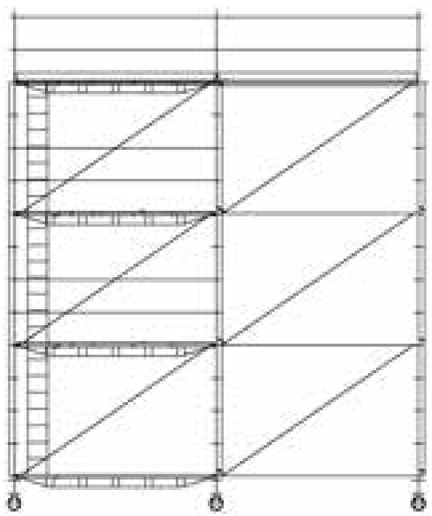
Safe workplaces and assembly places are created in any industrial or workshop in no time with the Allround system. Here today, there tomorrow – wherever it's used, it permits faster work thanks to a secure footing at height.

AS A BASIC SYSTEM FOR VERSATILE USE

STAIRWAY TOWERS – ROLLING TOWERS – LINING WITH PROTECT

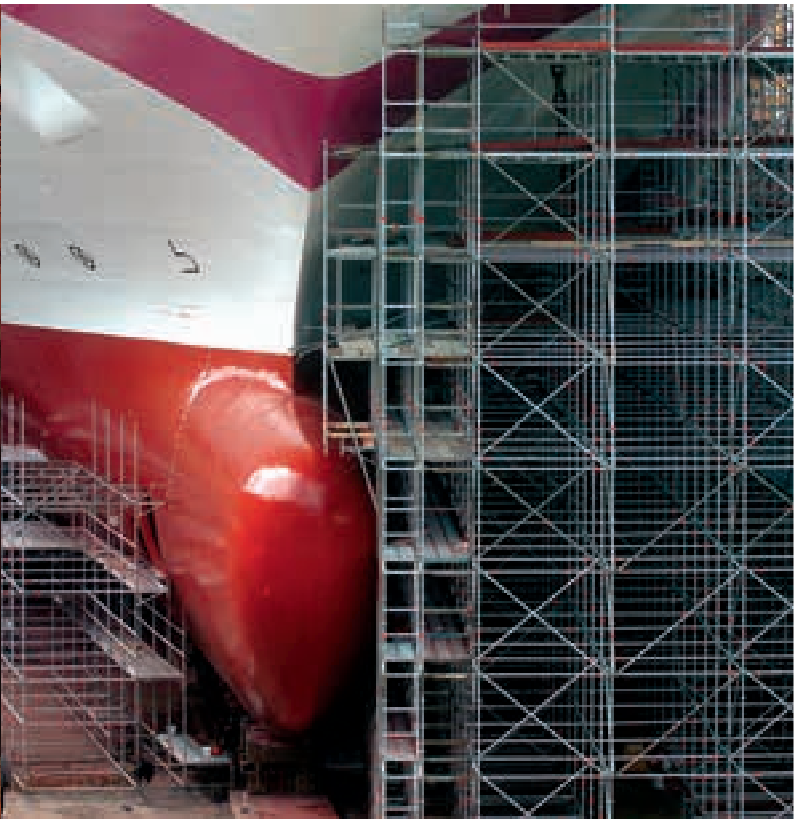




Its great variability and stiffness mean that a wide range of applications can be handled with the Allround Scaffolding using a small number of additional parts. By using individual stringers and appropriate railings, staircase towers ranging from construction stairway towers through to staircases can be built that meet the regulations for public assembly places. Rolling towers with a range of sizes and heights can be constructed. Using Allround Scaffolding together with the Protect system, waterproof enclosures covering entire façades, e.g. for asbestos clearance, can be realised.



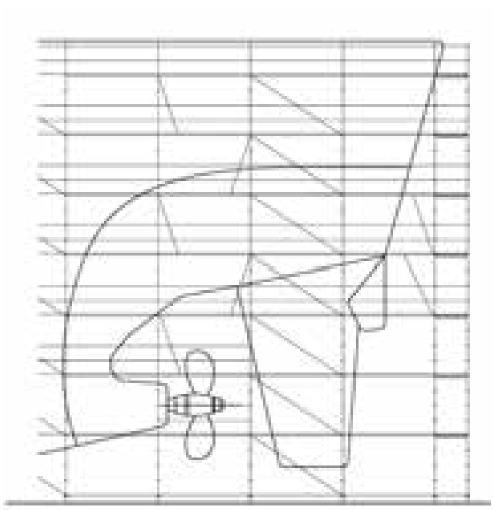
SHIPYARDS AND THE OFFSHORE SECTOR

SHORT INSTALLATION TIMES – FOR VERY FAST REPAIRS



In addition to Layher Allround Scaffolding, we offer Layher application technology, including technical consultation with qualified, trained contact partners. At your headquarters, at your building site, in your nearest Layher branch, or in the central technical office. Or highly experienced assemblers who help you to fully exploit the profitable possibilities of the Allround system.

One particular focus of the Allround Scaffolding is the construction of racks in shipyards and in the offshore sector. Enclosing the difficult shapes at and inside a ship, above and below deck, on and underneath offshore platforms, are no problem for the Allround Scaffolding, any more than the very fast assembly times that are required. For maintenance on drilling rigs, offshore or in the repair yard, the Allround Scaffolding is nowadays indispensable due to its versatility and adaptability.



AIRCRAFT ENCLOSED WITH EASE

SAFETY. RELIABILITY. ECONOMY.

Safety and service are vital when it comes to aircraft. This not only applies to the flight itself, but also to maintenance and therefore to the maintenance equipment. Whether for mobile maintenance units or special structures, Layher Allround Scaffolding is the right choice for any scaffolding where reliable, safe work at exactly the right height is critical.

Flexibility thanks to

- variable working heights
- selectable bay lengths and widths
- exceptional adaptability to the aircraft body

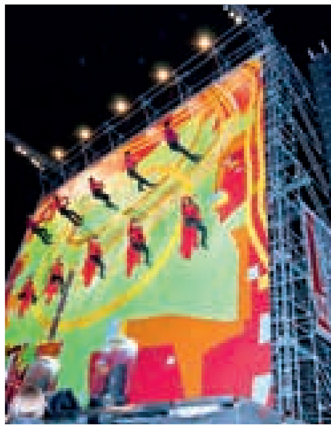
Reliability and safety thanks to

- bolt-free connection technology
- fast assembly and dismantling, allowing the machine's down-time to be shortened
- non-slip decks, convenient staircases, strong castors and other components from a well-thought-out and mature system

The Layher Allround Scaffolding is ideal for aircraft maintenance and servicing!

STANDS.
PODIUMS FOR INDOORS AND OUTDOORS

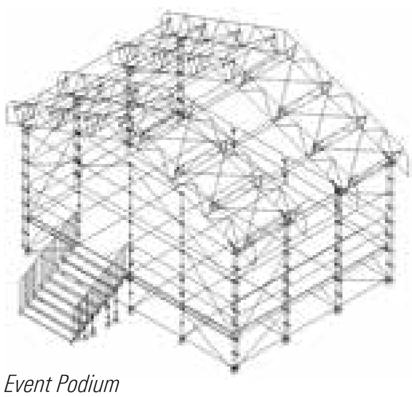
FOR EVERY OCCASION IN THE EVENTS SECTOR



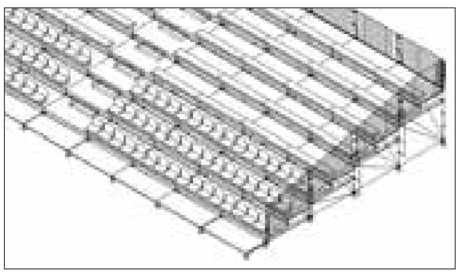
Using the Layher Allround system, you can safely, inexpensively and quickly assemble mobile stands and podiums for indoors and outdoors, for any occasion, in variable sizes.

An official inspection book can be included in the delivery.

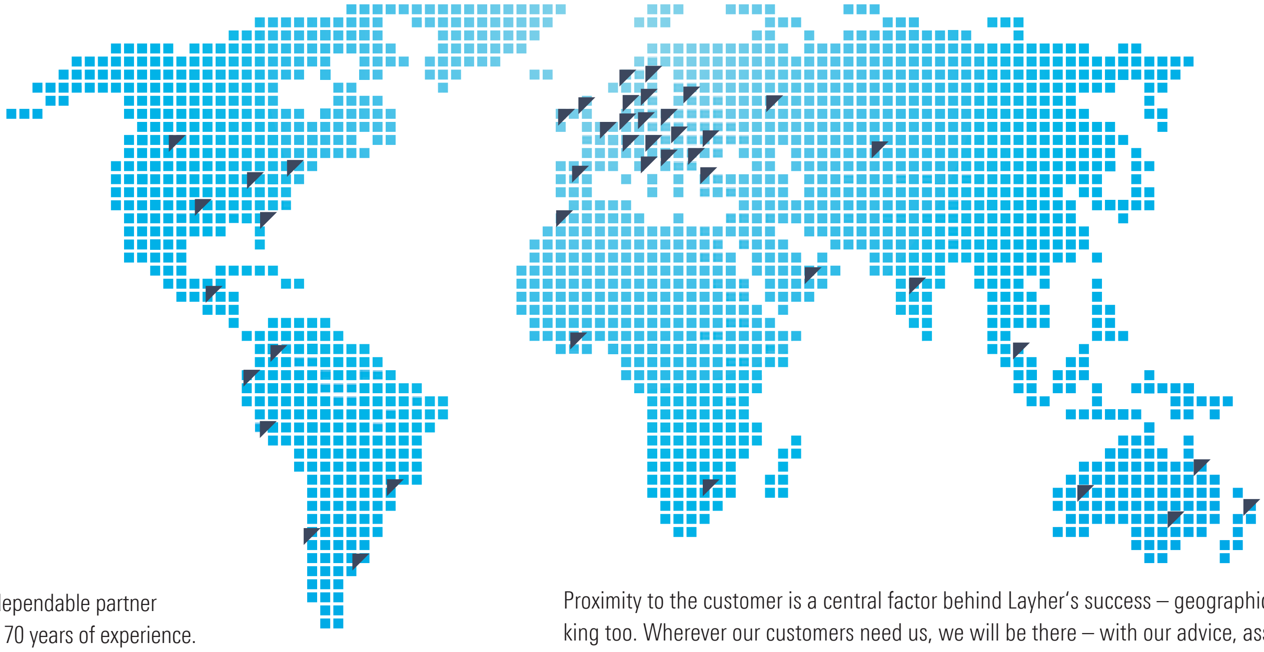
Matching roof structures are available as keder roofs, cassette roofs and variable-height roofs – in mono-pitch or double-pitch design, made from standard parts.



Event Podium



Event Stand



Layher is your dependable partner with more than 70 years of experience. "Made by Layher" always means "Made in Germany" too – and that goes for the entire product range. Superb quality – and all from one source.

Proximity to the customer is a central factor behind Layher's success – geographically speaking too. Wherever our customers need us, we will be there – with our advice, assistance and solutions.

- SpeedyScaf
- Allround Scaffolding
- Accessories
- Protective Systems
- Shoring
- Event Systems
- Rolling Towers
- Ladders

Headquarters in Eibensbach

Plant 2 in Gueglingen

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More Possibilities. The Scaffolding System.

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