

Modular scaffold

Holder/ Manufacturer /Supplier

Solideq AS

Rypevegen 2, 2406 Elverum, Norway

Product name

ALUSCAFF - Aluminium modular scaffolding

Product description

As per pages 2-16 of this type-examination certificate. Technical documentation as provided to RISE, no P104056, P110718, P109572, P110909, P111209, P110718, P113080, P114599, P115075 and P115416.

Certificate

RISE certifies that the product specified on this type-examination certificate complies with the requirements of the Swedish Work Environment Authority's Statute Book as per the provisions of AFS 2013:4 Scaffolding, Section 10 (RISE certification rules SPCR 064) and SS-EN 12810-1:2004 with associated standards.

Evaluated system configurations

Load class 2 - 5 (1.5 - 4.5 kN/m²), under the conditions contained in the product description.

Marking

All main components must be indelibly marked with A 75 RRM, where A 75 is the manufacturer's mark, RR is the year of manufacture and M is the month of manufacture. The products can also be marked with the RISE type-examination label (see below for example).

Period of validity

The type-examination certificate is valid until no later than 2031-07-05. The validity of this type-examination certificate can be verified at RISE homepage.

Miscellaneous

RISE conducts annual inspections of type-examined scaffolding components as per Section 5 of SPCR 064. This type-examination certificate supersedes the previous certificate with the same number. The type-examination certificate was originally issued on 2021-07-05.



Martin Tillander

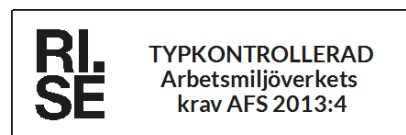
This is a translation from the Swedish original document. In the event of any dispute as to its content, the Swedish original shall take precedence.

Certificate C900133 | issue 2 | 2022-09-28

RISE Research Institutes of Sweden AB | Certification

Box 857, 501 15 Borås

+46 10 516 50 00 | certifiering@ri.se | www.ri.se



Product description for ALUSCAFF - Aluminium modular scaffolding

Design

ALUSCAFF modular scaffold comprised of standards, ledgers and transoms, horizontal braces, vertical and horizontal diagonal braces, platforms, guardrails, brackets, etc. as specified below. The standards are joined using sleeve joints, that is, a protrusion at the top of the standard onto which the above standard is placed. Attachments between tubes, diagonal braces and standards are comprised of wedge couplers attached to the welded rosettes on the standards. Access is via stairways attached to additional standards adjacent to the scaffold. All components are presented in the following specification.

The scaffold can be assembled in different width, length and height combinations.

Component	Measurement (m)	Item number
Base jack, hollow	0.5	T00043
Base jack, solid	0.5	T000423
Base jack, pinned solid	0.5	T00283
Standard with bayonet plate	3.0, 2.0, 1.5, 1.0, 0.5	R01300, R01200, R01150, R01100, R01050
Standard without bayonet	3.0, 2.0, 1.5, 1.0, 0.5	R02300, R02200, R02150, R02100, R02050
Top standard	0.35, 0.85	R02035T, R02085T
Tripod standard	3.0, 2.0, 1.0, 0.5	TS0300, TS0200, TS0100, TS0050
Adapter for tripod	Ø 34, Ø 48	TA0034, TA0048
Base jack for tripod standard, solid	Ø 48	T00414
Locking pin for standard, complete	Ø 16 x 80mm	T00119
Longitudinal beam	4.0, 3.0, 2.45, 1.9, 1.6, 1.2, 1.0, 0.7, 0.5, 0.3	R05400, R05300, R05240, R05190, R05160, R05120, R05100, R05072, R05050, R05030
Single-tube beam, reinforced	1.2, 1.0, 0.72	R06120, R06100, R06072
Single-tube beam, reinforced	1.6, 1.2, 1.0, 0.72	R06160A, R06120A, R06100A, R06072A
Aluminium platform 0,23m	3.0, 2.45, 1.96, 1.65, 1.25, 1.05, 0.72, 0.55	R18305, R18250, R18196, R18165, R18125, R18105, R18077, R18055
Aluminium platform 0,17m	3.0, 2.45, 1.96, 1.65, 1.25, 1.05, 0.72, 0.55	R17305, R17250, R17196, R17165, R17125, R17105, R17077, R17055
Aluminium platform 0,1m	3.05	R10305
Platform with hatch	1.2 x 0.7	T00055
Composite scaffolding platform ¹⁾	0.49 x 1.25	T00077
Double guardrail	3.0, 2.45, 1.9, 1.6, 1.0, 1.2, 0.7, 2.3	R11300, R11245, R11190, R11160, R11100, R11120, R11072, T00082
Single guardrail	3.0, 2.45, 1.9, 1.6, 1.2, 1.0, 0.72, 0.5, 0.3	R10300, R10245, R10190, R10160, R10120, R10100, R10072, R10050, R10030
Diagonal brace alu	H = 2, L = 3.0, 2.45, 1.9, 1.6, 1.2	R15300, R15250, R15190, R15160, R15120

Telescopic diagonal brace	Bay length: 1.2 – 3.0m	R15000
Stair	1.0 x 1.2, 1.0 x 1.0, 2.0 x 1.6, 2.0 x 1.2, 2.0 x 3.0	R30100, R30110, R30160 R30120, R30305
Railing for R30305		R31001
Internal railing for R30305		C286300
Base for stairs		R30105
Aluminum ladder	2.18	R35218
Ladder for platform with hatch	1.2 x 0.7	202021A
Aluminum toeboard	3.0, 2.45, 1.9, 1.6, 1.2, 1.0, 0.7, 0.5	R91305, R91250, R91196, R91165, R91125, R9100, R91072, R91050
Toeboard pin		T00143
Toeboard coupler		T00142
Platform Rider IP	0.23, 0.47, 0.7	R70001, R70002, R70003
Platform Rider VP	0.23, 0.47, 0.7	R71001, R71002, R71003
Swivel fixing for longitudinal beam		R73400
Beam Rider BRM same level, alu		R73100
Beam Rider BRM same level, steel		R73100S
BVR with top plate		R73201
BVR without top plate		R73200
Beam rider		R73300
Console alu	0.3, 0.5, 0.7, 1.2	R25030, R25051, R25070, R25120
Console alu without standard joint	0.5, 0.7	C25050, C25070
Console alu adjustable with tube	0.5 – 0.7	R25072
Console steel	0.72, 0.5, 0.47, 0.24	109072, 109050, 109047, 109024
Console 0,73 m for lifting wheels		C285579A
Lifting wheel for console		T00045
Corner platform for 0.7m console	672/672	T00118
Corner platform for 1.2m console	1149/1149	T00117
Platform for corners	0.5, 0.7	T00500, T00700
Bridging ledger aluminum	3.2 x 0.4, 4.2 x 0.4, 5.2 x 0.4, 6.2 x 0.4, 8.1 x 0.4	C000255, C000257, C000258, C000259, C000261
Joint for bridging ledger		C003588
Aluminum railing post		R03000
Wall ties steel	1.5, 1.2, 1.0, 0.8, 0.6, 0.4	T00008U, T00054U, T00178U, T00056U, T00053U, T00007U

Wall ties steel adjustable	0.75 - 1.25 0.5 - 0.85	T00199U, T00247U
Wall ties adjustable 0.6 m w/coupling		T00085
Wall ties adjustable 0.4 m w/coupling		T00153
Self-closing gate alu	1.2	ZZA070
Plate for bottom list		T00422
Bottom list	0.7, 1.0, 1.2, 1.6, 1.9, 2.5, 3.0	T00415, T00416, T00417, T00418, T00419, T00420, T00421
Five bar plate with handle in Alu	0.5 x 0.5, 0.7 x 0.5, 1.1 x 0.5, 1.14 x 0.64, 0.7 x 0.32	R75050, R75070, R75110, R75114, R75032
Cover list for platform	0.7, 1.0, 1.2, 1.6, 1.9, 2.5, 3.0	T00423, T00424, T00425, T00426, T00427, T00428, T00429
Suspension clamp double		T00078
Suspension grating		T00086
Suspension	H 80-180, H 150-300, L 60-120	T00087, T00122, T00123
Suspension bulb	160-240, 260-370	T00257, T00282
Sleeve		T00180

Other accessories: Benzelwire

¹⁾ Type-examination certificate number SC0984-15, designated "La Bank 490".

Dimensions

Component	Dimensions (mm)	Material
Standards	Ø48.3×6	Aluminium
Diagonal vertical	Ø48.3×3.4	Aluminium
Diagonal adjustable	Ø50×3, 42×4	Aluminium
Single-tube beam reinforced	90×3.4	Aluminium
Ledger beam	34×173.6	Aluminium
Base jack solid	Ø34	Steel
Base jack hollow	Ø34×4	Steel
Base jack pinned	Ø34×4	Steel
Bridging ledger - Horizontal and vertical pipe - Diagonal oval tube	Ø48.3×4 30×22×3	Aluminium
Guardrails	Ø48.3×3.4	Aluminium

Evaluated system configurations

1. Evaluated system configurations are shown in the following table.

	(1)	(2)	(3)
Load class	2	3	5 ¹⁾
Permissible load (kN/m ²)	1.5	2.0	4.5
Bay length (m)	3.05		
Bay width (m)	1.25		
Articulated base jack	Yes		
Bridging ledger ²⁾	Yes		Yes ³⁾
Platform	Aluminum planking on 5 adjacent levels		
Lift height (m)	2.0		
Vertical anchoring distance (m)	4.0		2.0
Verified erection height (m)			
- without brackets	24.5	24.5	24.5
- with bridging beam	24.5	24.5	24.5

Not. Each individual load-bearing component must meet at least the load class presented for each system configuration above.

- 1) Execution according to system configuration (3), see Figure 2.
- 2) Assembled with bridging ledger, see Figure 3.
- 3) The width of the opening is limited to 4.10 m, see Figure 4.

2. When evaluating the system configurations, the maximum load capacity of the scaffold has been determined, that is, the load capacity with a height of 25 m or more and the point at which the scaffold fails. This evaluation provides standard loads that can be used for simplified calculations, see **Conditions during use, item 1.**

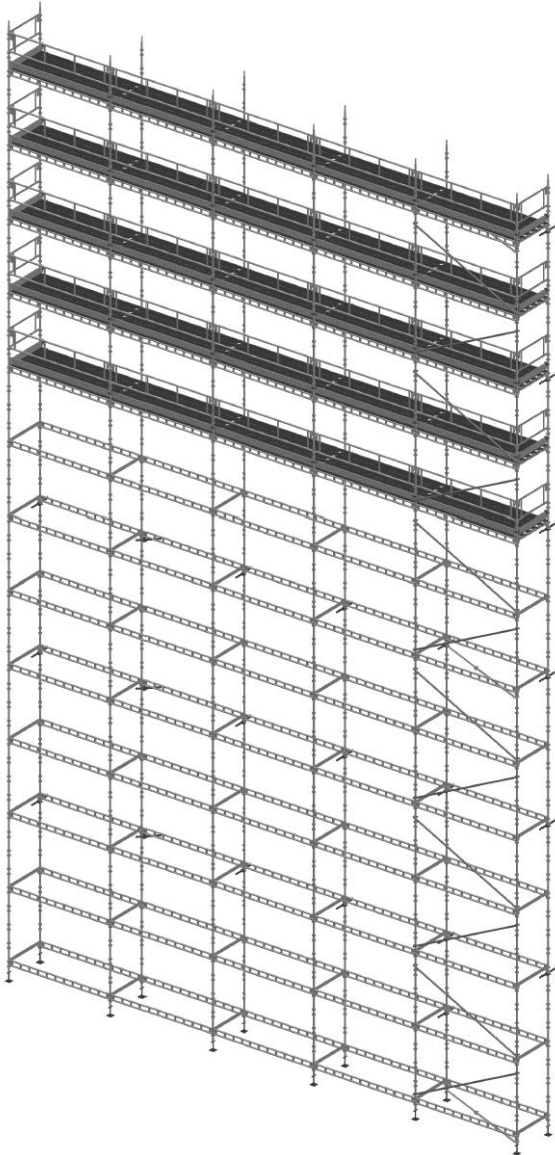
3. The scaffold is tied to the wall as per **Conditions during Use, item 11.**

The maximum anchor force perpendicular to the façade for dimensioning is 2.1 kN.

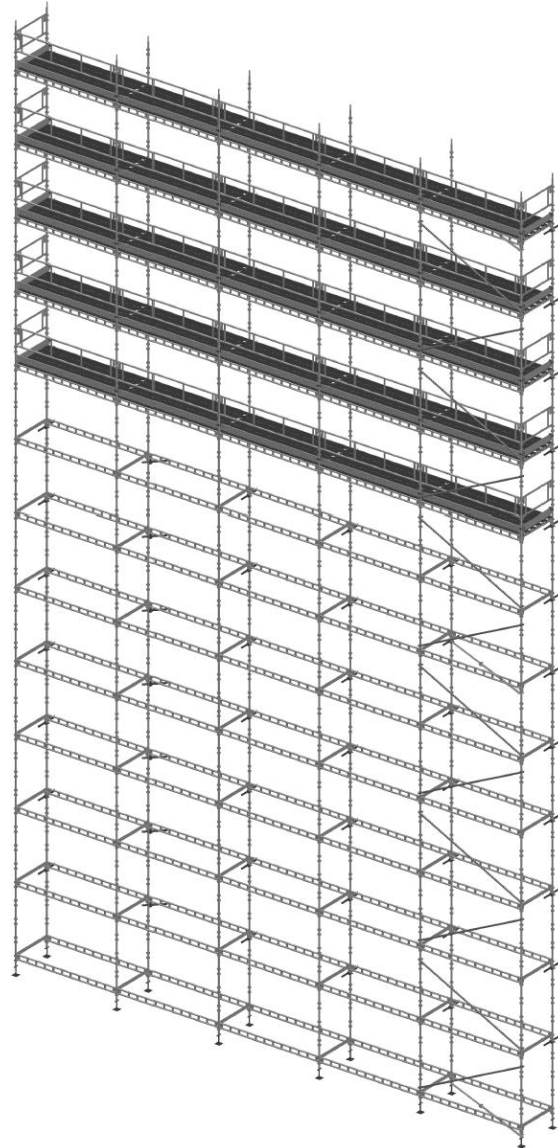
The maximum anchor forces for dimensioning anchors that can absorb horizontal forces (V-anchor) are 3.8 kN and 4.6 kN parallel and perpendicular to the façade respectively.

4. The maximum dimensional force on the foundation is 14 kN/standard for the design without brackets. With a bridging ledger to form an opening in the scaffold, the maximum design force on the foundation is 19 kN/standard. With anchor spacing of 2 m, the maximum design force on the foundation is 26 kN/standard.
5. The calculations are made with the assumption that work is conducted on one (1) level only.
6. During the type-examination, the assembly instruction edition 2022-02, as well as the separate assembly instruction edition 2022-02 for when ALUSCAFF - Aluminium modular scaffold is used as a hanging scaffold have been examined.

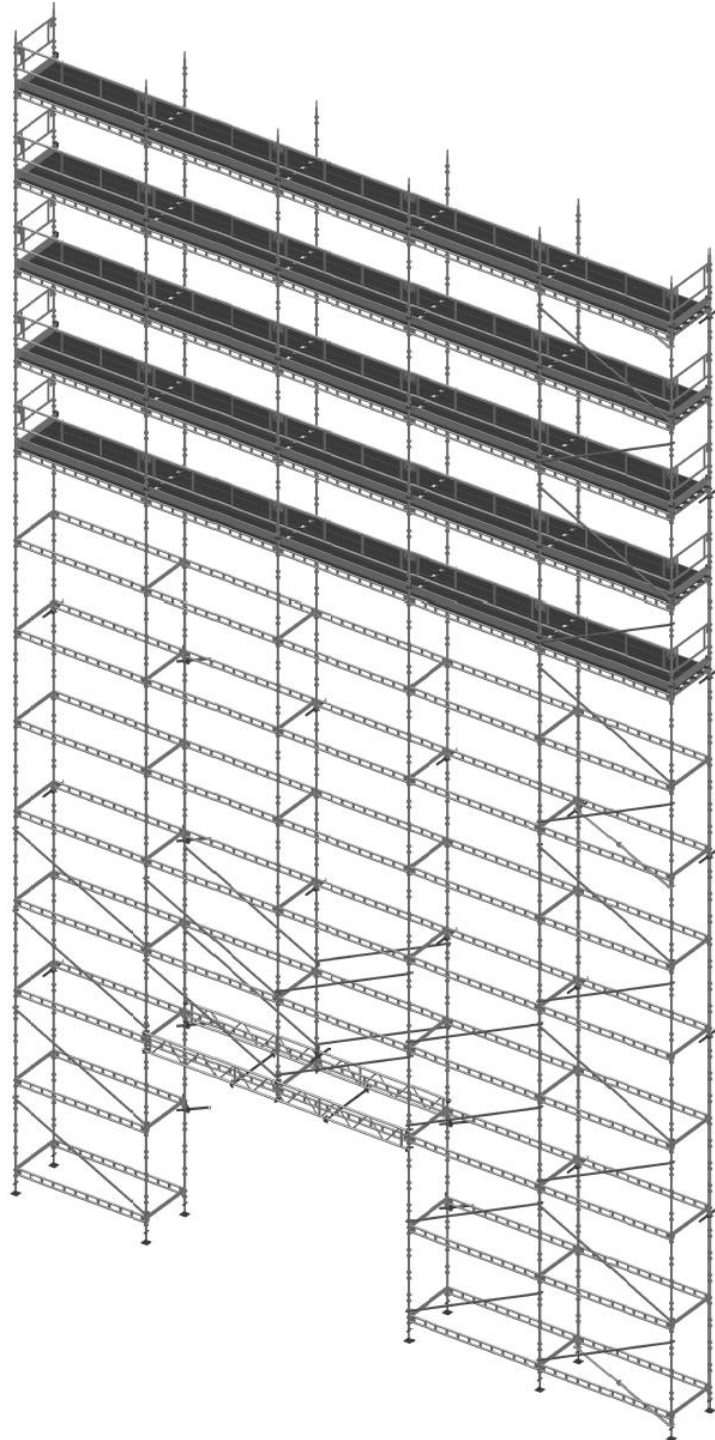
System configurations 24 m



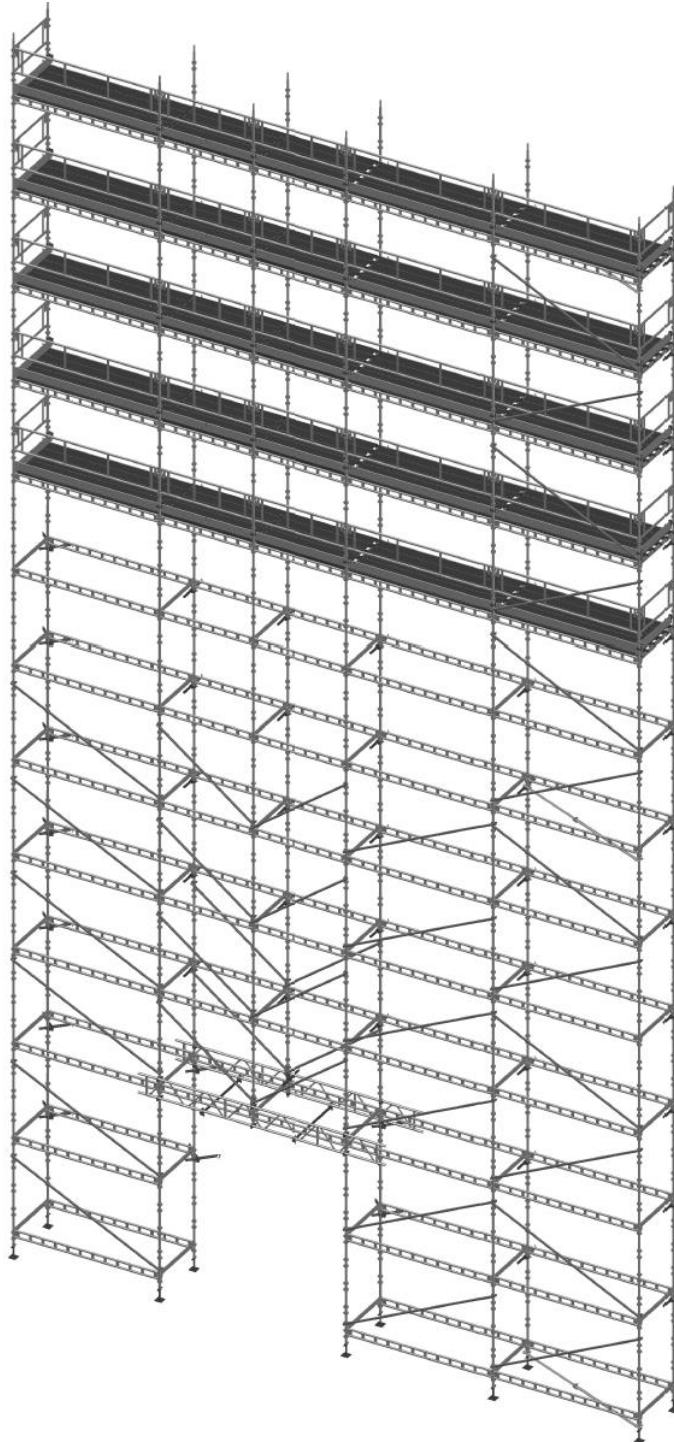
Scaffold without brackets with anchoring distance 4.0 m according to (1) and (2) in the table under item 1.



Scaffold without brackets with anchoring distance 2.0 m according to (3) in the table under item 1.



Scaffold with bridging ledger according to (1) and (2) in the table under item 1. Extra wall ties are placed at a height of 2.5 m on each side of the opening. Otherwise, wall ties according to item 3. Vertical diagonal braces are installed as shown in the figure.



Scaffold with bridging ledger according to (3) in the table under item 1. Extra wall ties are placed at a height of 2.5 m on each side of the opening. Otherwise, wall ties according to item 3. Vertical diagonal braces are installed as shown in the figure.

Conditions during use

1. In the case of simplified dimensioning, a permissible standard load as set out in the following table can be used, provided that the other applicable conditions set out below are met. In the case of simplified dimensioning using the partial coefficient method, the maximum load capacity is obtained by multiplying the permissible standard load by 1.5.

	Permissible standard load (kN)	
	Vertical anchoring distance (m)	4.0
Without brackets	7.1	17.3
Articulated base jack	6.8	-

2. Clear headroom between working areas shall normally correspond to height class H2, which means headroom of at least 1.90 m between working areas and transom, or between working areas and ledger when using brackets to widen the scaffold. The headroom between the working areas and any horizontal diagonal brace shall be at least 1.90 m regardless of height class.
3. Each level must be fitted with horizontal braces or ledgers on both the inside and the outside. The bottom level must always be placed at the lowest possible level.
4. Working areas must be fitted with double guardrails or guardrail frames and a toe board if the height of fall is two metres or more.
5. Vertical diagonal braces parallel to the facade shall be provided in at least every 5th bay and always in the outermost bays. In those bays where diagonal bracing is provided, horizontal diagonal bracing must be fitted at least every 12 metres in height. The horizontal diagonal braces must be positioned in such a way that the clear passage height is at least 1.90 m.
6. Vertical diagonal braces parallel to the facade can be replaced by double railings (R11xxx) if they are installed at each lift level and in all bays.
7. Standards with a length of 2.0 m may only be used at the top of the scaffold and never at more than the upper half of the height. Even shorter standards may only be used at the top of the scaffold.
8. The maximum extended length of the base jack is 0.5 m.
9. Stairs, ladders, platforms and beam riders must be secured with benzelwire against accidental lifting, as described in the manual.
10. The adjustable length of the telescopic diagonal brace should be fixed with a tightening torque of 50 Nm.
11. The scaffold must be tied to the wall every 4 metres in height using the innermost standard where the standard and transom meet. The lowest tie point must be no more than approximately 4.5 m above ground level.

Wall ties capable of absorbing horizontal forces must be used on at least every 5th standard pair at anchor level.

In the case of a covered scaffold and/or at heights greater than 24 m, larger wind loads can arise and therefore also higher anchorage forces.

12. When using brackets, the space between the main level and the bracket level must be covered, normally with ledgers or by equivalent means.
13. ALUSCAFF - Aluminum modular scaffold can also be used as a hanging scaffold, see separate mounting instructions for more information.
14. Access is via stairways attached to two additional standards on the outside of the scaffold using components intended for this purpose. Access stairways must be fitted with double handrails on the outside, with double guardrails in gable sections and toe-boards in lower gable sections. The topmost level must be fitted with a shorter rail towards the stairway. On any level with no adjacent platforms, the landings must be fitted with double safety rails towards the scaffold. The access route may also consist of an internal staircase or ladder in a platform with a hatch.
15. When using the lifting device, bracket and lifting wheels, it may be loaded with a maximum of 50 kg. Extra wall ties are required when using the lifting device, see the installation instructions for more information.
16. The wooden gratings that are used must be type-examined or designed in accordance with the provisions of AFS 2013:4.
17. The platforms that are used must be type-examined and designed so that they can be safely installed on the scaffold transoms or ledgers and secured against unintentional lifting at both ends.
18. Any system-independent components, such as bridging ledgers, stairways and tube couplers used must be type-examined

Assembly instructions

The scaffold must be accompanied by the assembly instructions when it is handed over to the user.

Application

The type-examination certificate applies to scaffolding produced by the manufacturer specified on the type-examination certificate using materials, dimensions and designs matching those of the type-controlled example.

The scaffold may not be assembled using components from other scaffolds unless a specific analysis of the resulting load capacity has been conducted.

Load capacity, components

Beams

The following permissible loads and load classes apply to the reinforced monotube beam (RO6xxx).

Section length (m)	Bay length, as transom (m)		
	1.20	1.00	0.72
Distributed load (kN/m)	24.9	33.1	49.8
Concentrated load (kN)	18.1	21.5	29.3
4.05	5	5	5
3.05	6	6	6
2.50	6	6	6
1.96	6	6	6
1.66	6	6	6
1.25	6	6	6
1.05	6	6	6
0.77	6	6	6
0.55	6	6	6

The following permissible loads and load classes apply to the single-tube beam reinforced (RO6xxxA). The table indicates the load class for single-sided loads and double-sided loads in brackets.

Section length (m)	Bay length, as transom (m) ^{Not}			
	1.60	1.20	1.00	0.72
Distributed load (kN/m)	6.8	12.1	17.5	33.7
Concentrated load (kN)	5,5	7,3	8,7	12.1
4.05	3(-)	5(3)	6(4)	6(5)
3.05	4(3)	6(4)	6(5)	6(6)
2.50	5(3)	6(4)	6(5)	6(6)
1.96	5(3)	6(5)	6(6)	6(6)
1.66	6(4)	6(5)	6(6)	6(6)
1.25	6(5)	6(6)	6(6)	6(6)
1.05	6(5)	6(6)	6(6)	6(6)
0.77	6(6)	6(6)	6(6)	6(6)
0.55	6(6)	6(6)	6(6)	6(6)

The following permissible loads and load classes apply to longitudinal beams. The table indicates the load class for single-sided loads and double-sided loads in brackets.

Section length (m)	Bay length (m) ^{Not}								
	4.00	3.00	2.45	1.91	1.61	1.20	1.00	0.72	0.50
Distributed load (kN/m)	1.8	4.3	6.7	10.8	15.5	24.1	32.3	53.4	90.5
Concentrated load (kN)	4.1	6.1	7.5	9.8	14.1	16.0	19.4	27.5	37.3
4.05		2 (-)	3 (-)	5 (3)	5 (4)	6 (5)	6 (6)	6 (6)	6 (6)
3.05		3 (-)	4 (3)	5 (4)	6 (4)	6 (6)	6 (6)	6 (6)	6 (6)
2.50		3 (2)	5 (3)	6 (4)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)
1.96	2 (-)	4 (3)	5 (3)	6 (5)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)
1.66	3 (-)	4 (3)	5 (4)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)
1.25	3 (-)	5 (3)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)
1.05	3 (2)	5 (4)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)
0.77	4 (3)	6 (4)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)
0.55	5 (3)	6 (5)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)

^{Not} Double-sided loading is, for example, a transom loaded from two adjacent bays. Single-sided load is, for example, a longitudinal beam loaded by a decking or other transverse platform.

Platforms

In the case of platforms, the following load classes and permissible loads apply to evenly distributed loads.

Type	Length cc-distance (m)	Width (mm)	Load class	Maximum permissible distributed load (kN/m ²)
Aluminium board 0.23	3.05	230	4	3.0 (300 kg/m ²)
	2.55		5	4.5 (450 kg/m ²)
	≤ 2.05		6	6.0 (600 kg/m ²)
Aluminium board 0.17	3.05	170	5	4.5 (450 kg/m ²)
	≤ 2.55		6	6.0 (600 kg/m ²)
Aluminium board 0.10	≤ 3.05	100	6	6.0 (600 kg/m ²)

Brackets

When using aluminium brackets, the following permissible loads and load classes apply.

Console	Length [m]	Maximum permissible load distributed over the entire console (kN)	Load class at bay length 3.05 m	Load class at bay length 2.5 m	Load class at bay length 2.0 m
Console alu	0.3	3.0	4	4	5
Console alu without spindle	0.5	4.9	3	4	5
Console alu	0.5	4.9	3	4	5
Console alu without spindle	0.7	5.0	3	3	4
Console alu	0.7	5.0	3	3	4
Console alu	1.2	9.0	3	3	4
Console adjustable alu with pipe	0.5-0.7	6.0	3	4	4

When using steel brackets, the following permissible loads and load classes apply.

Console	Length [m]	Maximum permissible load distributed over the entire console (kN)	Load class at bay length 3.05 m	Load class at bay length 2.5 m	Load class at bay length 2.0 m
Console steel	0.24	9.3	6	6	6
Console steel	0.47	3.7	3	3	4
Console steel	0.50	4.0	3	3	4
Console steel	0.72	5.4	3	3	4

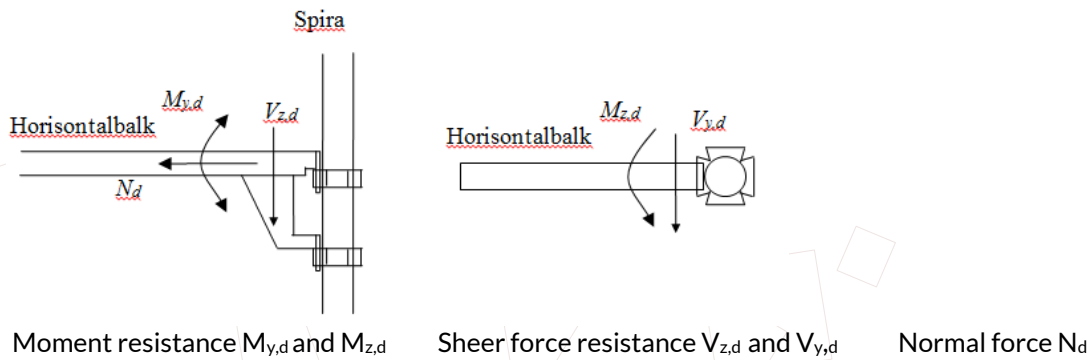
Other

When using suspension clamps, the following permissible loads apply.

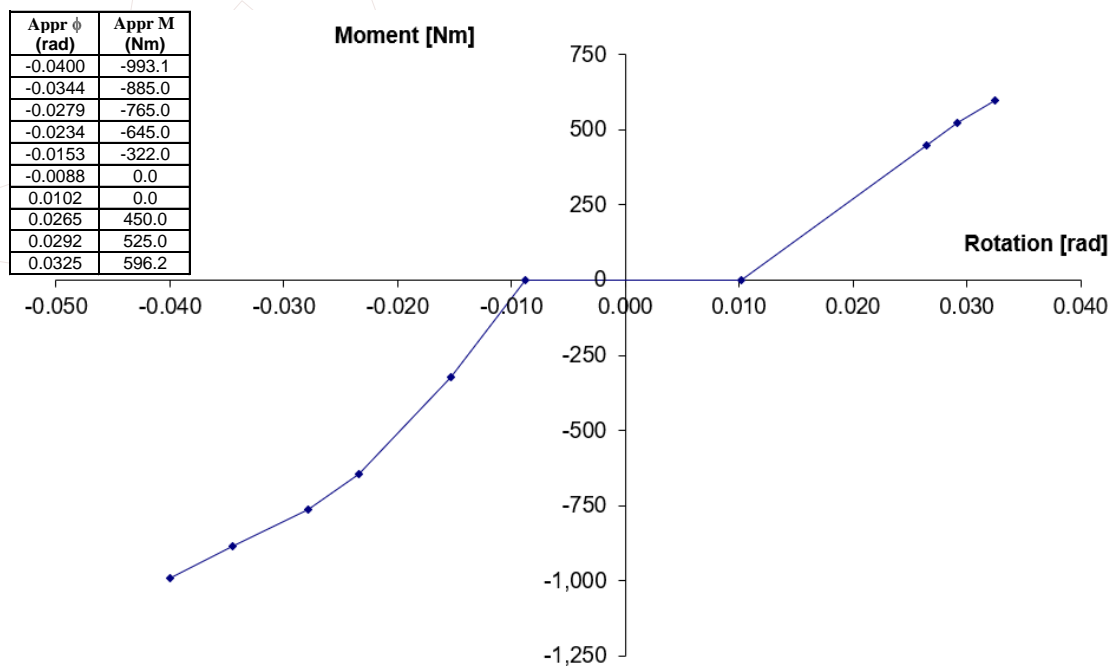
Type	Maximum permissible load (kN)
Suspension clamp double	12
Suspension grating	20
Suspension H and L	20
Suspension bulb	20
Sleeve	20

Input values for dimensioning

The following values obtained from component testing can be used as input values for determining the load capacity of the scaffold as per SS-EN 12811-1. All specified values are dimensioning values, R_d .



Beam attachment - Vertical moment resistance, $M_{y,d}$

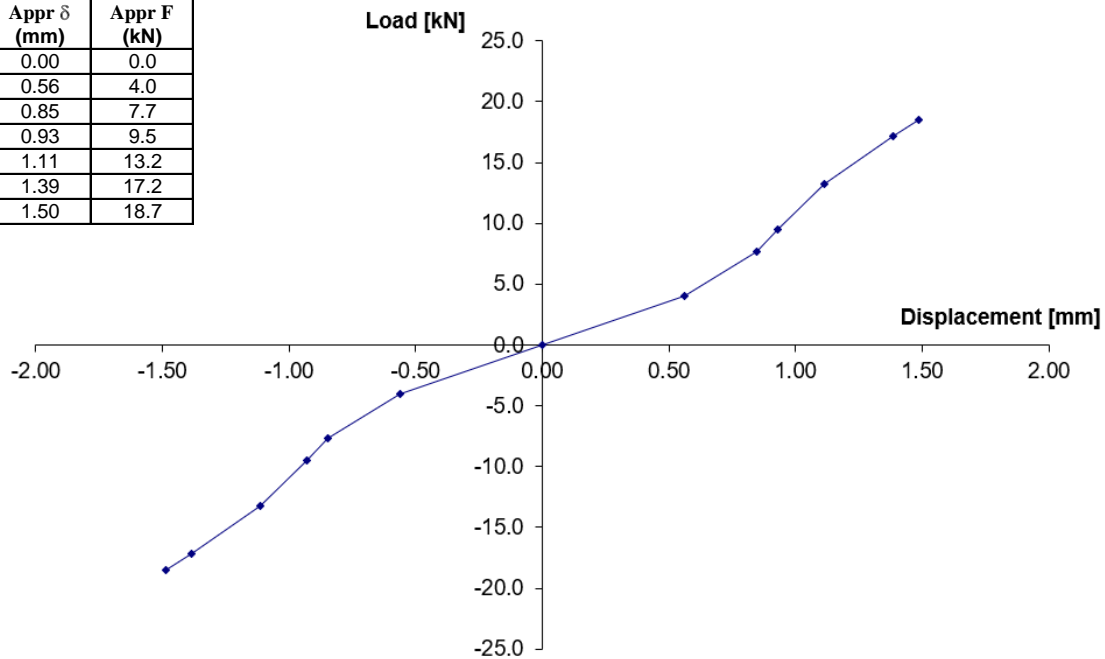


Beam attachment - Vertical moment resistance, $M_{z,d}$

The horizontal rotational stiffness, $M_{z,d}$, is modelled as a joint.

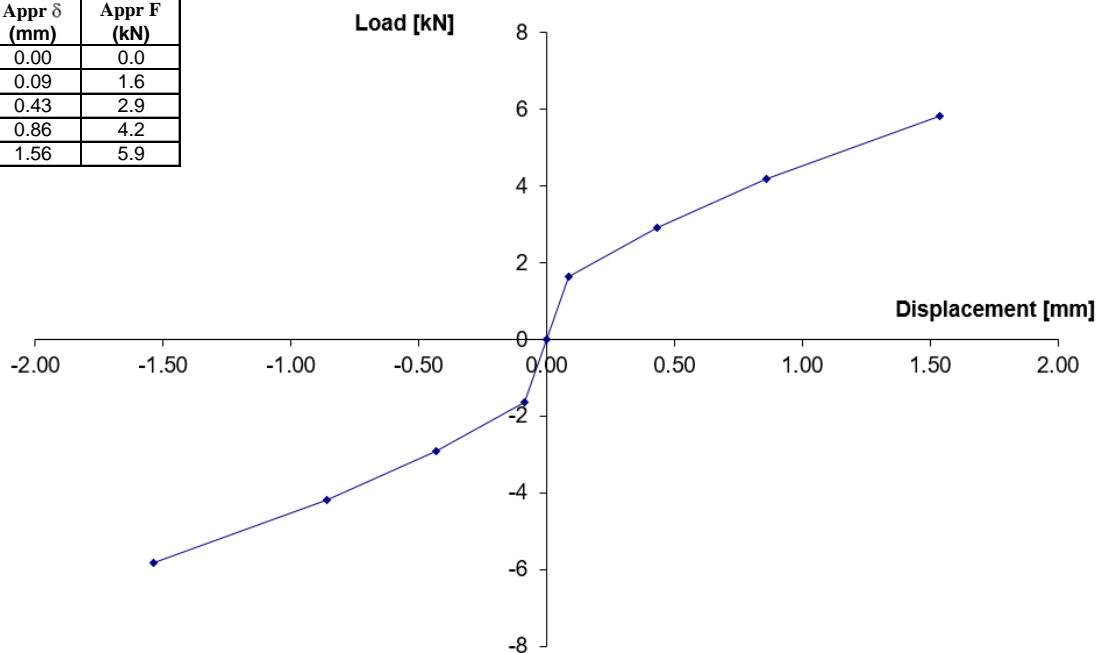
Beam attachment – Vertical shear force resistance, $V_{z,d}$

Appr δ (mm)	Appr F (kN)
0.00	0.0
0.56	4.0
0.85	7.7
0.93	9.5
1.11	13.2
1.39	17.2
1.50	18.7



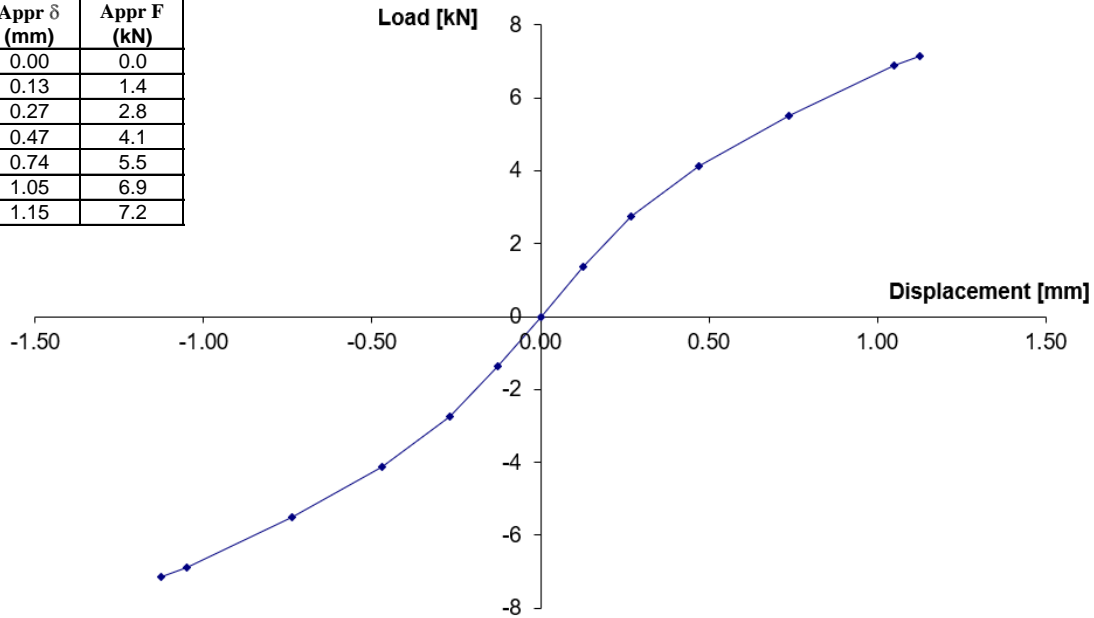
Beam attachment – Horizontal shear force resistance, $V_{y,d}$

Appr δ (mm)	Appr F (kN)
0.00	0.0
0.09	1.6
0.43	2.9
0.86	4.2
1.56	5.9



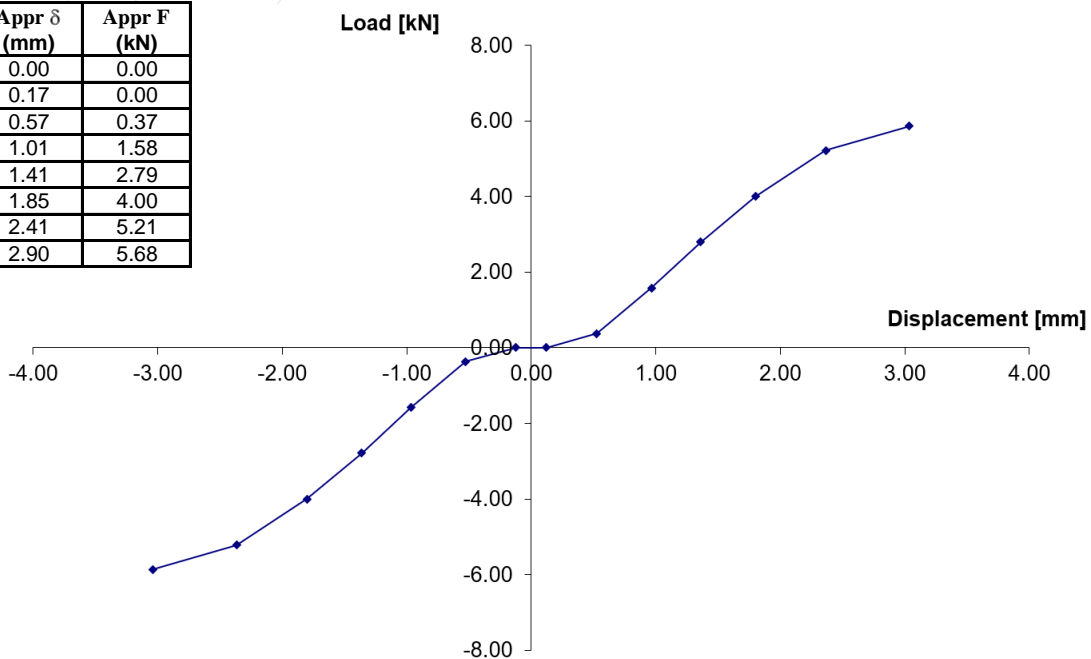
Beam attachment – Horizontal normal force resistance, N_d

Appr δ (mm)	Appr F (kN)
0.00	0.0
0.13	1.4
0.27	2.8
0.47	4.1
0.74	5.5
1.05	6.9
1.15	7.2



Horizontal diagonal brace (Diagonal brace telescope) - Stiffness correlation

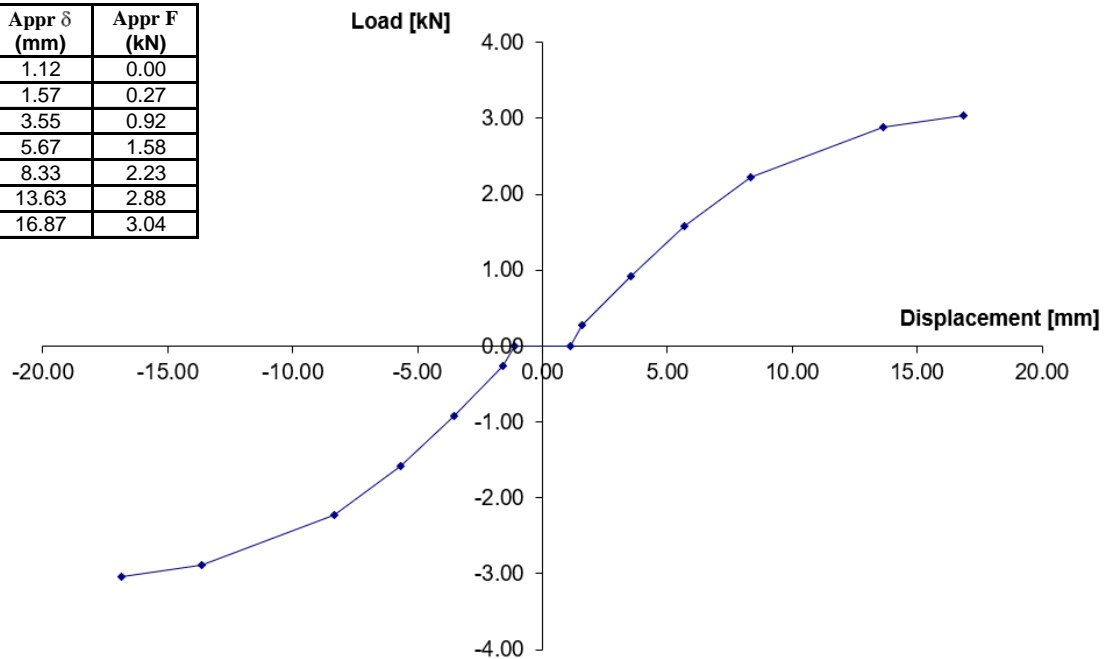
Appr δ (mm)	Appr F (kN)
0.00	0.00
0.17	0.00
0.57	0.37
1.01	1.58
1.41	2.79
1.85	4.00
2.41	5.21
2.90	5.68



The diagram shows the stiffness relationship of the diagonal in its direction.

Vertical diagonal (Diagonal brace alu) - Stiffness correlation

Appr δ (mm)	Appr F (kN)
1.12	0.00
1.57	0.27
3.55	0.92
5.67	1.58
8.33	2.23
13.63	2.88
16.87	3.04



The diagram shows the stiffness relationship of the diagonal in its direction.