



TYPE EXAMINATION CERTIFICATE

39 44 02

Frame scaffolding

Holder/Manufacturer/Supplier

Mon.Zon Development AB, Box 5238, SE-402 24 Göteborg

Product name

Frame scaffolding

Product description

According to pages 2–11 in this type examination certificate. Technical documentation according to the documentation for SP, no. 4P06705.

Requirements

The Swedish Work Environment Authority's Statute Book AFS 2013:4 Scaffolding, 10 § (SP's certification regulations SPCR 064) and SS-EN 12810-1.

Permitted Load

Load class 2 – 3 (1.5 – 2.0 kN/m²), with conditions according to the product description.

Marking

The main components of the scaffolding such as base jacks, frames, guardrail frames, diagonal braces, platforms, stairways, lattice beams, brackets, etc. must be clearly stamped with the year of manufacture (2 digits) and "monzon".

Validity

This type examination certificate is valid until not later than 15th March 2027.

Miscellaneous

SP carries out an annual verification of conformity of the type examined components according to section 5 of SPCR 064.

This type examination certificate replaces the certificate of the same number dated 15th March 2017 and originally issued on 28th February 2005.

SP Technical Research Institute of Sweden Certification

Lennart Aronsson

Gunnar Söderlind

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



Type examination certificate no. 394402 issue 10, 2017-05-09

SP Technical Research Institute of Sweden

Box 857, SE-501 15 Borås

Tel: +46 (0) 10 516 50 00

E-mail: info@sp.se www.sp.se

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Product description for Mon.Zon Frame scaffolding

Design

Frame scaffolding consists of frames, diagonal braces, platforms, stairs, ladders etc. according to the following list of components. The frames are made of aluminium with a width of 0.73 m. Access is by stairways mounted in separate frames adjacent to the scaffolding.

The scaffolding can be erected in different combinations of length and height. Constituent components are given in the list below.

Component (design is given in the instruction manual, steel unless otherwise stated)	Sizes	Item ID
Base jack (steel)	40, 60, 80 cm	111.040-080
Base jack, hinged (steel)	60, 80 cm	111.061, 111.081
U-base transom (alu)	73 cm	412.002
U-Frame 073 (alu)	66, 100, 150, 200 cm	100.066-200
L-Frame (alu)	100, 200 cm	102.073-200
Top end frame (alu)	73 cm	103.073
Guardrail frame (alu)	73, 109, 140, 157, 207, 257, 307 cm	101.073-307
Guardrail, single (steel)	73, 109, 140, 157, 207, 257, 307 cm	114.073-307
Horizontal brace (steel)	207, 257, 307 cm	105.207-307
End guardrail (steel)	73 cm	107.073
Vertical diagonal brace (steel)	157x200, 207x200, 257x200, 307x200 cm	104.157-307
U-deck 0.32 (alu)	73, 109, 140, 150, 157, 207, 257, 307 cm	310.073-307
U-Platform 0.61 (plywood)	73, 109, 140, 150, 157, 207, 257, 307 cm	300.073-307
U-Platform 0.61 (fibreglass)	73, 109, 140, 150, 157, 207, 257, 307 cm	317.073-307
U-Access deck 0.61 (plywood)	257, 307 cm	405.257-307
U-Access deck 0.61 (fibreglass)	257, 307 cm	417.257-300

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Component (design is given in the instruction manual, steel unless otherwise stated)	Sizes	Item ID
Toeboard (wood)	73, 109, 140, 157, 207, 257, 307 cm	108.073-307
Toeboard (alu)	73, 109, 140, 157, 207, 257, 307 cm	118.073-307
Toeboard for end (wood)	73 cm	108.000
U-Staircase (alu)	257x200, 307x200 cm	400.257-307
U-Staircase (alu)	160x100 cm	400.100
External handrail (alu)	257x200, 307x200 cm	403.257-307
Internal handrail (alu)	280 cm	412.280
U-Console, 036 (steel)	36 cm	109.036
U-Console, 073 (steel)	73 cm	109.073
Brace for bracket (steel)	73x170 cm	104.170
Wall tie (steel)	30, 50, 130 cm	112.030-130
Rail coupler (steel)		805.018
Lattice beam 450 (alu)	400, 500, 600, 800 cm	500.400-800
Mounting spigot, frame to lattice beam.	45 cm	820.001
U-transom 073, adjustable (steel)	73 cm	202.071
L-deck clamp, deck (steel)	26 cm	111.009
Bolt with spring lock (steel)	60 mm	500.008
Sole plate (wood)	45x450 mm	830.050
U-spigot (steel)	60X300 mm	820.000
O-spigot	60x300 mm	813.023
Deck locks 036 (alu)	320x60 mm	110.036
Deck locks 073 (alu)	730x60 mm	110.073

Other accessories: Toeboard clamps

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Dimensions

Component	Dimensions (mm)
Frame, Vertical (alu)	Ø48.3×4
Lower horizontal (alu)	40×20×2
Upper horizontal, U-profile special (alu)	U53×48×2.8
Vertical diagonal brace	Ø42.4×2.6
Base jack	Trapeze threaded Ø 38×5
Diagonal plane braces, wall ties	Ø48.3×3.2
Single rail	Ø40,0×2,0
Guardrail frame (alu)	Ø40×2 and □40×20×2
Horizontal brace	Ø48.3×2.6
Lattice beam (Alu)	Tubes horizontal & vertical Ø48,3×4; Diagonal braces Ø20/35×3

Evaluated system configurations

1. Evaluated system configurations.

	(1)
Load class	3
Permissible load (kN/m²)	2.0
Anchorage distance vertically (m)	4.0
Bay length (m)	3.07
Bay width (m)	0.73
Platform levels¹⁾	decks on all levels
Lift height (m)	2.0
Erection height (m)	
- without brackets	24.5
- with brackets 0.36 on each level	24.5
- with bridging beam ²⁾ , without brackets	24.5

¹⁾ For the calculations, the total weight of the platform levels has been assumed to be 25 kg per bay.

²⁾ Versions with bridging beam, see illustration on page 6.

2. When evaluating the system configurations, the maximum load capacity of the scaffolding, that is the load capacity at an erection height of 24.5 m or higher, and the failure point of the scaffolding has been determined. This evaluation allocates loads to standards that can be used for simplified calculations, see **Conditions for use** point 1.



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3. The scaffolding is **anchored to the wall** according to **Conditions for use**, point 5.
Maximum design anchorage load perpendicular to the facade is 2.9 kN.
Maximum design anchorage load in anchorages that can withstand horizontal loads (V-anchorage) is 3.4 kN and 5.1 kN parallel respectively, perpendicular to the facade.
4. Maximum design load on the base (the ground or a structure) is 15 kN/standard, with brackets 18 kN/standard and when bridging 25 kN/standard.
5. The calculations are made on the basis that work is only carried out at one lift level.
6. The instruction manual edition Version 1.0, dated 03-01-2017 have been inspected for the type examination.

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SP Technical Research Institute of Sweden

Box 857, SE-501 15 Borås

Tel: +46 (0) 10 516 50 00

E-mail: info@sp.se www.sp.se



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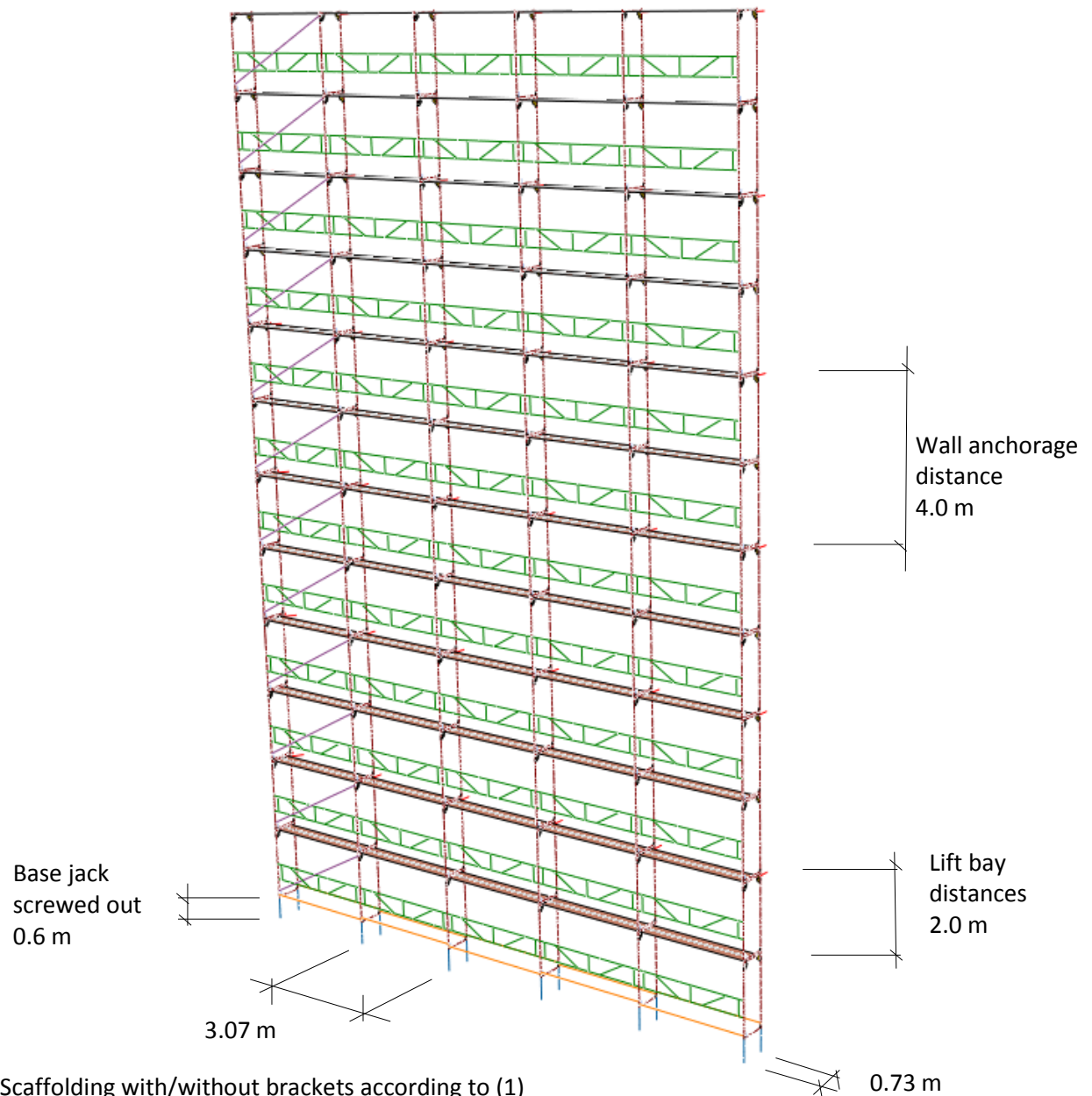
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System configurations 24 m



Scaffolding with/without brackets according to (1) in the table under point 1



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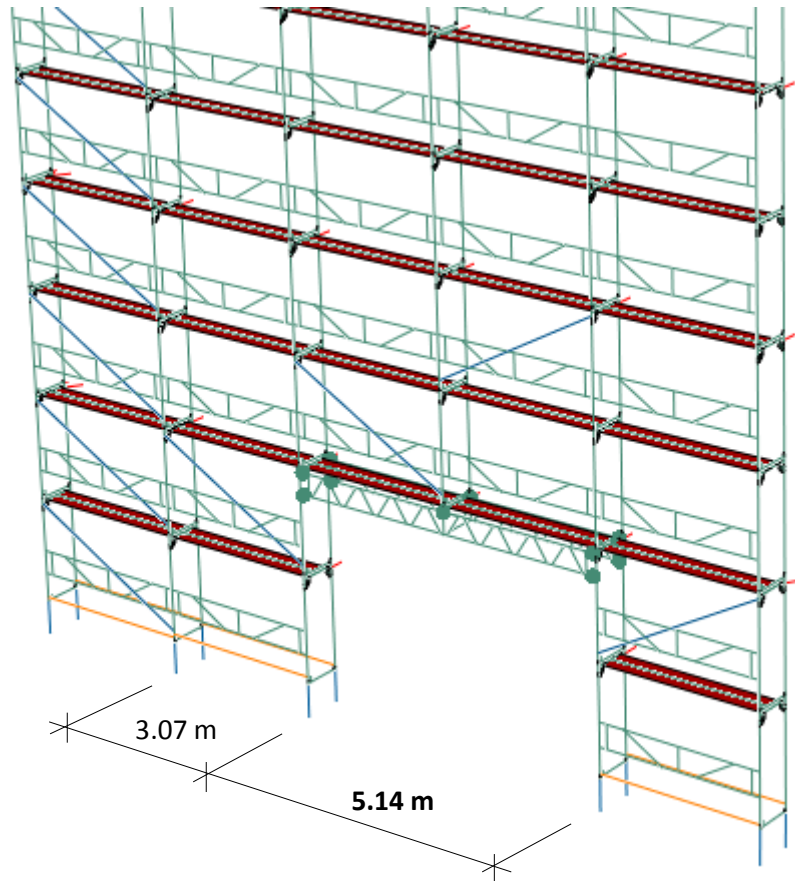
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Scaffolding with bridging beam according to (1) in the table under point 1. Extra wall ties are placed at 2.5 m height to the side of the opening and one bay to the right with a V-anchorage. Otherwise wall ties in accordance with point 3.

Conditions for use

1. For simplified design, a **permissible standard load** can be applied according to the following table, provided that all other applicable conditions are met. For simplified design using the partial coefficient method, a design load capacity is obtained by multiplying the permitted standard load by 1.5.

	Permitted standard load (kN)
Without brackets	4.7
With U-transom brackets 036 on each level	4.9

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2. Each lift from 2 m height above the ground must be equipped with **platforms**, with **guardrail frames** and **toeboard** on the outside and a **guardrail** and **toeboard** on the ends.
3. **Vertical diagonal braces** parallel with the facade must be used in every 5th bay and always on the external bays.
4. The scaffolding must be **anchored to the wall** by wall ties every 4 metres in height to the inner standard, close to the coupling between the standard and the transom. The lowest wall tie must not be higher than 4.8 m above ground.

Wall ties that can absorb horizontal loads must be used every 5th pair of standards longitudinally on each wall tie level.

For enclosed scaffolding and/or for heights greater than 24 m, greater wind loads may occur and thereby high anchorage loads may apply.
5. When **brackets** are used the area between the main level and the bracket level must be covered, usually by a horizontal or in another way.
6. Access is by a **stairway** installed on additional frames on the outside of the scaffolding with the necessary components. The access route must have double handrails on the outside and double guardrails at ends and toe boards on the lower end. The upper level should be equipped with a short rail to the stairway. On any level without adjacent platforms the landing must be supplemented with double guardrails towards the scaffolding.
7. Platforms that are used must be type approved and designed so that they can be positioned on the scaffolding ledgers and transoms and secured against unintentional lifting at both ends.
8. Lattice beams and tube couplings that are used must be type approved.

Instruction manual

An instruction manual must be supplied with the scaffolding when it is supplied to the user.

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Application

The type examination certificate is valid for scaffolding made and supplied by the manufacturers as stated on the certificate and of which materials, dimensions and design correspond with the type examined example.

The scaffolding must not be assembled incorporating other components unless a special investigation of the resulting load bearing capacity has been carried out.

Load bearing capacity components

Platforms

The following permitted loads for evenly distributed loads and load classes apply for platforms.

Platform	Height (mm)	Width (mm)	Length (m)	Permitted load (kN/m ²)	Load class
U-Deck 0.32 (alu)	90	320	0.73 – 1.57	6.0	6
			2.07	4.5	5
			2.57	3.0	4
			3.07	2.0	3
U-Platform 0.61 (plywood/ fibreglass)	78	610	0.73 – 2.57	3.0	4
			3.07	2.0	3

Brackets

The following permissible loads and load classes apply to U-brackets.

Bracket length (m)	Distributed load across bracket (kN)	Spot load (kN)	Section length (m)		
			3.07	2.57	2.07
U 0.36	7.7	1.8	3		
U 0.73	5.2	2.3	2	3	3
U 0.73*)	7.7	3.3	3		

*) Bracket with extra brace

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Lattice beam

The following permissible loads and load classes apply for lattice beam 450 (alu).

Load case	Length (m)				
	2	3	4	5	6
Evenly distributed load (kN/m)	8.0	4.9	3.3	2.5	1.8
Spot load (kN) ¹⁾	8.7	8.7	8.0	6.7	5.7
Spot load (kN) ²⁾	3.0	3.0	3.0	3.0	3.0
Load class	3	3	3	3	2

¹⁾ Load applied via both upper and lower tubes

²⁾ Load applied via one of the tubes

Adjustable transom

The following permissible loads and load classes apply for adjustable transom 0.73.

Length (m)	Distributed load (kN)	Spot load (kN)	Section length (m)
			≤ 3.07
0.73	6.1	2.0	3

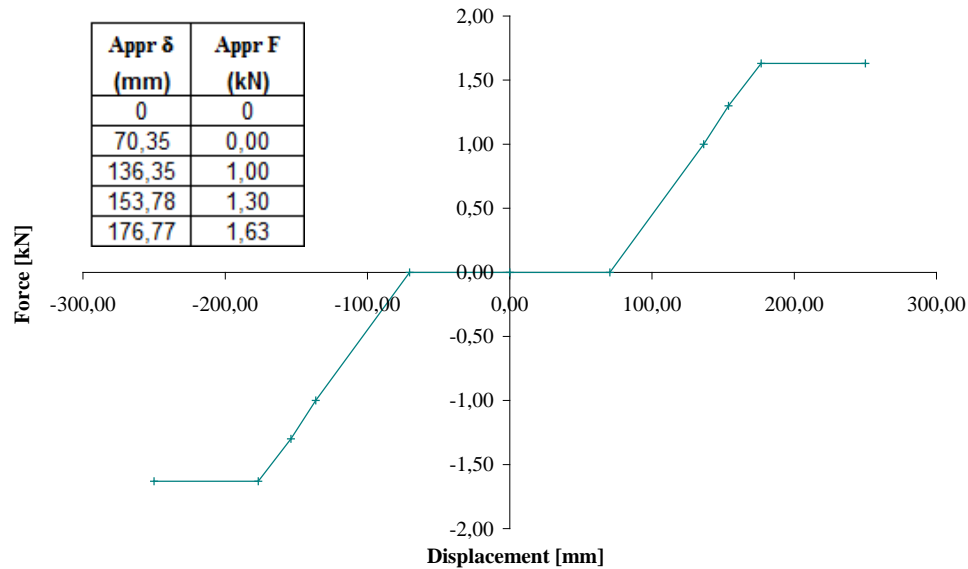
Input values when designing

The following values obtained from component testing can be used as input values when designing the load bearing capacity of the scaffolding in accordance with SS-EN 12811-1. All stated values are the designed values, R_d .

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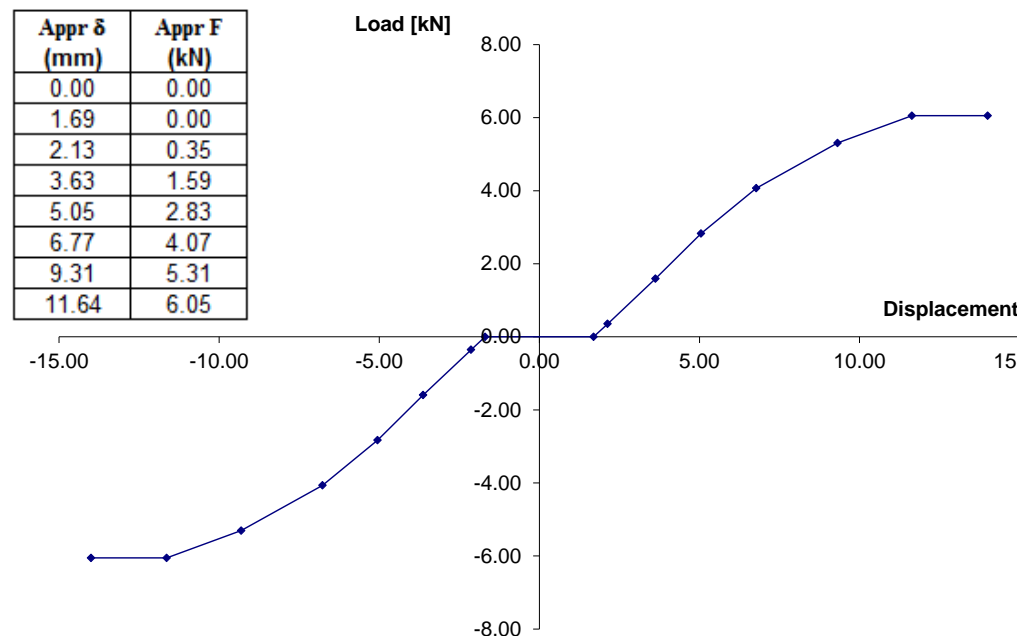
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Platform stiffness



The diagram illustrates the stiffness of the platform – scaffolding transversely.

Vertical diagonal brace – Stiffness



The diagram illustrates the stiffness of the diagonal in that direction.

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