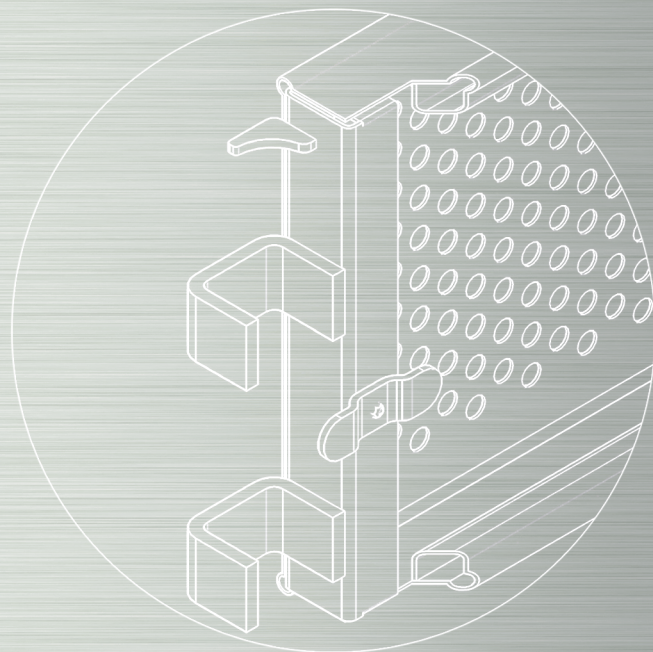
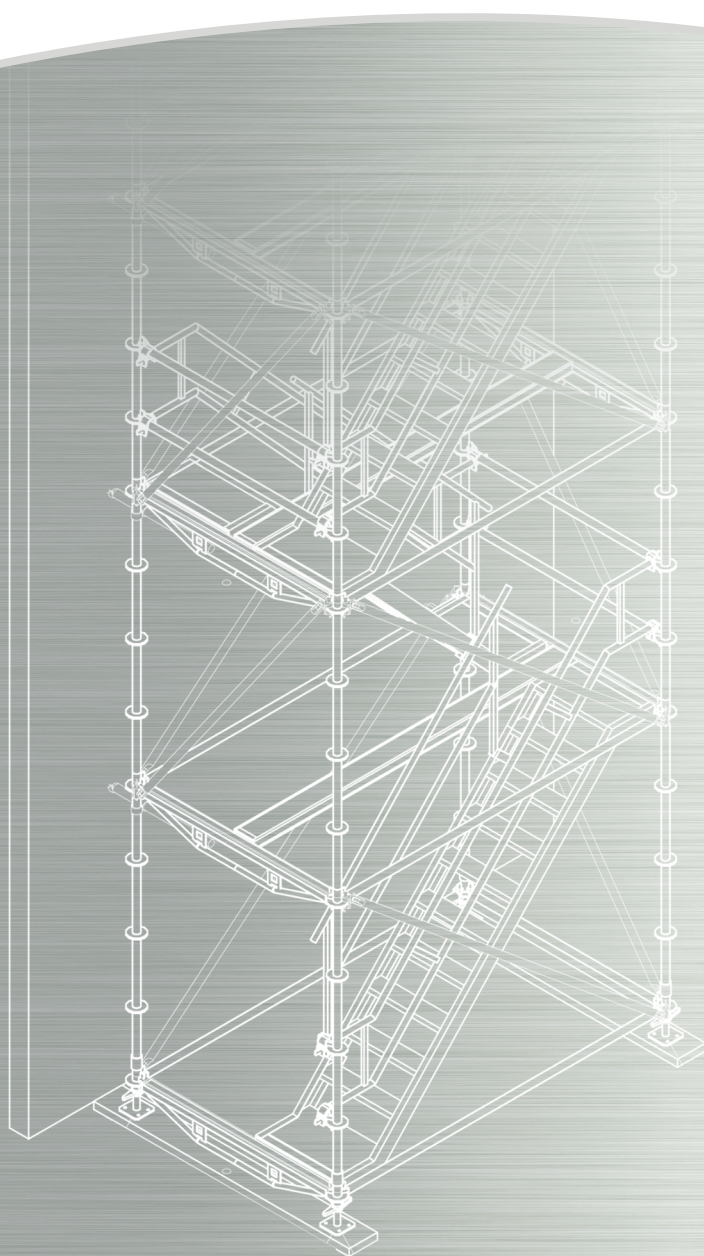




MOSTOSTAL
SCAFFOLDING
FORMWORK

ALUMINIUM MODULAR SCAFFOLDING “ALUROTAX”

ASSEMBLY MANUAL



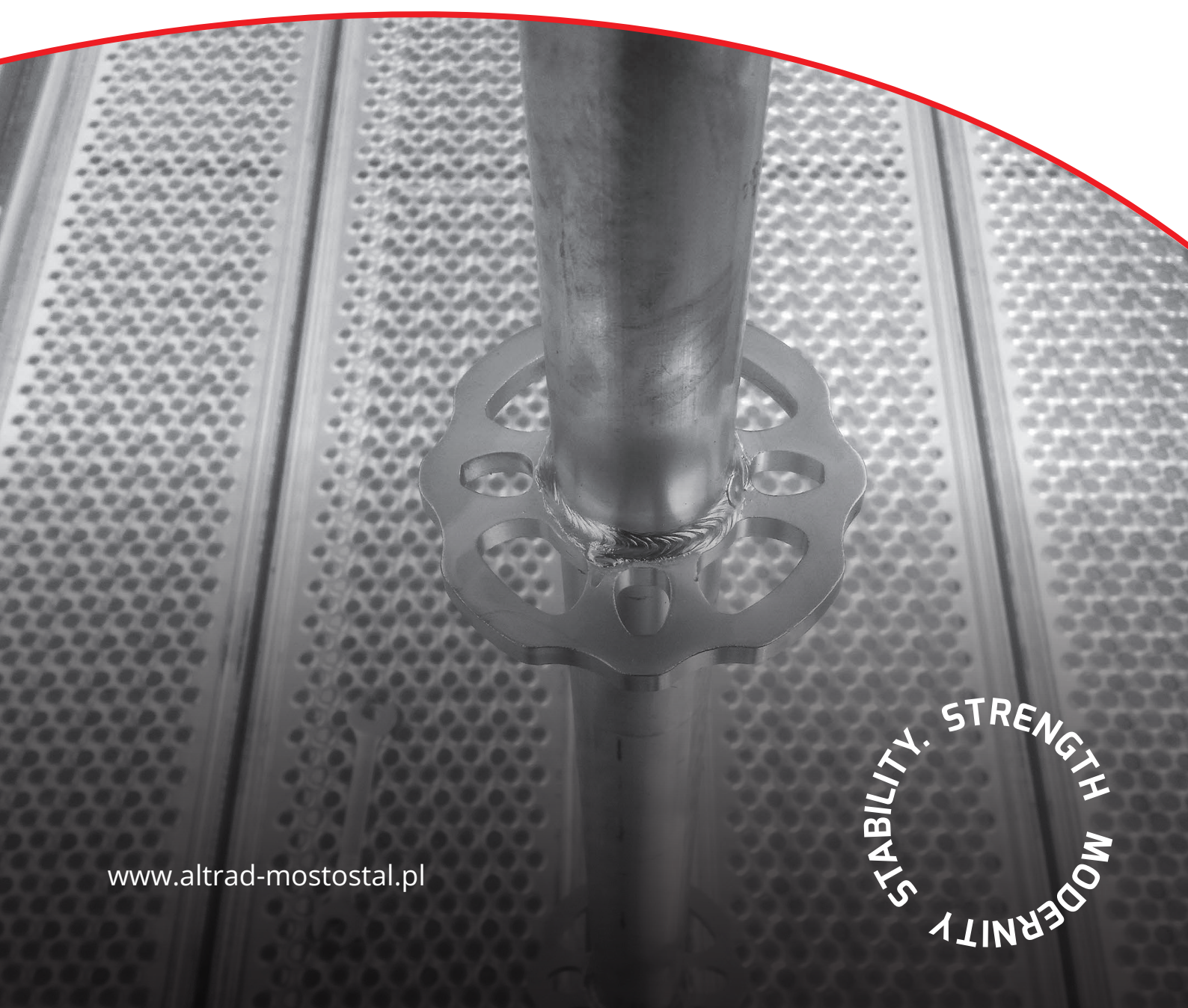
STABILITY. STRENGTH
MODERNITY



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ALUMINIUM MODULAR SCAFFOLDING "ALUROTAX"

ASSEMBLY MANUAL



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STABILITY. STRENGTH
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1. TECHNICAL OVERVIEW OF ALUROTAX SCAFFOLDING

1.1. Scaffolding characteristics

ALUROTAX system scaffolding is made of aluminium and erected on the basis of the structural net 3.07 m, 2.57 m, 2.07 m, 1.57 m long and 0.73 m and 1.09 m wide – the net can be expanded in all directions. The vertical plane of the system allows to change to component positions every 0.5 m. The ALUROTAX scaffolding ensures fast and reliable complex spatial structures erection. It can also be used to erect large platforms. The permissible working load of the facade setup scaffolding is 2 kN/m² for the scaffolding 0.73 m wide and 3 kN/m² for the scaffolding 1.09 m wide. The scaffolding is erected with the perforated steel or aluminium working platforms with the O-transom or U-transom catches and the aluminium and plywood platforms of 2 kN/m².

The whole scaffolding erection system is based on the possibilities of the specific structural node that allows to connect the crossbars, stringers, horizontal and vertical braces.

1.2. List of scaffolding standards and rules

When designing, installing, disassembling and using the scaffolding you should observe the rules and requirements included in:

- This manual.
- Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general occupational health and safety rules – unified text – Journal of Laws No. 169/03 item 1650 as further amended.
- Regulation of the Minister of Economy of 30 October 2002 on minimum requirements for occupational health and safety regarding usage by the employees of the machinery during work (Journal of Laws No. 191/02, item 1596) as further amended. Unified text - Journal of Laws No. 178/2003 item 1745.
- Regulation of the Minister of Infrastructure of 6 February 2003 on occupational health and safety during construction works (Journal of Laws No. 47/03 item 401).
- PM-M-47900-1:1996 “Steel, standing scaffoldings. Definitions, division and main parameters.”
- PM-M-47900-2:1996 “Steel, standing scaffoldings. Pole scaffoldings made of pipes.”
- PM-M-47900-3:1996 “Steel, standing scaffoldings. Frame scaffoldings.”
- PN-EN 12811-1:2004 “Provisional structures used at a construction site. Scaffoldings. Conditions for the production and general design rules.”
- PN-EN 12810-1:2004 “Facade scaffolding made of prefabricated elements. Products' technical specifications.”
- PN-EN 12810-2:2004 “Facade scaffolding made of prefabricated elements. Particular design and construction methods.”
- PN-EN 74:2002 “Couplings, centring plungers and foot sets used in working and load-bearing scaffoldings made of steel pipes. Requirements and examination procedures.”
- PN-EN 39:2003 “Steel pipes for scaffolding construction - Technical regulations for the delivery process.”
- PN-EN-HD1004 “Movable working platforms made of prefabricated elements, materials, scaffolding components, dimensions, force take-over and occupational health and safety requirements.”



2. GENERAL RULES

2.1. Component evaluation criteria

During the scaffolding assembly you should only use components in a perfect condition.

Components with visible signs of damage cannot be used. You cannot use the following:

- components with signs of corrosion localised at the component connection areas (welds),
- load-bearing stands with visible signs of damage in the form of pipe twists, section deformation,
- aluminium platforms with damaged sheathing or damaged and bent catches,
- aluminium and plywood platforms with damaged plywood sheathing: delaminated, cracked, expanded, with missing parts or bent platform load-bearing beams,
- screw base jacks with damaged threads, twisted plungers or resistive nuts.

Damaged components should be replaced with defect-free components and damaged components which cannot be repaired on site should be returned for repair. The components can be straightened only when their circular section is not deformed.

Repairing structure load-bearing components i.e. stands, braces and base jacks is prohibited.

2.2. General assembly rules

- 2.2.1. Before commencing the assembly the scaffolding ground base needs to be checked for transferring the loads of scaffolding and vertical forces present on the scaffolding. In the case of the structural bases and base reinforcement the scaffolding placement has to meet the requirements of PN-M-47900-2 section 4.4.
- 2.2.2. During the scaffolding assembly you should use a level, 500 g hammer to wedge the individual system components together, 19/22 spanner to tighten the clamps, connections and anchors.
- 2.2.3. During the assembly you should use only original components which are not damaged and which are included in the Mostostal Plus scaffolding system.
- 2.2.4. A scaffolding should be placed on the stable and graded base which allows rainwater to flow. To protect the base jack from driving into the base and puncturing it you should use wooden beams. At least 2 base jacks should be located on one beam.
- 2.2.5. The base jack plunger should be at least 150 mm in the stand pipe.
- 2.2.6. Install the initial components on the screw base jacks. The base jack and initial component sets should be connected with transoms which serve as stringers or crossbars.
- 2.2.7. The scaffolding structure allows you to secure the stands with securing pins which is not absolutely necessary as the pilot length exceeds the minimum standard requirements.
- 2.2.8. The scaffolding should be placed so that there is max. 0.2 m between the scaffolding platform edge and the building facade. When the distance from the building exceeds 0.2 m or when the scaffolding is a free-standing structure you should install on its internal side additional railings and toe boards.
- 2.2.9. A wall scaffolding is braced on the scaffolding external plane parallel to the wall face by performing multiplane or tower bracing. Vertical braces should be installed at every fifth scaffolding net bay (2.57 m) and every fourth bay (3.07 m). Each level should have at least two braces installed which should be positioned opposite to each other. The braced bays should be fitted with the longitudinal transoms acting as horizontal braces. The maximum distance between the braces is 10 m.
- 2.2.10. Lower stand rosettes should be clamped crosswise with the transoms.
- 2.2.11. The extreme platform endings should be protected with railings and toe boards to block access to the bays without the platforms.
- 2.2.12. A scaffolding should be provided with circulation paths, e.g. staircases. They should be provided when erecting the scaffolding structure. The distance between the circulation paths cannot exceed 40 m. The greatest distance of the work station from the circulation path cannot exceed 20 m. The circulation paths are created inside the scaffolding by installing the aluminium platforms with the access hatch and the aluminium ladder, and the steel platforms with the access hatch or as staircases provided in the scaffolding structure..
- 2.2.13. The bay where the circulation path is to be created with the hatch platforms should be fitted with the o-transoms and then you should install the platforms for vertical circulation.
- 2.2.14. All connections of the scaffolding pipes should be made with normal or rotary couplings compliant with PN-EN

74:2002. The coupling screws should be torque-tightened to 50 Nm

- 2.2.15.** The platforms should be laid so that the gap between two platform parts on one level does not exceed 25 mm.
- 2.2.16.** It is acceptable to expand the working platforms with the crossbars (transoms) and stands supported with the vertical braces. The platforms can be expanded on the external scaffolding side or on its last level or on any level providing that they are anchored to the expanded level wall and to the wall located one level above and below the expanded level.
- 2.2.17.** When loading a working platform you should observe the following rules:
- a) scaffolding load should be evenly distributed on its entire surface;
 - b) assume 80 kg (0.8 kN) for each person working on the scaffolding;
 - c) to analyse the structure increase the weight of the components delivered with the hoist by 20%;
 - d) dynamic platform loading, e.g. jumping, throwing heavy objects etc. is prohibited;
 - e) platforms fixed on the consoles (transom and stand expansions) must be of the same load class as the basic scaffolding platforms.
- 2.2.18.** The rules concerning installation of the facade scaffoldings presented in this manual are specified for the scaffoldings of the maximum height of $H_{max} = 34$ m and more than 10 m long after erection. When the erected scaffolding is shorter than 10 m you should perform the safety analysis or prepare an individual design.
- 2.2.19.** To protect people against objects falling from the scaffolding you should use the protective nets or canvases. You should remember that the wind suction and pressure forces acting on the net or canvas are a significant load for the scaffolding structure.
- 2.2.20.** The scaffolding may be used in all wind zones acc. to PN-77/8-02011 as shown on the enclosed map.



For the scaffoldings intended for use in III wind zone and in places located more than 1500 m a.s.l. you should perform the additional structural analyses concerning wind.

- 2.2.21.** If the scaffolding is anchored it should be anchored as the assembly progresses. The anchoring points should be located max. 0.2 m from the scaffolding node. When the scaffolding has to be anchored at a larger distance from the node you should prepare a design for this scaffolding.



The maximum facade set-up scaffolding bay length is $L = 3.07$ m. Install steel or aluminium platforms in this bay. Follow the general Occupational Health and Safety rules when working on the scaffolding according to the valid regulations concerning this matter.

- 2.2.22.** The scaffolding components should be stored and transported according to the provisions of PN-M-47900-2:1996 "Steel, standing scaffoldings. Pole scaffoldings made of pipes."
- 2.2.23.** The scaffolding may be disassembled when all works performed from this scaffolding are completed and all tools and materials are removed. It is acceptable to gradually disassemble the scaffolding from the top. Throwing the components down when disassembling the scaffolding is prohibited. When disassembled all scaffolding components should be cleaned, checked and grouped into those which can be used again and those which must be repaired or replaced.
- 2.2.24.** If the scaffolding is anchored the anchorage should be disassembled when disassembling the scaffolding structure. Disassembly of the anchors below the disassembled scaffolding level is prohibited. Examples of solutions are presented later in the manual.

2.3. General safety rules for the scaffolding assembly and use

- 2.3.1. The employees hired for the scaffolding assembly and disassembly should be trained and authorised by a training centre approved by the Institute of Mechanised Construction and Rock Mining in Warsaw.
- 2.3.2. When assembling and disassembling the scaffolding you should use the personal protective equipment - complete.
- 2.3.3. When assembling and disassembling the scaffolding you should establish a danger zone and secure it with the proper markings and railings min. 1.5 m high. The danger zone cannot be smaller than 1/10 of the scaffolding height and not smaller than 6 m. In a city compact settlement the danger zone may be smaller providing that other protections are used.

The scaffolding cannot be assembled, disassembled or used during:

- a) sunset or no proper lighting has been provided;
 - b) heavy fog, rain, snow and glazed frost;
 - c) storm and wind that exceeds 10 m/s.
- 2.3.4. The scaffolding assembly and disassembly area should be marked with the warning plates provided in the visible locations at the height of 2.5 m from the ground level. The text on the plates should be readable at least from 10 m.
 - 2.3.5. The scaffoldings located directly at the circulation roads should be provided with the protective canopies which comply with § 22 of the Regulation of Minister of Infrastructure of 6 February 2003, Journal of Laws No. 47 item 401.
 - 2.3.6. The stands located at the gates, clearances and passages used for the vehicle traffic should be protected with the bumping posts which are not connected with the scaffolding structure.
 - 2.3.7. When the passage is blocked during the scaffolding assembly (against the local authority consent) you should place a barrier in the passage along with a red shield with a text that warns of the closed or blocked passage and install a red light on the barrier that will be used at night.
 - 2.3.8. The scaffolding cannot be assembled, disassembled or used nearby the live overhead power lines if the distance between the scaffolding and the extreme power lines is smaller than:
 - a) 3 m for the lines with the maximum rated voltage of 1 kV;
 - b) 5 m for the lines with the rated voltage between 1 kV and 15 kV;
 - c) 10 m for the lines with the rated voltage between 15 kV and 30 kV;
 - d) 15 m for the lines with the rated voltage between 30 kV and 110 kV;
 - e) 30 m for the lines with the rated voltage exceeding 110 kV.When the scaffolding is assembled or disassembled under the overhead power lines or at a distance smaller than those specified above during the works the voltage should be cut-off.
 - 2.3.9. The scaffolding structure should be equipped with the lightning protection equipment according to PN-M- 47900-2:1996 "Steel, standing scaffoldings. Pole scaffoldings made of pipes," section 4.8. "Lightning protection equipment."
 - 2.3.10. The scaffolding may be used when it is accepted by the technical supervisor or other authorised person. During the acceptance you should test the scaffolding according to section 7.3. of PN-M-47900-2:1996 "Steel, standing scaffoldings. Pole scaffoldings made of pipes." The scaffolding acceptance is confirmed with a log according to annex no. 1 to this manual or a record in the construction logbook.
 - 2.3.11. The scaffolding should be provided with a plate which informs of the permissible platform load. It is prohibited to load the scaffolding platforms with materials which are heavier than its load capacity and to gather people on the platforms.
 - 2.3.12. The scaffolding may be equipped with a device used for transporting materials with the jibs secured to the scaffolding structure. The jibs may be made of the pipes secured to the scaffolding with the couplings. You can use the typical block and block jib offered by the manufacturer – E552100. Maximum weight of the lifted materials cannot exceed 150 kg. When using jibs with a higher lift capacity which are secured to the scaffolding you should carry out the structural analyses for this scaffolding. The transport jib must be additionally anchored at least in two points. Distance between the jibs cannot exceed 30 m. Distance of the cumulating axis from the furthest scaffolding point on the lifting plane cannot exceed 0.5 m. Height from the block attachment point to the platform level cannot be smaller than 1.6 m. For vertical transport it is recommended to use the hoisting winches with attachment that can be installed on the scaffolding, such as GEDA winches. This equipment must have the approval certificate issued by the Office of Technical Inspection. The hoisting winches should be installed in strict accordance with the manual prepared by the hoisting winch manufacturer.

- 2.3.13.** Before each use the scaffolding should be checked for the proper and complete structure and you should also check if there are no environmental changes that affect the safe use. In particular you should check if the foundation is intact. These checks should be performed by the foreman who uses the scaffolding.
- 2.3.14.** The scaffolding should be inspected: after strong wind, heavy rain, hailstorm, lightning stroke or when it was affected by other dangerous factors and when no works have been carried out on the scaffolding for 10 days, and the inspection should be performed at least once a month.

During the inspections check:

- condition of the base where the scaffolding is placed,
- protection condition (railings, toe boards),
- platform condition (gaps between platforms, damage, platform loading method), circulation paths (ladder fastening, proper opening and closing of hatches),
- method used for protecting the upper platforms and platforms supported on the consoles against falling out,
- rotary coupling condition,
- anchorage force,
- condition of the hoisting winches and the supporting structure,
- lightning protection system condition.

The inspection is carried out by the construction manager or other authorised person.

Each inspection should be documented with a memo or recorded in the construction logbook.

- 2.3.15.** Before work in winter you should remove snow from the scaffolding.

3. SCAFFOLDING ASSEMBLY

3.1. Basic elements assembly (partial examples)

3.1.1. ALURROTAX node

The node allows you to connect the basic elements: stands, transoms and vertical braces. The ALURROTAX rosette is fitted with 8 fastening sockets which connect up to 8 elements. Two types of sockets are available: 4 large and 4 small. Small sockets should be fitted with the transoms to form a rectangular scaffolding net. You can smoothly screw the elements mounted in large sockets up to 30°. The rosettes are welded to the stand pipe every 500 mm. It allows you to gradually change the working platform position and develop the auxiliary working surfaces. The elements are installed by driving the head wedge into the rosette socket with the 500 g hammer (see figures below).

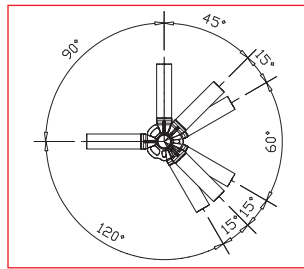


Fig. 3.1

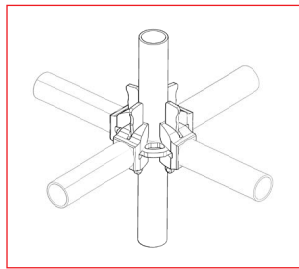


Fig. 3.2

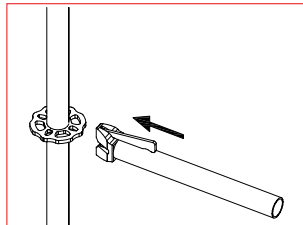


Fig. 3.3

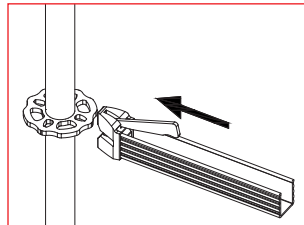


Fig. 3.3a

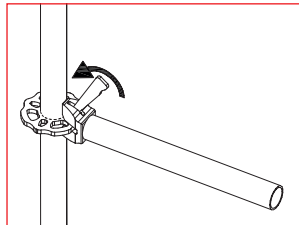


Fig. 3.4

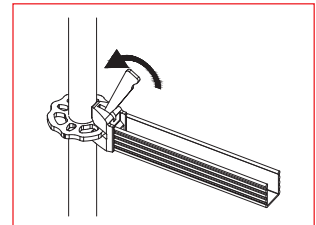


Fig. 3.4a

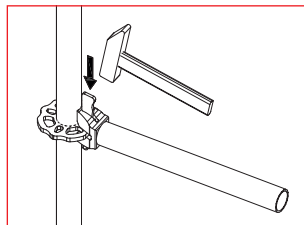


Fig. 3.5

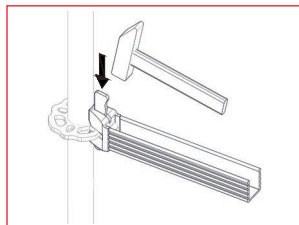


Fig. 3.5a

3.1.2. Assembly hints for safer use

Personal protection

Personal protective equipment (helmet, safety braces, protective shoes, safety cord) must be used during the scaffolding assembly, disassembly and use. For greater safety of the service the below figures present the examples of the above-mentioned protective equipment attachment points.

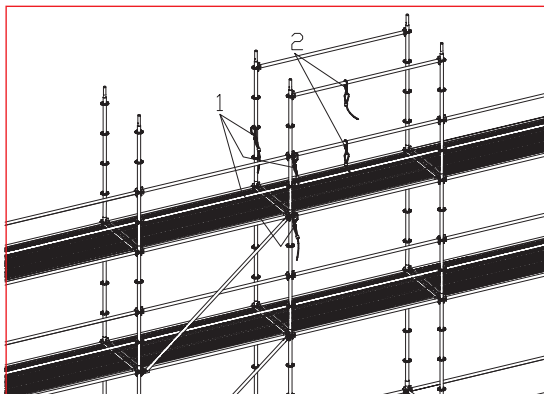


Fig. 3.6

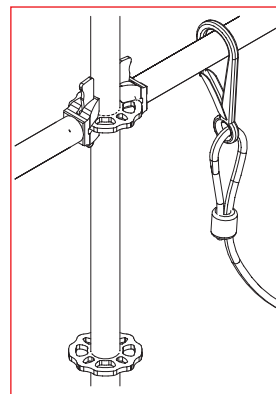


Fig. 3.7

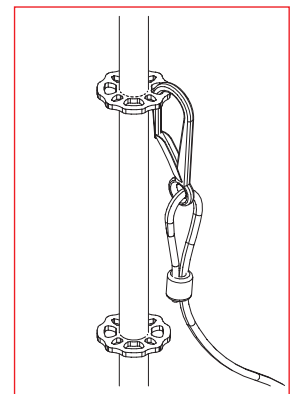


Fig. 3.8

The cords must be attached to the transoms and rosettes located above the level you are standing on. When the stands of the assembled level are not connected with each other the safety cords should be attached to the rosettes at the height of 1 m. It is acceptable to attach the cord to the components of the level you are standing on only when there is no other possibility. When erecting the wall scaffolding you should attach the individual safety cord to the scaffolding components located on the facade side. It is acceptable to attach the safety cord directly to the structure surrounded by the scaffolding. The protection is provided separately for each facility.

Safety Kit

An Assembly Safety Kit is a temporary safety precaution for the fitter used when entering the next level before the stands and transoms are installed. The Kit consists of 2 assembly posts and a telescopic railing. When the Safety Kit is assembled the railing is one meter above the platform of the level which the post is assembled on. The telescopic railing allows for moving the post to the next levels without disassembling the railing and adjust the set length within 1.5 m to 2.07 m, or 2.07 m to 3.7 m. Small weight of the structure allows for convenient moving of the set to the next scaffolding level.

Safety Kit assembly stages:

1. An assembly post consists of two pipes which can be rotated and moved along a joint axis. This allows opening and closing the catch. When the post is properly installed the bolt in the bottom catch enters the opening in the closing sheet (fig. 3.9).
2. By lifting and rotating the post external pipe attach the post to the stand so that the bottom catch leans on the upper railing of the scaffolding (transom) (fig. 3.10).
3. Attach the telescopic railing to the eye of the installed post.
4. Attach the other telescopic railing end to the post eye before the post installation.
5. Install the other post in the same manner as the first (section 2) on the other end of the scaffolding bay.
6. When the stands and transoms are installed on the higher scaffolding level the Safety Kit can be moved to the next level by opening the railing post catches, lifting the post and installing it on the higher level. This procedure does not require the telescopic railing to be disassembled.

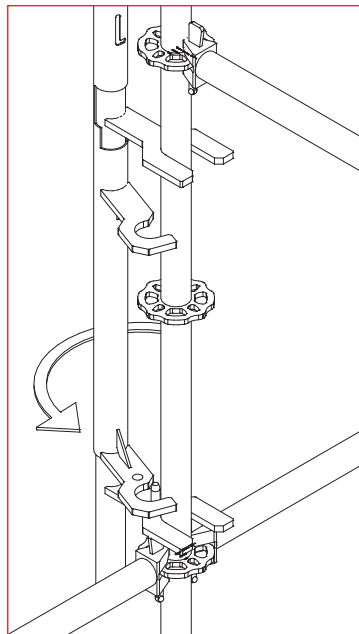


Fig. 3.9

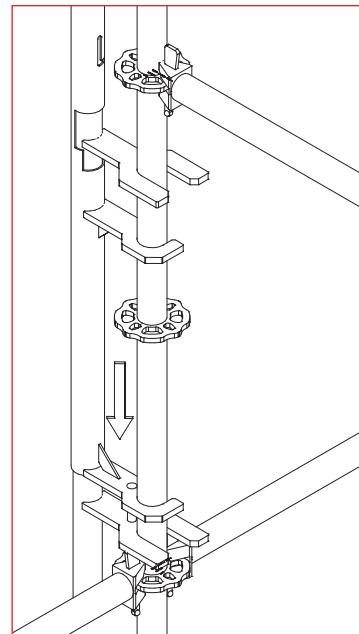


Fig. 3.10

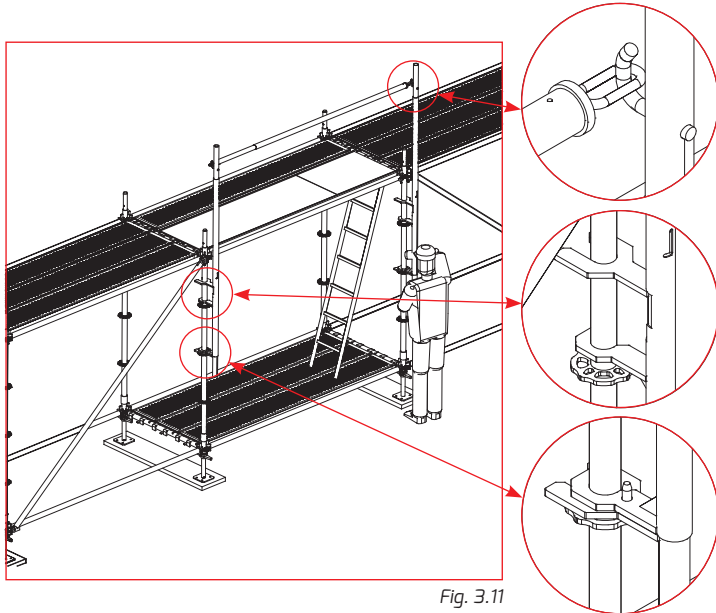


Fig. 3.11

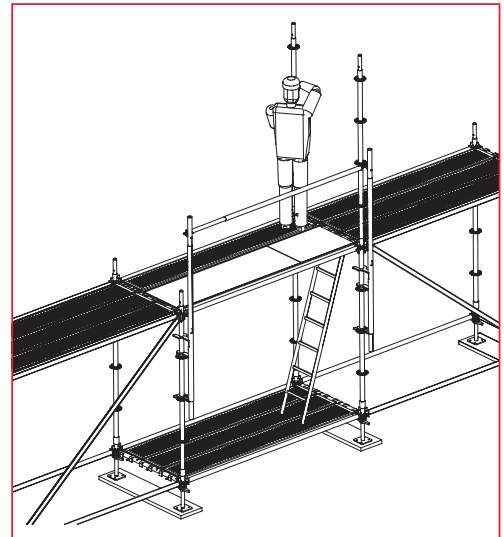


Fig. 3.12



The Assembly Safety Kit does not substitute the safety cord and other personal protective equipment.

3.1.3. Main ALURROTAX system components

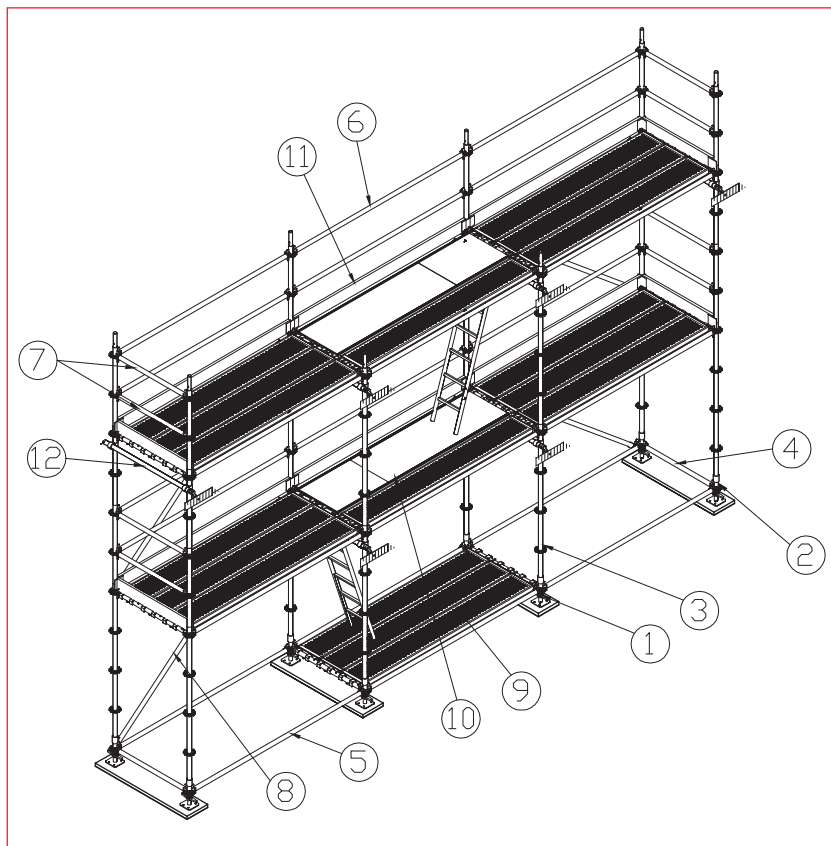


Fig. 3.13

View of the wall scaffolding from the side of the wall (fig. 3.13)

1. Steel adjustable footing
2. Initial component
3. Stand
4. O-transverse transom
5. Horizontal O-transom
6. Longitudinal railing (horizontal O-transom)
7. Front railing (horizontal O-transom)
8. Vertical brace
9. Working platform
10. Circulation path platform
11. Toe board
12. Anchoring

3.1.4. Platform assembly

Assembly of platforms with the O-transom

The platforms installed with the O-transom are not factory-protected from being torn off by wind. The placed platform is protected by turning the platform as shown in the figure above.

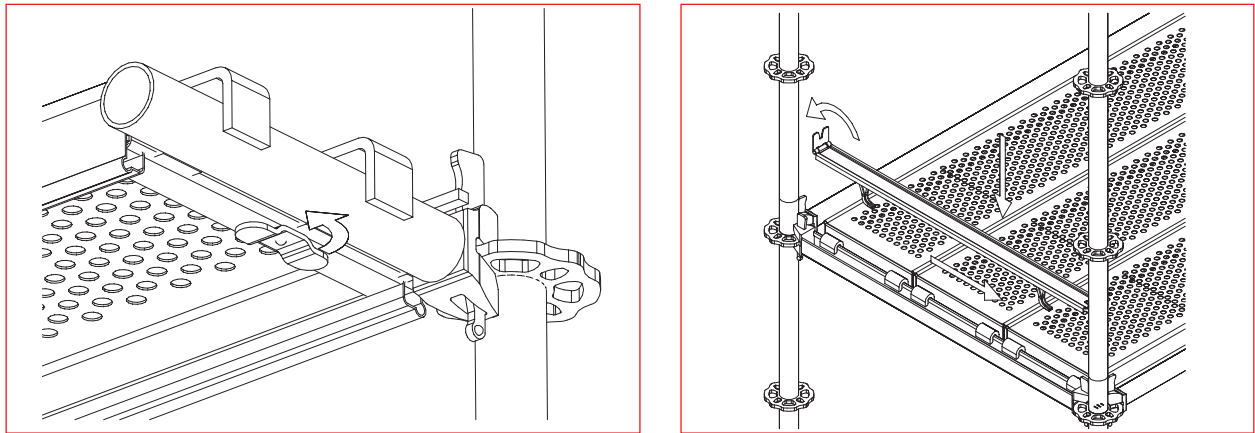
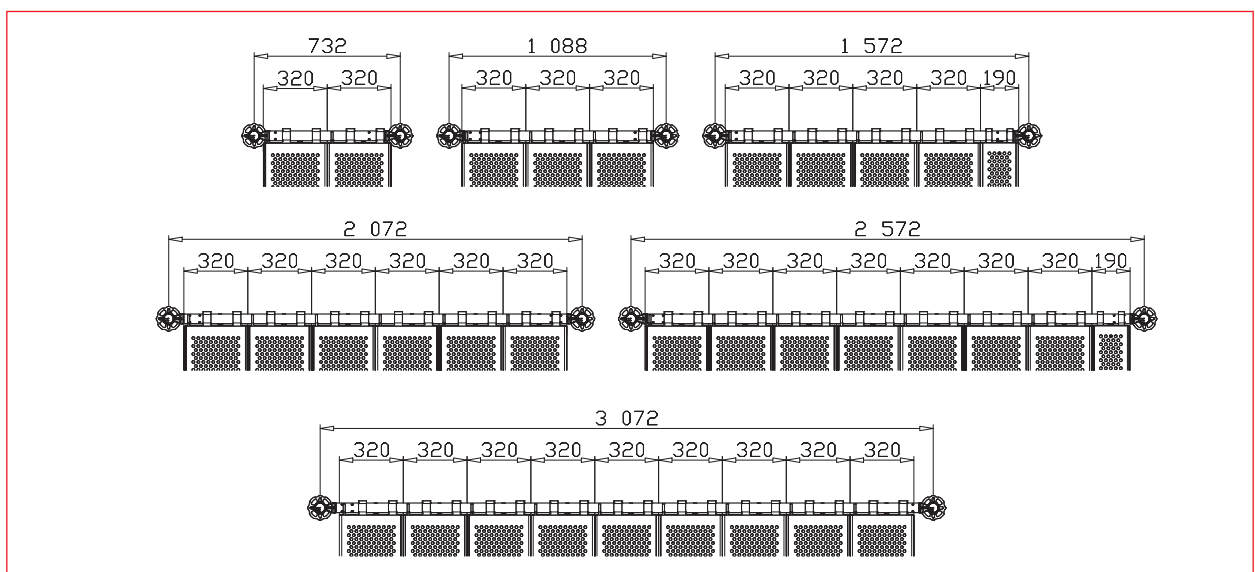


Fig. 3.14 – Example showing assembly of the platforms with the U-transoms and O-transoms

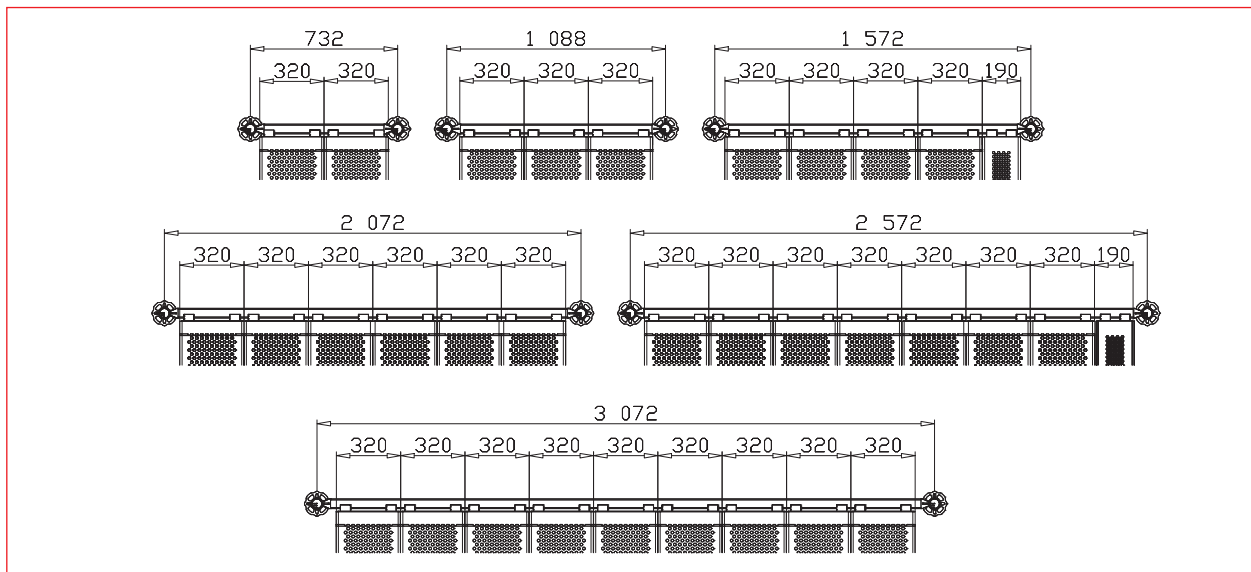
Table 3.1

Fitting the aluminium "U-" and "O-" transoms with the perforated platforms		
Transom length (m)	Number of platforms	
	0.32 m	0.19 m
0.73	2	—
1.09	3	—
1.57	4	1
2.07	6	—
2.57	7	1
3.07	9	—

Positions of platforms on the O-transoms

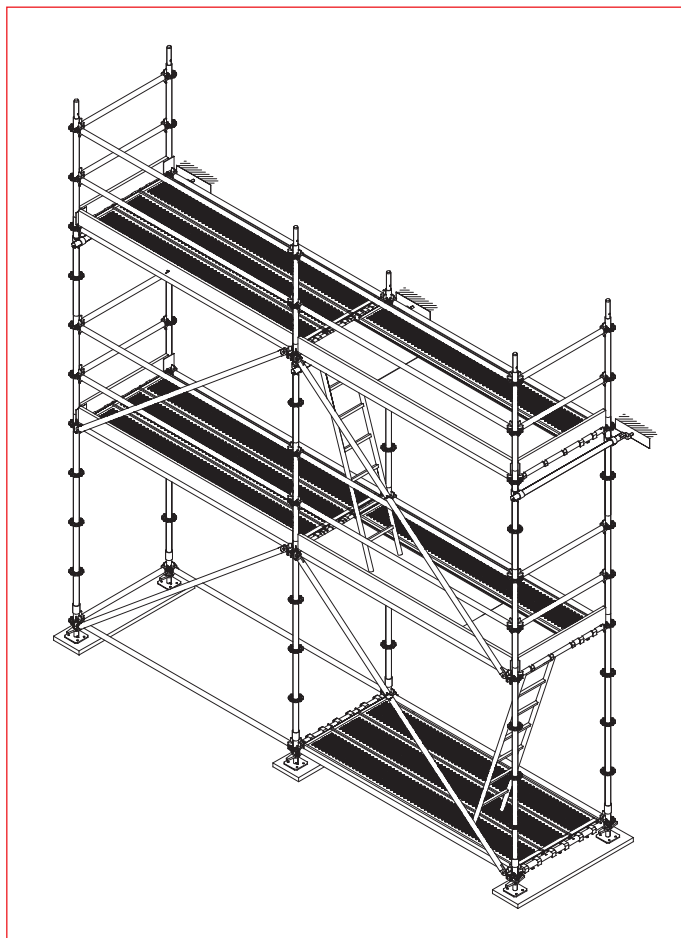


Positions of platforms on the U-transoms



3.1.5. Side protections

Each platform located more than 1 m above the ground level should be protected with a rail consisted of two railings and a toe board.



Rules for forming side protections:

- railings should be fastened in the stand rose tes - 0.5 m and 1 m above the platform level;
- the system includes the toe boards and transoms adapted to all platform lengths and widths (0.73 m, 1.09 m);
- protect the platforms on each side;
- you can skip the protection from the building wall side when the distance between the platform edge and the wall does not exceed 20 cm;
- the platforms can be protected in other manner, e.g. with the net railings;
- standing on the railings is prohibited.

Fig. 3.15 – Example of the scaffolding with the side protection

3.1.6. Corner assembly

The system allows you to easily and clearly form different kinds of corners. Below are a few examples.

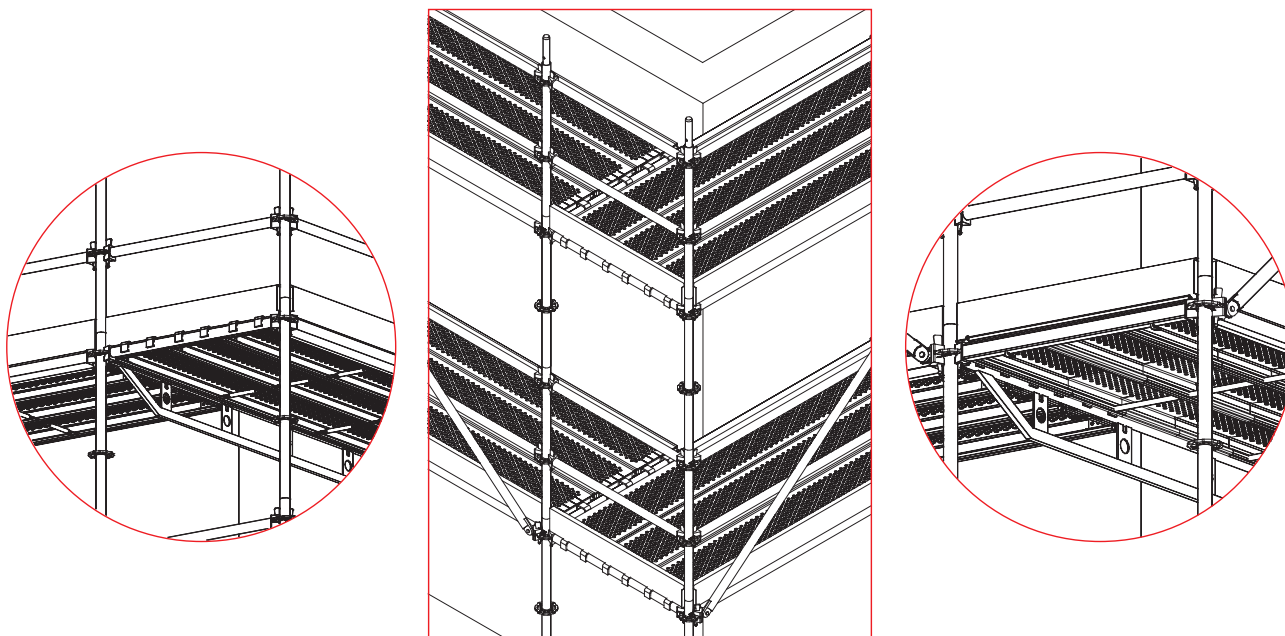


Fig. 3.16 – External corner formed of two stands and the O-U-transom

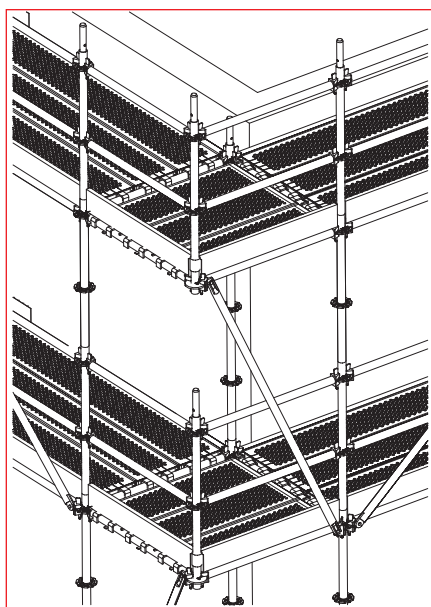


Fig. 3.17 – External corner formed of three stands and the console

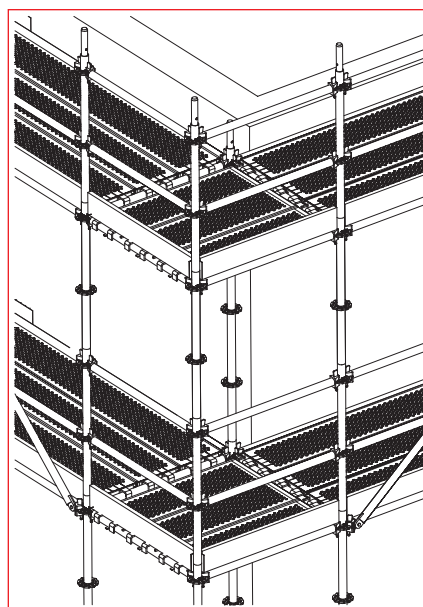


Fig. 3.18 – External corner formed of four stands

3.1.7. Expansion consoles

If you need a larger working platform surface the platform can be expanded with the consoles or transoms and braces.

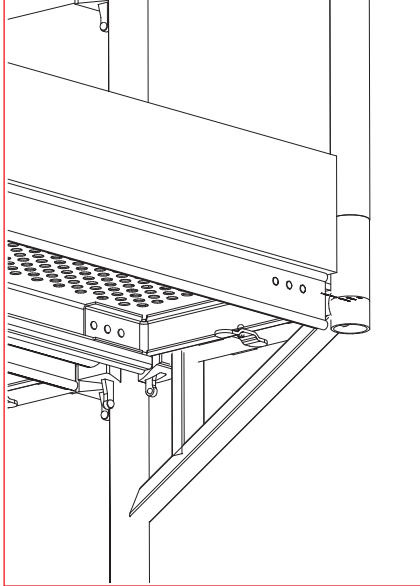


Fig. 3.19 – Platform expanded with the 0.36 m console

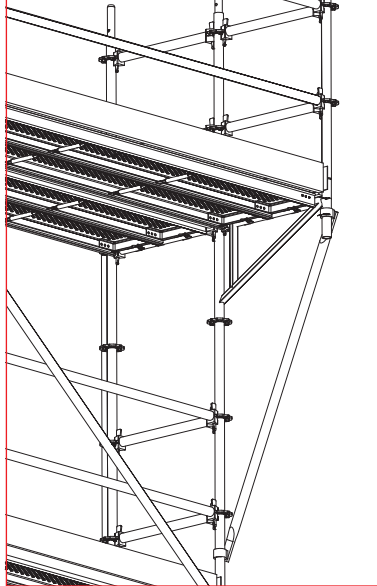


Fig. 3.20 – Platform expanded with the 0.73 m console and brace

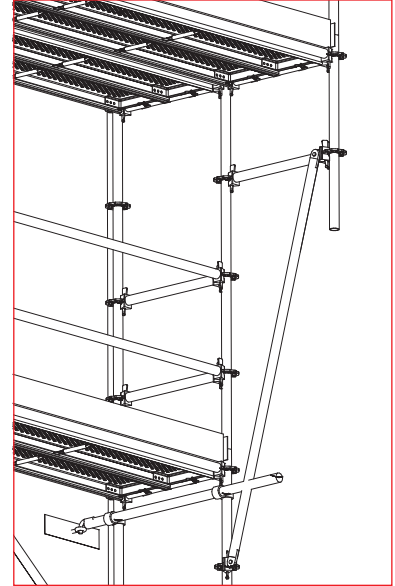


Fig. 3.21 – Platform expanded with the transoms and braces

When the platform is expanded with the 0.73 m wide console you must fix the supporting brace to the console. Install the toe boards on the console according to the diagram below using part no. E375900 (Rotax toe board handle).

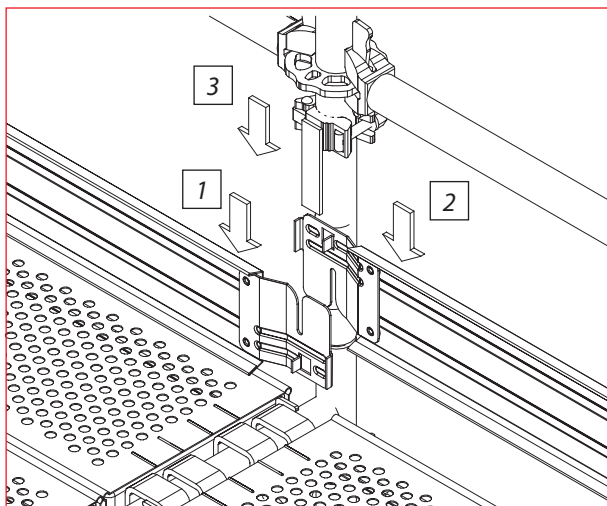


Fig. 3.20a – Steps connected with installing the toe boards on the console

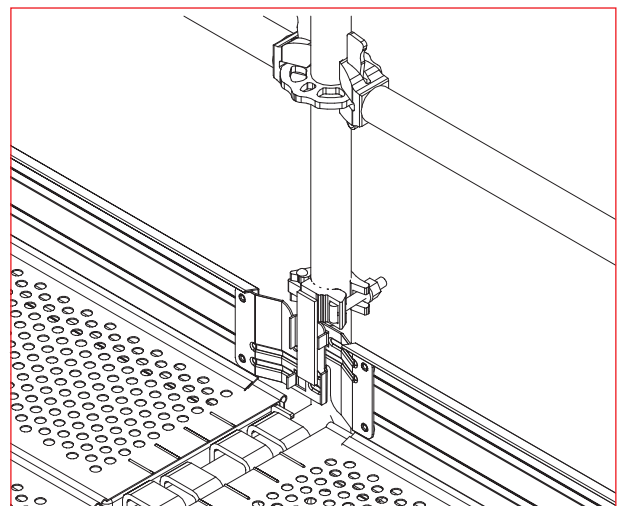


Fig. 3.20b – Proper installation of the toe boards on the console

3.1.8. Anchors

You should anchor the scaffolding while it is erected to the fixed structure components. You should use the anchoring connectors, standard and rotating connectors as well as the anchoring screws. The following present the examples of anchoring.

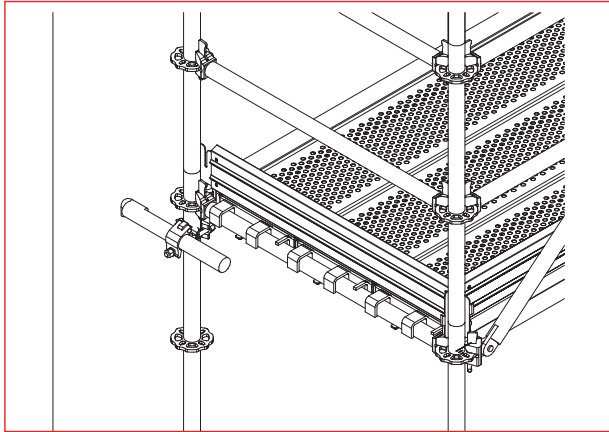


Fig. 3.22 – Internal stands anchored with a single anchor

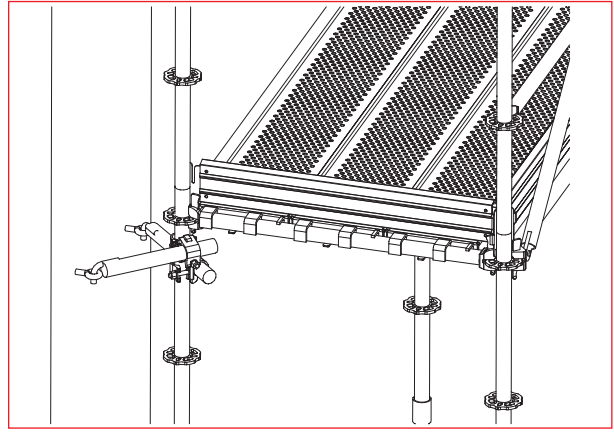


Fig. 3.23 – Internal stands anchored with the V anchor

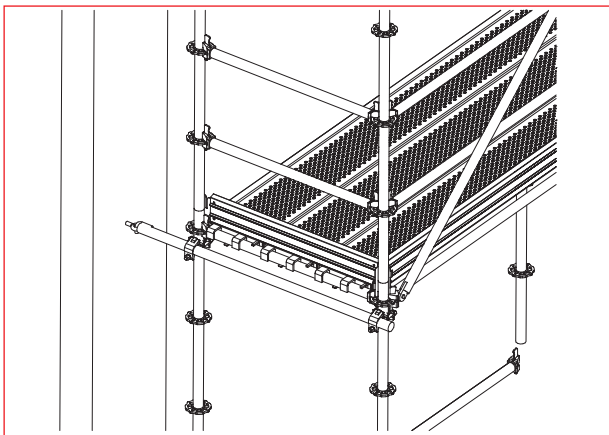


Fig. 3.24 – Internal stands anchored with a single anchor

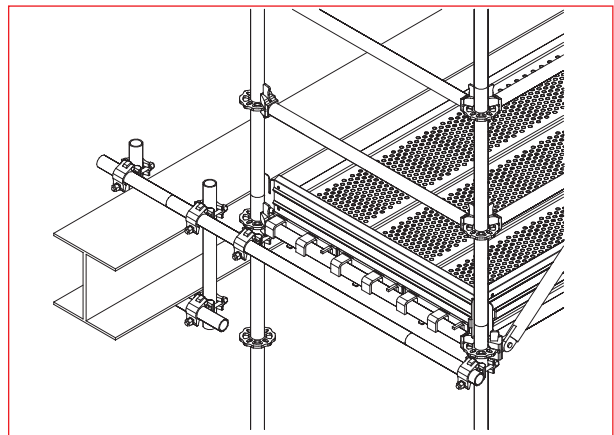


Fig. 3.25 – Anchors fastened to horizontal beams

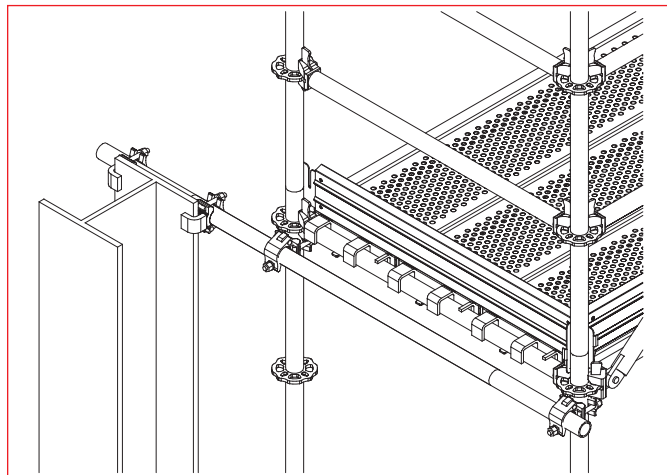


Fig. 3.25 – Anchors fastened to horizontal beams

3.1.9. Span beams – gate crossings

When a building is repaired you often must provide access to it. The crossings can be made with the girders or double transoms. They require a protection hood which is not presented in the figures below.

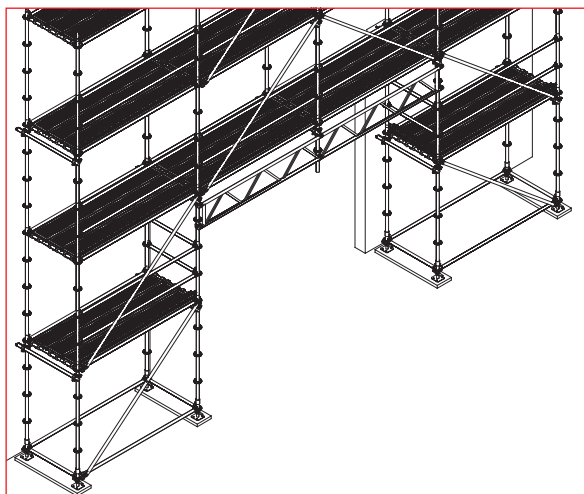


Fig. 3.27 – Gate crossing supported on girders

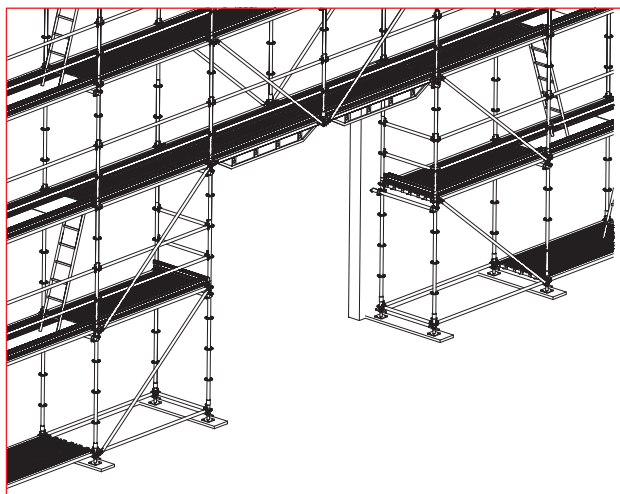


Fig. 3.28 – Gate crossing supported on double transoms

3.1.10. Pathways beneath scaffolding

When performing repair and construction works along the public footways you often have to maintain a safe circulation path for the pedestrians. Figure below shows an example of this solution.

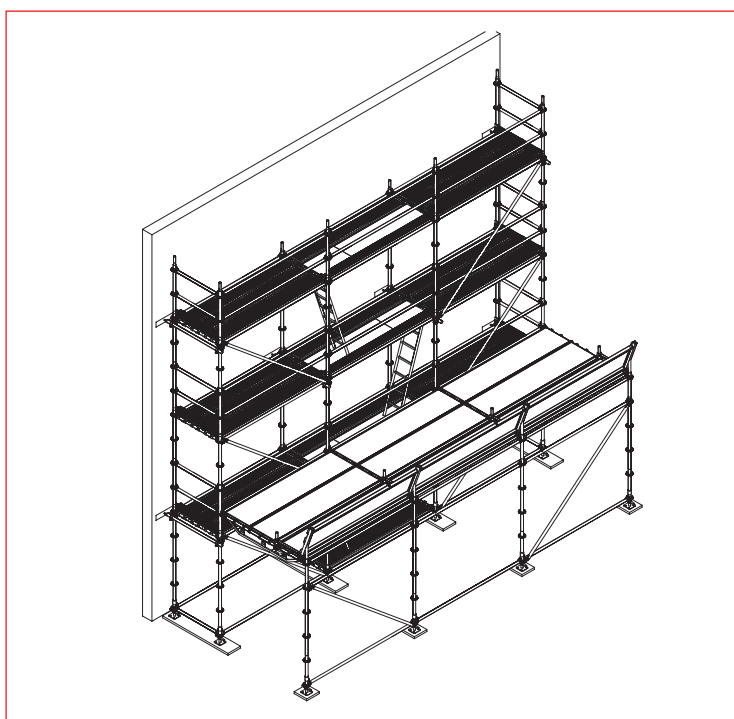
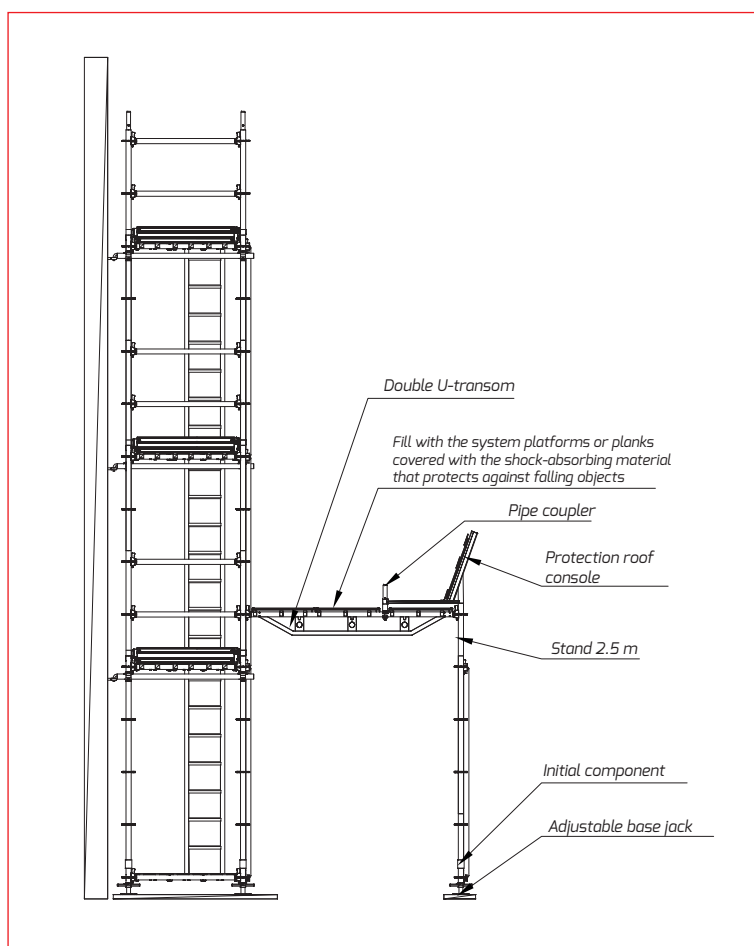


Fig. 3.29 – Example of a circulation path for pedestrians

The system solution should be based on the scheme below. The system platforms provided on the hood should be fixed to the U-transoms with the wire rope. The scaffolding must be anchored where the platforms are provided below and above the protection hood.



Rys 3.30 – Wykonanie przejścia za pomocą rozszerzenia podstawy rusztowania i konsoli dachowych

3.1.11. Scaffolding entrances

For the vertical communication on the scaffolding you must use system aluminium and plywood platforms and staircases (staircases, see fig. 3.51 to 3.54 and section 3.7.).

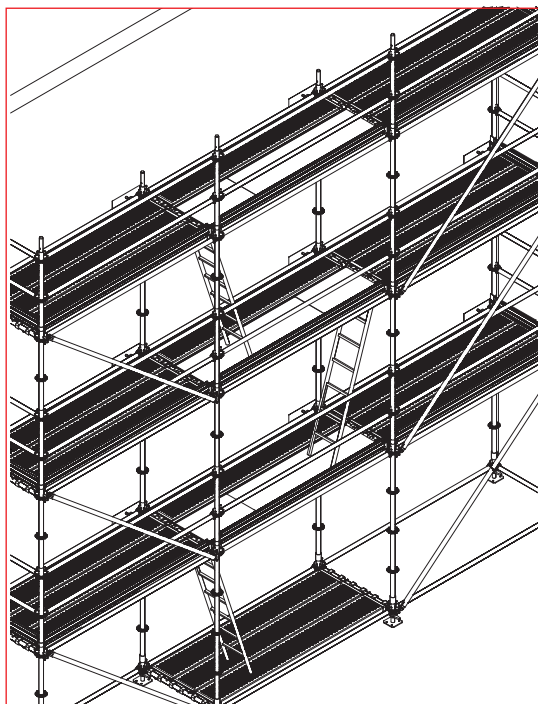


Fig. 3.31 – Scaffolding entrance with passing aluminium platforms fitted with the aluminium ladders

3.1.12. Scaffolding near eaves

When performing repair and construction works at the roof edge you should install 4 rows of horizontal transoms on 2-metre stands, over the entire working platform level length.

By installing the protection net or canvas between the working platform level stands you can avoid falling the components rolling off the roof outside the scaffolding.

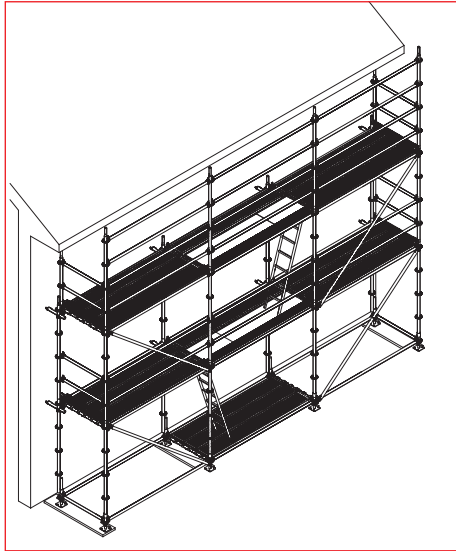


Fig. 3.32 – Example 1

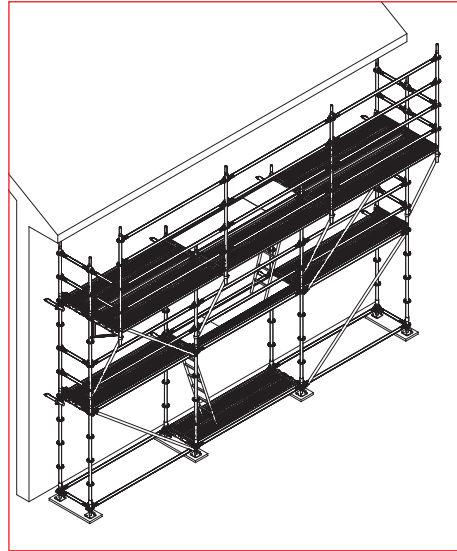


Fig. 3.33 – Example 2 expansion

3.1.13. Changing stands spacing

Change the bay width with the girder pipe connector. To bypass the protrusions, balconies or other architectural elements you can reduce the scaffolding bay width by using the girder pipe connector. When using the platforms with pipe catches reduce the bay width by using the girder pipe connector.

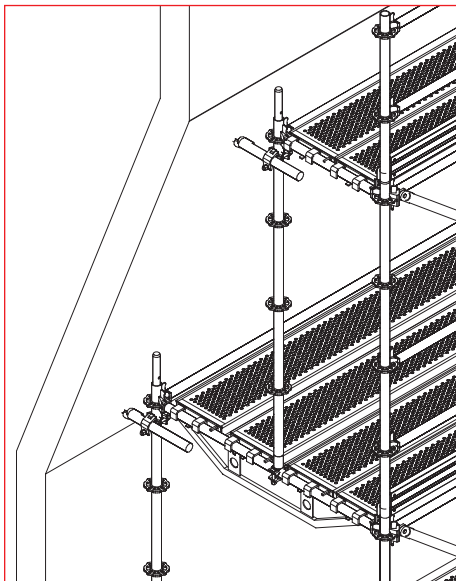


Fig. 3.34 – Using an "o" girder connector

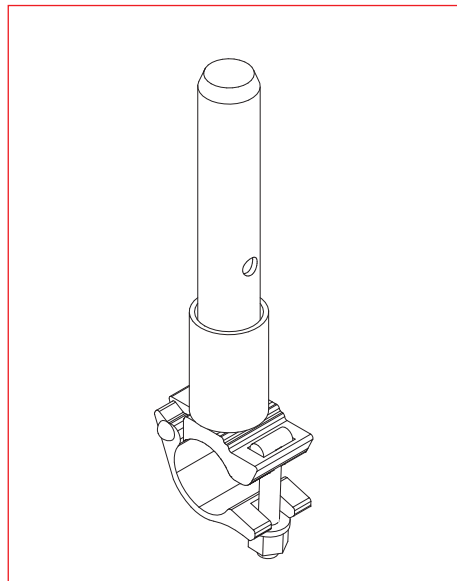


Fig. 3.34a – Pipe connector with a catch

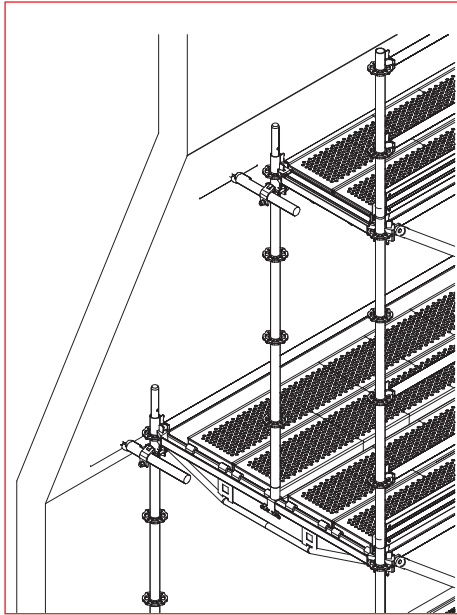


Fig. 3.35 – Using an “u” girder connector

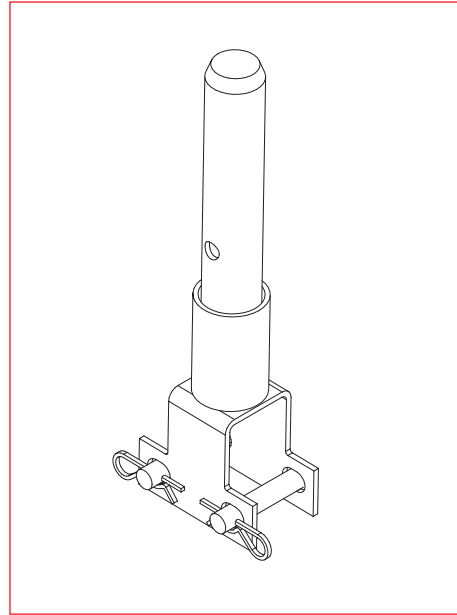


Fig. 3.35a – Pipe connector with a clamp

3.1.14. Additional components

The additional surfaces of the ALURROTAX system can be “lined” with wooden planks while ensuring safe use. Below are the examples showing the installation of the additional components with the overlapping transom. Follow the guidelines included in table 2 when building the working platforms with the planks. Ensure that the plank support spacing does not exceed 500 mm, the gap between the butt planks does not exceed 20 mm and that the planks overlap by at least 200 mm.

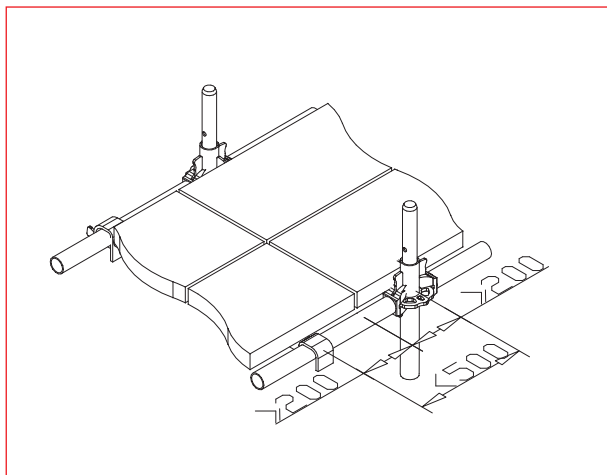


Fig. 3.36 – Butt planks

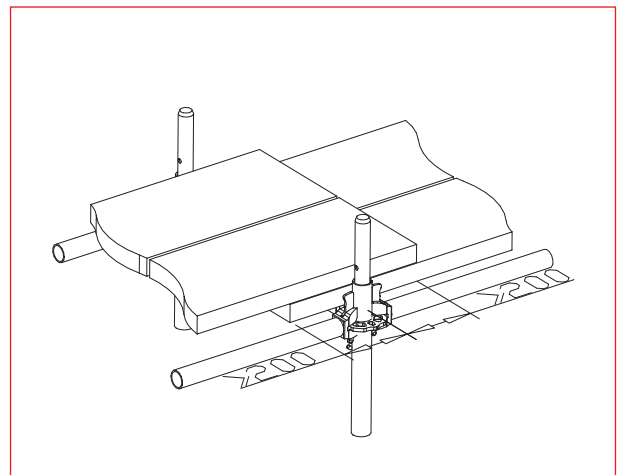


Fig. 3.37 – Overlapping planks

Table 3.2

Permissible spacing for the moveable platforms made of wood or planks (acc. to tab. 8, DIN 4420, T1)						
Scaffolding group	Platform or plank width [cm]	Platform or plank thickness [cm]				
		3.0	3.5	4.0	4.5	5.0
1, 2, 3	20	1.25	1.50	1.75	2.25	2.50
	24 i 28	1.25	1.75	2.25	2.50	2.75
4	20	1.25	1.50	1.75	2.25	2.50
	24 i 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

3.2. Scaffolding assembly in a facade set-up

3.2.1.

Start the scaffolding assembly at the highest area point by placing the wooden footings for the adjustable stand base jacks. The spacing should correspond to the bay length. There should be at least two base jacks on each footing.

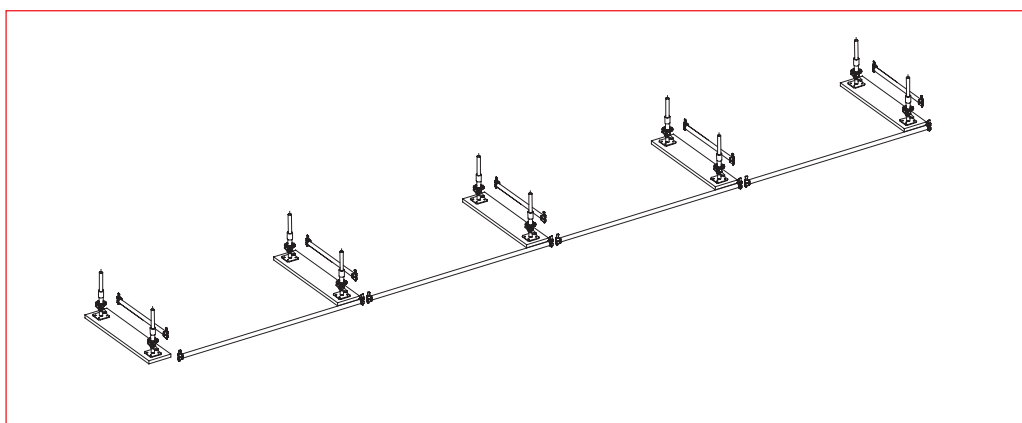


Fig. 3.38 – Step 1 – Footing assembly

3.2.2.

Put the initial components on the footings.

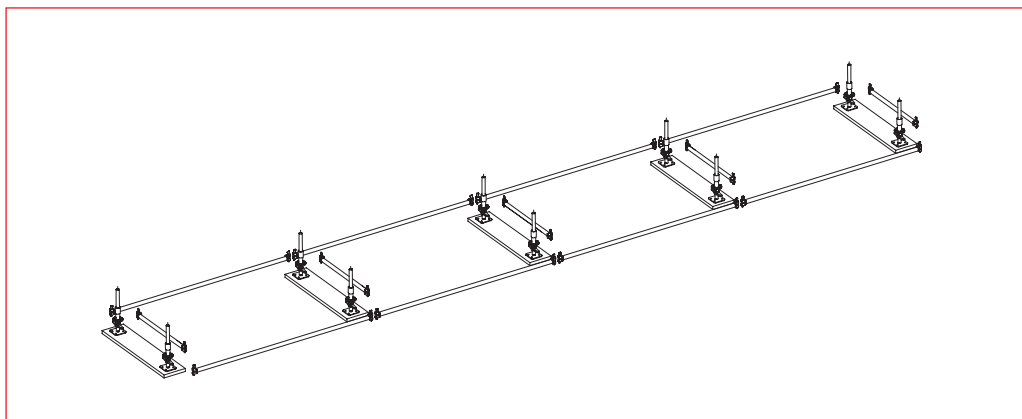


Fig. 3.39 – Step 2 – Putting the initial components

3.2.3.

Tie the initial components with the crossbars (horizontal 0.73 m or 1.09 m transom) and the stringers (horizontal 1.57 m, 2.07 m, 2.57 m, 3.07 m transom) and level. Install the transom driving the head wedge located in the initial component rosette hole with the 500 g hammer.

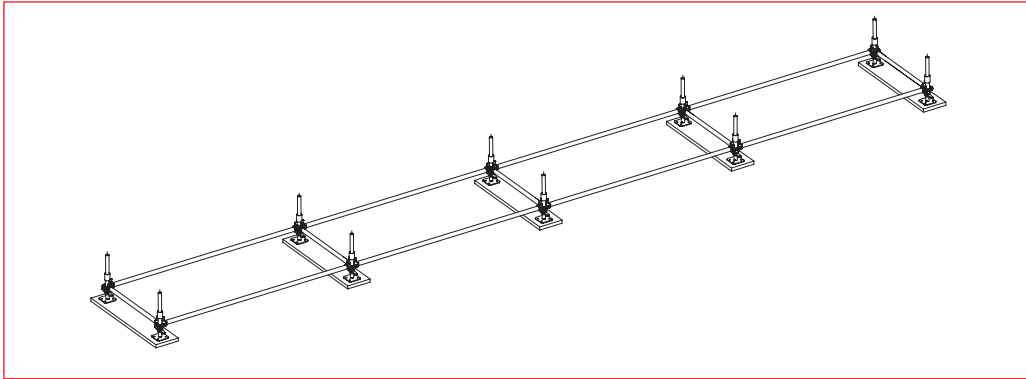


Fig. 3.40 – Step 3 – Tying the initial components

3.2.4.

Put the stands of the desired length on the basic level prepared as described above. Use the basic stand lengths i.e. 2 m or 4 m. When using the 2 m and 4 m stands put them alternately i.e. the 2 m stand should be adjacent to the 4 m stand (fig. 3.43).

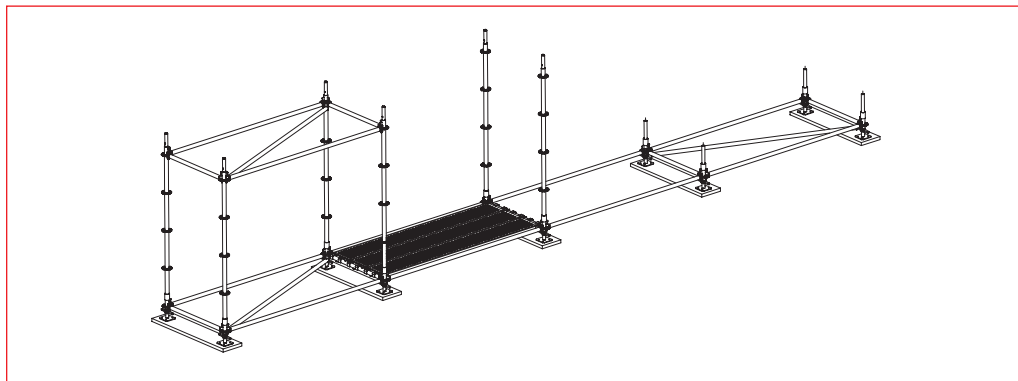


Fig. 3.41 – Installed stand

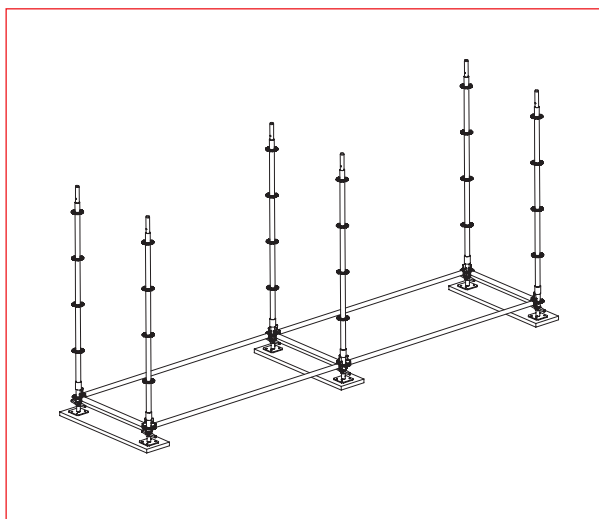


Fig. 3.42 – Example showing the use of stands of the same length

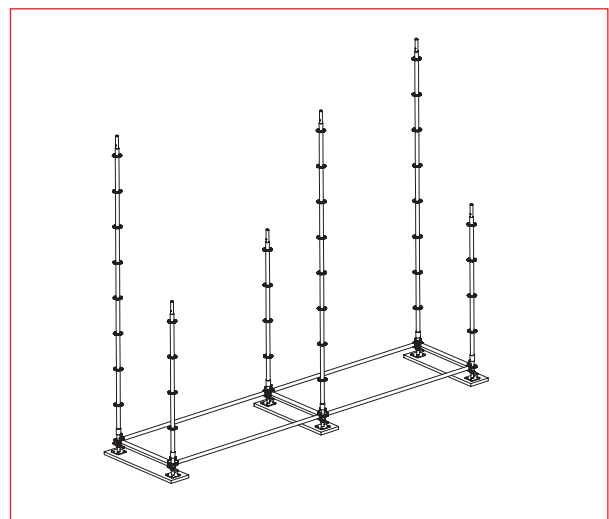


Fig. 3.43 – Example showing the use of stands of different length

3.2.5.

Install the crossbars, stringers and circulation path platforms 2 m from the initial component. To install the higher levels use the assembly planks as the temporary auxiliary platforms. The platforms should be installed when the scaffolding is low. Each platform should be protected (with the system protection). The bays without the system working platforms installed should be braced with the horizontal brace where the vertical braces are installed.

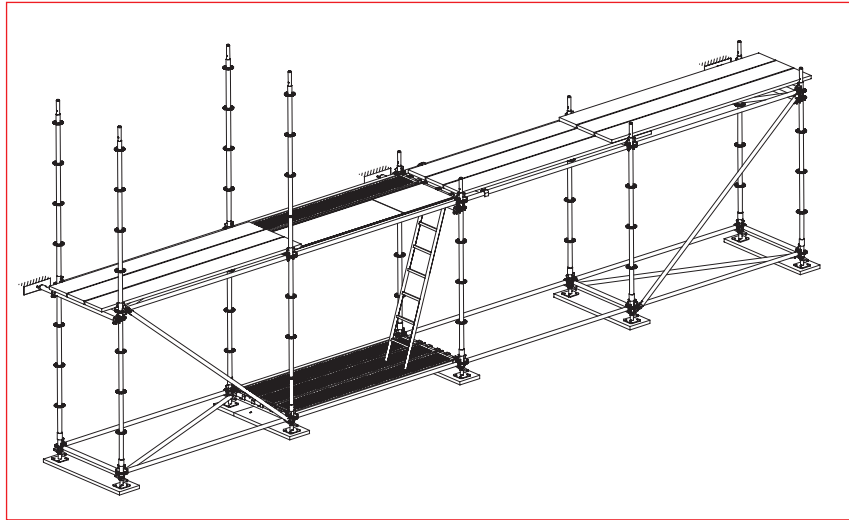


Fig. 3.44 – Assembly stage depicted

3.2.6.

Anchor the scaffolding to the facade starting from the second assembly platform (at the height of 4 m) by using the anchoring connectors, standard connectors and anchoring eyebolts. Install the vertical braces on the structural net or scaffolding as shown in the design or this manual. Each level should have at least two braces. When the scaffolding is anchored install the railings and toe boards on the installed platforms. During the installation ensure that the bays with the vertical brace and without the platform are fitted with the horizontal brace.



Install the anchors while erecting the scaffolding.

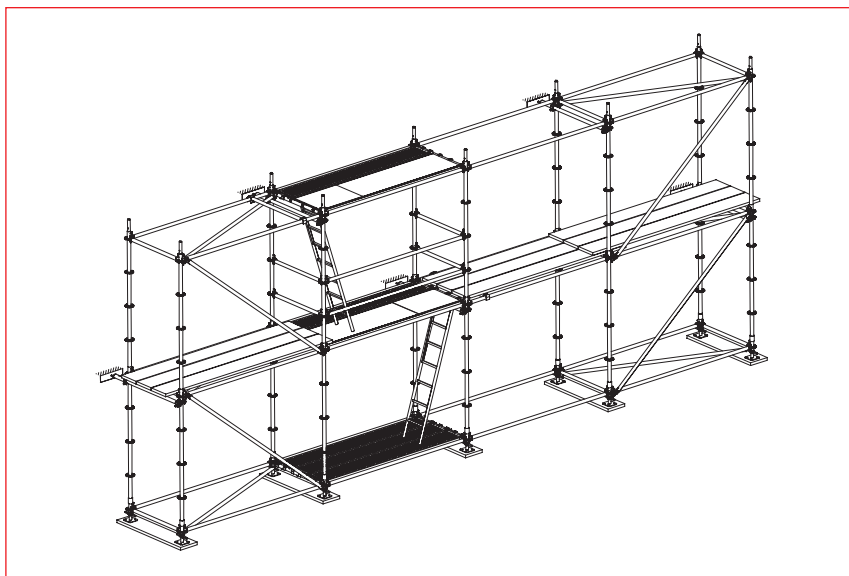


Fig. 3.45 – Example showing the scaffolding anchored to the facade

3.2.7.

The protection hoods can be installed at the height of the first platform level by expanding the platform and installing the protection roof console according to figure 3.29.

3.2.8.

Install the stringers, crossbars and higher level platforms when standing on the previous level platforms. Before you put the higher level platforms brace the stands of the erected level. Fasten all components to the stands by driving the head wedge into the rosettes. Drive the wedges from top to bottom.

During the assembly use the stands of the height that allows you to connect them at the scaffolding nodes. Protect the working and safety platforms with the toe boards and two horizontal O-transoms which also serve as protection railings.



Fig. 3.46 – Scaffolding with the platforms installed

3.2.9.

When the bay has to be expanded you can install the 0.36 m steel console from the inside of the scaffolding or the 0.73 m or 0.36 m steel console from the outside of the scaffolding in the facade set-up according to section 3.1.7. The scaffolding can be expanded from the outside only on one level at the entire scaffolding height. When the gap between the platforms exceeds 25 mm install the plank filling.

3.2.10.

The working platform can be lined with the wooden planks according to the rules specified in section 3.1.14. In this case install the horizontal braces over the planks.

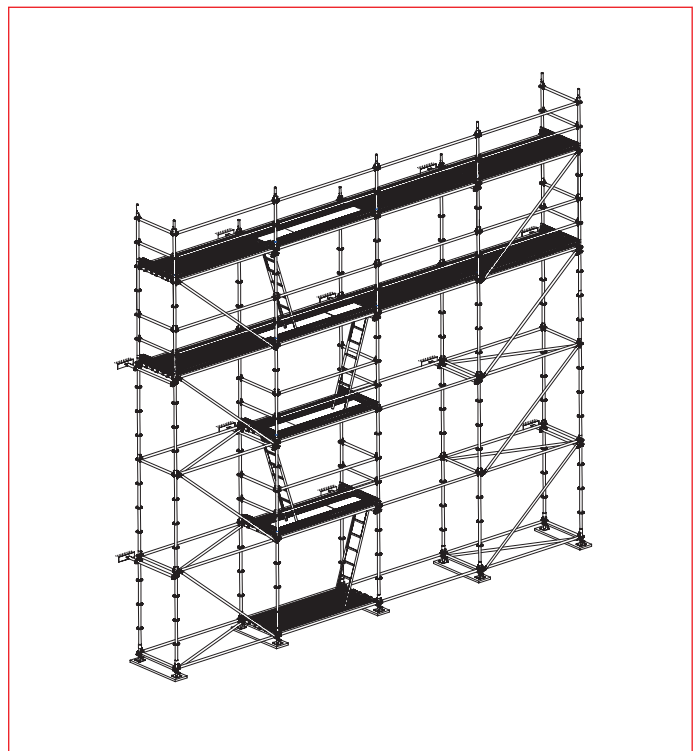
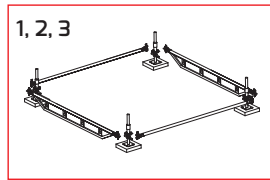


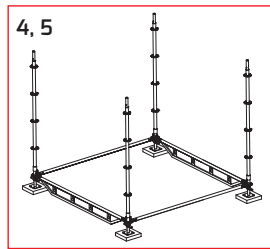
Fig. 3.47 – Working and safety platforms with braces

3.3. Tower scaffolding

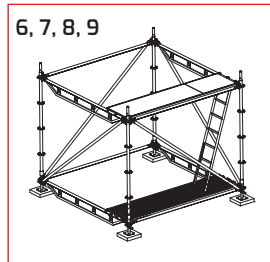
This type of scaffolding is often used as an inspection scaffolding or a light-duty installation scaffolding. It is also used as a supporting structure for camera stations or as a load-bearing structure for speaker sets during public events. The scaffolding fitted with the road wheels can serve as a mobile scaffolding. Before the assembly ensure that the load capacity of the ground is sufficient.



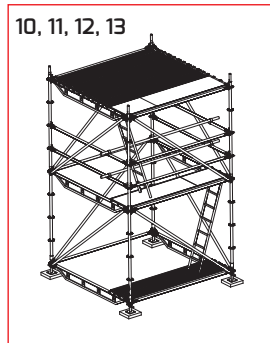
1. Space the steel base jacks according to the desired dimension.
2. Put a wooden footing under each base jack to distribute the scaffolding pressure over the ground.
3. Put the initial components on the base jacks.



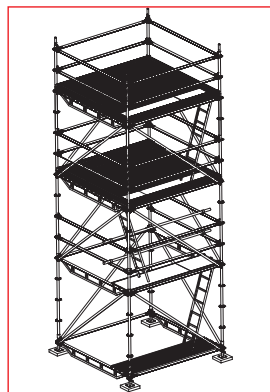
4. Install the horizontal transoms and level the resulting base frame.
5. Install the stands.



6. Install the platform in the entrance area.
7. Install the O-transoms and double transoms.
8. Brace each wall.
9. Install the communication passing platform.



10. Install the next scaffolding level in the manner described in sections 5, 6, 7.
11. Install the railings in the communication area (internal railing can be made of connectors and standard pipes).
12. Install the next scaffolding level.
13. Install all platforms, toe boards and railings on the main and safety platforms.



Observe the following when erecting the tower scaffolding

- When the scaffolding is erected outside the buildings the ratio of the scaffolding height H to the smallest base dimension B must be lower than or equal to 3.
- When the scaffolding is erected inside the buildings the ratio of the scaffolding height H to the smallest base dimension B must be lower than or equal to 4.
- When erecting a higher scaffolding you should perform a structural analysis.



Analyse the structure safety.

The ceiling platforms are installed similarly to the tower scaffolding. The individual towers are connected with the girders and transoms to increase the desired platform dimension. When building the platforms use the same ratio of height to the base dimension as specified for the tower scaffolding.

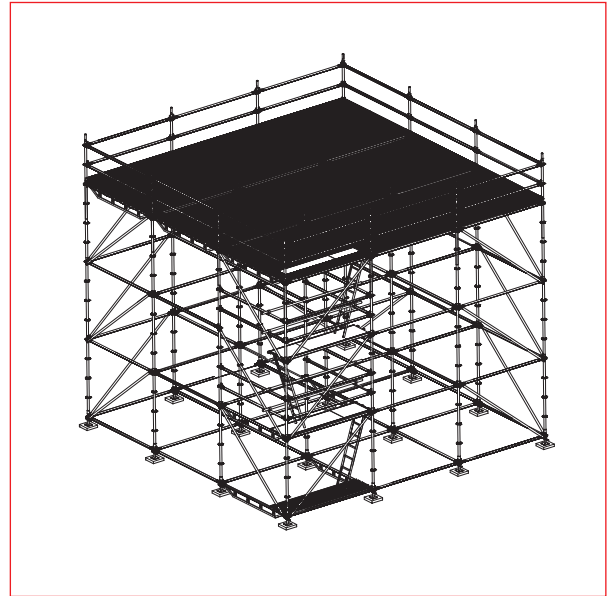


Fig. 3.48 – Working and safety platforms with braces



Analyse the structure safety.

3.4. Scaffolding for round facilities

The structure of the ROTAX Plus system allows you to erect it around the arched facilities. The general rules for erecting the scaffolding for round facilities are similar to those of the scaffolding for straight wall. The difference is that the external stands must be rotated by 45° and that the transoms must be installed in the large rosette sockets. Rotating the transom in the socket allows you to obtain a trapezoid bay.

The long (external) sides of the trapezoid bay should be fitted with the system transoms and the short (internal) sides should be fitted with the standard pipes fastened with the standard connections. It is recommended that each rectangular bay was braced with the vertical braces.

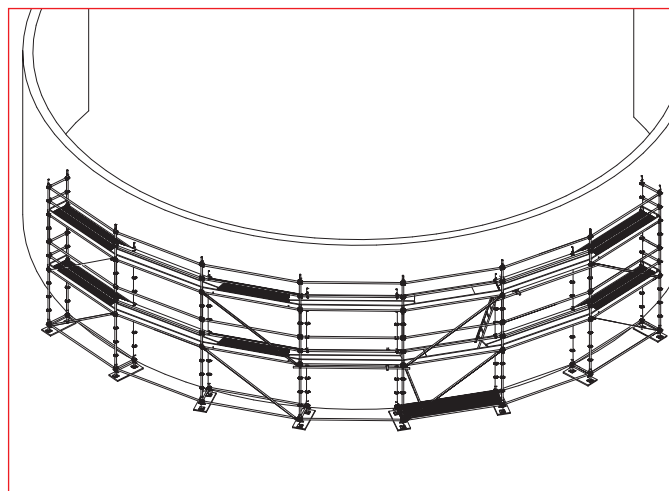


Fig. 3.49 – Example showing the scaffolding for round facilities.



Analyse the structure safety.

3.5. Suspended scaffolding

The suspended scaffolding is used at a huge height when the scaffolding cannot be erected on the ground because e.g. its load capacity is not sufficient, in the case of bridge structures, when the process traffic under the structure is high and for other reasons.

The scaffolding can be suspended with the clamping connectors, chains, expansion pins or other components applicable to the given conditions.



When erecting the suspended scaffolding use the stands with the screwed pipe connector to effectively transmit the tensile forces.

When you start installing the suspended part we recommend that you install the stands with the connector pointed downwards to facilitate suspending next stands. The part that is installed on top of the suspended part can be assembled on the ground and lifted to the installation site with a crane. The suspended scaffolding should be installed so that the duration of works performed at height is as short as possible.

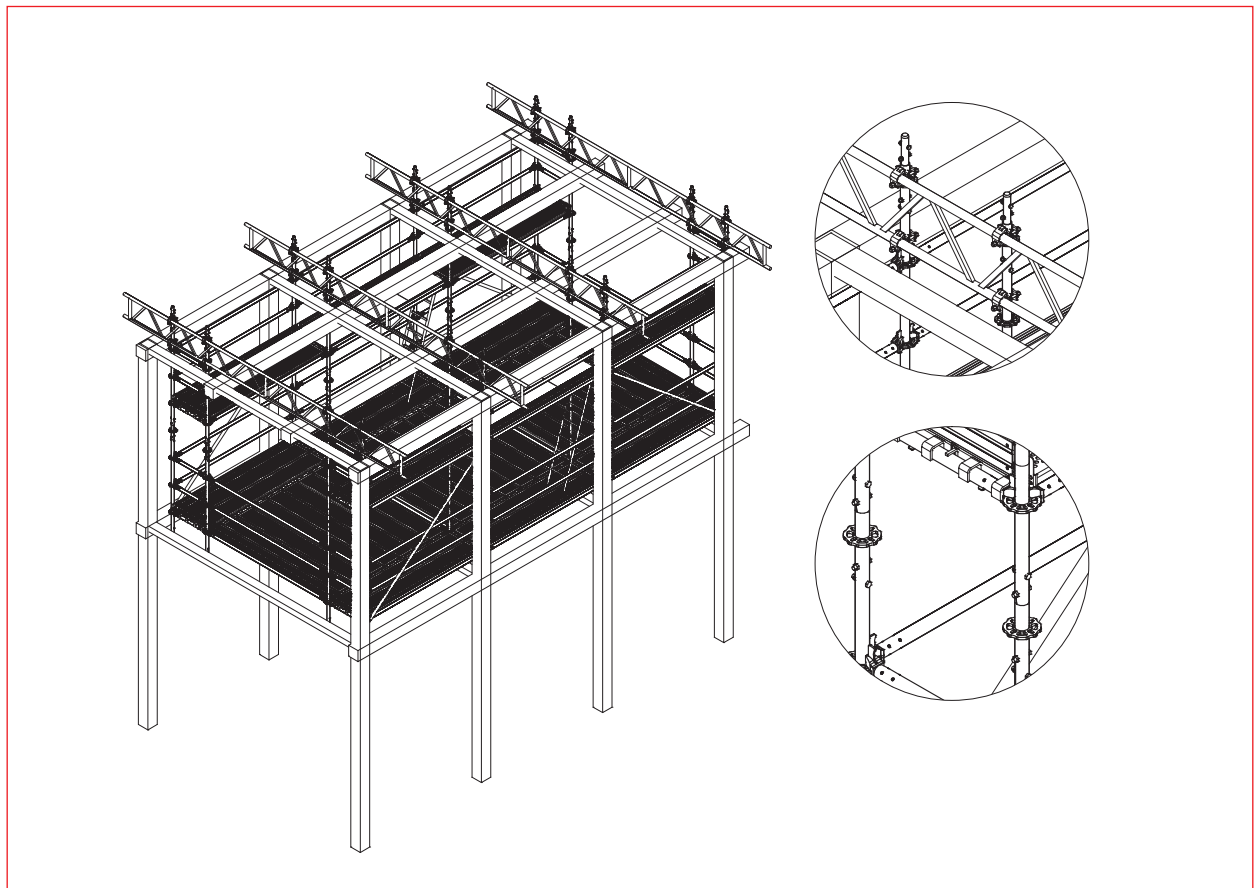


Fig. 3.50 – Example showing a suspended scaffolding



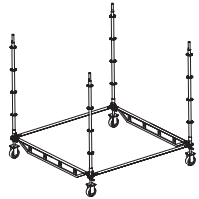
Analyse the structure safety.

3.6. Mobile scaffolding

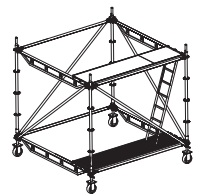
1, 2, 3, 4



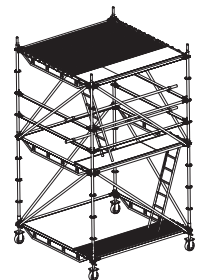
5, 6



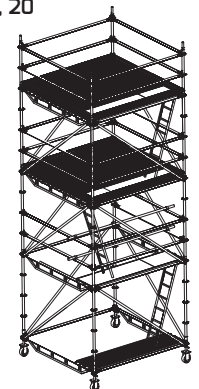
7, 8, 9, 10, 11



12, 13, 14, 15, 16, 17, 18



19, 20



When the construction, assembly and inspection works are performed in places where it is not advisable to erect a scaffolding for a longer time you can use a mobile scaffolding based on the ALUROTAX system. The mobile scaffolding is assembled according to the general rules for the assembly of the tower ALUROTAX scaffolding. The difference is that the base is equipped with the road wheels. Observe the following rules when erecting the mobile scaffolding:

- outside the buildings, the ratio of the scaffolding height H to the smallest base dimension B must be lower than or equal to 3,
- inside the buildings, the ratio of the scaffolding height H to the smallest base dimension B must be lower than or equal to 4,
- higher scaffolding must be anchored to the building,
- when the scaffolding is put in the final location lock the road wheels with the brake (to protect them from rolling and rotating),
- move the scaffolding along the flat ground of sufficient load capacity,
- when the scaffolding is moved no employees or materials, tools etc. can be present on the scaffolding.

1. Install the road wheels with the steel base jacks.
2. Install the initial components on the base jacks.
3. Install the horizontal transoms.
4. Level the assembled base.

5. Install the stands in the corners.
6. Lock the wheel brakes before proceeding with the assembly.

7. Install the bottom platform.
8. Install the double transoms.
9. Install the horizontal transoms.
10. Brace each wall.
11. Install the passing platform.

12. Install the erected level stands.
13. Install the double transoms.
14. Install the horizontal transoms.

15. Install the internal circulation path railings (pipes + standard clamps).
16. Brace each wall.
17. Install the steel platforms.
18. Install the passing platform.

19. Install the stands, braces, transoms, passing platform and the steel platform for the next level.
20. Install the safety platform with all railings and toe boards.
21. Install the working platform with all railings and toe boards.

During work lock all road wheel brakes. Below are the examples of other configurations.

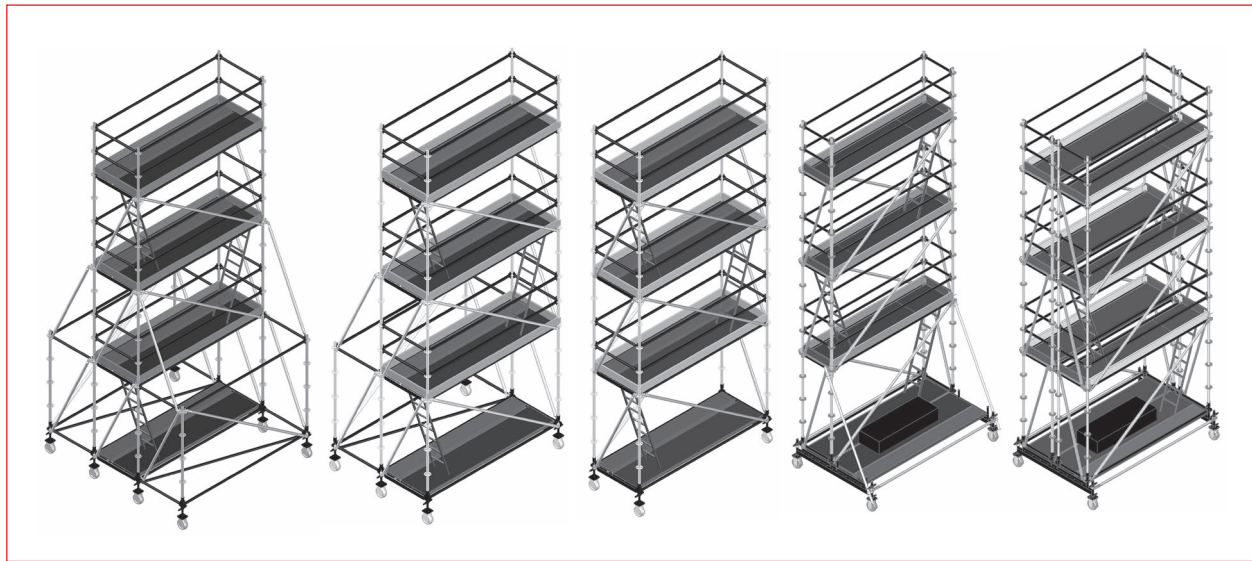


Fig. 3.51 - Mobile scaffolding in various configurations



Analyse the structure safety.

3.7. External staircases

Staircases are used to ensure comfortable vertical communication on the scaffolding. A staircase is made of the system aluminium stairs, external and internal railings. The stair panels are installed instead of the passing platforms, the stair railings are installed instead of individual railings. Below are the examples of staircases.

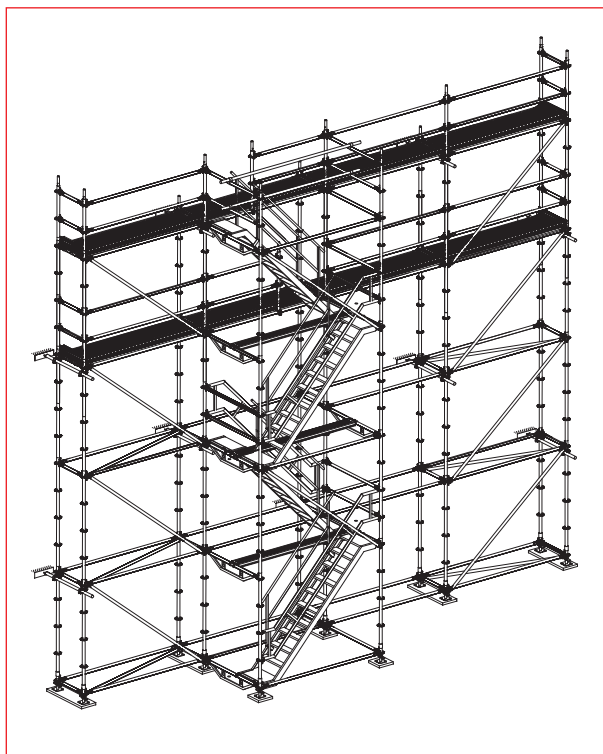


Fig. 3.52 - External double staircase

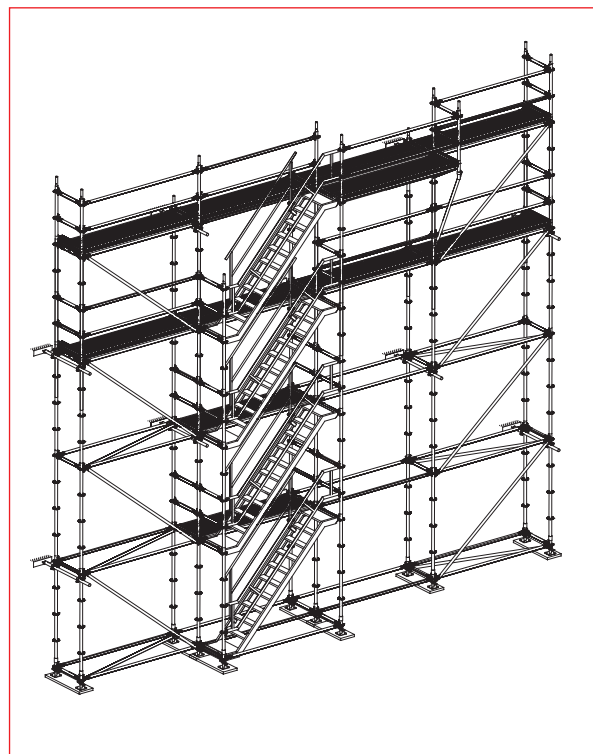


Fig. 3.53 - External single staircase



Fig. 3.54 – Single staircase exit, example no. 1

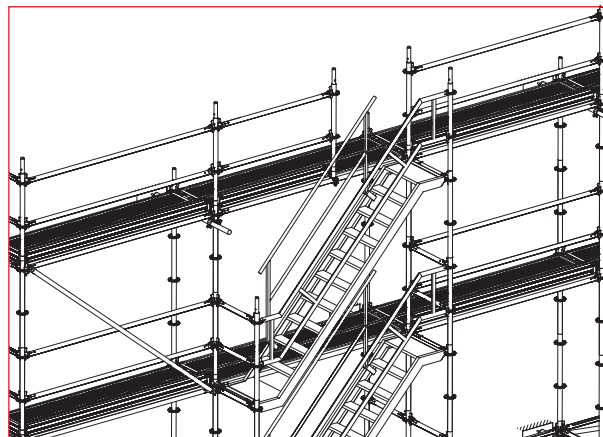


Fig. 3.55 – Single staircase exit, example no. 2

Example no. 1 shows the staircase exit to the working platform extension made of the 0.73 m console supported by the brace and the steel platforms.

Example no. 2 shows the staircase exit to the working platform where the pipe connector, post and railings are used within the staircase.

3.8. Vertical material handling

The materials required to work can be delivered on the scaffolding with a block boom, block and a winch, e.g. GEDA. Install these components on the scaffolding as well as anchor the scaffolding according to the rules described in chapter 2, section 2.3.13. The maximum weight of lifted loads cannot exceed 150 kg. Below is a scheme that presents the installed winch.

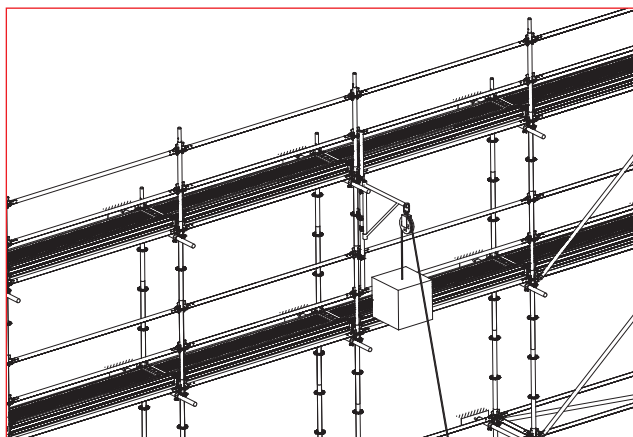


Fig. 3.56 – Scaffolding part with the winch



You should also anchor two adjacent stands on each boom side at the storey level and one level over and below the storey level.

3.9. Assembly Diagrams For Typical Scaffolding In A Facade Set-Up

The structural analyses of the set-up options that are presented in the schemes were made on the basis of the loads compliant with PN-EN 1004. The set-up options were a net is used consider the loads compliant with EN12811:1999. The component dimensions were determined according to PN-B-03200. The forces specified in the below schemes were calculated and include the safety coefficients.

Wall anchored ALUROTAX scaffold, height 24.2 m, no consoles, covered with a net, positioned at the partially opened facade – (60% of holes).

Calculation model marking: **01 ALROT GW FO NO**

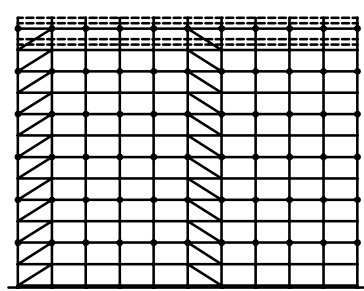


Fig. 3.9.1 – Version 1

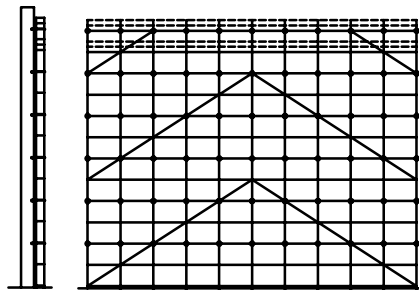


Fig. 3.9.2 – Version 2

Bay length – max 3.07 m
Level height – 2 m
Scaffold height – 24.2 m
Useful load – 2 kN/m²

Anchor load
 $F_{\perp} = 4.11 \text{ kN}$ $F_{\parallel} = 1.69 \text{ kN}$
Ground load $F_z = 12.5 \text{ kN}$

Scaffold platforms – steel, aluminium, installed on each level or at least on two levels. Where the platforms protected against detaching with the U-transom protections are installed you do not need to use any longitudinal O-transoms. The protection rails made of transoms are installed in each bay which has the platforms installed.

Bracing system: large plane or tower.

The scaffold is installed on a sufficiently strong ground (no settling)

Height of the screw base plate adjustment nut relative to the foot – 0.20 m

Maximum scaffold to wall distance (deck edge to wall distance) – 0.20 m

Consoles: none

Covering: none

Anchored with long anchoring connectors fastened to two stands

Calculated anchor and ground loads (load coefficient $\gamma_f = 1.5$):

– anchor load $P_{\perp} = 4.11 \text{ kN}$; $P_{\parallel} = 1.79 \text{ kN}$

– ground load per a single stand $F = 17.25 \text{ kN}$

Wall anchored ALUROTAX scaffold, height 24.2 m, no consoles, covered with a net, positioned at the closed facade – (0% of holes)

Calculation model marking: **02 ALROT GW FZ NO**

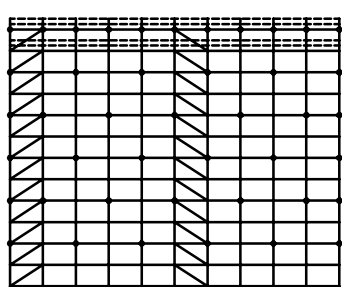


Fig. 3.9.3 – Version 1

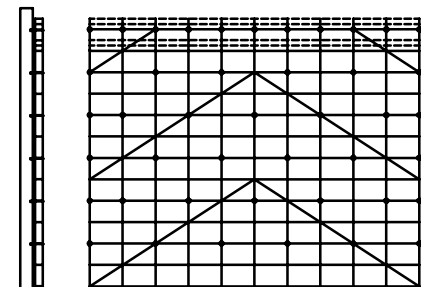


Fig. 3.9.4 – Version 2

Bay length – max 3.07 m
Level height – 2 m
Scaffold height – 24.2 m
Useful load – 2 kN/m²

Anchor load
 $F_{\perp} = 2.85 \text{ kN}$ $F_{\parallel} = 1.85 \text{ kN}$
Ground load $F_z = 13.66 \text{ kN}$

Scaffold platforms - steel, aluminium, installed on each level or at least on two levels. Where the platforms protected against detaching with the U-transom protections are installed you do not need to use any longitudinal O-transoms. The protection rails made of transoms are installed in each bay which has the platforms installed.

Bracing system: large plane or tower.

The scaffold is installed on a sufficiently strong ground (no settling)

Height of the screw base plate adjustment nut relative to the foot – 0.20 m

Maximum scaffold to wall distance (deck edge to wall distance) – 0.20 m

Consoles: none

Covering: none

Anchored with long anchoring connectors fastened to two stands

Calculated anchor and ground loads (load coefficient $\gamma_f = 1.5$):

- anchor load $P_{\perp} = 2.67$ kN; $P_{\parallel} = 2.09$ kN

- ground load per a single stand $F = 17,66$ kN

Wall anchored ALUROTAX scaffold, height 24.2 m, no consoles, covered with a net, positioned at the closed facade.

Calculation model marking: **03 ALROT GW FZ P5**

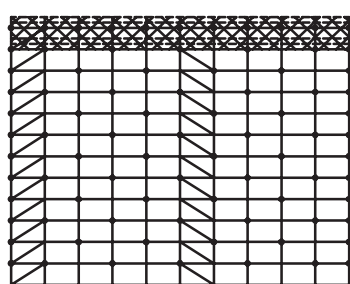


Fig. 3.9.5 – Version 1

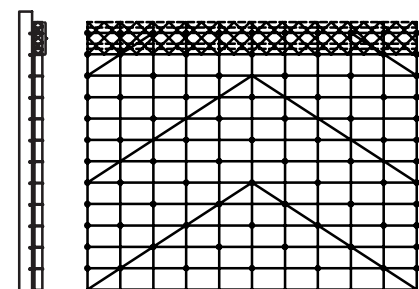


Fig. 3.9.6 – Version 2

Bay length – max 2.57 m
Level height – 2 m
Scaffold height – 24.2 m
Useful load – 2 kN/m²

Anchor load: section covered with a net
 $F_{\perp} = 7.15$ kN $F_{\parallel} = 1.931$ kN;
section without a net
 $F_{\perp} = 2.85$ kN $F_{\parallel} = 1.85$ kN
Ground load $F_z = 13.66$ kN

Scaffold platforms – steel, aluminium, installed on each level. Install longitudinal O-transoms on the platform planes in each bay, on both sides.

The protection rails made of transoms are installed in each bay on each level.

Bracing system: large plane or tower.

The scaffold is installed on a sufficiently strong ground (no settling)

Height of the screw base plate adjustment nut relative to the foot – 0.20 m

Maximum scaffold to wall distance (deck edge to wall distance) – 0.20 m

Consoles: none

Covering: net

Anchored with long anchoring connectors fastened to two stands

Calculated anchor and ground loads (load coefficient $\gamma_f = 1.5$):

- anchor load $P_{\perp} = 6.75$ kN; $P_{\parallel} = 3.19$ kN

- ground load per a single stand $F = 12$ kN

4. PRODUCT MARKING SYSTEM

All products manufactured by ALTRAD-Mostostal according to the existing ISO 9001 quality system are marked with the permanent marks (stamp ~ 0.7 mm deep) located as specified in the technical documentation. Additionally, the manufacturer and/or customer labels are used acc. to the individual agreements.

Component marks – hard-stamped mark:

A 75 RMM – general mark view

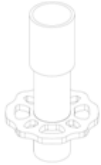


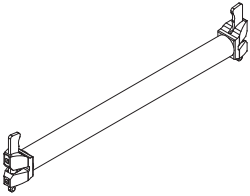
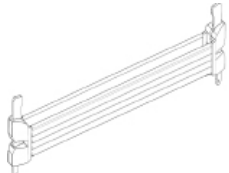
A 75 – permanent mark of the manufacturer – ALTRAD-Mostostal in Siedlce


R – letter of the month of manufacture (variable mark)

MM – digit of the year of manufacture (variable mark)



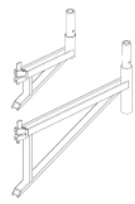


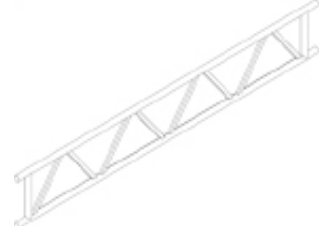
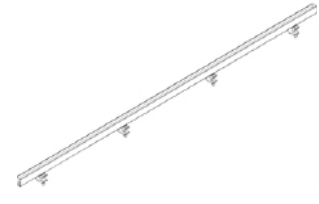
YEAR SYMBOL - RR-		MONTH SYMBOL - M-	
01 = 1995	10 = 2004	A - January	G - July
.....	.....	B - February	H - August
06 = 2000	20 = 2014	C - March	I - September
07 = 2001	21 = 2015	D - April	J - October
08 = 2002	.....	E - May	K - November
09 = 2003	95 = 2099	F - June	L - December










5. ALUROTAX MODULAR SCAFFOLDING COMPONENTS LIST


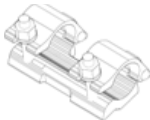

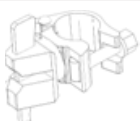




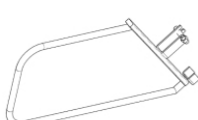

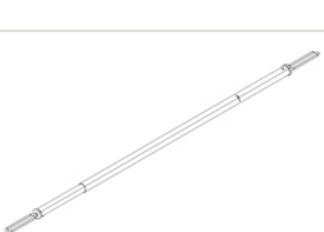
Component name	Index	Weight (kg)	Diagram
Initial component	E371300	1,59	
Aluminium stand 0.5 m	E391405	1.19	
Aluminium stand 1.0 m	E391410	2.11	
Aluminium stand 1.5 m	E391415	3.05	
Aluminium stand 2.0 m	E391420	3.97	
Aluminium stand 2.5 m	E391425	4.90	
Aluminium stand 3.0 m	E391430	5.83	
Aluminium stand 3.5 m	E391435	6.78	
Aluminium stand 4.0 m	E391440	7.71	
Aluminium stand 0.5 m, without connector	E391505	0.92	
Aluminium stand 1.0 m, without connector	E391510	1.85	
Aluminium stand 1.5 m, without connector	E391515	2.79	
Aluminium stand 2.0 m, without connector	E391520	3.71	
Aluminium stand 2.5 m, without connector	E391525	4.65	
Aluminium stand 3.0 m, without connector	E391530	5.57	
Aluminium stand 3.5 m, without connector	E391535	6.53	
Aluminium stand 4.0 m, without connector	E391540	7.46	
Aluminium stand 0.5 m, with screwed connector	E391605	2.99	
Aluminium stand 1.0 m, with screwed connector	E391610	3.93	
Aluminium stand 2.0 m, with screwed connector	E391620	5.78	
Aluminium stand 2.5 m, with screwed connector	E391625	6.72	
Aluminium stand 3.0 m, with screwed connector	E391630	7.65	
Aluminium stand 3.5 m, with screwed connector	E391635	8.59	
Aluminium stand 4.0 m, with screwed connector	E391640	9.52	
Rosette connector	E371200	1.15	
Aluminium O-transom 0.73 m	E391807	1.61	
Aluminium O-transom 1.09 m	E391810	2.15	
Aluminium O-transom 1.57 m	E391815	2.88	
Aluminium O-transom 2.07 m	E391820	3.63	
Aluminium O-transom 2.57 m	E391825	4.37	
Aluminium O-transom 3.07 m	E391830	5.13	
Aluminium U-transom 0.73 m	E392407	1.61	

Component name	Index	Weight [kg]	Diagram
Aluminium U-transom 1.09 m – strengthened	E392410	2.20	
Aluminium double O-transom 1.57 m	E393615	4.45	
Aluminium double O-transom 2.07 m	E393620	5.79	
Aluminium double O-transom 2.57 m	E393625	7.11	
Aluminium double O-transom 3.07 m	E393630	8.45	
Aluminium double U-transom 1.09 m	E393510	3.14	
Aluminium double U-transom 1.57 m	E393515	4.41	
Aluminium double U-transom 2.07 m	E393520	5.72	
Aluminium double U-transom 2.57 m	E393525	7.05	
Aluminium double U-transom 3.07 m	E393530	8.36	
Platform steel protection 0.36 m	E374503	0.61	
Platform steel protection 0.73 m	E374507	1.33	
Platform steel protection 1.09 m	E374510	1.96	
Platform steel protection 1.40 m	E374514	2.74	
Platform steel protection 1.57 m	E374515	3.00	
Platform steel protection 2.07 m	E374520	4.00	
Platform steel protection 2.57 m	E374525	4.93	
Platform steel protection 3.07 m	E374530	5.87	
Aluminium platform 0.32x0.73 m - U - with crosspiece	E491507	4.23	
Aluminium platform 0.32x1.09 m - U - with crosspiece	E491510	5.14	
Aluminium platform 0.32x1.57 m - U - with crosspiece	E491515	6.46	
Aluminium platform 0.32x2.07 m - U - with crosspiece	E491520	7.88	
Aluminium platform 0.32x2.57 m - U - with crosspiece	E491525	9.22	
Aluminium platform 0.32x3.07 m - U - with crosspiece	E491530	10.55	
Steel platform 0.32x0.73 m - U - with crosspiece	E491607	6.09	
Steel platform 0.32x1.09 m - U - with crosspiece	E491610	7.99	
Steel platform 0.32x1.57 m - U - with crosspiece	E491615	10.93	
Steel platform 0.32x2.07 m - U - with crosspiece	E491620	13.65	
Steel platform 0.32x2.57 m - U - with crosspiece	E491625	16.15	
Steel platform 0.32x3.07 m - U - with crosspiece	E491630	18.85	
Steel platform 0.19x0.73 m - O	E491707	5.05	
Steel platform 0.19x1.09 m - O	E491710	7.00	
Steel platform 0.19x1.57 m - O	E491715	9.73	
Steel platform 0.19x2.07 m - O	E491720	12.36	
Steel platform 0.19x2.57 m - O	E491725	15.08	
Steel platform 0.19x3.07 m - O	E491730	17.80	
Steel platform 0.32x0.73 m - O	E492907	6.76	
Steel platform 0.32x1.09 m - O	E492910	8.66	
Steel platform 0.32x1.57 m - O	E492915	11.45	
Steel platform 0.32x2.07 m - O	E492920	14.12	
Steel platform 0.32x2.57 m - O	E492925	16.80	
Steel platform 0.32x3.07 m - O	E492930	19.48	

Component name	Index	Weight [kg]	Diagram
Steel platform 0.32x0.73 m - O	E497907	4.90	
Steel platform 0.32x1.09 m - O	E497910	5.87	
Steel platform 0.32x1.57 m - O	E497915	7.15	
Steel platform 0.32x2.07 m - O	E497920	8.60	
Steel platform 0.32x2.57 m - O	E497925	9.97	
Steel platform 0.32x3.07 m - O	E497930	11.33	
Complete aluminium platform 0.61x1.09 m - O	E492710	12.00	
Complete aluminium platform 0.61x1.57 m - O	E492715	19.87	
Complete aluminium platform 0.61x2.07 m - O	E492720	24.57	
Complete aluminium platform 0.61x2.57 m - O	E492725	33.75	
Complete aluminium platform 0.61x3.07 m - O	E492730	38.64	
Complete aluminium platform 0.61x1.09 m - U	E491910	8.75	
Complete aluminium platform 0.61x1.57 m - U	E491915	11.92	
Complete aluminium platform 0.61x2.07 m - U	E491920	15.53	
Complete aluminium platform 0.61x2.57 m - U	E491925	18.80	
Complete aluminium platform 0.61x3.07 m - U	E491930	24.06	
Aluminium passing platform 0.61x2.57 m - O	E492625	28.14	
Aluminium passing platform 0.61x3.07 m - O	E492630	31.09	
Aluminium passing platform 0.61x2.57 m - U	E492125	23.80	
Aluminium passing platform 0.61x3.07 m - U	E492130	29.10	
Steel overlay O-transom 0.73 m	E372607	4.00	
Steel overlay O-transom 1.09 m	E372610	5.17	
Transverse wooden toe board 0.73 m	E375107	1.97	
Transverse wooden toe board 1.09 m	E375110	2.85	
Longitudinal wooden toe board 1.57 m	E375115	4.05	
Longitudinal wooden toe board 2.07 m	E375120	5.29	
Longitudinal wooden toe board 2.57 m	E375125	6.53	
Longitudinal wooden toe board 3.07 m	E375130	7.76	
Transverse steel toe board 0.73 m	E375507	1.83	
Transverse steel toe board 1.09 m	E375510	2.49	
Longitudinal steel toe board 1.57 m	E375515	3.43	
Longitudinal steel toe board 2.07 m	E375520	4.38	
Longitudinal steel toe board 2.57 m	E375525	5.33	
Longitudinal steel toe board 3.07 m	E375530	6.28	
Vertical brace 2.0x0.73 m	E393107	4.94	
Vertical brace 2.0x1.09 m	E393110	5.16	
Vertical brace 2.0x1.57 m	E393115	5.52	
Vertical brace 2.0x2.07 m	E393120	6.00	
Vertical brace 2.0x2.57 m	E393125	6.55	
Vertical brace 2.0x3.07 m	E393130	7.15	

Component name	Index	Weight [kg]	Diagram
Adjustable base jack 0.4 m	E511204	3.39	
Adjustable base jack 0.6 m	E511206	4.30	
Adjustable base jack 0.8 m	E511208	5.20	
Adjustable base jack 1.5 m	E511313	9.52	
Tilted adjustable base jack 0.8 m	E511408	7.81	
Aluminium console 0.39 m - O	E394203	2.17	
Aluminium console 0.73 m - O	E394207	2.92	
Aluminium console 0.39 m - U	E394103	1.68	
Aluminium console 0.73 m - U	E394107	2.87	
Transverse steel brace 1.75 m	E285179	4.99	
Protection roof console 0.73 m	E288501	5.65	
Aluminium girder 0.4x3.0 m	E501230	12.70	
Aluminium girder 0.4x4.0 m	E501240	17.00	
Aluminium girder 0.4x5.24 m	E501252	20.96	
Aluminium girder 0.4x6.0 m	E501260	24.70	
Aluminium girder 0.4x6.24 m	E501262	25.12	
Aluminium girder 0.5x3.24 m	E501330	14.97	
Aluminium girder 0.5x4.24 m	E501340	18.79	
Aluminium girder 0.5x5.24 m	E501350	22.60	
Aluminium girder 0.5x6.24 m	E501360	26.43	
Aluminium crossbeam 0.6 m	E501006	2.70	
Aluminium crossbeam 0.9 m	E501009	3.30	
Aluminium crossbeam 1.2 m	E501012	3.80	
Aluminium crossbeam 1.6 m	E501016	5.20	
Aluminium crossbeam 1.9 m	E501019	5.80	
Aluminium crossbeam 3.0 m	E501030	8.50	
Aluminium crossbeam 4.0 m	E501040	10.20	
Aluminium crossbeam 5.0 m	E501050	12.70	
Aluminium crossbeam 6.0 m	E501060	15.20	

Component name	Index	Weight [kg]	Diagram
Girder connector	E502000	2.20	
Girder pipe connector	E376700	1.87	
Pipe connector with connection	E581701	1.60	
Aluminium stairs 2.57m - O	E423225	29.29	
Aluminium stairs 3.0m - O	E423230	34.19	
External stairs railing 2.0x2.57m	E395025	9.50	
External stairs railing 2.0x3.07m	E395030	10.62	
Steel internal stairs railing	E286300	11.85	
Steel anchoring connector 0.4m	E286504	1.66	
Steel anchoring connector 0.5m	E286505	1.89	
Steel anchoring connector 0.8m	E286508	2.96	
Steel anchoring connector 1.1m	E286511	3.90	
Steel anchoring connector 1.3m	E286513	4.58	
Steel anchoring connector 1.5m	E286515	4.94	
Steel anchoring connector 1.9m	E286519	6.16	
Anchoring screw with eye 0.12m	E511012	0.20	
Anchoring screw with eye 0.19m	E511019	0.30	
Anchoring screw with eye 0.23m	E511023	0.40	
Standard connector	E581119	1.25	

Component name	Index	Weight [kg]	Diagram
Rotating connector	E581319	1.20	
Longitudinal connector	E581419	1.50	
Double wedge connector	E373900	1.36	
Standard wedge connector	E373901	1.21	
Rotating wedge connector	E373001	1.22	
Clamping connector	E284620	1.06	
Road wheel Ø200mm	MP-116	4.00	
Block jib	E552100	7.86	
Bottom stairs railing	E286305	4.38	
Assembly post	E206600	6.82	
Telescopic railing 1.5m ÷ 2.07m	E206800	3.45	
Telescopic railing 2.07m ÷ 3.07m	E206700	4.23	

6. ANNEX NO. 1 - SCAFFOLDING COMMISSION PROTOCOL



SCAFFOLDING COMMISSION PROTOCOL

No. _____ of _____

To agreement no. _____ of _____

Contractor	User
.....
.....
.....
Authorised person	Authorised person
Phone no.	Phone no.
Scaffolding type: <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Frame <input type="checkbox"/> Rotax modular <input type="checkbox"/> Mobile <input type="checkbox"/> Facade </div> <div> <input type="checkbox"/> Wall <input type="checkbox"/> Free-standing <input type="checkbox"/> Hanging <input type="checkbox"/> </div> </div>	Assembly site
Scaffolding parameters: Structure dimensions Net dimensions Structure load capacity Working platform permissible load capacity kNm ²	Scaffolding purpose
Earthing resistance Ω Subsequent inspection dates	Additional equipment

Declaration and confirmation

- Assembly Contractor certifies that the scaffolding described in this protocol is complete. The scaffolding was assembled according to the best construction practices and the assembly manual issued by the manufacturer as well as according to the OHS requirements. The assembly was performed by certified fitters.
- The scaffolding structure may be modified only by the Assembly Contractor.
- The Assembly Contractor provides the following along with this protocol:
 - scaffolding scheme
 - scaffolding assembly manual
 -
 -
- Scaffolding user accepts this scaffolding for use without any reservations and declares that he/she is aware of the rules of use resulting from the assembly manual.
- Before each use of the scaffolding the User should check its technical condition and completeness.
- Commission in the following panel confirms the scaffolding hand-over after assembly and acceptance for use.

a) .....	.....	..... - User
b) .....	.....	..... - User
c) .....	.....	..... - Contractor
full name	position	signature

Application date for scaffolding disassembly:



MOSTOSTAL
SCAFFOLDING
FORMWORK

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www.altrad-mostostal.pl

04.2022

