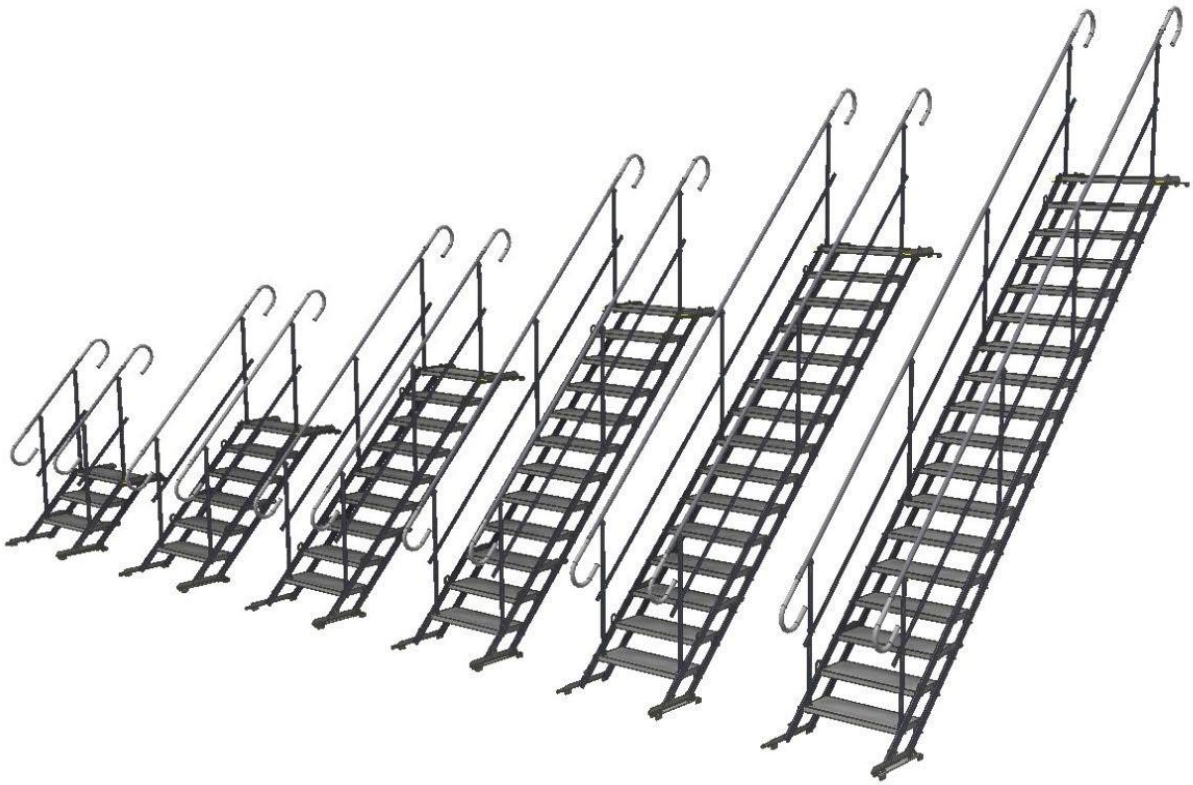
Manual SAT stairs



General Safety Principles

The installation instructions are included as an appendix to the SAT trench stair technical documentation. The excavation steps consist of components according to the specifications attached to the delivery. Read this manual before starting installation and use. Incorrect installation or use can lead to a risk to health or life. Due to the considerable size and weight of the individual components, special care must be taken during transport, installation and use of the staircase.

Keep this manual as a source of information for users of the staircase and its service personnel. Keep this manual as an information source for stairs users and a service team.

- Installation or use of the staircase which is not in accordance with the contents of these instructions may adversely affect the performance of the product and/or be a source of danger.
- The manufacturer is not responsible for any damage caused by incorrect installation of the product or its misuse.
- No modifications to the construction of the staircase components are permitted.
- The staircase is designed for use in an industrial environment, i.e. for use by adults who comply with health and safety regulations, are trained and are not under the influence of alcohol.
- It is not permitted to be under the stairs while they are being used by others.
- Do not allow the simultaneous use of the staircase by a number of persons having more weight than the permitted load of the staircase.
- Stairs are used to move people to reach the lower levels of deep excavations as well as in the opposite direction. Staying on the steps as well as placing objects that are not stair equipment in these areas is against the operating rules.
- Do not use the stairs to transport objects other than tools, instruments, etc.
- Since in most cases the support for the staircase is unpaved ground, the possibility of the ground slipping and becoming wet must be taken into account, which can disturb the stability of the staircase.
- If there is a risk of falling from height, a safety harness should always be used during assembly and disassembly.

SAT stairs

The basic elements of the SAT stairs for excavation are the steps together with the railings. These stairs, are available in 3, 6, 9, 12, 15 and 18 steps and in widths of 700 mm and 1000 mm. The variants can be connected to each other using connectors and supports. The system makes it possible to create an overhead walkway over an obstacle using a platform that connects to a staircase of 3 or 6 steps. It is also possible to create a footbridge (e.g. over an excavation) with 6, 9 or 12 step stairs, and with the use of an additional truss with 15 or 18 step stairs.

By replacing the bottom foot and the top foot in the staircase, it is possible to mount on scaffolding systems based on the 48.3 mm diameter round profile.

Application options:

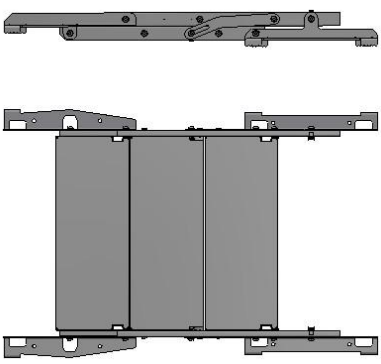
- As a temporary staircase to overcome small differences on the ground floor of different places (excavations, construction layers, etc.)
- As a temporary passage for road works, construction pits and ditches
- As a temporary staircase for level differences (buildings, deep foundation excavations and underground parking garages)

Main features:

- Wide incline angle from 0 to 50 degrees (for stairs with up to 12 steps)
- Modular, available in modules for 1 staircase from 3 to 18 steps
- Possibility to connect the floors (e.g. 18+18 steps, 15+12 steps, etc.)
- Possibility to mount railings on one or both sides
- Possibility to change the location of use at any time (by means of a crane)
- According to the EN12811 standard

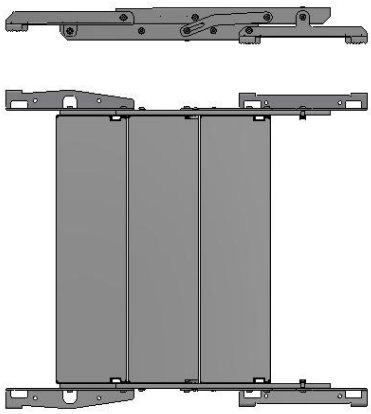
Parts

TAS-S3A



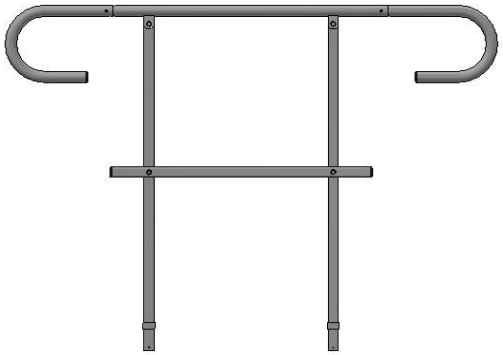
31,31 kg
1.358x898x126 mm

TAS-S3B



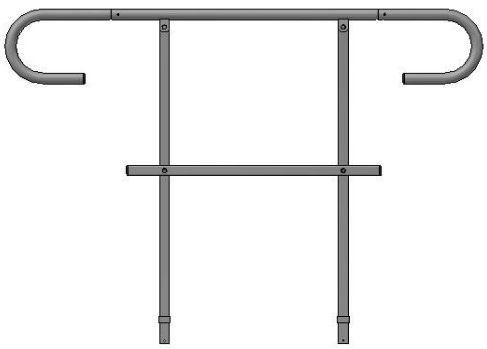
40,60 kg
1.38x1.198x1.35 mm

TAS-BP3



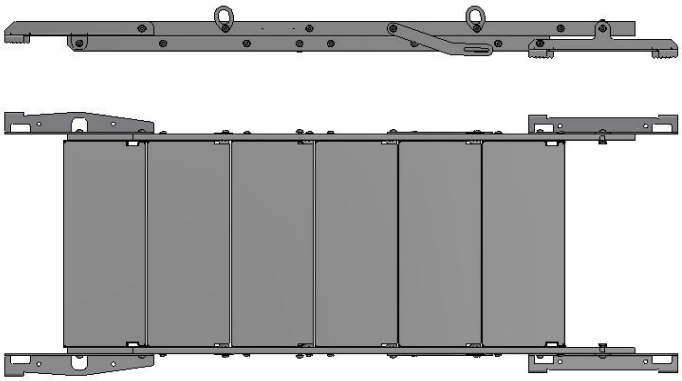
8,18 kg
1.444x1.045x34

TAS-BL3



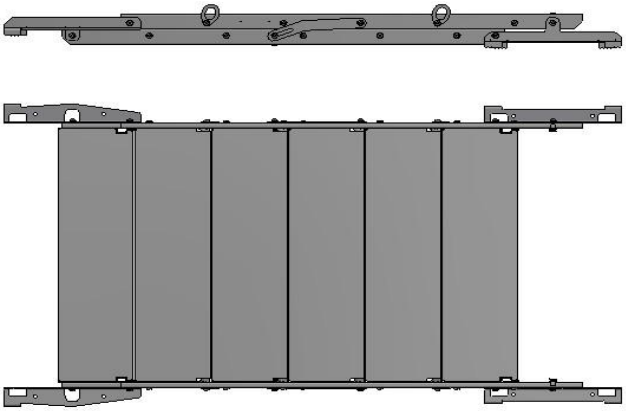
8,18 kg
1.444x1.045x34

TAS-S6A



53,26 kg
2.167,5x898x126 mm

TAS-S6B



71,86 kg
2.167,5x1.198x135 mm

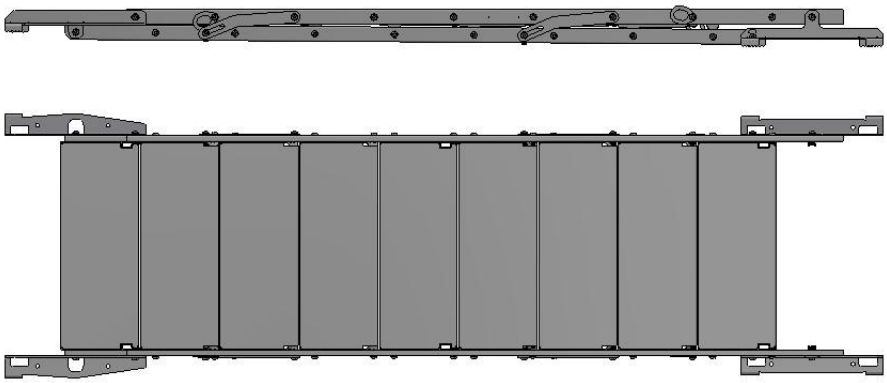
TAS-BL6

10,96 kg
2.254x1.045x34 mm

TAS-BP6

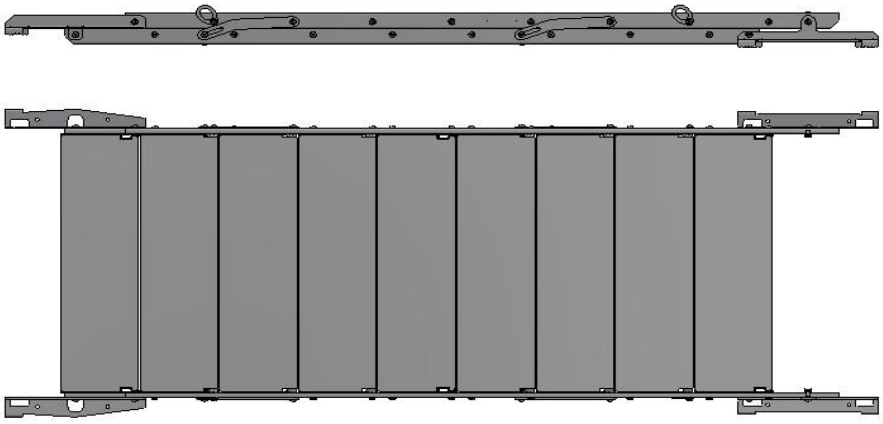
10,96 kg
2.254x1.045x34 mm

TAS-S9A



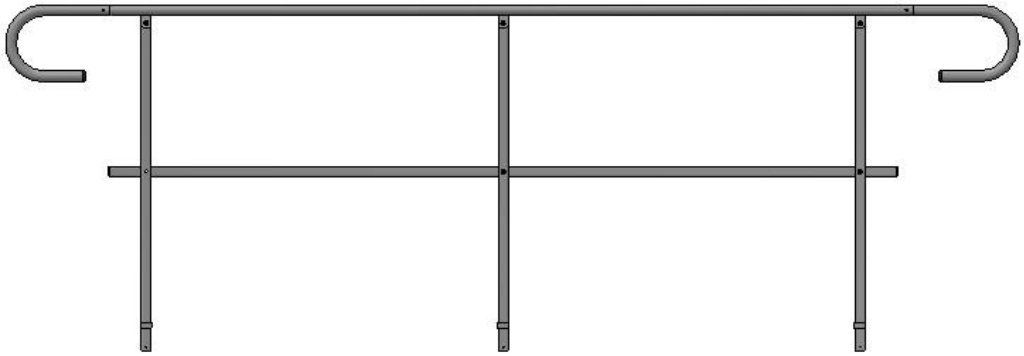
76,45 kg
2.977,5x898x126 mm

TAS-S9B



104,40 kg
2.977,5x1.198x135 mm

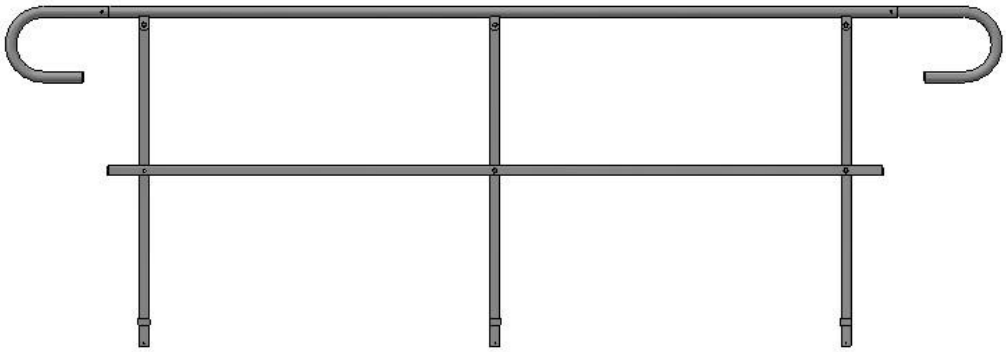
TAS-BL9



15,10 kg

3.064x1.045x34 mm

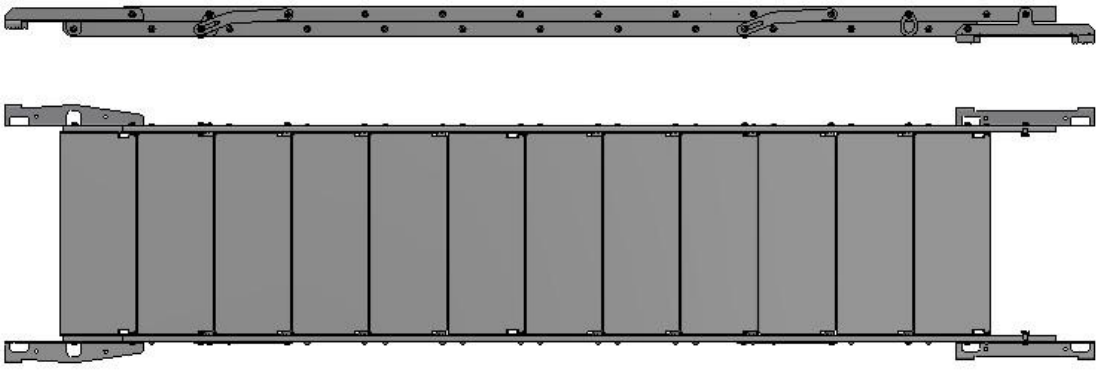
TAS-BP9



15,10 kg

3.064x1.045x34 mm

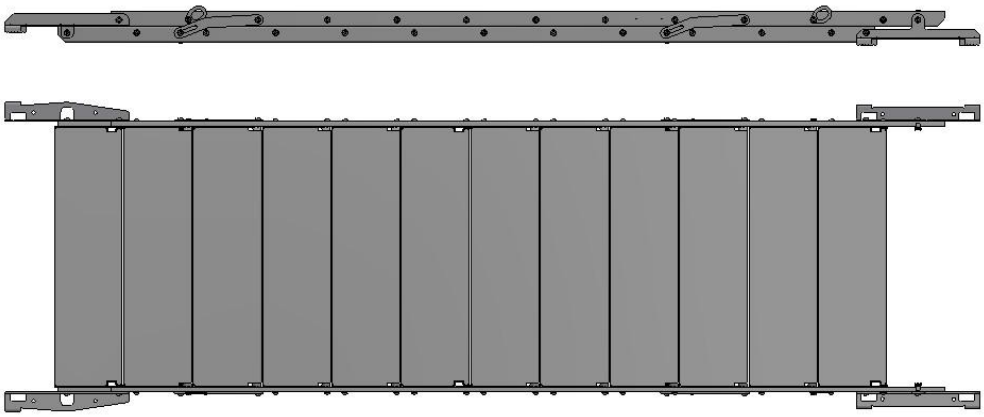
TAS-S12A



98,18 kg

3.787,5x898x126 mm

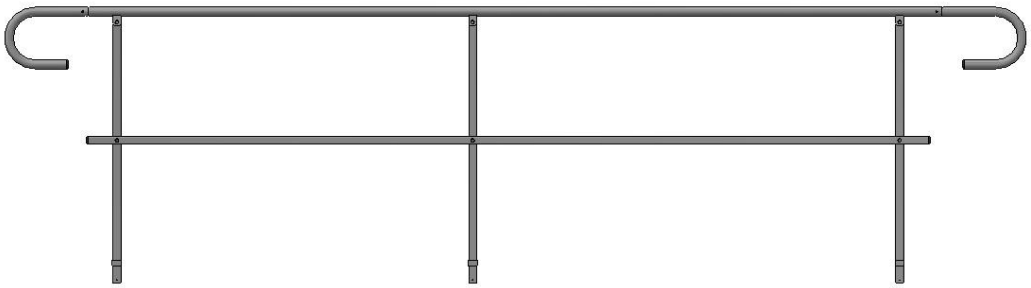
TAS-S12B



135,50 kg

3.787,5x1.198x135 mm

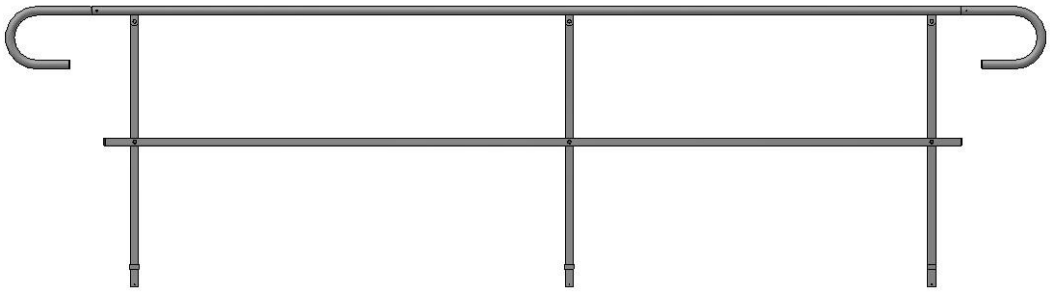
TAS-BL12



17,90 kg

3.874x1.045x34 mm

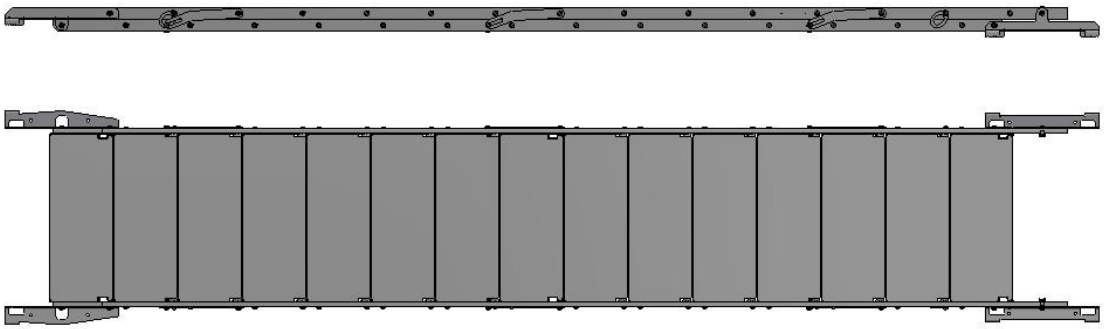
TAS-BP12



17,90 kg

3.874x1.045x34 mm

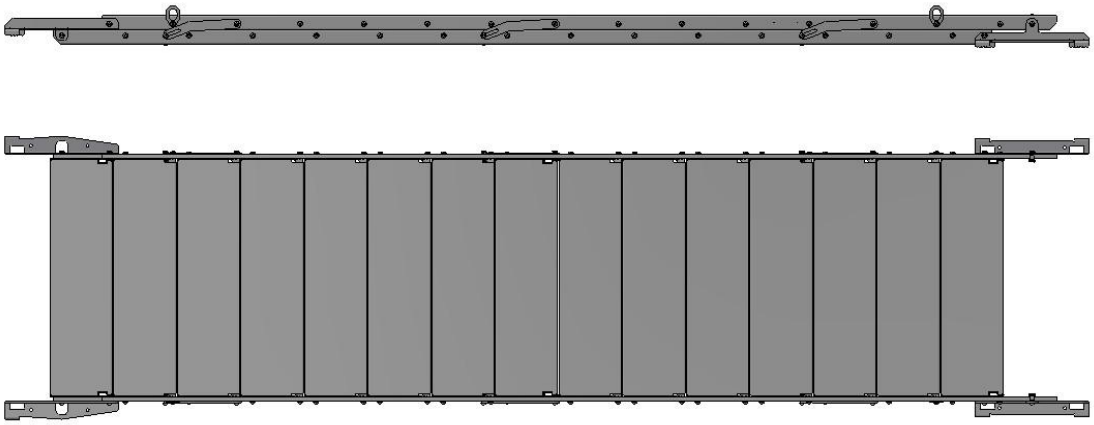
TAS-S15A



120,93 kg

4.597,5x898x126 mm

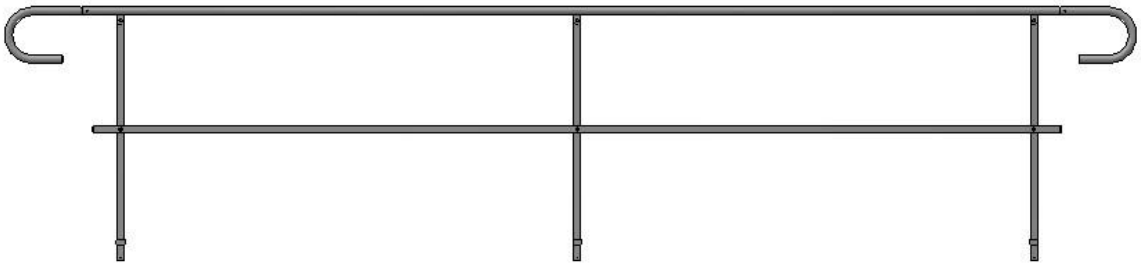
TAS-S15B



167,64 kg

4.597,5x898x135 mm

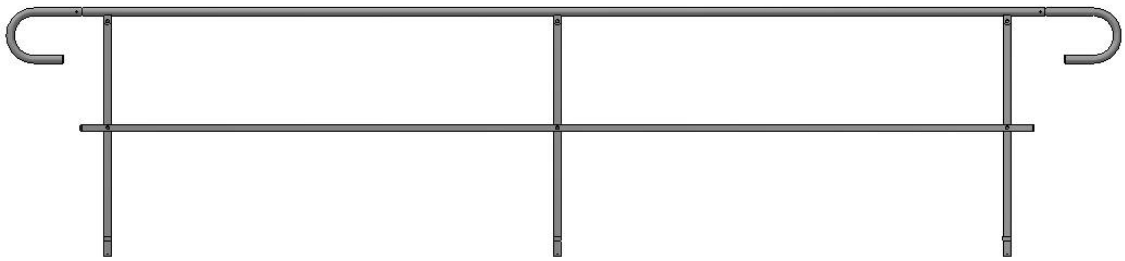
TAS-BL15



20,67 kg

4.684x1.045x34 mm

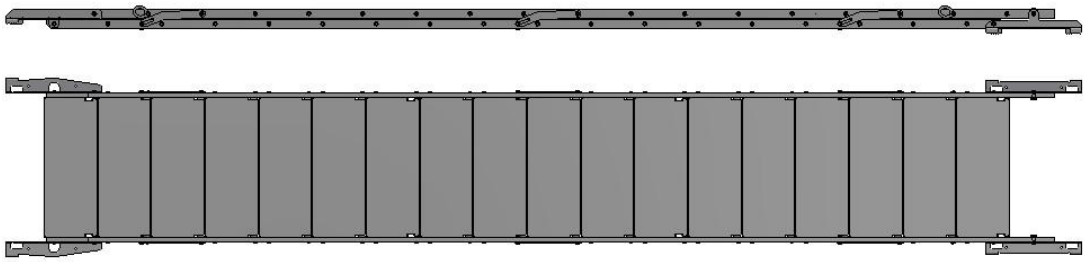
TAS-BP15



20,67 kg

4.684x1.045x34 mm

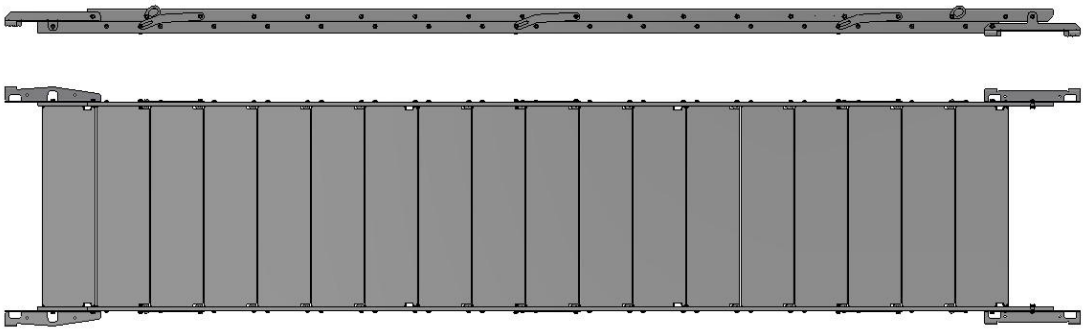
TAS-S18A



142,97 kg

5.407,5x898x126 mm

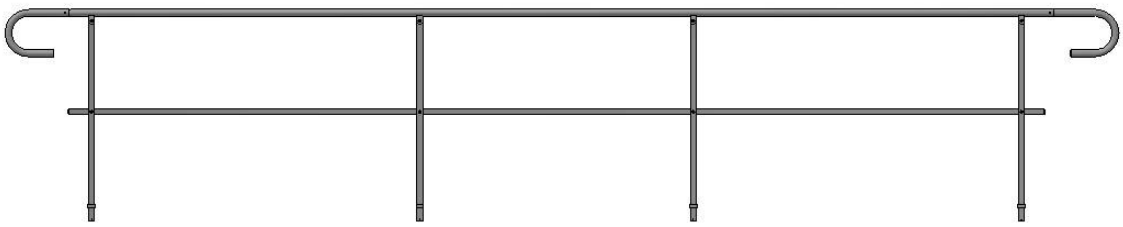
TAS-S18B



199,00 kg

5.407,5x1.045x1.135 mm

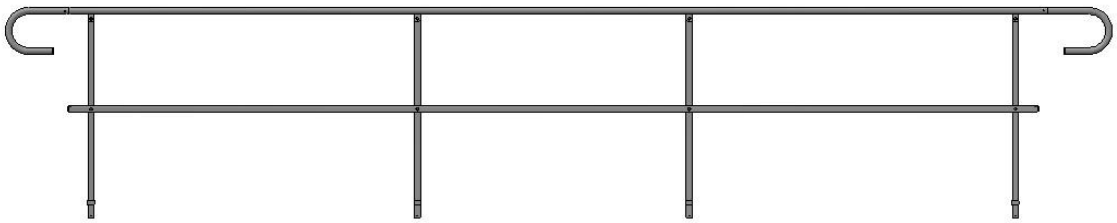
TAS-BL18



24,81 kg

5.494x1.045x34 mm

TAS-BP18



24,81 kg

5.494x1.045x34 mm

TAS-L5

2,70 kg

740x57x20 mm

TAS-L6

3,0 kg

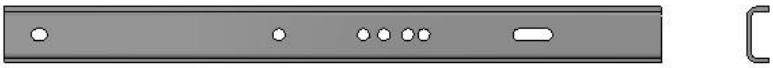
740x72x25 mm

TAS-L13

2,80 kg

715x90x8 mm

TAS-L12



2,70 kg

740x62x25 mm

TAS-PR1

10,28 kg

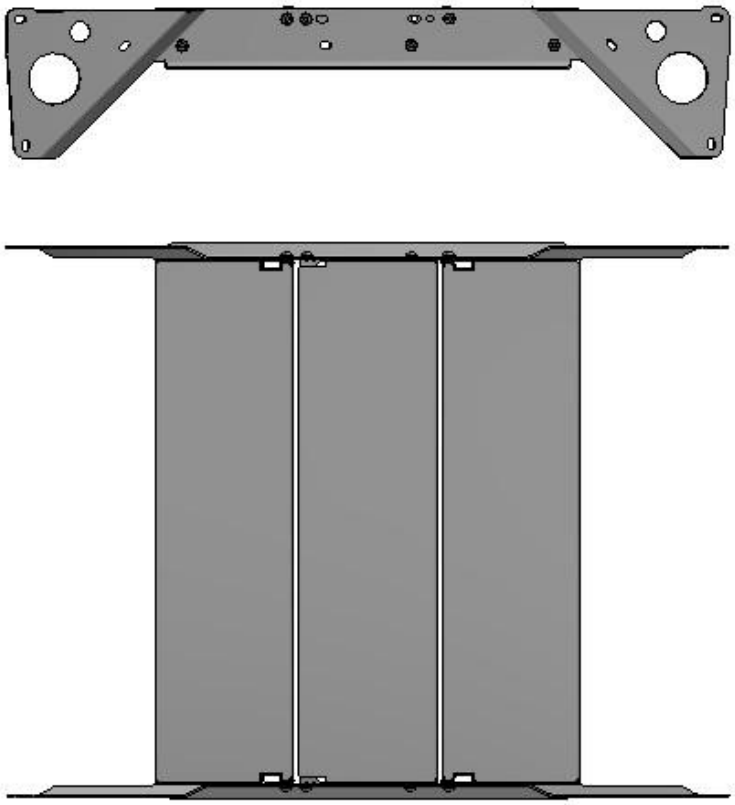
3.268,5x250x52,5 mm

TAS-PR5

25,40 kg

3.389x264x100 mm

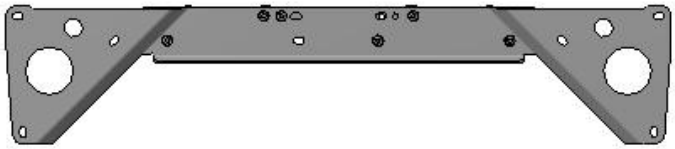
TAS-K4

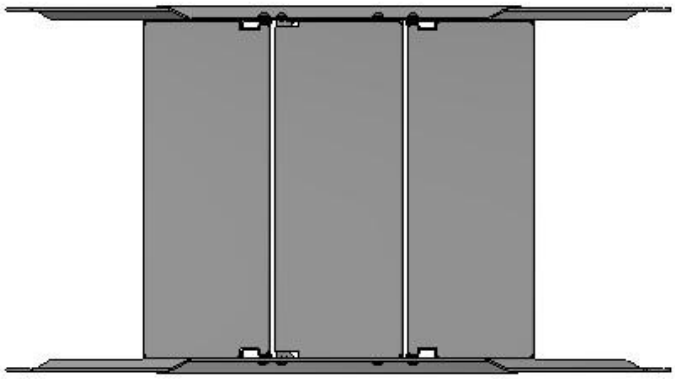


50,00 kg

1.386x1.068x287 mm

TAS-K3





45,00 kg

1.386x768x287 mm

TAS-PH3

2,40 kg

1.185x92x34 mm

TAS-PR3

1,60 kg

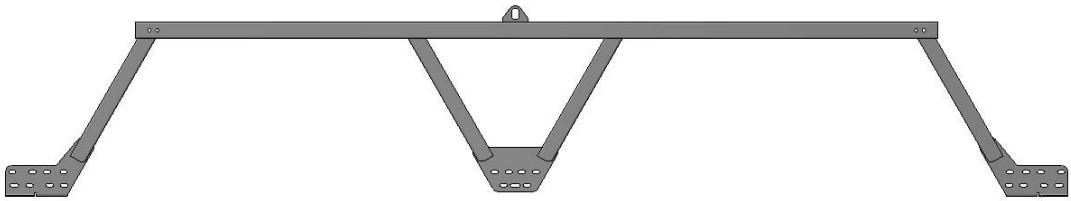
1.291x30x20 mm

D-TAS-064

2,27 kg

1.290x213x20 mm

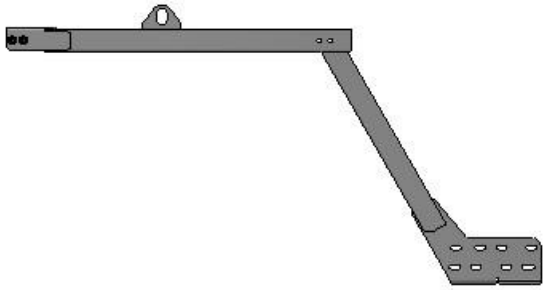
TAS-WB1



28,50 kg

4.106x735x94 mm

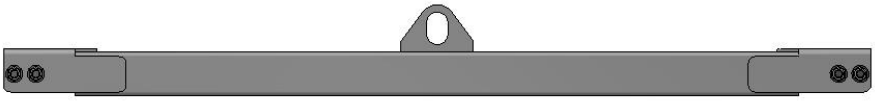
TAS-WB2



8,90 kg

1.410x735x94 mm

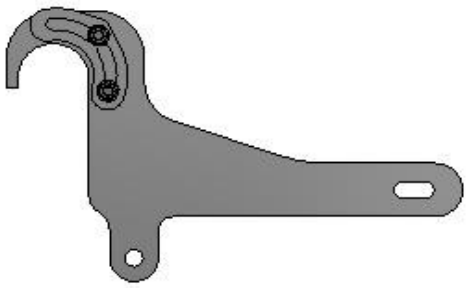
TAS-WB3



6,20 kg

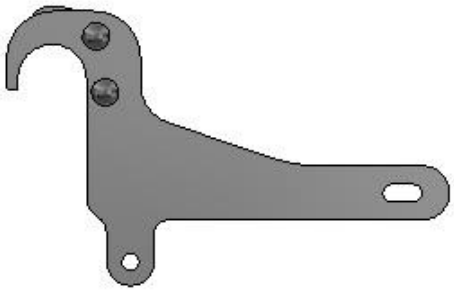
1.201x125x48 mm

TAS-L15



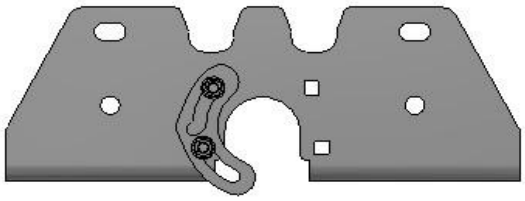
1,30 kg
327,5x288,5x12 mm

TAS-L14



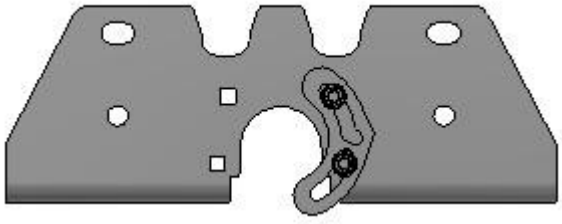
1,30 kg
327,5x288,5x12 mm

TAS-L16



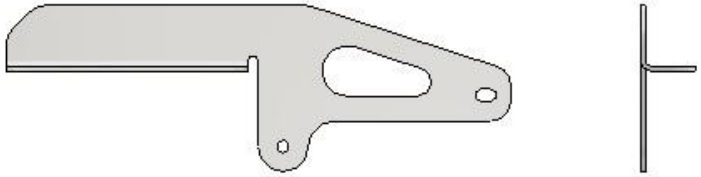
2,10 kg
340x121x51 mm

TAS-L17



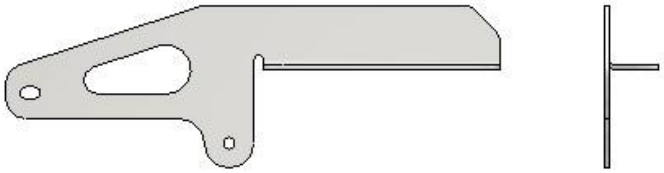
2,10 kg
340x121x51 mm

TAS-SGLH



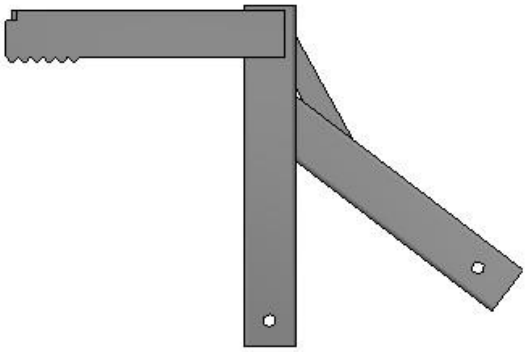
1,83 kg
501x165x55 mm

TAS-SGPH



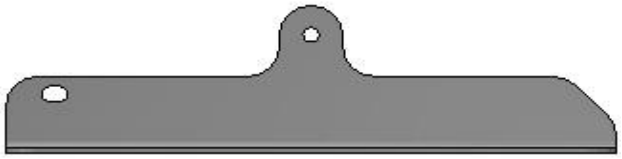
1,83 kg
501x165x55 mm

TAS-L26



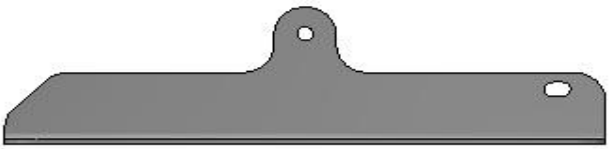
2,0 kg
500x330x28 mm

TAS-SDLH



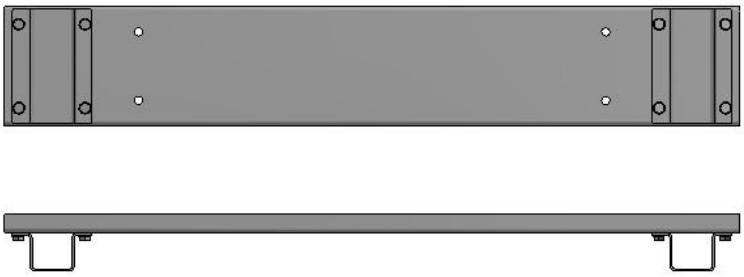
2,15 kg
480x125x55 mm

TAS-SDLH



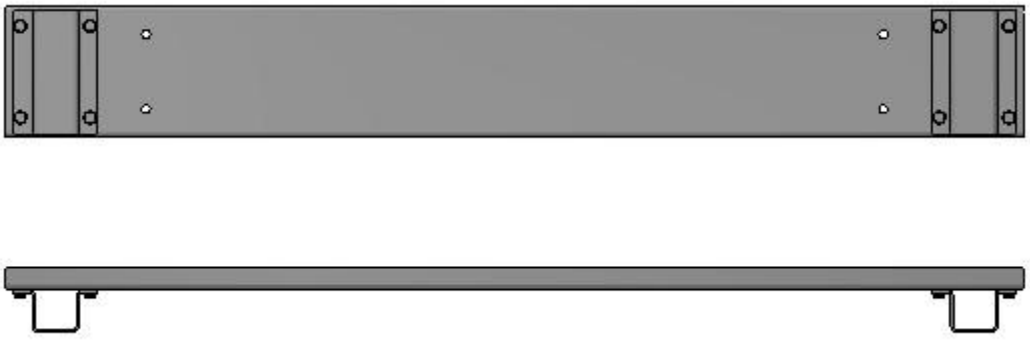
2,15 kg
480x125x55 mm

TAS-O1



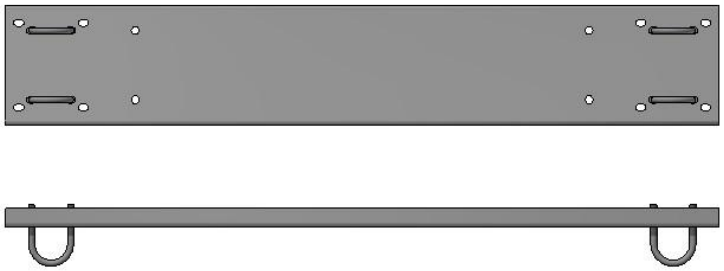
5,77 kg
929x156x75 mm

TAS-O2



7,0 kg
1.228x156x77 mm

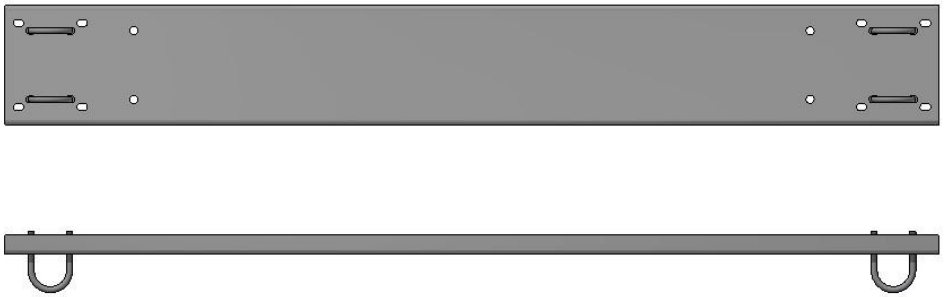
TAS-O3



4,30 kg

929x156x81 mm

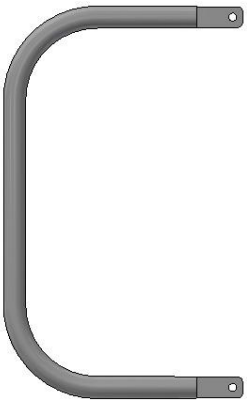
TAS-O4



5,70 kg

1.228x156x81 mm

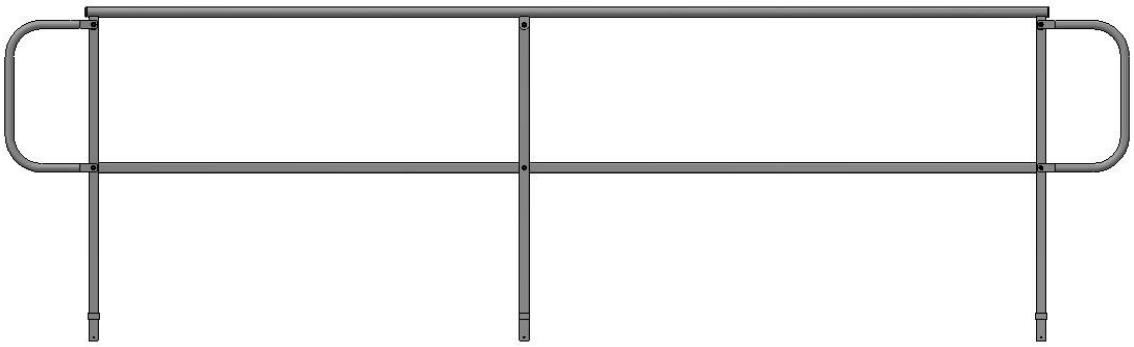
TAS-BU



1,20 kg

475x388x27 mm

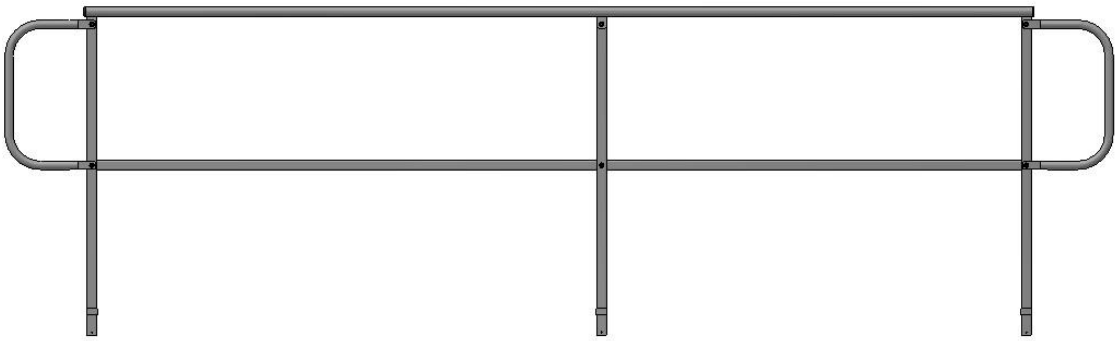
TAS-BL12H



16,50 kg

3.523x1.045x45 mm

TAS-BP12H



16,50 kg

3.523x1.045x45 mm

Fasteners

		3 Steps	6 Steps	9 Steps	12 Steps	15 Steps	18 Steps
Nr.	**Fasteners**						
1	Bolt ISO 7380 8-ZN – M12x40	18	30	44	56	70	83
2	Nut ISO 10511 8-ZN – M12	18	30	44	56	70	83
3	Washer ISO 7089 ZN-12 – 200 HV	18	30	44	56	70	83
4	Bolt ISO 4014 8-ZN M8x40	4	4	6	6	6	8
5	Bolt ISO 4014 8-ZN M8x45	4	4	5	6	6	8
6	Nut ISO 1511 ZN-M8	8	8	11	12	12	16
7	Washer ISO 7089 ZN-8 – 200 HV	16	16	22	24	24	32
8	Screw DIN 7504K 4,8x16 verzinkt gegalvaniseerd	8	8	8	8	8	8

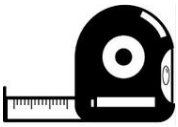
Accesory Fasteners

Nr.	**Fasteners**	**TAS-K3**	**TAS-K4**
9	Nut ISO 4032 8-ZN – M12	4	4
10	Nut ISO 10511 ZN – M12	12	12
11	Nut ISO 4032 8-ZO – M6	8	8
12	Nut ISO 10511 ZN – M8	4	4
13	Washer ISO 7089 ZN-12 – 200 HV	24	24
14	Washer ISO 7089 ZO-6 – 200 HV	16	16
15	Washer ISO 7089 ZN-8 – 200 HV	8	8
16	Bolt ISO 4762 8-ZN – M12 × 25	4	4
17	Bolt ISO 4762 8-ZN – M12 × 30	12	12
18	Bolt ISO 4017 8-ZO – M6 × 30	8	8
19	Bolt ISO 4014 8-ZN – M8 × 65	4	4

Components to form a footbridge from the TAS-15 and TAS-18 steps

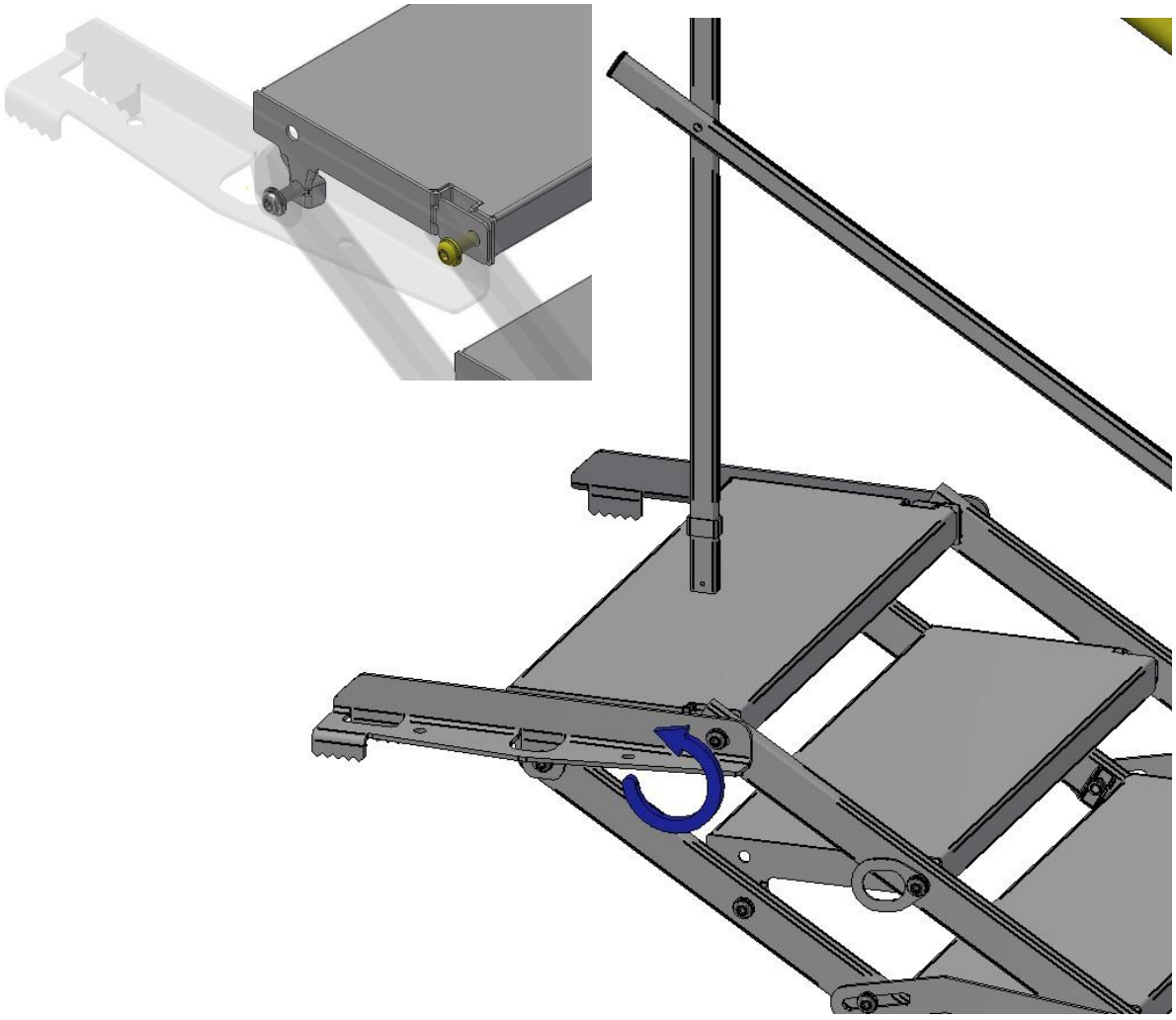
Description	**15 Steps**	**15 + 15 Steps**	**15 + 18 Steps**	**18 Steps**	**18 + 18 Steps**
TAS-15	1	2	1	0	0
TAS-18	0	0	1	2	1
TAS-WB1	2	4	4	4	2
TAS-WB2	0	0	2	4	2
TAS-WB3	0	2	2	2	0

Tools

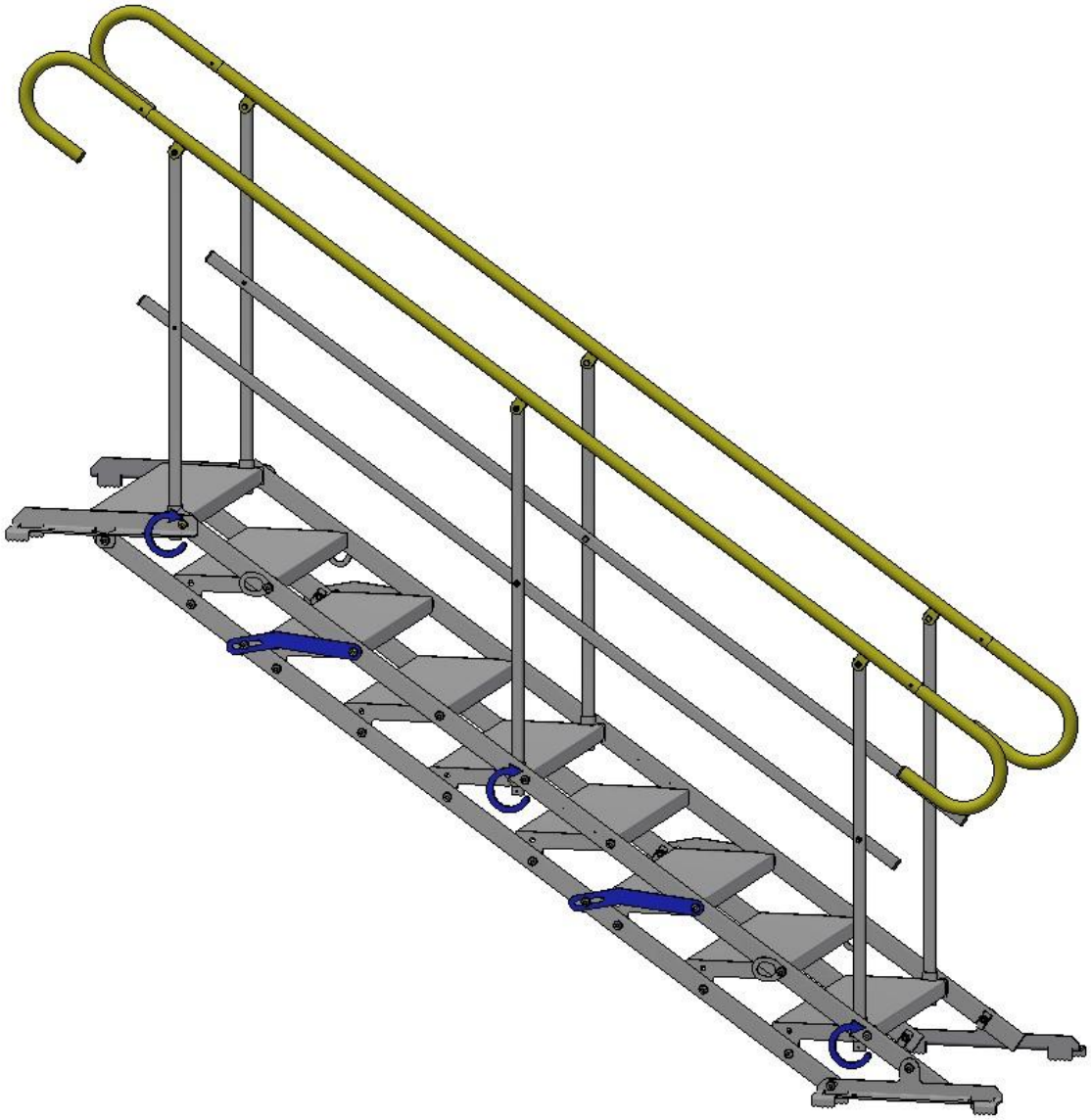
	Wrenches: 19, 18, 13, 10
	8, 10
	Screwdriver
	Level
	Tape measure
	Lifter with at least 1t capacity when assembling long sets

Assembly

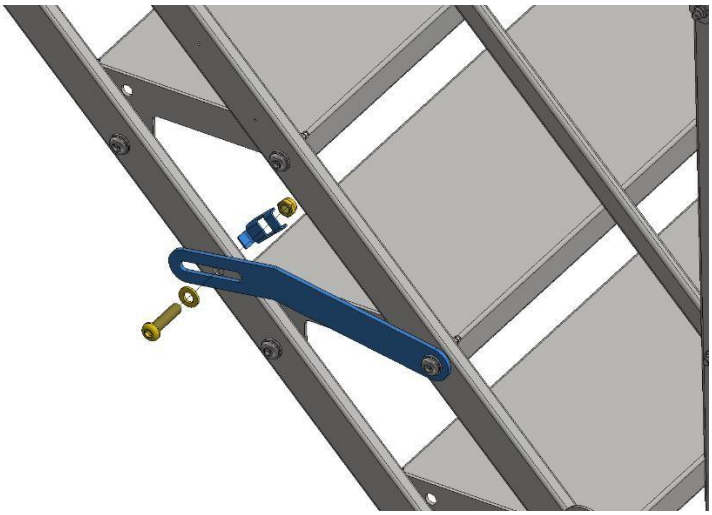
Installing the railings to the steps - To install the railings, loosen all bolts on the steps with sockets for the railing posts. Then slide the posts into the slots.



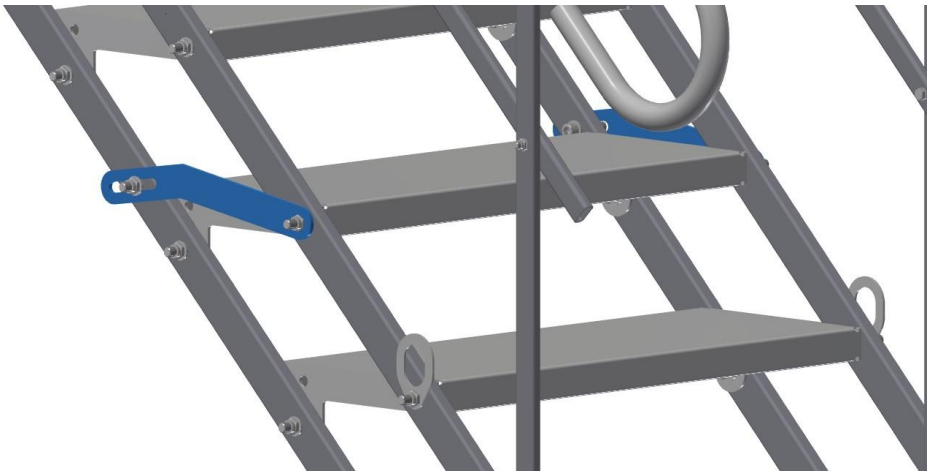
Tighten the railing locks - After fitting the railing, set the target angle of the stairs and then tighten the post lock bolts and the lock bolts. Each time the angle of the stairs is adjusted, the locking bolts of the stairs must be loosened and tightened.



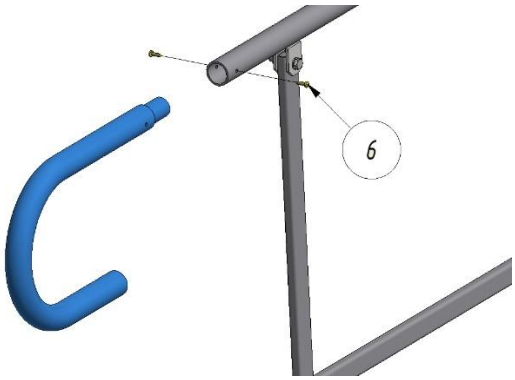
Stairs 15, 18 steps are supplied with pre-assembled interlocks, the interlock must be fitted. Remove the bolt, together with the washer, put through the other side of the lock (oval hole), tighten.



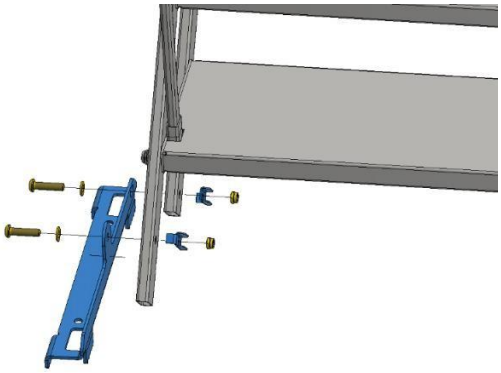
In order to ensure the rigidity of the staircase, the bolts securing all locks must be tightened. Tighten connections with approximately 60% of the tightening torque prescribed for the diameter and class of connector. In order to improve the stiffness of the steps, it is recommended that all step connections are tightened.

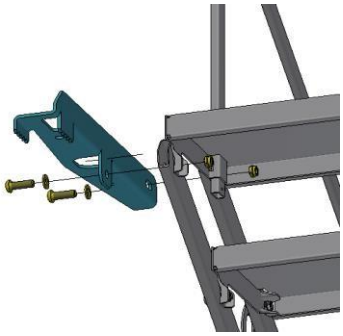


Combining of the stairs.
Removal of handrail ends - unscrew the screws securing the handrail ends on both sides at one end of the stairs. Remove the lower ends on one staircase and the upper ends on the other.



Removal of the foot stair treads - Unbolt the bolt connections with which the stair steps are bolted to the stringers. Remove the bottom feet in one staircase and the top feet in the other.

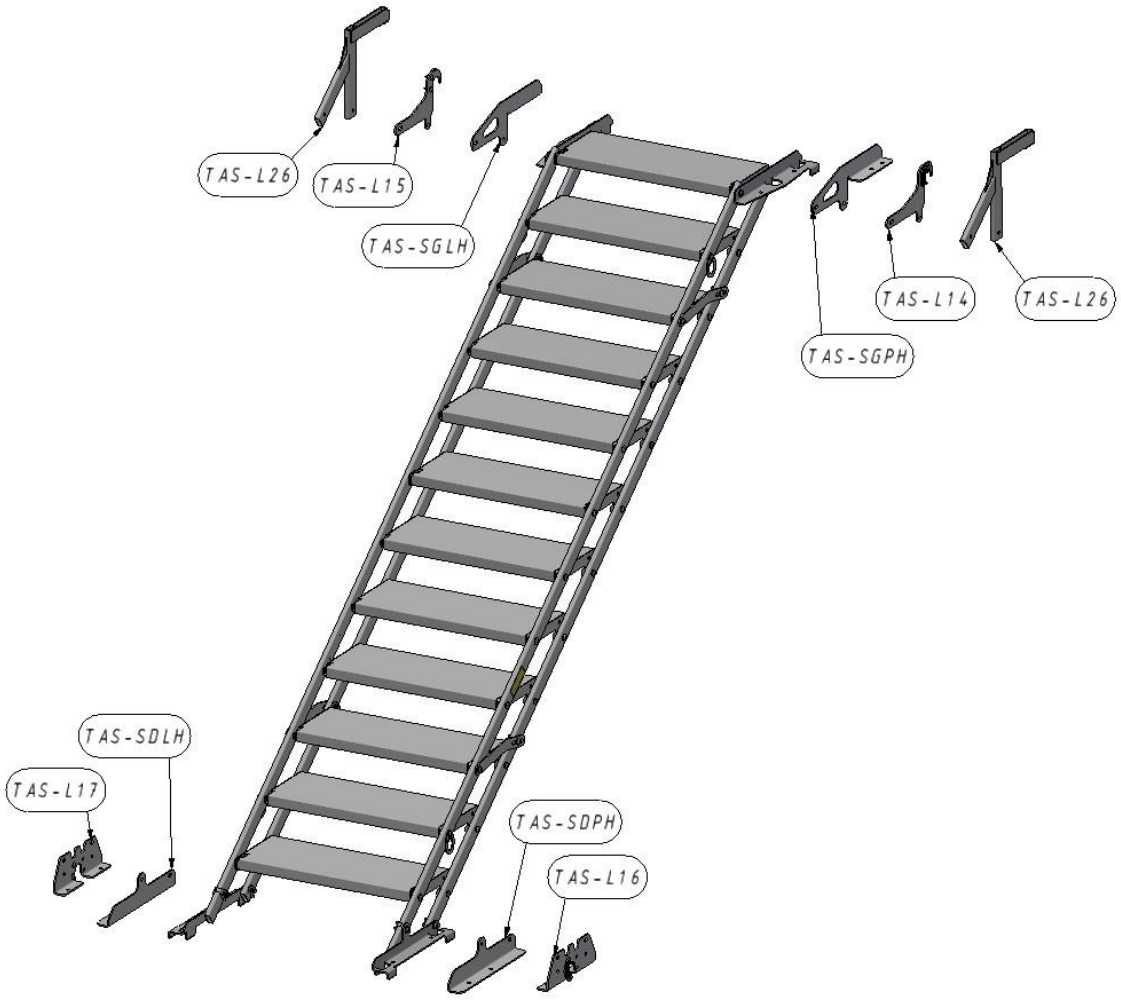




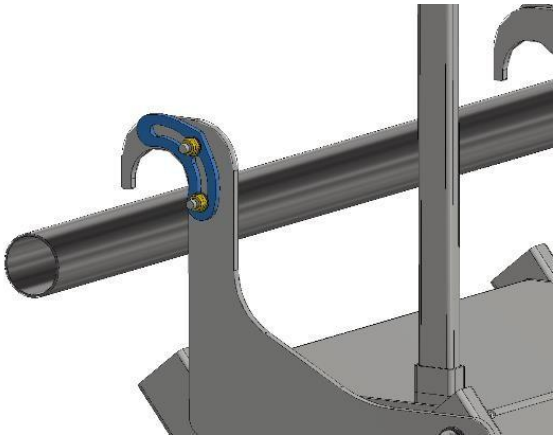
Depending on the need, standard TAS stair treads can be replaced with application specific treads:

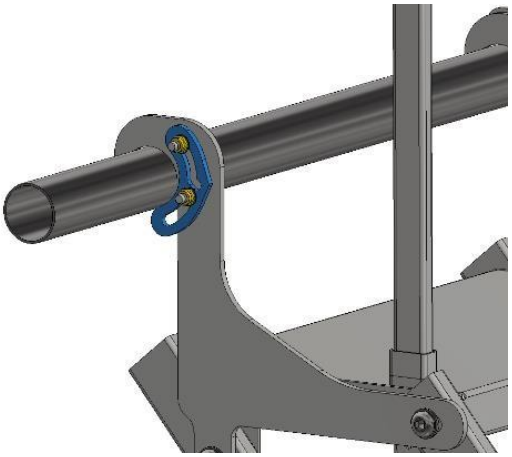
- **TAS-L26 allow the staircase to be lowered relative to the top mounting edge, providing an additional step.**
- **TAS-L14, TAS-L15, TAS-L16, TAS-L17 is a set of feet allowing the staircase to be mounted on a scaffolding tube with a diameter of 48 mm.**
- **TAS-SGLH, TAS-SGPH, TAS-SDLH, TAS-SDPH is a set for mounting on flat hard surfaces such as concrete, steel plates, wood.**

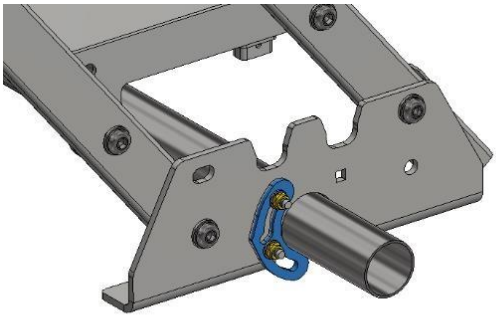
The footings are assembled by dismantling the standard footings according to section 4.5.2 and then screwing them on using the same fasteners.

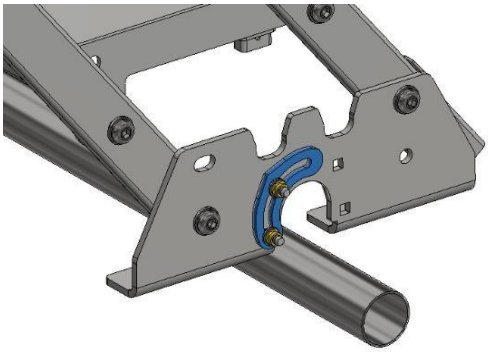


Handles TAS-L14, TAS-L15, TAS-L16, TAS-L17 are equipped with ratchets to secure the feet against unintentional removal.

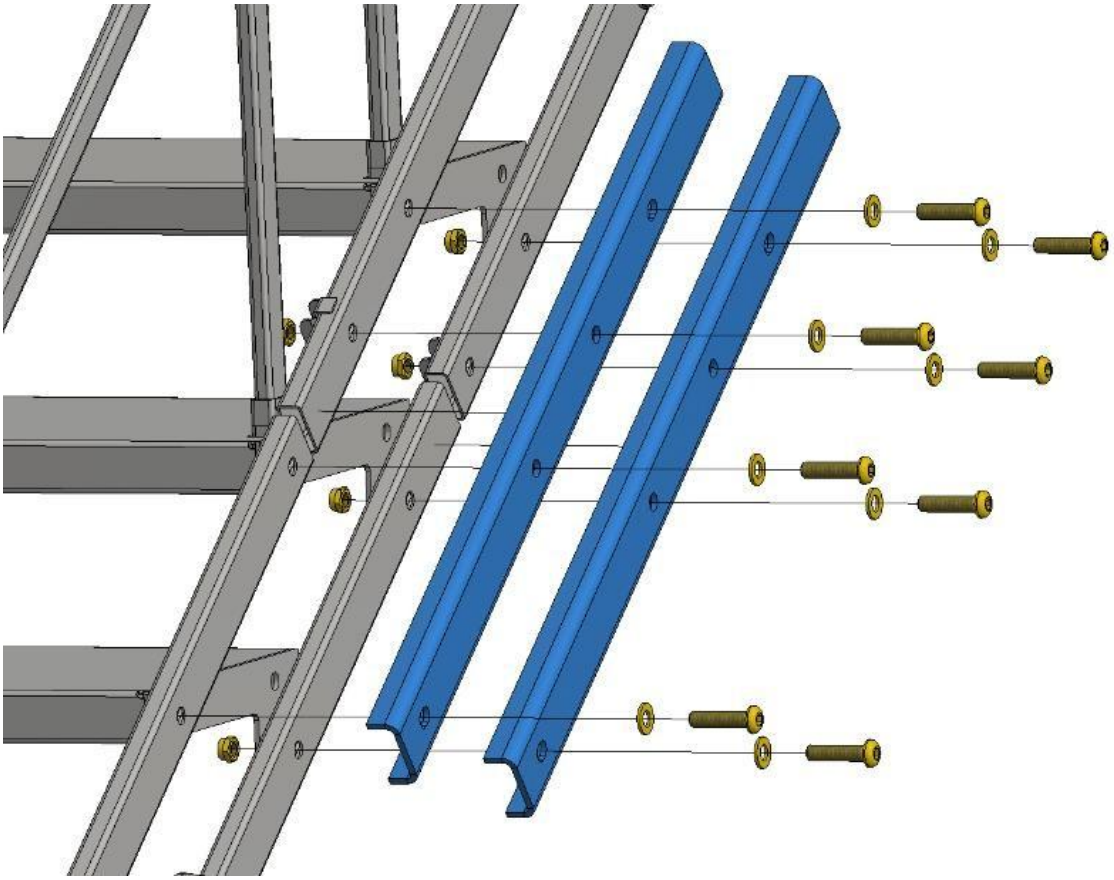




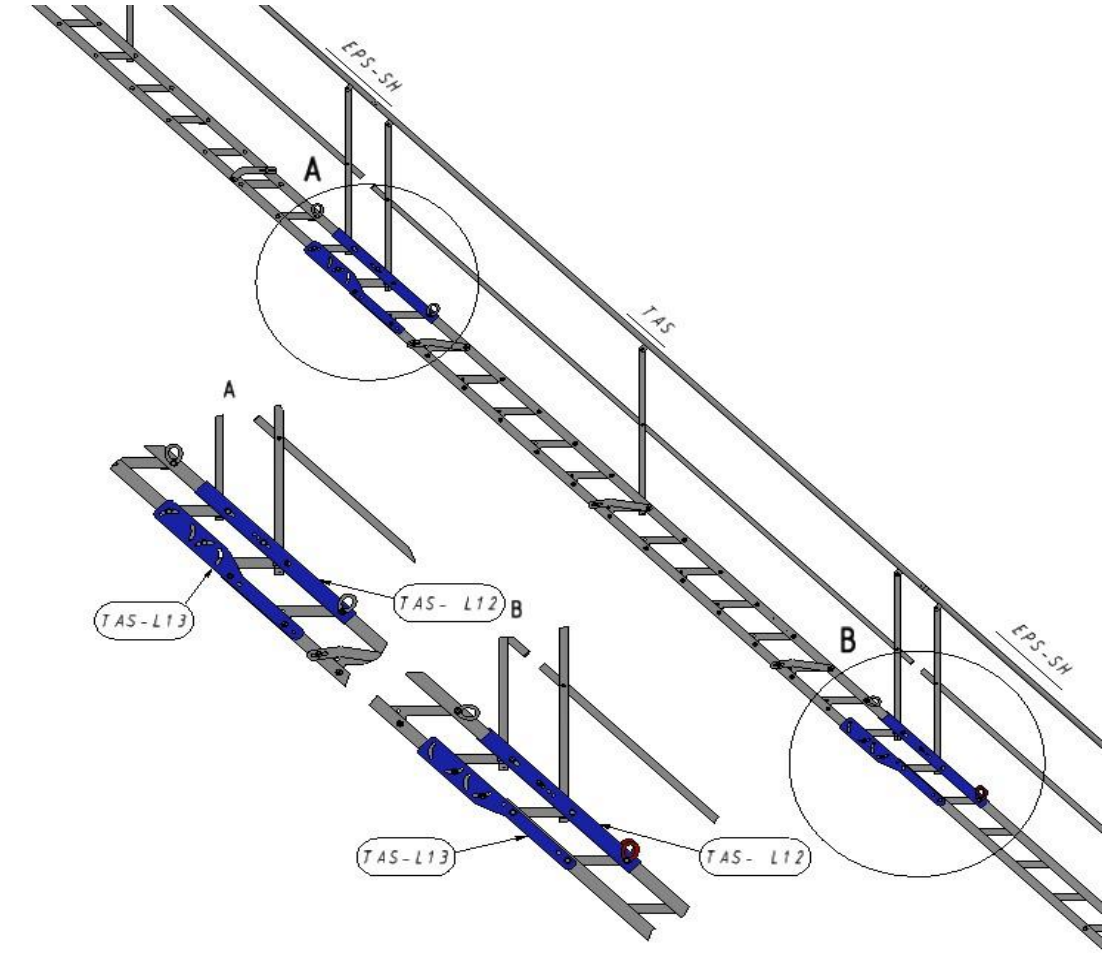


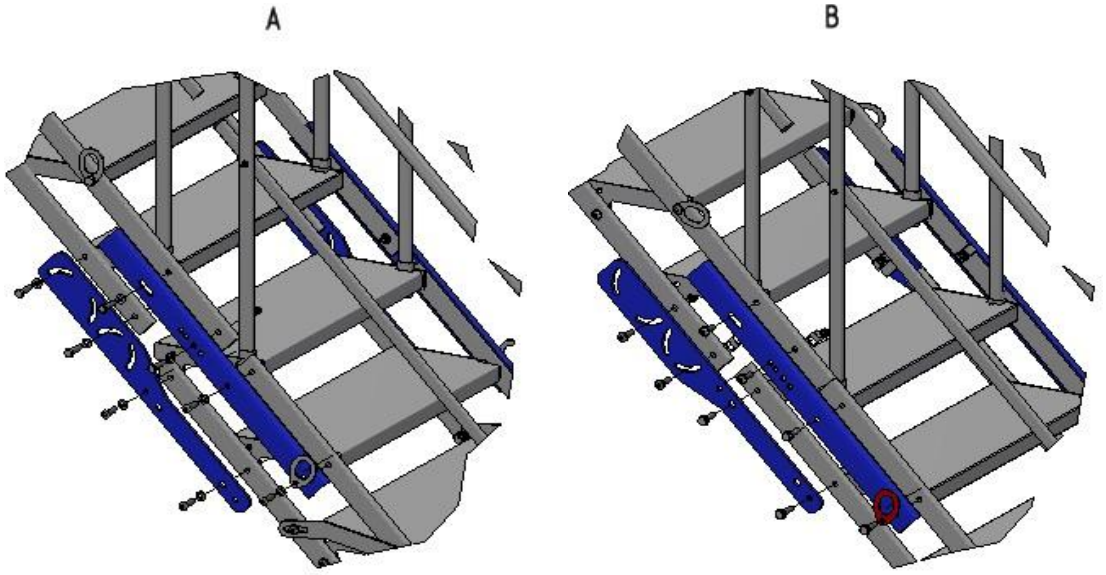


Mounting connector L5/L6 - fold the stairs with the ends without feet towards each other. Unscrew the bolts securing the steps located in the fastener range. Place 4 pcs. of L5/L6 fasteners on the stringers, then tighten all bolt connections - 16 pcs.

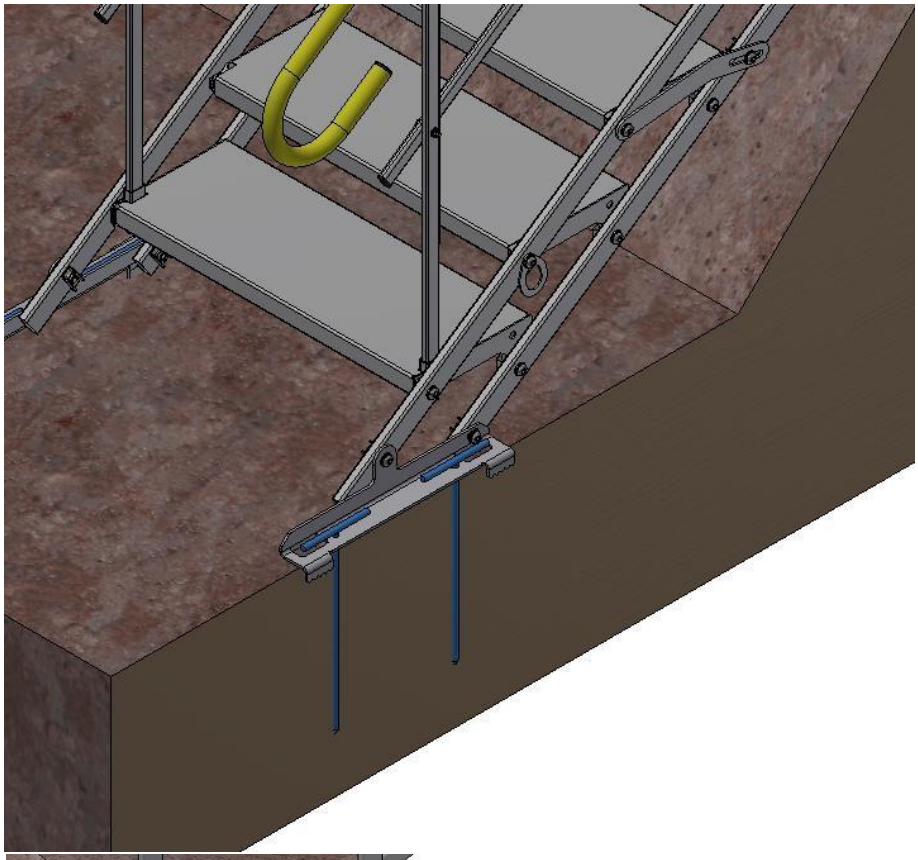


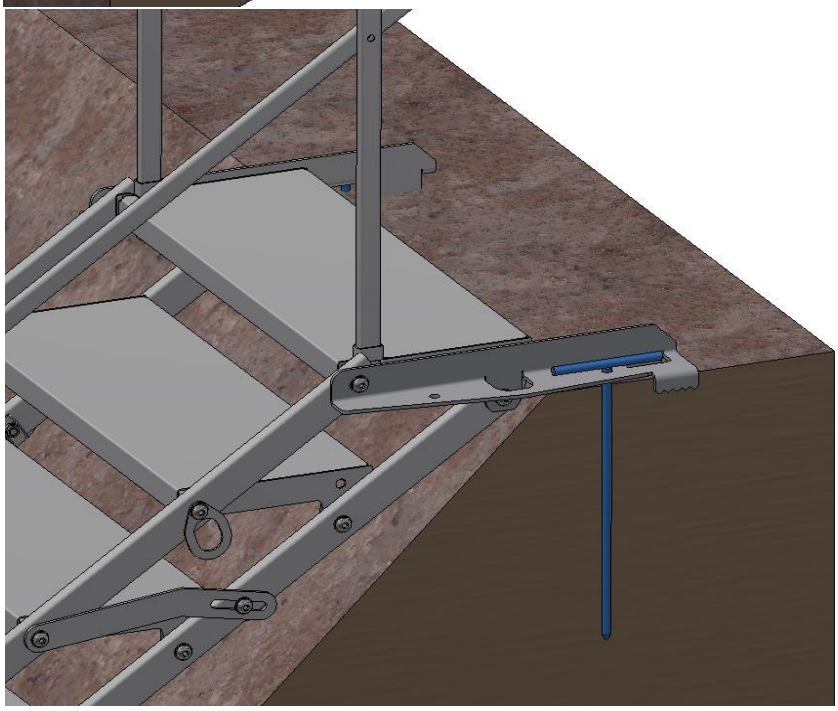
Combining the old EPS-SH stairs with the newer TAS stairs by using TAS-L12 and TAS-L13 connectors.



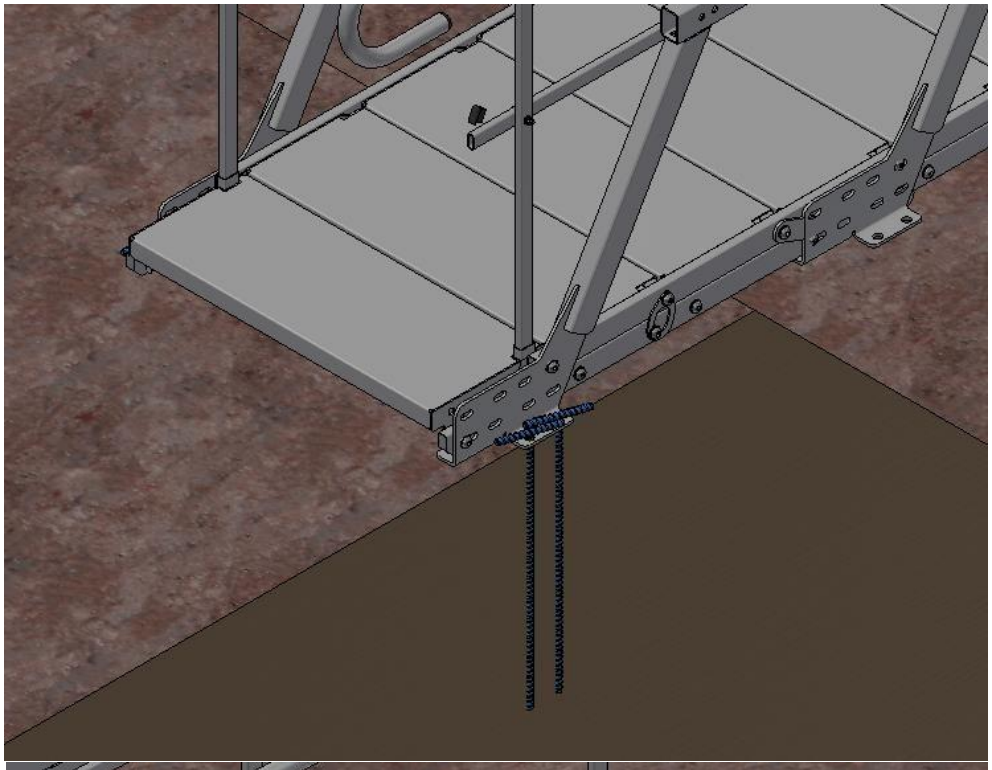


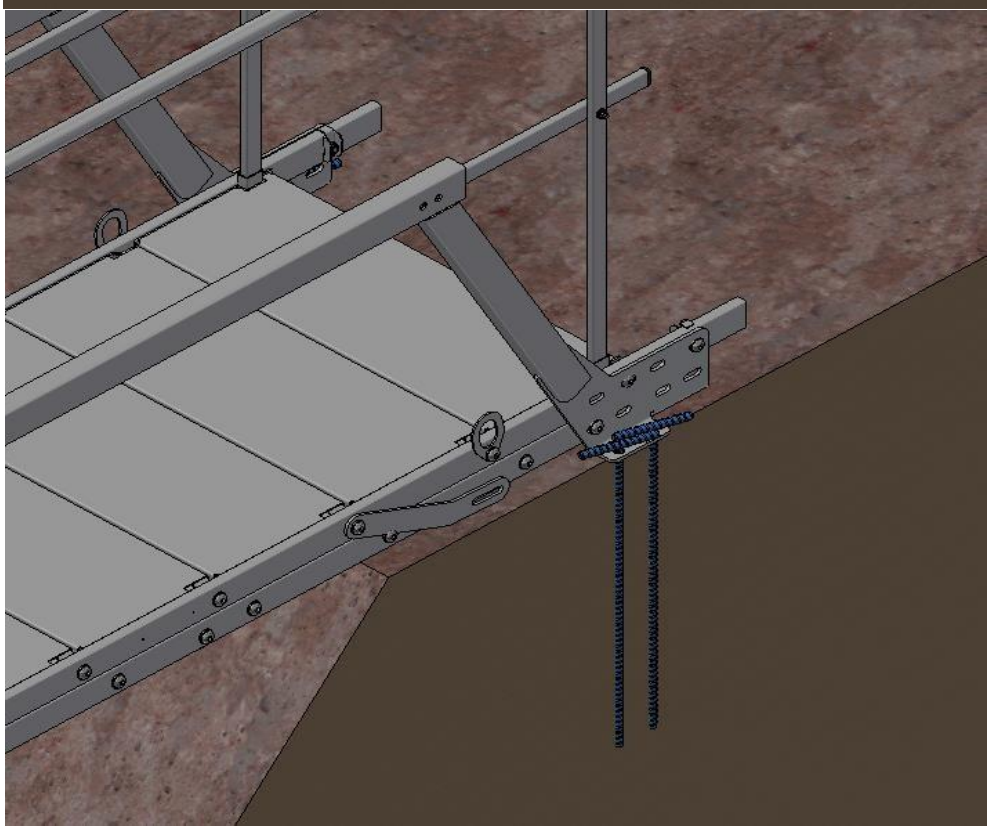
Anchoring the stairs to the ground. The stairs must be anchored using the holes in the footplates. If the stairs are installed on the soil, the minimum anchor length is 400 mm.



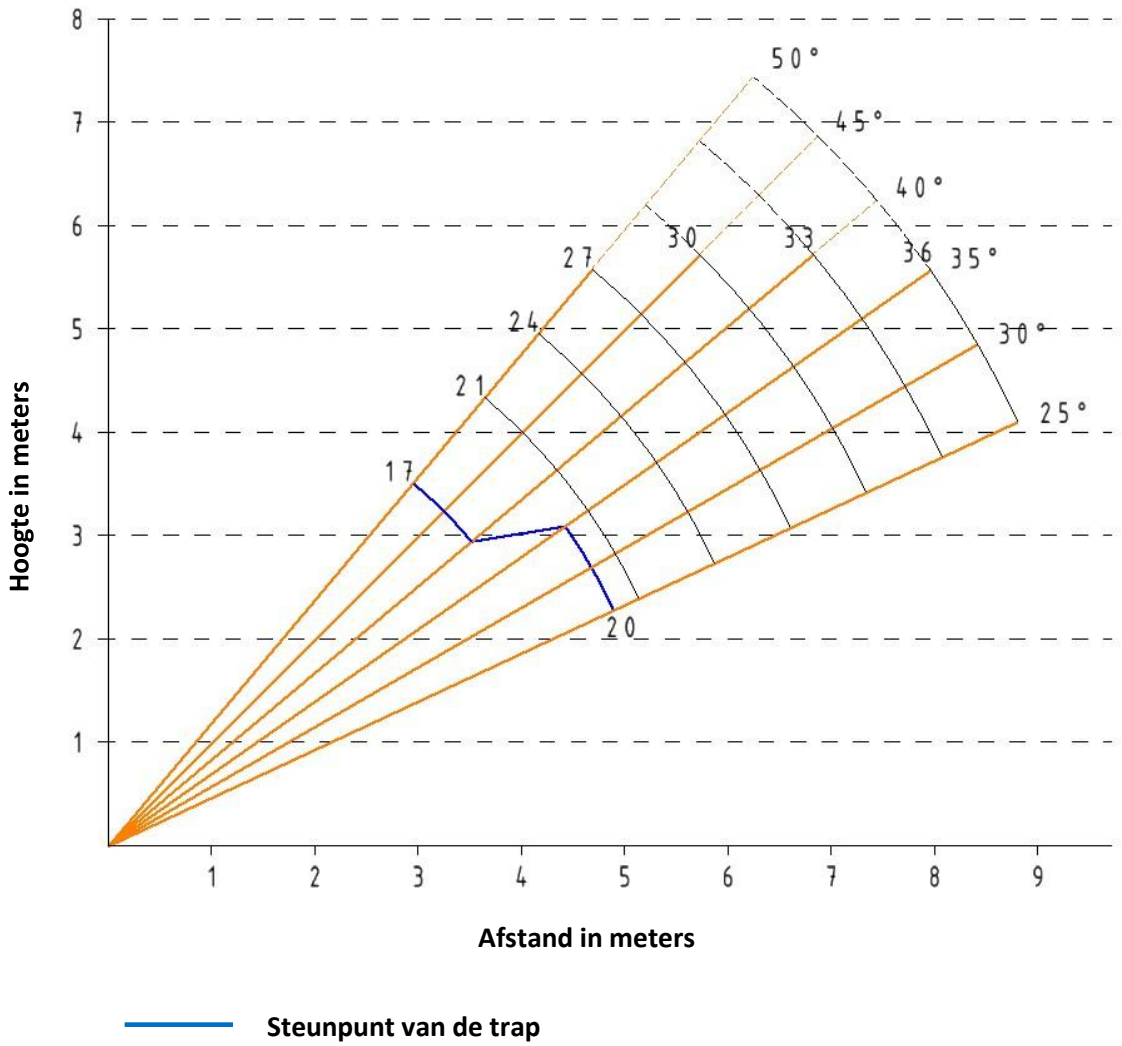


Anchoring the footbridge with a truss to the ground. The footbridge must be anchored using the holes in the truss footplates. If the footbridge is installed on the soil, the minimum anchor length is 400 mm.



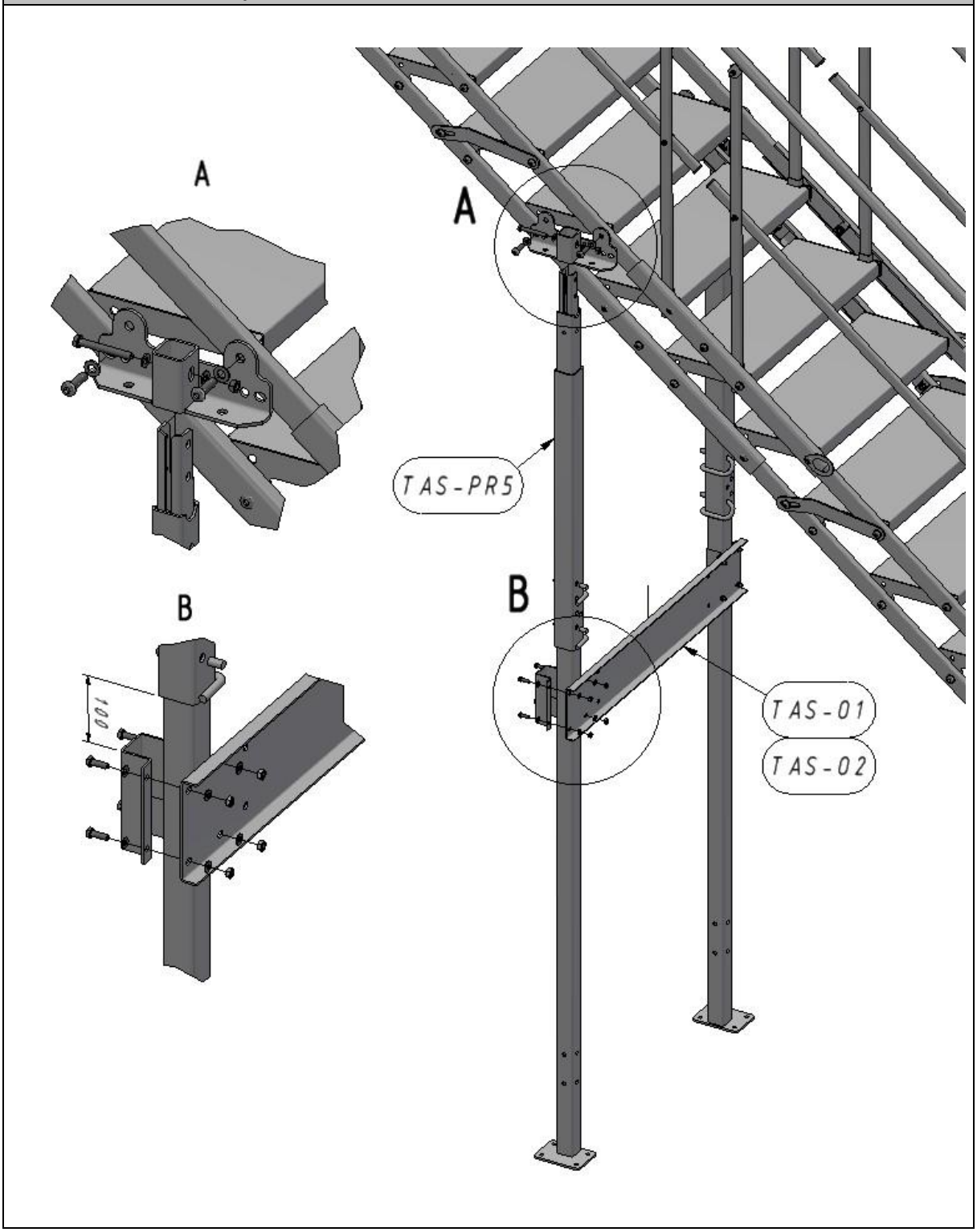


When combining 15 and 18 step stairs, it is necessary to support the entire combined flight. The support columns should be bolted to a stable concrete base. Using one support in the middle, it is permissible to combine a maximum of two 18 + 18 steps in this case the support should be installed under the twentieth step. When combining two staircases with less than 18 steps. The support should be mounted under the seventeenth step.

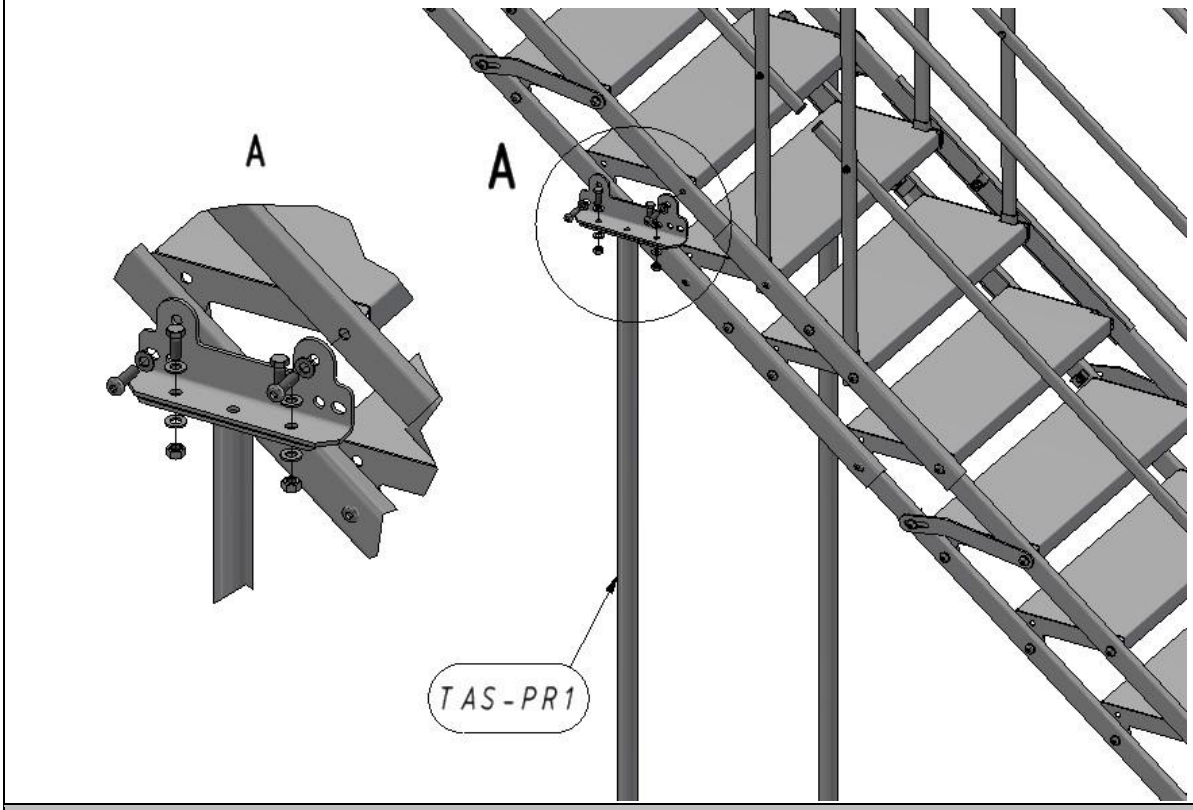


Steunpunt van de trap

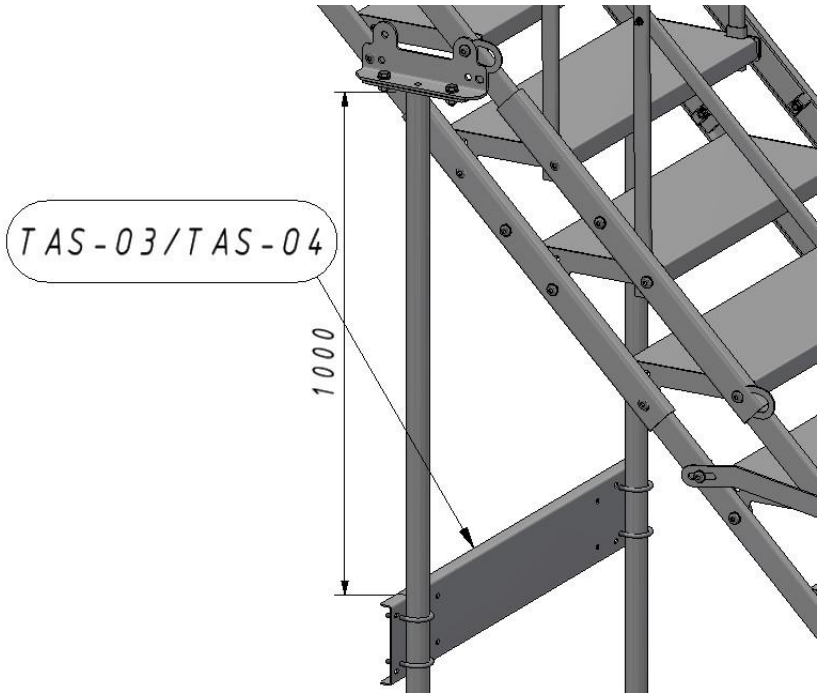
Mounting of the TAS-PR5 support - mount the support by bolting the support console using the step bolts. Once the supports are in place, bolt the column bracing TAS-O1 for TAS A 700mm stairs or TAS-O2 for TAS B 1000mm stairs. The PR5 support is used when the total number of steps exceeds 21.



Mounting of the TAS-PR1 support- Mount the support by bolting the support console using the step bolts. The PR1 support can be used when the total number of steps in the flight exceeds 21.



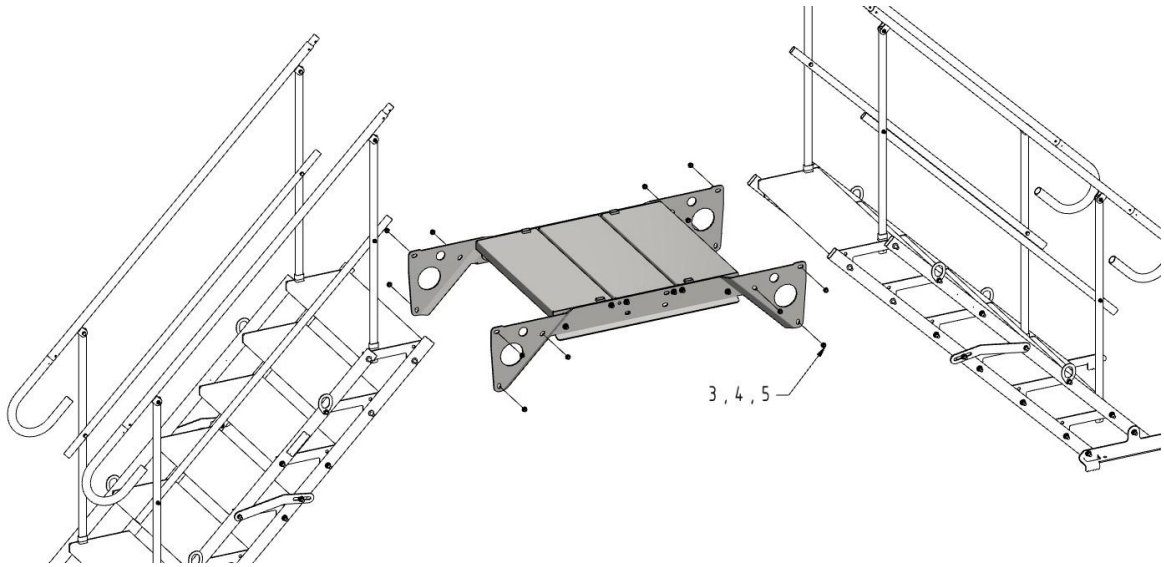
For better stiffness of the stairs, a TAS-O3 bracing can be fitted for 700mm wide stairs or TAS-O4 for 1000mm wide stairs.



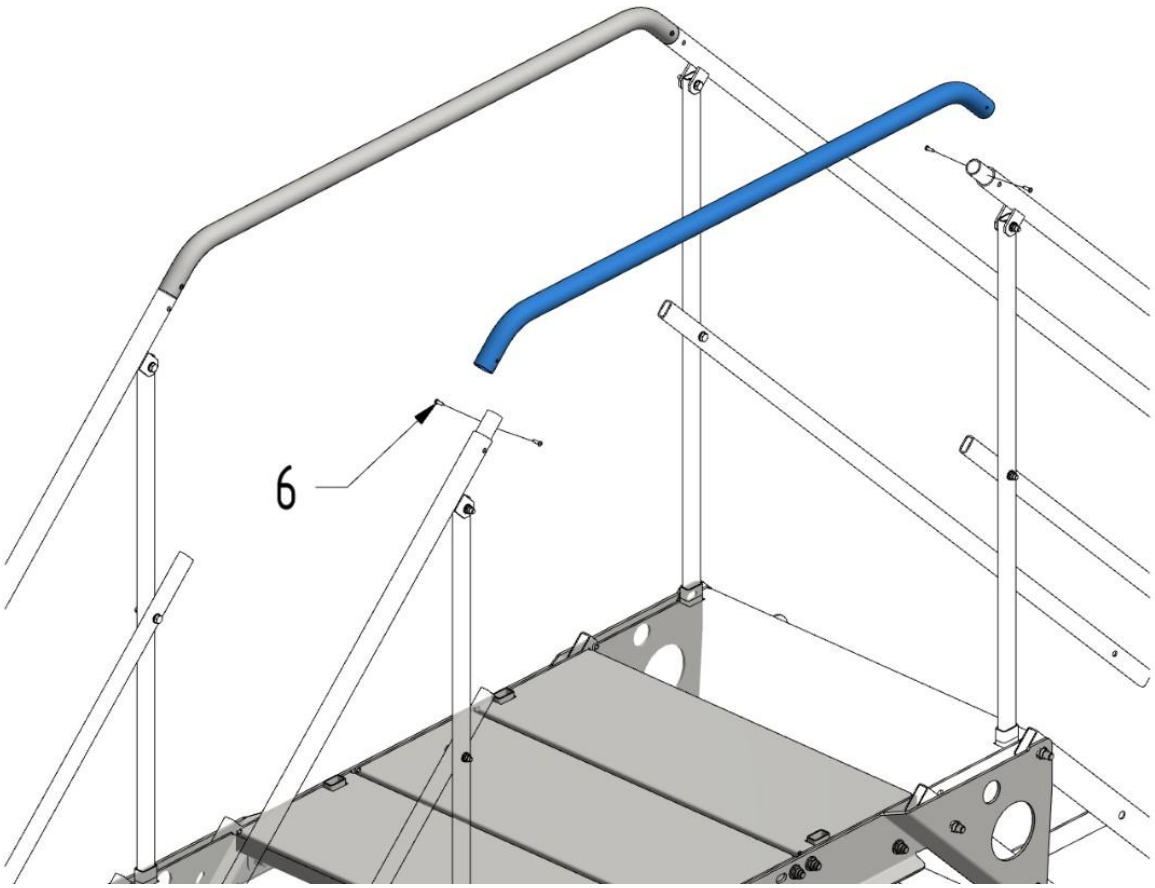
Footbridge.

The dismantling of elements from the stairs:

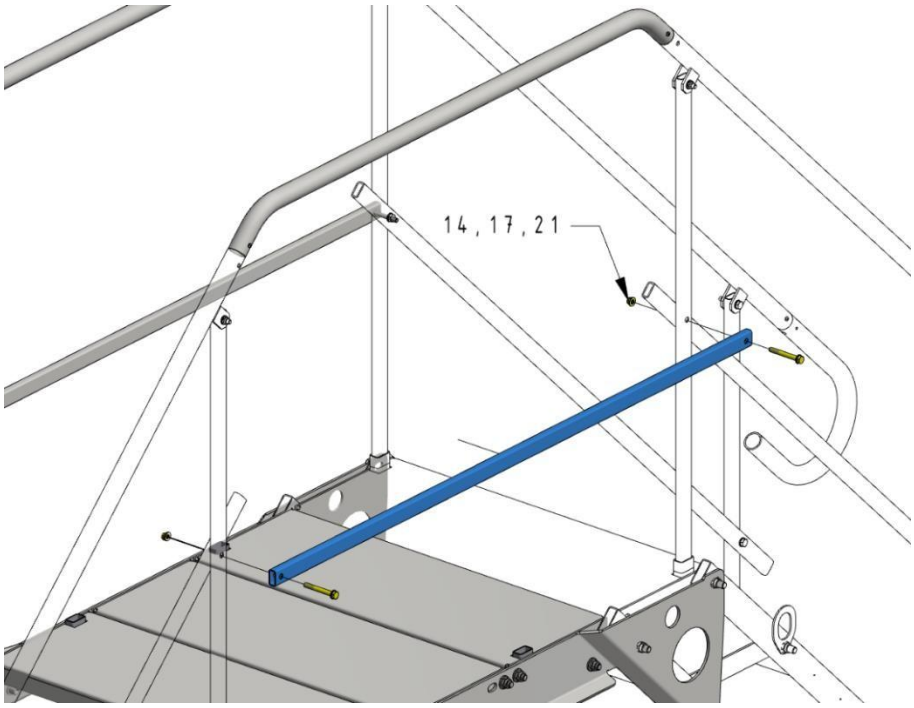
1. **Remove top feet - see section p. 4.5.2**
2. **Remove the upper handrail ends - see section p. 4.5.1**



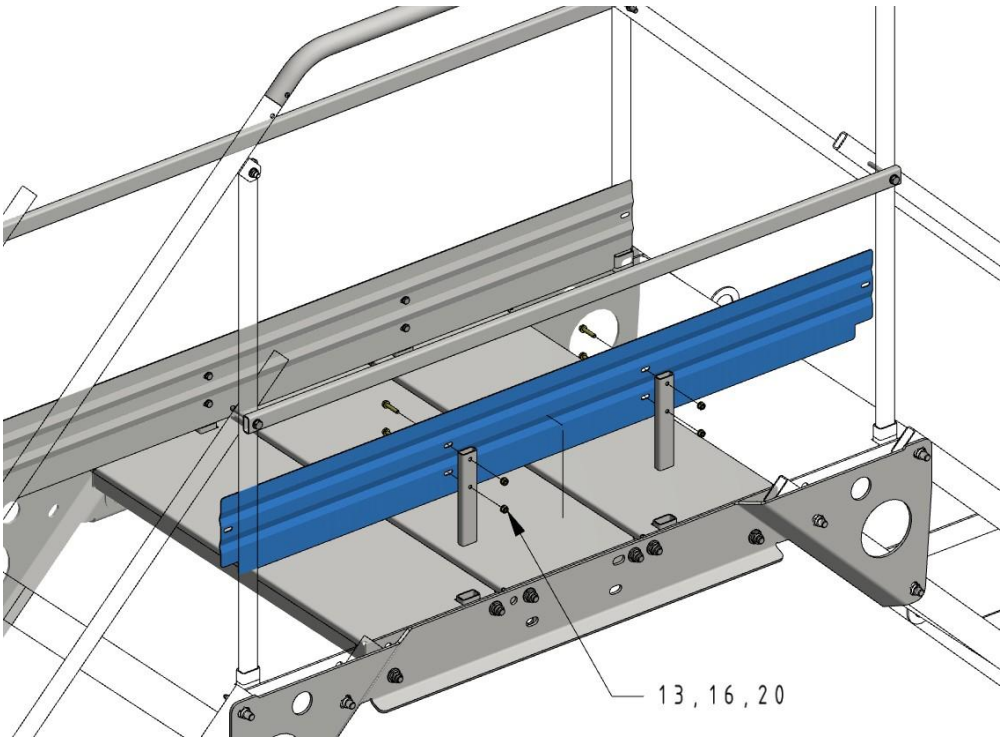
Installation of the handrail - slide the handrail onto the handrail ends and screw in place with screws.



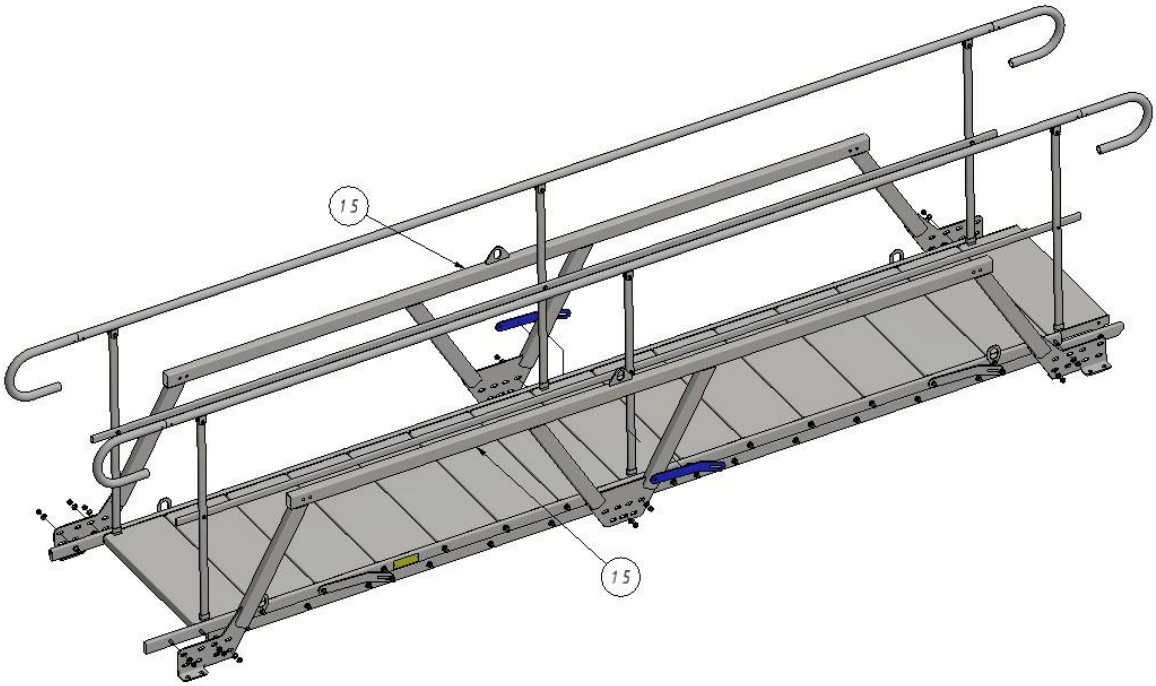
Assembly of the crossbar - The crossbar should be bolted to the stair posts.



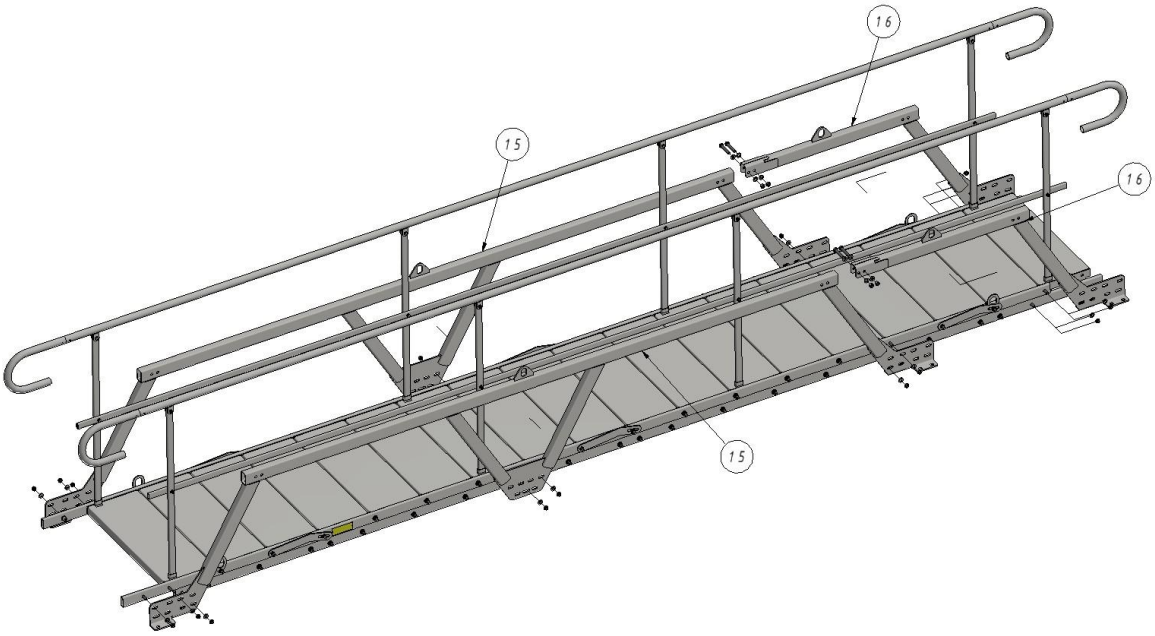
Assembling the toeboard - the toeboards should be bolted to the D-TAS-063 brackets and inserted into the holes in the footbridge.



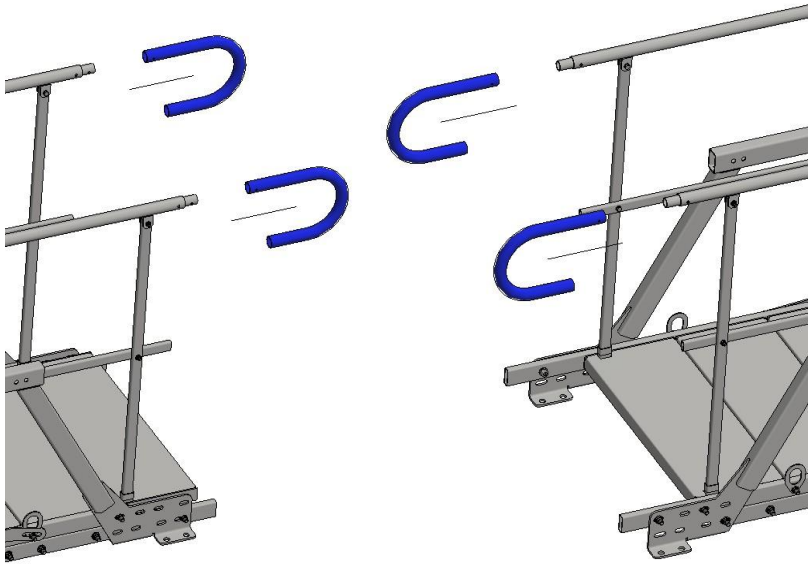
Assembly of the truss.
When installing the TAS-WB1 truss to a staircase with 15 steps, the central connectors TAS-L4 must be removed. The truss is bolted together with bolts for mounting the steps.

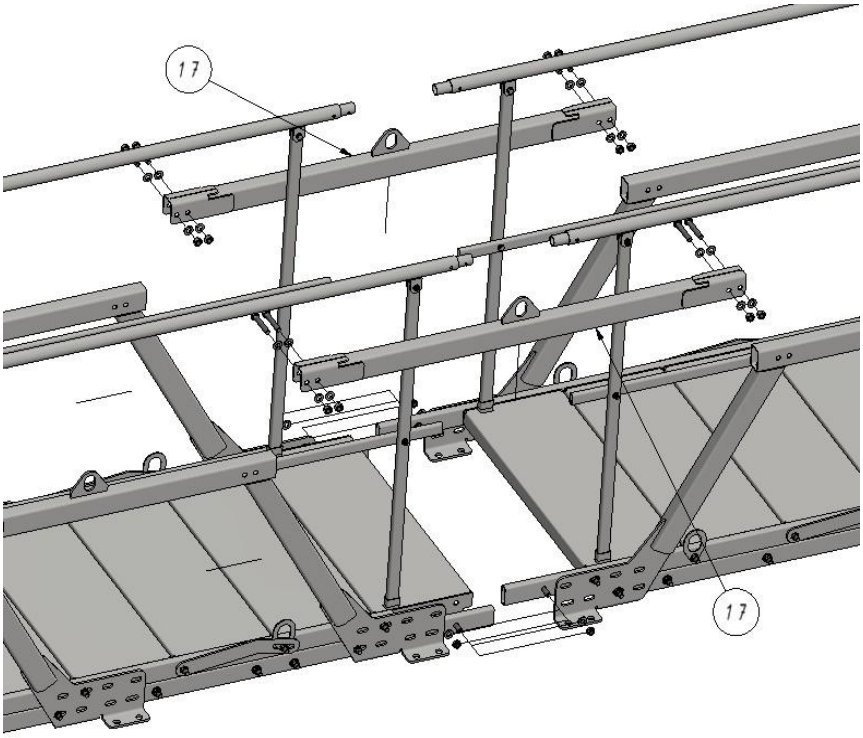


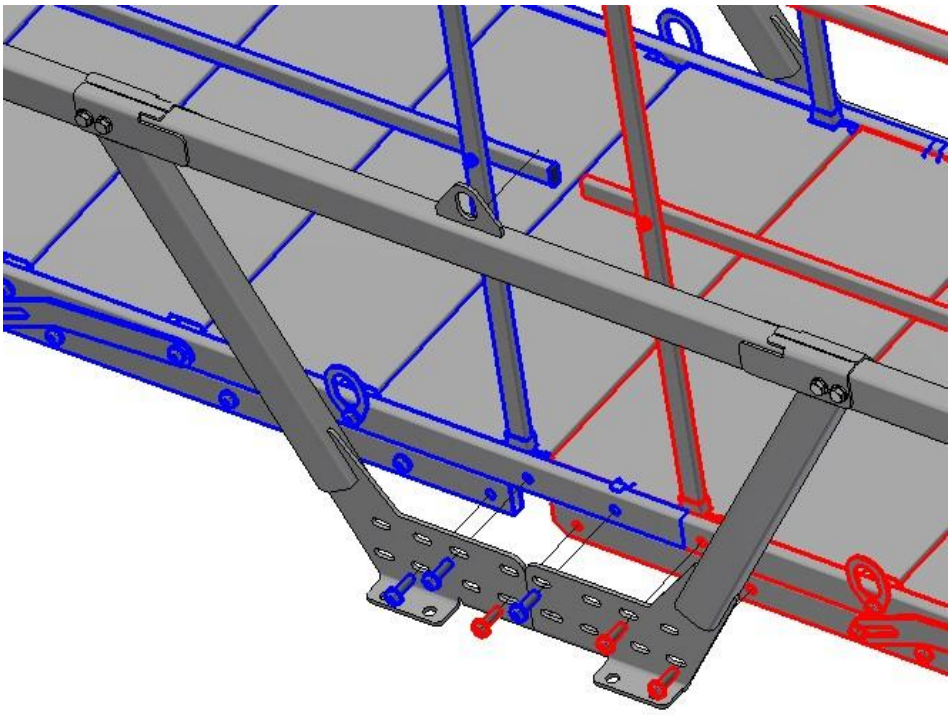
When fitting the truss to a staircase with 18 steps, the TAS-L4 connectors do not need to be removed. The TAS-WB1 truss is screwed with the bolts used for mounting the steps, the TAS-WB2 element is screwed to the TAS-WB1 element using the connectors included in the TAS-WB1 element set.



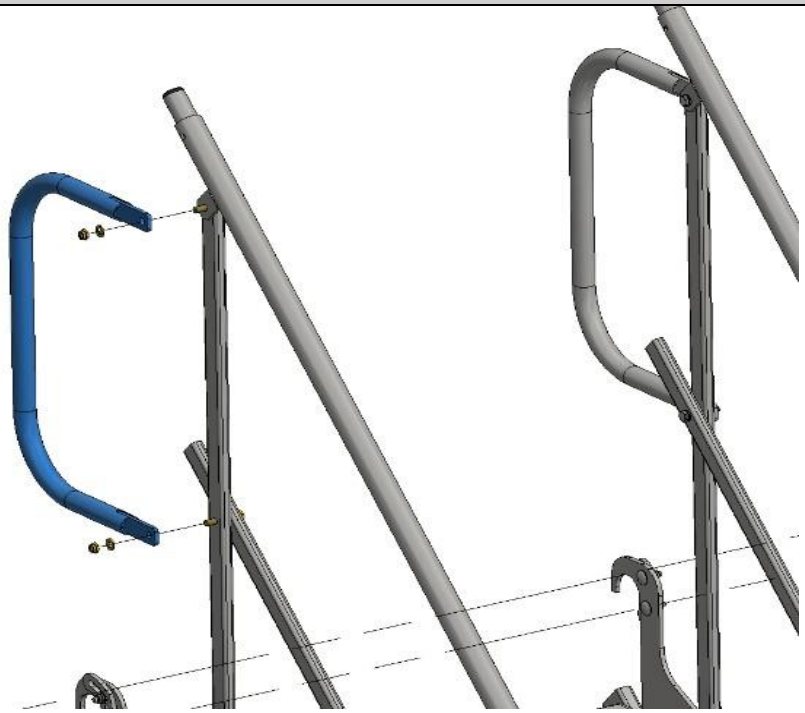
When connecting two staircases with a truss, they should be bolted together at the base using the connectors used to assemble the steps and fastened together at the top with the TAS-WB3 beam using the connectors included in the TAS-WB3 beam set. The ends of the railings must be removed before joining the stairs. The fastener sets used to connect the truss elements to the stairs should be tightened using 60% of the torque.







Installation of supplementary railing. Unscrew the nuts, slide on the railing tighten the nuts.



Installation of stairs and footbridge

Assembly should take place on a pre-prepared substrate that is level and provides a stable support for the staircase throughout its service life. Due to the temporary use of the stairs, assembly on reinforced concrete slabs, concrete blocks or wooden blocks is permitted. If timber blocks and blocks are used, it is a required that they are set into a hardened gravel bed with an effective drainage system in a secure and stable manner. When installing on the ground, an effective drainage system is required. In addition, the staircase must be anchored using the holes in the base feet; if the staircase is installed on the ground, the minimum anchor length is 400 mm.

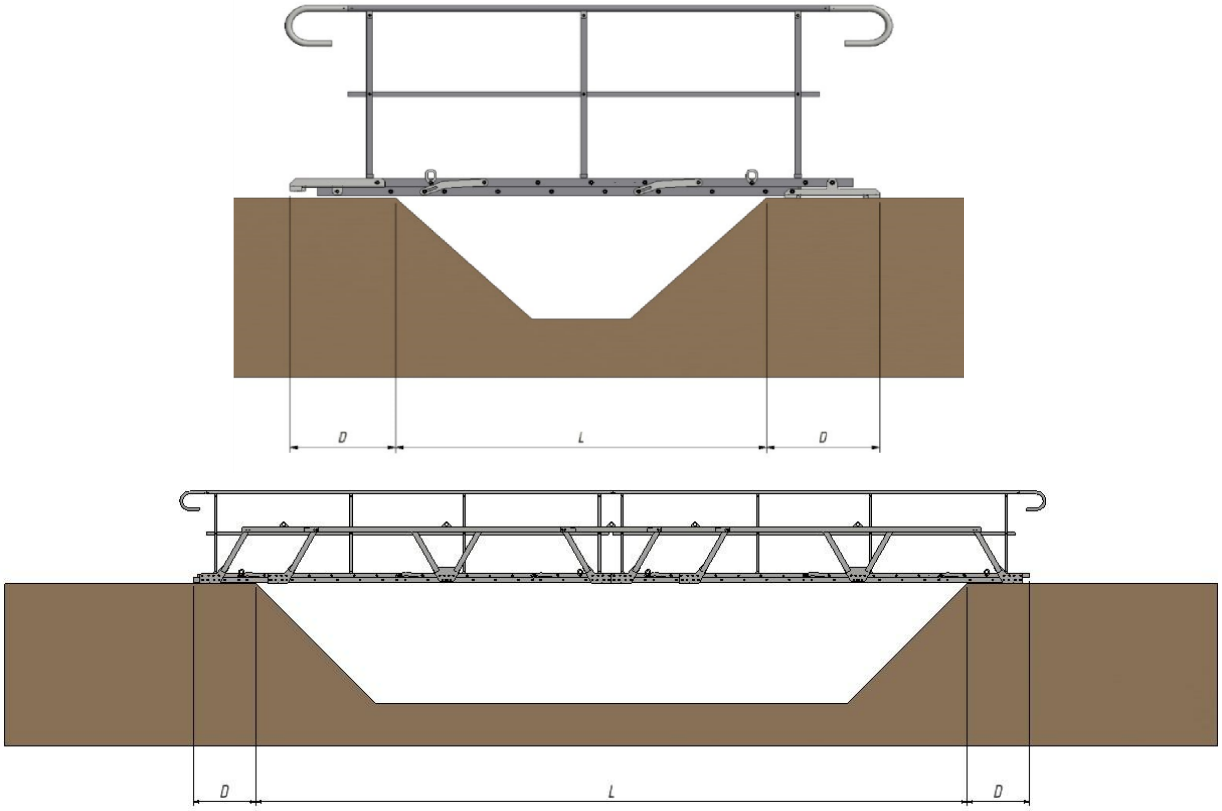
It is possible to combine stairs to create a communication route leading to the building floors. In this case, a combination of maximum two stairs is permitted (E.G. 12+12=24, 18+6=24). It is necessary to support the flight; two PR-1 or PR-5 supports should be used for this purpose.

Stairs of 6, 9, 12 steps can be used as a footbridge over the excavation, the minimum distance at which the footbridge must support the edge of the excavation on one side and the other side is D = min 500 mm. The 15-step and 18-step staircase can be used as a footbridge after the installation of a truss in the form of TAS-WB1 and TAS-WB2 elements. It is possible to combine 15 and 18 step staircases equipped with trusses into 15+15, 15+18, 18+18 step staircase configurations, the number of elements is shown in Tab. 5. In this case, the minimum distance at which the footbridge must butt up against the edge of the excavation on one side and the other side is D = min. 700mm. In addition, the footbridge must be anchored to the ground.

The stairs must be installed in the excavation with at least two skilled workers and a crane.

- Prior to installation, the installation zone must be demarcated so that it does not interfere with ongoing construction work and does not create a hazard.
- Determine the location of the foundation of the stairs so that they do not interfere with the construction work being carried out and do not create a hazard.
- Prepare the location of the stairs.
- Lift the stairs using a lifting device and place in the excavation on the prepared ground.
- Rest the whole against the top edge of the trench.
- Immobilise by anchoring and tightening the locks.

For 15- and 18-degree staircases, it is recommended to set the angle of the staircase in advance and to tighten all bolt connections to approximately 60% of the tightening torque prescribed for the respective diameter and class of connector.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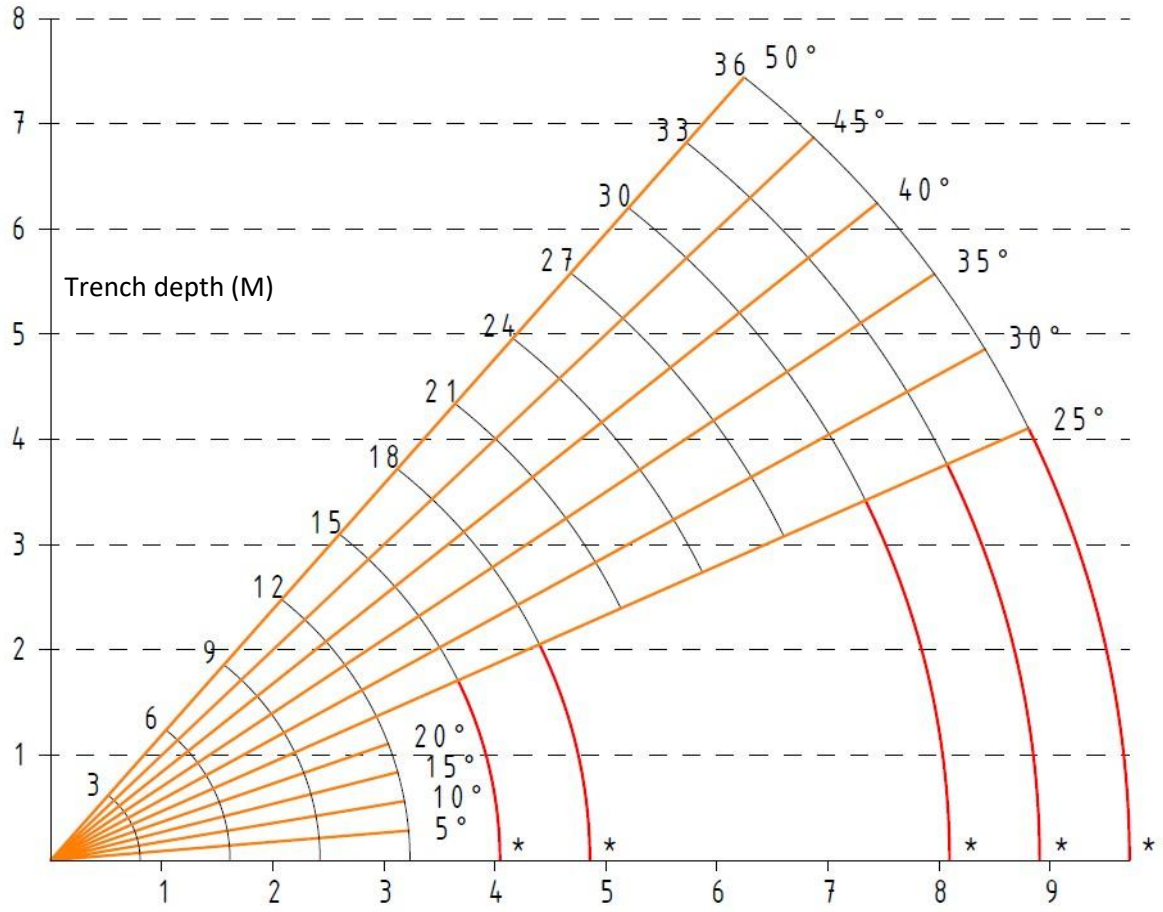
Trench depth (M)
8
7
6
5
4
3
2
1
36
33
30
27
24
21
18
15
12
9
6
3
50°
45°
40°
35°
30°
25°
20°
15°
10°
5°
1
2
3
4
5
6
7
8
9

General

Operating conditions
The basis for the proper use of the staircase is its correct positioning. This mainly concerns the proper levelling of the substrate on which the stairs will be placed. Too much deviation from the horizontal will cause all the steps to be misaligned, which can cause operational difficulties and the danger of an accident. Therefore, the staircase should be checked periodically to ensure that the substrate on which it stands has not moved, which could cause the staircase to deviate from the horizontal, and the threaded connections should also be checked to ensure that they are tight.

To ensure proper operation when using the staircase, the following steps must be taken when assembling the individual components.

- Restrain the lower part of the staircase to prevent sliding and rising.
- Restrain the top of the staircase by ensuring that it is supported by a stable edge in the form of a concrete block or wooden block.
- Tighten the lock A djustment and setting activities also include checking and possibly tightening bolt connections.

Dismantling
Before dismantling, a safety zone must be defined. Removal of the footbridge involves pulling it down from above the excavation using a lifting device after first ensuring that it is not restrained to either edge of the excavation. The dismantling of the staircase must be carried out in the reverse order to the installation. The operation should be carried out by at least two qualified personnel**.**

Disposal
Store, manage or dispose of packaging and used equipment in accordance with the current recommendations and requirements set out in the Waste Act of 27.04.2001 (J.L. 2001 No. 62 item 628) as amended.