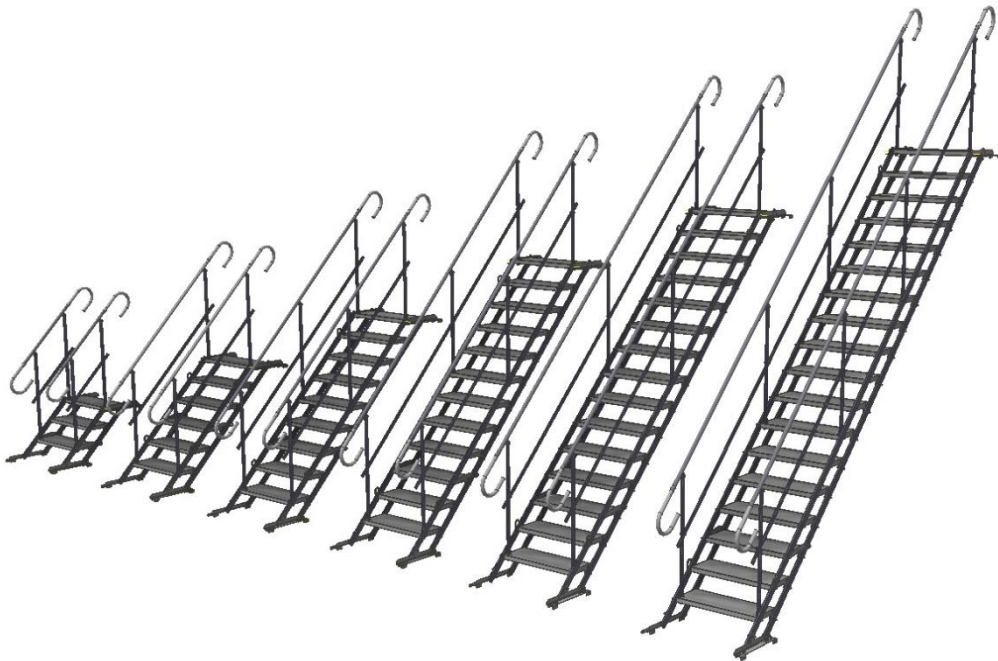

Operation and maintenance manual
of TAS temporary stairs



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Table of changes

N.	NAME	DEPART.	REVISION DATE	SCOPE OF CHANGES	COMMENTS
1	Robert Cieśla	BR	2021-09-01	para. 8	
2	Miłosz Muzyka	BR	2022-03-31	Amendment of technical data (para. 2.), added information on 1000mm stairs in the introduction	
3	Miłosz Muzyka	BR	2023-03-23	Revision of periodic inspection guidelines	
4	Peter Abram	BR	2023-11-23	Table under para. 2	
5	Robert Cieśla	BR	2024-08-21	Table 4 tightening torque added	
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1. Introduction

The subject of these instructions is the technical description, the installation description and the description of the use of the stairs for deep excavation for the movement of people. The stairs are installed in the excavation, after the ground and the upper supporting edge have been prepared. The bottom ground should be level to provide adequate support for the entire set, as only this position allows the set to be used correctly and safely. The essential element is the flight of stairs with the steps installed. The number of steps depends on the length of the stair segment, and the surface has perforations to protect the user against slipping and the accumulation of dirt. There is a locking device between the stringboards of the flight of stair to prevent the stairs from folding uncontrolled. The individual steps have special sockets for the installation of railing posts, which can be installed on both sides of the staircase.

The range available includes 3, 6, 9, 12, 15 and 18 step sets. It is possible to combine individual sets, but when combining into long sets, accessories such as connectors and supports are required. In addition, stairs with 3, 6, 9, 12 steps can be folded to form a footbridge to create a walkway over the excavation.

The table shows the weight and length of the staircase in its folded state.

Number of steps	3	6	9	12	15	18
Weight (kg)	47	74	105	133	162	192
Folded length L (m)	1,36	2,17	2,98	3,79	4,6	5,41

Tab 1. Stair weight and stair length for 708 mm wide stairs

Number of steps	3	6	9	12	15	18
Weight (kg)	56	93	134	171	208	248
Folded length L (m)	1,36	2,17	2,98	3,79	4,6	5,41

Tab 2. Stair weight and stair length for 1008 mm wide stairs

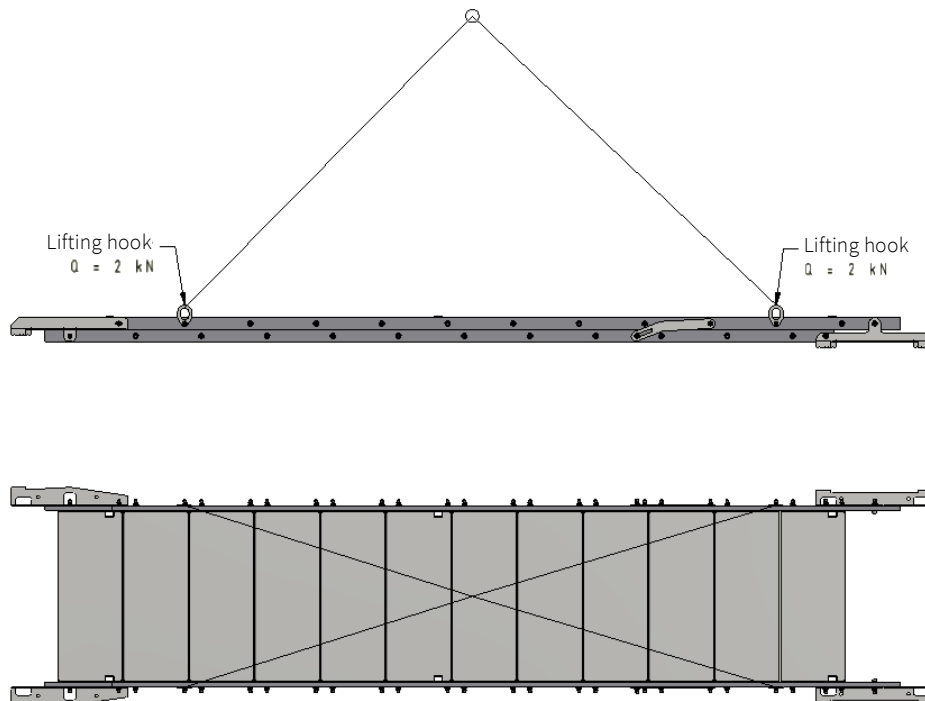


Fig. 1. Drawing of the stairs



Fig. 2. Stairs in unfolded state



Fig. 3. Stairs folded to form a footbridge

2. Technical description

- permissible distributed load for stairs - 2.0 kN/m²
- admissible concentrated load for stairs - 1.5 kN on 200x200 mm surface
- permitted side load on the railing - 0.3 kN/m
- allowable wind load - 0.2 kN/m²
- permissible number of persons on the stairs according to table 1.
- usable width of stairs - 708 / 1008 mm
- step depth - 265 mm
- Material - steel S235 / S355
- anti-corrosion coating - hot-dip galvanized

Number of steps	Permissible number of persons on the stairs
3	1
6	1
9	2
12	2
15	2
18	3

Tab 3. Permissible number of persons on a given stairs

3. Intended use

The excavation stairs in question were intended for use in works requiring safe communication between levels of earth excavations as well as in building structures for temporary movement between levels.

4. Unintended use

The use of the product contrary to the recommendations - and therefore any deviation from the recommendations given in this manual - is considered as misuse.

5. Standards and materials

The guidelines of the following standards were taken into account during design:

- PN EN 12811-1:2007 class 1
- PN EN 13374:2005

Structural materials such as rectangular profiles, channels, angles, flat bars, pipes and rods, and sheet metal with appropriate parameters to ensure safe operation and durability were used in the construction of the stairs. The entire structure was treated with an anti-corrosion coating to protect it from corrosion.

6. Terms and definitions



Information!

Sign indicating important information



Attention!

Sign to attract attention



Danger!

Sign indicating the occurrence of a hazard or safety-critical information

7. Operation



Use the stairs for their intended purpose without allowing situations such as:

- Overloading of steps and platform gratings by more people stopping and staying for longer periods of time, leaving heavy objects, hanging loads, etc.,
- Load the stair structure with a force acting in the direction from the ground as well as at an angle other than 90° downwards in relation to the steps, the only load permitted being the weight of people moving on the landings,
- Loosening of bolt connections,
- Individual components missing,
- Using the staircase in excess of 50°.

Intended use also includes following all the instructions in this manual and carrying out regular inspections of the staircase.

8. Safety rules



General safety rules for the operation of stairs:

- Use the stairs in accordance with general health and safety rules.
- Do not use stairs with unlevelled steps. The lower ground should then be adjusted so that the lower foot rests against it in an exact horizontal position.
- The staircase may only be assembled and used by persons who have read these instructions.
- Do not assemble the staircase in sets with other similar third-party structures.
- When installing at great heights, a safety harness should be used to prevent accidents.
- Before using the staircase, all components should be checked to ensure that they have been installed correctly.
- Do not hang on to staircase components or place any live electrical cables on the landings. Such cables may pose a risk due to the risk of damage to the insulation.
- Do not lean against the railings with your whole body weight.
- Do not tilt, shifting the centre of gravity of your own body off the railing.

- Do not slide down the railings.
- Replace damaged components only with new ones in accordance with the parts list.
- During repairs, take extra care to warn others of the work being carried out and inform everyone that the stairs are out of use.
- Do not put your hands or other parts of your body between the components of the structure (danger of crushing).
- Do not leave any objects on the surface of the platforms and steps that could cause users to slip or that could fall from a height by getting through the trusses.
- If an accident has occurred or the staircase has been overloaded, it must be taken out of service until it has been thoroughly checked by qualified personnel.
- If there is no contact between the staircase and the ground, earthing of the staircase according to EN 62305-3:2011 is recommended.

9. Manufacturer's recommendations



To ensure the longest possible life and reliability of the staircase, it is recommended:

- Storage and transport of components on wooden or rubber spacers to eliminate scratching of the protective surface.
- When lifting with a crane or forklift, the use of conveyor belts and wooden spacers instead of metal hooks or chains.
- Keep stairs reasonably clean. Do not use oily oil-based products for cleaning or maintenance.

10. Security



The role of fall protection is fulfilled by guardrails, which form a line from the ground on which the stairs are placed to the exit from the excavation. Their installation must be continuously checked and adjusted throughout their lifetime. For safety reasons, it is required to operate the stairs with two railings.



The nuts used to mount the steps have a polyamide insert to prevent self-unscrewing. The same type of nut is required for replacement.



In order to prevent self-folding, both interlocks must be tightened with M12 nuts to a torque of see table 1 in order to create a suitable friction between the bracket and the interlock.

Class: 8.8	M8	M10	M12
Torque (Nm)	23	46	79

Tab 4. Maximum screw tightening torque

11. Classification and guidelines for periodic inspection



Due to the conditions of use and the use of welded, crimped or bolted joints, the components of the structure and the entire structure must be inspected. The inspection should be carried out with regard to:

- the completeness of the system,
- the condition and completeness of the fasteners,
- weld defects,
- deformations, cracks, cuts or other damage to components,
- the condition of the corrosion protection coating,
- patency of assembly and drainage holes,
- the use of the correct elements belonging to a given system.

The purpose of the current inspection is to determine the presence of damage that:

- directly endanger the safety of users;
- significantly reduce the comfort of the building or its surroundings;
- indicate the need for an emergency in-depth review.

In the event that anomalies in the structure or components are found during the inspection, the structure or components must be taken out of service immediately and the necessary repairs must be carried out by replacing the damaged components with replacement components supplied by the system manufacturer. No self-repair of the structure or elements is allowed without authorization and approval of the manufacturer.

Defects in corrosion protection coatings should be repaired in a manner appropriate to the type of coating used. The manufacturer allows for the repair of corrosion protection coatings on condition that they are carried out in accordance with the provisions of PN-EN ISO 1461 pt. 6.3 for hot-dip galvanized products or the PN-EN ISO 12944 series of standards for painted products.



Based on the period of performance, we distinguish between the following types of review:

A. Current overview, daily

The daily inspection is carried out by the users of the structure. It is a visual inspection to assess the condition of components and the integrity of the structure in the event of occurrence:

- irregularities in the assembly performed, anchoring of construction elements,
- damage due to fortuitous events such as gales, storms, floods, fires, etc.,
- mechanical damage caused, for example, by the impact of moving objects,
- damage to components caused by operational factors,
- damage to components that has not been reported.

B. Weekly review

The weekly inspection should be carried out by a competent person with appropriate technical knowledge. The inspection is carried out to assess the condition of the components and the structure in terms of deformation, damage, and the condition of the anti-corrosion surface. The purpose of the inspection is to assess whether there are any changes in the structure and its elements that may pose a risk.

C. Detailed overview

A detailed review should take place:

- in the event that damage is discovered during the current or weekly inspections,
- in the event of an accident,
- before the structure or its components are delivered to the construction site,
- every 12 months of use,
- after an extended period of non-use (min. 12 months),

- after a period of 12 months from the date of manufacture indicated on the nameplate, if the staircase has not been used to date,
- at the request of the client.

The inspection should be carried out by competent persons with appropriate technical knowledge. The results of the inspection should be documented in the form of an inspection report.

12. Storage

The stairs are protected against corrosion, however, the longest lifespan can be achieved by storing them when not in use in a closed and dry place.

If more than one set needs to be stored, it is possible to stack them directly on top of each other, with each set folded, which significantly reduces the amount of storage space required.



With this solution, it is important to remember to use the transport handles to lock the set against moving to the side. To do this, the handles must be adjusted accordingly and locked with a bolt.

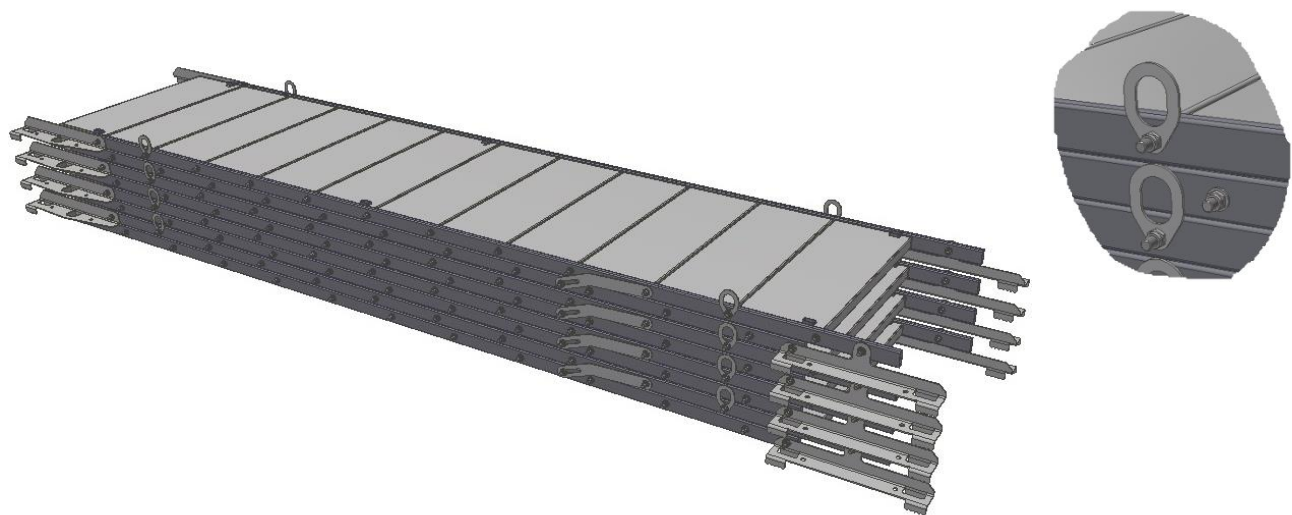


Fig. 4. Storage of stairs

13. 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.

14. Appendices

List of appendices to the Technical and Operational Documentation:

Appendix no. 1 - Installation manual