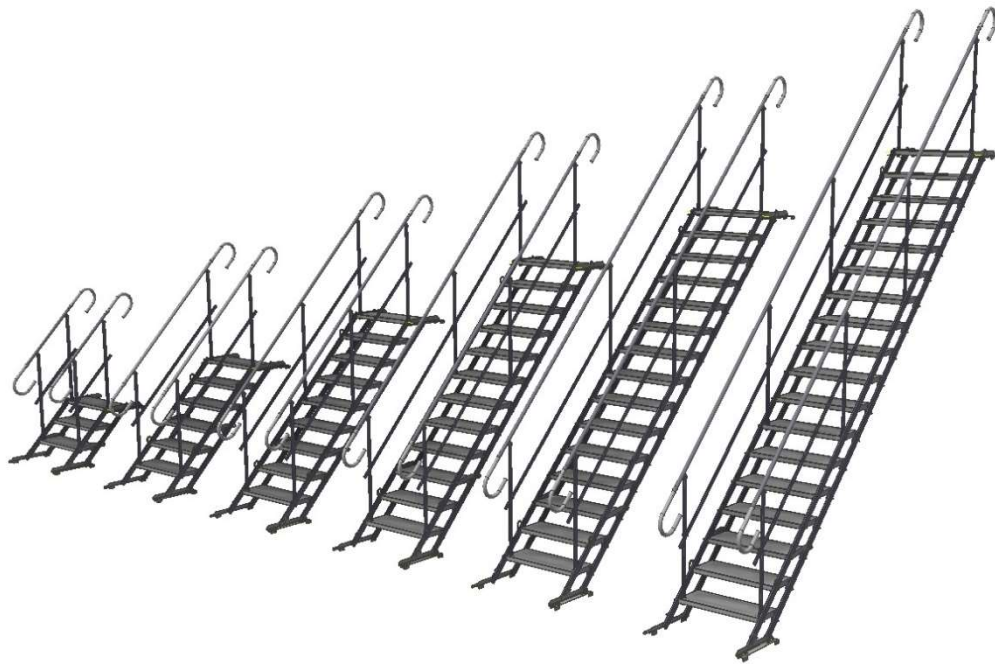

Operation and maintenance manual for
TAS excavation stairs



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Version 1.0, July 2018

Table of Revisions

No.	FULL NAME	DEPARTMENT	DATE OF REVISION	ZAKRES ZMIANY	NOTES
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1. Introduction

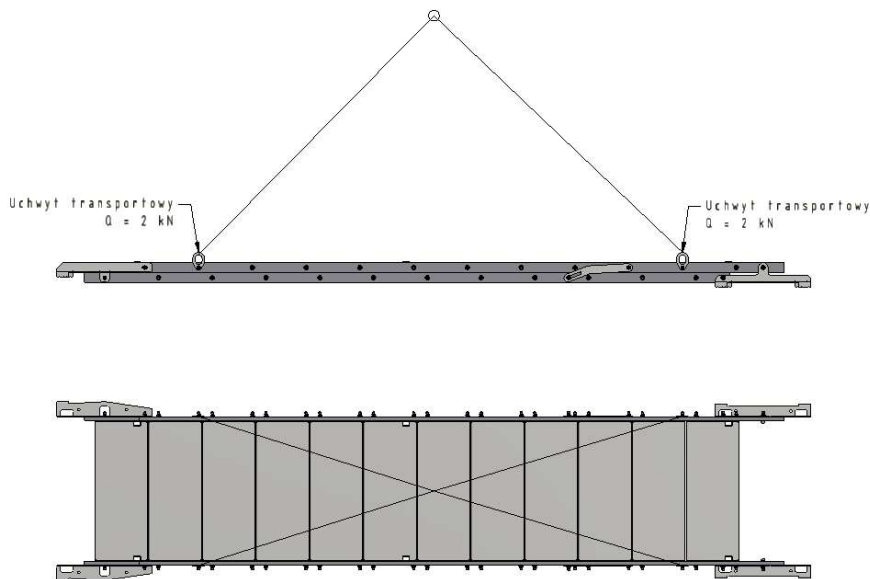
The subject of this instruction is the technical, assembly and utilization description of the stairs used in deep excavations to ensure communication. The stairs are assembled in an excavation, with the ground and upper edge of the excavation prepared. The lower ground should be levelled to ensure reliable support for the entire set – only such assembly ensures proper and safe use of the set. The basic element is the flight of stairs with mounted steps. The number of steps depends on the segment length, and they have perforated surface to prevent skidding and dust accumulation. Between the stringer stair bars there is a lock that prevents the stairs from sudden folding. Particular steps have special sockets to mount the railings on both sides.

The available range of sets 3, 6, 9, 12, 15 and 18 steps. There is a possibility to connect the sets – in case of long flights there is a need of using additional equipment such as supports and connectors. Additionally, 3, 6, 9 and 12-stepped stairs can be used as catwalks to provide the pathway across excavation.

The table shows the weight and length of flights of stairs when folded.

Number of steps	3	6	9	12	15	18
Weight (kg)	46,1	73,67	104,01	131,35	158,65	188,99
Length of L when folded (m)	1,36	2,17	2,98	3,79	4,6	5,41

Tab 1. Weight and length of stairs



Rys 1. Flight of stairs



Rys 2. Extended stairs



Rys 3. Stairs used as a catwalk

2. Technical description

- Acceptable spread load for stairs – 1.0 kN/m²
- Stairs usable width – 708 mm
- Material - steel S235 / S355
- Anti-corrosive layer – hot-dip galvanization

3. Intended use

The stairs for excavation access are intended for use in works requiring safe communication between excavation levels as well as in construction structure for temporary transfer between levels.

4. Misuse

Using the product contrary to the guidelines, i.e. every derivation from the recommendations given in the instruction is considered as misuse.

5. Standards and materials

In the designing process, the guidelines of following standards were taken into account:

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

For the construction of the stairs the following construction materials were used: rectangular profiles, channel bars, angle sections, pipes and bars, and sheet metal of appropriate parameters ensuring safe utilization and durability. For the corrosive protection, the construction was protected with anti-corrosion coating.

6. Terms and definitions



Information!

Sign of important information



Attention!

Sign of drawing attention



Danger!

Sign of occurring danger or key information for safety

7. Utilization



Stairs should be used as they are intended to and the following situations should be avoided:

- Excessive load on steps and steps grids caused by the fact that too many people are standing there for too long or that there are heavy objects put or hanging there, etc.
- Loading the stairs construction with force operating in the direction from the ground, as well as at a different angle than 90° down towards the steps, whereby the only acceptable load is the load of two people moving on the stairs.
- Loosening of screw connections.
- Lack of particular elements.
- Utilization of the stairs in the scope over 50°

Every guideline included in the manual and regular control and maintenance of the stairs should be considered as intended use.

8. Safety rules



General safety rules concerning utilization of the stairs:

- Use the stairs according to the general health and safety regulations.
- Stairs with steps that are not levelled should not be used. The lower ground should be adjusted so that lower connector is supported by it exactly in the horizontal position.
- The stairs can be mounted and used only by people who read this instruction.
- The stairs should not be assembled in sets with other similar constructions of other manufacturers.
- During assembly at high altitudes, a protective harness, securing from the fall, should be used.
- Before the utilization of the stairs begins, all elements should be checked in terms of their correct installation.
- Any electrical live wires should not be put or hanged on the steps. Such wires may cause danger due to the risk of insulation damage.
- Do not lean on the railings with all body weight.
- Do not lean out, moving the body's centre of gravity outside the railing.
- Do not slide on the railings.
- Damaged elements should be replaced with new ones, according to the list of parts.
- During repairs be extremely careful, warn others about performed works and inform everybody about excluding the stairs from use.
- Do not put hands or other body parts between construction elements (danger of crushing).
- On the surface of platforms and steps do not leave any objects that may cause users to slip or fall through the grid.
- In case of an accident, or if stairs were overloaded, you should remove them from service so that they could be carefully checked by qualified staff.

9. Manufacturer recommendations



In order to ensure longer durability and reliability of the stairs, we recommend:

- Storage and transport of the elements on wooden or rubber pads eliminating the danger of scratching the safety surface.
- While lifting using crane or a fork-lift, use transport belts and wooden spacers instead of metal hooks and chains.
- Maintain the stairs clean. Do not use any greasy petroleum products for cleaning and maintenance

10. Precautions



Railings constitutes protective measures from falling, they create a string from the base of the stairs to the exit from the excavation. They must be installed during the whole period of utilization as well as checked and regulated on regular basis. Due to safety reasons, the utilization of stairs must be done with both railings.



Nuts used for steps assembly have a polyamide pad, which prevents from the self unscrewing of the nut. In case of replacing nuts it is required to use the same type of nuts.



In order to prevent self-locking, both locks should be tightened with M12 nuts to cause maximum tightness between the support and the lock.

11. Inspection and maintenance

Provided stairs are the construction that does not require servicing by a qualified Staff. Nevertheless, in order to ensure long utilization of the stairs, the user should at least once a year perform a periodic review and maintenance works, which include:

- Checking technical condition of elements
- Checking if the tightening of screw connectors is correct
- In case of scratching of the safety surface, preparing necessary spot repairs in order to prevent the development of corrosion process.

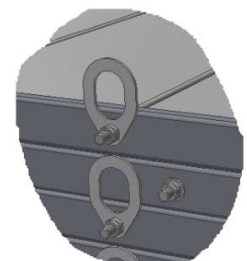
12. Storage

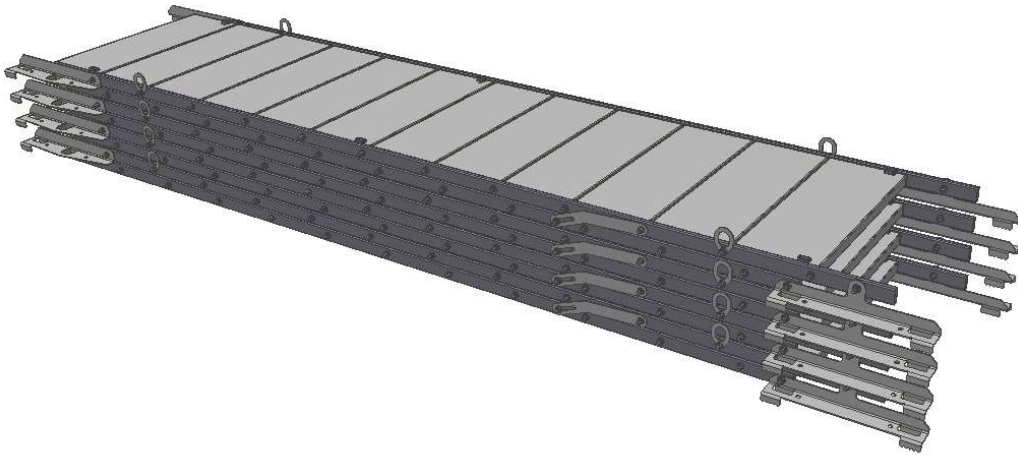
Stairs are protected against corrosion nevertheless the maximum durability can be achieved if they are stored, while not used, in a closed and dry room.

If there is more sets that have to be stored, they can be put one on another, but every set should be maximally folded, which allows to reduce the space necessary for storage.



In such case you should remember to use transport grips to lock the set and prevent it from moving. For this purpose, the grips should be set in a right position and locked with a screw.





Rys 4. Set of folded stairs.

13. Disposal

Opakowania oraz zużyte urządzenia składować, zagospodarowywać lub utylizować zgodnie z obowiązującymi zaleceniami i wymaganiami określonymi w Ustawie o odpadach z dnia 27.04.2001 (Dz.U.2001 nr 62 poz. 628) z późniejszymi zmianami. Packages and used devices should be stored, managed or disposed according to applicable recommendations and requirements defined by the law.

14. Appendixes

The list of appendixes to operation and maintenance manual:

Appendix no.1 – Assembly manual