

Operation and Maintenance  
Documentation

Aluminum Container Stairs



Piotr Abram  
(Prepared by)

*Piotr Abram*  
.....  
(Signature)

Robert Cieśla  
(Checked by)

*Robert Cieśla*  
.....  
(Signature)

Miłosz Muzyka  
(Approved by)

*Miłosz Muzyka*  
.....  
(Signature)

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## Revisions

Item	NAME AND SURNAME	DEPARTMENT	DATE OF CHANGE	SCOPE OF REVISION	NOTES
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## 1. General Guidelines

Each time before starting installation works with aluminium container stairs, make sure to become acquainted with this Operations and Maintenance Documentation (abbr. OMD). OMD informs about the method of assembly of the stairs, their operational use, maintenance, and conditions of safety during use. OMD presents the method of installation, use and maintenance of container stairs. During the assembly, dismantling, operational use and maintenance of container stairs, always observe the guidelines included in the operating and maintenance documentation and the HS&E regulations.

## 2. The subject matter of OMD

The subject matter of this operating and maintenance documentation is the information about the method of assembly, dismantling, operational use, maintenance and safety of use of the container stairs system by TLC, which consist of modules, such as flights of stairs, landings, barriers, poles, supports.

## 3. The predestination of aluminum container stairs

The container stairs system is a temporary structure designed according to the PN EN ISO 14122-3 and PN EN ISO 12811-1 standards. It is designed to provide communication between levels of stackable office, warehouse and sanitary containers at the construction site.

The aluminum container stairs system by TLC is easy to assemble and durable, and simplicity of its assembly results from the limited number of connectors, such as bolts, nuts, and use of the intuitive system of assembly of stairs, barriers and poles.

## 4. Technical description

- The allowed distributed load on landings and stairs: 2 kN/m<sup>2</sup>
- The allowed concentrated load on landings and stairs: 1.5 kN on 200x200 mm
- The operational widths of stairs and landings:
  - Version 1000 mm
  - Version 1200 mm
- Types of barriers
  - Heavy-duty version
  - Safe version
- Material – Aluminum 6082, 6060, 5754 h22
  - Steel S355 JR

The stairs are installed to the container with supports and are supported on poles. To ensure the proper assembly and use, the stairs should be installed on a level concrete base.

Due to the temporary nature, installation on reinforced concrete slabs or concrete blocks is allowed. When blocks are used, the necessary condition is that they are seated in hardened, well-drained, gravel base, in a reliable and stable way.

## 5. HS&E guidelines

### GENERAL PROVISIONS

- a) During the installation of container stairs, persons may be employed, who fulfil the following conditions:
  - Admission to work on height by a physician, good health condition
  - 18 years of age or older,
- b) Conditions for admission to work:
  - The employee must be sober and rested,
  - The employee should wear working clothing and should have attested safety equipment, such as harness, cords, etc.
- c) Due to the dimensions and weight of the components, special care should be maintained during transportation, installation and use of the stairs.
- d) These instructions should be kept as the source of information for the stairs users and maintenance personnel.
- e) The producer shall not be responsible for any damages resulting from improper assembly of the product or using it contrary to its planned use.
- f) The stairs are intended for use under industrial conditions, i.e. used by adult persons who follow HS&E regulations, are trained and are not under the influence of alcohol or other intoxicants.
- g) The stairs must not be used by persons with the combined weight exceeding the allowed load.
- h) The stairs should not be used for transporting any objects other than tools, instruments, etc.

### ASSEMBLY OF THE CONTAINER STAIRS

- a) Before starting the assembly of the stairs, make sure to become acquainted with the technical documentation and the guidelines of the construction manager.
- b) During preparation of materials, check whether the metal elements are not rusted or bent.
- c) Define and mark the area around the zone for assembly of the container stairs.
- d) Check whether the containers, to which the stairs are to be installed, are set on stable ground, and whether their position against each other is proper.

- e) During execution of work at the height, employees should be secured with harness safety, fixed to solid elements of structure.
- f) The structure of the stairs should be assembled in accordance with the operational and maintenance documentation and with the approved design.
- g) It is recommended for the aluminum container stairs to provide the appropriate earthing protection against atmospheric discharges according to *PN-HD 60364-5-54:2011; PN-EN 50522:2011; PN-EN 62305-3:2011; PN-EN 62561-2:2012*  
The earthing should be done by a person eligible for assembly of this kind of installation. You can use the existing screw connections as assembly points.
- h) The container stairs may be used after commissioning by the technical supervision, confirmed with the relevant record.
- i) It is forbidden to modify any elements of the system and assemble them at variance with the operating and maintenance documentation.
- j) It is forbidden to assemble the system if the containers are incorrectly set against each other, as it may result in setting the elements of the system incorrectly, which may pose a hazard for its users.

#### DISMANTLING WORKING LANDINGS.

- a) The employees who take part in dismantling the container stairs must use attested safety harness.
- b) Dismantling of the stairs shall be always conducted in the reverse order than that of assembly.
- c) Before starting the dismantling, define the safety zone (in the distance of not less than 6 m from the place of dismantling).

#### FINAL PROVISIONS

- a) It is forbidden to assemble and dismantle the container stairs:
  - At dusk, if proper lighting is not provided,
  - During fog, rainfall, black ice
  - During the storm and wind of more than 10 m/s,
  - Close to nearest power lines, at a distance shorter than:
    - LV line: 2 m
    - HV line up to 15 kV: 5 m
    - HV line up to 30 kV: 10 m
    - HV line over 30 kV: 15 m
- b) During operational use, supervision personnel should periodically check the condition of the bolted connections.

- c) All accidents at work should be reported with the direct superior, and the work place should remain in the original condition as at the time of the accident.
- d) If the assembling person it is not feeling well, he should report it to his superior and obtain a release from work at height.

## 6. Classification and guidelines of periodical inspections of engineering structures.

Current inspection of engineering structure means visual inspection conducted within temporary checking of the structure in order to find damages that pose a direct threat to the safety of users. It is most often executed on their application or after non-typical events like gale, high snowing, flood, vehicle bump, fire, seismic vibrations and load exceeding standard values.

*The purpose of the current inspection is to find:*

- damages that pose a direct threat to the safety of users;
- damages that clearly reduce the comfort of use of the structure or its surroundings;
- damages that indicate the necessity of performing a basic or expanded emergency inspection.

Current inspection consists in visually checking the structure, equipment and surroundings of the engineering structure for any symptoms proving or suggesting their improper condition or fixing. Current inspection shall be conducted from the operational level of the stairs, and if any irregularities are found and not less frequent than once every year, also from the ground level under the structure and next to it.

Periodical annual inspection – the basic inspection means checking, at least once a year, in order to assess and record the current technical condition of the structure, as well as to determine the conditions for safe operational use and needs as well as the scope of the necessary works of current maintenance and repairs.

The purpose of the basic inspection is to check the technical condition of the elements of the engineering structure, the surroundings of the structure, the installation and devices used to protect the environment and to record any changes resulting from use.

The result of the basic inspection should be finding:

- damages of the structure that may pose hazard to human life or health, safety of the property or the environment,
- damages of the structure that may cause a construction disaster,

- conditions of safe use of the structure,
- damages to the structure that should be eliminated within the current maintenance plan or within the emergency procedure,
- damages of the installations and devices used for the protection of the environment,
- damages to the equipment,
- damages to fixings or covers of third party equipment threatening the safety of users of the stairs or the engineering structure, for the purpose of calling owners of these devices to conduct inspection and eliminate damages,
- execution of the recommendations from the previous inspection,
- the need to execute the expanded or detailed inspection beyond the schedule of inspections,
- the need to provide expert opinion about the technical condition of the structure or its parts.

Before starting the inspection, make sure to become acquainted with the registration documents and the technical documentation of the structure. The basic inspection includes a visual inspection of the structure and its surroundings as well as the basic tests and measurements. The visual inspection as well as the basic tests and measurements are performed:

- at the time of the basic inspection from the level of the stairs and from the ground level at the structure, with a binocular and, possibly, a ladder or scaffolding.
- e) if needed, devices should be used during the inspection to allow direct access to each element of the structure being inspected.

## 7. Commissioning, approval for use

After completion of the proper assembly of the container stairs, the structure should be inspected. Check:

- Fixing of all bolted connections,
- Correctness of anchor installation,
- Correctness of barrier installation.

The container stairs may be used after commissioning by the technical supervision, confirmed with the relevant record.

The condition of the anti-corrosion coat should also be inspected for damages resulting from the installation; if any damages to the coat are found, the damaged item should be replaced or subjected to repair.



## 8. Statement of functional characteristics

TLC provides certificates of compliance for each landing. The following is the specimen of such a document.

 <b>2527</b>
<i>TLC sp. z o.o.</i> <b>UL Chopina 25N</b> <b>38-300 Gorlice</b> <b>POLAND</b> <b>17</b> <b>2527-CPR-1A.096.0X</b>
<b>EN 1090 -1:2009+A1:2011</b>  <u>Elementy konstrukcji / Execution steel construction</u> <i>Nazwa - Symbol / Part name - Part No.</i> <b>SYSTEM SCHODÓW/ STAIR SYSTEM: P-SK3</b>
<p><i>Tolerancje wymiarów / Tolerances of dimensions:</i>  <b>PN-EN 1090-3</b></p> <p><i>Spawalność / Weldability:</i>  <b>EN AW-6082/T6; 6060/T66; 5754; 6060/T6 - klasa / class I; 8011A - klasa / class II wg / as per PN-EN 1999-1-1</b>  <b>S355J2 wg 10025-2S355J2+M wg / as per PN-EN 10025-2</b></p> <p><i>Odporność na kruche pękanie / Impact strength:</i>  <b>EN AW-6082/T6; 6060/T66; 5754; 6060/T6; 8011A - NPD</b>  <b>S355J2 - kV=27J w temperaturze / in temperature - 20°C</b></p> <p><i>Reakcja na ogień / Reaction to fire:</i>  <b>Materiał klasyfikowany: Klasa A1 / Classified material: Class A1 wg / as per PN-EN 13501-1</b></p> <p><i>Wydzielanie kadmu / Release to dangerous material:</i>  <b>NPD</b></p> <p><i>Radioaktywność / Radioactivity:</i>  <b>NPD</b></p> <p><i>Trwałość / Durability:</i>  <b>Konstrukcja wykonana ze stopów aluminium nie wymagających zabezpieczenia powierzchni, klasa A/B wg PN-EN 1999-1-1; szczegóły - specyfikacja elementu. / The structure is made of aluminum alloy does not require surface protection, class A/B wg PN-EN 1999-1-1; details in design documentation</b></p> <p><u>Charakterystyka konstrukcyjna / Construction characteristic:</u></p> <p><u>Nośność / Bearing capacity:</u> <b>Spełnia kryteria wytrzymałościowe zgodnie z PN EN-12811-1-2 oraz PN-EN 1991-1-1.</b>  <i>Obliczenia statyczne zgodnie z normą EN 1991-1, inne szczegóły w opisie projektu. / Static calculations according to EN 1991-1 and other details in project specification.</i></p> <p><u>Odkształcenie w stanie granicznym / Deformation limit state:</u>  <b>NPD</b></p> <p><u>Wytrzymałość zmęczeniowa / Fatigue strength:</u>  <b>NPD</b></p> <p><u>Odporność ogniowa / Resistance to fire:</u>  <b>NPD</b></p> <p><u>Wykonanie / Realization:</u>  <b>szczegóły - zgodnie ze specyfikacją i PN-EN 1090-3; Klasa wykonania EXC2/ details - in design documentation and PN-EN 1090-3; Execution Class EXC2</b></p>
<b>Deklaracja właściwości użytkowych Nr / Declaration of performance No.: 01/09/2017</b>

Gorlice 01.09.2017

Podpis / Signed by:

## 9. Transport and storing

The elements of the stairs are provided with anticorrosion protection, yet the best durability may be obtained by storing the unused stairs in a closed and dry area.

To avoid damages to the elements of the system, proper storage is recommended with the use of spacing elements, and pads that ensure free space between the individual elements in order to prevent damages of the anti-corrosion coat.

### Storage and transport of the stairs

- The stairs should be stored on spacing elements with the minimum height of 170 mm, with the pipes used to fix the barrier turned downwards. The further flights should be set in the same position. Maximum 4 flights may be stacked.
- Transported stacked flights should be protected with belts.

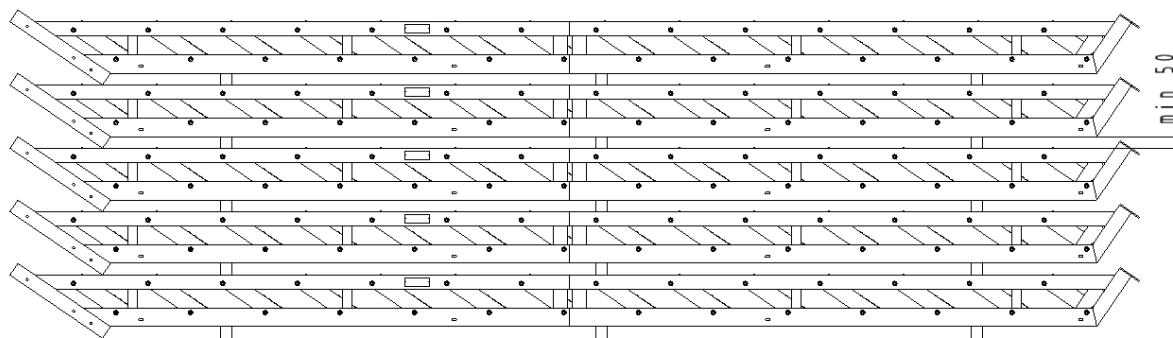


Figure 1. Storing the stairs

- The stairs may be loaded and unloaded with a crane, with 4-leg chain slings. Sling angle  $\beta = 45\text{--}60^\circ$

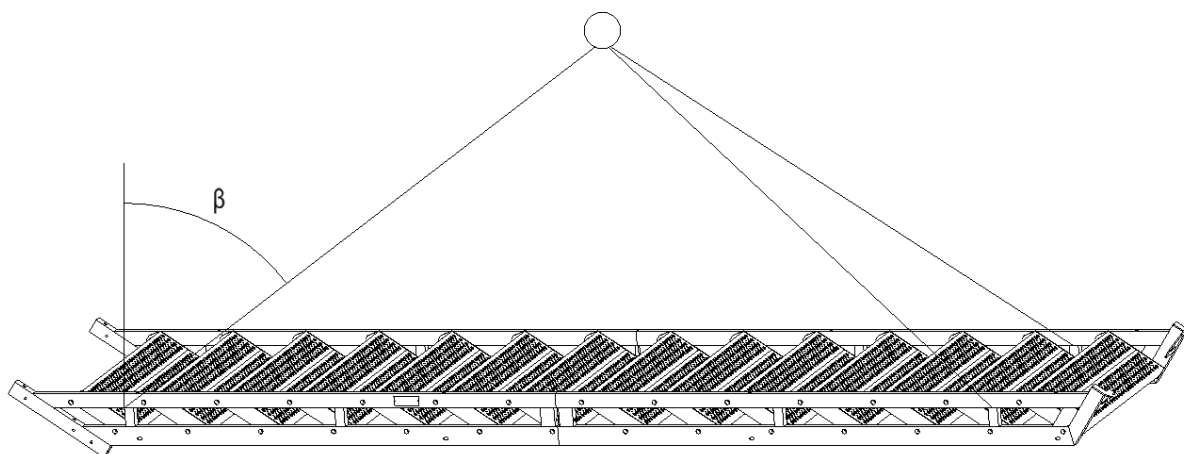


Figure 2. Lifting the stairs

### Storing landings

- The landings should be stored on spacers with the minimum height of 40 mm. Maximum 10 landings may be stacked.
- When landings are transported stacked, they should be protected with belts.

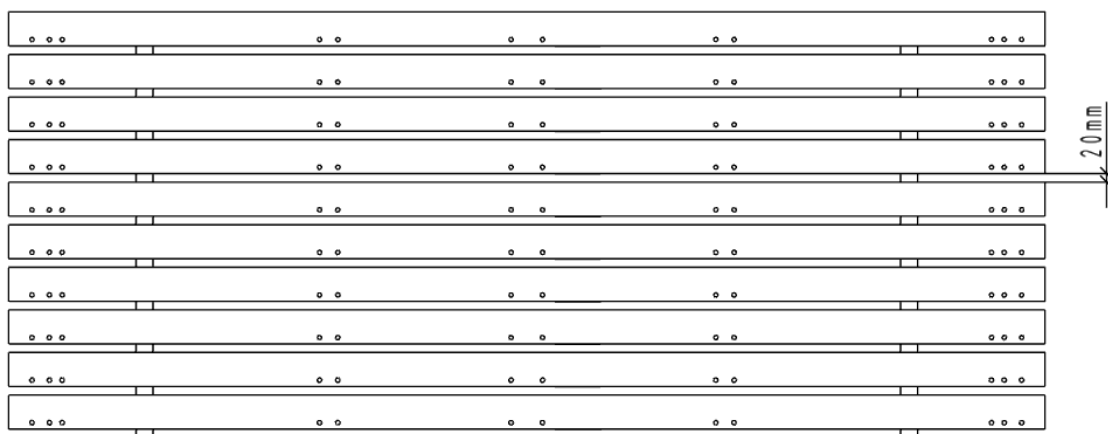
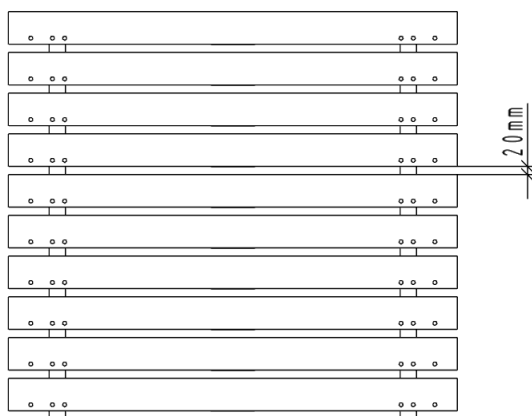


Figure 3. Storing landings

### Storing Barriers

- Barriers may be stored horizontally and vertically.
- When storing vertically, the barriers should be leaned against a steel frame, i.e. the container, the basket, or the wall. Barriers should be leaned against each other so that the angle of inclination of the barriers against the support  $\alpha$  is about  $10^\circ$ .

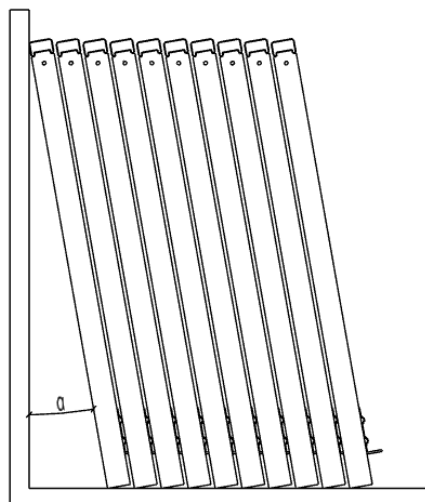


Figure 4. Vertical storage of the barriers

- When storing horizontally, leave min. 10 mm distance between the railings.
- A maximum of 15 railings may be stacked.
- For transport, the barriers should be stacked horizontally and secured with belts.

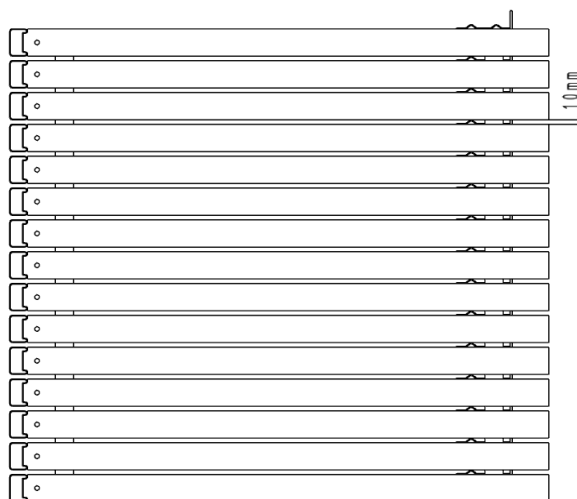


Figure 5. Horizontal storage of barriers

### Storage of supports

- Supports should be layered in two units each, with the following layers crossing to previous ones
- The distance between the floor and the first layer should min. 60 mm, with min. 30 mm between the following layers.
- A maximum 15 layers may be stacked.
- Transported stacked supports should be protected with belts.

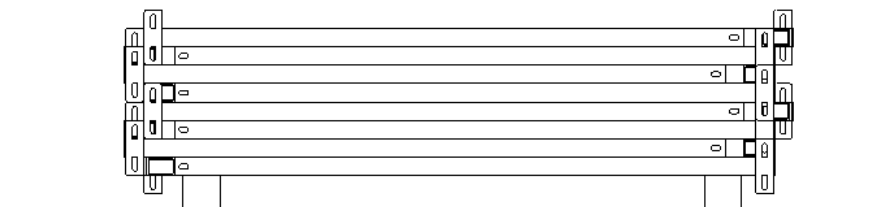


Figure 6. Storage of supports

### Storage of Poles

- Poles should be stored in transport baskets in layers with min. 10 mm spaces.

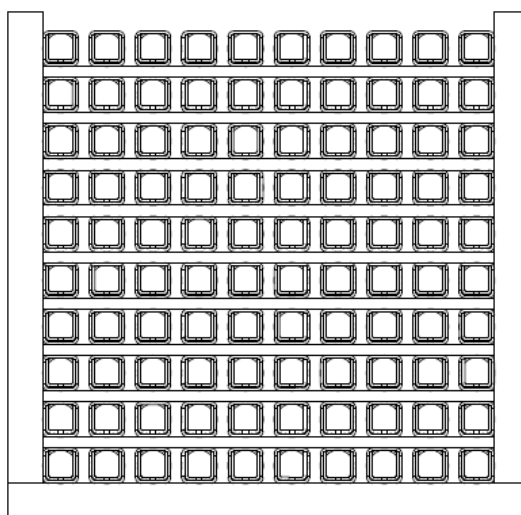


Figure 7. Storage of poles

## 10. Utilisation

Packages and used equipment should be stored, managed or utilised according to recommendations and requirements set forth in the Waste Law of 27.04.2001 (Dz.U. 2001 No. 62 Item 628 as amended).

## 11. Annexes

The list of annexes to the Operational and Maintenance Documentation:

Annex no. 1. Assembly instructions

Annex no. 2. Declaration of functional characteristics