



## Safety instructions manhole installation - BB<sup>2.5</sup> VERTICAL

Document	Safety Instructions_20230420.docx		
Version from	20.04.23	Revision	3
Replaces the version	08.11.22	Revision	2
Topic	Safety when installing the manhole liners		

### 1 Supplied documents

- "Installation manhole liner" in the version of 20.04.2023
- "Operating Instructions" Installation of Manhole liners, version 07/2022

### 2 Traffic safety

Attention must be paid to the traffic regulations of the respective country in which the Brandenburger Schachtliner is installed. If public traffic space is used in the Federal Republic of Germany, this means that a special use permit/traffic law order must be applied for from the responsible authority, according to which the traffic protection must be carried out in accordance with STVO. These regulations already apply to the work of the liner survey.

- The construction site must be secured in such a way that a sufficiently large working area is available and that there is no danger from flowing traffic.
- Likewise, the construction site must be secured in such a way that no pedestrians or residents are affected.
- Unauthorised persons must not enter the construction site.
- Own vehicles are to be kept in a roadworthy and operationally safe condition at all times.

### 3 Occupational health and safety

For all work on the construction site, the applicable national health and safety regulations of the country of installation and the user's country of origin must be observed. As an example for the Federal Republic of Germany, reference is made to the law on the implementation of occupational health and safety measures.

to improve the safety and health protection of employees at work (Arbeitsschutzgesetz -ArbSchG) and the Ordinance on Safety and Health Protection on Construction Sites (Baustellenverordnung - BaustellV) as amended.

Reference is also made to the safety regulations and operating instructions of the respective plant and equipment manufacturer. The measures to be taken in terms of occupational health and safety

result, among other things, from the process and construction site-related hazard analyses and operating instructions that must be prepared.

It should also be noted:

### 3.1 General

- During all work, at least 2 persons must be present on the construction site in order to be able to provide assistance or make an emergency call in case of an emergency.
- Avoid contact with rough and sharp-edged parts, e.g. when entering the shaft. Wear "full-face" work clothes and protective gloves.
- Observe the load capacity of the crane and all lifting gear. Only use approved lifting gear
- Store working materials and tools safely (e.g. on workbenches and not on the floor). Take special care that nothing can fall into the open shaft.
- Avoid tripping hazards (cables, hoses, work material or tools).  
Neatly laying cables and hoses also prevents them from being damaged.
- When using electrically operated equipment, the relevant safety regulations must be observed. This is particularly important in the damp or wet conditions on the construction site. Hand-held power tools should be battery-operated or compressed air tools if possible.
- Vehicles and compressors shall be positioned so that diesel engine emissions do not affect employees and residents.
- When handling hazardous substances and working in the canal, the known hygiene regulations and the wearing of PPE must be observed.  
The wearing time of liquid-tight gloves must be limited as much as possible.
- Hoses and fittings that are under pressure must be free of damage.

### 3.2 Work on and in the shaft

- Danger points, in particular the open shaft, must be secured by suitable protective devices such as a barrier grid, at a distance of at least 1.5m around the shaft. If no barrier grid can be used, at least one person with a warning flag must secure the area around the shaft.  
If the manhole is not being worked on, it must be closed with the cover. Under no circumstances may it be covered only with foil (danger of falling).
- Personal protective equipment against falls from a height (PPEgA) must be worn and permanently attached to the rescue hoist for all work in the shaft.
- Before entering the shaft, it must be "measured free".
- Use shut-off bladders as intended
- Wear a helmet when working in the shaft (falling objects).

### 3.3 Liner under pressure

- **During calibration and curing, the liner is under internal pressure. In rare cases, this pressure can increase considerably in the event of a deflagration. This can cause the liner to burst or the packer to be "blown off and fly away". For this reason, the following measures must be observed.**
- **In order to be able to secure the packer when calibrating the shaft liner, at least 3 pieces of tensioning belts with a respective load-bearing capacity of at least 2,500daN are doweled into the cone by means of hammer rivets (at least 3 pieces each with Ø6mm). These securing straps are to be fastened to the packer.**
- **As soon as there is pressure on the liner, it is forbidden to use sight glasses or other openings which serve to look into the liner. Only the camera may be used to look into the**



liner. The packer can fly away upwards despite being secured. (At a pressure of 500mBar a force of approx. 1,500daN (1.5 tons) is exerted on the packer).

- Staying within a distance of 1.5m around the packer is prohibited. This area is to be cordoned off with grids.

### 3.4 UV light source

- When using electrically operated equipment, especially the light source, the relevant safety regulations must be observed. See the operating instructions. This is particularly important in the damp or wet conditions on the construction site.
- The hot light source poses a considerable fire hazard if it comes into contact with the inside of the liner or with the inner foil. In particular, there may also be a risk of explosion if the inner foil is damaged and solvent (styrene) escapes. Damage to the second inner foil and contact with the light source must be safely avoided.
- Be careful when handling the hot light source. Allow to cool down.
- Caution when handling UV light. No direct eye and skin contact. Wear full-face working clothes.

## 4 Training certificate

Trained at: \_\_\_\_\_

Trained by: \_\_\_\_\_

Signature: \_\_\_\_\_