

**LITEBOX trench edge support**



**LITEBOX trenching system**



**LITEBOX trench sheeting system**



**LITEBOX manhole shoring system**



## **LITEBOX Aluminium Trenching System**

**One system – four uses**

Lightweight. Efficient. Safe.

Safety aspects checked by BG-Bau (building sector employers' liability insurance association)



# LITEBOX aluminium trenching system

System-based, efficient solutions.

The LITEBOX aluminium trenching system is the ideal shoring system for trenches as deep as 6 m and is preferred for urban applications. This aluminium modular system closes the gap between the frequently heavy and cumbersome steel systems and manual trench timbering.

The range is divided into four types of application to match the different requirements of building sites. This modular system can be combined and supplemented as required.

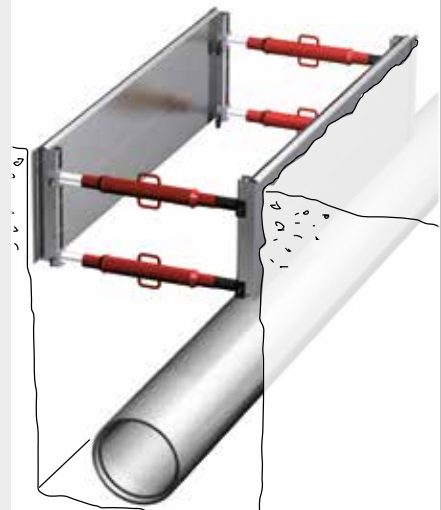
All the lightweight parts (max. 42 kg) can be transported to and from the site with a van or trailer. Once on site, the aluminium trench panels are quickly fitted together manually with aluminium connectors and trench struts to form trench shoring units to suit the depth required. All customary trench widths and depths and degrees of difficulty (crossing services, friable soils, cramped conditions) are easy to handle with the standard parts of the

LITEBOX aluminium trenching system – and no need for heavy plant either. An uncluttered working space of up to 2.85 m between the trench struts, trench widths of up to 2.26 m and pipe clearance heights of up to 2.50 m add up to ample space for excavating soil and installing services. The many applications include the laying of cables and gas and water pipes in open trenches, jacking and working pits for installing pipes and cables underground, installing and repairing service connections to buildings, inspection work, horticultural and landscaping works, etc. It is also possible to fit safety barriers to the system: Gi-A LITEBOX rail posts are simply inserted into the top of each aluminium trench panel.



## LITEBOX aluminium trench edge support

Partial shoring – for securing max. 1.75 m deep trenches



- Prevents the top edges of the trench from collapsing
- Suitable for stiff and cohesive soils as well as rocky ground
- Can be installed by two persons without plant

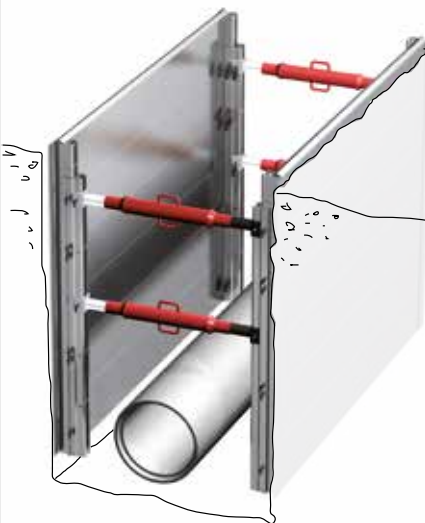
> System A, page 4





**LITEBOX aluminium trenching system**

Full shoring – fast and safe, for max. 6 m deep trenches



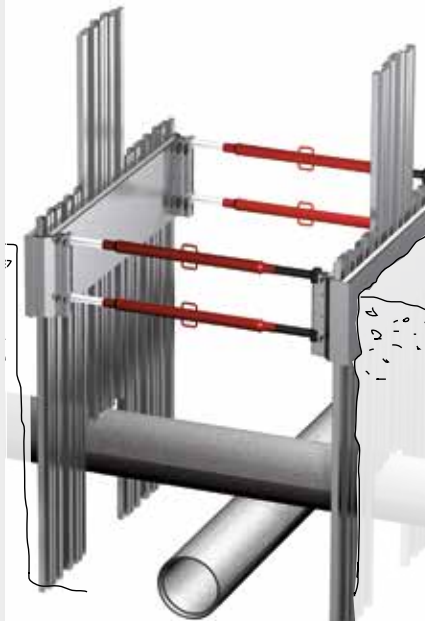
- Sides fully supported
- For soils that are stable for short periods
- Suitable for use in max. 6 m deep trenches

> Systems B to K, pages 6–7



**LITEBOX aluminium trench sheeting system**

Full shoring with flexible and adjustable aluminium trench sheets – for max. 3 m deep trenches, also in complex situations



- Easy to leave openings for crossing services
- Also suitable for friable and cohesionless soils
- Unobstructed view of trench sheets during installation
- Safe excavation between supported sides also possible
- Generous pipe clearance height

> System L, pages 8–9



**LITEBOX aluminium manhole shoring system**

Aluminium manhole shoring – fast and safe, for max. 6 m deep shafts



- Sides fully supported
- For soils that are stable for short periods
- The solution for jacking and working pits
- Suitable for supporting trench ends

> Systems M to N, page 10

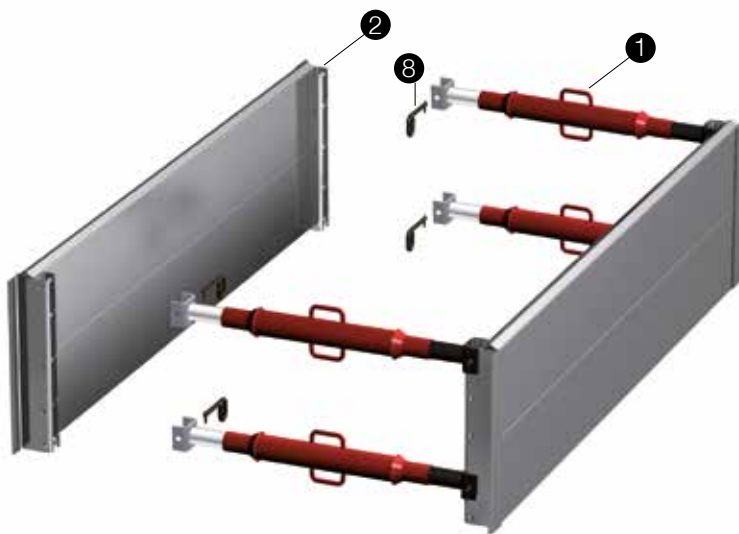


# LITEBOX aluminium trench edge support

## System A

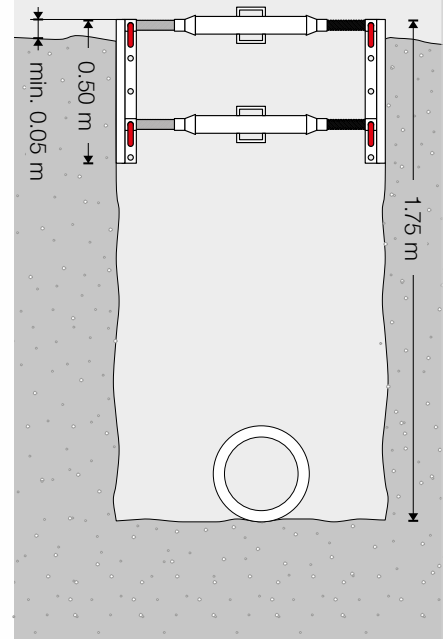
### LITEBOX aluminium trench edge support

#### System A



One frequent application for the LITEBOX aluminium trenching system is partial shoring with the aluminium trench edge support system in stable soils and for trenches no deeper than 1.75 m. Most buried services are within that depth. All the advantages of the modular system can be fully exploited for this straightforward application. A trench edge support unit weights no more than 130 kg.

### System A



#### Applications

Trench depth	1.75 m
Trench width	0.60 bis 2.18 m
max. pipe clearance height	0.75 m

#### Max. weight

with LITEBOX struts Gi-A/129-218	
3.00 m LITEBOX panels	130 kg
2.00 m LITEBOX panels	103 kg
1.55 m LITEBOX panels	93 kg

#### Components for system A

① LITEBOX struts Gi-A	4
② LITEBOX panels	2
⑧ Standard connecting pins Ø 13 mm	8



**Special application:  
LITEBOX aluminium trenching  
system as combination of  
trench shoring and formwork**

The diverse combination options render possible a whole range of solutions in practice. In this particular case, the LITEBOX aluminium trenching system was used to secure the sides of the trench and as formwork for a layer of blinding.



**Special application:  
LITEBOX panels as foundation  
formwork**

In certain cases, the LITEBOX aluminium trenching system can be used as formwork for small components.



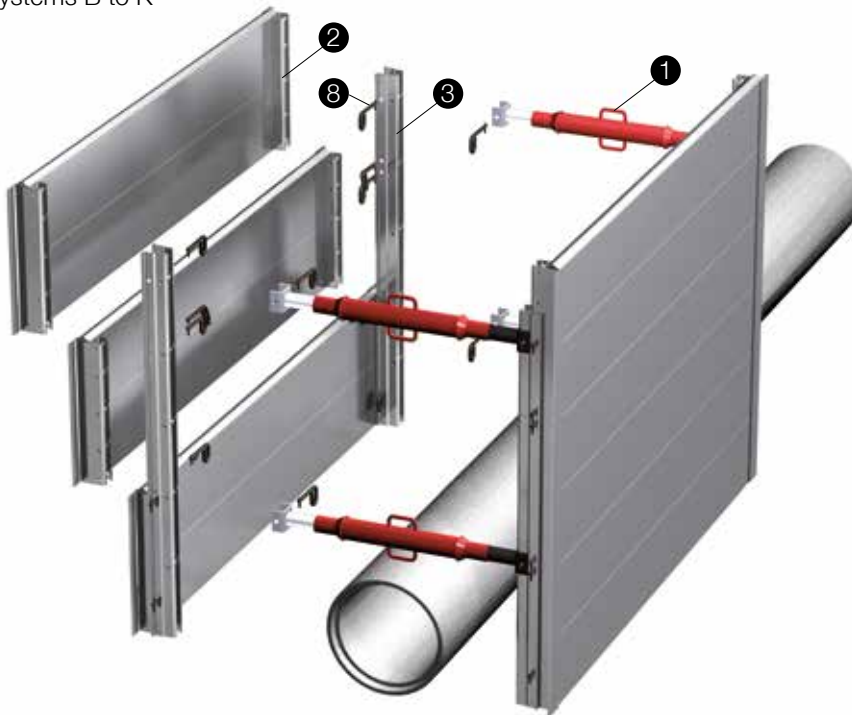


## LITEBOX aluminium trenching system

Systems B to K\*

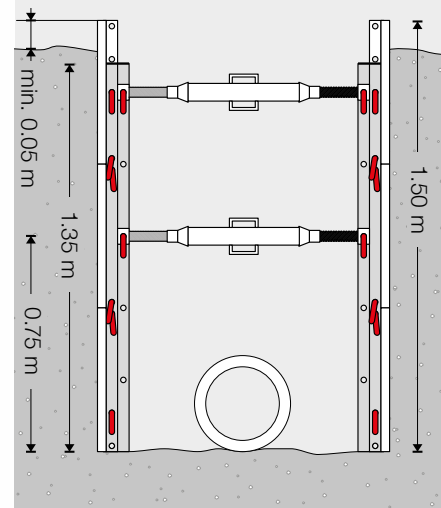
### LITEBOX aluminium trenching system

Systems B to K\*



Full shoring is required in trenches deeper than 1.75 m or where the soil remains stable for a short time only. Several aluminium trench panels are joined together with aluminium panel connectors to form large trench shoring units. This is the safe, quick answer for trenches as deep as 6 m. Trench struts of different lengths enable generous trench widths of up to 2.26 m.

### System B



#### Applications

Trench depth	1.50 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.75 m

#### Max. weight

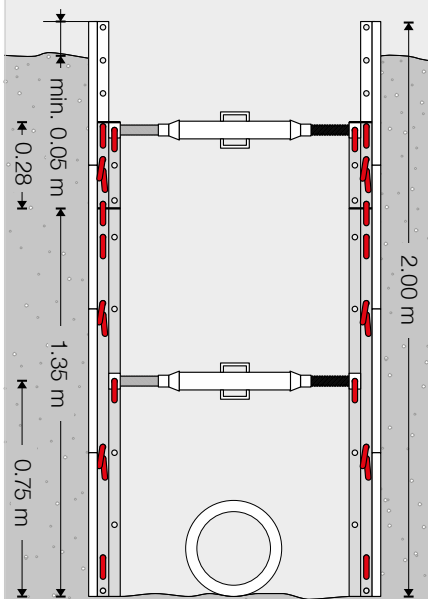
with LITEBOX struts Gi-A/129-218	
3.00 m LITEBOX panels	325 kg
2.00 m LITEBOX panels	242 kg
1.55 m LITEBOX panels	213 kg

#### Components for system B

① LITEBOX struts Gi-A	4
② LITEBOX panels	6
③ Panel connectors 0.28 m	-
Panel connectors 1.35 m	4
⑧ Standard connecting pins Ø13 mm	32

\*Trench depths > 3m (systems F to K) not illustrated. Package of components can be compiled on request.  
If 0.28 m connectors are only used, more struts may be needed and pipe clearance can be reduced, as each panel has to be supported by a strut.

### System C



#### Applications

Trench depth	2.00 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.75 m

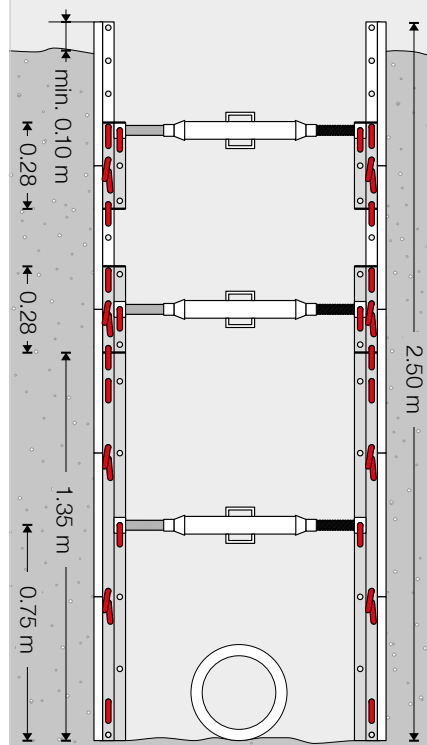
#### Max. weight

with LITEBOX struts Gi-A/129-218	
3.00 m LITEBOX panels	417 kg
2.00 m LITEBOX panels	307 kg
1.55 m LITEBOX panels	268 kg

#### Components for system C

① LITEBOX struts Gi-A	4
② LITEBOX panels	8
③ Panel connectors 0.28 m	4
Panel connectors 1.35 m	4
⑧ Standard connecting pins Ø 13 mm	48

### System D



#### Applications

Trench depth	2.50 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.75 m

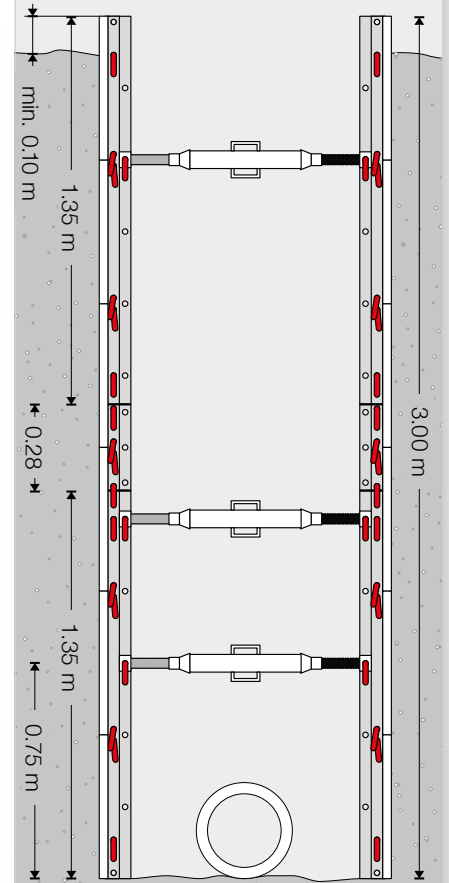
#### Max. weight

with LITEBOX struts Gi-A/129-218	
3.00 m LITEBOX panels	532 kg
2.00 m LITEBOX panels	394 kg
1.55 m LITEBOX panels	346 kg

#### Components for system D

① LITEBOX struts Gi-A	6
② LITEBOX panels	10
③ Panel connectors 0.28 m	8
Panel connectors 1.35 m	4
⑧ Standard connecting pins Ø 13 mm	68

### System E



#### Applications

Trench depth	3.00 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.75 m

#### Max. weight

with LITEBOX struts Gi-A/129-218	
3.00 m LITEBOX panels	635 kg
2.00 m LITEBOX panels	469 kg
1.55 m LITEBOX panels	411 kg

#### Components for system E

① LITEBOX struts Gi-A	6
② LITEBOX panels	12
③ Panel connectors 0.28 m	4
Panel connectors 1.35 m	8
⑧ Standard connecting pins Ø 13 mm	76



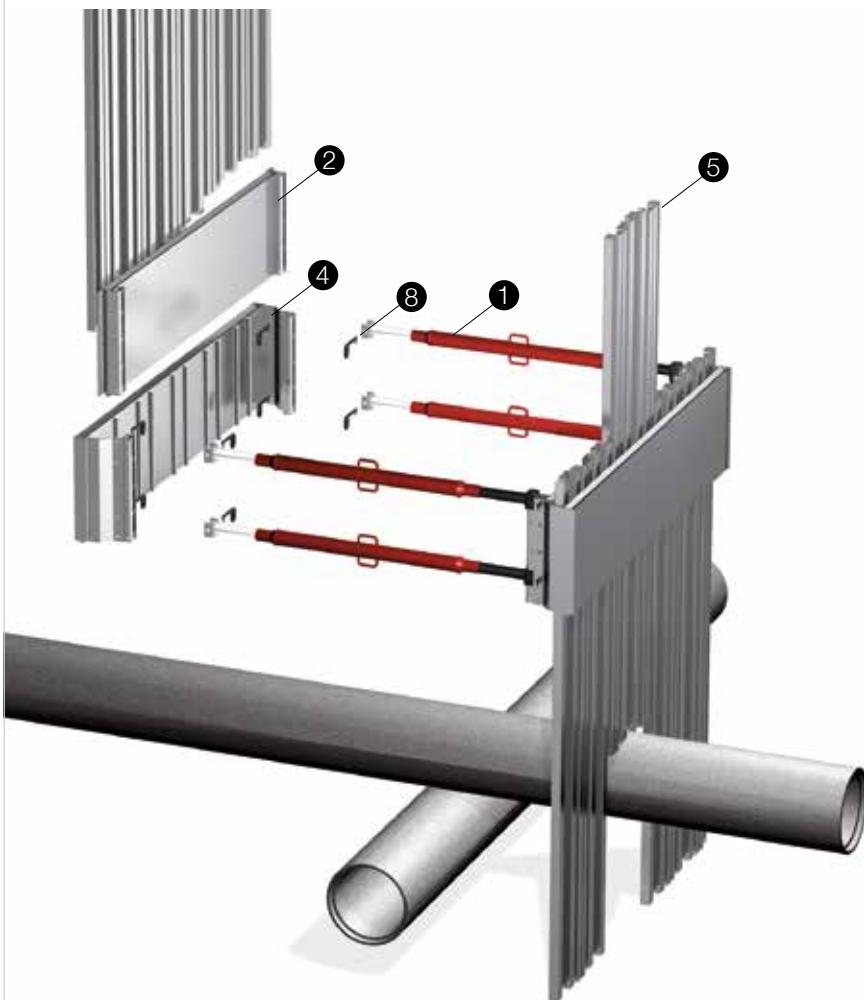
## LITEBOX aluminium trench sheeting system

### System L

### LITEBOX aluminium trench sheeting system

#### System L

Leaving openings for crossing services and other obstacles in trenches as deep as 3 m is easy with the LITEBOX aluminium trench sheeting system. Combining aluminium trench panels and aluminium guide panels enables the aluminium trench sheets to be installed in the ground over the depth required. Excavations can then be carried out in controlled conditions, safeguarded at all times by the trench lining – even in friable, unstable soils.



### System L

#### Applications

Trench width 0.91 bis 2.49 m

#### Trench max. 2 m deep

- Aluminium trench sheet 2.5 m
- Pipe clearance height 1.5 m
- Aluminium trench sheets not embedded in base of trench

#### Trench max. 3 m deep

- Aluminium trench sheet 3.5 m
- Pipe clearance height 2.5 m
- Aluminium trench sheets embedded in base of trench

#### Max. weight

with LITEBOX struts Gi-A/129-218

Aluminium trench sheets 2.50 m

457 kg

Aluminium trench sheets 3.50 m

569 kg

#### Components for system L

① LITEBOX struts Gi-A	4
② LITEBOX panels 2 m long	2
④ Aluminium guide panels	2
⑤ Aluminium trench sheets	20
⑧ Standard connecting pins Ø 13 mm	16





The simple solution for complex situations and large pipe clearance heights



Safe excavation with an unobstructed view and without relieving the soil



Lightweight and flexible, no need for heavy plant



Special application adjacent building, with shoring on one side of trench only



## LITEBOX aluminium manhole shoring system

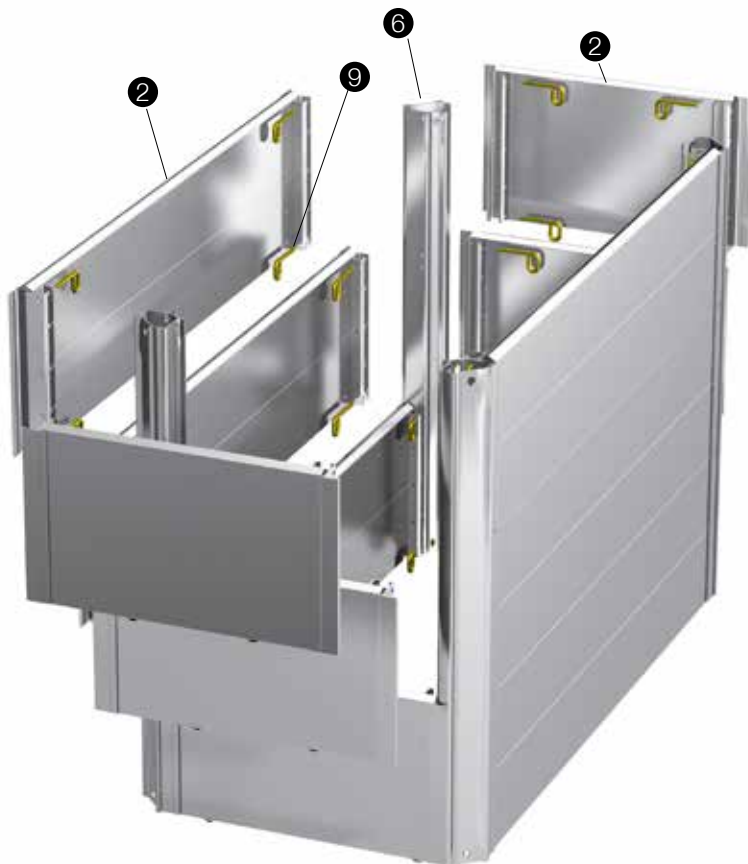
System M to N

### LITEBOX aluminium manhole full shoring system

System M (1.5 m excavation depth)

System N (3 m excavation depth, not illustrated)

Combining LITEBOX panels of different lengths enables shafts of various plan dimensions to be secured. An unobstructed working space without struts is possible in shafts down to a depth of 3 m. The simple and safe way to support jacking and working pits for installing pipes and cables underground. Left open on one side, the aluminium manhole shoring system is ideal for closing the end of a trench.



#### Applications

Excavation depth	bis 3.00 m
Excavation width	1 bis 3 m
Pipe clearance height in shaft	1 m

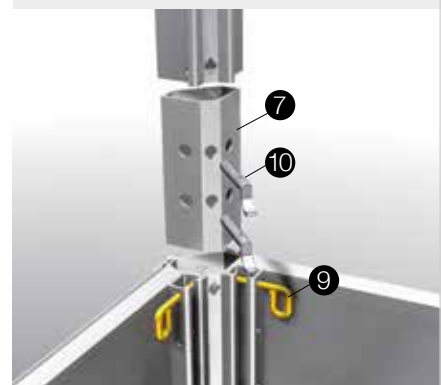
#### Components for system M

Excavation depth 1.5 m	
② LITEBOX panels, shaft length	6
LITEBOX panels, shaft width	6
⑥ Manhole corner profiles 1.5 m	4
⑩ Connecting pins Ø 13 mm	48

#### Components for system N

Excavation depth 3 m	
② LITEBOX panels, shaft length	12
LITEBOX panels, shaft width	12
⑥ Manhole corner profiles 1.5 m	8
⑦ Manhole corner connectors	4
⑨ Connecting pins Ø 13 mm	96
⑩ Connecting pins Ø 20 mm	8

Manhole corner profiles are joined together with manhole corner connectors (system N)





#### **Easy removal**

Manhole shoring can be removed in one piece or dismantled and the parts removed separately.



#### **Jacking and working pits**

Fitting manhole corner profiles to the open side of the shaft shoring results in a maximum pipe clearance height of 1 m in the shaft.



#### **Sides fully supported**

Up to a size of 2 x 2 m on plan, the system is suitable for manholes as deep as 6 m.





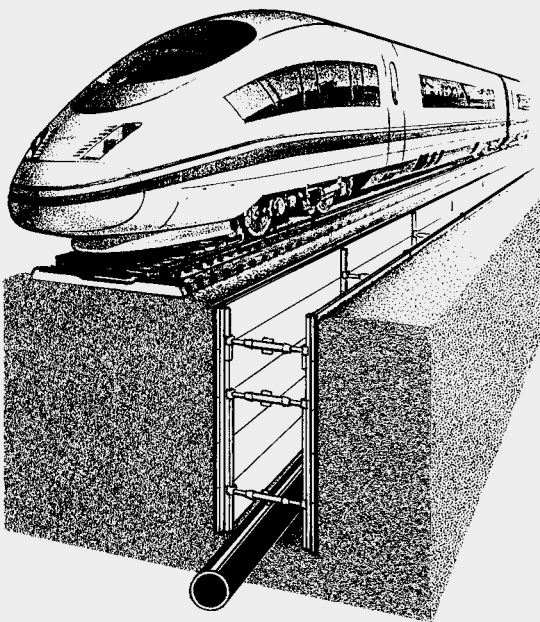
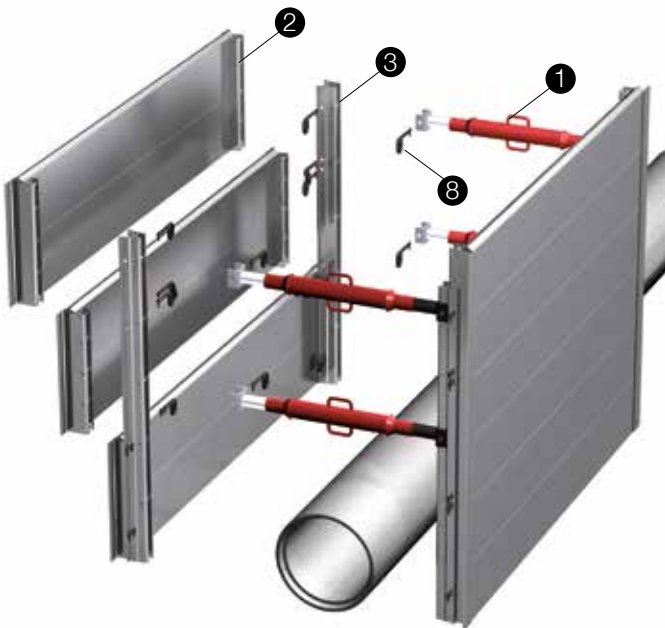
# LITEBOX aluminium trenching system

Systems C-rail to E-rail

## LITEBOX aluminium trenching system alongside railway lines

Systems C-rail to E-rail

With its low weight plus fast and simple assembly, the LITEBOX aluminium trenching system is the perfect answer to installing buried services alongside railway lines. Trenches as deep as 3 m are no problem at all. Verified typical calculations are available.

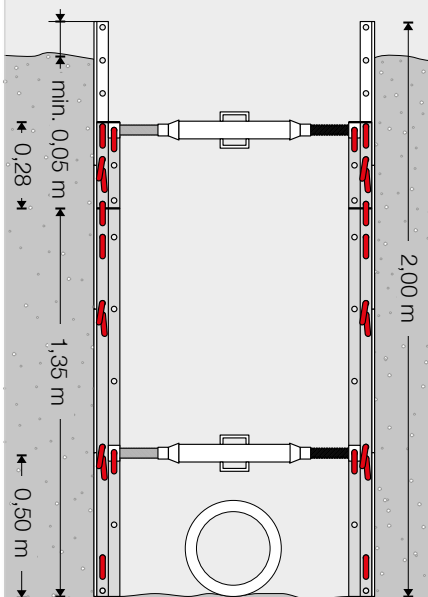


### Technical data for rail systems

LITEBOX panel	1.55 x 0.50 m	0.91 x 0.50 m
Permissible trench depth	3.00 m	3.00 m
Spacing of trench struts in trench direction	1.40 m	0.76 m
Pipe clearance height	0.50 m	0.50 m

It may also be possible to use 2 m aluminium trench panels depending on the ground conditions (angle of friction of soil  $\phi > 35^\circ$ ), but special agreement by DB Netz AG is needed. For further information, please refer to the typical calculations and the instructions for installation and use. Assumptions for structural calculations: loads to DIN 1054, RiL 836, RiL 804 and DIN Special Report 101 (load model 71 and SW/2) [consistent soil strata with  $\gamma = 20 \text{ kN/m}^3$  and angle of friction of soil  $\phi$  between  $25^\circ$  and  $35^\circ$ ].

### System C-rail



#### Applications

Trench depth	2.00 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.50 m

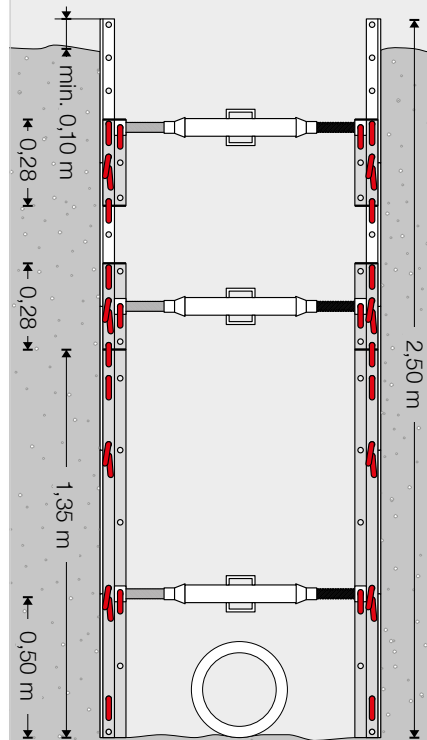
#### Max. weight

with LITEBOX struts Gi-A/129-218	
2.00 m LITEBOX panels	307 kg*
1.55 m LITEBOX panels	268 kg

#### Components for system C-rail

① LITEBOX struts Gi-A	4
② LITEBOX panels	8
③ Panel connectors 0.28 m	4
Panel connectors 1.35 m	4
⑧ Connecting pins	48

### System D-rail



#### Applications

Trench depth	2.50 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.50 m

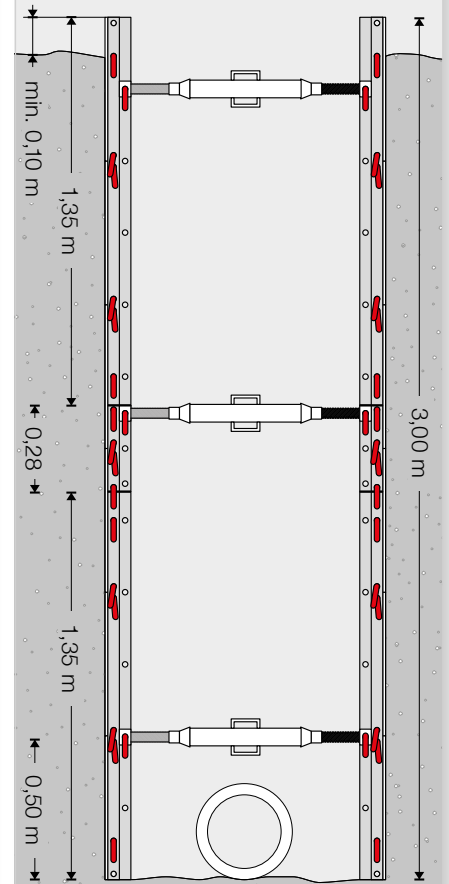
#### Max. weight

with LITEBOX struts Gi-A/129-218	
2.00 m LITEBOX panels	394 kg*
1.55 m LITEBOX panels	346 kg

#### Components for system D-rail

① LITEBOX struts Gi-A	6
② LITEBOX panels	10
③ Panel connectors 0.28 m	8
Panel connectors 1.35 m	4
⑧ Connecting pins	68

### System E-rail



#### Applications

Trench depth	3.00 m
Trench width	0.68 bis 2.26 m
max. pipe clearance height	0.50 m

#### Max. weight

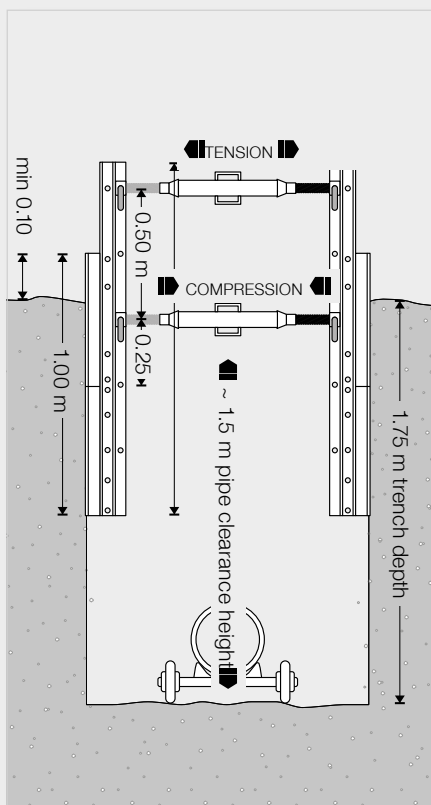
with LITEBOX struts Gi-A/129-218	
2.00 m LITEBOX panels	469 kg*
1.55 m LITEBOX panels	411 kg

#### Components for system E-rail

① LITEBOX struts Gi-A	6
② LITEBOX panels	12
③ Panel connectors 0.28 m	4
Panel connectors 1.35 m	8
⑧ Connecting pins	76

\*Special agreement by DB Netz AG necessary

## Special applications



### Special solution for laying long pipes

- up to 12 m long
- 0.3 m diameter
- 1.75 m deep trench without repositioning trench struts



### Temporary barrier at tunnel entrance

A wide range of applications is possible in combination with Ischebeck's aluminium TITAN Megashore system.







## Earth pressure according to civil engineering employers' liability insurance association (TBG)

Trench depth [m]	≤ 3	4	5	6
Earth pressure $e_k$ [kN/m <sup>2</sup> ]	17.5	23.0	28.6	34.1
Pipe clearance height [m]	0.75	0.75	0.50	0.50

## LITEBOX aluminium trenching system (systems B to K)

Average weight approx. 30 kg/m<sup>2</sup>

LITEBOX panel [m]	3.00 x 0.50	2.00 x 0.50	1.55 x 0.50	0.91 x 0.50
Permissible trench depth [m]	3.00	6.00	6.00	6.00
Spacing of trench struts in trench direction [m]	2.85	1.85	1.40	0.76

In the case of repositioning trench struts while laying the pipe, the largest permissible spacing of the trench struts may not exceed 1.15 m.

## LITEBOX aluminium trench sheeting system (system L)

Average weight approx. 30 kg/m<sup>2</sup>

LITEBOX panel [m]	2.00 x 0.50	
Aluminium trench sheet [m]	2.50 without embedment in base of trench	3.00 with embedment in base of trench
Pipe clearance height [m]	1.50	2.50

## LITEBOX aluminium manhole shoring system (systems M to N)

10 possible plan forms for aluminium manhole shoring system [m]:

3.00 x 3.00 (3.20 x 3.20)	–	–	–
3.00 x 2.00 (3.20 x 2.20)	2.00 x 2.00 (2.20 x 2.20)	–	–
3.00 x 1.55 (3.20 x 1.75)	2.00 x 1.55 (2.20 x 1.75)	1.55 x 1.55 (1.75 x 1.75)	–
3.00 x 0.91 (3.20 x 1.11)	2.00 x 0.91 (2.20 x 1.11)	1.55 x 0.91 (1.75 x 1.11)	0.91 x 0.91 (1.11 x 1.11)

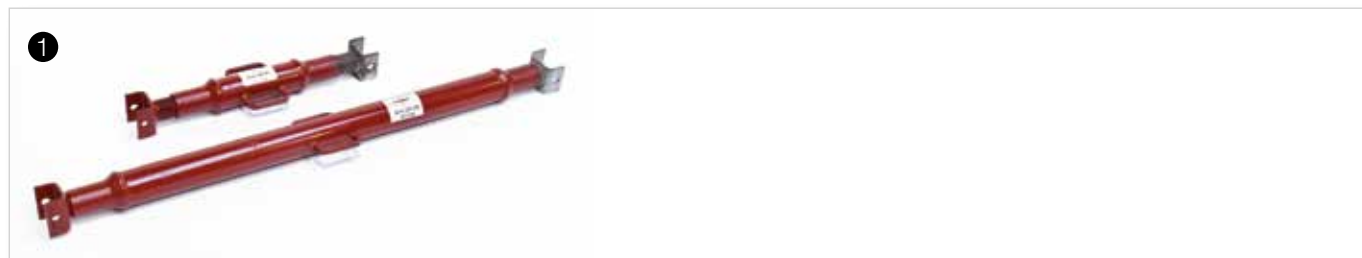
Dims. in ( ) = external dims. of aluminium manhole shoring system

## Dependability

The safety aspects of the LITEBOX aluminium trenching system have been checked by a specialist committee of the civil engineering employers' liability insurance association (TBG).

The LITEBOX aluminium trenching system complies with the requirements of DIN 4124 and DIN EN 13331. For further planning information, please refer to the instructions for installation and use for the LITEBOX aluminium trenching system and the LITEBOX aluminium trench sheet guide units.

## Overview of system components and useful accessories



**LITEBOX strut Gi-A** (2 Standard connecting pins Ø 13 mm included)  
 External dims, LITEBOX aluminum trenching system without connector  
 External dims, LITEBOX aluminum trenching system with connector  
 External dims, LITEBOX aluminium trench sheeting system  
 Permissible loading depending on spindle travel  
 Weight  
 Art.no.

**Gi-A / 60 - 81**  
 0.60 - 0.81 m  
 0.68 - 0.89 m  
 0.91 - 1.12 m  
 103.5 - 56.4 kN  
 5.54 kg  
 0130504524

**Gi-A / 80 - 121**  
 0.80 - 1.21 m  
 0.88 - 1.29 m  
 1.11 - 1.52 m  
 98.9 - 56.1 kN  
 7.35 kg  
 0130504525

**Gi-A / 129 - 218**  
 1.29 - 2.18 m  
 1.37 - 2.26 m  
 1.60 - 2.49 m  
 84.3 - 44.2 kN  
 11.49 kg  
 0130504526



### LITEBOX panel

Length	Weight	Art.no.
0.91 m	15.2 kg	0230500021
1.55 m	23.5 kg	0130500010
2 m	28.3 kg	0130500011
2.55 m	36.7 kg	0130500013
3 m	42.1 kg	0130500012



### Panel connector

Length	Weight	Art.no.
0.28 m	2.03 kg	0130504587
1.35 m	6.55 kg	0130504590
1.85 m	9.00 kg	0130504594
4, 6 or 8 Standard connecting pins included (Ø 13 mm).		



### Aluminium guide panel

Length	Weight	Art.no.
2.055 m	37 kg	0130500080
4 Standard connecting pins included		



### Aluminium trench sheet

A total of 20 aluminium trench sheets are required per trench sheeting unit.

Length	Weight	Art.no.
2.50 m	14 kg	0630500084
3.50 m	19.6 kg	0630500086



### Manhole corner profile

Manhole corner profiles are supplied with 4 or 12 connecting pins (Ø 13 mm, yellow).

Length	Weight	Art.no.
0.50 m	3.8 kg	0130504593
1.50 m	11.0 kg	0130504597



### Manhole corner connector

For connecting two aluminium manhole corner profiles for deeper shafts; 2 connecting pins included (Ø 20 mm with nib, galvanized).

Length	Weight	Art.no.
0.3 m	1.4 kg	0130504598



#### Standard connecting pin with drop-down locking nib, Ø 13 mm

For fixing LITEBOX panels, Gi-A LITEBOX struts, panel connectors, 3-D lifting eyes, holding brackets etc.; colour: black.

Weight 0.25 kg  
Art.no. 0130500088



#### Connectin pin, Ø 13 mm

For connecting LITEBOX panels to man-hole corner Profiles; colour: yellow.

Weight 0.20 kg  
Art.no. 0130500096



#### Connectin pin, Ø 20 mm

With nib, for connecting manhole corner profiles and corner connectors, galvanized.

Weight 0.5 kg  
Art.no. 0130500099



#### Strut spanner

For the easy tightening and releasing of trench struts.

Weight 2.61 kg  
Art.no. 0620210060



#### Holding bracket

Can be used to secure the trench lining system against slippage or to attach guard rail posts; 2 standard connecting pins included (Ø 13 mm).

Weight 4.3 kg  
Art.no. 0130504516



#### Guard rail post

Optional, for erecting a safety barrier alongside the trench; (Ø 48 mm x 1.11 m, galvanized).

Weight 5.8 kg  
Art.no. 0130500089



**Useful accessories**  
for trench lining units



**Lifting eye for manhole corners**  
The lifting eye can be attached to the top of a manhole corner and used to lift either the entire manhole shoring or just the corner element out of the excavation. Extracting the corner element in stages enables the LITEBOX panels to be removed from the bottom of the excavation. 1 connecting pin included (Ø 20 mm with nib, galvanized).  
Weight 1.05 kg  
Art.no. 0330504594



**3-D lifting eye**  
A 3-D lifting eye is attached to each of the four corners of a trench lining unit. A hook can then be attached to each one so that the unit can be lifted and placed in a trench or lifted out of a trench.  
- 2 standard connecting pins included (Ø 13 mm, black).  
- permissible load 10 kN  
Weight 1.50 kg  
Art.no. 0130504541



**Lifting sling**  
For the safe installation and removal of trench lining units. Four 3-D lifting eyes are required on trench lining units or four lifting eyes for manhole lining units.  
- permissible load 10 kN, DIN 7541  
Weight 3.99 kg  
Art.no. 0630500040

## Useful accessories for LITEBOX strongframe systems



### Driving head

This protects the aluminium trench sheets when being installed with an excavator bucket or similar plant.

Weight 1.9 kg  
Art.no. 0630500083



### Lifting clamp

The lifting clamp is fitted to an aluminium trench sheet so that it can be extracted with an excavator bucket or similar plant.

Weight 3.0 kg  
Art.no. 0630500081



### Positioner 38

Attached to aluminium trench sheets as fixing point or to prevent slippage.

Weight 0.1 kg  
Art.no. 0620490058



LITEBOX aluminium trenching system is the ideal system for inner-city building sites.



It is easy to leave gaps in the LITEBOX aluminium trench sheeting system to accommodate crossing services. Also suitable as shoring in friable, unstable soils.

#### Formworking Systems



#### Trenching Systems



#### Geotechnic



Certified Management-System to DIN EN ISO 9001 / 2008 ; Registry-No. DE-96-010



#### FRIEDR. ISCHEBECK GMBH

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