



## Summary


### Technical data

KS - Assembly and operating manual **KIF**

Technical characteristics KS TB

Designation	Height	Length	Weight	Max. depth	Max. width	Max. length	Max. weight
KS TB 100	100	100	100	100	100	100	100
KS TB 150	150	150	150	150	150	150	150
KS TB 200	200	200	200	200	200	200	200
KS TB 250	250	250	250	250	250	250	250
KS TB 300	300	300	300	300	300	300	300
KS TB 350	350	350	350	350	350	350	350
KS TB 400	400	400	400	400	400	400	400
KS TB 450	450	450	450	450	450	450	450
KS TB 500	500	500	500	500	500	500	500
KS TB 550	550	550	550	550	550	550	550
KS TB 600	600	600	600	600	600	600	600
KS TB 650	650	650	650	650	650	650	650
KS TB 700	700	700	700	700	700	700	700
KS TB 750	750	750	750	750	750	750	750
KS TB 800	800	800	800	800	800	800	800
KS TB 850	850	850	850	850	850	850	850
KS TB 900	900	900	900	900	900	900	900
KS TB 950	950	950	950	950	950	950	950
KS TB 1000	1000	1000	1000	1000	1000	1000	1000

KS - Assembly and operating manual **KIF**



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### Montage



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### Implementation



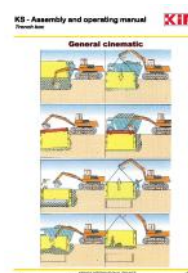
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### Extraction



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### Cinematic



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# KS - Assembly and operating manual

## Trench box



Your Trench Shoring equipment is a monoblock box system, KS type (KS60 or KS100 according to the thickness of the panel).

This system allows :

- To assure safety of the workers in the trench,
- To secure the stability of the surrounding grounds, and the near by houses or buildings (buried works, roads, buildings).
- To control and estimate the volumes of excavation and embankment works,
- To control the daily rate production

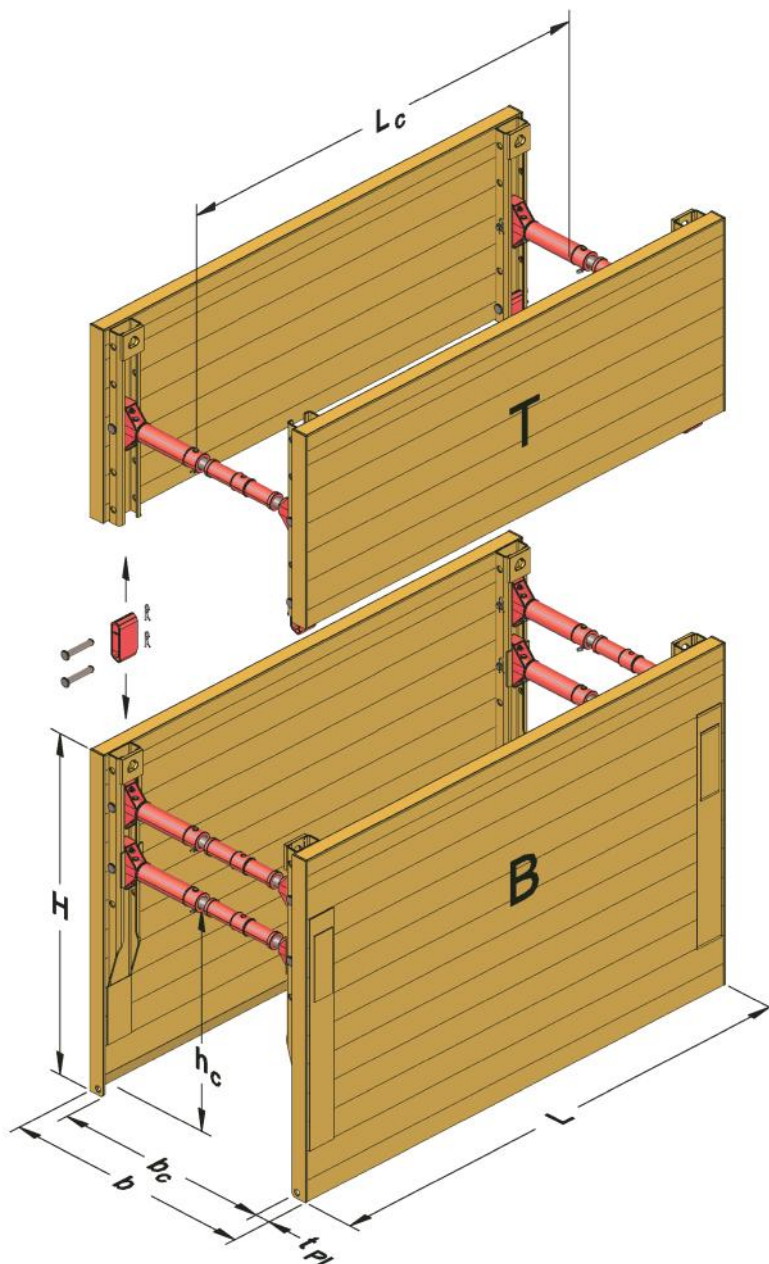
***NO!***



***YES!***



Based on the depth to be reached, the characteristics of works to be executed, the nature of the ground met as well as the capacities of lifting of the handling machine , the KS Box perfectly meets the needs of the construction site.



H	Plate height
L	Plate length
H <sub>c</sub>	Pipe culvert height
L <sub>c</sub>	Pipe culvert length
b <sub>c</sub>	Working width
b	Shoring width
t <sub>pl</sub>	Plate thickness

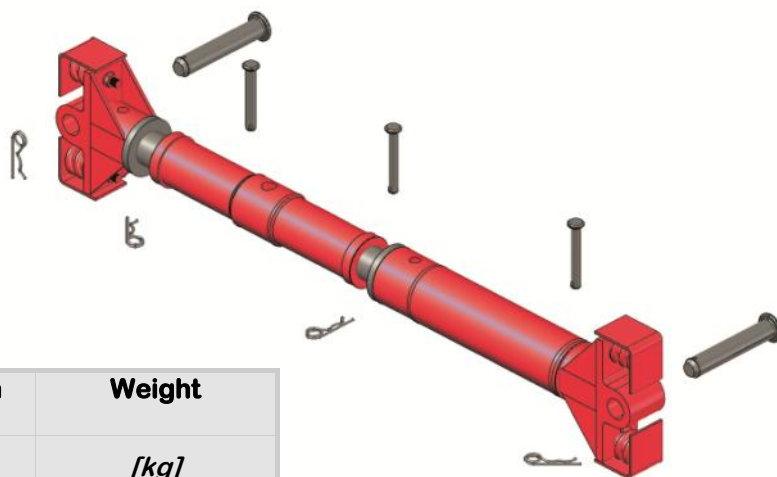
### Technical characteristics KS 60

Base plate LxH	Weight box	Pipe culvert height H <sub>c</sub>	Pipe culvert length L <sub>c</sub>	Thickness plate t <sub>pl</sub>	State design load limit ed
[mm]	[kg]	[mm]	[mm]	[mm]	[kN/m <sup>2</sup> ]
KS 2000x2400	1120	1355	1600	60	66.2
KS 2500x2400	1240	1355	2100	60	49.8
KS 3000x2400	1360	1355	2600	60	33.0
KS 3500x2400	1710	1355	3030	60	32.9
Top plate					
KSA 2000x1300	610	-	1600	60	66.2
KSA 2500x1300	680	-	2100	60	49.8
KSA 3000x1300	750	-	2600	60	33.0
KSA 3500x1300	960	-	3030	60	32.9

Any other dimension, consult us.

#### Tensile forces:

- lifting eyes at the plate head Rd = 229 kN
- bottom eyes Rd = 23 kN



Brace extension	Working width b <sub>c</sub>	Shoring width b	Weight
[mm]	[m]	[m]	[kg]
0	0.99-1.29	1.11-1.41	71.0
300	1.29-1.59	1.14-1.71	+ 15.5
500	1.49-1.79	1.61-1.91	+ 20.0
800	1.79-2.09	1.91-2.21	+ 26.7
1000	1.99-2.29	2.11-2.41	+ 31.1

# KS - Assembly and operating manual

## Trench box



### Technical characteristics KS 100

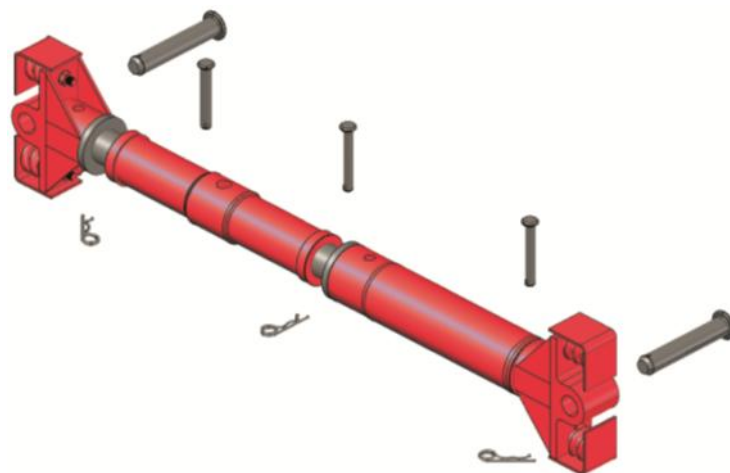
Base plate LxH	Weight box	Pipe culvert height H <sub>c</sub>	Pipe culvert length L <sub>c</sub>	Thickness plate t <sub>pl</sub>	State design load limit ed
[mm]	[kg]	[mm]	[mm]	[mm]	[kN/m <sup>2</sup> ]
KS 2000x2400	1460	1535	1614	100	97.5
KS 2500x2400	1650	1535	2114	100	78.0
KS 3000x2400	1850	1535	2614	100	65.0
KS 3500x2400	2050	1535	3114	100	55.7
KS 3750x2400	2150	1535	3364	100	51.3
<b>KS 3750x2900</b>	<b>2630</b>	<b>1875</b>	<b>3364</b>	<b>100</b>	<b>45.0</b>
KS 4000x2400	2240	1535	3614	100	44.6
KS 4500x2400	2570	1535	4114	120	42.9
KS 5000x2400	2780	1535	4614	120	34.3
<b>Top plate</b>					
KSA 2000x1300	840	-	1614	100	97.5
KSA 2500x1300	970	-	2114	100	78.0
KSA 3000x1300	1090	-	2614	100	65.0
KSA 3500x1300	1210	-	3114	100	55.7
KSA 3750x1300	1270	-	3364	100	51.3
KSA 4000x1300	1340	-	3614	100	44.6
KSA 4500x1300	1690	-	4114	120	42.9
KSA 5000x1300	1830	-	4614	120	34.3

Any other dimension, consult us.

#### Tensile forces:

- lifting eyes at the plate head Rd = 229 kN
- bottom eyes Rd = 47 kN

Brace extension	Working width b <sub>c</sub>	Shoring width b	Weight
[mm]	[m]	[m]	[kg]
0	0.99-1.29	1.20-1.50	71.0
300	1.29-1.59	1.50-1.80	+ 15.5
500	1.49-1.79	1.70-2.00	+ 20.0
800	1.79-2.09	2.00-2.50	+ 26.7
1000	1.99-2.29	2.20-3.00	+ 31.1



### **A. General**

The monoblock K.I.F box, appears under the shape of 2 panels of the same dimensions put face to face. The space between the panels is adapted with rigid mechanical jacks.

For the assembly, it is necessary to plan:

- A mean of handling (mechanical shovel, forklift truck or a mobile crane),
- Two workers accompanying the driver of the handling machine,
- 4 leg chain/slings with 4 safety hooks / standards (DIN 5687 / DIN 5688 / ISO 3076 NF 818 4/+A1),
- A sledgehammer, a steel bar, or a jack key. Some ropes to help the rotation of the box, when it is handled under the bucket of the excavator
- Our standard equipment does not require any keys for bolting.

Standards must be respected:

- DIN 4124 Excavations and open-air trenches
- DIN IN 13331 parts 1 and 2 trench shoring systems.
- Safety regulations of the occupational health.
- Instructions for the prevention of the accidents / instructions relative to the safety at work.

Our trench shoring system carries the GS initials (certified Safety), which means it is in compliance with the current European Standards.

### **B. Lifting and transport**

Only the handling rings can be used for lifting (hooks , ropes).

The means of handling must be adapted to the weight to be transported.

By security measure, only hooks provided with a screed can be used (safety hooks).

The transport should be made as close as possible of the ground to avoid any useless and dangerous pendular movement.

It is forbidden to stay in the zone of gyration of the hoisting device as well as under raised loads.

Be very careful with the existing areal electric lines !

A permanent eye contact must be maintained between the driver and the person who guides him.

### **C. Measures to reduce hazards:**

The construction site must be well bounded and secured (ribbons, barriers or other means of protection).

The surrounding road traffic must be secured if necessary, by additional staff.

The staff has to wear safety clothes (helmet, safety footwear, gloves).

Possible instabilities due to the wind which can arise during the assembly or the installation of the trench shoring equipment must be considered (use of ropes).

The trench shoring systems and parts should be stored in a horizontal way, on a stable ground.

During the installation, the instructions of the mode of use must be respected.

### **D. Maintenance & repair**

Normaly, the different parts of the equipment should be checked before installation.

Original KIF spare parts can be used during repairs.

We draw your attention on the fact that any repair made by yourself and if you use spare parts from other manufacturers, will cancel the guarantee.

Due to the intense utilization of the equipment, all parts should be repainted with anti-rust paint, every two years.

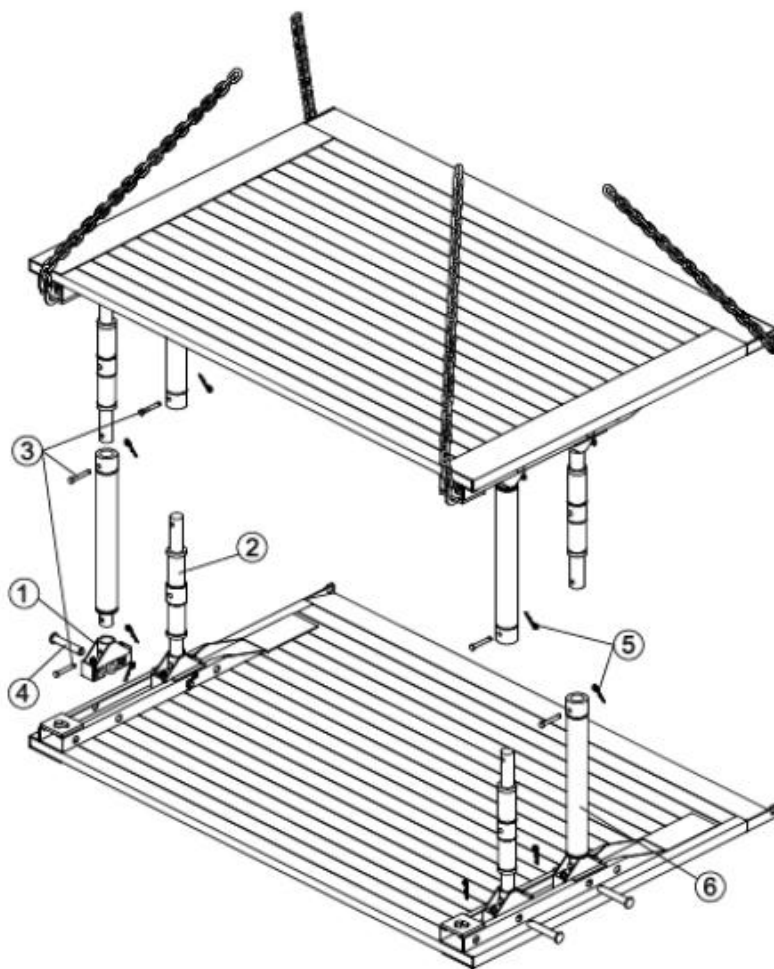
### E. Montage:

- The panels are lying flat on the ground.
- Set up the spindle supports in the sliding guide where the drillings are located.
- Fix the spindle supports with the bolt  $\text{\O}40\text{mm}$  and the supplied safety clips.
- Insert the jacks into the spindle supports.
  - ✎ Please check for the same opening for the spindles
- Fix the spindles with the bolt  $\text{\O}20\text{mm}$  and the supplied safety clips.
  - ✎ Head upwards for the bolt  $\text{\O}20\text{mm}$ .
- Prepare the second panel with the spindle supports.
- Renew the operation in order to set up the trench box with the bolts and safety clips.

Spindle-extensions can be supplied in case your trench boxes need a wider width other than the standard width (standard spindle).

The connection between spindles and spindle-extensions is set up with  $\text{\O}20\text{mm}$  bolts and safety clips.

- ✎ A quincunx set up of the spindle/spindle-extension/spindle is recommended.



- |   |                  |   |                        |   |                  |
|---|------------------|---|------------------------|---|------------------|
| 1 | Mushroom spring  | 3 | Bolt $\text{\O}20*140$ | 5 | Safety clip beta |
| 2 | Mechanical strut | 4 | Bolt $\text{\O}40*212$ |   |                  |

# KS - Assembly and operating manual

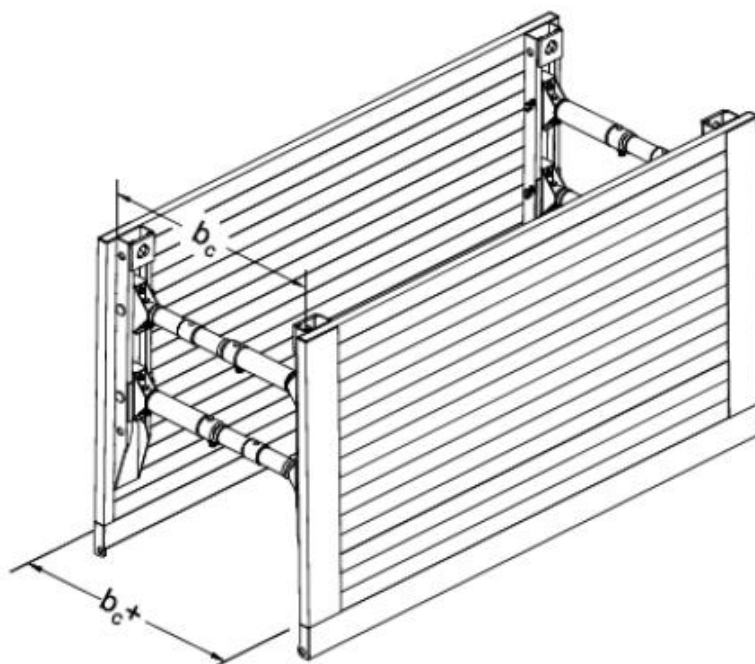
## Trench box



The bottom spindles should be a little bit more open (a few centimeters) than the top ones (the trench box should be in a « A » shape).

When assembly is finished, handling and installation can be done.

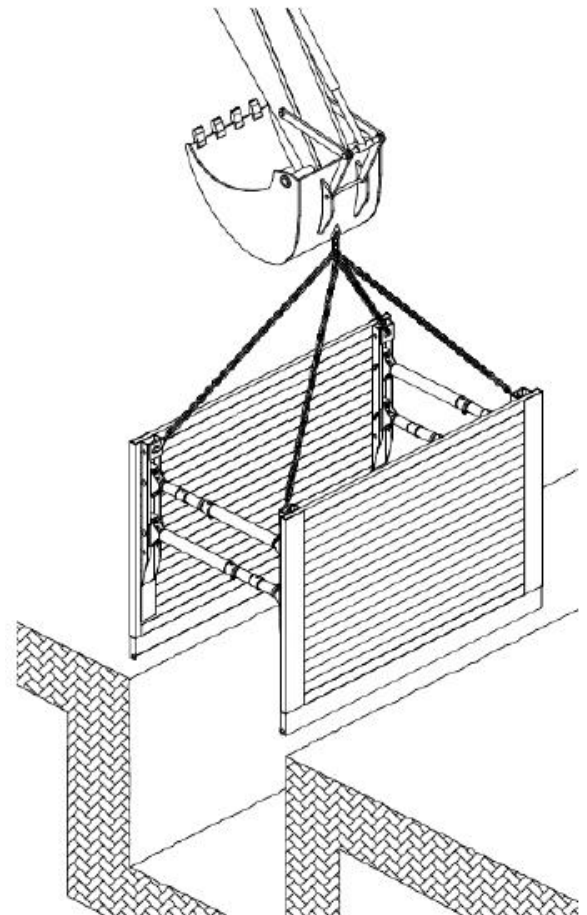
Panels are manufactured with lifting rings; it is FORBIDDEN to raise the equipment with the chain- sling attached or hooked to the spindles.





### F. Installation phases:

The ideal use of a trench box consists in making an excavation down to the required depth, and before whoever can step down inside, install the box.

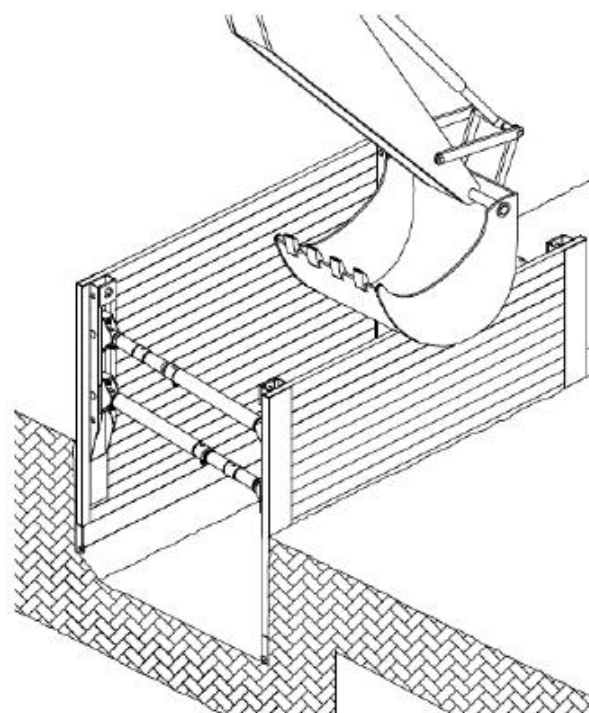
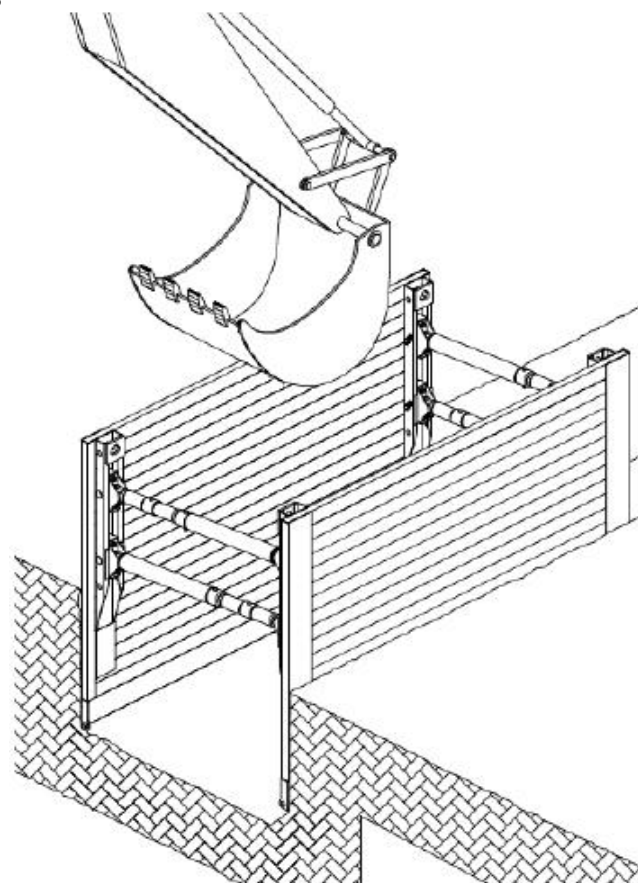


# KS - Assembly and operating manual

## Trench box



In case of a non-cohesive ground, we recommend a pre-excitation; in this situation, the trench box is lowered by means of the “cut and lowering down” method. The panels will be protected with the “head panel protectors”.



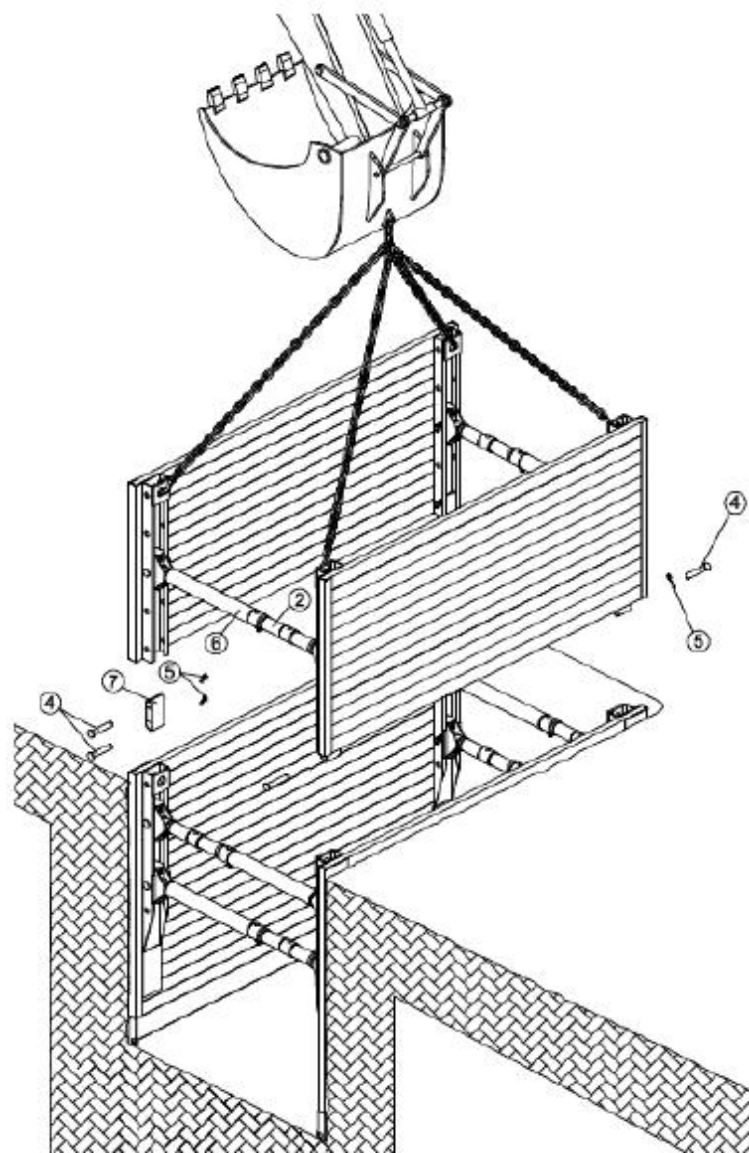
Heavy head protectors can be used to preserve the head of panels at the time of the installation by cutting method.

# KS - Assembly and operating manual

## Trench box



Extension panels can be added in order to reach deeper excavations. Junction devices (4 junction units per box) connect the base and extension or top panels.



2 Mechanical strut

5 Safety clip beta

7 Box connector

4 Bolt Ø40

6 Extension pipe

✎ The base box is equipped with 2 spindles lines in every extremity, as for the extension box it has only one spindle line.



When the trench box reaches the required depth, the preparation of the bottom can begin. In certain cases, a concrete slab is poured; the panels can be used as external formwork. Polystyrene sheets can be applied between the panels and the concrete to be poured.

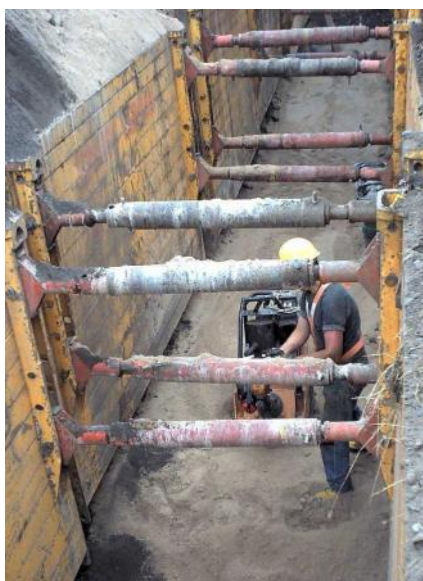


### **G. Back filling - Extraction**

Generally, the excavator having made the excavation and the installation of the boxes is capable of removing these ones. The extraction is made in the opposite direction than the installation.

The trench box is hooked with the 4 safety hooks of the 4 leg chain-sling. Pull upward the left and right panel alternately. Back fill and compact every 50 cm.

Compact the bottom and repeat the operation as required.



## General cinematic

