

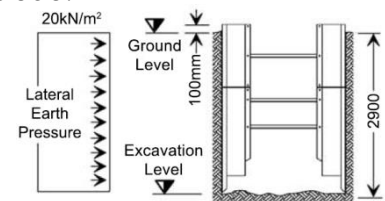
## Introduction

This information guide is intended to provide the user with a basic guide; drawing on aspects of handling, assembly, installation and use. The manhole box is intended for shoring of trenches, all major components have handling and lifting points for safe slinging. Backhoe boxes are not normally suitable for use in water bearing soils.

## Design

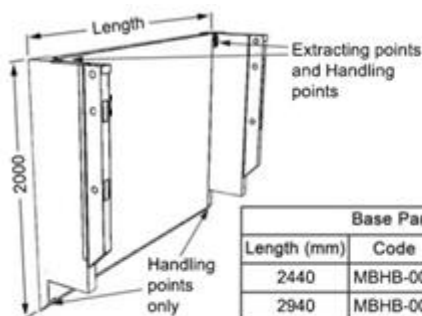
Typical working pressures that the manhole box can sustain are as shown below. Users are advised to check that their excavation will not impose greater working pressures than these. Conditions likely to increase lateral earth pressure include:

- Close proximity of structures
- Adjacent excavated or construction materials
- Close proximity of site roads/railways

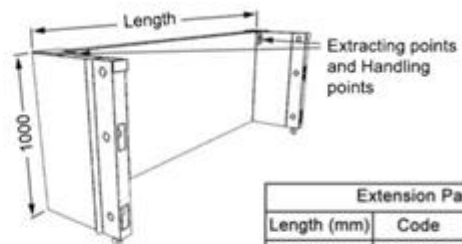


Users should note that settlement of the reinstated grounds and grounds next to the box are likely to occur after backfilling.

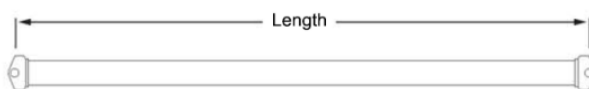
## Component Identification & Dimensions



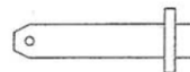
Base Panel		
Length (mm)	Code	Weight (kg)
2440	MBHB-001	470
2940	MBHB-004	510



Extension Panel		
Length (mm)	Code	Weight (kg)
2440	MBHB-002	260
2940	MBHB-005	285



Fixed Length Strut		
Length (mm)	Code	Weight (kg)
1350	MBHB-003	15.0
1850	MBHB-006	18.0



Pin with 'R' Clip



10mm Chain Sling



Connector Chain

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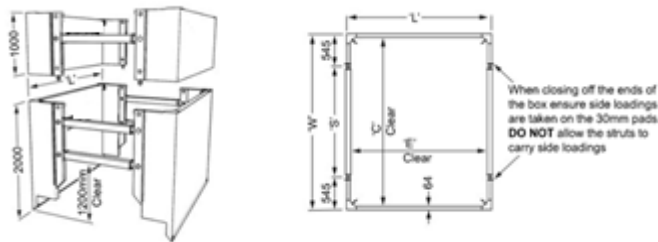
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### Connection Details

All connections are via the 25mm diameter pin 125mm long (BHB-004). These are:

- Strut end to panel
- Extension panel to base panel

### Dimensions and Weights (Completed Boxes)



Description	Kit Code	'L' (mm)	'W' (mm)	'S' (mm)	'C' (mm)	'E' (mm)	Weight (kg)
2.5m Long Base	MBHBB-01	2440	2440	1350	2312	2248	1004
3.0m Long Base	MBHBB-02	2940	2940	1850	2812	2748	1100
2.5m Long Extension	MBHBE-01	2440	2440	1350	2312	2248	556
3.0m Long Extension	MBHBE-02	2940	2940	1850	2812	2784	614

The 2.5m manhole box is suitable for Manhole ring sizes: 1050mm, 1200mm and 1350mm

The 3.0m manhole box is suitable for Manhole ring sizes: 1500mm, 1800mm and 2100mm

**NOTE:** The weights tabulated above are based on theoretical weights (+5% for debris etc.)

### Offloading & Site Handling of Backhoe Boxes

- Regulations require suitably trained, experienced and supervised personnel to be deployed
- A suitable appliance is required for off-loading and assembly. The machine lifting capacity and clearance under the lifting point should be checked against the sizes and weights of the box components and the assembly/dismantling stages.
- Lifting chains of suitable length and capacity complete with current certification. Typically a set of 4 leg 10mm chains with 3m leg length complete with safety hooks and shortening clutches.
- Edge protection, access and hard standing areas include: a suitable area for off-loading; a hard standing area for the machine to lift the box; suitable access equipment for connection/removal of chains; ladders and other provisions to provide safe access into and out of the trench.
- Clients should ensure that upon removal, the equipment is returned in sections as supplied.

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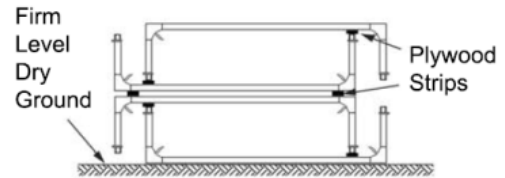
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## Stacking, Handling & Transportation

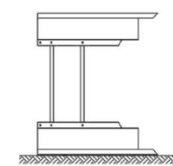
In dismantled form and in transit:

Base and extension panels should be stacked as shown with suitable timber dunnage (Max 4 per stack). Strut components and pins must be stored in skips/bins. During transportation stacks should be securely restrained to the vehicle bed.

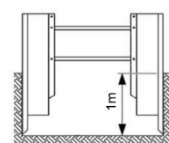


Onsite, if not in use – separate the base boxes from extension boxes. Dismantle extension boxes and store as above. Base boxes should be stored on their side or temporarily dug in when not in use. Uneven or sloping ground and/or wind loading can result in inadequate stability if left upright.

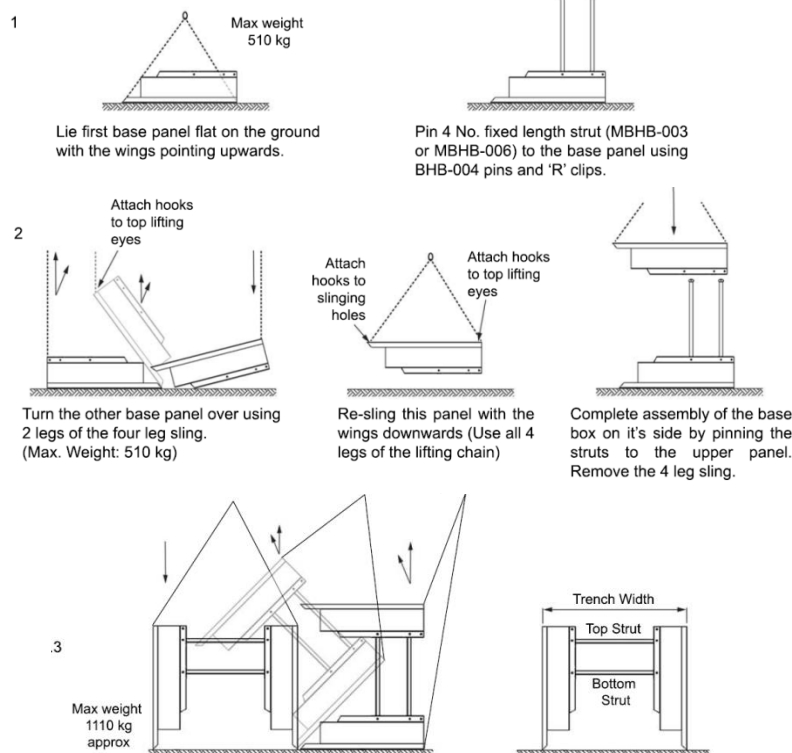
Lie base boxes on their side.



or leave them temporarily dug in 1m



## Site Assembly of Backhoe Base Boxes (Dismantling in reverse procedure)



Attach 2 chains of the sling to UPPER lifting eyes of UPPERMOST panel and 2 chains of sling to UPPER lifting eyes on LOWER panel. Stand the box on it's cutting edges with great care to avoid damaging the struts. It is important to ensure the weights and radius are well within the lifting capacity of the machine to allow for impact and lurching effects as the box is turned upright. The completed base box can now

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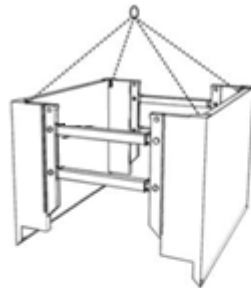
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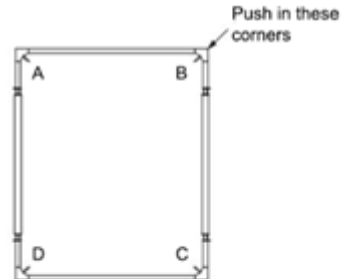
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## Installation of Manhole Base Box

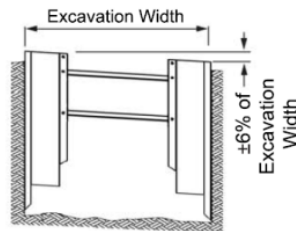


After standing upright check all pins and safety clips are in place. Lift the box using the four leg chain sling attached to the lifting points at the top of each panel.

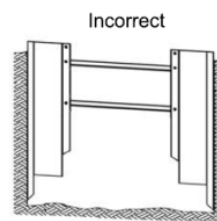
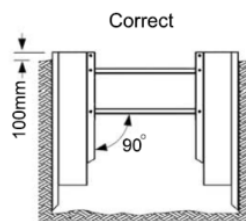
10.2



Dig the manhole approx. 600-1000mm deep to the correct width, and using the four leg sling place the box in the excavation. By digging between the box panels and pushing down on the ends of the panels, the box can be installed to the correct depth. Always dig below the panels before pushing down. Push only on the corners of each panel and never in the middle. When pushing the box panels down, always push down in the sequence shown and never diagonally across corners. i.e. push A then B followed by C then D, and not A then C or B then D.



During the dig and push operation (10.2) restrict the advance of one panel over the other to 6% of the box width.



When the required excavation level is reached and the box sunk to full depth, ensure that the struts are horizontal and at right angles to the panels before entering the excavation.

**DO NOT** use any unsupported part of the excavation for access. Leave the top of the box 100mm above the surrounding ground level.

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## Installation of Manhole Extension Box (removal in reverse procedure)

**NOTE:** It is recommended that the extension box is not fully pre-assembled prior to fitting on to base box, to ease installation.

Dig and Push base box to within say 300mm of top of base box.

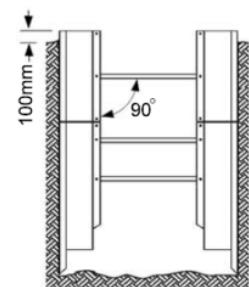
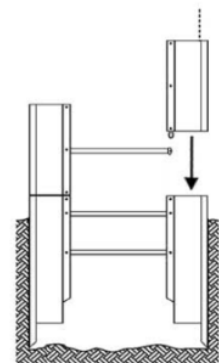
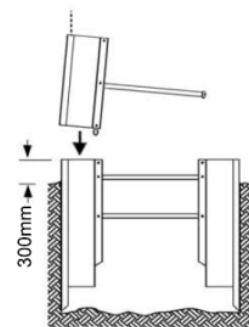
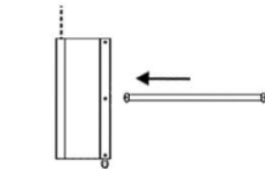
Lift one extension panel upright using two legs of the 4 leg chain sling (max. weight 285kg) and pin two no. fixed length struts (MBHB-003 or MBHB-006) to the panel using BHB-004 pins and 'R' clips.

Lift the extension panel complete with struts (max. weight 330kg) and lower onto one side of the base box. Secure to the base box with BHB-004 pins and 'R' clips.

Lift the second extension panel upright using two legs of the 4 leg chain sling and lower onto the other base panel, at the same time locating the two number struts into the panel. Secure the panel to the base box using BHB-004 pins and 'R' clips.

Continue the dig and push operation until the required excavation level is reached. Ensure all the struts are horizontal and at right angles to the panels before entering the excavation.

**DO NOT** use any unsupported part of the excavation for access. Leave the extension 100mm minimum above the surrounding ground level.



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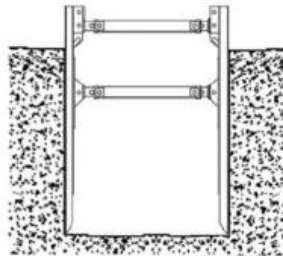
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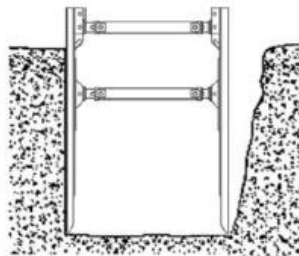
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### Before Entering the Trench

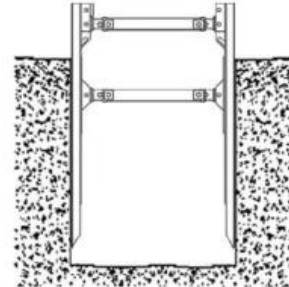


Correct

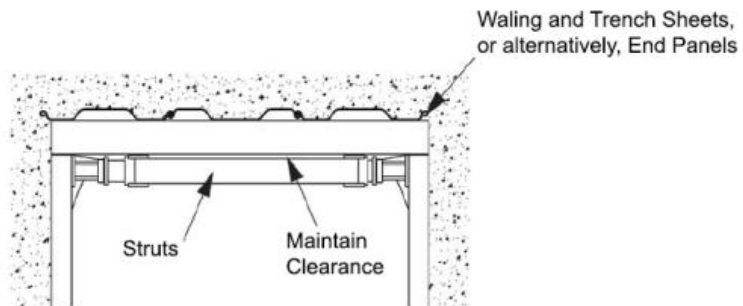
Ensure that there are **NO** voids between the box panel and the trench sides as this may cause the box to move sideways.



Incorrect



**DO NOT** leave the base of the box 'flying' above the trench level.



When stopping off the end of the trench, steel walers should be used to support the sheets off the end of the panels. Never use the struts as supports for the trench sheets.

### Entering the Supported Trench

- Use a ladder to enter the working space between the struts of the backhoe box
- DO NOT climb up or down the struts
- DO NOT use any unsupported part of the trench for access
- DO NOT move the box when personnel are inside
- Wear a safety helmet to minimise the risk of injury
- Ensure that the excavator operator is aware of your intentions

### Precautions during Use and Maintenance

Regularly check all pins are in place and 'R' clips are fitted. Avoid lateral loading on struts – either by hanging or propping from them or by accidental striking. Damaged struts should not be used.

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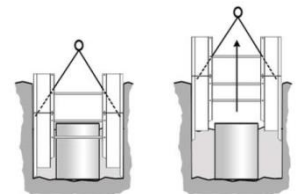
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### Extraction of Backhoe Boxes

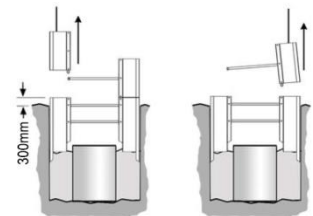
It is usually more difficult to extract the box than to insert them due to settlement of grounds against the modules. Methods for extracting are as follows, please remember that lifting must be done at the points provided. No personnel must be inside the box whilst extracting.

#### Normal Method

After initial backfilling and compaction, lift the base box complete with extension box (if fitted), from the trench using the 4 leg chain attached to all 4 upper lifting points of the 2 base panels. Continue backfilling as removal of the box proceeds.

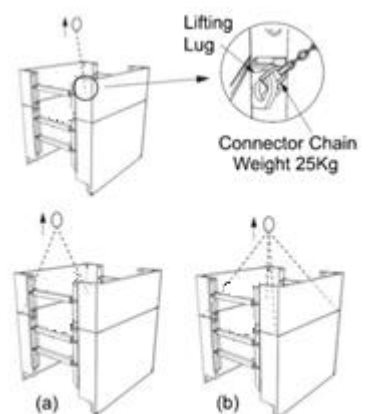


Alternatively, if the extension box is to be removed from the base box, lift as above until the top of the base box is roughly 300mm above ground level. Remove the two corner pins securing one of the extension panels to the base and the two pins securing one of the extension panels to the struts. Lift the panel from the base. Removing the two corner pins, secure the other extension panel to the base and lift this panel complete with struts from the base. Remove struts from extension panel and stack as advised. DO NOT remove the extension panels before the top of the base is above ground level. DO NOT remove the extension box as a complete unit from the base box.



#### Wet Ground Removal

In such conditions, it may be required to pull one corner of the box at a time to begin moving. Connect the single leg connector chain to the upper lifting points of each base panel in turn and pull vertically to free the box. Always fit the chain slings to the base panels of the Backhoe box and never the extension panels.



Once the box is free, attach 2 legs of the chain sling to the upper lifting points on 1 of the base panels (a). Pull this panel up then repeat on the second base panel.

The box can now be lifted from the excavation site using the 4 leg chain attached to all 4 lifting points on the base box (b).

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