MARWOOD GROUP LTD

Manhole Boxes Safety Information and Instructions

1.0 General Information

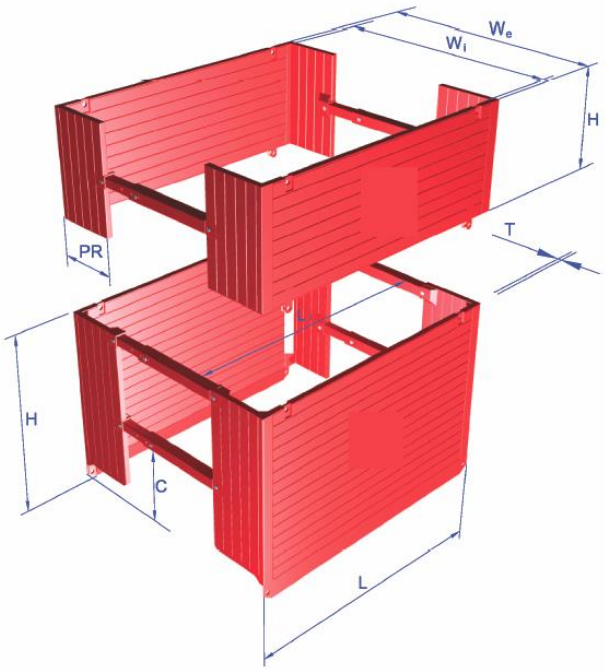
- Manhole boxes are a two-sided mechanical excavation support system with integrated return/end panels.
- They are designed to be installed by an excavator using the dig and push technique.
- Manhole boxes are ideal for providing safety during manhole construction.
- They are manufactured and designed in compliance with BS EN 13331: 2002 Parts 1 and 2 Manhole Lining Systems.
- Manhole boxes are fabricated from Grade S355 steel.
- They have a 40kN/m² panel resistance SWL for MGF.
- The clearance under the lower strut is 900mm.
- Manhole boxes are suitable for handling by small-sized excavators.
- They provide a fast, safe, and economical method of providing manhole safety.
- Following applicable safety regulations and guidelines is crucial when working with manhole boxes.

Marwoods recommends that the operating radius of the excavator should be checked for boxes wider than 1055mm.
A risk assessment must be completed prior to the use and suitability of this equipment.
Marwoods also recommends that a suitable 4 leg lifting chains is used when turned upright (10mm x 6.7 tonne).

MGF square sockets component list

	Size (mm)	Weight (kg)	Struts	Struts pins & R clips	Connector pins & clips
Base Unit	2500 x 2000	1540	4	12	N/A
Top Unit	2500 x 1100	938	2	6	4

Technical Specification



Description L x H	2500 x 2020 Base	2500 x 1100 Top	3000 x 2020 Base	3000 x 1100 Top
Alternative Name	Mini Base	Mini Top	Midi Base	Midi Top
Max Depth** (m)	4.22	N/A	4.22	N/A
Panel Thick/ Weight T(mm)/(kg)	60/ 684	60/ 414	60/ 767	60/ 459
Approx Assembled Weight (kg)	1540	938	1692	1018
Internal Trench Width* Wi(mm)	2380	2380	2880	2880
Trench Width* We(mm)	2500	2500	3000	3000
Clearance Below Bottom Struts C(mm)	923	N/A	923	N/A
Clearance Between Struts Li(mm)	2251	2251	2751	2751
Panel Return PR (mm)	670	670	670	670

The principal contractor must carry out suitable checks to make sure those carrying out the work are fully trained and that safe working practices are always followed on site. When selecting trench support systems, careful consideration should be given to appropriateness for the task at hand. Matching manhole box sizes to the installed drainage can significantly reduce the number of trench box joints, thereby minimising pinch point risks.

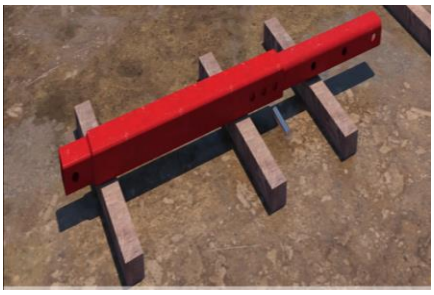
2.0 Safety Instructions

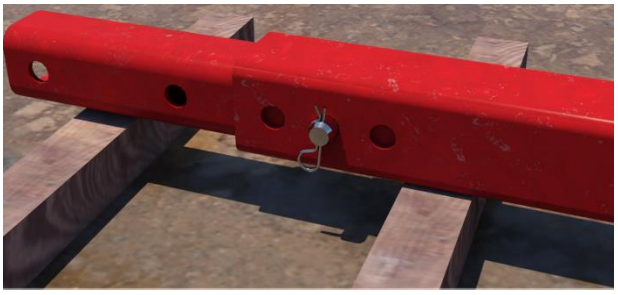
- Only qualified authorised/suitably trained personnel should be allowed to operate Manholes and accessories.
- The competent person must plan, manage and supervise the installation, alteration or removal of excavation support project.
- Correct manual handling techniques must always be used and PPE as detailed in the specific risk assessment must be worn at all times. Pinch points must be included and a hierarchy of control should be applied to mitigate this specific hazard effectively.
- A land and ground survey must also be carried out to check also for any utilities (electrical, cables and gas or water supply) below the Manhole. It is recommended the use of gas detector and breathing equipment.
- Continually monitor groundwater, soil and air by sight, smell and use gas detection equipment when working in excavation.
- Boxes should only be used in the configurations shown in section 1.0.
- Boxes should not be used in very weak ground (especially very soft clays and peats) or where significant groundwater is present.
- Boxes are not suitable for usage in Manholes with multiple service crossings.
- Boxes are not normally suitable for usage where ground movement is an issue and are therefore not recommended for use in live carriageway situations or adjacent to existing buildings / structures.
- Lifting of the box above the base of the excavation is strictly prohibited.
- Boxes should not be left in-situ for extended periods within cohesive soil as adhesion on the panel surfaces may prevent safe removal.
- The operating instructions should be always available.

Ladders must be present around the excavation to provide easy access in and exit in the Manholes. (usually about 8 metres or less)

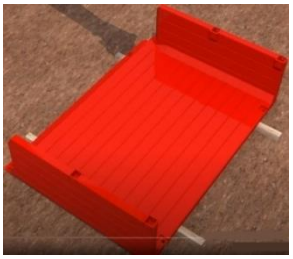
3.0 Installation Guidelines for Manhole Box Assembly

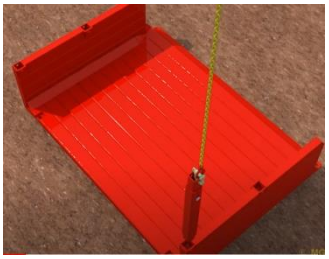
Before commencing installation, all components must be laid on ground on timber skids. Panel should be laid so that the strut pockets are facing skyward.





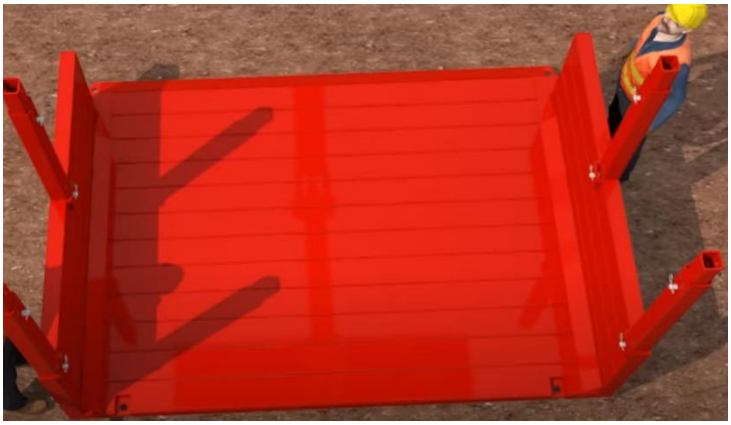
The telescopic strut should be built up to the correct length by sleeving the inner strust into the outer securing using the supplied connecting pin and r-clips



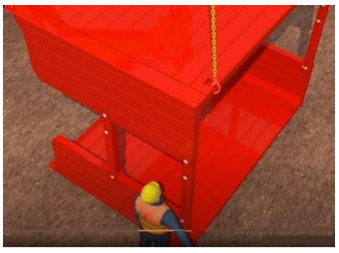


1) Always install/remove the system from a position of safety. Place a Manholebox panel on its back and carefully lower the assembled strut into the strut pockets using a suitably rated shackle.

2) Secure with a pin and r-clip. Make sure to take extra care throughout this operation due to finger trap hazards. Pin should be inserted from the outside of the panel.



3) Attach the remaining struts into the three remaining pockets on the Manhole box panels



4) Using an excavator gently lower the second Manhole box panel over the struts and secure using pin and r-clips

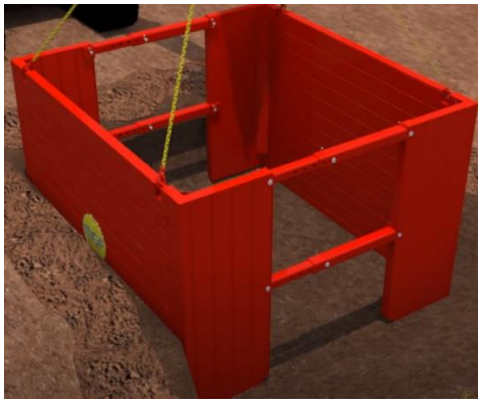
5) With the box laying on timber skids on stable ground, attach a two-leg chain to the handling point of the upper panel and using an excavator orientate the Manhole box into vertical position

Note: As the handling of this equipment has an increased risk with it. Care must taken to avoid the equipment slipping causing injuries or trapping. It is essential to ensure that trench support systems are installed without any gaps.

4.0 Installation Guidelines using the Manhole Boxes

1) Mark out the digging area. Place pedestrian barrier around the excavation area. Start with 1m depth

2) While digging, the spoil must be located away from the excavation and its zone of influence.



3) Lower the assembled Manhole box into the excavation.

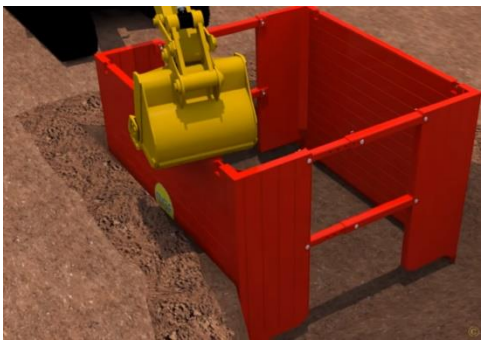
4) Operatives on even ground to remove chains only if the box upstand is 1m above ground level

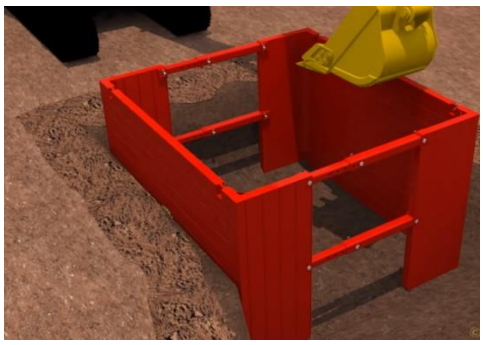
5) These barriers are temporary control measure to highlight the open excavation hazard

Marwood Group Ltd recommends to use the Edgesafe panel as soon as possible

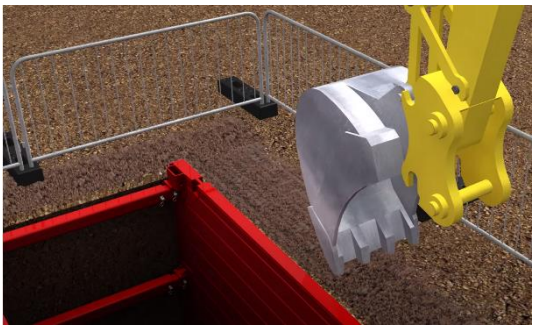
Marwood would always recommend the use of Edge Safe Panels which conform to the latest Temporary Edge Protection Systems legislation BS EN13374 and keeps operators safe from open excavations.

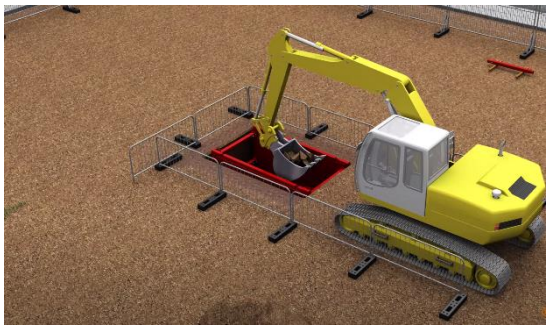
6) Carefully dig the next state of the excavation.





7) Using the excavator bucket, dig and gently push down each corner of the Manholebox about 300mm increments. Take care to avoid damage to the panels.





8) Level off ground prior to movement of pedestrian barriers.

9) Operative to check the correct dig depth. Approximately 200mm upstand of the box is recommended before a top box is installed.

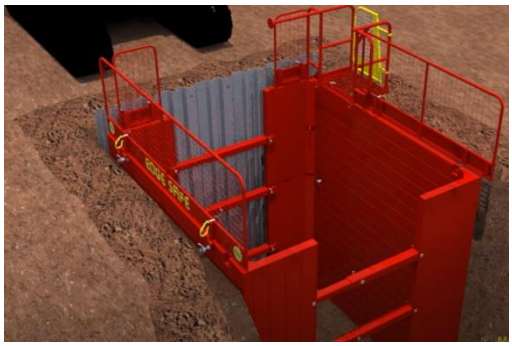
10) Using an excavator, lower the top onto the base using connection points. Marwoods do not recommend that more than 2 Top units be used with any one Base unit.

11) Operatives behind the pedestrian barriers to attach the top to the base using pins from outside and r-clips from inside of the Manhole box. Always ensure a safe and secure means of access prior to entry

12) Operative to remove chains from top box.

13) Using the excavator bucket repeat the dig and push process to the required depth. 300mm increments. On reaching the final depth, secure the box by back filling against the panels and if required batter back the opened ends of the excavations. End safe panels or trench sheets could be used to secure the ends.

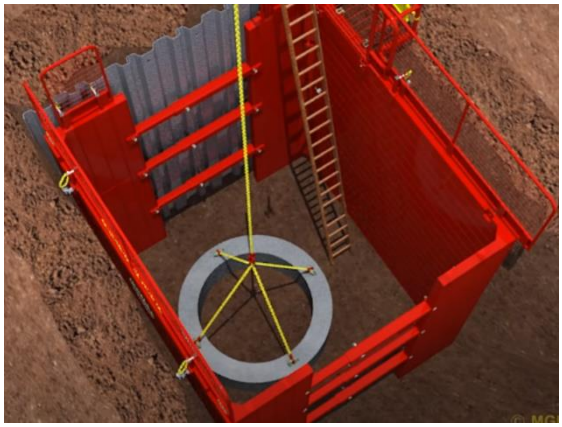
14) Behind pedestrian barriers, two operatives attach edgesafe and secure with clips and r-clips



15) To close off the open edge of the Manhole walls, Trench sheet or edgesafe panels can be used. Using the excavator quick hitch, gently push on the Manhole sheet until it has reach the required depth.

16) If a ladders safe platform is required, lower the platform over the Manholebox panel and secure with pin and r-clips.

17) The ladder must be 1m beyond the ladder pole. Secure the ladder with a minimum 3m of rope



Note: Flying of the box above the base is not recommended.

Removal of the Manholebox
The above process is used in reverse to safely remove the installed Manholebox. Extraction of the boxes commences by backfilling around the installed structure. Any edgesafe or ladder safe installed should be removed by loosening the clamps. A chain is attached in turn to each lifting point slowly applied an upward force to break any adhesion that may have occurred between the panel and the ground. The Manhole Box should be progressively withdrawn, as the excavation is backfilled. Once top unit is cleared from ground, connect a 4 Leg chain as stated above and remove the 4 pins with r-clips of the connection points on the box. Repeat the extraction process for the base unit.

5.0 Maintenance & Inspection of Manhole Boxes

- A visual inspection is required to be carried by a competent person before and after its use.
- A competent person must inspect excavations at the start of each shift before work begins, after any event likely to have affected the strength or stability of the excavation and after any accidental fall of rock, earth or other material.
- Any distortion, damage or security concern about the boxes or its accessories must be reported to the competent person and the box must not be used until it is deemed safe.
- Make sure that the connector pins and R-clips are in good condition.

A written report should be made after most inspections. Stop work if the inspections show the excavation or equipment is unsafe.

Transportation Notes
The panels will be supplied by Marwood Depot as per configuration below. For collection, back to Marwood Depot, ensure that they are properly laid flat as per photo with sets of wood bites in between the panels (opposite ends on top of each other). Ensure that the panels are securely strapped to the lorry. The panels must not create any hazard while in transit. Take extra care when loading and unloading the load.

This equipment must not be modified

All pictures shown are for illustration purpose only. Colours may look different on computer monitors and cell phone screens.

The principal contractor and site personnel are advised to familiarise themselves with: -

The Construction (Design and Management) Regulations 2015

Health and Safety at Work etc. Act 1974

Good Practice and Safety Topics from HSE

Web links may be broken, if this is the case, please search the description stated above in your search engine website.

Visit our website URL for more details and a copy of the Instructions