

Title

Manhole Lifter

Issue

1

Date

July 2014

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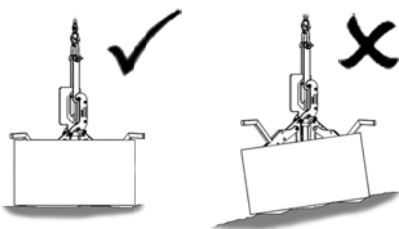
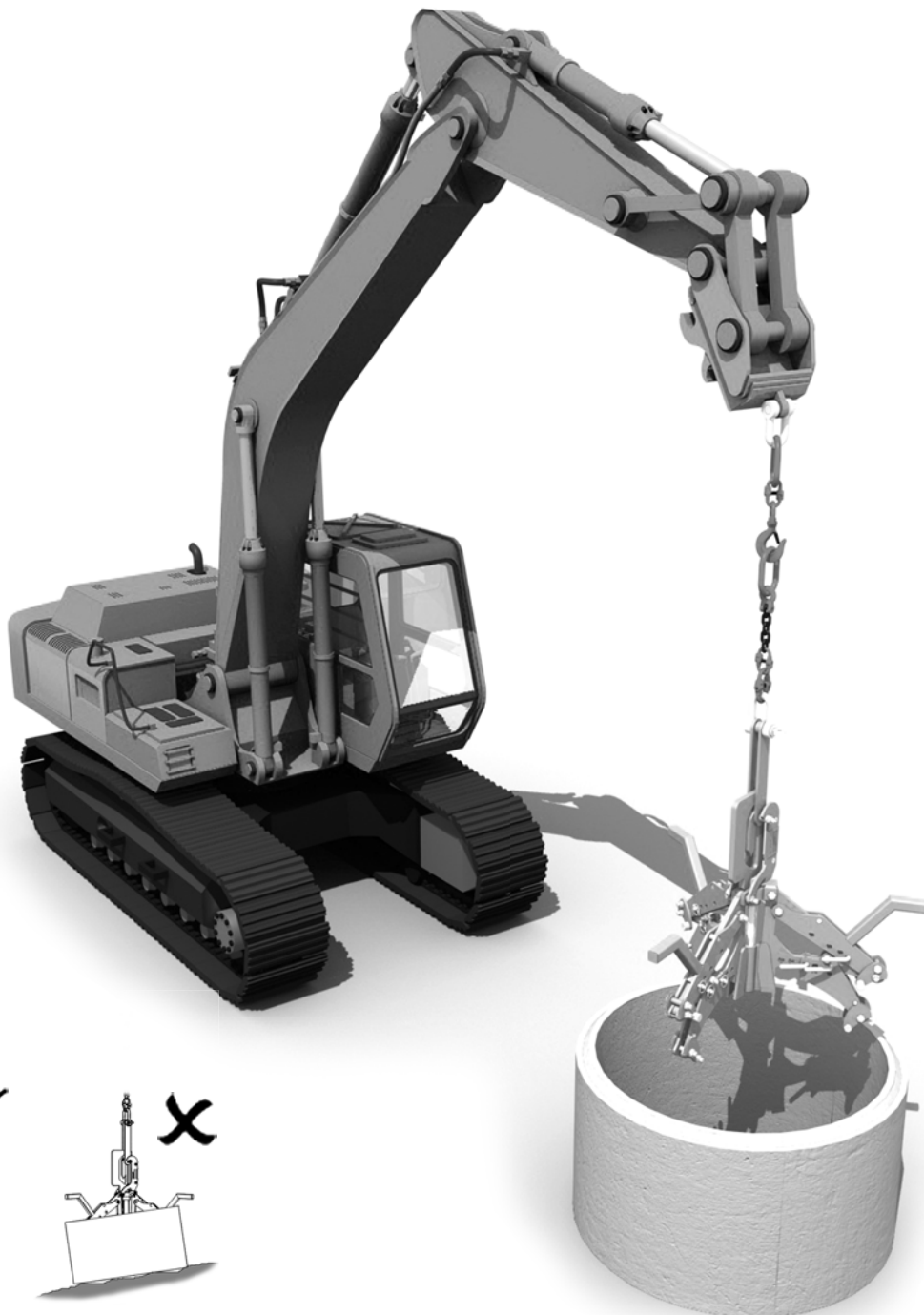
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Acknowledgment

This document has been compiled using extracts from the Probst User Manual and the Probst Product Flyer.

1. Introduction

This booklet is intended to provide basic information for users of the Mabey Hire Ltd Manhole Lifter and to draw the clients' attention to the practical aspects of handling and use which need to be considered in compiling a safe system of work. In particular, the clients' attention is drawn to the size and weights of the individual components and the need for planning the lifting operations involved. All moving parts are mechanical and do not require the excavator to have additional hydraulics.

The Manhole Lifter is only intended for use in lifting and transporting of uncoated manhole rings, cones and base units and is not to be used for any other purposes.

The Manhole Lifter comes under the LOLER regulations and should not be used without a valid 6 monthly inspection certificate.

2. Design

The Manhole Lifter is designed in accordance with :-

- EN ISO 12100-1
- Safety of machinery; Basic concepts, general principles for design,
 - Part 1: Basic terminology, methodology
- EN ISO 12100-2
- Safety of machinery; basic concepts, general principles for design;
 - Part 2: principles and specifications
- EN ISO 13857
 - Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
- EN 349
 - Minimum distance to avoid squeezing any parts of the body
- CE marked in accordance with EC Machinery Directive 2006/42/EC.

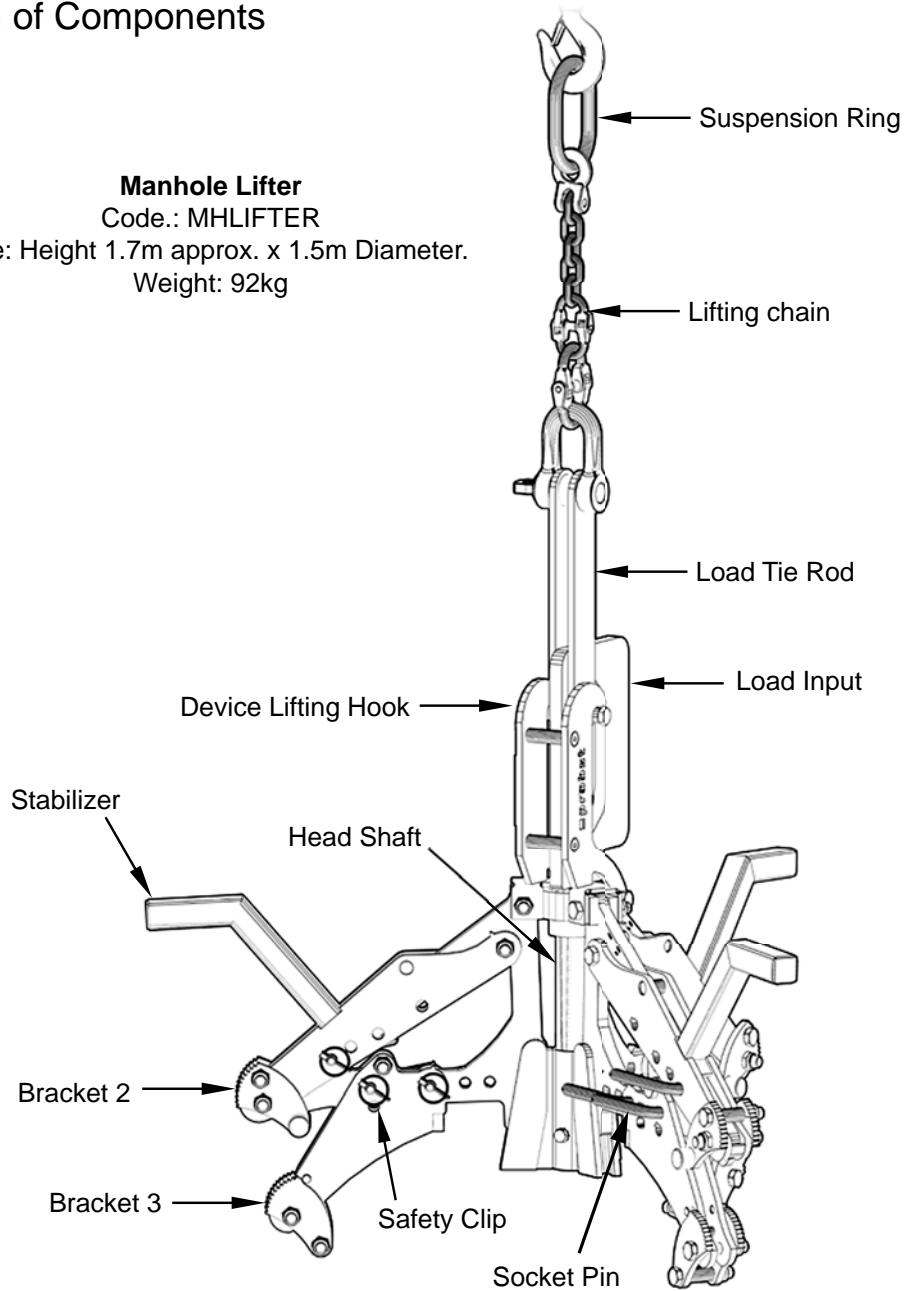
3. Safety Features

- Easy to use, one person operation
- Lifts manhole rings with an internal diameter ranging from 900mm to 1800mm
- Lifts manhole rings with depths ranging from 250mm to 1800mm
- Tested to a safe working load of 2500kg

4. Identification of Components

4.1 Manhole Lifter

Manhole Lifter
 Code.: MHLIFTER
 Size: Height 1.7m approx. x 1.5m Diameter.
 Weight: 92kg



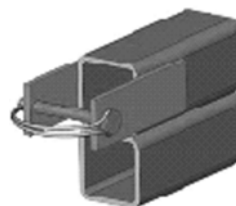
Code	SWL (kg)	Internal Manhole Dia (mm)		Manhole Ring Depth (mm)		Manhole Lifter Size (mm) Approx		Weight (kg)
		Min	Max	Min	Max	Height	Dia.	
MHLIFTER	2500	900	1800	250	1800	1700	1500	92

4.2 Single 1800 Adaptor



Single 1800 Adaptor
 Code.: MH-1800AD
 Size: 365x100x410
 Weight: 8.6 kg

4.3 Single Height Adjuster



Single Height Adjuster
 Code.: MHLIFTER-HA
 Size: 100x50x150
 Weight: 0.8 kg

5. How to Use

5.1 Load Hooks and Chains

- Connect an appropriate swivel chain to the approved lifting point on the excavator, (Mabey Hire can supply an 8 tonne swivel chain (SSBA-007) upon request).
- Attach the suspension ring of the lifting chain to the lifting equipment.

5.2 Gripping Range Adjustment

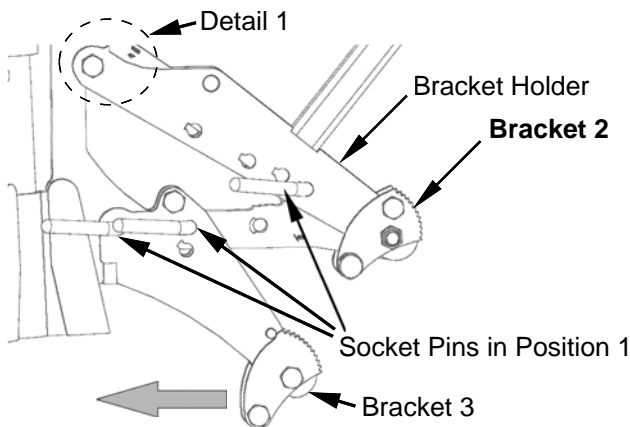
The Manhole Lifter will need to be adjusted to suit the internal diameter of the manhole ring that is to be lifted.

5.2.1 Bracket 2

- For Manhole Rings

Bracket Type	Manhole Internal Diameter (mm)
Bracket 2	1000, 1050, 1200, 1250, 1350, 1500 *

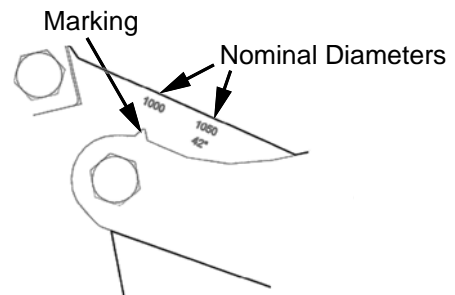
* Tolerance = $\pm 10\text{mm}$



Note: When using Bracket 2, Bracket 3 **MUST** always be moved inwards and positioned as far in as possible, (see image above).

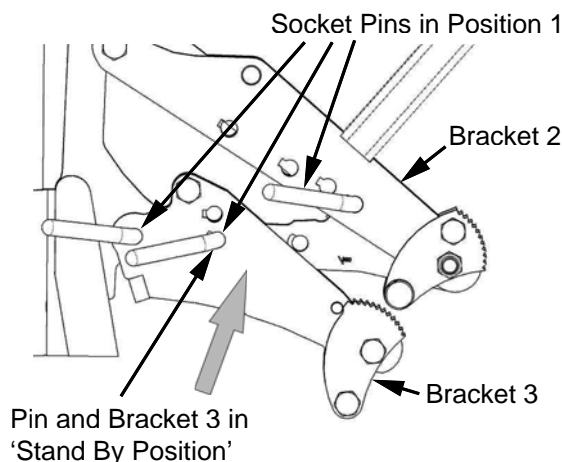
- To adjust the respective nominal diameter, first remove the safety clips at the socket pin and then pull the socket pin (position 1) out.
- Position the bracket holder (marking) to the respective nominal diameter (detail 1).
- Insert the socket pin (position 1) again into respective hole.
- Secure socket pin (position 1) again with safety clip.

NOTE: All three brackets **MUST** be adjusted to the same nominal diameter.



Bracket holder set to nominal diameter (Detail 1)

- For Manhole Base Units



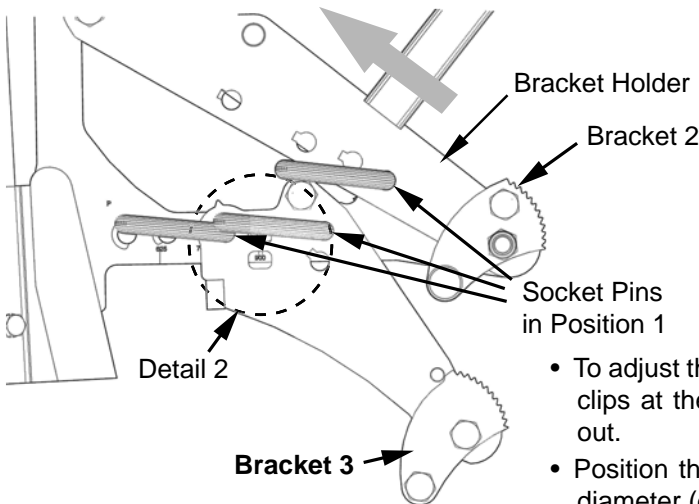
Note: When gripping Manhole Base Units with Bracket 2, Bracket 3 **MUST** be moved into the "stand-by position".

5. How to Use Cont'd

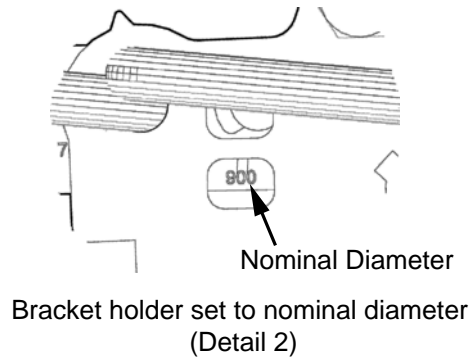
5.2.2 Bracket 3

Bracket Type	Manhole Internal Diameter (mm)
Bracket 3	900 *

* Tolerance = $\pm 10\text{mm}$



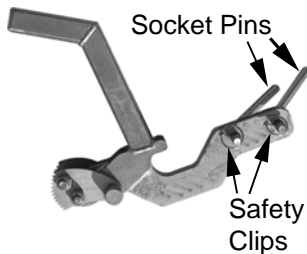
Note: When using Bracket 3, bracket 2 **MUST** always be moved inwards and positioned as far in as possible, (see image below left).



- To adjust the respective nominal diameter, first remove the safety clips at the socket pin and then pull the socket pin (position 1) out.
- Position the bracket holder (marking) to the respective nominal diameter (detail 2).
- Insert the socket pin (position 1) again into respective hole.
- Secure socket pin (position 1) again with safety clip.

NOTE: All three brackets **MUST** be adjusted to the same nominal diameter.

5.3 Single 1800 Adaptor - MH-1800AD (for use on manhole rings with internal diameter of 1800mm)



- To install and adjust the Manhole Lifter when suspended from the excavator, follow the instructions in section 5.2.1 and ensure all bracket holders are positioned at 1500mm.
- Remove the socket pins from MH-1800AD.
- Slide the MH-1800AD inside the upper bracket holder. Line up the two holes in the MH-1800AD with the holes in the bracket holder. Insert the 2no. pins and secure with safety clips.

Note: Only use the MH-1800AD on manhole rings with an internal diameter of 1800mm.

5.4 Single Height Adjuster - MHLIFTER-HA

When gripping manhole rings with a minimum total height of 250mm (10") a Single Height Adjuster must be fitted to each stabilizer.

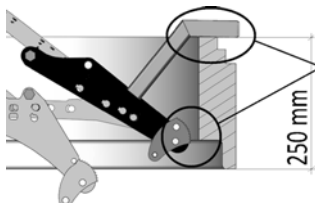


Fig 1. Manhole ring with minimum total height of 250mm (10") **without** Single Height Adjuster fitted **incorrectly**.

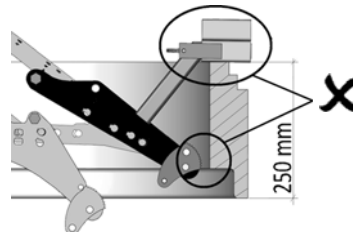


Fig 2. Manhole ring with minimum total height of 250mm (10") **with** Single Height Adjuster fitted **incorrectly**.

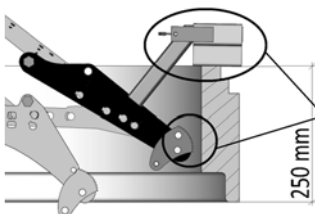


Fig 3. Manhole ring with minimum total height of 250mm (10") **with** Single Height Adjuster fitted **correctly**.

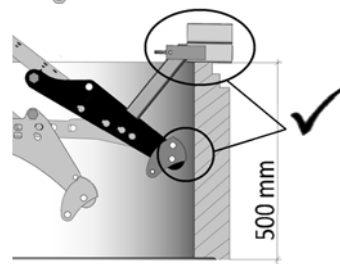


Fig 4. Manhole ring with larger total height than 250mm (10") **with** Single Height Adjuster fitted **correctly**.

5. How to Use Cont'd

5.5 Manhole Rings - General

When gripping manhole rings with step irons (Fig. 1) take care that brackets are not positioned too close to the step irons.

When placing manhole rings on top of each other, it is recommended to mark them on the outside with chalk or similar. This way the step irons will always be placed at the same position.



Fig. 1

6. Lifting Procedure

6.1 Manhole Rings

- Adjust Bracket 2 or Bracket 3 to the required nominal diameter. Making sure all 3No. brackets are adjusted to the same diameter.
- Connect the Manhole lifter by chain suspension / load hook to the excavator.
- Position the manhole lifter over the centre of the manhole.
- Release chain / load hook until the Load Tie Rod slips downwards.
- Move the Load Tie Rod into the 'Release' position (Fig. 2).
- Position the Manhole Lifter into the manhole ring, ensuring that all three stabilizers of the Manhole Lifter are resting on the upper edge of the manhole ring (Fig. 5).

Note: Lifting is **NOT** allowed if there is a gap of more than 15mm from the top of the manhole ring to at least 1 of the stabilizers (Fig. 4). If a gap occurs, lower the Manhole Lifter to the ground and try again.

- Release the chain suspension / load hook until the Load Tie Rod moves downwards.
- Move the load tie rod into the 'Lift' position (Fig. 3).
- Manhole Lifter and manhole ring are now ready to be lifted.

Note: Do **NOT** lift the manhole ring if it is not on level and stable ground.

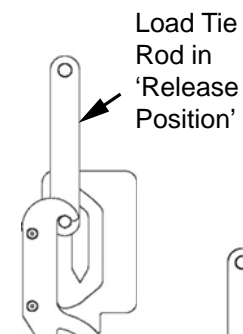


Fig. 2

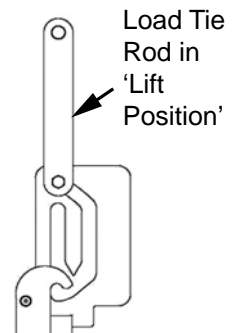


Fig. 3

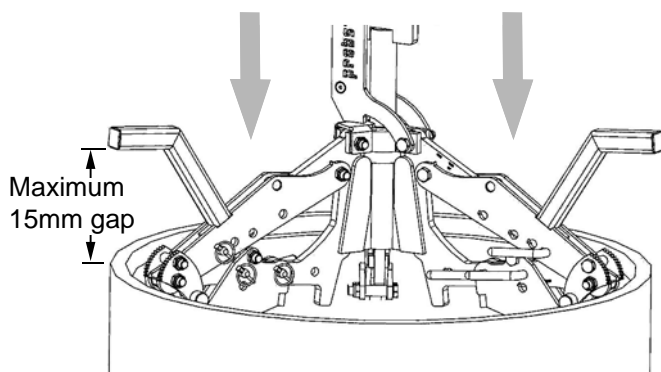


Fig. 4

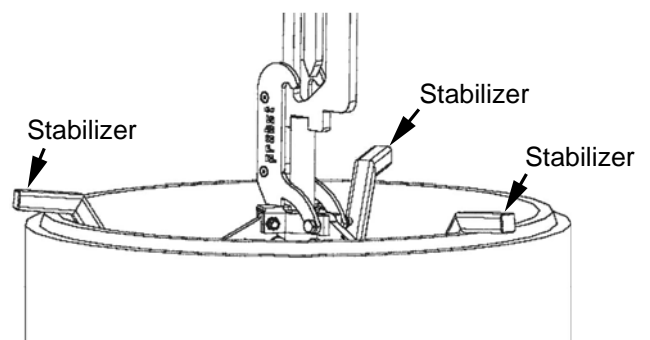


Fig. 5

Notes: Lift a manhole ring **slowly** and **avoid** jerky movements. **Never** track excavator while lifting a manhole ring. Both could result in the manhole ring breaking.

6. Lifting Procedure Cont'd

6.2 Shaft Cones

When gripping shaft cones using bracket 3, make sure that **ALL** three brackets are gripping below the cylindrical part of the of the manhole cover opening (see Fig. 6). I.e. the cylindrical part may have a maximum allowable depth of 150mm (< 150mm).

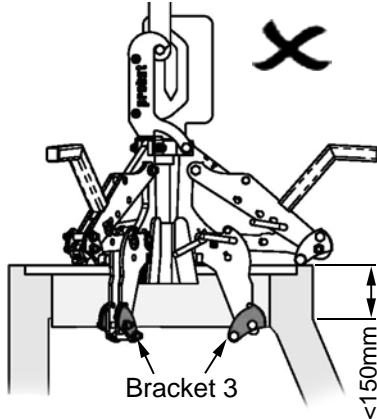


Fig. 7

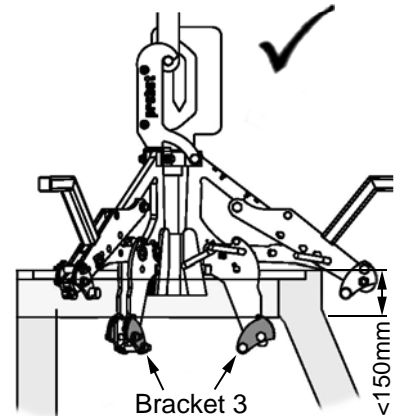


Fig. 6

The gripping of shaft cones with a cylindrical part more than 150mm deep (> 150mm) is **NOT** allowed. The brackets gripping the cylindrical part of the manhole cover opening will cause the Shaft Cone to hang unbalanced and could cause a bracket to slip during use (see Fig. 7).

7. Handling and Transportation

- Weights of components are given in Section 4.
- The Manhole Lifter should be transported on a pallet and should be securely restrained to the vehicle bed.
- Suitable lifting equipment of adequate lifting capacity should be provided for handling.
- Return equipment as supplied from Mabey Hire depot.

8. Storage and Maintenance

8.1 Storage

When not in use **ALL** equipment should be stored in a clean, dry and easily accessible environment, together with the User Guide and any other instructions relating to its use.

8.2 Maintenance

Before any inspection or maintenance takes place ensure the Load Tie Rod is the 'release position' (refer to section 6). All maintenance / inspections that are carried out must be carried out and recorded by a competent person. (Refer to Appendix B for Proof of Maintenance Form).

Before each start-up:

- Check all brackets and the Head Shaft for mobility, abrasion and contamination. Worn teeth (no longer sharp-edged) or bent brackets **MUST** be replaced.
- All parts to be cleaned with a high pressure cleaner, **care must be taken** to remove dirt and grit from the device, particularly around all moving joints and the exposed vertical slide bar. **Note:** Components which have become wet during cleaning or use may only be dried naturally, not near a fire or similar heat sources.
- Check bolts and nuts for tightness.

Weekly:

- Lubricate and oil all Socket Pins, the Head Shaft and the base of the Load Tie Rod (see section 4.1).

6 Monthly:

- **ALL** components **MUST** be inspected and certified under the LOLER regulations every 6 months.
- Check all the suspension parts, bolts and straps. Check for corrosion and safety.
- The service life of the Manhole Lifter must be determined in the 6 monthly inspection.

General:

- all parts should be visually inspected for damage, which would include:
 - i) bent or distorted plates or sections
 - ii) missing items

Note: If damage is found to any component, remove the item from use and contact Mabey Hire immediately.

Title

Manhole Lifter

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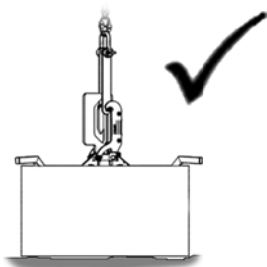
Date

July 2014

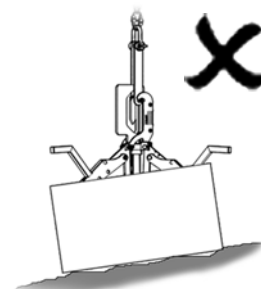
9. Do's and Don'ts

- DO.. always lift the manhole ring on level and even ground.
- DO.. store the Manhole Lifter in a safe flat area along with the User Guide when not in use.
- DO.. ensure the working area is clear of personnel.
- DO.. ensure that a risk assessment and safe system of work are available prior to any lifting taking place.
- DO.. check the Manhole Lifter is securely attached to the lifting equipment and all Lifting chains are undamaged.
- DO.. check that the Manhole Lifter is in a good working condition and all Socket Pins and Safety Clips are secure and undamaged.
- DO.. check that **ALL** three brackets are set to the same nominal width before use.
- DO.. ensure **ALL** Stabilizers are resting on the upper edge of the manhole ring.
- DO.. use the Manhole Lifter in close proximity to the ground, i.e. do **NOT** swing the Manhole Lifter over peoples heads.
- DO.. transport the Manhole Lifter safely and securely on a pallet.

- DO NOT.. lift any manhole ring that is **NOT** on level ground.
- DO NOT.. use the Manhole Lifter if **ANY** component is damaged, cracked or deformed.
- DO NOT.. use the Manhole Lifter to lift anything other than uncoated manhole rings, cones and base units.
- DO NOT.. use the Manhole Lifter below 3°C, as the Lifter could fail due to dampness or freezing.
- DO NOT.. leave the excavator unmanned while a manhole ring is being lifted.
- DO NOT.. attempt to lift manholes with an internal diameter less than 900mm or greater than 1800mm or with a ring depth of less than 250mm or greater than 1800mm.
- DO NOT.. exceed the S.W.L of the Manhole Lifter.
- DO NOT.. alter the Manhole Lifter under any circumstance.
- DO NOT.. pull or drag the Manhole Lifter or manhole rings sideways.
- DO NOT.. use to pull out stuck or tight manhole rings.
- DO NOT.. touch any part of the manhole ring or Manhole Lifter when it is in use.



The manhole ring **MUST** be on a level and stable ground prior to any lifting taking place.



DO NOT attempt to lift any manhole ring that is on an incline or uneven ground as the Manhole Lifter is likely to slip which will cause damage to the manhole ring and Manhole Lifter.

10. General

Since our policy is one of continual improvement, components may vary in detail from the descriptions given in this publication.

User Information Appendix A : Provision of a Mabey Hire Site Demonstrator

Mabey Hire can, subject to availability, offer the services of a Site Demonstrator. However, the Customer should note the following :-

A1. The Customers Responsibilities

A safe system of work remains the Customers responsibility at all times. It is his responsibility to prepare for, organise and direct the operation including :-

- A1.1 Site induction for the demonstrator.
- A1.2 Preparation of a method statement.
- A1.3 A risk assessment.
- A1.4 Selection of lifting equipment and any other equipment required to undertake the work.
- A1.5 Positioning of the crane or lifting appliance.
- A1.6 Banking the crane.
- A1.7 Slinging the components.
- A1.8 Assembling the components and installing them.

A2. Activities which the Mabey Hire Demonstrator is authorised to carry out

Mabey Hire Demonstrator is authorised to :-

- A2.1 Assist in identification of Mabey Hire components.
- A2.2 Explain how they fasten together.
- A2.3 Point out slinging points and special methods of lifting as noted in the user information.
- A2.4 Demonstrate how to attach hoses and use pumps to extend/retract hydraulic braces.
- A2.5 Draw attention to the content of the user information.
- A2.6 Clarify queries with Mabey Hire scheme drawings.

The Demonstrator is NOT AUTHORISED to 'take over' or direct the installation.

To : Mabey Hire Limited

(Please return this completed form to the Mabey Hire depot supplying the equipment. Contact details for all the Mabey Hire depots are available both on-line at www.mabeyhire.co.uk/depot-directions/ and within our brochures)

From (Company Name) _____ Site (Address) _____

Tel.No. _____ Fax No. _____

Re : Provision of a Mabey Hire Demonstrator on site

We confirm receipt of your User Information Appendix A - and that we would like to request the services of your Demonstrator on the following date(s) _____

Signed _____ Name (print) _____ Date _____

product user guide



Title **Manhole Lifter**

Issue **1**

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Appendix B : Proof of Maintenance Form

Note: The inspection of this product and completion of this form must only be carried out by persons trained and authorised to do so.

Name of inspector: _____

Manhole Lifter

On behalf of: _____

Unique Number: _____

Signature: _____

Date: _____

Refer to section 8.2 for maintenance and inspection details. Contact Mabey Hire if any damage is found and remove Manhole Lifter from use.

• Before every use

- Carefully clean all components with water.
- Check all components for any abrasion or contamination.
- Check all components for any damage.
- Check all teeth on all brackets are not worn (no longer sharp-edged).
- Check movement of all brackets and the Head Shaft.
- Check all items are present, inc. socket pins, safety pins and adaptors / adjusters if used.
- Check all bolts and nuts are tight.

Checked

• Weekly

- Lubricate and oil all socket pins, the Head Shaft and the base of the Load Tie Rod.

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• 6 Monthly

- All components inspected and certified under the LOLER regulations.
- Hire products should be returned to Mabey Hire for their report of thorough examination.
- Check for corrosion.
- Service life determined.
