

# Caisson shaft system

## Installation Guide



**Marshalls**  
Civils & Drainage

This guide is to be used for the installation of Marshalls Civils and Drainage caisson shaft units which use a plate jointing system.

## Health and Safety

Prior to commencement of any work, a full Risk Assessment should be carried out and a bespoke Safe System of Work developed.

Marshalls Civils and Drainage recommends that ALL lifting operations should comply with the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998, and the Provision and Use of Work Equipment Regulations 1998 (PUWER).

Marshalls Civils and Drainage is committed that its products are designed and manufactured to ensure the safety of users. Installation of products involves breaking ground and is thus considered as construction work under the Construction (Design and Management) Regulations 2015.

Marshalls Civils and Drainage puts a great deal of effort into ensuring that its designs are safe and will provide structural details to the Principal Designer nominated by the Construction Site Client, if requested (please contact Marshalls Civils and Drainage Technical Office).

## Weights and Dimensions:

| Nominal I/Dia (mm) | Wall Thickness (mm) | Outside Diameter (mm) | Effective Depth (mm) | Overall Depth (mm) | Weight per Unit (tonne) | No of Lifting Bracket Sets |
|--------------------|---------------------|-----------------------|----------------------|--------------------|-------------------------|----------------------------|
| 2000               | 130                 | 2260                  | 500                  | 500                | 1.065                   | 3                          |
| 2000               | 130                 | 2260                  | 750                  | 750                | 1.598                   | 3                          |
| 2000               | 130                 | 2260                  | 1000                 | 1000               | 2.130                   | 3                          |
| 2400               | 140                 | 2680                  | 500                  | 522                | 1.370                   | 3                          |
| 2400               | 140                 | 2680                  | 750                  | 772                | 2.055                   | 3                          |
| 2400               | 140                 | 2680                  | 1000                 | 1022               | 2.740                   | 3                          |
| 2740               | 160                 | 3060                  | 500                  | 500                | 1.790                   | 3                          |
| 2740               | 160                 | 3060                  | 750                  | 750                | 2.685                   | 3                          |
| 2740               | 160                 | 3060                  | 1000                 | 1000               | 3.580                   | 3                          |
| 3000               | 175                 | 3350                  | 500                  | 500                | 2.135                   | 3                          |
| 3000               | 175                 | 3350                  | 750                  | 750                | 3.203                   | 3                          |
| 3000               | 175                 | 3350                  | 1000                 | 1000               | 4.270                   | 3                          |
| 3660               | 185                 | 4030                  | 750                  | 769                | 3.980                   | 3                          |
| 3660               | 185                 | 4030                  | 1000                 | 1019               | 5.300                   | 3                          |
| 4000               | 200                 | 4400                  | 750                  | 769                | 4.770                   | 3                          |
| 4000               | 200                 | 4400                  | 1000                 | 1019               | 6.360                   | 3                          |

Note: 3660 & 4000 units are supplied to site in two parts.

## 1.0 Components

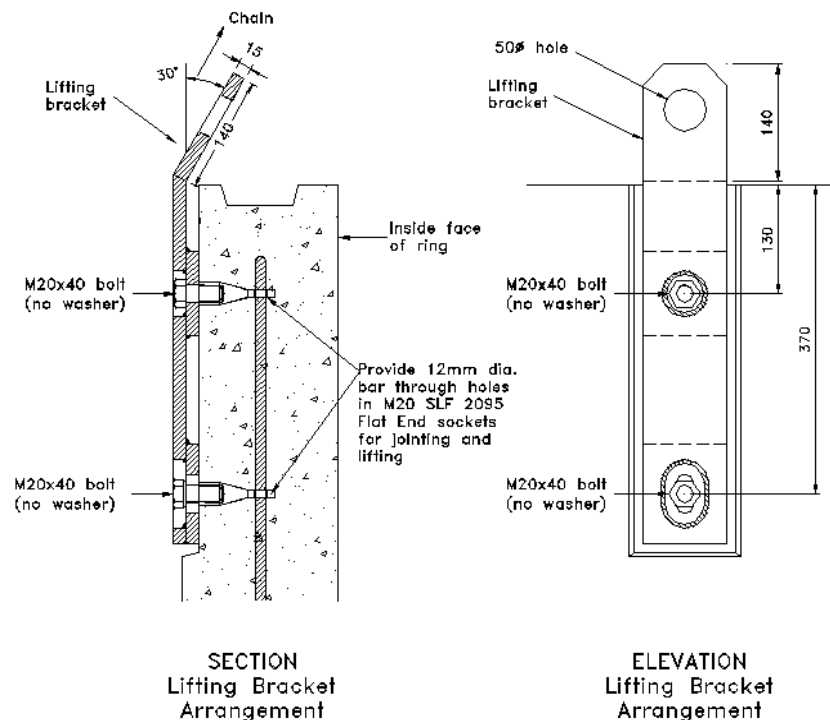
- 1.1 Precast concrete caisson units produced in 0.50m, 0.75m and 1.00m depths (Dependent upon unit diameter).
- 1.2 Mild steel lifting brackets and M20 x 40mm long bolts.

## 2.0 Lifting

- 2.1 Ensure that suitable plant is available to accomplish necessary reach and lift.
- 2.2 Use the three specially designed and tested lifting brackets and 6 No. M20 x 40mm bolts supplied (see figure below) for lifting of each individual shaft ring.
- 2.3 Use adequate length lifting chains (the maximum angle from the vertical for chains should be no more than 30°).
- 2.4 For DN3660 & DN4000 units only – two half sections of each ring to be jointed together to form complete ring (at ground level and using supplied 25mm x 12mm joint sealant) prior to lifting into final shaft construction point.

## 3.0 Jointing

- 3.1 Ensure that the jointing surfaces are clean and dry. Place the sealing strip centrally onto the top joint and remove any sealant separation paper. Mitre all joints in the strip where required to produce a continuous seal). Note: All joints must be clean and dry before jointing if a watertight shaft is to be formed.
- 3.2 Lift the next shaft unit, clean the underside jointing face, align the jointing pockets then carefully lower it onto the previous unit and allow the sealant to compress.



**UNDER NO CIRCUMSTANCES MUST THE LIFTING BRACKETS BE USED FOR THE TRANSPORTATION OF UNITS ACROSS THE SITE**