

HOBAS®

TECHNICAL ADVICE SHEET

05-20-2022

Hobas Complete Manhole System Installation Guide

If in doubt, seek advice from: Hobas Pipe USA, Inc. | 800-856-7473

HOME OF THE 150 YEAR DESIGN LIFE

TEEBASE MANHOLE SYSTEM

1. Unloading/Handling/Storage

a. General Handling:

i. Severe impact with the ground or other objects can damage the parts.
ii. Never use chains or wire cables to directly handle Hobas parts. Use a fabric strap or carefully use a forklift (only contacting the OD of the pipe underneath – do not use forks inside the pipe contacting the ID). Care should be taken when using a forklift to ensure the part does not roll unintentionally.
iii. Avoid letting the weight of the pipe rest on the coupling, bell end, or any neck or lateral.
iv. Avoid setting pipes on rocks or very uneven ground. A point load with a hard object can damage the pipe.
v. Be aware of the location of manhole ends while moving. An end or coupling can be damaged by an impact.

b. Unloading

i. Inspect on truck for damage
   1. Thoroughly check ends/joints, neck and any laterals.
   2. Spot check the ID condition at the chock timber contacts and strap locations. Also spot check the saddle lamination
   3. Note any damage (cracks, scrapes/gouges, discolorations, etc.) found on the BoL prior to signing it. Then, photograph the areas of damage and send to Hobas Pipe USA for evaluation.
ii. Shipping dunnage and banding should be left in place until time for installation or pre-casting. This helps avoid unintentional rolling (and risk of damage) which can impact a lateral and/or neck.
iii. Manhole tees can be lifted in the following ways (note: after any pre-casting is done around the manhole tees, the composite encased part should be lifted by the concrete, not the fiberglass parts extending out of the encasement block):
   1. Using a pair of straps and spreader bar, one strap on each manhole leg (up stream and downstream). For manholes with angles and/or unequal leg lengths, care should be taken to balance the load to avoid any rolling/twisting. Additional rigging may be required.
   2. For straight-through manholes (i.e. no angle), forks can be used under the through pipe, contacting the OD (not in the ends contacting the ID). The man hole must be secure to avoid any rolling that could impact the neck or a lateral. Chocks or other methods can help.

iv. It is up to the installer to determine the best and safest method for utilizing his specific equipment within the jobsite conditions, to unload special pieces (fittings, manholes, risers etc.). Use special caution to avoid damaging joint ends. Avoid picking up the special pieces by branches. Use the main pipe. It is the unloader's responsibility to avoid damage.

c. Storage

i. Store on flat, even ground on the original banded dunnage it was shipped on.

ii. If storing a manhole for an extended period of time (more than 6 months), contact Hobas for further considerations.

2. Assembling adjacent joints (follow all standard FWC Coupling Assembly instructions regarding lubrication and alignment):

a. Joining the TeeBase to an existing pipe end:

i. If the manhole is straight-through (i.e. no angle), assembly force can be applied to the plain end (or spigot side) using timber cushion between the pipe end face and the excavator bucket.

ii. For manholes with angles (or straight manholes where the excavator cannot be positioned properly to apply force), a pair of straps is typically used on the manhole. These straps are typically placed on the far side of the neck, around the through-pipe and are connected to either stationary trench protection or the pipe it is being joined to. Come-alongs are then used on each side for assembly force. Ensure you have enough force available to assemble the FWC joint in field conditions. Total force available of at least 1.5x the book assembly force is recommended.

b. Joining the first pipe out of a MH that has been set and encased:

i. After the manhole has been installed and encased, the first pipe coming out of the manhole can be assembled as a normal joint. The assembly force can be applied to the plain end (or spigot) with a timber cushion between the excavator bucket surface and the pipe end face, or can be applied by choking it with a strap (no hooks or turnbuckles).

3. Encasement

a. General:

i. The Hobas tee base manhole system consists of a Hobas tee base and a riser system. The riser system can consist of a one-piece fiberglass riser, segmented fiberglass riser, or segmented RCP riser.

ii. The tee base consists of a Hobas thru-pipe (or fitting) and a Hobas vertical stub, connected at the saddle-cut with a structural fiberglass lamination. The main pipe can be straight (no angle) or mitered to a specific angle (typically up to 90º). The structural fiberglass lamination is very strong and will typically equal or exceed the tensile strength of the pipe itself. Although the pipe can withstand up to 5% long-term uniform deflection, the irregularly shaped saddle connection can tolerate very little deformation. The tee base must therefore be prevented from distorting. This is typically done with a concrete encasement (sometimes needs reinforcement). Details regarding necessary reinforcement will depend on conditions and will need to be designed by others.

b. Encasement:

i. Traditionally, the body of the tee base is encased, with the encasement stopping before the joint on each end (see FIGURE 1). While this will effectively protect the tee base, it creates a dramatically different support condition for the pipes on each side of the coupling at each of the adjacent joints. The tee base thru-pipe will be held perfectly round, supported rigidly, and the adjacent pipe will be supported elastically by the native soil and the pipe-zone surround system. While the FWC coupling that seals this joint is flexible and quite forgiving, it cannot easily maintain seal when connecting pipes with dramatically different shapes.

ii. This phenomenon is magnified as the main diameter increases. Experience indicates that with sizes 48" and larger (typically), it is advisable to extend the concrete encasement past the joint (1' – 3' depending on diameter – see FIGURE 2). This will eliminate the risk of leak due to differential deflection of the coupling joints on each side of the tee base.

iii. This will, however, create a rigid connection in the pipe wall, posing another, albeit smaller, potential risk. If the bedding and side support in the elastically supported pipe immediately adjacent to the encasement is not adequate, the resulting stress in the pipe wall where the encasement ends could be sufficient to damage the pipe wall. Excellent bedding and side support at this transition is critical. While this transition area is important and has associated risks, cases of pipe wall damage at rigid concrete connections are rare.

iv. NOTE: Pre-encasing Tee Bases is common. Pre-cast manholes should be handled by the encasement and not the fiberglass parts. For sizes 48" and larger, the adjacent joint areas, and extending onto the adjacent pipes, should be rigidly supported with further encasement, slurry/flowfill, compacted cement-stabilized sand, or similar, after adjacent pipes are connected to the tee base.

c. Conclusion:

i. For tee bases with thru-pipes of 48" and larger, Hobas' experience indicates extending the concrete encasement past the joints by about 1' – 3' (depending on diameter) is advisable to get equal support across the joint. Excellent bedding and side support is critical in the elastically supported pipe adjacent to the end of the encasement.

ii. The top of the encasement surface should be level horizontally and flat. This will be the surface on which the riser assembly will rest. This surface should be appreciably cured to a strength appropriate for further work prior to riser assembly.

iii. A second "curb" pour encapsulating the Manhole anti-flotation flange by will be required later for lateral stability. Reference the design engineer's plans for details.

HOBAS RISER SYSTEM

1. Unloading/Handling/Storage

a. General Handling:

i. Severe impact with the ground or other objects can damage the parts.
ii. Never use chains or wire cables to directly handle Hobas parts. Use fabric straps.
iii. Riser system parts should be stored on their shipping dunnage until time for installation. Avoid loading the floatation ring.
iv. Be aware of the location of riser ends while moving. The cone and floatation flange can be damaged by an impact.

b. Unloading

i. Inspect on truck for damage
   1. Thoroughly check cone, floatation ring, pipes/joints, and any laterals.
   2. Spot check the ID condition at the chock timber contacts and strap locations. Also spot check the cone area and bottom embedded FWC area.
   3. Note any damage (cracks, scrapes/gouges, discolorations, etc.) found on the BoL prior to signing it. Then, photograph the areas of damage and send to Hobas Pipe USA for evaluation.
ii. Shipping dunnage and banding should be left in place until time for installation or pre-casting. This helps avoid unintentional rolling (and risk of damage) which can impact a lateral and/or neck.
iii. Risers should not be stacked like some pipe diameters get stacked. Store and move individually on one level. Hobas Riser parts can be lifted either using
   1. A pair of straps and spreader bar at least 50% of the part length. Care should be taken to center the weight between the straps. The center of the riser weight might not be at the midpoint of its length.
   2. A single strap at the midpoint of the weight. The center of the riser weight might not be at the midpoint of its length.
iv. It is up to the installer to determine the best and safest method for utilizing his specific equipment within the jobsite conditions, to unload special pieces (fittings, manholes, risers etc.). Use special caution to avoid damaging joint ends. Avoid picking up the special pieces by branches. Use the main pipe. It is the unloader's responsibility to avoid damage.

c. Storage

i. Store on flat, even ground on the original banded dunnage it was shipped on. Ensure the floatation flange is not loaded during storage.
ii. If storing a manhole for an extended period of time (more than 6 months), contact Hobas for further considerations.

2. Righting and Assembly

a. Righting

i. The riser must be shifted from the horizontal orientation that it was shipped and stored in, to a vertical orientation for assembly to the Tee Base neck. This must be done with care to avoid damage to the lip at the top of the cone, and the anti-floatation flange at the bottom.
ii. Note: for assembly onto the Tee Base, putting an adjustment ring at the top of the cone is advised prior to righting. This ring should be taller than the lip height at the cone opening.
iii. Use straps, connected to the lifting lugs. Take care to ensure damage to the anti-floatation flange doesn't occur.
iv. If the riser needs to be temporarily set on the ground before assembly onto the tee base, choose flat, only use flat, level ground, and provide support to ensure the riser doesn't tip over. The anti-floatation flange extension beyond the riser pipe OD should not be loaded.

b. Assembly onto Tee Base

i. Lubricate both the seal area of the Tee Base neck OD and the bottom gasket fins of the embedded FWC that is at the bottom of the riser.
ii. Lift the riser in a vertical position, centered over the Tee Base neck and carefully lower the embedded FWC over the neck.
iii. Apply additional assembly force to an adjustment ring on the cone with a timber cushion. The loaded area of the riser should be the flat shoulder at the top of the cone and not the lip at the opening.
iv. After assembly is complete, the anti-floatation flange should be resting evenly atop the Tee Base encasement. Ensure the riser is vertical.

3. Support/Backfill and Completion

a. Anti-floatation encasement/curb

i. Encase the bottom anti-floatation flange per job plans and specifications, and allow to set up.

b. Backfill

i. The excavated area around the riser should be filled and compacted per the job specifications.

ii. Care should be taken to compact as uniformly as possible around the circumference of the riser to ensure the riser remains vertical.

iii. Compact fill in lifts specified for the job, typically maximum 12" for soils.

iv. Flowable fill backfills such as concrete, CLSM, or similar to have maximum lift heights coordinated with the manhole manufacturer.

c. Completion of Ring and Cover

i. Remove adjustment ring that was used to apply assembly force.

ii. Lay a mortar bed on the cone shoulder to spread load over any geometric irregularities and place the first adjustment ring on the mortar bed while prior to mortar bed setting.

iii. Stack adjustment rings as necessary to place the ring and cover at the proper elevation, ensuring the ring and cover are clear of the lip of the cone opening. The ring and cover should directly contact only the adjustment rings and not any portion of the Hobas riser system. Do not place any ring and cover directly on any fiberglass surface. Also, do not attached (with bolts or other methods) the ring and cover to the fiberglass parts or surfaces.