

**Installation Instructions
for Stanton Bonna
Circular Pipes
Incorporating Captive
Gasket Joints**

PD 46 Rev B

October 2006

1. **Scope**

This document gives basic guidance on the installation of Stanton Bonna circular pipes incorporating the a Captive Gasket (CG) joint under normal conditions. When circumstances vary, supplementary instructions may be required and should be provided by the overall scheme designer.

Users should note that this document is not a comprehensive guide to pipeline installation and it is expected that the work is executed under the control of suitably qualified and experienced personnel.

For further information on pipeline installation reference should be made to "The Comprehensive Guide to Laying Precast Concrete Drainage Systems" published by the Concrete Pipe Association (tel: 0116 2536161).

2. **Receipt of Goods**

On receipt the delivery should be checked to ensure that:

- The delivery note corresponds to the goods in the consignment.
- Pipes are free from damage, especially at the ends.
- Jointing lubricant, if ordered, has been supplied.

3. **Handling & Storage**

3.1 **Handling**

Unloading and handling on site must be undertaken carefully in order to avoid damage to products.

Particular care should be taken to avoid impact damage to the ends of the unit.

Pipes should be lifted by the use of broad canvas slings passed around the outside or through the bore of the pipe. The use of lifting hooks should be avoided where possible as they may cause damage to the pipes. Where lifting hooks are used they should be suitably designed to avoid damage to the pipe and particularly the socket mounted gasket.

3.2 **Storage**

Pipes should be stored on firm, level ground with timber supports beneath the bottom row. They should remain free from soil or substances which may damage either the pipe or gasket or interfere with the jointing process.

Pipes shall not be stacked higher than shown in Table 1.

Pipe DN	Max. No. of Layers	Pipe DN	Max. No. of Layers
300	4	675	2
375	4	750	2
450	3	800	2
525	3	900	2
600	3	1050	1
		1200	1

Table 1. Maximum Stacking Heights

4. **Excavation & Preparation**

4.1 **Trench Width**

Where pipes are to be laid in trench, the trench width should not exceed that specified in the design. Trenches narrower than the specified width may prevent the proper placement and compaction of bedding and backfill materials.

4.2 **Formation**

It is essential to ensure uniform support of the pipeline. Hard or soft spots in the formation should be removed and replaced with bedding or selected backfill material.

Groundwater should be kept below the bottom of the trench.

In conditions of unstable ground special precautions may be necessary.

4.3 **Bedding Materials**

Angular bedding material such as crushed gravel or rock is recommended as bedding for pipes.

The material should be of similar particle size to the material in which the trench is excavated in order to avoid migration of fines to or from the bedding. Alternatively, a geotextile membrane can be used to separate the bedding from the surrounding soil.

Where gradients are steep or where there is a possibility of groundwater movement that could risk disturbing the bedding, special precautions should be considered.

Maximum particle size should not exceed 40mm.

Under no circumstances should blocks or bricks be placed beneath pipes and any pegs used for setting out or levelling must be removed.

WRc Information and Guidance Note (IGN) 4-08-01 provides guidance on the particle size of material with respect to pipe diameter.

5. Jointing

5.1 Preparation

The bedding material in the bottom of the trench should be laid to the specified thickness and levelled. The material directly under the units should not be heavily compacted.

Bedding should be removed locally at the position of each socket. The size of hole formed should be such that it allows the barrel of the pipe to be supported along its full length and prevents collection and trapping of bedding material in the bottom of the joint.

Before lowering the pipe into position the spigot and socket of the joint concerned should be cleaned and inspected to ensure they are free from damage. Special attention shall be paid to the area at the back of the gasket, ensuring that any soil, bedding or frozen matter is removed using the tool provided.

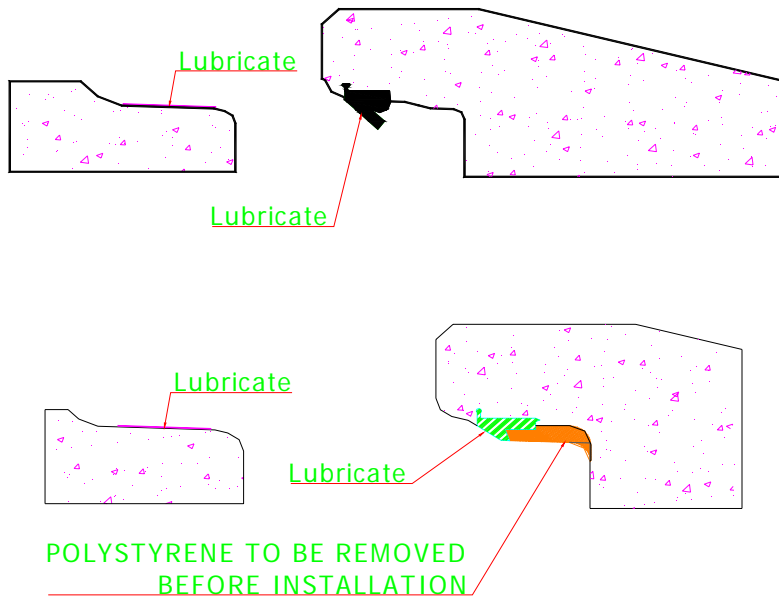
One design of captive gasket incorporates a polystyrene strip behind the gasket. This must be removed using the red tear tape provided before jointing.

The spigot surface shall be coated with joint lubricant. Only lubricant supplied by Stanton Bonna should be used. Do not use oils, grease etc as they can damage the gasket.

Pipe DN	Average No. of Joints per kg Lubricant	Pipe DN	Average No. of Joints per kg Lubricant
300	23	675	9
375	19	750	8
450	14	800	8
525	12	900	7
600	10	1050	6
		1200	5

Table 2. Lubricant Quantities

Fig 1



5.2 Jointing

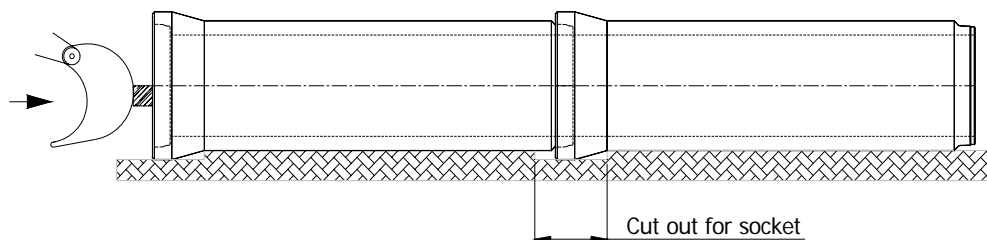
The unit should be lowered into the trench and the spigot entered into the socket of the previously laid pipe. It should be allowed to rest on the bedding with support from the crane.

The alignment of the pipe should be adjusted until the spigot and socket of the joint are square and concentric.

Pipes should not be adjusted by pushing down on the crown with mechanical equipment.

The weight of the pipe should not be supported on the gasket.

When the joint is correctly aligned it should be pulled home by means of a Tirfor, a hydraulic cylinder, or pushed home by using the excavator arm as shown below. Pipe ends should be protected from direct contact with mechanical equipment by means of timber packings or baulks.



Jointing with excavator bucket

Fig 2

During jointing the joint should be inspected to ensure the spigot is moving smoothly into the socket and that no damage to the joint or displacement of the gasket occurs.

The CG joint is designed as a tight fitting joint to provide maximum watertightness, however, if jointing forces increase suddenly it is likely that the joint is misaligned and locked tight. The pipe should be disjointed and realigned before continuing. Care should be taken to ensure that the pipe remains square during jointing.

After completion of jointing, line and level should be checked. Joint gaps should be not less than 5mm nor more than 25mm. Check by test. It is advisable to carry out an air test every few pipes before backfilling to check the integrity of the joint.

6. Backfilling

6.1 General

Backfilling should proceed as soon as possible after laying.

Material should be placed in layers and compacted, where necessary, evenly on both sides of the pipe. It should be carefully placed in position and not dropped or bulldozed into the trench.

Trench supports should be removed as backfilling proceeds, particularly in the case of 'Full Bed and Surround' bedding.

6.2 Backfill Material

Material for backfill should be similar in character to the surrounding soil. It should be readily compactable, free from large lumps, roots, rubbish and building rubble.

Compaction requirements for backfill material are governed by activities that occur over the pipeline. However, it is important to ensure that no hard spots are created over the pipe which can cause point loading.

6.3 Crossing of Pipeline

There is a risk that construction plant will apply loads on the pipeline which are in excess of that for which it may have been designed, especially as such loading may occur before the ground has been brought up to finished level.

Before any crossing of the pipeline is made the Engineer should be consulted.

7 Acceptance Tests

7.1 Air Tests

Air tests are a convenient method for checking the quality of workmanship, however they are not conclusive. Where a marginal failure has occurred a water test should be carried out.

It is recommended that collapsible, inflatable neoprene edged (Mill test type) stoppers are used for testing Stanton Bonna circular pipes.

The requirements for air testing are given in "Civil Engineering Specification for the Water Industry".

7.2 Water Tests

Water tests are a more conclusive test for a completed pipeline but the availability and disposal of large volumes of water may be problematic.

The method for carrying out a water test can be found in the "Comprehensive Guide to Precast Concrete Drainage Systems".

Right to Change: The specifications given in this document are believed to be correct but are not guaranteed. Stanton Bonna reserve the right to alter any specifications given in accordance with its policy of continuous product development. All rights reserved.

STANTON BONNA CONCRETE LTD, LITTLEWELL LANE, STANTON-BY-DALE, ILKESTON, DERBYS. DE7 4QW
TEL: (0115) 944 1448 FAX: (0115) 944 1466 E-MAIL: sales@stanton-bonna.co.uk