

Installation Instructions for Circular Trench Pipes (DN300 – DN1200)

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1. Scope

This document gives basic guidance on the installation of Stanton Bonna circular pipes incorporating the Integrated Gasket (IG) 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 Technical Guide – Section 2 Installation Pipes" published by the Concrete Pipe Association (tel: 0116 232 5770 email: email@concretepipes.co.uk)

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 (See Product Data Sheet PD72).

Pipes hanging on slings must only be moved over short distances to minimise dynamic loading off the sling and pipe, minimising wear on sling and minimising risk of impact damage to the pipes.

If pipes cannot be off loaded adjacent to where they are needed consideration should be given to transporting them on trailers or by using a pipelifter (See Product Data Sheet PD70P).

The use of 'pipe hooks' is not recommended due to the increased risk of damage to the spigot and socket.

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.

The integrated gasket joint design incorporates a polystyrene strip behind the gasket. This must be removed using the coloured tear tape provided before jointing.

The integrated gasket used with the DN800 pipe does not incorporate polystyrene. The gasket uses a rubber wedge behind a flap cast into the socket.

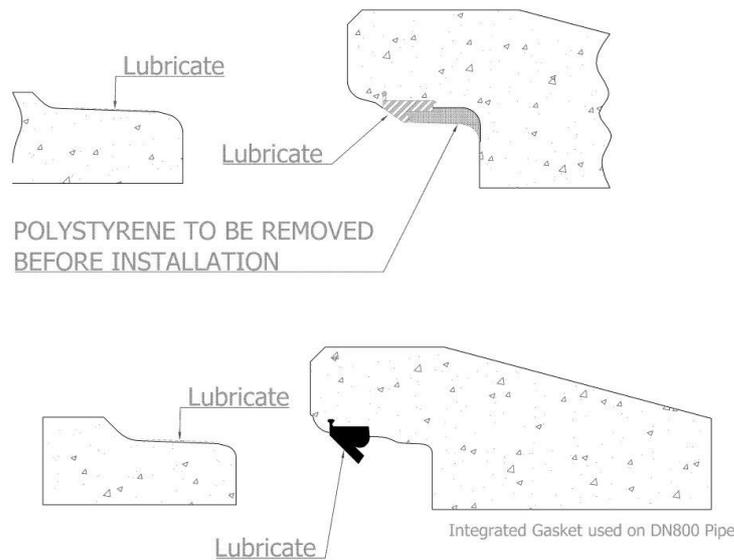
Prior to jointing, check that the wedge is correctly fitted behind the flap.

The spigot surface and gasket 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.

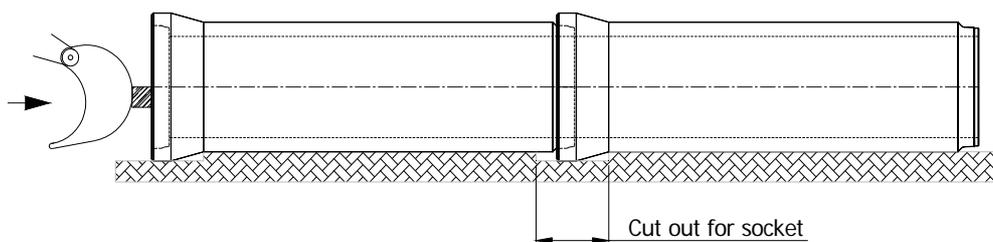
The alignment of the pipe should be adjusted until the spigot and socket of the joint are square and concentric.

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.

The jointing force must be applied centrally along the axes of the pipe to produce an even force on the gasket.



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 "The Technical Guide Section 2 Installation Pipes".

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