

Installation guide

The installation guide for NG Tegra 1000 manhole is not intended to replace the installation regulations as stated in EN 1610. In all cases the requirements stated in the EN 1610 should take precedence.

Before installation check all products for damage, contamination or missing parts.

Clean all sockets and seals and check that they are assembled correctly.

Check if the configuration of the base connections is as expected (diameter, flow direction, socket configuration).

Due to its double bottom the manhole position should be should be lowered by 10 cm in relation to the excavation needed for sewer pipeline. Manhole light weight elements can be carried by 2 people.

Step 1 – preparation

Manhole is installed from elements on the leveled, stable trench bottom. Remove big sharp stones. Level the bottom of the trench using a suitable bedding material with a minimum layer of 10 cm. When used non-compacted material the maximum layer should be 10 cm.

NOTE! The excavation needed for the manhole will be deeper than required for the pipe system.



Step 2 – First connection

Check the orientation of the manhole base for any flow direction and position of pipe sockets for the intended connections. Either connect;

- a) manhole base to a fixed pipe by pushing the manhole onto the pipe.
- b) pipe to the manhole base by pushing the pipe into the socket of the base.

For ease of assembling apply lubricant to the pipe socket in the manhole.

NOTE!

1. Always use professional lubricants approved for rubber seals and plastics. The plumber paste must not be used.
2. Alternative lubricants should be used in dilution of minimum 10 times. After installation the agents should lose their lubricant properties.

Step 3 – Base leveling

Level the base using standard level equipment (e.g. laser level).

Step 4 – Other pipe connections

Install other pipe connections with the correct angle and fall, using a lubricant to ease assembly. The adjustable pipe sockets enable an angular deflection of 7,5° from the centre line in any direction. Adjust the pipe sockets using the correct diameter pipe with a length > 1m.

Step 5 – Stabilize base



To fix the manhole base during installation it is as advisable to backfill the trench up to 20 cm above the top surface of the connected pipe(s). Backfill with layers of max. 30 cm of side filling soil and compact carefully.

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Step 6 - Cutting shaft pipe

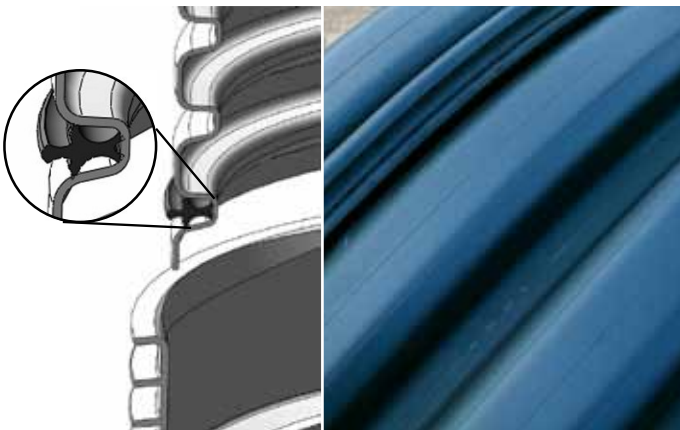
Use corrugated shaft pipe DN 1000 to build up the manhole. If necessary cut the shaft pipe to the required installation height. It is possible to shorten the pipe shaft by using an electric saw or by using a handsaw.

NOTE! Shaft pipe is cut inside corrugation in the factory. In connection with base and cone sockets shaft pipe can be cut in any place. In connections with using double socket shaft pipe should be cut in outside of the corrugation, in widest place. After cutting clean both ends from feather edges and remove debris.



Sealing rings locations and shaft pipe cutting options – pages 32 and 33..

Step 7 - Install shaft sealing ring



Lubricate base socket with the proper lubricant and connect the shaft pipe with base. During installation shaft pipe should be kept perpendicular to the socket. To easy assembly lubricate a sealing ring.

In double socket connections a sealing ring should be installed between each socket and connected elements (see STEP 6).



Step 8 - Installing cone

Assemble the sealing ring in the first complete corrugation on the outside of the shaft pipe. Apply lubricant to the shaft socket (and seal) and install the cone, if applicable aligning the ladder support in the cone to the pre-installed ladder (depending on the ladder assembly option).

STEP 9 - Shallow installation

For shallow installations without a shaft pipe, identify the seal groove on the outside of the cone and remove the shaft socket by cutting below the seal groove with an electric saw or handsaw (see page 21).



Locate a sealing ring into the seal groove and assemble the cone directly into the base

Step 10 - Backfilling

Backfill the trench evenly with layers of max. 30 cm of side and back filling around the entire perimeter of the manhole. The appropriate degree of soil compacting should correspond with the existing soil and water conditions and future external load.

It is advised to compact soil at the minimum level of:

- 1 - 90% Proctor (SP) for non-trafficked areas,
- 2 - 95% Proctor (SP) for roads with limited traffic load,
- 3 - 98% Proctor (SP) for roads with heavy traffic load.

In the case of a high ground water level, it is advised to increase the degree of soil compacting to the minimum level of 95 % Proctor (SP) for non trafficked areas, and 98 % Proctor (SP) for trafficked areas.

Step 11 - Cover solution

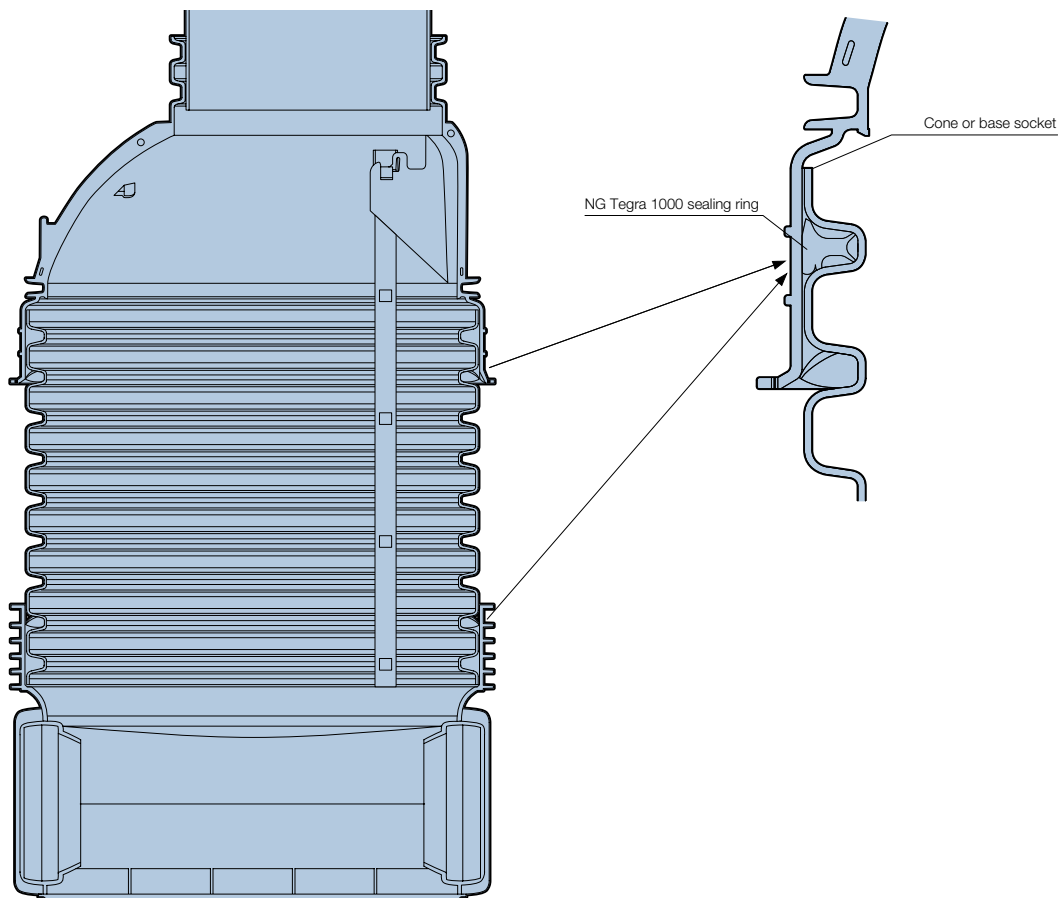
Cover solutions - see page 36.

Cover installation guide – see page 109.



Sealing rings location and shaft pipe cutting in various connecting options

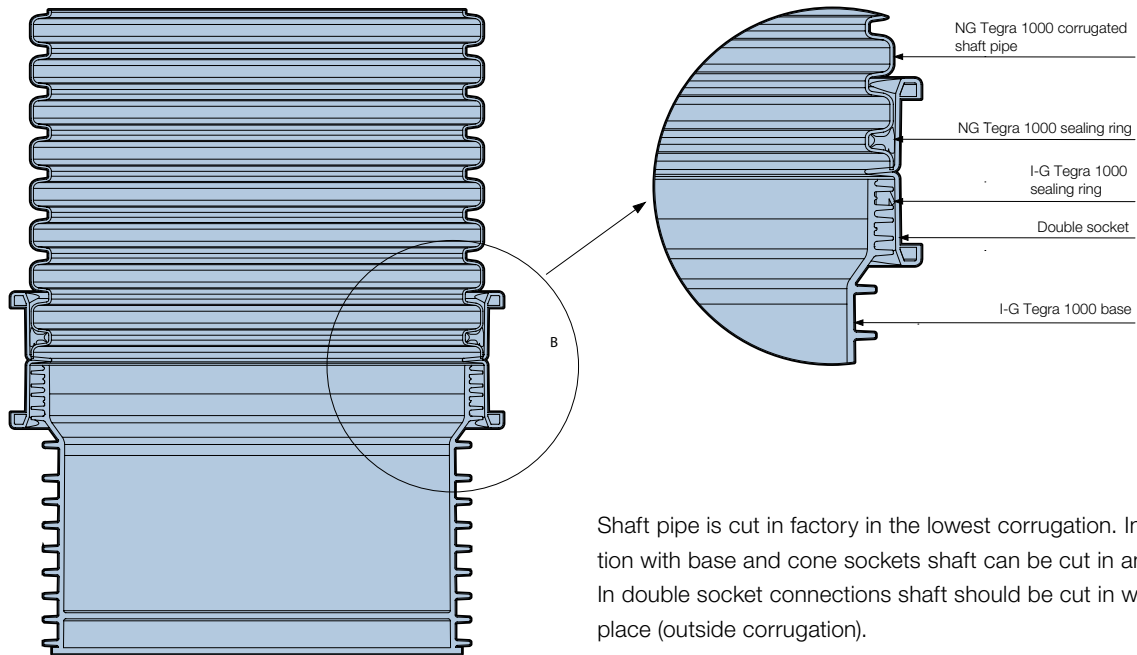
Connection between NG Tegra 1000 elements



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Connection between I generation Tegra 1000 base and NG Tegra 1000 shaft pipe



Shaft pipe is cut in factory in the lowest corrugation. In connection with base and cone sockets shaft can be cut in any place. In double socket connections shaft should be cut in widest place (outside corrugation).

Ladder installation guide

General

Before installation check the ladder and its elements for their assembly usability and completeness and read the installation guide and the assembly diagram.

Determine length of ladder

Basing on the assembly diagram determine the length of ladder, fix points in manhole and its location depending on the manhole height.

Ladder are offered in 4 standard lengths:

3064821106	T 1000 ladder	L=1,63m – 6 steps
3064821110	T 1000 ladder	L=2,83m – 10 steps
3064821114	T 1000 ladder	L=4,03m – 14 steps
3064821118	T 1000 ladder	L=5,23m – 18 steps

Standard lengths can be cut to adjust the ladder to the respective manhole depth

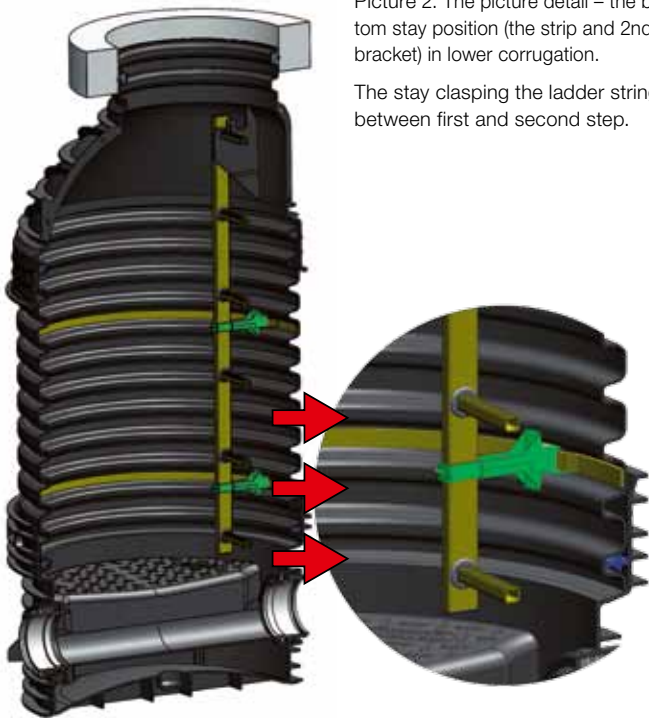
NOTE! When cutting the ladder is required follow the rules:

- cut the ladder to the required height using hand or power saw,
- upper and bottom stringers should always extend 65mm or 50mm beyond the steps edge (counting from the middle of the steps; see the assembly diagram).

Assembly option selection

Ladder assembly option can be decided depending on installation conditions:

- post-installation assembly (in Tegra 1000 installed in ground),
- ladder pre-installed before shaft pipe installation.



Picture 1. GRP ladder in NG Tegra 1000 manhole.

Picture 2. The picture detail – the bottom stay position (the strip and 2nd bracket) in lower corrugation.

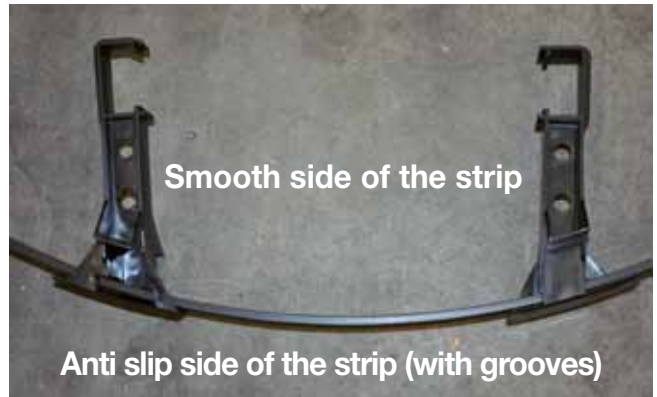
The stay clamping the ladder stringer between first and second step.

Use Picture No 4 during the operation.

NOTE! If it is necessary (see assembly diagram) a second pair of ladder stays should be installed in the middle of man-hole height.

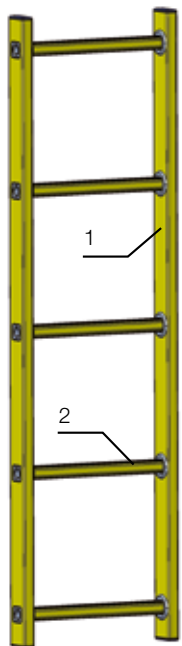
2. Hanging the ladder in manhole

Hang the ladder with stays in the manhole by clicking the top rung into the upper ladder support inside the cone.



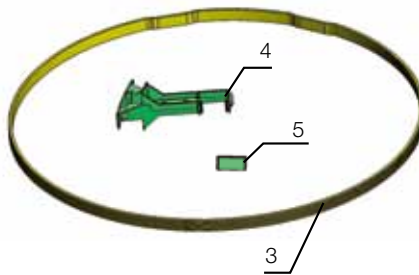
Picture 4. The detail – stays location in the stripe.

Anti slip side of the strip (from the side of corrugated shaft pipe), smooth side of the strip (from manhole inside).



Picture 3. GRP ladder elements:

- 1. stringer
- 2. step
- 3. strip
- 4. stay
- 5. bracket blanking plate

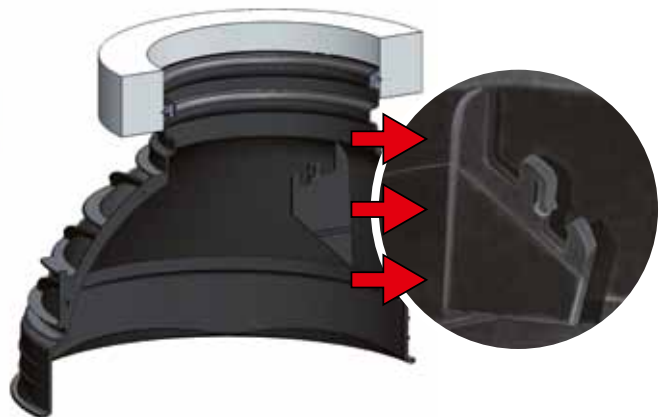


NOTE! If it is required to have the first step of the ladder nearer to the surface it is possible to install the ladder to the mounting bracket of the cone using the second rung (the second installation option – see the assembly diagram).

The stays installed between lower steps will be used as the temporary ladder support.

3. Install and fix ladder strip

To fix the ladder stays it is necessary to enter the manhole. Exhibit caution using the ladder until.



Picture 5. The detail - upper support for the ladder – the ladder stay installed the cone.

Slide the ladder strip through the slot in the ladder stays and locate the joint opposite (180deg) from where the ladder is located. Turn the smooth side of the strip inwards the manhole.

Ladder assembled in NG Tegra 1000 installed in ground

1. Ladder stays assembly

Locate the Ladder Stays between the lower and second rungs of the Ladder and click the stays over the stringers. Fix the ladder into the stays by sliding the two blanking plates into the slots located in the stays.

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While bending one 'leg' of the ladder strip inwards into the shaft locate the two ends of the strip so that the male and female ends engage in the corrugation groove. Keeping fingers clear press on the bent leg until the strip snaps into the shaft corrugation.

NOTE! Since the strip is springing care should be taken while bending the strip to not trap the fingers.

Ladder pre-installed in Tegra 1000 before shaft pipe assembly

1. Prepare the ladder clamp (the strip and stays).

In a deep trench it is recommended to pre-install the ladder clamp in shaft pipe before the shaft with base is installed.

First properly arrange stays on the smooth side of strip (see the Picture 4). Anti-slip side of the strip covered with rubber grooves is installed in lower corrugation of the shaft pipe.

NOTE! For deep installations (>3,8m) a second support strip (the strip and 2 stays) should be installed in the middle of the ladder height (maximum distance between ladder stays is 2,95m). If it is necessary additional support strip can be bought as the product: 3064823901 (the strip and 2 stays).

2. Initial stage – the clamp pre-installation in the shaft pipe.

Locate the strip with stays in the right lower corrugation of the shaft pipe (see the Picture 6), counting from the lower shaft end (see the assembly diagram) in the way the joint is located opposite from where the ladder will be fixed. Adjust spacing and location of the stays to the ladder width.

NOTE! Since the strip is springing care should be taken while bending the strip to not trap the fingers.



Picture 6. The support strip pre-assembled in the shaft.

3. Level the upper support strip in the cone in relation to the lower stays in the shaft pipe.

When installing the cone (see Installation guide - step 8) adjust its position in the way the ladder support strip in cone fits to the initially installed stays. Locate the highest ladder step in the upper mounting bracket inside the cone. The springing element gives in under the pressure and after the step is located in the prepared place the support strip element partially closes the handle and protects the ladder against accidental slipping out.

4. Hang the ladder in manhole.

After manhole installation hang the ladder inside the chamber by pressing the upper step into the upper handle in the cone and the stringers into the mounting brackets (see the Picture 2). When doing this locate the highest ladder step (option 1) or the second step (option 2) in the prepared place. The springing element gives in under the pressure and after the step is located in the prepared place the support strip element partially closes the handle and protects the ladder against accidental slipping out.

NOTE! If it is required to have the first step of the ladder nearer to the surface it is possible to install the ladder to the mounting bracket of the cone using the second rung (option 2nd, see the assembly diagram).

It is required to enter the manhole to finish the ladder installation. Care should be taken when climbing down the steps before the final fixing of the lower support strip. Safety corset and safety measures are recommended.

Fix the ladder by closing the support strip with bracket blanking plates located in the special grooves (see the Picture 7).



Picture 7. Fixing of the blanket plates.

Finishing the installation

After the installation in both assembly options make sure of all the ladder elements are installed properly and the distance between manhole upper/bottom side and the ladder is kept. The stringers should not lean against the landing. In the first assembly option the ladder location should not narrow the manhole entry.

NOTE! To guarantee the safety for a person entering the manhole install the ladder in line with the installation guide requirements!