PALADEX
Innovative Pipe Systems

PALADEX PIPE INSTALLATION INSTRUCTIONS

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1. Transportation requirements

To avoid damage to the pipe and fittings the following handling requirements shall be followed:

- During transportation, a flat floor should be provided without any sharp objects.
- The pipes shall be placed on wooden beams with minimum 12 cm in width and 5 cm in height. The distance between two beams shall be maximum 2 meters.
- The pipes shall be loaded onto the vehicle and secured so that there is no movement of the pipes during transportation. The method of securing the pipes shall not the cause any damage to the pipes.
- The socket of each pipe will be free from any friction or pressure.
- Large pipes will be place at the bottom of the stockpile.
- For Nested pipes during transportation use wooden pallets at the back of the truck to avoid a sudden movement of the inner pipes.

2. Handling requirements

- Pipes shall not be dropped (tipped over) from the vehicle.
- Pipes shall not be dragged or allowed to strike any object.
- Pipes shall be loaded, unloaded and moved on site only by fabric-lifting belt with a minimum 50 mm in width.
- Pipes shall not be handled with any type of chain.
- Lifting the pipes according to table 1.
- Pipes shall not be lifted by threading the belt through the interior of the pipe.
- 450mm and smaller pipes can be moved by hand.
- Larger pipe requires a backhoe with a fabric-lifting belt. (see table 1)
- 900mm and larger diameter pipes shall be lifted with a fabric-lifting belt at two points spaced approximately 3m apart.
- For nested pipes (pipe stored within a larger diameter pipe) use two points connection to pipe regardless the diameter



Hand Transportation

≤ 450mm



One lifting point

500-750mm



Two lifting points

≥ 900mm

Table 1:

Recommended Handling Method for Pipe				
Diameter in. (mm)	Approx. Weight (kg/m)	Hand Transportation	One lifting point	Two lifting points
400	10.0	√	√	√
450	11.5	√	√	√
500	13.1		√	√
600	18.4		√	√
700	23.7		√	√
750	25.5			√
800	28.0			√
900	33.2			√
1000	40.4			√
1050	38.6			√
1200	45.1			√
1250	55.8			√
1400	62.5			√
1500	77.7			√
1600	88.7			√

3. Receipt of Pipes

Pipes shall be visually inspected for the following:

- Exposed re-enforcing steel.
- Damaged pipe ends.
- Seal in place.
- Roundness of pipe ends.

Any damaged pipes shall be isolated form stock to prevent their use and Avrot Industries Ltd. Shall be informed regarding the quarantined stock.

4. Onsite Pipe Storage

To ensure that the pipes will not be damaged during nearby work, the following guidelines are required:

- Pipes shall be stored in an isolated area to minimize risk of damage from other activities onsite.
- The transportation distance between storage and installation should be kept to the minimal practical distance.
- The pipes should be stocked on a flat and clear ground.
- Ensure that the stockpile is secure to prevent collapse.
- Stack pipes no higher than approximately 2.5m high. (number of pipes depends on diameter)
- Ensure that the pipes' socket will be free from any interference (as described in the picture below).
- While in storage, pipes and gaskets shall not come into contact with active materials, such as: fuels, oils or any other chemicals.
- It is recommended to plan on an economic level of stock held on site (2-3 days) to minimize risk of damage.



5. Trench Construction

The trench construction shall be according to the Health and Safety requirements set be they local, regional or national regulations. In case no such requirements are known, use the following instructions when installing Paladex pipes:

- The width of the trench shall be at least 90cm wider than the diameter of the pipe in order to place and compact backfill around the pipe.
- The trench base and backfill materials which are used shall be in accordance to the specification of the country of installation
- Trench base **must** be **cleaned** from any rock or similar materials that cannot provide support to the pipe or may cause stress on the pipe.
- The gradient of the trench shall be as specified on installation schedule
- Trench base should be made of well compacted bases, with the ability for compaction of 95%.
- The pipes bedding thickness shall be at least 15 cm from the base of the trench.
- Spread 5 cm layer of soil in order to level the soil easily according to the required angle.
- During installation, the trench shall be free of ground water.

6. Socket-Spigot Connection

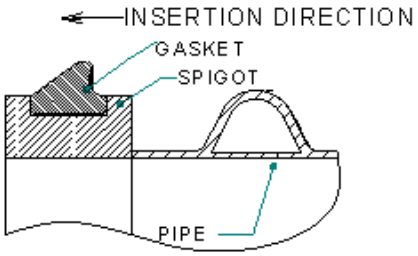
Since Paladex pipes are connected in a socket-spigot method, the instructions for this matter are as follows:

- Inspect the pipe for any damage prior to lowering the pipe into the trench
- Remove any foreign objects from trench base and confirm compaction of gradient of base
- Lower pipe into trench by hand, or use belts, depending on size of pipe.

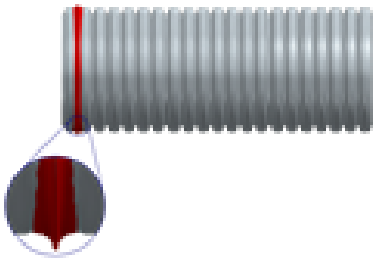




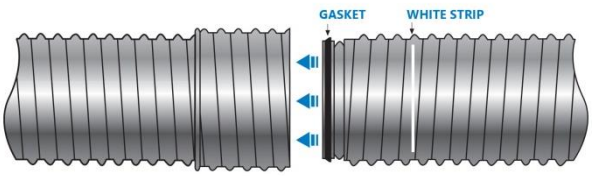
- When using a **Paladex PE pipe** (above diameter 800 mm) - assemble gasket on spigot according to the shown drawing.

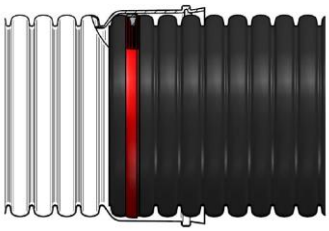


- When using a **Paladex PP pipe** (diameter 400,500,600 & 800 mm) - assemble gasket on the first valley according to the drawing.



- Lubricate pipe socket with lubricant supplied with the pipes.
- Make sure that the lubricated area will not touch dirt or backfill.
- Place spigot into socket and align.
- The insertion direction is always from spigot/gasket to socket





- Insertion depth will be up to the white mark (approximate 25 cm)

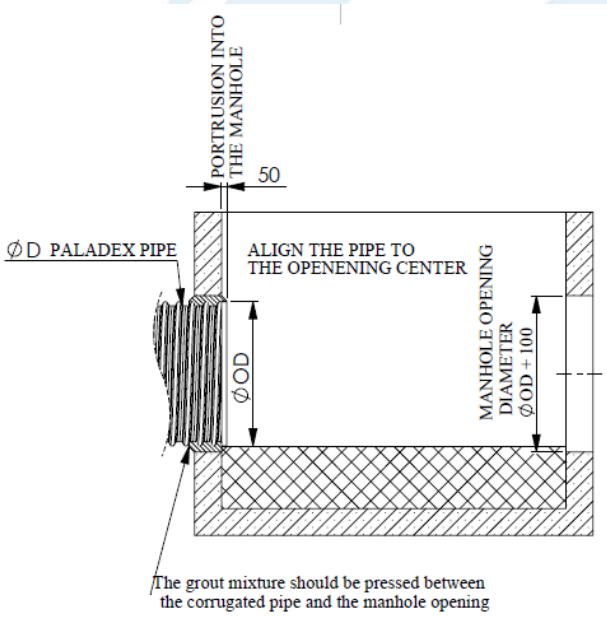


With the pipe suspended from the belt and aligned, the pipe can be inserted using the belt and manual pressure. It is then possible to push the pipe into the socket of the previous pipe. Swaying the pipe side to side will aid insertion. It is prohibited to push the pipe with any other equipment at any point of the pipe

7. Manhole connection

Manhole can be used at changes in pipe material, size, grade, direction and provide for system access. The method used to join the pipe and the manhole depends on the project requirements.

Grouting Paladex pipe is to grout the pipe into the concrete manhole opening.



The grout mixture should be pressed between the pipe and the manhole opening. This type of connection is acceptable for the majority of storm sewers. Because of the spiral exterior, this connection also creates a water stop effect.

Pipe diameter (ID)	400	450	500	600	700	750	800	900
Direct insertion	600	600	700	800	900	950	1050	1100

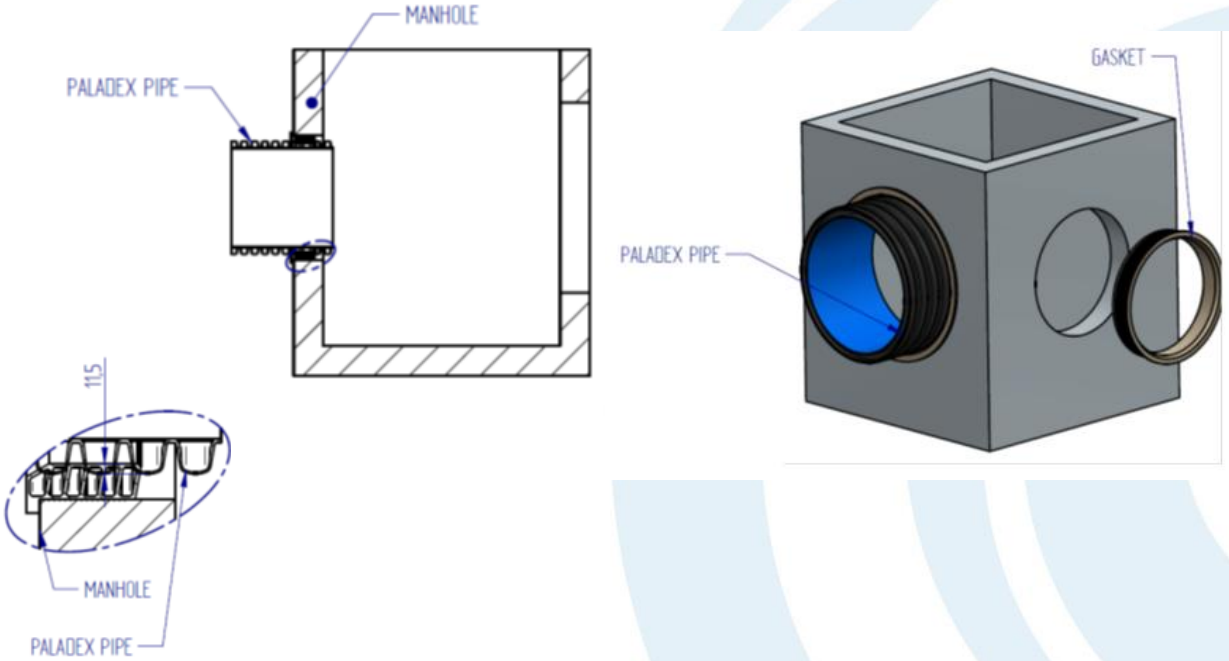
Pipe diameter (ID)	1000	1050	1200	1250	1400	1500	1600
Direct insertion	560	1250	110	110	110	110	110

Manhole opening diameter

Gasket

In case a project requires connection to manhole with gasket, there are two configurations of gaskets; for PALADEX PP the gasket does not required special preparation and for PALADEX PE there is need for special order of pipes (with smooth edges at the spigot end).

The following drawing describe the insertion process



Manhole opening diameter when using gasket with PALADEX PP

Pipe diameter (ID)	400	500	600	800
Direct insertion	510	630	740	960

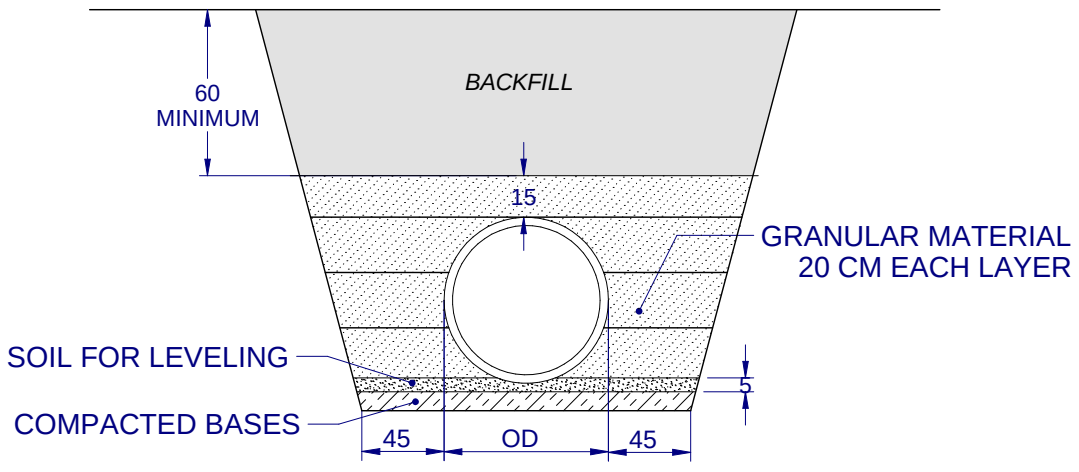
8. Backfill

The specified material for backfill surrounding and covering the pipe shall be used and could vary between countries and clients. The following is the minimum requirements for the Paladex system:

The minimum requirement is a sand/gravel mixture as described below.

A. The sand/gravel mixture should be a mixture of sand and gravel, 100% smaller than 40 mm (gravel), and about 50% smaller than 6 mm (sand).
B. All types of backfill should be free of any wood, masonry debris, silt or clay

- Place and compact backfill in layers to meet requirements above and project requirements.
- Avoid impacting pipe with compaction equipment.
- single pipe runs receiving H-25 traffic requires final backfill 0.15m above initial backfill to provide at least 0.6m of total cover as measured from the top of pipe to bottom of flexible pavement or to top of rigid pavement.
- Minimum cover may be reduced in areas with no or infrequent light traffic. These situations must first be reviewed by the pipe manufacturer.



9. Leak tightness testing

The pipe shall be subject to a pressure when stated in the contract. The pressure typically undertaken on manhole to manhole length and undertaken to a defined test method and performance criteria depending on the location of the installation site. The test's criteria should be specified by project manager/Engineer.
The test is typically done before back filling.