



# Grouted Tee™

## Frequently Asked Questions

**Q What pipe size range can the Grouted Tee be used on?**

2" to 56". Non-standard pipe sizes can be accommodated.

**Q Can the Grouted Tee be used to install Tees that are equal in diameter to the main line?**

Yes

**Q What type of pipe materials can the grouted Tee be used on?**

Carbon Steel, Stainless Steel, Spun, Cast and Ductile Iron

**Q What is the thinnest pipe material for which a grouted tee could be installed?**

The Grouted Tee is suitable for pipelines with Diameter/Thickness ratio of 120 or less.

**Q When ordering from GL Noble Denton what is expected installation time?**

Usually between 4 to 12 weeks in UK/Europe depending on size. Please contact us for other areas.

**Q What pipeline products can the Grouted Tee be used for?**

Natural Gas, Water, Crude Oil, Methanol, Propylene, contact us for other fluid compatibility.

**Q How does the epoxy grout adhere to the wall of the pipe?**

The outer surface of the main carrier pipe and inner surface of the shells are grit blasted to the standard SA 2.5 (i.e with a surface finish between 30 and 70 micrometer). Epoxy based grout was developed specifically for this type of application. GL Noble Denton has done repeated tests where the side bolts of the horizontal flanges were removed. It was found that even without the bolts, the fitting retains its required integrity. The epoxy grout has extremely low shrinkage properties to ensure load is transferred effectively from the main pipe to the outer shell.

**Q Will weather conditions affect the installation of the Grouted Tee? For example rain or high humidity?**

Standard precautions can be taken to ensure that the pipe and fitting remain dry during installation.

**Q Are different grouts available?**

No, the grout has been specifically developed for this application. GL Noble Denton or one of its licensees will specify the grout material.

**Q Can I procure the grout, seals and tees locally?**

No, these materials will be supplied through GL Noble Denton or one of its licensees as part of the installation

**Q What type of surface is required when preparing the pipe for the Grouted Tee installation?**

SA 2.5 - (roughness 30 to 70 micrometer)

**Q Would hydro-blasting be an acceptable method of cleaning/surface finish?**

Yes as long as it gives the right surface roughness. It would require drying after.

**Q Can a mechanical cleaner be used?**

Yes as long as it gives the right surface roughness.

**Q What Approvals have been performed on the Grouted Tee?**

The Grouted Tee has been verified by DNV and by the UK gas industry.

**Q What would be an average schedule from initial design to installation on different size pipes?**

- Small diameter (4" to 12") would take between 4 to 6 weeks
- Larger diameter (Above 12") would take between 6 to 12 weeks

**Q What type of seal material is used ?**

HNBR (high grade nitrile) is currently used as the primary seal material for natural gas , water, crude oil, methanol, and propylene applications. Other seal materials can be used to match other products.

**Q What is the product temperature range for the Grouted Tee?**

-50 to + 125 Celsius. Higher temperatures will be possible subject to testing. Please contact us for latest status.

**Q What working pressures are the fittings designed for, ie ANSI- 300, 600 or 900?**

The Fittings have been certified by DNV to ANSI-600. This is a requirement in the UK gas industry. However, GL Noble Denton have also performed limited qualification tests up to CLASS 900.

**Q What thickness layer of epoxy grout is needed and is this dependent on the operating pressures of the line?**

Grout thickness is not dependent on the operating pressures of the line. The practical thickness is usually from 3mm to 26mm due to ovality in the host pipe. The epoxy grout allows load from the main carrier pipe to be transferred to the outer shells of the fitting.

**Q What amount of time is required to install the tee, and to tap the line, assuming site preparations have been made**

For all sizes (2" to 56"). allow one day to install the fitting. Then 8 hours for the epoxy grout to cure. Drilling (i.e. tapping) can then be carried out. Therefore a total elapsed time of 2 days.

**Q Can the Grouted Tee be used for flow isolation**

Yes, it can be used for stopple (i.e. flow stopping) applications. A double branch fitting has been developed for this type of application.

**Q Can the lines be tapped in the vertical along with horizontal?**

Yes, and at any other orientation. Grouted Tee technology also allows multiple branches on one fitting at different orientations.

**Q Can the Grouted Tee be used to install pig launchers and receivers?**

Yes, a Y-branch fitting (up to 30 degree angle from the pipe axis) can be installed for such a purpose.