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The ultimate in piping solutions



Flowtite™ GRP Jacking Pipe

FLOWTITE™ Jacking Pipes

FLOWTITE™ Jacking pipes are designed for the construction and renovation of underground pipelines using trenchless methods. FLOWTITE™ jacking pipes feature high axial strength and ring stiffness and a flush coupling design .

FLOWTITE™ Jacking Pipes are manufactured on a continuously winding and advancing mandrel, ensuring consistent high quality pipes. These are recognised for their strength and corrosion resistance making them suitable for a range of applications including water, sewerage and drainage.

- The FLOWTITE™ Jacking Pipe product range consists of the following products:

 - Standard jacking pipes
 - Jacking pipes with injection nozzles
 - Relining pipes
 - Specially tailored fittings
 - Diameter range 300—3000mm

Applications

FLOWTITE™ Jacking Pipes are used in pipeline construction for the transport and storage of water, sewerage, drainage and industrial wastewater. FLOWTITE™ Jacking pipes can be installed in straight or curved sections in vertical or horizontal alignments. The construction methods are suitable for both cohesive and non-cohesive soils, in dry or high water table conditions.

- Pipe jacking is primarily used for:

 - Construction of new sewer pipelines
 - Old sewer replacements
 - Construction of conduits as protective tubes for gas pipelines, high pressure water pipelines, etc.
 - Road and technology culverts in
 - Transport engineering
 - Electricity and telecommunication cable ducts in urban areas or areas with groundwater restrictions
 - Relining

Benefits

- The main benefits of pipe jacking compared to open trench method are:

 - Minimum environmental disturbance, especially in urban areas
 - Significant reduction in social costs
 - A strong, watertight, complete pipeline after jacking is finished
 - Lower installation costs compared to open trench technology
 - Pipe structure can be designed individually according to project-specific requirements.



- Compared to other materials, FLOWTITE™ GRP pipe systems ensure:

 - High axial compressive strength
 - High maximum allowable jacking forces with small wall thickness
 - Smooth and even outer surface
 - Minimum required jacking forces compared to other materials, especially after breaks
 - Low water adhesion (small friction during jacking),
 - Max. single drive length up to 300m depending on soil conditions and jacking parameters
 - Elastic material behaviour
 - Consistent distribution of concentrated compressive stress (especially in curves)
 - Low risk of cracks
 - Pipe can easily be machined
 - Ability to perform couplings or fittings after completion of jacking
 - Ability to build a manhole in a completed pipeline
 - Low specific weight of GRP material
 - Reduced handling efforts
 - High safety

- The excellent hydraulic characteristics of FLOWTITE™ Jacking pipes allow for a smaller internal diameter compared to pipes made of other material. This results in:

 - Smaller jacking machines
 - Minimum excavation volume
 - Reduced jacking forces
 - Smaller electric/hydraulic power units
 - Smaller starting pit (thrust block volume)
 - Lower energy consumption
 - Reduced construction time
 - Maximum cost savings
 - Optimal price-to-performance ratio

Physical Characteristics

The pipe manufacturing process creates a very compact composite structure which is necessary and very important for jacking applications.

The winding mandrel technology enables the production of a wide range of pipe wall thicknesses. This allows the optimal pipe selection in terms of the required ring stiffness and the maximum permissible jacking force required for a given internal diameter.

The wall construction of FLOWTITE™ jacking pipes can vary dependant on the wall thickness, pressure application, stiffness and jacking load requirements. Therefore only indicative values are provided below:

Properties of FLOWTITE™ Jacking Pipes

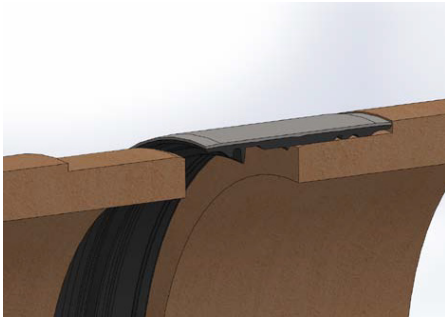
Parameter	Value
Specific weight of material	20 kN/m ³
Longitudinal compressive strength	85 MPa
Safety factor for jacking force	3.5
Colebrook-White coefficient	0.01 mm
Hoop flexural modulus	11,000 MPa

Couplings

Jacking pipes are connected using flush joint couplings. A standard FLOWTITE™ jacking pipe is equipped with a coupling pushed onto one of the spigots. Couplings for jacking pipes have an outer diameter equal to the outer diameter of the jacking pipes so the resulting connections do not interfere with the installation process. Depending on the intended use, couplings are available in different types, pipe diameters and pressure classes. The coupling seals are made of elastomeric materials and meet EN 681-1 and AS1646.

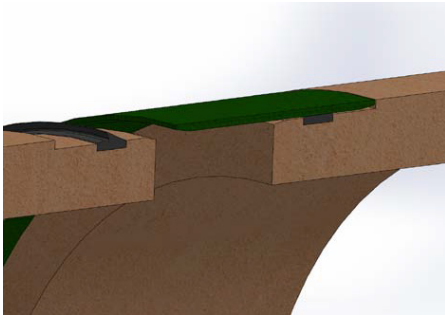
Type SE Coupling

The Type SE coupling is a 316 stainless steel sleeve with an integral elastomeric seal over the entire width. The standard seal supplied is made of EPDM, however, SBR or NBR seals are available on special request.



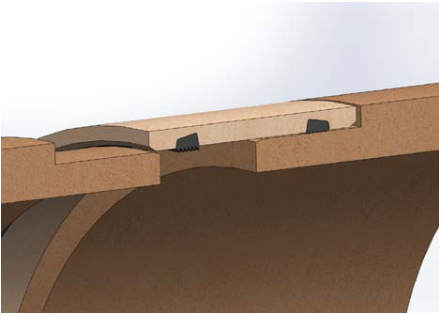
Type GR Coupling

The Type GR coupling is a GRP sleeve made of polyester resin reinforced with fibreglass. The inner surface of the sleeve fits tightly to the wedge seal made of EPDM, SBR or NBR embedded into a special groove on the pipe spigot. The GR coupling is predominantly used for larger pipe diameters (DN ≥ 1000).



Type FJ Coupling

The Type FJ coupling has been designed for pressure applications. The coupling is equipped with REKA seals, also used for connecting standard GRP pressure pipes installed in an open trench. This solution is proposed for pressure jacking applications not exceeding 600 kPa. The suitability of the FJ coupling should always be discussed with the manufacturer.



Transition Pipe

Transition pipe is supplied to provide the means to connect trenchless jacking pipe to trenched pipe. The transition pipe provides cost savings in that MH structures are not necessary and jacking pipes can be used sparingly between MH structures.



Max. Allowable Jacking Force (ISO 25780, Safety Factor 3.5)

Outside Diameter (mm)	SE Joint		GR Joint	
	Wall Thickness (mm)	Jacking Force (kN)	Wall Thickness (mm)	Jacking Force (kN)
376	17 - 36	234 - 702		
401	18 - 39	278 - 829		
427	18 - 39	298 - 890		
501	18 - 48	353 - 1348		
530	18 - 51	374 - 1535		
550	20 - 53	467 - 1668	29 - 50	634 - 1356
616	21 - 58	570 - 2086	30 - 52	697 - 1483
650	21 - 62	555 - 2329	29 - 58	745 - 1916
718	21 - 68	616 - 2872	30 - 61	834 - 2157
752	21 - 72	647 - 3211	29 - 68	878 - 2725
820	23 - 78	826 - 3843	30 - 71	975 - 3011
860	24 - 81	866 - 4149	30 - 77	1068 - 3625
924	26 - 87	1066 - 4841	30 - 81	1123 - 4037
960	27 - 90	1179 - 5231	30 - 87	1005 - 4515
1026	29 - 96	1411 - 6017	31 - 90	1115 - 4892
1099	31 - 90	1674 - 6076	33 - 96	1343 - 5654
1229	34 - 81	2146 - 6141	30 - 90	1043 - 5525
1348	37 - 89	2654 - 7502	34 - 81	1436 - 5431
1434	40 - 95	3166 - 8591	37 - 89	1874 - 6722
1499	41 - 99	3396 - 9410	39 - 95	2206 - 7760
1638			41 - 99	2303 - 8317
1720			45 - 94	3000 - 8604
1842			47 - 98	2893 - 9022
2047			51 - 98	3639 - 9710
2252			56 - 94	4802 - 10302
2400			62 - 96	5608 - 11040
2530			66 - 95	6685 - 11639
2740			69 - 93	6856 - 11192