

FASCICULE 71 RULES

In accordance with Article 63.5 of Fascicule 71, 2003 issue, the test pressure accepted in a section of pipe installed (STP) equals the maximum design pressure (MDP) of the section. MDP is equivalent to the static level in gravity systems or dynamically in pressure systems, increased by the effects of temporary operations.

The maximum size of temporary operations is determined by considering the protective device possibly installed.

The above test pressure was fixed at the CCTP and is the outcome of preliminary calculations made by the Owner.

Article 63-5-1 of the Fascicule lays down: " the section is held under pressure for 30 minutes during which the pressure drop, measured with appropriate precise apparatus, shall not exceed 20 KPa."

THRUST ON BLANK FLANGE

thrust $F = \text{test } P \times f \text{ (1 bar)}$

example :

Test P = 10 bar
DN = 150 | thrust F = 2270 daN

Thrust f on blank flange for 1 bar of pressure

DN	f (1 bar) daN	DN	f (1 bar) daN	DN	f (1 bar) daN	DN	f (1 bar) daN
60	47	250	590	600	3167	1200	12370
80	75	300	835	700	4278	1400	16787
100	109	350	1122	800	5568	1500	19236
125	163	400	1445	900	7014	1600	21851
150	227	450	1809	1000	8626	1800	27612
200	387	500	2223	1100	10405	2000	34045



SAINT-GOBAIN PAM LAYING RECOMMENDATIONS

- STORAGE
- HANDLING
- BACKFILL
- STANDARD JOINT
- STANDARD Vi JOINT
- STANDARD Ve JOINT
- UNIVERSAL Vi JOINT
- STANDARD V+i JOINT
- UNIVERSAL Ve JOINT DN 100 to 1200 MM
- EXPRESS JOINT
- EXPRESS Vi JOINT
- PIPE CUTTING
- WELD BEAD
- ANCHOR BLOCKS
- ANCHORING
- EXTERNAL COATING REPAIRS
- INTERNAL LINING REPAIRS
- PE SLEEVE INSTALLATION
- HYDRAULIC TESTING
- ASSEMBLY EQUIPMENT
- HORIZONTAL DIRECTIONAL DRILLING
- CONTACTS



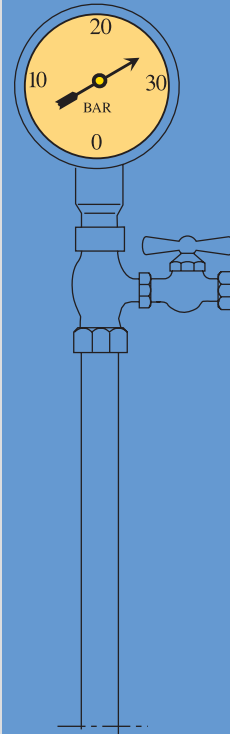
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LAYING RECOMMENDATIONS

Hydraulic Testing



These recommendations are based upon our knowledge of the products and their use. It is the contractor's responsibility to ensure that installation is carried out according to the best rules of practice.

- The length of the section to be tested depends on the configuration of the layout and CCTP data.

- The latest version of **Fascicule 71** recommends that 2000 m is not exceeded.

1 • Preferably raise the pressure in the pipes leaving joints uncovered in order to check that they are watertight, depending on the type of site.

2 • **Block the ends** of the relevant section with blank flanges fitted with valves, for water filling and air venting.

3 • **Evaluate the hydraulic loads** exerted on the ends of the pipe (see the table below) and set up a properly sized system of anchors.

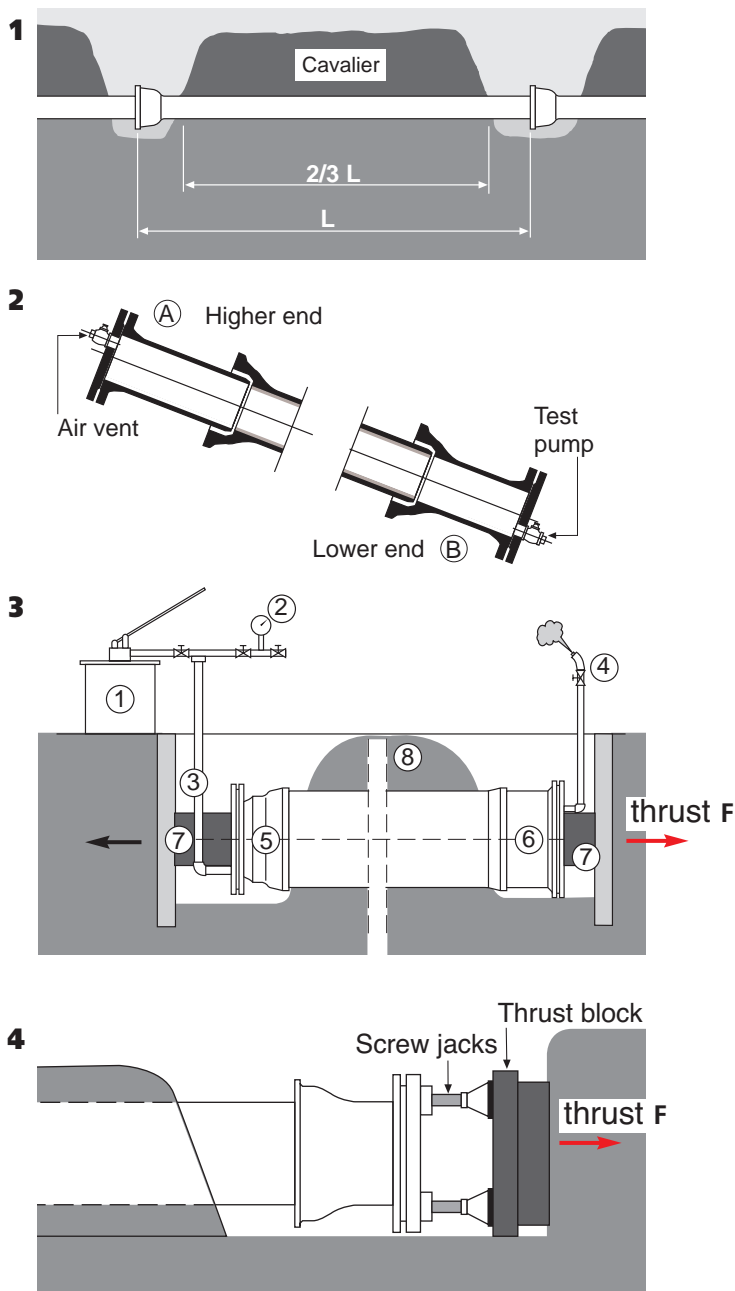
Absorb the loads in the timbers buried across the trench or in sheet piling (also provide lateral anchors).

Avoid the end of the pipe, already laid and hydraulically tested, being put under load.

Drawing legend:

1 Test pump	5 Low end part
2 Pressure gauge	6 High end part
3 Pump connection	7 Anchor system
4 Air vent	8 Pile of soil

4 • Raising the pressure applies a compressive force on temporary test anchors. Provide screw jacks to compensate for possible subsidence, if need be.



- **Check** that the air valves are working (opening their isolation valves).

- **Gradually fill** the main with water, preferably through the low point.

- **Use** the washout valves to check that the water is gradually filling up.

- **Bleed the air** at various high points in the section.

Leave the pipes full of water for 24 hrs as far as possible, before raising the pressure.

PRESSURIZING

- With the pipe completely filled, slowly **raise the pressure** up to the specified test pressure.

- **Monitor** the anchors on a permanent basis.

- **Apply the specified checking criteria.** (Where the Fascicule 71 rules are applied, test pressure shall not drop another 0.2 bar when it is held for 30 minutes).

- **Drain** the main, remove the test equipment and connect the section.

- **Thoroughly rinse** it to remove stones or earth possibly sticking to the sides during laying operations.

- **Disinfect** it before commissioning.