

BS EN 911 – ISO 3459 Test Method for Leaktightness Under Negative Pressure – Testing Equipment

Description

4 Apparatus

4.1 Apparatus for procedure A

4.1.1 A suitable apparatus for procedure A is shown in Figure 1.

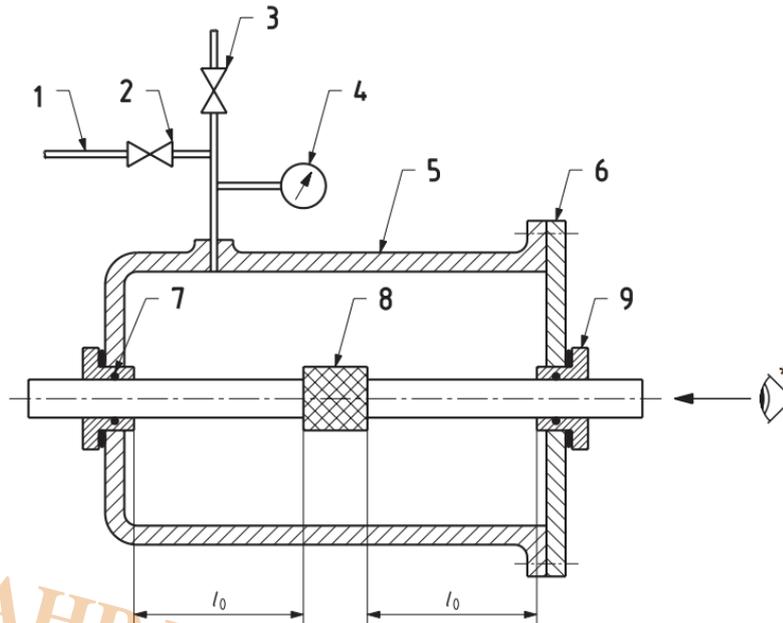
4.1.2 Enclosed tank, capable of being used at the appropriate test pressure and receiving the test specimen. The ends of the test specimen shall pass through the walls of the tank, so that the inside of the

pipe is open to the atmosphere and the connecting pipes are in axial alignment. The assembly shall be arranged so as to enable any leakage to be detected within the test specimen.

4.1.3 Pressure source, connected to the tank and capable of raising and maintaining the specified water pressure with an accuracy of $\pm 0,05$ bar.

4.1.4 Pressure measuring device, capable of checking conformity of the test pressure.

4.1.5 Temperature control system, capable of maintaining the temperature of the pressurized water in the tank at the specified temperature, T, with an accuracy of ± 2 °C.



Key

- | | |
|--|------------------------|
| 1 connection to hydraulic pump | 6 cover flange |
| 2 valve | 7 annular seal |
| 3 air release valve | 8 fitting to be tested |
| 4 pressure measuring device | 9 sealing collar |
| 5 enclosed tank | l_0 pipe free length |
| * The apparatus shall permit a clear view through the test piece | |

Figure 1 — Typical apparatus

4.2 Apparatus for procedure B

4.2.1 A typical test arrangement for Procedure B is shown in Figure 2.

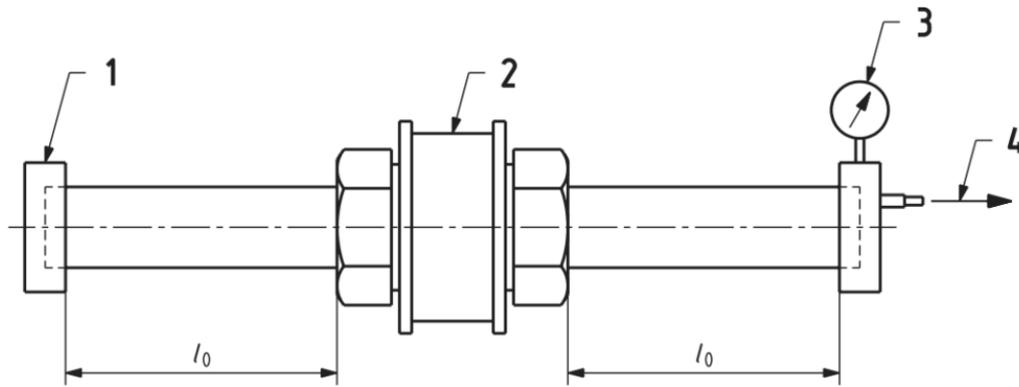
4.2.2 Vacuum source (pump), capable of producing in the test piece the partial vacuum specified in the referring standard.

4.2.3 Vacuum pressure measurement device, capable of measuring the pressure in the test piece with an accuracy of $\hat{A}\pm 0,01$ bar.

4.2.4 Shut-off valve, to isolate the test piece from the vacuum source.

4.2.5 Thermometer(s), capable of checking conformity to the specified test temperature.

4.2.6 End-sealing device, of appropriate size and sealing method for sealing the non-jointed end of the test piece. The device shall be restrained in a manner that does not exert longitudinal forces on the joints.

**Key**

- 1 end seal
- 2 joint under test
- 3 pressure measurement device
- 4 to vacuum pump
- l_0 pipe free length

Figure 2 — Typical test arrangement

5 Test pieces

The test specimen shall consist of one or more fittings and two or more pieces of plastic pressure pipe of

the size and quality for which the fitting is designed. The fittings and pipes shall not be tested until 24 h after their production. For practical reasons, the manufacturer may wait for a shorter period of time before testing. In case of dispute, a duration of 24 h shall apply.

In case of using procedure B, the test piece shall be connected to the vacuum source (pump) via a line with a shut-off valve. The vacuum pressure measurement device shall be connected between the shutoff valve and the test piece.

The assembly of the joint should be carried out in accordance with the manufacturer's instructions. The mean outside diameter, d_{em} , of the pipe should preferably conform to the minimum specified value,

and the fitting dimensions (mean inside diameter, d_{im}) should preferably conform to the maximum values stated by the manufacturer, in order to have dimensions as close as possible to the extreme limits

of their relevant tolerances.

6 Procedure A: Pressure outside

6.1 Secure the test specimen in the water tank. Fill the tank with water at the specified temperature, and

that variations in the test temperature do not exceed ± 2 °C. Minimum conditioning times are given in Table 1.

Table 1 — Conditioning periods

Nominal wall thickness of the pipe mm	Minimum conditioning period min
$e \leq 10$	20
$10 < e \leq 20$	60
$20 < e$	120

6.2 Remove any condensation from the inside of the test specimen. Wait for 10 min and ensure that the inside of the test specimen is completely dry.

6.3 After conditioning, progressively and smoothly apply a first test pressure, p_1 , in the shortest time practicable for at least 1 h and then smoothly increase the pressure without shock to the second level, p_2 .

Maintain the test pressure, p_2 , for a further period of at least 1 h. The test starts on achieving the required test pressures.

6.4 Maintain a constant reading on the pressure measuring device. Inspect the inside surface of the test piece for leakage and record any signs of leakage observed, and the pressure at which leakage occurs, while the joint is subjected to external pressure.

7 Procedure B: Vacuum inside

7.1 Minimum conditioning times are given in Table 2.

Table 2 — Conditioning periods

Nominal wall thickness of the pipe mm	Minimum conditioning period min
$e \leq 10$	20
$10 < e \leq 20$	60
$20 < e$	120

7.2 Ensure that during the procedure, the test temperature is maintained at the specified temperature and that variations in the test temperature do not exceed $\pm 2 \text{ }^\circ\text{C}$.

7.3 Evacuate the test piece to the test pressure specified in the referring standard. Record the time when the test pressure is achieved and close the shut-off valve.

7.4 Record the increase of pressure, if any, in the test piece until either the test period specified in the referring standard has elapsed or prior failure of the test piece as indicated by an increase of internal pressure.

8 Test report

The test report shall include the following information:

- a) a reference to this International Standard and to the referring standard;
- b) the nominal pressure class or S series of the components [e.g. fitting(s), pipe] comprising the joint(s) under test;
- c) all details necessary for identification of the test pieces, including the nominal size of the pipes and

- fittings used to produce the test pieces, the type of material, and the manufacturer's code;
- d) the test procedure;
- e) the test period;
- f) the test pressure;
- g) the test temperature;
- h) information on the leaktightness of the joint including the pressure at which a leakage occurred (if any);
- i) any factors which might have affected the results, such as any incidents or any operating details not specified in this International Standard;
- j) the date of test.

Annex A

Test parameters

The test parameters in Table A.1 shall be used, if applicable.

Table A.1 — Test parameters

Test medium		Test duration	Test temperature	Test pressure difference (p_1 and p_2)
Procedure A	Procedure B			
Water outside and air (atmospheric pressure) inside	Air	1 h low pressure difference (p_1) followed by 1 h high pressure difference (p_2)	$20\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$	100_{0+50} mbar (p_1) followed by (800 ± 50) mbar (p_2)

The free length, l_0 , of each pipe shall be at least three times the nominal outside diameter, d_n , with a minimum of 250 mm.

In case of using procedure A, pipes with d_n greater than 315 mm and the specified minimum free length cannot be achieved, a shorter free length can be chosen with a minimum of two times d_n , unless otherwise specified in the referring standard or specification.



Leaktightness Tester Under Negative Pressure According to ISO 3459 , BS EN 911

- Touch display
- Definition of two pressure levels and time for each level
- Complete test done automatically

-
- For sizes under 63mm according to standard (Rings and seals as per customer request)
 - Thermal printer included
 - USB export of data to MS EXCEL
 - Proportional pressure control valve
 - Negative pressure down to -5000 mbar
-

[Leak Tester for Fittings Under Negative Pressure](#)

▪

Category

1. Equipment for Standards
2. Standards

AHP PLASTIK MAKINA