

Australian/New Zealand Standard™

Methods of test for plastics pipes and fittings

Method 8: Method of testing the leaktightness of assemblies

METHOD

1 SCOPE

This Standard specifies a method for testing the leaktightness of assemblies of plastics pipes and fittings with elastomeric sealing-ring socket joints or inspection openings that may be subject to diametric distortion and/or angular deflection. It includes, but is not limited to—

- (a) single sockets on pipes,
- (b) double sockets,
- (c) sockets on fittings, and
- (d) inspection openings on fittings.

It is also applicable to elastomeric sealing-ring sockets made of other materials, e.g. ductile iron, intended for use with plastics piping.

2 PRINCIPLE

A joint assembly, such as a test piece consisting of a plastics pipe mounted into an elastomeric seal socket, is subjected, within a specified temperature range, to a specified internal positive or negative pressure regime for a specified test period during which the pipe may also be subject to an angular deflection and/or diametric distortion. While under pressure (positive or negative), the test piece is monitored for signs of leakage.

3 SYMBOLS AND DEFINITIONS

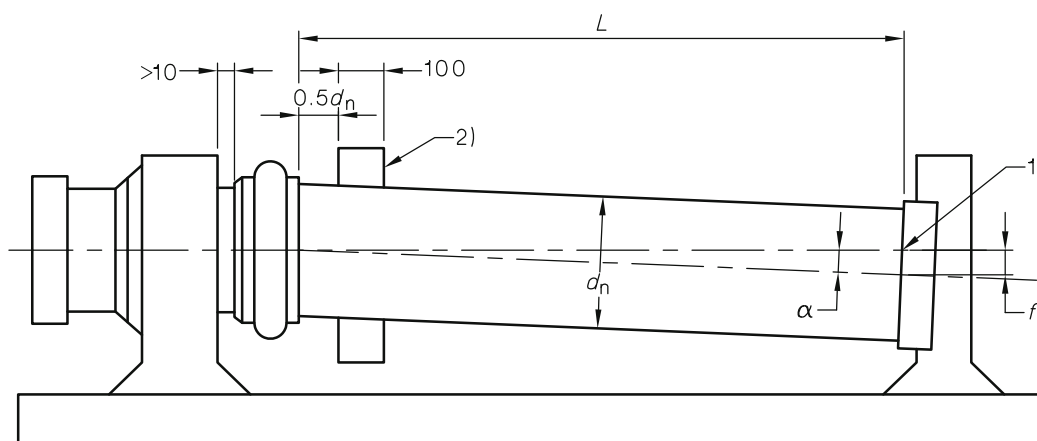
For the purposes of this Standard the following symbols and definitions apply:

- d_{em} = mean outside diameter of the pipe, in millimetres
- d_{im} = mean inside diameter of the socket, in millimetres
- d_n = nominal outside diameter of the pipe, in millimetres

4 APPARATUS

4.1 Test rig

Where angular deflection is specified, the test rig shall consist of at least two fixing devices, one of which may be movable, to allow angular deflection to be applied to the test joint while pressure, either positive or negative, is being applied. In addition provision should be made for applying diametric distortion to the test specimen. Distortion shall be applied via the use of flat plates (see Figure 1). For pressure testing of inspection openings, end-closures are required (see Figures 2 and 3).



L Free length of the pipe section between the socket mouth and the end-seal.

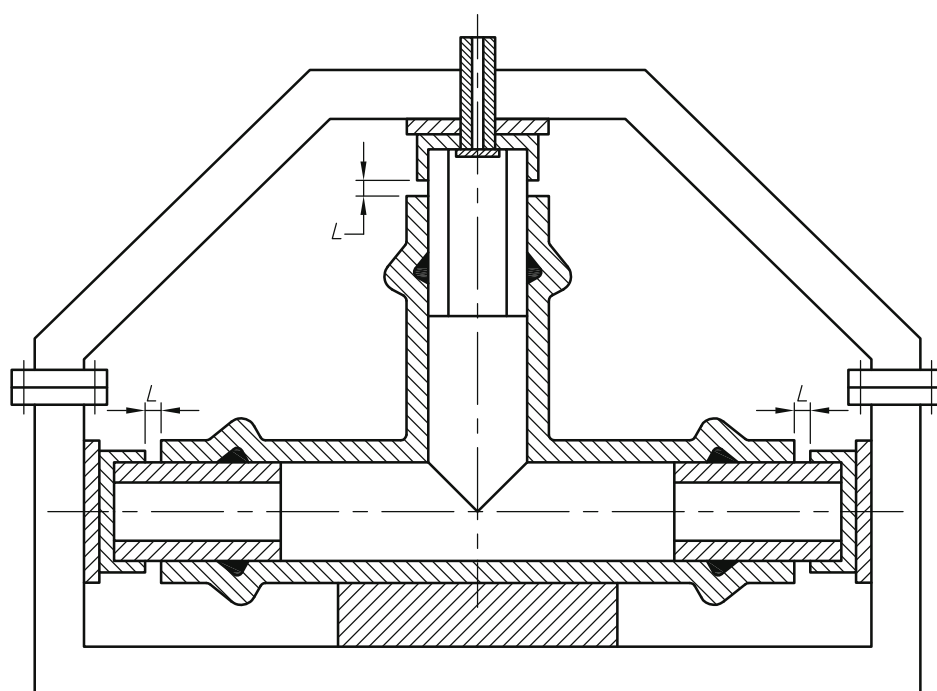
- 1) Starting point for measuring and adjusting the angle of deflection (α) $\geq 2^\circ$.
- 2) A pair of plates to deform the pipe.

NOTE: The deflection (f) and the angle of deflection (α) are related by the equation $f = L \sin \alpha$ (i.e. for $\alpha = 2^\circ$, the deflection is $f = 0.035L$).

WARNING: ADEQUATE MEASURES SHOULD BE TAKEN IN THE DESIGN AND OPERATION OF THE EQUIPMENT, ESPECIALLY IN THE CASE OF LARGE TEST PIECE SIZES TO ENSURE SAFETY.

DIMENSIONS IN MILLIMETRES

FIGURE 1 TYPICAL ARRANGEMENT FOR JOINT TESTING



L Length of pipe between the assembly under test and the joint or end-closure (plug or cap)
($L = d_n$ with $L_{\min} = 150 \text{ mm}$)

FIGURE 2 TYPICAL ARRANGEMENT FOR TESTING OF INSPECTION OPENING

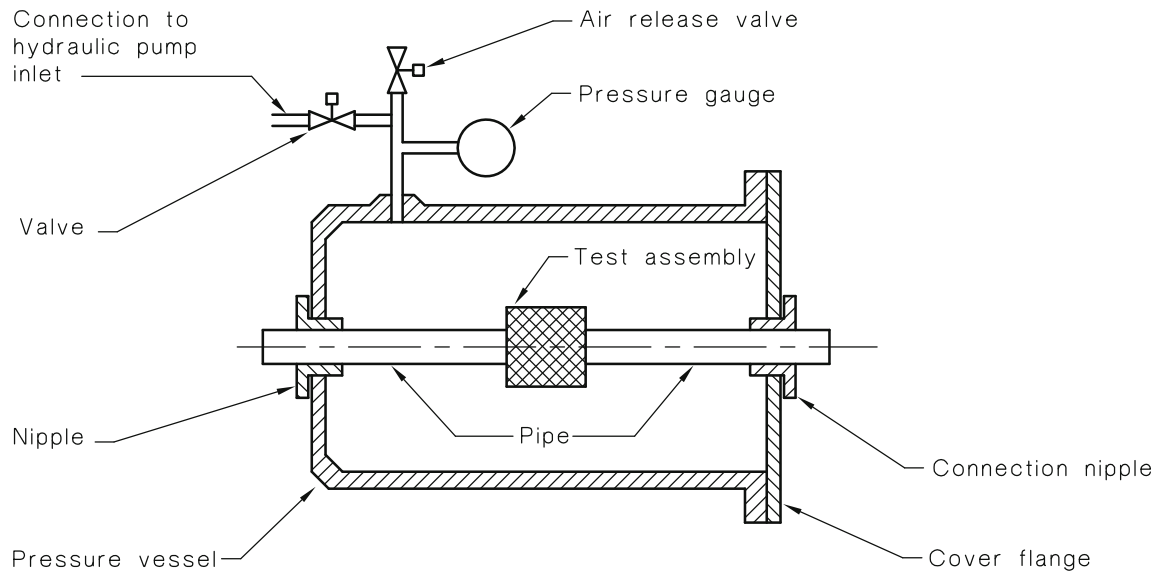


FIGURE 3 TYPICAL ARRANGEMENT FOR EXTERNAL PRESSURE TESTING

4.2 Pressurizing system

A system capable of producing and maintaining the test pressure (vacuum or hydrostatic, as required). Pressure or vacuum may be applied through one of the end-connections.

4.3 Pressure-measuring device

A pressure-measuring device capable of checking conformity to the specified static pressure values to an accuracy of $\pm 1\%$.

4.4 End-connections

Watertight connections shall be made to the pipe or test assembly either within the socket or on the external surface. Provision shall be made for connection to the pressurizing system or for venting of the specimen to the atmosphere as required.

4.5 Tank

If required, a tank capable of being used at the appropriate test pressure and temperature and capable of receiving the test specimen.

5 TEST PIECES

5.1 General

The relevant dimensions of the joint components shall be measured and recorded, that is, the mean outside diameter and out-of-roundness of any spigot or pipe joint area, the mean inside diameter and out-of-roundness of any socket, and the relevant dimensions of any intermediate component.

NOTE: The mean outside diameter (d_{em}) of the pipe should ideally be the minimum specified value, and the socket dimensions [the mean inside diameter (d_{im}) and the diameter of the groove for housing the sealing ring] should ideally be the maximum values stated by the manufacturer, in order for the dimensions to be as close as possible to the extreme limits of their relevant tolerances.

5.2 Elastomeric seal joint assembly

Each joint assembly shall consist of an elastomeric seal-socketed fitting or an elastomeric seal-socketed pipe assembled with one or more pieces of pipe.

Before assembly, the end of each piece of pipe shall have its ends squared and cleaned. It shall not have burrs, notches or other defects, which may cause premature failure.