BRITISH STANDARD

BS EN
14802:2005

Plastics piping systems — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading

The European Standard EN 14802:2005 has the status of a British Standard

ICS 93.025; 93.030

BSI
British Standards

National foreword

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Summary of pages

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14802

December 2005

ICS 93.025; 93.030

English Version

Plastics piping systems - Thermoplastics shafts or risers for inspection chambers and manholes - Determination of resistance against surface and traffic loading

Systèmes de canalisations en plastique - Eléments de rehausse en thermoplastiques pour boîtes d'inspection et de branchement ou regards - Détermination de la résistance aux charges de remblai et de circulation

Kunststoff-Rohrleitungssysteme - Kontrollschächte (Inspektionsöffnungen) und Einsteigschächte aus Thermoplasten - Bestimmung der Widerstandsfähigkeit gegen Belastungen der Oberfläche und Verkehrslasten

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Foreword

This European Standard (EN 14802:2005) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

The relevant performance requirements are contained within the referring standard(s) concerned.

This European Standard is one of a series of standards on test methods that support system standards for plastics piping systems and ducting systems.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies a method of testing the resistance of the upper assembly of inspection chambers and manhole components against surface and traffic loading.

It does not include requirements for testing the cover and frame. These requirements are specified in EN 124 or other standards depending on the material.

NOTE 1 Upper assembly components would normally include riser shafts, tapers, reducing slabs and telescopic joints.

NOTE 2 This test method is intended to support prEN 13598-2 and prEN 15229 (see bibliography)

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 124, *Gully tops and manhole tops for vehicular and pedestrian areas — Design requirements, type testing, marking, quality control*

ENV 1046, *Plastics piping and ducting systems — Systems outside building structures for the conveyance of water or sewage — Practices for installation above and below ground*

EN 1437, *Plastics piping systems — Piping systems for underground drainage and sewerage — Test method for resistance to combined temperature cycling and external loading*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
inspection chamber
drainage or sewerage fitting used to connect drainage or sewerage installations and/or to change the direction of drainage or sewerage runs, which terminates at ground level and has a riser shaft with a minimum outer diameter of 200 mm and an inner diameter of less than 800 mm (see also EN 476:1997 for non-circular chambers)

NOTE The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris but does not provide access for personnel.

3.2
manhole
drainage or sewerage fitting used to connect drainage or sewerage installations and/or to change the direction of drainage or sewerage runs, which terminates at ground level and has a riser shaft with a minimum inner diameter of 800 mm (see also EN 476:1997 for non circular manholes)

NOTE The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris and provides access for personnel.

4 Principle

A test assembly comprising at least the top 1 m of chamber or manhole components measured from and including any component or recommended installation assembly detail at the top end of the inspection chamber or manhole, is buried either in a soil box or under field conditions and a load is applied (see Figure 1).

During loading, the vertical displacement of the cover assembly is measured. After the test is finished, the test assembly is visually inspected and checked for defects.

NOTE The standard making reference to this European Standard can require test conditions that differ from those set in this European Standard for the following test parameters:

a) the number of test pieces (see Clause 6);

b) the maximum load (see Clause 9);

c) the soil group of granular surround (see Clause 9);

d) the compaction of the granular surround (see Clause 9).

5 Apparatus

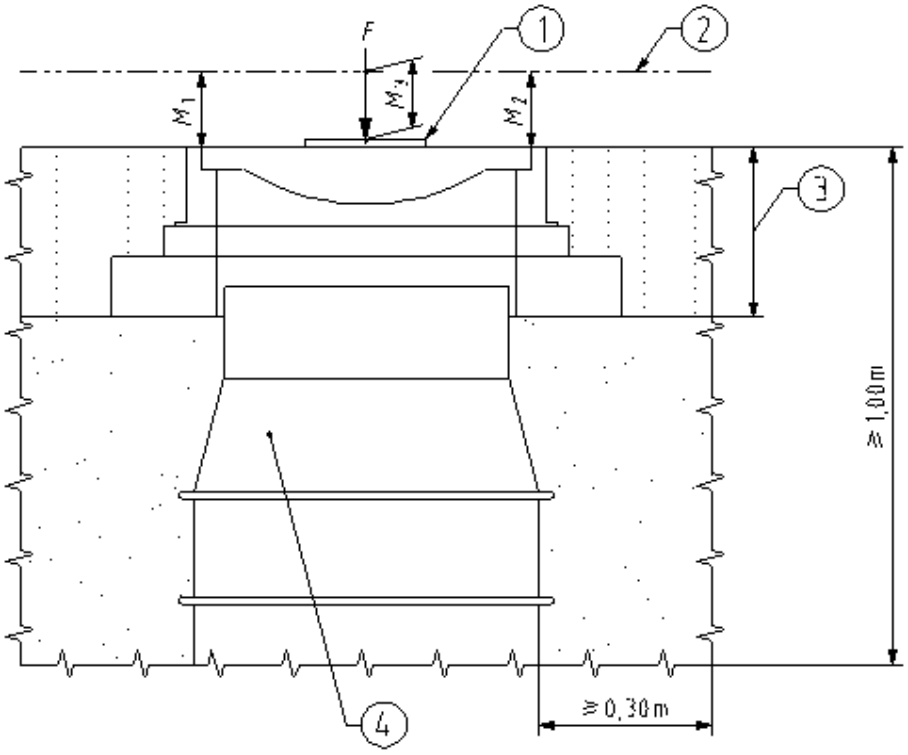
5.1 Soil box, large enough to accommodate at least the first 1 m of the test assembly and such that at all sides of the assembly a free space of 300 mm minimum is available. The box shall conform to the rigidity and other general requirements specified in EN 1437.

5.2 Loading device, capable of applying the required load to the middle of the cover and of maintaining a constant load for a minimum of 15 min. The load shall be applied via a loading plate conforming to the requirements given in EN 124.

NOTE A loading device could comprise a hydraulic actuator, alternatively the load can be applied using dead weight.

5.3 Thermo-couple, capable of measuring temperature to an accuracy of ± 5 °C.

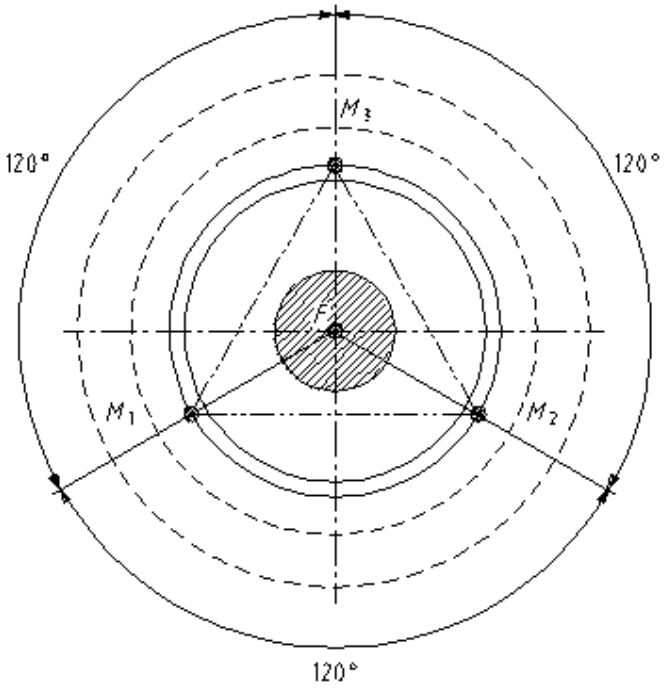
5.4 Test assembly, comprising at least the first 1 m of test assembly measured from and including the top assembly detail of the inspection chamber or manhole (see Figure 1).



Key

1 loading plate, size according to EN 124
2 reference line, datum
3 cover-solution
4 top element of chamber or manhole
M_1, M_2 and M_3 dimensions for determining the displacement (see 8.2)
F test load

Figure 1a — Test assembly



Key
M1, M2 and M3 points of measurement of displacements
F centre point of application of the test load

Figure 1b — Position of measuring points

6 Number of test pieces

Unless otherwise specified in the referring standard, the number of test pieces shall be one.

7 Conditioning and test temperatures

The test pieces shall not be tested for at least 24 h after manufacture.

The test shall be performed at ambient temperature between 5 °C and 25 °C. The test shall not be performed if the granular surround is at a temperature of less than 3 °C. The temperature of the granular surround shall be recorded.

8 Procedure

8.1 Bury the test assembly (5.4) either in the soil box (5.1) or under field conditions using the test parameters given in Table 1 ensuring that there is at least 300 mm of specified granular surround conforming to Clause 9. Where the test assembly is to be buried in the field, excavate enough soil to accommodate at least the first metre of the riser shaft below the test assembly. Bury the thermo-couple in the granular surround at the top of the riser shaft, but below the other assembly components, at a distance of approximately 300 mm.

Where the inspection chamber or manhole incorporates a pavement as an integral part of the cover, apply the pavement as in real practice and bury under field conditions.

Where telescopic joints are supplied, install the support ring and covers in accordance with the manufacturer's product or installation description.

Measure and record at the specified points the distance between the top of the cover and a datum which will not be affected by the load – see Figure 1b.

8.2 Apply the load using the loading device (5.2) within a period of 1 min to 5 min and maintain at the maximum value specified in Table 1 for a minimum of 15 min. Having applied the load re-measure and record the distances between the top of the cover and the datum.

8.3 After removal of the load visually inspect the test assembly inspecting for cracks or defects likely to impair performance.

9 Test parameters

Unless as otherwise specified in the referring system standard, the test parameters shall conform to Table 1.

Table 1 — Test parameters

Classification of inspection chamber or manhole [a]	Maximum load [b] kN	Soil group of granular surround [c]	Compaction of granular surround [d] %
Class A	5	3	≤ 95
Class B	50	2	> 95 and ≤ 98
Class D	100	1	> 98
Class E	150	1	> 98

[a] The classification of the application shall be in accordance with EN 124.

[b] The maximum load is not to be confused with the test load for covers in EN 124.

[c] The classification of soil group shall be in accordance with ENV 1046. The soil group shall be as specified unless otherwise specified in the minimum required installation condition of the manufacturer in which case the manufacturer's requirements shall apply.

[d] Unless otherwise specified in the minimum required installation condition of the manufacturer in which case the manufacturer's requirements shall apply.

10 Test report

The test report shall include the following information:

a) a reference to this European Standard and the referring standard;

b) a detailed identification of the inspection chamber or manhole components tested sufficient for factory process control requirements;

c) the installation details used during the test and their relationship to the recommended details of the manufacturer;

d) the test procedure used;

e) the soil temperature;

f) the maximum load;

g) the measured displacement(s);

h) the test duration time;

i) after testing any observed crack(s) and other defects likely to impair the performance of the inspection chamber or manhole;

j) any factors that might have affected the result, such as any incidents or any operating details not specified in this European Standard;

k) the date of test.

Bibliography

[1] EN 476:1997, *General requirements for components used in discharge pipes, drains and sewers for gravity systems*

[2] prEN 13598-2 *Plastics piping systems for non-pressure underground drainage and sewerage – Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 2 : Specifications for manholes and inspection chambers in traffic areas and deep underground installations*

[3] prEN 15229, *Plastics piping systems for non pressure underground drainage and sewerage - Performance requirements for manholes and inspection chambers*

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