

Nederlandse norm

NEN-EN 488

(en)

Stadsverwarmingsbuizen - In de fabriek geïsoleerde buissystemen voor stadsverwarming - Stalen afsluiters voor stalen leidingen met polyurethaanschuim als isolatiemateriaal en met een ommanteling van polyetheen

District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene

Vervangt NEN-EN 488:2003;
NEN-EN 488:2009 Ontw.

ICS 23.060.01
maart 2011

Als Nederlandse norm is aanvaard:
- EN 488:2011, IDT

VOORBEELD
Preview

Normcommissie 349054 "Leidingen voor warmtedistributie"

Apart from exceptions provided by the law, nothing from this publication may be duplicated and/or published by means of photocopy, microfilm, storage in computer files or otherwise, which also applies to full or partial processing, without the written consent of the Netherlands Standardization Institute.

The Netherlands Standardization Institute shall, with the exclusion of any other beneficiary, collect payments owed by third parties for duplication and/or act in and out of law, where this authority is not transferred or falls by right to the Reproduction Rights Foundation.

Auteursrecht voorbehouden. Behoudens uitzondering door de wet gesteld mag zonder schriftelijke toestemming van het Nederlands Normalisatie-instituut niets uit deze uitgave worden verveelvoudigd en/of openbaar gemaakt door middel van fotokopie, microfilm, opslag in computerbestanden of anderszins, hetgeen ook van toepassing is op gehele of gedeeltelijke bewerking.

Het Nederlands Normalisatie-instituut is met uitsluiting van ieder ander gerechtigd de door derden verschuldigde vergoedingen voor verveelvoudiging te innen en/of daartoe in en buiten rechte op te treden, voor zover deze bevoegdheid niet is overgedragen c.q. rechtens toekomt aan de Stichting Reprorecht.

Although the utmost care has been taken with this publication, errors and omissions cannot be entirely excluded. The Netherlands Standardization Institute and/or the members of the committees therefore accept no liability, not even for direct or indirect damage, occurring due to or in relation with the application of publications issued by the Netherlands Standardization Institute.

Hoewel bij deze uitgave de uiterste zorg is nagestreefd, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het Nederlands Normalisatie-instituut en/of de leden van de commissies aanvaardden derhalve geen enkele aansprakelijkheid, ook niet voor directe of indirecte schade, ontstaan door of verband houdend met toepassing van door het Nederlands Normalisatie-instituut gepubliceerde uitgaven.

Nederlands voorwoord

Voor de in deze norm vermelde normatieve verwijzingen bestaan in Nederland de volgende equivalenten:

<u>vermelde norm</u>	<u>Nederlandse norm</u>	<u>titel</u>
EN 19	NEN-EN 19	Industriële afsluiters - Markering van metalen afsluiters
EN 253:2009	NEN-EN 253:2009	Stadsverwarmingsbuizen - Fabrieksmatig geïsoleerde verbonden buissystemen voor ondergrondse warm water leidingnetten - Rechte buizen samengesteld uit een stalen mediumvoerende buis met polyurethaanschuim als isolatiemateriaal en met een polyetheen buitenmantel
EN 448:2009	NEN-EN 448:2009	Stadsverwarmingsbuizen - Fabrieksmatig geïsoleerde verbonden buissystemen voor ondergrondse warm water leidingnetten - Hulpstukken samengesteld uit een stalen mediumvoerend hulpstuk met polyurethaanschuim als isolatiemateriaal en met een polyetheen buitenmantel
EN 736-1:1995	NEN-EN 736-1:1995	Afsluiters - Termen en definities - Deel 1: Definitie van de afsluitertypen
EN 12266-1:2003	NEN-EN 12266-1:2003	Industriële afsluiters - Beproeving van afsluiters - Deel 1: Beproevingen, beproevingsprocedures en acceptatiecriteria waaraan iedere afsluiter moet voldoen
EN 13941:2009+A1:2010	NEN-EN 13941:2009+A1:2010	Ontwerp en installatie van voor-geïsoleerde buissystemen voor stadsverwarming
EN 14419	NEN-EN 14419	Stadsverwarmingsbuizen - In de fabriek geïsoleerde buissystemen voor stadsverwarming - Bewakingsystemen

Voorbeeld
Preview

English Version

District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene

Tuyaux de chauffage urbain - Systèmes bloqués de tuyaux préisolés pour les réseaux d'eau chaude enterrés directement - Robinets préisolés pour tubes de service en acier, isolation thermique en polyuréthane et tube de protection en polyéthylène

Fernwärmerohre - Werkmäßig gedämmte Verbundmantelsysteme für direkt erdverlegte Fernwärmenetze - Vorgeämmte Absperrarmaturen für Stahlmediumrohre mit Polyurethan-Wärmedämmung und Außenmantel aus Polyethylen

This European Standard was approved by CEN on 19 February 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	4
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 Requirements.....	9
4.1 Pressure ratings for valves.....	9
4.1.1 General.....	9
4.1.2 Valves without indicated flow direction.....	9
4.2 Service temperatures for valves.....	9
4.3 Steel parts.....	9
4.3.1 General.....	9
4.3.2 Valve.....	10
4.3.3 Valve extension pipe.....	10
4.3.4 Welding ends.....	10
4.3.5 Welding of steel parts.....	10
4.4 Casing.....	10
4.4.1 General.....	10
4.4.2 Requirements for polyethylene welding.....	10
4.4.3 Diameter and wall thickness of the casing.....	10
4.5 Polyurethane rigid foam insulation (PUR).....	10
4.5.1 General.....	10
4.5.2 Minimum insulation thickness.....	10
4.6 Valve assembly.....	11
4.6.1 Ends of valve assembly.....	11
4.6.2 End of stem construction.....	11
4.6.3 Main dimensions of the valve assembly.....	12
4.6.4 Installation of measuring elements.....	13
4.7 Requirements for effective operation and maintenance.....	13
4.8 Resistance to axial forces and bending moments.....	14
5 Testing, test methods and test requirements.....	14
5.1 General.....	14
5.2 Test specimens.....	14
5.2.1 General.....	14
5.2.2 Test specimens for type testing steel parts of valve.....	14
5.2.3 Test specimens from casings and polyurethane foam.....	14
5.3 Steel parts.....	14
5.3.1 General.....	14
5.3.2 Type test of the steel parts.....	14
5.3.3 Production testing of valves.....	17
5.4 Casing.....	17
5.4.1 General.....	17
5.4.2 Leak-tightness of the welded casing.....	17
5.5 Polyurethane rigid foam insulation.....	17
5.6 Valve assembly.....	18
5.7 Surveillance system.....	18
6 Marking.....	18
6.1 General.....	18
6.2 Steel valve.....	18
6.3 Casing.....	18

6.4	Valve assembly	18
7	Installation and maintenance	19
Annex A	(informative) Guidelines for inspection and testing	20
A.1	General	20
A.2	Manufacturer’s type test	20
A.3	Manufacturer’s quality control	20
A.4	External inspection	20
A.5	Extent of inspection	20
A.6	Manufacturer’s responsibility	20
Annex B	(normative) Resistance to axial force and bending moment	23
B.1	Axial strength test	23
B.2	Bending test	23
Annex C	(normative) Resistance to bending forces	25
C.1	Resistance to bending forces	25
C.1.1	General	25
C.1.2	Formulas based on the considerations	25
C.1.3	Standard test assembly (four point bending test)	27
C.1.3.1	Bending moment from test load	27
C.1.3.2	Bending Moment from uniform load q (pipe weight and where appropriate water weight)	28
C.1.3.3	Bending moment from valve weight	29
C.1.3.4	Total Bending Moment (M_{total}) due to F, P and F_v	29
C.1.4	Alternative test assembly (for diameters \leq DN 200 mm) – Maximum bending moment	30
	Bibliography	32

Preview

Foreword

This document (EN 488:2011) has been prepared by Technical Committee CEN/TC 107 "Prefabricated district heating pipe systems", the secretariat of which is held by DS.

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 September 2011, and conflicting national standards shall be withdrawn at the latest by September 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 488:2003.

Annex A is informative, Annexes B and C are normative.

This document includes a Bibliography.

The first edition of EN 488 was approved in 1994. The first revised standard was published in 2003. In this second revision, in general the whole standard has been edited to make it more readable. Requirements and test methods have been separated; therefore, clause numbers have changed and some clauses have been split up in several clauses. Exact references for changes are not always possible. The main areas of the current revision are:

- a) The scope has been amended. The standard applies no longer only to insulated valve assemblies for continuous operation with hot water at various temperatures in accordance with EN 253:2009, Clause 1 but also to the valve assemblies with a maximum operation pressure of 25 bar. For higher pressure, additional demands apply. It is also explained that the calculation rules of loads and stresses are not included. They depend on the configuration of the system as it is installed. The design and installation rules are given in EN 13941:2009+A1:2010.
- b) In Clause 3, "terms and definitions", definitions for the nominal pressure (PN), nominal size (DN) and maximum operation pressure have been added. A figure "Example valve assembly components" of a valve assembly, its components and definitions has been added.
- c) Clause 4, "requirements"
 - 1) material of the steel parts in the pressurized parts of the valve shall be certified in accordance with EN 10204, the 3.1 certificate (4.3.1);
 - 2) it is added that flanged or screwed connections, except sealing system at the stem, shall not be used except in the non-pressurized area e.g. for the stem extensions (4.3.2);
 - 3) the requirements for the use of stop devices are amended (4.7);
 - 4) the minimum water temperature has been adjusted to 4 °C (4.2);
 - 5) 4.3.5 "Welding of steel parts" has been changed and adjusted to EN 13941:2009+A1:2010 and the text in EN 448;
 - 6) 4.1.6 has become 4.8 "resistance to axial forces bending moments" and has been rewritten in Annex B;
 - 7) additions have been made to the requirements to the corrosion protection of the stem (see 4.6);

- 8) the Clause "increase in diameter" has been changed to "diameter and wall thickness of the casing" (see 4.4.3);
 - 9) a table with the tolerances of the main dimensions has been added together with a figure to explain the dimensions (see 4.6.3);
 - 10) a clause was added about the installation of measuring elements for surveillance (see 4.6.4).
- d) Clause 5, "test methods"
- 1) the clause "Testing, test methods and test requirements" has been adjusted to make the order of test clearer;
 - 2) a test for the surveillance system is added (see 5.7).
- e) Clause 6, "marking"
- 1) for the steel valve pressure and temperature and marking with closed and open position;
 - 2) for the casing the date of manufacture has been changed to year and week of manufacture (see 6.3);
 - 3) for the valve assembly, the type of blowing agent and diffusion barrier has been added (see 6.4).
- f) Annex A, "guidelines for inspection and testing"
- 1) the clause about quality surveillance had been changed in quality control (see A.3);
 - 2) a table for the valve assembly inspection had been added.
- g) Former Annex B, the guidelines for installation of the valves has been deleted. New Annexes B and C have been added, in which the actual testing is included.
- h) The former Table 1, "Service pipe dimensions and test forces" has been changed due to cold laying conditions. Therefore, the compressive forces have been adapted. In this table the maximum allowable bending moments have been included and the table has been moved to Annex B.
- i) A description of the test method for bending forces has been added in Annex C.

In general, references were changed where needed. If possible references to European standards were used.

For information on the minimum expected thermal life with operation at various temperatures with respect to PUR foam performance see EN 253.

The other standards from CEN/TC 107 covering this subject are:

- EN 253, *District heating pipes — Preinsulated bonded pipe systems for directly buried hot water networks — Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene;*
- EN 448, *District heating pipes — Preinsulated bonded pipe systems for directly buried hot water networks — Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene;*
- EN 489, *District heating pipes — Preinsulated bonded pipe systems for directly buried hot water networks — Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene;*

Bestelformulier

NEN

Stuur naar:

NEN Standards Products & Services
t.a.v. afdeling Klantenservice
Antwoordnummer 10214
2600 WB Delft

NEN Standards Products & Services

Postbus 5059
2600 GB Delft

Vlinderweg 6
2623 AX Delft

T (015) 2 690 390
F (015) 2 690 271

www.nen.nl/normshop

Ja, ik bestel

__ ex. NEN-EN 488:2011 en Stadsverwarmingsbuizen - In de fabriek
geïsoleerde buisystemen voor stadsverwarming - Stalen afsluiters voor
stalen leidingen met polyurethaanschuim als isolatiemateriaal en met een
ommanteling van polyetheen € 61.30

**Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via
www.nen.nl/normshop**

Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen,
normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze
e-mailnieuwsbrieven. www.nen.nl/nieuwsbrieven

Retourneren

Fax: (015) 2 690 271
E-mail: klantenservice@nen.nl
Post: NEN Standards Products
& Services,
t.a.v. afdeling Klantenservice
Antwoordnummer 10214,
2600 WB Delft
(geen postzegel nodig).

Gegevens

Bedrijf / Instelling

T.a.v. _____ O M O V

E-mail

Klantnummer NEN

Uw ordernummer _____ BTW nummer _____

Postbus / Adres

Postcode _____ Plaats _____

Telefoon _____ Fax _____

Factuuradres (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode _____ Plaats _____

Datum _____ Handtekening _____

Voorwaarden

- De prijzen zijn geldig tot 31 december 2016, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon (015) 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typfouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: www.nen.nl/leveringsvoorwaarden.