BS EN 12561-6:2011

BSI Standards Publication

Railway applications — Tank wagons

Part 6: Manholes

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 12561-6:2011. It supersedes BS EN 12561-6:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RAE/1/-/9, Railway Applications - Wagons (Tank/Freight).

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 72812 9

ICS 13.300; 45.060.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2011.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12561-6

June 2011

ICS 13.300; 45.060.20

Supersedes EN 12561-6:2002

English Version

Railway applications - Tank wagons - Part 6: Manholes

Applications ferroviaires - Wagons citernes - Partie 6: Trous d'homme

Bahnanwendungen - Kesselwagen - Teil 6: Mannloch

This European Standard was approved by CEN on 3 June 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

Figures

Foreword

This document (EN 12561-6:2011) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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 December 2011, and conflicting national standards shall be withdrawn at the latest by December 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 12561-6:2002.

This European Standard *Railway applications — Tank wagons* consists of the following parts:

— *Part 1: Identification plates for tank wagons for the carriage of dangerous goods;*

— *Part 2: Bottom emptying devices for liquid products including vapour return;*

— *Part 3: Bottom filling and emptying devices for gases liquefied under pressure;*

— *Part 4: Devices for top filling and emptying of liquid products;*

— *Part 5: Devices for vapour return while filling or emptying of liquid products;*

— *Part 6: Manholes;*

— *Part 7: Platforms and ladders;*

— *Part 8: Heating connections.*

The changes made during this revision are editorial because of the change of the title of part 1 and the necessary updates of references.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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 the United Kingdom.

1 Scope

This European Standard applies to manholes on tank wagons used for the transport of dangerous substances. Safety functions of these devices are subject to RID requirements and not described in this document.

This European Standard specifies the dimensions for the interchangeability of seals and other wearing parts and defines also the important dimensions for:

— manholes for gas tank wagons located in one end of the tank;

— manholes for gas tank wagons located on the top of the tank including the arrangement of fittings;

— bolted manholes for tank wagons for liquid substances located on the top of the tank;

— swing bolt manholes for tank wagons for liquid substances located on the top of the tank.

Quick closing/opening manholes are permitted but are not covered by this European Standard.

This European Standard applies to new tank wagons built after the 1st January 2010.

2 Normative references

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

EN 14025, *Tanks for the transport of dangerous goods — Metallic pressure tanks — Design and Construction*

EN 14564, *Tanks for transport of dangerous goods – Terminology*

EN 20898-2, *Mechanical properties of fasteners — Part 2: Nuts with specified proof load values — Coarse thread (ISO 898-2:1992)*

EN ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits (ISO 286-1:2010)*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread (ISO 898-1:2009)*

EN ISO 4287, *Geometrical product specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

ISO 7005-1:1992, *Metallic flanges — Part 1: Steel flanges*

ISO 9669, *Series 1 freight containers:;Interface connections for tank containers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14564 and the following apply.

3.1
manhole
opening in the tank which includes the sealing, the manlid and fastenings

4 Requirements

4.1 Threaded fasteners

The threaded fasteners used for manholes shall conform to the requirements of EN ISO 898-1 and EN 20898-2.

NOTE To avoid any crack or damage of a tank in case of an accident, it is recommended to use only threaded fasteners with no sharp edges and only in the shortest possible length.

4.2 Dimensions

Nominal diameter of manhole shall be ≥ 500 mm. The figures of this document are given for a nominal diameter of manhole equal to 500 mm, Values depending on the diameter of the manhole shall be adapted to the nominal diameter

All dimensions are given in millimetres. Unless otherwise indicated in this European Standard, tolerances of EN ISO 286-1 apply for all dimensions.

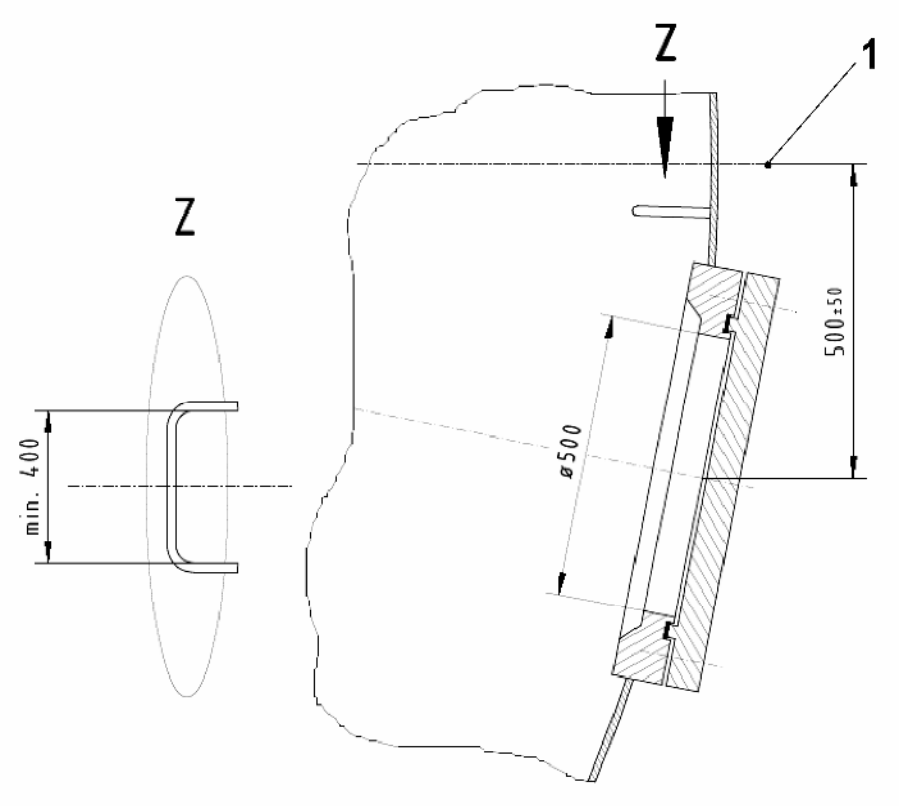
5 End fitted manhole for gas tank wagons

5.1 Position of manhole

The centre of the manhole shall be positioned on the longitudinal centre line of one end of the tank wagon. For easier access inside the tank, it is recommended that it is positioned according to Figure 1.

NOTE For easier access to the tank, one handle above the manhole and inside the tank should be fitted.

Dimensions in millimetres



Key

1 centre line of the tank

Figure 1 — Positioning of manhole

5.2 Ring and plate

5.2.1 General

Ring and plate shall be calculated according to EN 14025.

The plate shall be equipped with a minimum of one lifting point.

5.2.2 Dimensions

Dimensions shall be in accordance with Figure 2.

Dimensions in millimetres

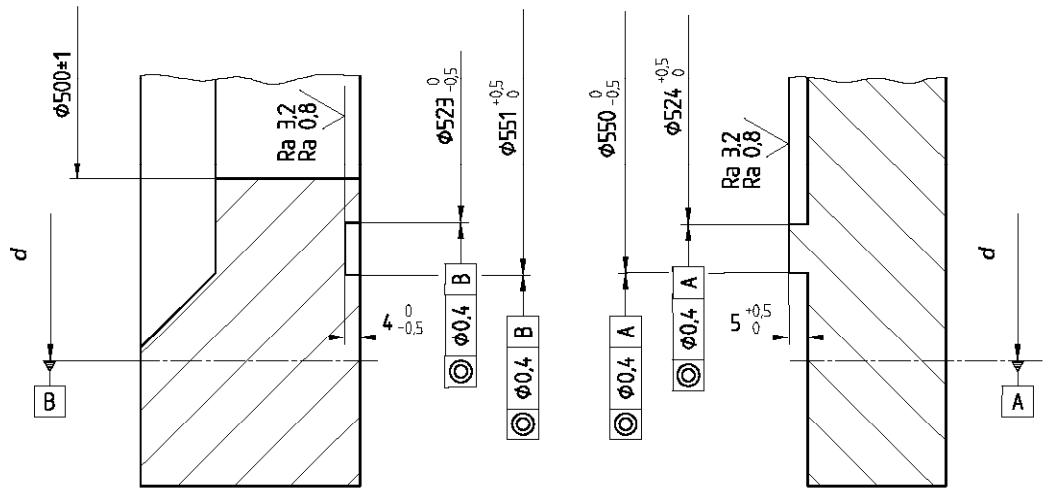


Figure 2 — Dimensions of ring and plate

5.2.3 Surface parameters

To ensure static liquid tightness and interchangeability of gaskets the maximum profile height (Rt) of surface defects according to EN ISO 4287 of gasket seat shall be less than 16 µm.

5.2.4 Tolerances

Non specified tolerances shall be in accordance with those of flanges DN 500 of ISO 7005-1:1992.

5.3 Gaskets

The dimensions of the gasket shall be in accordance with Figure 3.

Dimensions in millimetres

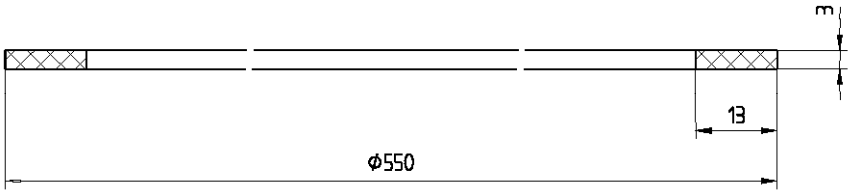


Figure 3 — Gasket dimensions

The average outside diameter obtained by measurements on two perpendicular diameters shall be 550 mm with a limit deviation of (0/- 1,5) mm.

For flat gaskets made from fibre/elastomer or plastics, the thickness limit deviation is ± 0,20 mm.

For metal plastics gaskets, the thickness limit deviation is (+ 0,5/ 0) mm.

6 Top fitted manhole for gas tank wagons

This manhole is for gas tank wagons for which RID does not permit openings below the surface level of the liquid.

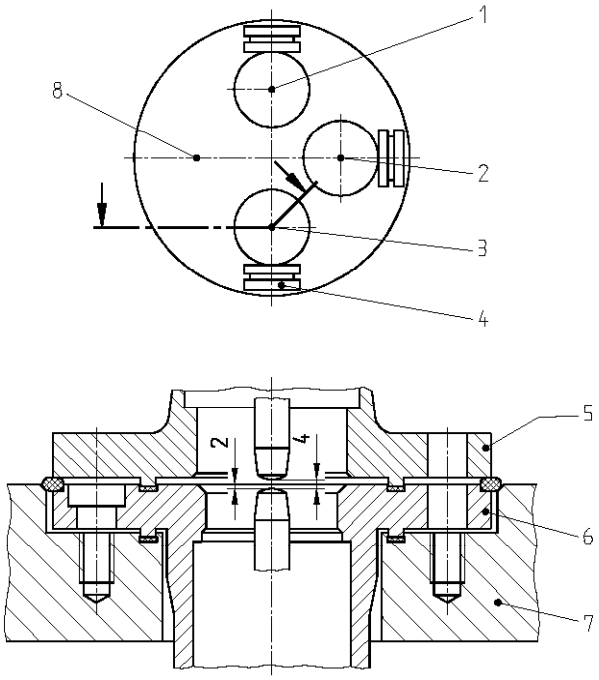
Standard flanges DN 500 of ISO 7005-1:1992 and corresponding gaskets shall be used. Ring and plate shall be calculated according to EN 14025.

The manlid shall be fitted with equipment defined in Figure 4, Figure 5 and Figure 6. The manlid shall be equipped with a minimum of three lifting points.

All connecting and blind flanges of the external valves shall conform to face B of ISO 7005-1:1992.

The liquid phase valves shall be painted red.

Dimensions in millimetres



Key

1 liquid phase

2 gas phase

3 liquid phase

4 valves, connecting flange DN 40 PN 40 Type 21A, blind flange 4 valves, connecting flange DN 40 PN 40 Type 21A, blind flange

5 external valve flange

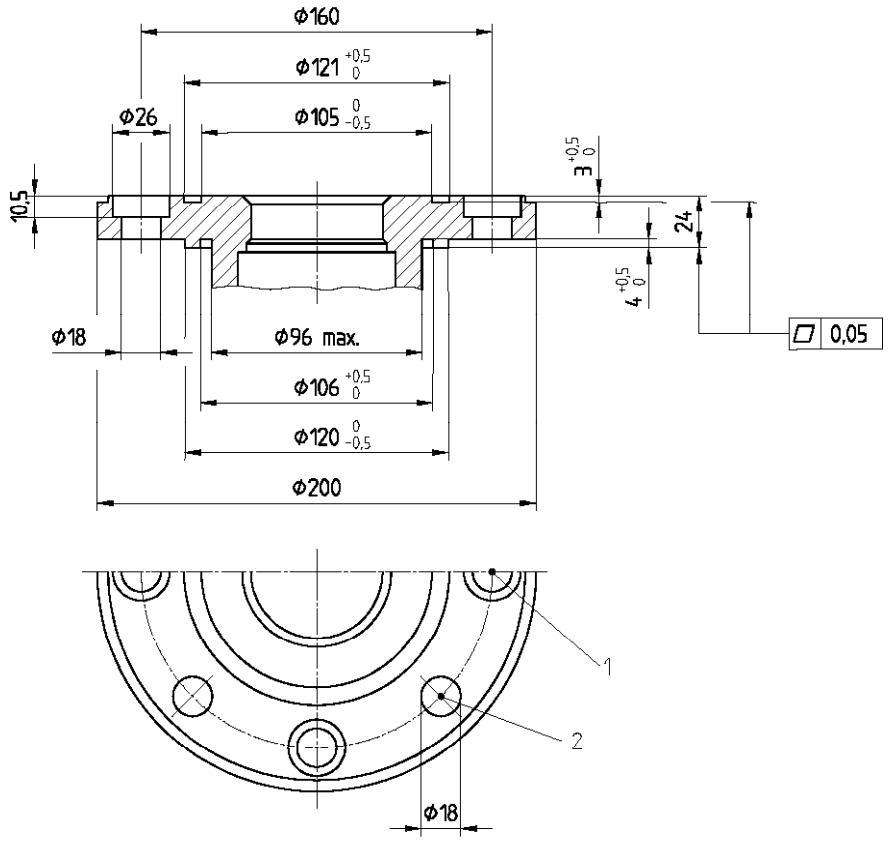
6 internal valve flange

7 manhole cover

8 tank wagon longitudinal axis

Figure 4 — Arrangement of valves on manlid

Dimensions in millimetres



Key

1 4 holes for hexagon socket head cap screws M 16

2 4 holes for stud M 16

Figure 5 — Dimensions of internal valve flange

Dimensions in millimetres

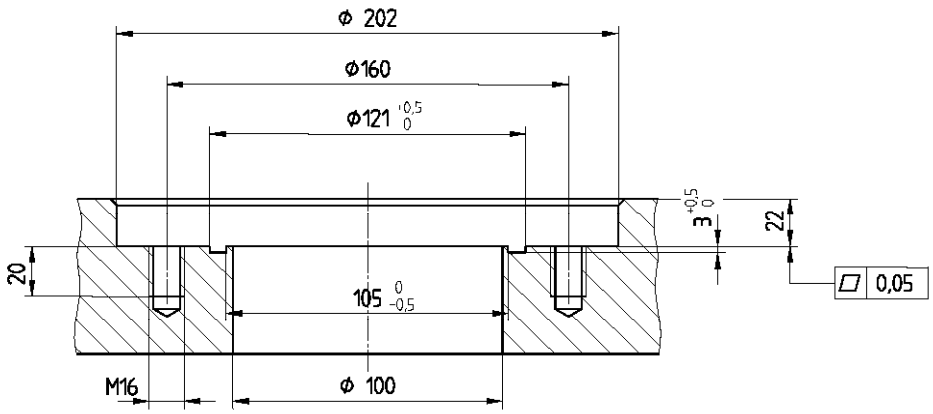


Figure 6 — Dimensions of recess in the manlid for internal valve flange

7 Bolted manhole for liquid substances

Standard flanges DN 500 according to ISO 7005-1:1992 and corresponding gaskets shall be used. Ring and plate shall be calculated according to EN 14025.

The manlid shall be fitted with at least two lifting points, If handles are used, they shall be in accordance with Figure 7.

Nozzles for loading or unloading on manlid are permitted.

Dimensions in millimetres

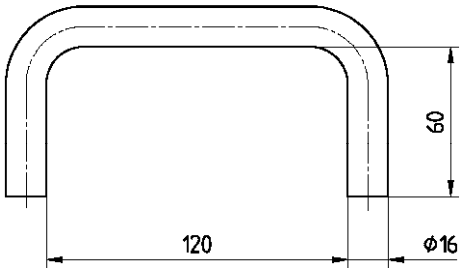


Figure 7 — Manlid handle - minimum dimensions

8 Swing bolt manholes for liquid substances

8.1 General

Swing bolts manholes shall either be in accordance with this European Standard or with ISO 9669.

Swing bolt manholes with four wing nuts according to Figure 8 are not allowed on tank wagons with a test pressure greater than 0,4 MPa.

8.2 General arrangement

Where tank wagons with a test pressure up to 0,4 MPa are fitted with a swing bolt manhole, this manhole shall be in accordance with Figure 8. They shall be fitted with swing bolts and wing nuts in accordance with 8.3, 8.4 and 8.5.

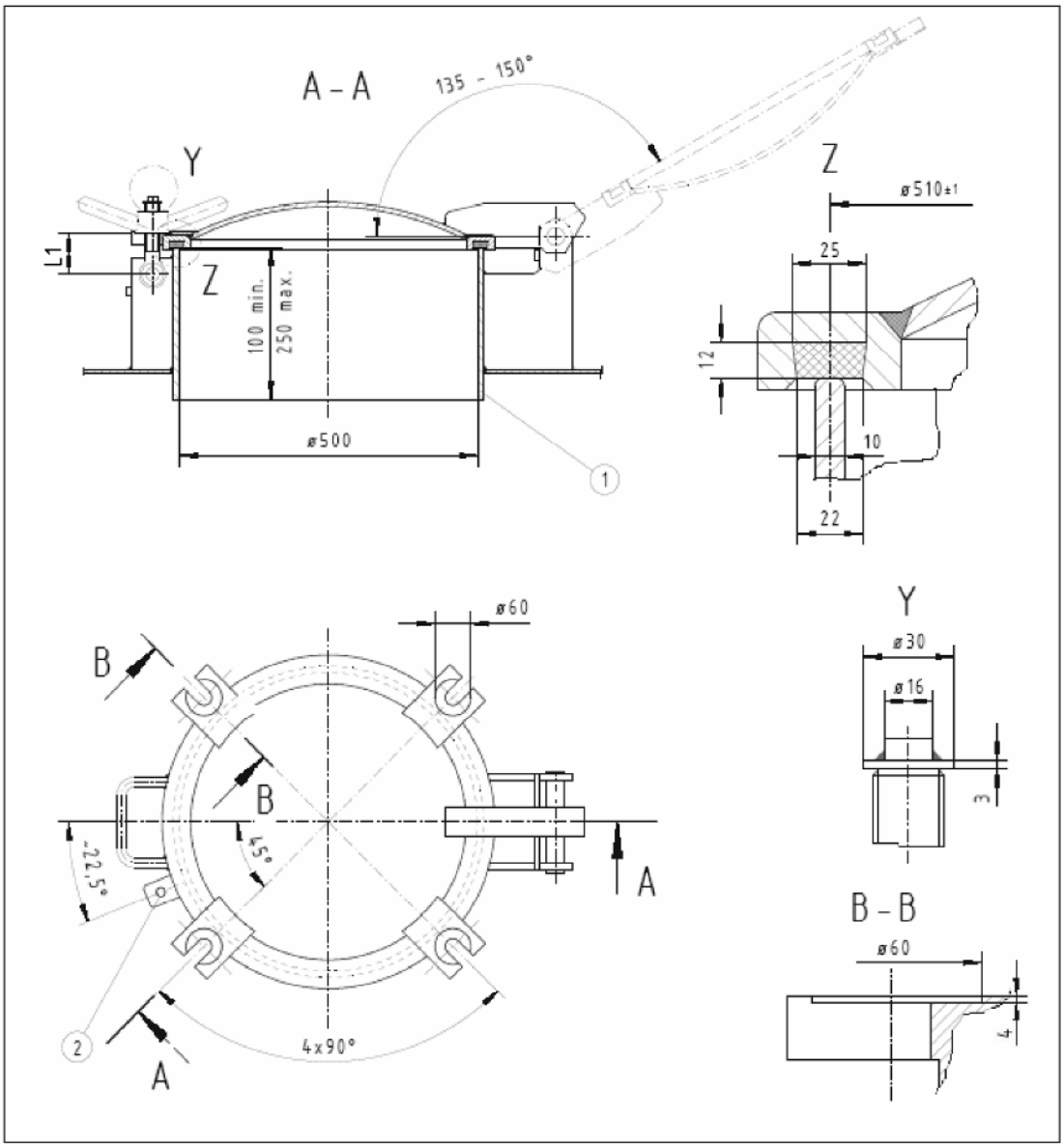
There shall be sufficient clearance around the manhole hinge pin to allow the manlid seal to seat evenly.

Dimension l_1 from Figure 8 shall allow easy release of the swing bolt.

The top surface of the neck ring shall be in the horizontal plane.

The manlid shall be equipped with a device which will release tank pressure prior to the swing bolts being swung down. An example to achieve this is given in Figure 8 cross section BB.

Dimensions in millimetres



Key

1 hole for venting

2 hole with diameter 15 for custom sealing

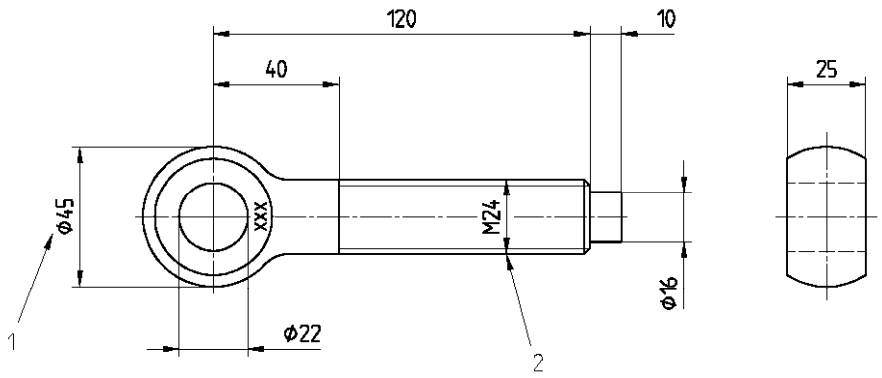
Figure 8 — Main dimensions for swing bolt manholes

Type and space for connections could be different with agreement between customer and manufacturer.

8.3 Swing bolts

Swing bolts shall be in accordance with Figure 9.

Dimensions in millimetres



Key

1 head spherical

2 cold rolled thread

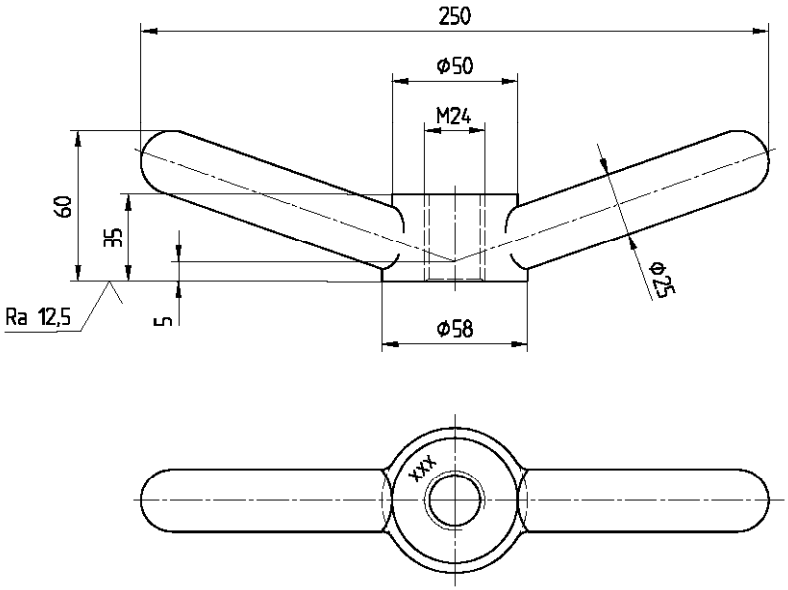
Class of the bolt according to EN ISO 898-1.

Figure 9 — Swing bolt

8.4 Wing nuts

Wing nuts shall be in accordance with Figure 10.

Dimensions in millimetres



Class of the nut according to EN 20898-2.

Figure 10 — Wing nut

8.5 Swing bolt hinge pin

The hinge pin shall have a diameter of 20 mm and shall be removable without heating or cutting. It shall be capable of being customs sealed.

8.6 Gasket

The dimensions of the gasket shall be in accordance with Figure 11 (∅ 535 is valid only for ∅ 500 manhole).

Dimensions in millimetres

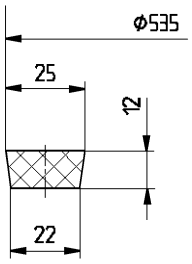


Figure 11 — Gasket dimensions

Bibliography

[1] EN 12972, *Tanks for transport of dangerous goods — Testing, inspection and marking of metallic tanks*

[2] RID, *Regulations concerning the International Carriage of Dangerous Goods by Rail*[1)] *implementing Commission Directives 2003/28/EC and 2003/29/EC*

[1)] Commonly known as RID.

This page deliberately left blank

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™