

AS 2419.4:2021



STANDARDS  
Australia



# Fire hydrant installations

## Part 4: Storz fittings for firefighting purposes



AS 2419.4:2021

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- Australian Fire Safety Practitioners Accreditation Board
- Australian Industry Group
- Australian Institute of Building Surveyors
- Australian Stainless Steel Development Association
- Engineers Australia
- Facility Management Association of Australia
- Fire Protection Association Australia
- Hydraulic Consultants Association Australasia
- Insurance Council of Australia
- International Copper Association Australia
- Master Plumbers Australia
- National Fire Industry Association
- Plastics Industry Pipe Association of Australia
- Water Services Association of Australia

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# Fire hydrant installations

## Part 4: Storz fittings for firefighting purposes

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## Preface

This Standard was prepared by the Standards Australia Committee FP-009, Fire Hydrant Installations.

The objective of this Standard is to specify minimum requirements for the design, manufacture, performance and testing of Storz (i.e. quarter turn internal lug two-way) pressure and suction fittings suitable for firefighting purposes.

This Standard is part of a series on fire hydrant installation, which comprises the following parts:

- (a) AS 2419.1, *Fire hydrant installations, Part 1: System design, installation and commissioning*
- (b) AS 2419.2, *Fire hydrant installations, Part 2: Fire hydrant valves*
- (c) AS 2419.3, *Fire hydrant installations, Part 3: Fire brigade booster connections*
- (d) AS 2419.4, *Fire hydrant installations, Part 4: Storz fittings for firefighting purposes*  
(this Standard)

This Standard is to be read in conjunction with AS 2419.1.

The terms “normative” and “informative” are used in Standards to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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## Introduction

Australian fire brigade hose couplings evolved independently in each state and territory according to local needs. The various regional connections are subsequently referenced in the appendices of the AS 2419 suite of standards. To facilitate better interagency cooperation, the Australasian Fire and Emergency Services Authorities Council designated the Storz type connection as one of the common Australia-wide fittings for firefighting hoses, equipment, vehicles and fire hydrant installations.

Carl August Guido Storz first patented a quarter turn internal lug two-way hose coupling in Germany in 1881. German fire brigades adopted Storz after a single fire destroyed 203 homes in 1933. The German Institute for Standardization (DIN) describes 25, 52, 75 and 110 mm Storz fittings. The Netherlands Standardization Institute (NEN) also describes 65 mm Storz fittings. Other diameters of Storz connection are variously described by the National Fire Protection Association (USA) and the Standards Council of Canada.

Storz fittings that do not conform to established Standards are not fully compatible with fire brigade equipment and operations. Cast aluminium fittings which are specifically prohibited for firefighting purposes in Australia by AS 2419.2 and AS 2419.3 have been used in place of forged aluminium fittings and have failed. Non-conforming Storz fittings are a safety risk to firefighters and building occupants, especially if connection failure occurs during firefighting and emergency response operations.

To address poor conformance and facilitate reliability, this Standard consolidates and specifies the requirements for the standard sizes of Storz fittings used for firefighting purposes in Australia.

## NOTES

# Australian Standard®

## Fire hydrant installations

### Part 4: Storz fittings for firefighting purposes

## 1 Scope and general

### 1.1 Scope

This Standard applies to Storz fittings intended for firefighting purposes in Australia and specifies the design, manufacture, performance and testing of Storz fittings used for:

- (a) connections to valves, hydrant and sprinkler boosters, pipe fittings, and branch pipes etc;
- (b) hose couplings;
- (c) reducing connection sizes; and
- (d) capping connections.

NOTE For guidelines on the information to be supplied at the time of an enquiry or order, see [Appendix B](#).

### 1.2 Application

This Standard shall be read in conjunction with AS 2419.1.

### 1.3 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 2419.1, *Fire hydrant installations, Part 1: System design, installation and commissioning*

AS 2419.2, *Fire hydrant installations, Part 2: Fire hydrant valves*

AS 2419.3, *Fire hydrant installations, Part 3: Fire brigade booster connections*

AS 2700, *Colour Standards for General Purposes*

DIN 405, *General purpose knuckle threads*

DIN 5686, *Double loop chains without quality requirements*

DIN 14301, *Aluminium alloy delivery and suction coupling type D; nominal pressure 16*

DIN 14302, *Aluminium alloy delivery coupling type C; nominal pressure 16*

DIN 14303, *Aluminium alloy delivery coupling type B with nominal pressure PN 16*

DIN 14306, *Aluminium alloy solid coupling type D for pressure and suction purposes; nominal pressure 16*

DIN 14307-1, *Aluminium alloy solid coupling type C, with sealing ring for pressure purposes; nominal pressure 16*

DIN 14307-2, *Aluminium alloy solid coupling type C with sealing ring for suction purposes; nominal pressure 16*

DIN 14308-1, *Aluminium alloy solid coupling type B, with sealing ring for pressure purposes; nominal pressure 16*

DIN 14308-2, *Aluminium alloy solid coupling type B with sealing ring for suction purposes; nominal pressure 16*

DIN 14309, *Aluminium alloy solid coupling type A, with sealing ring for pressure and suction purposes; nominal pressure 16*

DIN 14310, *Aluminium alloy cap fire hose coupling type D for pressure and suction purposes; nominal pressure 16*

DIN 14311, *Aluminium alloy cap fire hose coupling type C, for pressure and suction purposes; nominal pressure 16*

DIN 14312, *Aluminium alloy cap fire hose coupling type B, for pressure and suction purposes; nominal pressure 16*

DIN 14313, *Aluminium alloy cap fire hose coupling type A for pressure and suction purposes; nominal pressure 16*

DIN 14317, *Aluminium alloy solid coupling type C with metallic sealing area and with cast iron cover or with aluminium alloy cover; nominal pressure 16*

DIN 14318, *Aluminium alloy solid coupling type B with metallic sealing area and with cast iron cover or with aluminium alloy cover, type B; nominal pressure 16*

DIN 14321, *Aluminium alloy suction coupling type C; nominal pressure 16*

DIN 14322, *Aluminium alloy suction coupling type B; nominal pressure 16*

DIN 14323, *Aluminium alloy delivery and suction coupling type A; nominal pressure 16*

DIN 14330, *Aluminium alloy delivery coupling type C; nominal pressure PN 16*

DIN 14332, *Aluminium alloy delivery coupling type C; nominal pressure 16*

DIN 14334, *Solid couplings Storz System PN 16 for delivery and suction*

DIN 14341, *Aluminium alloy C-D-adaptor for nominal pressure 16*

DIN 14342, *Aluminium alloy B-C-adaptor for nominal pressure 16*

DIN 14343, *Aluminium alloy A-B-adaptor for nominal pressure 16*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 48-4, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness, Part 1: Durometer method (Shore hardness)*

EN 515, *Aluminium and aluminium alloys — Wrought products — Temper designations*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products, Part 3: Chemical composition and form of products*

EN 586-2, *Aluminium and aluminium alloy forgings, Part 2: Mechanical properties and additional properties*

EN 755-2, *Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles, Part 2: Mechanical properties*

EN 1706, *Aluminium and aluminium alloys — Castings — chemical composition and mechanical properties*

EN 10204, *Metallic products — Types of inspection documents*

EN 10216-5, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 5: Stainless steel tubes*

EN 10283, *Corrosion resistant steel castings*

EN 10270-3, *Steel wire for mechanical springs, Part 3: Stainless spring steel wire*

EN 12266-1, *Industrial valves — testing of metallic valves, Part 1: Pressure tests, test procedures and acceptance criteria — Mandatory requirements*

EN 12266-2, *Industrial valves — Testing of metallic valves, Part 2: Pressure tests, test procedures and acceptance criteria — Supplementary requirements*

EN 12420, *Copper and copper alloys — Forgings*

NEN 3374, *Fire-fighting equipment — Fire hose couplings and ancillary equipment*

CAN/ULC S543, *Standard for internal lug quick-connect couplings for fire hose*

NFPA 1963, *Standard for fire hose connections*

## 1.4 Terms and definitions

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

### 1.4.1

#### **adaptive acceptance sampling scheme**

inspection plan to establish product acceptability where the sampling frequency responds to variations in the quality of the finished product

### 1.4.2

#### **adaptor**

fitting that allows hoses and equipment to connect to equipment with otherwise incompatible connections, including different thread, lug and port configurations

### 1.4.3

#### **aggressive atmosphere**

environmental condition or chemical process that is known to react with and cause degradation of a specified subject or material

### 1.4.4

#### **blank cap**

fitting used to terminate and close the open end of a hose coupling or other fitting and create a closed (sealed) water system

### 1.4.5

#### **BSP**

British Standard Pipe parallel thread according to ISO 228-1

### 1.4.6

#### **challenge test**

test performed on a medium with known and accepted qualities to ensure instrument results are consistent and within acceptable limits

### 1.4.7

#### **coupling**

fitting fastened to the end(s) of a hose so that the hose may be connected to other fittings

Note 1 to entry: Storz couplings have a swivelling centre hose tail section.

**1.4.8****distortion**

any visible permanent deformation of a fitting, including any of its components

**1.4.9****dust cap**

fitting used to close the open end of a hose coupling or other fitting to prevent ingress of dust and debris

Note 1 to entry: Does not create a closed (sealed) water system.

**1.4.10****fire brigade**

statutory authority constituted under an Act of parliament having as one of its functions, the protection of life and property from fire and other emergencies

Note 1 to entry: Fire brigades are also known as a fire service or fire authority.

**1.4.11****fire brigade booster**

fitting that enables the fire brigade to pressurize or pump water into a fire hydrant system or fire sprinkler system

Note 1 to entry: For information on fire brigade boosters, refer to AS 2419.3.

**1.4.12****fire hydrant valve**

fitting installed in a fire hydrant system main with a single valved outlet or two valved outlets for the connection of fire hose(s)

Note 1 to entry: For information on fire hydrant valves, refer to AS 2419.2.

**1.4.13****fitting**

smaller part for attachment to a greater assembly, hypernym encompassing couplings, adaptors, reducers, blanking and dust caps

**1.4.14****interconnection torque**

torque, or rotational force, that is required to connect one Storz connection to another having the same gasket type

**1.4.15****may**

indicates an option

**1.4.16****nominal diameter**

**DN**  
alphanumeric designation of diameter for components of a pipeline, which is used for reference purposes

Note 1 to entry: The nominal size comprises the letters DN (*Diameter Nominal*) followed by a whole number.

**1.4.17****nominal pressure**

**PN**  
alphanumeric designation of pressure classification based on the rated working pressure, expressed in hundreds of kilopascals, which is used for reference purposes

Note 1 to entry: The nominal pressure comprises the letters PN (*Pression Nominal*) followed by a whole number.

**1.4.18****reducer**

fitting that allows hoses and equipment of one diameter to connect to hoses and equipment of another diameter

**1.4.19****relevant authority**

independent agency authorized by legislation or regulation to issue determinations, orders, or other instructions in respect of any subject covered by this Standard

**1.4.20****shall**

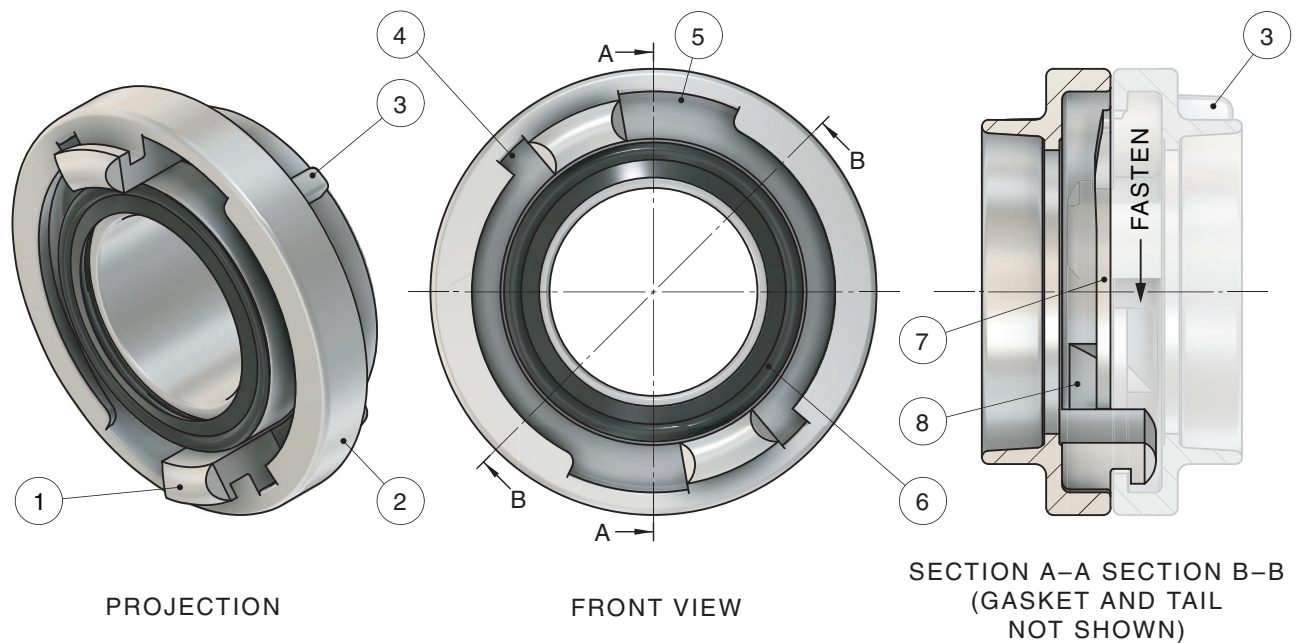
indicates that a statement is mandatory

**1.4.21****should**

indicates a recommendation

**1.4.22****Storz**

type of hose and pipe connection as shown in [Figure 1.4.22](#) consisting of two identical interfaces with protruding lugs which correspond with recessed ports on the opposing flange and engage following a quarter turn with adjacent ramps



| No | Description   |
|----|---------------|
| 1  | Lug           |
| 2  | Cam ring      |
| 3  | Rib           |
| 4  | Cleaning port |
| 5  | Lug port      |
| 6  | Gasket        |
| 7  | Ramp          |
| 8  | Lug stop      |

**Figure 1.4.22 — Typical Storz connection face**

#### 1.4.23

##### **test pressure**

maximum hydrostatic pressure applied to a fitting for verification purposes without causing damage, deformity or other performance degradation

#### 1.4.24

##### **working pressure**

normal operating pressure to which a fitting is designed to work

### 1.5 Product conformity

In order to claim that a product is manufactured to this Standard, the product shall meet the product conformity requirements in [Appendix A](#).

Storz fittings, including the fittings specified in [Section 2](#), tested and verified as conforming to an equivalent Standard listed in [Table C.1](#) shall be deemed to also conform to this Standard.

### 1.6 Alternative designs

This Standard does not prevent the production of fittings that pair Storz connections with BSP adaptors (e.g. 65 Storz adaptor to 50 mm BSP external thread), hose tails (e.g. 38 Storz coupling to 25 mm hose tail) or transition pieces (e.g. 150 Storz reduced to 65 mm Storz) in arrangements not specifically described by this Standard to address local needs. Such fittings may be deemed to conform to this Standard where the opposing faces otherwise conform to this Standard's dimensional, manufacturing, performance and product conformity requirements.

### 1.7 New designs and innovations

This Standard does not prevent the use of any alternative materials, designs and methods of construction that do not conform with the specific requirements of this Standard, or are not mentioned in it, that have been approved by the relevant authority.

Where an alternative system or innovation is intended, the design drawings with supporting documentation, as applicable, shall be submitted to the relevant authority for approval.

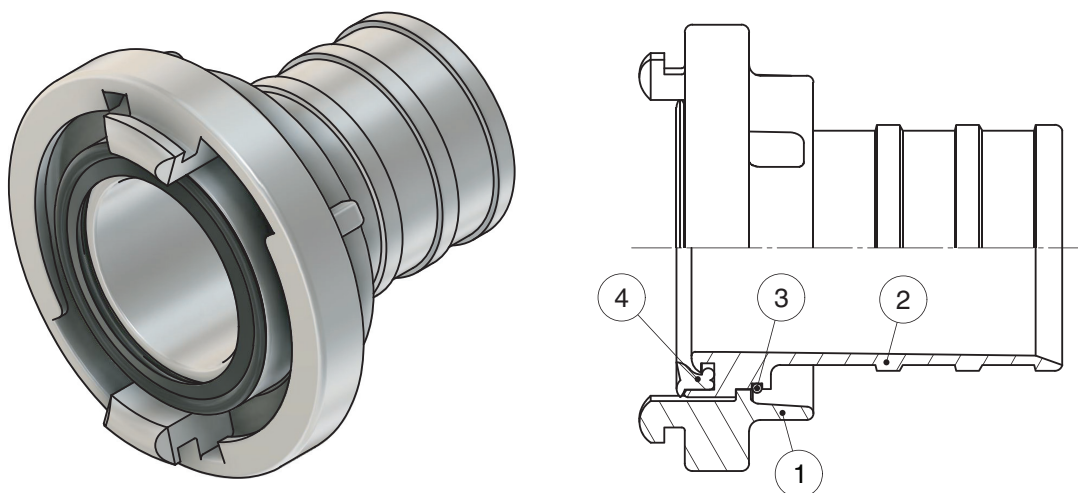
Any alternative system or innovation shall conform to the performance requirements of this Standard in [Section 5](#) and be compatible with local fire brigade firefighting equipment and vehicles.

## 2 Storz assemblies

### 2.1 Hose coupling

A Storz hose coupling is an assembly of a coupling cam ring, hose tail, retaining ring and suction or delivery gasket of the same nominal diameter. A typical example is shown in [Figure 2.1](#).

The hose tail incorporates the gasket and swivels within the cam ring. The hose tail fits inside a fire hose of corresponding diameter and the hose is then clamped, bound or whipped around the circumference to the tail.



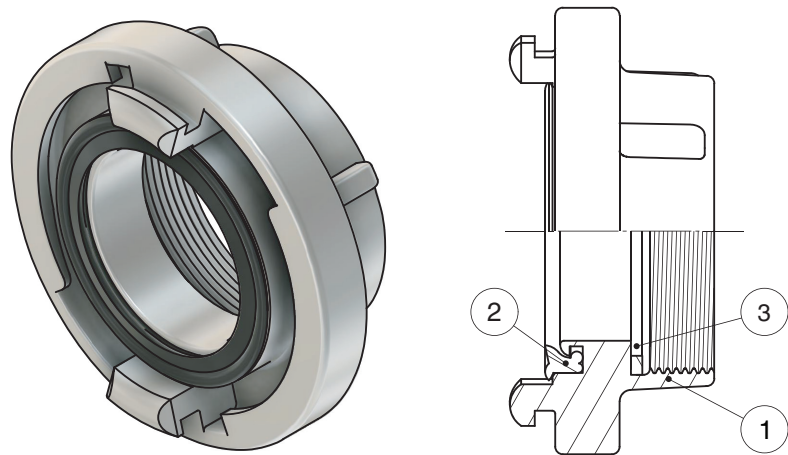
| No | Description       | Clause                     |
|----|-------------------|----------------------------|
| 1  | Coupling cam ring | <a href="#">Clause 3.1</a> |
| 2  | Hose tail         | <a href="#">Clause 3.2</a> |
| 3  | Retaining ring    | <a href="#">Clause 3.3</a> |
| 4  | Suction gasket or | <a href="#">Clause 3.4</a> |
|    | Delivery gasket   | <a href="#">Clause 3.5</a> |

**Figure 2.1 — Hose coupling**

2.2 Adaptor — Internal thread

The adaptor — internal thread is an assembly of an adaptor cam ring with an internal BSP thread on the opposing face, suction or delivery gasket and flat gasket of the same nominal diameter. A typical example is shown in [Figure 2.2](#).

Threaded adaptors are directly affixed to firefighting equipment, vehicles, fire hydrant or fire sprinkler systems.



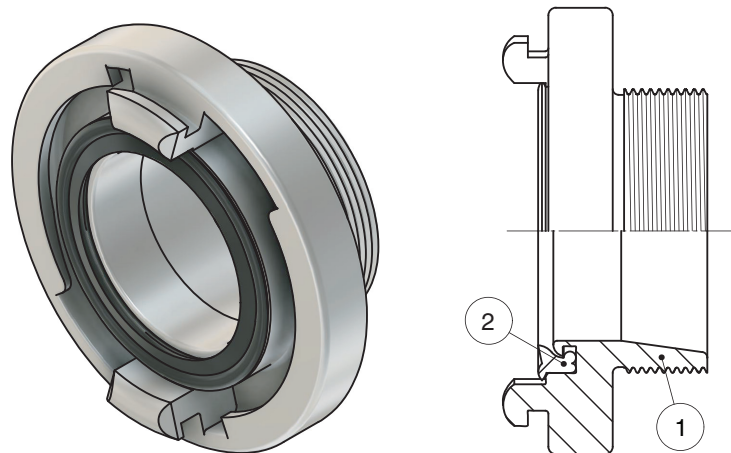
| No | Description                          | Clause                                                   |
|----|--------------------------------------|----------------------------------------------------------|
| 1  | Adaptor cam ring — internal thread   | <a href="#">Clause 3.7</a>                               |
| 2  | Suction gasket or<br>Delivery gasket | <a href="#">Clause 3.4</a><br><a href="#">Clause 3.5</a> |
| 3  | Flat gasket                          | <a href="#">Clause 3.6</a>                               |

Figure 2.2 — Adaptor — Internal thread

### 2.3 Adaptor — External thread

The adaptor — external thread is an assembly of an adaptor cam ring with an external BSP thread on the opposing face, and suction or delivery gasket of the same nominal diameter. A typical example is shown in [Figure 2.3](#).

Threaded adaptors are directly affixed to firefighting equipment, vehicles, fire hydrant or fire sprinkler systems.



| No | Description                          | Clause                                                   |
|----|--------------------------------------|----------------------------------------------------------|
| 1  | Adaptor cam ring — external thread   | <a href="#">Clause 3.8</a>                               |
| 2  | Suction gasket or<br>Delivery gasket | <a href="#">Clause 3.4</a><br><a href="#">Clause 3.5</a> |

**Figure 2.3 — Adaptors — External thread**

2.4 Fire hydrant adaptor and anti-tamper plug

The fire hydrant adaptor and anti-tamper plug consists of an adaptor with an integral metal sealing face, flat gaskets and an anti-tamper plug of the same nominal diameter. A typical example is shown in [Figure 2.4](#). The anti-tamper plug threads into the throat of the adaptor and has a triangular boss on its external face. Plug removal requires a wrench with a corresponding head.

NOTE AS 2419.2 and AS 2419.3 require a blank cap to have a 3 mm drain hole.

The fire hydrant adaptor and anti-tamper plug is fixed to fire hydrant valves where misuse may be an issue.

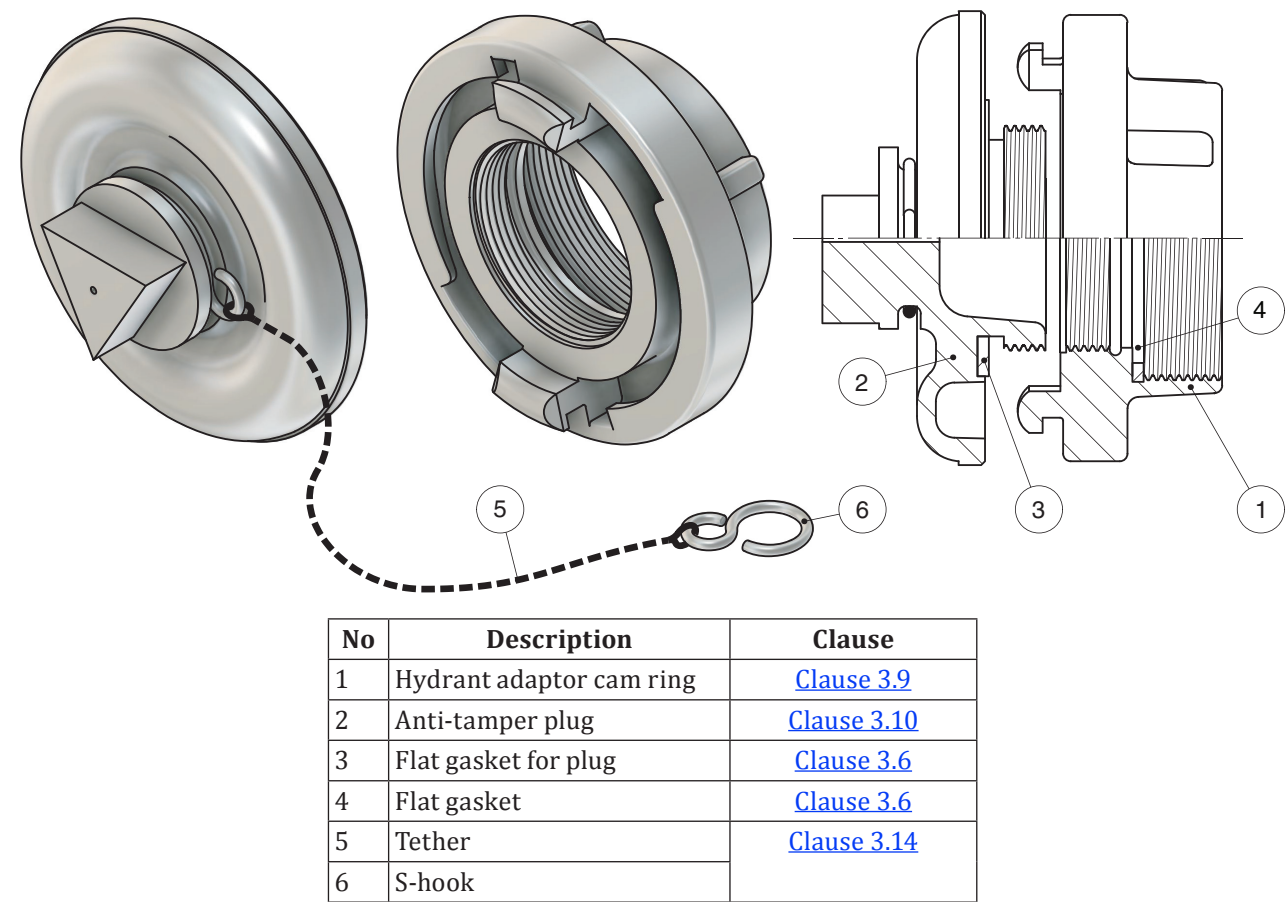
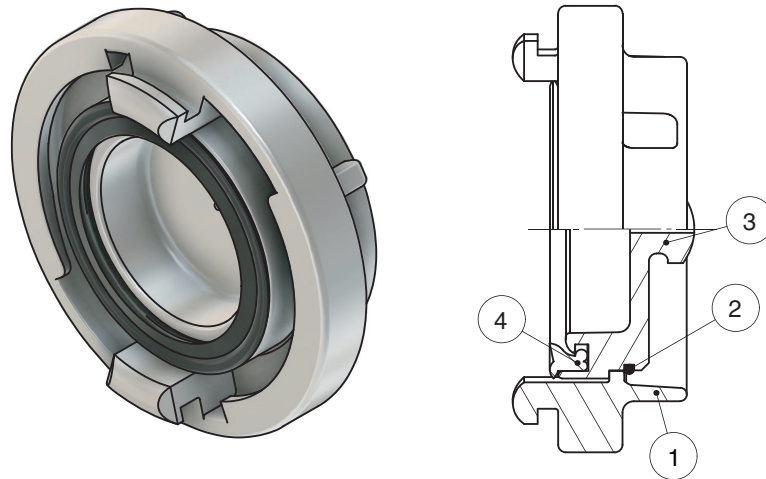


Figure 2.4 — Adaptor — Fire hydrant valve

## 2.5 Blank cap

The blank cap is an assembly of a coupling cam ring, retaining ring, blank cap and suction or delivery gasket of the same nominal diameter. A typical example is shown in [Figure 2.5](#). The blank cap may be fastened to close any corresponding hose coupling or connection.

NOTE AS 2419.2 and AS 2419.3 require a blank cap to have a 3 mm drain hole.



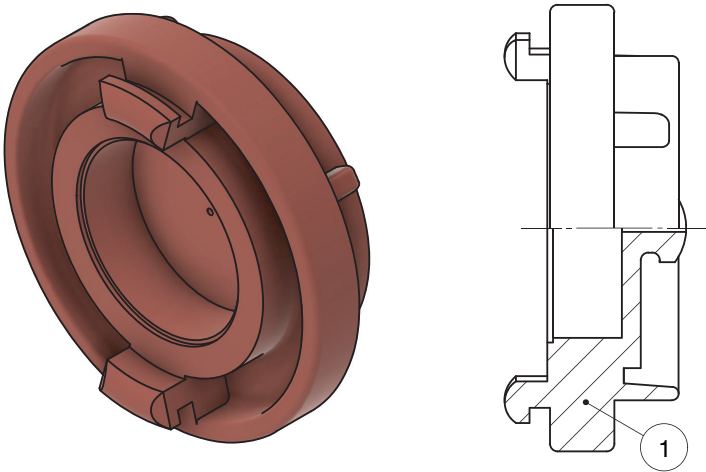
| No | Description       | Clause                      |
|----|-------------------|-----------------------------|
| 1  | Coupling cam ring | <a href="#">Clause 3.1</a>  |
| 2  | Blank cap         | <a href="#">Clause 3.11</a> |
| 3  | Retaining ring    | <a href="#">Clause 3.3</a>  |
| 4  | Suction gasket or | <a href="#">Clause 3.4</a>  |
|    | Delivery gasket   | <a href="#">Clause 3.5</a>  |

**Figure 2.5 — Blank cap**

2.6 Dust cap

The dust cap is a single piece that may be fastened to a matching hydrant connection to prevent the ingress of dust and debris. A typical example is shown in [Figure 2.6](#).

NOTE The dust cap is not pressure or vacuum rated. AS 2419.2 and AS 2419.3 require a blank cap to have a 3 mm drain hole.



| No | Description | Clause                      |
|----|-------------|-----------------------------|
| 1  | Dust cap    | <a href="#">Clause 3.12</a> |

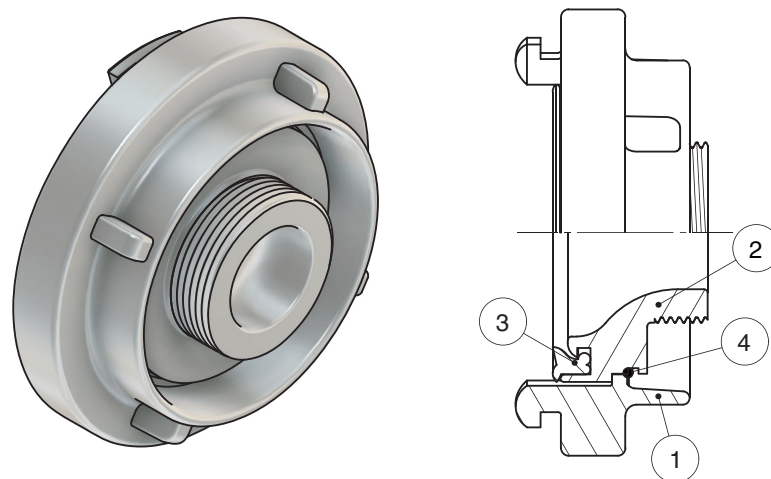
Figure 2.6 — Dust cap

## 2.7 Reducer

The reducer consists of a coupling cam ring, retaining ring, reducer adaptor transition piece and suction or delivery gasket of the same nominal diameter. A typical example is shown in [Figure 2.7](#). Reducers allow connections to be made between fittings of different diameters and connection types.

NOTE 1 A corresponding adaptor — internal thread may be screwed to the smaller diameter external thread to assemble a Storz to Storz reducer.

NOTE 2 Reducers assembled similar to DIN 14341, DIN 14342 or DIN 14343 where the smaller diameter cam ring is fixed in the larger diameter cam ring, and reducers assembled similar to NEN 3374, parts W or X where the transition piece connects two swivelling cam rings that otherwise conform to this standard are also deemed to conform, as per [Clause 1.6](#) Alternative designs.



| No | Description                          | Clause                                                   |
|----|--------------------------------------|----------------------------------------------------------|
| 1  | Coupling cam ring                    | <a href="#">Clause 3.1</a>                               |
| 2  | Reducer adaptor transition piece     | <a href="#">Clause 3.13</a>                              |
| 3  | Suction gasket or<br>Delivery gasket | <a href="#">Clause 3.4</a><br><a href="#">Clause 3.5</a> |
| 4  | Retaining ring                       | <a href="#">Clause 3.3</a>                               |

**Figure 2.7 — Reducer adaptor**

### 3 Components and dimensions

#### 3.1 Coupling cam ring

Coupling cam rings shall be manufactured as shown in [Figure 3.1.1](#), [3.1.2](#), [3.1.3](#) or [3.1.4](#) to the dimensions and tolerances specified in [Table 3.1](#).

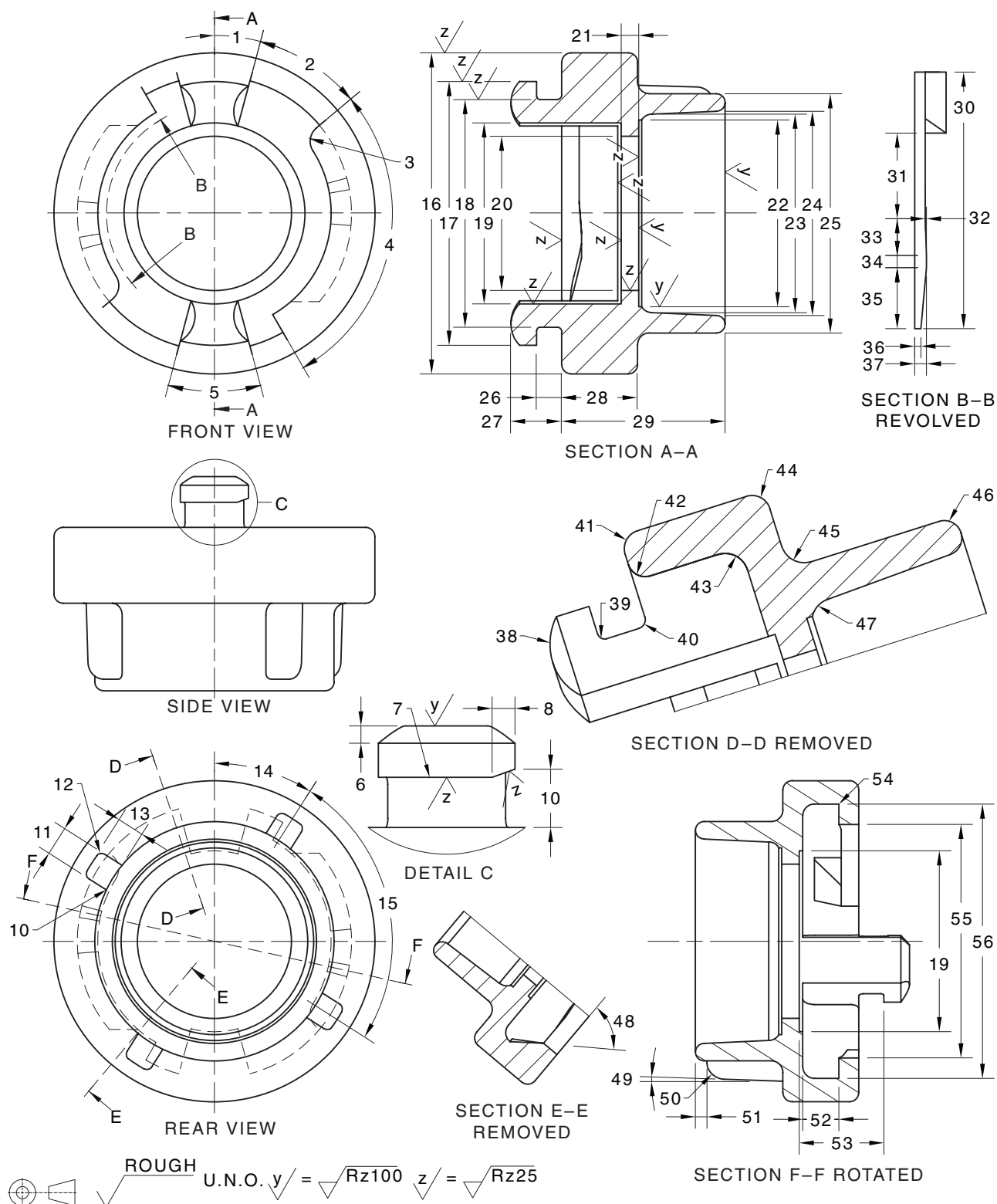


Figure 3.1.1 — Coupling cam ring — 25 mm

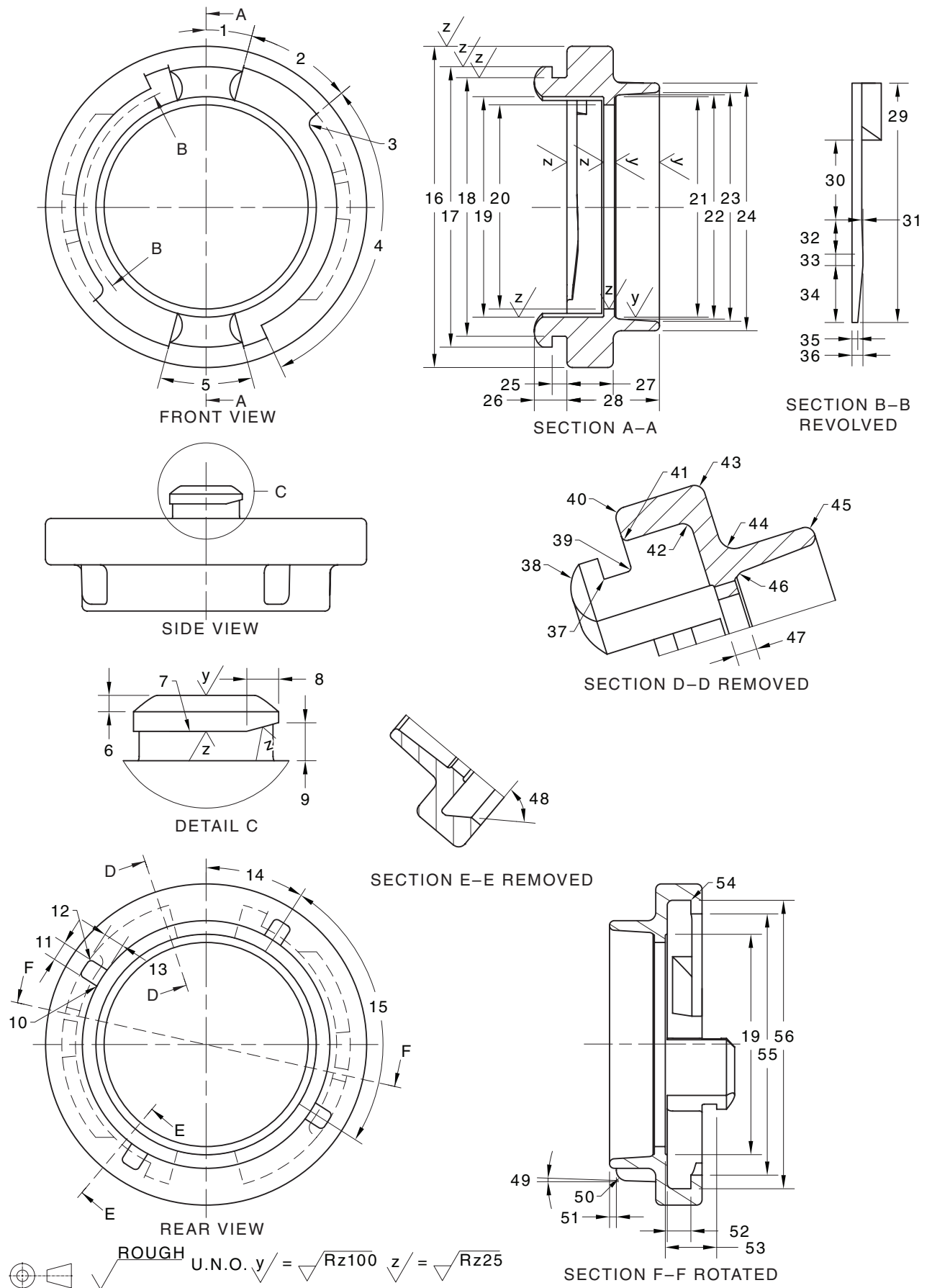


Figure 3.1.2 — Coupling cam ring — 38, 52, 65, 75, 90 mm