SA Water

Engineering

Technical Standard

TS 0230.0 - General requirements for valves

Version: 1.0.
Date: 24 October 2025.
Status: Final.
Document ID: SAWS-ENG-0230.0
Confidentiality: OFFICIAL

Government of South Australia

Issue and version number

Only the current version of the Technical Standard should be used. Earlier versions of this Technical Standard are superseded and must not be used.

This Technical Standard document is not controlled when printed or downloaded. Only online versions from the SA Water website may be used.

Copyright and intellectual property

This Technical Standard has been produced by the South Australian Water Corporation (SA Water). SA Water owns the copyright to all material produced by SA Water.

No part of this Technical Standard may be reproduced, copied or transmitted in any form or by any means, except with the express written consent of SA Water.

Where any material is extracted from this Technical Standard, which may occur only with express written consent of SA Water, that material must be attributed to SA Water as: © SA Water.

Intellectual property

Where any material is extracted from this Technical Standard, which may occur only with express written consent of SA Water, that material must be attributed to SA Water as: © SA Water.

Unless indicated expressly to the contrary, SA Water (and/or any third-party licensors of SA Water) own the copyright and other intellectual property rights, which is contained in the text, graphics, information, designs, data and other content in this Technical Standard.

This Technical Standard may not, without consent in writing from SA Water, or otherwise except to the extent permitted under the *Copyright Act 1968* (Cth), be reproduced for any purpose, including particularly: purposes associated with government operational activities, commercial activity, or education.

SA Water is committed to upholding the rights of owners of copyright and intellectual property, and SA Water will make every effort to contact copyright owners and request permission to reproduce and make available copyright material. If you believe that any content in this Technical Standard may infringe your copyright or other intellectual property rights, please contact us at legal@sawater.com.au and we will investigate the position, and if appropriate, endeavour to correct the situation

If you have access to this Technical Standard and the Technical Standard is used by you or any other entity, for purposes other than to progress SA Water's statutory functions, you could be infringing SA Water's copyright, and or SA Water's intellectual property, and you may face penalties under the *Copyright Act 1968* (Cth), otherwise under law, or under any other policy of SA Water or the South Australian Government that may apply.

Technical Standards are only applicable for intended use

This Technical Standard may be used by only: SA Water staff, SA Water constructors and persons expressly authorised in writing by SA Water to do so.

This Technical Standard may be used only for application to progress activities associated with SA Water's statutory functions described particularly within the *Water Industry Act 2012* (SA), the *Water Industry Regulations 2012* (SA), and the *South Australian Water Corporation Act 1994* (SA). This Technical Standard may not be used for any other activity outside of the scope of the functions described in that legislation.

If you have access to this Technical Standard, and the Technical Standard is used by you or any other entity, for purposes or activity other than to progress SA Water's statutory functions, the Technical Standard may not be applicable to that other purpose or activity, in which you or that other entity intend to engage, and you could be misinterpreting the contents and you may not correctly apply the Technical Standard. This may result in loss or damage to you, the entity or to other parties, and must be avoided.

This Technical Standard has been prepared to address general and not particular circumstances. This Technical Standard is intended to be used in conjunction with designs and project instructions that are prepared in response to circumstances and toward particular objectives. Any user of this Technical Standard must ensure, by independent verification, that the application of the Technical Standard is suitable to any design for any project, and to ensure that the Technical Standard is in accordance with the latest relevant Australian standards, legislation, regulations, codes and with any relevant and applicable policy.

SA Water does its best to provide accurate and up-to-date information in the Technical Standards we prepare, but you should use your own skill and judgement before you rely on it. SA Water does not guarantee or warrant the accuracy, completeness, or currency of the information provided. SA Water recommends that you ask for professional advice from your own advisors on any aspect of your own circumstances.

Liability disclaimer

This Technical Standard may be used by only: SA Water staff, SA Water constructors and persons expressly authorised in writing by SA Water to do so.

To the extent that the use of the Technical Standard constitutes you acquiring goods or services from SA Water, as a consumer within the meaning of the Australian Consumer Law set out in the *Competition and Consumer Act 2010* (Cth) sch 2, as amended or replaced from time to time, you may have certain rights and remedies (including:, consumer guarantee rights) that cannot be excluded, restricted or modified by agreement.

Nothing in this disclaimer operates to exclude, restrict or modify the application of any implied condition or warranty, provision, the exercise of any right or remedy, or the imposition of any liability under the Australian Consumer Law or any other statute, where to do so would contravene that statute or cause any term of this agreement to be void.

You acknowledge and agree that:

- Except for any non-excludable obligations, SA Water gives no warranty (express or implied) or guarantee that information, services and materials contained in this Technical Standard are accurate, complete, current, or fit for any use whatsoever.
- All such information, services and materials are provided "as is" and "as available" without warranty of any kind. This means, for instance, that you should not rely on the accuracy or completeness of any information displayed within this Technical Standard and its suitability for application to your particular circumstances, and furthermore it is your responsibility to contact an appropriate member of our staff if you have any questions about suitability of the Technical Standard to any particular circumstance, before your use of the Technical Standard.

To the maximum extent permitted by law and subject to any non-excludable obligations, SA Water excludes all liability for any loss or damage arising out of access to, use of, or reliance upon information, services and materials contained within this Technical Standard.

Documents superseded by this standard

The following documents are superseded by TS 0230:

a. TS 0230, Version 3.0.

Significant/major changes incorporated in this edition

Updates in this version of the Technical Standard include:

a. Updated in accordance with the SA Water Technical Standard Template Version 8.1 and the SA Water Style and Writing Standard Version 2.0

b. Internal references updated.

Updated text throughout is provided with dotted underline, excepting minor formatting or grammatical changes.

Document controls

Version history

Version	Date	Author	Comments
1.0	24-10-2025	Julian Hamedi	Issued for use

Template: Technical Standard Version 8.2, 08 October 2025

Author

Author Name	Author Role	Signature
Julian Hamedi	Principal Engineer Mechanical	6/11/2025 X Julian Hamedi Principal Engineer Mechanical Signed by: HA005811

Approvers

Approver Name	Approver Role	Signature
Matthew Davis	Manager Engineering Quality and Innovation	10/11/2025 X Matthew Davis Manager Engineering Quality and Innovation Signed by: DA003681
Sofia Chouli	Senior Manager Engineering	12/11/2025 X Sofia Chouli Senior Manager Engineering Signed by: CH005288

Reviewers

Name	Role	Version	Review Date
Josephine Premnath	Principal Engineer Hydraulic	0.1	08-10-2025
Mark Stephens	Engineering Specialist	0.1	08-10-2025

Contents

List of tables

1 Introduction

SA Water is responsible for the construction and commissioning of an extensive amount of engineering infrastructure such that it is safe and functional.

This standard has been developed to assist in the design, maintenance, construction, and management of this infrastructure.

1.1 Purpose

SA Water is responsible for operation and maintenance of an extensive amount of engineering infrastructure. Valve design, selection, and refurbishment is a critical aspect of managing SA Water's existing water and wastewater infrastructure to maximise the service life of these assets.

This Technical Standard series (TS 0230) has been developed to assist in the maintenance and management of SA Water's valve assets, to ensure that design, maintenance, construction, and management are completed to consistent standards to attain the specified asset life.

The purpose of Technical Standard is to detail the minimum technical requirements of valve design and selection for SA Water's water and wastewater assets, and comprises the following suite of sub-documents:

- TS 0230.0: General Requirements (this document)
- TS 0230.1: Gate valve (including knife gate)
- TS 0230.2: Butterfly valve

Table 1 summarises the scope of each sub-document.

The purpose of this document is to detail the interface between each Technical Standard sub-document, and to provide general technical requirements that are applicable to all SA Water's water and wastewater valve requirements projects.

All sub-documents of the Technical Standard suite must be read together, with this document TS 0230.0: General Requirements.

Table 1: Valve Requirements Suite Overview

Ref. No.	Title	Content
TS 0230.0	General requirements for valves	Outline of the Technical Standard and general requirements.
TS 0230.1	Gate valve requirements	Gate and knife gate valves requirements for water, waste and raw water. MSGV and resilient. Application above and below grounds with corrosion prevention methodology.
TS 0230.2	Butterfly valve requirements	Application of Butterfly valve for throttling and isolation in both above and below ground with corrosion prevention methodology

1.2 Glossary

Terms and Abbreviations utilised in this Standard are included in the following sections. The definitions presented below are to be used when interpreting this Standard and actions undertaken in relation to this Standard. Where a conflict exists, clarification is to be sought from SA Water.

1.2.1 Terms and Definitions

The following is a list of Terms applicable to this document:

Term	Description
Accepted	Determined to be satisfactory by SA Water's Representative.
Allow	Means that the cost of the item referred to is the responsibility of the Constructor
Constructor	The organisation responsible for constructing and installing infrastructure for SA Water whether it be a third party under contract to SA Water or an in-house entity.
Contract	A set of documents supplied to Constructor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.
Designer	The organisation responsible for designing infrastructure for SA Water whether it be a third party under contract to SA Water or a Constructor, or an in-house entity. A Designer is a person who effects design, produces designs or undertakes design activities as defined in the *Work Health and Safety Act 2012 (SA)*.
Informative	Means "provided for information and guidance".
Manufacturer	A person, group, or company that owns and operates a manufacturing facility that provides materials for use in SA Water infrastructure.
Person/s	Each word implying a person, or persons shall, where appropriate, also be construed as including corporations.
Provide	Means "supply and install".
Responsible Discipline Lead	The engineering discipline expert identified in the 'Approvers' table (via SA Water's Representative).
SA Water Representative	The SA Water representative with delegated authority under a Contract or engagement, including (as applicable): • Superintendent's Representative • SA Water Project Manager • SA Water nominated contact person
Must	Indicates a requirement that is to be adopted to comply with the Standard.
Should	Indicates practices which are advised or recommended, but is not required
Supplier	A person, group or company that provides goods for use in SA Water infrastructure.
Technical Dispensation Request Form	This form is part of SA Water's Technical Dispensation Request Procedure which details the process by which those required to comply, or ensure compliance, with SA Water's technical requirements may seek dispensation from those requirements.
Work	Elements of a project which require design and/or construction.

1.2.2 Abbreviations

The following is a list of Abbreviations, Acronyms and Initialisms used in this document:

Abbreviation	Description
ISO	International Organization for Standardization
ITP	Inspection and Test Plan
MDR	Manufacturer s Data Report
SA Water	South Australian Water Corporation
TDRF	Technical Dispensation Request Form
TS	SA Water Technical Standard

1.2.3 Terminology

The following is a list of specific interpretations for Terminology used in this standard.

- Where an obligation is given and it is not stated who is to undertake these obligations, they are to be undertaken by the Constructor.
- Directions, instructions and the like, whether they include the expression "the Constructor shall" or equivalent, shall be directions to the Constructor, unless otherwise specifically stated.
- Where a submission, request, proposal is required and it is not stated who the recipient should be, it is to be provided to SA Water's Representative for review.
- Each word imparting the plural shall be construed as if the said word were preceded by the word "all".
- "Authorised", "approval", "approved", "selected", "directed" and similar words shall be construed as referring to the authorisation, approval, selection or direction of SA Water's Representative in writing.
- "Submit" mean "submit to the SA Water Representative or their nominated delegate".
- Unless noted otherwise, submissions, requests, proposals are to be provided at least 10 business days prior to work commencing or material ordering (unless noted otherwise).

1.3 References

1.3.1 Australian and international

The following table identifies Australian and International standards and other similar documents referenced in this document:

Reference	Title
WSA 201	Manual for Selection and Application of Protective Coatings

1.3.2 SA Water documents

The following table identifies the SA Water standards and other similar documents referenced in this document:

Reference	Title
SAWG-RM-0001	SA Water corporate risk management methodology
TS 0107	Sustainability by Design
TS 0121	Physical Security Site Standards General Definitions
TS 0100	Requirements for technical drawings
TS 0101	Safety in Design
TS 0104	Design quality management
TS 0105	Quality requirements
TS 0109	Infrastructure design
TS 0230.1	Gate valve requirements
TS 0230.2	Butterfly valve requirements
TS 0500	Authorised Products Water and Sewer Maintenance
TS 0502	Authorised Products Gravity Sewer and Pressure Pumping Main Systems
TS 0503	Authorised Products Water Systems

2 Scope

2.1 Type of Valves

SA Water has a wide range of valves, or varying purpose and construction, in its water and wastewater treatment, distribution, and reticulation networks.

Valve assets which are subject to this Technical Standard suite include but are not limited to:

1. Gate Valves:
    a. Metal Seated
    b. Resilient Seated
    c. Rising Stem
    d. Non-rising Stem
    e. Knife Gate
    f. Through Conduit
2. Butterfly Valves:
    a. Zero offset (Concentric)
    b. Single offset
    c. Double offset (Double eccentric)
    d. Triple offset

2.2 Works not in scope

Approved products listed in TS 0500, TS 0502, and TS 0503 have been assessed for compliance for use in typical working and environmental conditions. Valves in those standards comply with this Technical Standard and can be used in works which comply with the use limitations detailed in the TS 0500, TS 0502, and TS 0503 as applicable.

2.3 Technical dispensation

Departure from any requirement of this Technical Standard shall require the submission of Technical Dispensation Request Form (TDRF) for the review and approval (or otherwise) of SA Water Principal Engineer listed in Page 5, on a case-by-case basis.

The Designer shall not proceed to document/incorporate the non-conforming work before the Principal Engineer has approved of the proposed action in writing via the Technical Dispensation Request Form (TDRF).

SA Water requires sufficient information to assess dispensation requests and their potential impact. The onus is therefore on the proponent to justify dispensation request submissions and provide suitable evidence to support them.

Design works that are carried out without being appropriately sanctioned by SA Water shall be liable to rejection by SA Water and retrospective rectification by the Designer/Constructor.

2.4 Hazards

Hazards shall be identified and addressed in accordance with TS 0101.

3 Hold points and witness points

3.1 Hold points

Please refer to TS 0105 for further detail on hold points.

3.2 Witness points

Please refer to TS 0105 for further detail on witness points.

3.3 Non-conformance

Please refer to TS 0104 and TS 0105 for the requirements relating to non-conformance.

4 Planning and Design

During the planning and design phase of a project, the Designer shall take necessary steps to create a record of design decisions with respect to reliability, durability, and maintenance.

4.1 Safety, sustainability, and security in Design

Safety, Sustainability, and Security of SA Water assets are key to ensuring a whole of life approach to the asset is considered. Requirements are set out in the sections below to ensure that appropriate considerations are made during the design process.

4.1.1 Safety in Design

Designers comply with the requirements set forth in TS 0101 to ensure that appropriate considerations are made for Safety in Design. Designers shall liaise with the SA Water Representative to ensure that appropriate safety considerations are considered in the selection of valves.

Selected valves will need to demonstrate compliance and consideration of this standard.

4.1.2 Sustainability in Design

Designers comply with the requirements set forth in TS 0107 to ensure that appropriate considerations are made for Sustainability in Design. Designers shall liaise with the SA Water Representative to ensure that appropriate sustainability considerations are considered in the selection of valves.

Selected valves will need to demonstrate compliance and consideration of this standard.

4.1.3 Security in Design

Designers comply with the requirements set forth in TS 0121 to ensure that appropriate considerations are made for Security in Design. Designers shall liaise with the SA Water Representative to ensure that appropriate security considerations are undertaken to protect the valves from unlawful interference.

Valve security, including location, access, and locking mechanisms, will need to demonstrate compliance and consideration of this standard.

4.2 Design Life

All valves shall be designed to accommodate the Design and Service Life requirements as nominated in TS 0109. Further to this, the design shall nominate and have supporting evidence, for each valve, for:

a. Number of actuations over the Design and Service lives of the valve

b. The period between maintenance activities considering the:

- Operational environment
- Number of actuations

4.3 Environmental Conditions

The design shall consider and nominate the environmental conditions anticipated to be encountered over the life of the valve. This shall consider:

a. Exposure (indoors / outdoors / buried).

b. Chemical environment (salinity / chlorine / corrosive).

c. Temperature (min °C / max °C / operational range).

d. Fluid (raw water / drinking water / reverse osmosis water / sewage / effluent / brine / etcetera).

e. Flooding and draining of the carrier pipe (valve internals).

f. Flooding and draining of the valve installation location (valve externals).

g. Groundwater, including wet dry cycles from water table rise and fall.

4.4 Pressure Environment

Designers shall assess the pressure environment for the proposed valve and select the appropriate pressure rating for the valve accordingly. Designers shall consider operating system pressure, system test pressures, dynamic stress and surge events, and fatigue failure of the nominated valves.

5 Quality Requirements

Refer to TS 0105 for quality requirements.

5.1 General

The quality management system requirements for the supply, construction, testing and commissioning activities undertaken onsite in the delivery of system including flanged connections shall comply with TS 0105 for details of SA Water's quality management, documentation and hold/witness point requirements.

5.2 SA Waters Independent Quality Control Inspector/Technical Support

In addition to the requirements set out in TS 0105 for an Independent Quality Control Inspector, the following minimum certification and experience requirements are necessary:

a. Member or eligible for membership of Engineers Australia or equivalent professional body

b. Significant experience in mechanical components, flange, gearbox, actuator assembly including understanding of materials

c. Significant experience in Hydrostatic pressure testing of valves including flange, weld joint, seat seal leak testing and validation.

d. Significant experience in examination and verification of ITP, MDR, and certification documents.

5.3 Dimensions

Further to the requirements set forth in TS 0100, TS 0104, and TS 0105:

e. Where dimensions may have been taken from the original design drawings, the Constructor shall verify all dimensions prior to works starting.

f. Under no circumstances shall dimensions be scaled from the Drawings unless authorised, in writing, by SA Water's Representative. No claim for additional costs arising from failure to obtain measurements and other information on site will be allowed.

g. Where any discrepancy exists between figure and scaled dimensions, the figured dimensions shall prevail, pending confirmation in-situ.

5.4 Inspection and testing during warranty period

SA Water reserves the right to test any valve under warranty to confirm its operational performance against the test criteria stipulated in this Technical Standard.

SA Water may conduct passive monitoring of the performance and operation of the valve without physically engaging with or otherwise disturbing the valve in its installed conditions or changing its method of operation. Valve vendors will be notified by SA Water of the results of any passive monitoring of the performance and operation of the valve that confirms a defect. The warranty held by SA Water is unaffected by this passive testing, and acceptance of this is to be confirmed by the valve Vendor upon the initial supply of the valve and before any valve is procured.

SA Water may conduct active testing and monitoring of the performance and operation of the valve by changing its method of operation without physically engaging with or otherwise disturbing the valve in its installed conditions. Valve vendors will be notified by SA Water of any testing and monitoring of the performance and operation of the valve involving a change to its method of operation and given an opportunity to organise witnessing of any test. Valve Vendors will be notified by SA Water of any testing results that confirm a defect. The warranty held by SA Water is unaffected by this active testing, and acceptance of this is

to be confirmed by the valve vendor upon the initial supply of the valve and before any valve is procured.

SA Water may conduct active testing and monitoring of the performance and operation of the valve by changing its method of operation and physically engaging with or otherwise disturbing the valve, by isolating the system containing the valve and physically removing the valve for testing in a workshop. Valve Vendors will be notified by SA Water of any testing and monitoring of the performance and operation of the valve involving a change to its method of operation and physically engaging with or otherwise disturbing the valve. They will also be given an opportunity to organise witnessing of any test. Valve vendors will be notified by SA Water of any testing results that confirm a defect. The warranty held by SA Water is unaffected by this active testing unless the physical engagement with or disturbance of the valve results in new damage to the valve, and acceptance of this is to be confirmed by the valve Vendor upon the initial supply of the valve and before any valve is procured. The condition of removed valves will be documented upon removal from the system to establish a dilapidation baseline, which will be forwarded to the valve vendor before any testing or transport of the valve by SA Water that could result in new damage.

If defect is discovered after any of the tests identified in this section, then the costs incurred by SA Water in conducting the tests will be paid by the valve vendor as part of any claim against the warranty.

The information contained in this section must be explicitly transferred by the Designer or Constructor into all valve supply contracts.