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Reconfirmed 2015

Australian Standard™

Knife-gate valves for waterworks purposes

Standards Australia

This Australian Standard was prepared by Committee WS-022, Valves for Waterworks Purposes. It was approved on behalf of the Council of Standards Australia on 3 January 2003 and published on 3 March 2003.

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Australian Industry Group
Australian Valve Manufacturers Association
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Master Plumbers Australia
New Zealand Metal Casting Industry Association
Plastics Industry Pipe Association of Australia
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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 6401—2003

Knife-gate valves for waterworks purposes

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Technical Committee WS-022 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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NOTES

Australian Standard™

Knife-gate valves for waterworks purposes

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PREFACE

This Standard was prepared by the Joints Standards Australia/Standards New Zealand Committee WS-022, Valves for Water Supply Purposes, in response to a request from Water Services Association of Australia (WSAA) to provide a suitable product Standard for knife-gate valves.

The objective of this Standard is to provide material requirements and performance tests for knife-gate valves in water supply systems including potable water, recycled water and screened wastewater systems, together with default compliance requirements for the use of manufacturers and certification bodies.

Support and contribution is acknowledged from the Water Services Association of Australia (WSAA) and manufacturers.

The terms ‘normative’ and ‘informative’ have been used in this Standard 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.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA

Australian Standard
Knife-gate valves for waterworks purposes

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for Class 10 flanged, wafer and lugged, rising and non-rising spindle, uni-directional and bi-directional, gland box and bonneted knife-gate valves of sizes DN 50 to DN 1500 inclusive for:

(a) cold potable water supply (up to 40°C); and

(b) drainage and sewerage systems (continuous flow up to 45°C and intermittent flow up to 95°C).

The valves are designed for operation by manual hand wheel either above ground or buried or submerged with an extension spindle.

Means for demonstrating compliance with this Standard are given in Appendix A.

NOTES:

1 Purchasing guidelines are given in Appendix B.

2 The design of the extension spindle is not covered in this Standard.

1.2 REFERENCED DOCUMENTS

The documents referred to in this Standard are listed in Appendix C.

1.3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.3.1 Knife-gate valve

A valve that provides on/off control by means of a thin, parallel sliding gate and guide.

1.3.2 Allowable operating pressure

The allowable internal pressure, excluding surge, that a component can safely withstand in service.

1.3.3 Maximum allowable operating pressure

The allowable internal pressure, including surge, that a component can safely withstand in service.

1.3.4 Allowable test pressure

The maximum internal hydrostatic pressure that can be applied on site to a component in a newly installed pipeline.

1.3.5 Bi-directional

The valve is designed to seal against the flow in either direction.

1.3.6 Bulk head test

A test where the testing machine provides external restraint to make a watertight joint at each end of the valve.

1.3.7 Class

The allowable operating pressure of the valve expressed in hundreds of kilopascals.

1.3.8 Coating

A corrosion-inhibiting medium applied to the surfaces of a valve.

1.3.9 Coating defect

A detectable weakness or discontinuity in a coating which deems it to be suspect in its ability to protect the substrate from corrosion during its normal service life.

1.3.10 Distortion

Any permanent deformation.

1.3.11 DN (Nominal size)

An alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises the letters DN followed by a dimensionless whole number that is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections.

1.3.12 Face to face dimensions

The distance between the valve mating faces measured along the valve axis.

1.3.13 Free end test

A test where the valve ends are blanked off so that the axial hydraulic force is not externally restrained. This simulates a valve in a terminal position held rigidly at one end only.

1.3.14 Non-rising spindle design

A valve design where the gate is attached to the spindle, such that as the gate moves from closed to open position the spindle does not rise during operation.

1.3.15 Rising spindle design

A valve design where the gate is fixed to the spindle such that as the gate moves from closed to open position the spindle rises during operation.

1.3.16 Un-directional

The valve is designed to seal against the flow in one direction only

1.3.17 Type test

A once only set of tests carried out to prove performance.

1.4 VALVE TYPE

Valves shall be of the wafer, flanged or lugged type for installation between flanges, or for installation at a termination point.

The valve may be supplied in any of the following configurations:

(a) Rising or non-rising spindle.

(b) Uni-directional or bi-directional flow.

(c) Yoke and gland box or bonneted valve spindle support system.

The centre-line of the knife-gate valve and actuator shall be in the vertical plane unless otherwise specified by the purchaser.

1.5 DESIGNATION OF SIZE

Valve size shall be designated by the nominal size as follows: DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300, DN 350, DN 400, DN 450, DN 500, DN 600, DN 700, DN 750, DN 800, DN 900, DN 1000, DN 1050, DN 1200, DN 1400 and DN 1500.

1.6 ALLOWABLE PRESSURES

Allowable pressures for valves up to and including DN 600 are given in Table 1.1.

TABLE 1.1

ALLOWABLE PRESSURES

Class of valve	Allowable operating pressure kPa	Maximum allowable operating pressure* kPa	Allowable test pressure kPa
10	1000	1200	1500

* Seat leakage may occur at maximum allowable operating pressures without structural damage.

NOTES:

1 Test pressures should only be applied to the gate in the fully open position.

2 Allowable pressures for valves >DN 600 should to be negotiated with the manufacturer.

SECTION 2 MATERIALS AND COMPONENTS

2.1 GENERAL

The basic materials that shall be used for the manufacture of the valve components are listed in Table 2.1. The materials listed are the minimum acceptable standard materials.

Alternative materials may be used, provided they are equivalent in performance, particularly with respect to strength, corrosion-resistance, valve operation and durability. Acceptable alternative materials are listed in Appendix D.

Non-metallic materials used in the componentry of valves shall be fit for the intended purpose and shall exhibit dimensional stability after extended periods of time immersed in water and wastewater.

NOTE: Material equivalence will be considered by a ruling committee of purchasers and suppliers selected by the Water Services Association of Australia (WSAA) from standing members of Committee WS-022.

2.2 CORROSION-RESISTANT MATERIALS

For the purposes of this specification, the following materials are deemed to be corrosion-resistant:

(a) Copper alloys complying with AS 1565, AS/NZS 1567 or AS/NZS 1568 and complying with AS 2345.

(b) Austenitic stainless steel complying with ASTM A276, series 300, containing not less than 8% nickel, except that Grade 303 is not permitted, and duplex (ferritic-austenitic) stainless steels UNS S32750, S32304, S31803 and S31500.

(c) Stainless steel complying with ASTM A480 or ASTM743

(d) Phosphor bronze complying with AS 2738.2 Alloy 518.

(e) Copper nickel alloy complying with AS 2738.2 Alloy 706 or Alloy 715.

Other materials may be considered based on demonstrated corrosion resistance data.

2.3 CONTAMINATION OF WATER

Components in contact with potable water shall comply with AS/NZS 4020.

A scaling factor of 0.01 shall be applied.

TABLE 2.1

BASIC MATERIAL REQUIREMENTS FOR KNIFE-GATE VALVES

Component	Basic material		
	Material	Standard	Grade
Cast lugged or flanged body and gland box, seat integral	Stainless steel	ASTM A743 (AS 2074)	CF8M
Fabricated bodies, gland boxes and up-stands	Stainless steel	ASTM A480	316
Gate	Stainless steel	ASTM A240	316
Gate guide	Stainless steel	ASTM A276	431
Cast bonnet	Stainless steel	ASTM A743 (AS 2074)	CF8M
Fabricated bonnet	Stainless steel	ASTM A480	316
Seat	Polytetrafluoroethylene (PTFE)		Viton™ Fluorel™
Spindle	Stainless steel	ASTM A276	316
Gland packing	PTFE		
Bridge	Stainless Steel	ASTM A743 (AS 2074)	CF8M
Pillar	Stainless steel	ASTM A276 or ASTM A480	316
Nut	Gunmetal	AS 1565	C83600
Thrust washer	Polyamide	ASTM D5989	S-PA0411 (Nylon 6™)
Fasteners	Stainless steel	ASTM A276	316
Washers	Stainless steel	ASTM A480	316

SECTION 3 DESIGN

3.1 GENERAL

Valves shall be designed for installation with the spindle in the vertical position and uni-directional or bi-directional operation under full unbalanced allowable operating pressures, unless otherwise specified.

NOTE: Valves may be of the rising or non-rising spindle type as specifically requested by the purchaser (refer to Appendix B).

Valves shall be designed to withstand all torques and pressure conditions specified in this Standard.

NOTE: The design criteria of the valve and fasteners should be based on a minimum life expectancy of 25 years.

3.2 END CONNECTIONS

Valves shall be supplied in wafer, lugged or flanged configurations suitable for connection to flanges with dimensions in accordance with AS 4087 Figure B2 or other flange Standards agreed to by the purchaser. Body and lug tapped holes shall be metric threads in accordance with AS 1275.

3.3 COMPONENT DESIGN—WELDING AND POST WELD HEAT TREATMENT

All construction welding of steel or cast steel valve components shall be in accordance with AS/NZS 1554.1. Category SP

All construction welding of stainless steel valve components shall be carried out in accordance with AS/NZS 1554.6, Category 2B using welding electrodes that comply with ANSI/AWS A5.9 excluding inspection requirements. Welding shall be capable of meeting the requirements of the intergranular corrosion test specified in AS 2205.10.1.

No welding shall be permitted on cast iron components.

Inspection shall be carried out by suitably trained persons approved by the manufacturer to meet its requirements.

3.4 DIMENSIONS

Valve dimensions shall be as given in Table 3.1.

TABLE 3.1

DIMENSIONS OF KNIFE-GATE VALVES

Nominal size of valve DN	Face to face dimension, L mm		
	Wafer Unbonneted	Lugged Unbonneted	Bonneted
50	49	49	48
65	49	49	48
80	52	52	51
100	52	52	51
125	58	58	58
150	58	58	58
200	71	71	71
300	71	71	71
350	76	76	76
400	89	89	89
450	89	89	89
500	114	114	114
600	114	114	114
700	118	118	118
750	118	118	118
800	118	118	118
900	118	118	118
1050	*	*	*
1200	*	*	*
1400	*	*	*
1500	*	*	*

* Purchaser to consult manufacturer

NOTE: Tolerance on L: DN 50 to DN 300 ±2 mm, DN 400 to DN 600 ±4 mm, DN 750 to DN 1500 ±6 mm

3.5 GATE

3.5.1 General

The surface roughness of the gate in contact with the gland and resilient seal shall not exceed 1.6 μm Ra when measured in accordance with ISO 4288.

3.5.2 Guides

A guide system shall be provided on valves of all sizes to ensure alignment of the gate and to carry the loads imposed on the gate during the opening and closing cycle.

3.5.3 Gate travel

Gate travel shall be sufficient to ensure that the gate can be raised clear of the internal diameter of the valve. When the gate is in the closed position, there shall be full engagement of the spindle nut.

3.5.4 Gland sealing

For gland box valves, sealing between the valve body and gate shall be by an adjustable packed gland. The gland box or follower shall be adjustable.

3.6 COMPONENT CONNECTIONS

Surfaces integral with the knife-gate valve and forming connections between components shall provide a watertight joint. The joint shall be designed to withstand the body test pressure given in Table 4.1.

3.7 SPINDLE

3.7.1 Spindle strength

The spindle shall be designed to withstand the minimum strength test torque specified in Table 4.3, without distortion.

3.7.2 Spindle thread

The spindle shall be screwed with an acme thread in accordance with AS B202 Class 2G, unless otherwise specified. The diameter and lead of the screw shall be designed to ensure that the valve shall remain in any position under static and dynamic operating conditions.

3.7.3 Spindle sealing

For bonneted valves, means shall be provided for spindle sealing under working conditions.

3.8 LIFTING DEVICES

Valves exceeding 25 kg shall be provided with a means for lifting the total mass of the valve. Where provided, eyebolts shall comply with AS 2317.

3.9 FASTENERS

Bolts, screws and nuts shall conform to the dimensional requirements of AS 1111.1, AS 1111.2 and AS 1112.3 respectively.

3.10 OPERATION

3.10.1 General

Valves shall be designed for operation by manual hand wheel, with or without a gearbox, or by chain wheel or quick action lever or electric, hydraulic or pneumatic actuator as requested by the purchaser.

3.10.2 Hand wheels

Where hand wheels are fitted, they shall be of a diameter suitable for operation of the valve at the maximum torque referred to in Clause 4.2.6. The wheel shall be secured in such a manner that it cannot be taken off unless the means of securing the hand wheel is removed.

3.10.3 Direction of closure

Valves shall be manufactured with either clockwise or anti-clockwise closure as requested by the purchaser with the direction to open or close indicated on the hand wheel.

SECTION 4 PERFORMANCE TESTS

4.1 GENERAL

Both type tests and production tests shall be conducted on each class and size of valve up to and including DN 600 in accordance with Clauses 4.2 and 4.3, respectively, and the following:

(a) All valves shall be mounted in the test apparatus with the valves in the vertical position, with an allowable deviation of not greater than 2°.

(b) All tests shall be conducted at ambient temperature and, as appropriate, with clean water within a temperature range of 10°C to 30°C.

(c) The apparatus used for measuring the various parameters shall enable measurement with a permissible error of up to ±2% of the measured value.

Because of the varying types of installation, knife-gate valves are available as either standard products (normally available as per the manufacturer's literature) or specially engineered to order designed products. The tests listed in Clauses 4.2 and 4.3 apply to standard product designs up to and including DN 600. For specially designed products and valves >DN 600, the production tests in Clause 4.3 plus any of the type tests listed in Clause 4.2, as specified by the purchaser, shall be conducted.

4.2 TYPE TESTS

4.2.1 General

Type tests shall be carried out sequentially in accordance with Clauses 4.2.2 to 4.2.6 for each nominal size and component material combination.

Before commencing the tests, the number of turns of the spindle to accomplish full gate travel, whilst the valve seat test pressure is applied in the openend condition, shall be recorded.

4.2.2 Body design pressure test

With the gate in the open position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.2. There shall be no plastic deformation or distortion of the valve body, or gate. Leakage at pressure-containing joints shall not be a cause for failure of the test.

4.2.3 Strength test—Spindle, nut and gate connection

With the gate in the closed position, gradually apply a torque to the valve spindle in the closing direction until the strength test torque, as given in Table 4.3, is achieved. There shall be no permanent deformation or distortion of the spindle nut and gate connection.

TABLE 4.1

HYDROSTATIC TEST PRESSURES

Class	Allowable operating pressure, kPa	Test pressure, kPa			
		Body test	Valve seat test	Gate strength test	Gate leakage test
10	1 000	1 500	1 000	1200	275

TABLE 4.2

TYPE TEST DURATION

Nominal size of valve DN	Minimum duration, min.			
	Body test	Seat test	Gate strength test	Gate leakage test
50–300	1.0	1.0	1.0	15.0
350–700	2.0	2.0	2.0	15.0
750–1 500	10.0	10.0	10.0	15.0

4.2.4 Gate strength test

For uni-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.2 to the upstream side of the gate, the other side of the valve being at atmospheric pressure.

For bi-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.2 in turn to both sides of the gate, with the other side of the valve being at atmospheric pressure.

There shall be no permanent deformation or distortion of the gate. Leakage at the seat shall not be cause for rejection.

4.2.5 Gate leakage test

For uni-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.2 to the upstream side of the gate, the other side of the valve being at atmospheric pressure.

For bi-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.2 in turn to both sides of the gate, with the other side of the valve being at atmospheric pressure.

The maximum permissible leakage shall be 40 mL/min/25 mm of nominated diameter.

NOTE: Valve seat test pressure of 275 kPa is adopted from MSS-SP 81.

4.2.6 Functional test

The procedure shall be as follows:

(a) Close the valve using the same number of turns plus or minus one, as determined in Clause 4.2.1. The torque shall not at any point in its travel exceed the maximum functional test torque, as given in Table 4.3.

(b) Fully open the valve. The torque shall not at any point it its travel exceed the maximum functional test torque, as given in Table 4.3.

TABLE 4.3

TEST TORQUES FOR VALVES WITHOUT GEARBOXES

Nominal size of valve DN	Strength test torque N.m	Maximum functional test torque* N.m
50	70	25
65	70	25
80	70	25
100	70	25
125	90	25
150	100	25
200	120	25
250	600	40
300	700	200
350	800	250
400	900	300
450	1 200	400
500	1 500	500
600	2 500	700
700	2 500	700
750	2 500	700
800	2 500	700
900	3 000	800
1 000	3 000	850
1 050	3 000	900
1 200	3 500	1 000
1 400	3 500	1 000
1 500	3 500	1 000

* Denotes input on handwheel at zero differential pressure

4.3 PRODUCTION TESTS

4.3.1 Gate leakage test

For uni-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.4 to the upstream side of the gate, the other side of the valve being at atmospheric pressure.

For bi-directional valves with the gate in the closed position, apply a hydrostatic body test pressure as given in Table 4.1 for a test duration as given in Table 4.4 in turn to both sides of the gate, with the other side of the valve being at atmospheric pressure.

The maximum permissible leakage shall be 40 mL/min/25 mm of nominated diameter.

TABLE 4.4

BATCH RELEASE TEST DURATION

DN	Test duration min
50–300	1
350–700	2
750–1 5000	10

4.3.2 Body test

With the gate in the closed position, apply the valve seat test pressure as given in Table 4.1 for a minimum duration as given in Table 4.4, to the body of each valve. No visible leakage through the body shall be allowed.

SECTION 5 MARKING AND PACKAGING

5.1 BODY MARKINGS

The following information shall be cast on the body of the valve.

(a) Manufacturer's name or mark.

(b) Nominal valve size.

(c) Year of manufacture.

(d) Class of valve.

(e) An arrow denoting essential flow direction if applicable.

The lettering shall be legible block type letters not less than 25 mm high and projecting not less than 3 mm.

Where, owing to size or any other reason, casting of the above lettering is not practicable, such information shall be shown on an engraved stainless steel nameplate. This nameplate shall be securely attached to a raised pad on the body of the valve casting using stainless steel fixings positioned to be clearly visible after installation.

A product identifier (Fig No./Model No., etc.) shall also be applied to each valve by way of a permanent mark or an affixed tag, to indicate that the valve complies with this Standard.

5.2 PACKAGING

Valves shall be suitably packed to prevent damage to coatings whilst in transit.

The gate shall be in the closed position for dispatch. Valve packing nuts may be loosened prior to shipment to extend packing life and then tightened when in service by the purchaser. Valve shall be shipped with covers to protect the raised face of the flanges.

APPENDIX A

MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD

(Normative)

A1 SCOPE

This Appendix sets out means by which compliance with this Standard shall be demonstrated by a manufacturer:

(a) The use of a product certification scheme.

(b) The use of a minimum sampling and testing frequency plan.

A2 RELEVANCE

The long-term performance of pipeline systems is critical to the operating efficiency of water agencies in terms of operating licences and customer contracts. The long-term performance of plumbing systems is similarly critical to the durability of building infrastructure, protection of public health and safety and protection of the environment.

A3 PRODUCT CERTIFICATION

The purpose of product certification is to provide independent assurance of the claim by the manufacturer that products comply with this Standard.

The certification scheme should meet the criteria described in SAI HB18.28/SANZ HB18.28 (ISO/IEC Guide 28) in that, as well as full type testing from independently sampled production and subsequent verification of conformance, it requires the manufacturer to maintain effective planning to control production.

The certification scheme serves to indicate that the products consistently conform to the requirements of this Standard.

Product certification shall be conducted by a certification body accredited by the Joint Accreditation System for Australia and New Zealand (JAS-ANZ) or by another accreditation body that is acceptable to JAS-ANZ.

The frequency of the sampling and testing plan, as detailed in Paragraph A4, shall be used by the certifying body for product compliance auditing. However, where the manufacturer can demonstrate adequate process control to the certifying body, the frequency of sampling and testing nominated in the manufacturer's quality plan and/or documented procedures shall take precedence for the purpose of product certification.

A4 TESTING

A4.1 General

Table A1 sets out the minimum sampling and testing frequency plan for a manufacturer to demonstrate compliance of product(s) to this Standard.

A4.2 Retesting

In the event of a test failure, the products manufactured since the previous test(s), conforming to the requirements outlined in Table A1, shall be quarantined as a batch. A further set of samples shall be selected randomly from the quarantined batch using a sampling plan to AS 1199 for an acceptable quality level (AQL) of 2.5 and an inspection level of S3. If the retest requirements are met, the batch may be released and compliance with this Standard for the quarantined batch may be claimed.

Should failure on retesting occur, then the quarantined batch shall be rejected and claims and/or marking indicating compliance to this Standard shall be suspended until the cause of the failure has been identified and corrected.

A4.3 Rejection after retest

In the event of a quarantined batch being rejected after retesting in accordance with the procedures set out in Paragraph B4.2, it may be subjected to 100% testing for the failed requirement(s), and only those items found to comply may be claimed and/or marked as complying with this Standard.

TABLE A1

MINIMUM SAMPLING AND TESTING FREQUENCY PLAN

Characteristic	Clause	Requirement	Test method	Frequency
Type Tests				
Material properties	2.1	Materials	Review materials parts lists and compliance certificates	At any change in materials
	2.3	Contamination of water	AS/NZS 4020	At change in materials or every 5 years, whichever occurs first
Design	3.1	Operation Installation Performance history Estimated operating life Design calculations	Review manufacturer's data, instructions, drawings, calculations and other relevant information	At any change in design
	3.2	End Connectors	Relevant Standard	At any change in design
	3.3	Welding	AS 1554.6 Category SP	At any change in weld procedure
		Welding electrodes	ANSI/AWS A5.9 excluding inspection	At any change in welding electrode
		Intergranular corrosion resistance	AS 2205.10.1	At any change in welding procedure
	3.4	Dimensions	Measuring tape	At any change in design
	3.5.1	Gate contact surfaces Surface roughness Bevelled edge	ISO 4288 Visual examination	At any change in design
	3.5.2	Alignment	Design drawings and visual examination	
	3.5.3	Gate travel		
	3.5.4	Gate gland sealing		
	3.6	Connections	Verified by type test	At any change in design
	3.7.1	Spindle strength	Verified by type test	At any change in design
	3.7.2	Spindle thread	Design drawings, thread measurement and operation demonstration	
	3.7.3	Spindle sealing	Verified by type test	

(continued)

TABLE A1 (*continued*)

Characteristic	Clause	Requirement	Test method	Frequency
Design	3.8	Lifting devices	Weighing and visual examination	At any change in design
	3.9	Bolts, nuts and washers	AS/NZS 1111.1, AS/NZS 1112.3 and AS 1237	At any change in supplier
	3.10.2	Hand wheels	Design drawings and visual examination	At any change in design
	3.10.3	Direction of closure	Visual examination	
Performance	4.2.1	Number of turns	Manual operation	At any change in design
	4.2.2	Body strength	Body design pressure test	
	4.2.3	Strength of valve assembly	Strength of spindle, nut and gate connection test	
	4.2.4	Gate strength	Hydrostatic test	
	4.2.5	Watertightness	Gate leakage test	
	4.2.6	Functionality	Operational test	
Batch release tests				
Design	3.1 and 3.4	Standard critical dimensions	Design drawings	Each valve
Protective coatings		As agreed	As agreed	As agreed
Performance	4.3.1	Leakage	Gate leakage test	Each valve
	4.3.2	Body soundness	Hydrostatic test	
Markings	5.1	Legibility and tagging	Visual examination	Each valve
	5.2	Packaging	Visual examination	

APPENDIX B

PURCHASING GUIDELINES

(Informative)

B1 GENERAL

Joint Australian/New Zealand Standards are intended to include the technical provisions necessary for the supply of a product referred to in a particular Standard, but do not purport to contain all the necessary provisions of a contract. In a number of cases, the purchaser either is asked to state the requirements or is given a choice of optional requirements, and these are contractual matters to be agreed between the purchaser and the manufacturer.

This Appendix contains detailed explanation, advice and recommendations on the information to be supplied by the purchaser at the time of the enquiry or order. Its aims are to prevent misunderstanding and to result in satisfactory supply of products and service.

B2 INFORMATION TO BE SUPPLIED BY THE PURCHASER

The following information should be supplied by the purchaser:

Size	DN.....	
Hydraulic Data	Maximum static pressure	_____
	Maximum pressure differential	_____
	Maximum flow	_____
Valve	Details	_____
Materials	Body material	_____
	Blade material	_____
	Seat	_____
	Other	_____
Application	☐ Uni-directional	
	☐ Bi-directional	
Actuation	☐ Manual—Rising spindle	
	☐ Manual—Non-rising spindle	
	☐ Pneumatic	
	☐ Electric	
Body style	☐ Wafer	
	☐ Lugged	
	☐ Bonneted	
	☐ Gland box	
Flange drilling		_____
Manufacturer's model No.		_____
Trim No.		_____

Power supply	Pneumatic	_____ kPa
	Electric	_____volts/Hz

B3 INFORMATION TO BE SUPPLIED BY THE MANUFACTURER

At the time of tendering, the valve manufacturer should state the following:

(a) The relevant standard and grade of all materials to be used in the manufacture of the valve if other than basic materials are used (see Table A and Clause 2.1).

(b) Number of turns to fully raise the gate.

(c) Details of protective coatings, including proposed process control measures and batch release testing details as applicable

B4 MATTERS FOR AGREEMENT BETWEEN THE PURCHASER AND THE MANUFACTURER

The purchase and the manufacturer should agree on the following matters, where relevant:

(a) Type testing and production testing requirements for valves >DN 600.

(b) Full details where an extended spindle is required including any intermediate support or support bearing requirements.

(c) Protective coatings

(d) Method of actuation

(e) Provision of accessories

APPENDIX C

REFERENCED DOCUMENTS

(Normative)

AS	
1111	ISO metric hexagon bolts and screws
1111.1	Part 1: Product grades A and B—Bolts
1111.2	Part 2: Product grades A and B—Screws
1112	ISO metric hexagon nuts
1112.3	Part 3: Product grade C
1199	Sampling procedures and tables for inspection by attributes
1237	Flat metal washers for general engineering purposes (metric series) *superseded*
1275	Metric screw threads for fasteners
1565	Copper and copper alloys—Ingots and castings
1646	Elastomeric seals for waterworks purposes
1830	Iron castings—Grey cast iron
1831	Iron castings—Spheroidal or nodular graphite cast iron
2074	Steel castings
2205	Methods for destructive testing of welds in metal
2205.10.1	Method 10.1 Methods for destructive testing of welds in metal
2317	Collared eyebolts
2345	Dezincification resistance of copper alloys
2738.2	Part 2: Wrought products
4087	Metallic flanges for waterworks purposes
B202	General purpose acme screw threads
AS/NZS	
1554	Structural steel welding
1554.1	Part 1: Welding of steel structures
1554.6	Part 6: Structural steel welding—Welding stainless steels for structural purposes
1567	Copper and copper alloys—Wrought rods, bars and sections
1568	Copper and copper alloys—Forging stock and forgings
2938	Gears – Spur and helical—Guide to specification and rating
3678	Structural steel—Hot rolled plates, floor plates and slabs
4020	Products for use in contact with drinking water
SAI	
HB18	Guidelines for third-party certification and accreditation
HB18.28	Guide 28: General rules for model third-party certification system for products

ISO	
4288	Geometrical Product Specifications (GPS)—Surface texture: Profile method—Rules and procedures for the assessment of surface texture
ANSI/AWS	
A5.9	Specification for bare stainless steel welding electrodes and rods
ASTM	
A240	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
A276	Standard specification for stainless and heat-resisting steel bars and shapes
A480	Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip
A743	Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General
D5989	Standard Specification for Extruded and Monomer Cast Shapes Made from Nylon (PA)
MSS	Manufactures standardisation society
P81	Stainless steel, bonnetless, flanged knife-gate valves.

APPENDIX D

ACCEPTABLE ALTERNATIVE MATERIALS

(Normative)

D1 GENERAL

Acceptable alternative materials are listed in Table D1.

Other acceptable alternative materials may be added to the list of materials in Table D1 provided they are suitable to the specified duty and judged equivalent by a ruling committee of purchasers and suppliers selected by the Water Services Association of Australia (WSAA) from standing members of Committee WS-022.

D2 PROTECTIVE COATINGS

The use of coating systems as an alternative to corrosion resistant materials will reduce the life expectancy of the valve in most environments.

Where non-corrosion resistant materials are used, internal and external surfaces shall be coated. Coating system specifications shall be negotiated between the purchaser and the manufacturer.

TABLE D1

ACCEPTABLE ALTERNATIVE MATERIALS

Component	Basic Material		
	Material	Standard	Grade
Cast wafer body seat and gland box, seat integral	Grey cast iron*	AS 1830	T220†
	Spheroidal graphite cast iron*	AS 1831	400-12†
Cast lugged or flanged body and gland box, seat integral	Grey cast iron*	AS 1830	T220†
	Spheroidal graphite cast iron*	AS 1831	400-12†
Fabricated bodies, gland boxes and up-stands	Plain carbon or alloy steel*	AS/NZS 3678	As specified by the designer
Gate	Stainless steel	ASTM A480	304
Gate guide	Stainless steel	ASTM A480	316 304
Cast bonnet	Grey cast iron*	AS 1830	T220†
	Spheroidal graphite cast iron*	AS 1831	400-12†
Fabricated bonnet	Stainless steel	ASTM A480	316
Seat	Reinforced PTFE		Reinforced Viton™ Reinforced Fluorel™
	Elastomer	AS 1646	EPDM
	Wear and corrosion resistant metallic alloy		As specified by the designer
Spindle	Stainless steel	ASTM A276	431 304
Gland packing	Reinforced PTFE		
Bridge	Grey cast iron*	AS 1830	T220†
	Spheroidal graphite cast iron*	AS 1831†	400-15
Pillar	Stainless steel	ASTM A276 or ASTM A480	304
Nut	Gunmetal	AS 1565	C83600
Thrust washer			
Fasteners	Stainless steel	ASTM A276	304
Washers	Stainless steel	ASTM A480	304

* Coating required, refer to Paragraph D2.
† Higher strength grades accepted.

NOTES

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