Assets Planning and Delivery Group
Engineering

# Strategic Product Specification

## SPS 251
## Mains Tapping Ball Valves

VERSION 4
REVISION 3

MAY 2023

## FOREWORD

Each Strategic Product Specification has been prepared to inform Water Corporation staff, consultants, contractors and land developers of the requirements for selecting and acquiring a manufactured product to be used in strategic Corporation infrastructure. The definition of 'Product' includes items that comprise assembled components, equipment or plant for mechanical, electrical and civil infrastructure applications.

The objective of a Strategic Product Specification is to specify fit-for-purpose Product which will contribute to the provision of effective water services at least whole-of-life cost and with least risk to service standards and safety. A Strategic Product Specification also provides uniform standards for compatibility of new water infrastructure with existing water assets.

Many Strategic Product Specifications have drawn on the design, asset management and operational experience of Product performance in live service gained by the Corporation over time. Some Strategic Product Specifications have drawn on the experience of the water industry nationally by referencing Australian or WSAA standards.

Strategic Product Specifications are intended for reference and use in the following typical procurement scenarios:

- Capital funded infrastructure design and construction work;
- Private developer funded subdivision infrastructure for takeover by the Corporation;
- Operationally funded infrastructure design and construction work;
- Corporation period contracts for Product purchases;
- Product purchases for stock or for miscellaneous minor work.

A published Strategic Product Specification will, in some cases, comprise technical content that is typical of a range of products of the same type (type specification) but may exclude specific requirements that should apply to a particular project or application. In such cases, the project designer is required to document the supplementary project specific requirements in the 'Project Specific Requirements' Appendix of the Specification.

The text of a published Specification should not be directly modified. In the event that a text variation is considered necessary to accommodate the needs of a particular project or application, the text modification should be documented in the appropriate Clause of a 'Project Specific Requirements' Appendix.

Enquiries relating to the technical content of this Specification should be directed to the Senior Principal Engineer, Mechanical, Engineering to whom all enquiries relating to the technical content of the Specification should be directed. Future Specification changes, if any, will be issued to registered Specification users as and when published.

**Head of Engineering**

*This document is prepared without the assumption of a duty of care by the Water Corporation. The document is not intended to be nor should it be relied on as a substitute for professional engineering design expertise or any other professional advice.*

*It is the responsibility of the user to ensure they are using the current version of this document.*

**REVISION STATUS**

**The revision status of this standard is shown section by section below. It is important to note that the latest revisions including additions, deletions and changes to this version of the standard are also identified by the use of a vertical line in the left hand margin, adjacent to the revised section.**

| REVISION STATUS | | | | | | |
|---|---|---|---|---|---|---|
| **SECT.** | **VER./ REV.** | **DATE** | **PAGES REVISED** | **REVISION DESCRIPTION (Section, Clause, Sub-Clause)** | **RVWD.** | **APRV.** |
| 1 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 1 | 4/1 | 01.01.10 | 8, 9 | 1.1, 1.2, amended, AOP deleted | EJP | SE |
| **1** | **4/3** | **25.05.23** | **7** | **Section 1.2 amended** | **GP** | **SE** |
| 2 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 2 | 4/1 | 01.01.10 | 12 | Clause 2.1 to 2.3 Table 2.1 amended | EJP | SE |
| 2 | 4/2 | 20.09.10 | 11 | Table 2.1 amended | GP/EJP | SE |
| **2** | **4/3** | **25.05.23** | **11** | **Section 2.1 amended** | **GP** | **SE** |
| 3 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 3 | 4/1 | 01.01.10 | 13, 14 | 3.2.5 to 3.2.7, 3.3 amended | EJP | SE |
| **3** | **4/3** | **25.05.23** | **12,13** | **3.1, 3.2.5and 3.2.6 amended** | **GP** | **SE** |
| 4 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 4 | 4/1 | 01.01.10 | 15 | Clause 4.5.1 amended | EJP | SE |
| **4** | **4/3** | **25.05.23** | **14** | **Section added on type test requirements** | **GP** | **SE** |
| 5 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 6 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 7 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 8 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 9 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| **9** | **4/3** | **25.05.23** | **20** | **Section 9.32 on Manufacturing Repairs (In-process) removed** | **GP** | **SE** |
| 10 | 4/0 | 01.02.06 | All | New version using SPS standard template | EJP | AAK |
| 10 | 4/1 | 01.01.10 | 22 | Table 10.1 amended | EJP | SE |

| REVISION STATUS | | | | | | |
|---|---|---|---|---|---|---|
| **SECT.** | **VER./ REV.** | **DATE** | **PAGES REVISED** | **REVISION DESCRIPTION (Section, Clause, Sub-Clause)** | **RVWD.** | **APRV.** |
| **11** | **4/0** | **01.02.06** | **All** | **New version using SPS standard template** | **EJP** | **AAK** |
| **11** | **4/1** | **01.01.10** | **23** | **Table 11.1 amended** | **EJP** | **SE** |
| **11** | **4/3** | **25.05.23** | **22** | **Table 11.1 amended** | **GP** | **SE** |
| **12** | **4/0** | **01.02.06** | **All** | **New version using SPS standard template** | **EJP** | **AAK** |
| **12** | **4/3** | **25.05.23** | **25** | **New MMRs 21860 & 21865 added** | **GP** | **SE** |

Strategic Product Specification

# SPS 251
# Mains Tapping Ball Valves

## CONTENTS

# 1 Scope and General

## 1.1 Scope

This Specification sets out requirements for the manufacture, testing, supply, handling and delivery of handwheel-operated, metal-bodied, in-line, service connection ball valves suitable for mains tapping and as further described in the following. The Specification details the requirements in lieu of specific clauses, or as clarification for options that exist within, or as additional requirements to AS 4796. Accordingly, unless otherwise specified in this Specification, the valves shall be manufactured, tested and supplied in accordance with the requirements of AS 4796. The Specification also details the means by which compliance with the Specification shall be demonstrated and the criteria for acceptance of Product.

## 1.2 Referenced Documents

The following documents are referenced in this Specification:

**AS**

| | |
|---|---|
| 1646 | Elastomeric seals for waterworks purposes |
| 1683.15.1 | Methods of test for elastomer – International rubber hardness |
| 1722.1 | Pipe threads of Whitworth form – Sealing pipe threads |
| 2550.1 | Cranes, hoists and winches – Safe use - General |
| 2550.3 | Cranes, hoists and winches – Safe use – Bridge, gantry, portal (including container cranes), jib and monorail cranes |
| 2550.5 | Cranes, hoists and winches – Safe use - Mobile |
| 2550.11 | Cranes, hoists and winches – Safe use – Vehicle loading cranes |
| 4796 | Water supply – Metal-bodied and plastic-bodied ball valves for property service connections |

**AS ISO**

| | |
|---|---|
| 7.1 | Pipe threads where pressure-tight joints are made on the threads – Part 1 |

AS/NZS

| | |
|---|---|
| 4020 | Testing of products for use in contact with drinking water |
| 4129 | Fittings for polyethylene (PE) pipes for pressure applications |

**AS/NZS ISO**

| | |
|---|---|
| 9001 | Quality management systems – requirements |

**ASTM**

| | |
|---|---|
| A276 | Standards Specification for Stainless Steel Bars and Shapes |
| A313M | Standards Specification for Stainless Steel Spring Wire |
| A351M | Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts |

**ISO/IEC**

| | |
|---|---|
| 17025 | General requirements for the competence of testing and calibration laboratories |

**SAA Guides**

| | |
|---|---|
| HB 18 | Guidelines for third-party certification and accreditation |
| HB 18.2 | Guide 2 - General terms and their definitions concerning standardization and related activities |

| | |
|---|---|
| HB 18.22 | Guide 22 - Information on manufacturer's declaration of conformity with standards and other technical specifications |
| HB 18.23 | Guide 23 - Methods of indicating conformity with standards for third-party certification systems |
| HB 18.28 | Guide 28 - General rules for model third-party certification system for products |
| MP 52 | Manual of authorization procedures for plumbing and drainage products |

# 1.3 Definitions and Notation

## 1.3.1 Certificate

A formal certificate defined in SAA HB 18.2 and operated in accordance with SAA HB 18.22 that, as an outcome of Product Certification, attests Product conformity with the nominated product and test standards and authorizes the use of a Certification Mark.

## 1.3.2 Certification Body

An independent (or third party) organisation duly accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) to operate Certification Schemes.

In the case of a non-strategic plumbing Product, a Certification Body means an organisation approved by Standards Australia to administer the National Certification of Plumbing and Drainage Products (NCPDP) Scheme in accordance with SAA MP 52.

## 1.3.3 Certification Mark

A trademark or other mark of product conformity with a specified standard defined in SAA HB 18.2 and applied in accordance with SAA HB 18.23 that is issued under the rules of a Certification Scheme.

## 1.3.4 Certification Scheme

A product certification program or system which is operated in accordance with JAS-ANZ Procedure 15 – General requirements for bodies operating product certification systems and in accordance with the general rules of SAA HB 18.28 and System No. 5 as defined in ISO/ITC publication - Certification - Principles and practice. In the case of a non-strategic plumbing Product, a Certification Scheme means the NCPDP Scheme.

**NOTE:** The effect of this is to require maintenance by the manufacturer of effective production control planning in addition to full type testing from independently sampled production and subsequent verification of conformity with specified standards.

## 1.3.5 Compliant Product

Product that has been assessed, by means of Product Appraisal, as conforming with standards and specifications that are nominated by the Corporation.

## 1.3.6 Corporation

The Water Corporation of Western Australia.

## 1.3.7 Mains Tapping

An operational procedure which is performed after fitting the valve to a reticulation main via a tapping band followed by drilling through the main under pressure (known as hot tapping) to provide a water service.

## 1.3.8 Manufacturer

An entity or combination of entities that is responsible for selection, processing and control of Product constituent materials or compounds and for the processing equipment that collectively result in the manufactured product.

## 1.3.9 Nominal Size (DN)

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 which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections.

## 1.3.10 Notation

Statements expressed by use of the word 'shall' are mandatory or 'normative' requirements of the Specification. Statements expressed by use of the words 'should' or 'may' are 'informative' but not mandatory and are provided only for information and guidance. Notes in Specification text are informative. Notes that form part of Specification Tables are normative. An Appendix to the Specification that is designated 'normative' contains mandatory requirements. An Appendix that is designated 'informative' is provided for information and guidance only. The term 'specified' includes requirements of the Specification and requirements stated or referenced in other project documentation.

## 1.3.11 Officer

A duly authorised representative or appointed agent of the Corporation.

## 1.3.12 Pressure Class (PN)

A classification of pressure by PN number, based on the allowable operating pressure (AOP) expressed in Megapascals (PN = 10 x AOP).

## 1.3.13 Product

A single unit or multiple units of manufactured end product or an assembly of manufactured component products, materials or equipment. This Specification and accompanying Purchasing Schedule define the nature and details of Product to be supplied. In this Specification the Product shall refer to a mains tapping ball valve.

**NOTE 1:** An end product is most commonly an output of manufacturing processes that result in finished end products having the same features and characteristics and can be the result of a single or multiple production batches.

**NOTE 2:** Manufactured equipment and assemblies of Product components or materials are commonly procured for mechanical, electrical and civil infrastructure applications.

## 1.3.14 Product Appraisal

A formal process whereby Product, including product design, is subjected to systematic engineering assessment to determine Product fitness for prescribed end uses and to evaluate the extent of Product and production systems conformity with nominated standards and specifications. Product Appraisal includes verification of the extent of compliance in accordance with the requirements of a relevant 'Technical Compliance Schedule' Appendix.

## 1.3.15 Product Assessor

An organization, Officer or other person who, having demonstrated specialist product knowledge and competence acceptable to the Corporation, is nominated by the Corporation, subjects Product to Product Appraisal and issues one or more Product Verification Reports.

## 1.3.16 Product Certification

A formal process whereby the production and management systems for the manufacture of Product, are assessed by a Certification Body to evaluate compliance of these systems with prescribed product standards and tests, under Certification Scheme rules.

## 1.3.17 Product Verification Report

A formal report wherein a Product Assessor evaluates the extent of Product compliance with the nominated product standards and specifications.

**NOTE:** Verification may be on a project-by-project basis or at agreed intervals, as appropriate to the scope of a Purchasing Schedule and Product end use, subject to determination by the Corporation.

### 1.3.18 Product Warranty

A formal express undertaking by a Supplier or Manufacturer that Product is:

a) In conformity with the nominated product specification and referenced standards;

b) Fit for the nominated Product end use or application;

c) Designed for sustained operation at the nominated service performance levels for the specified design life;

d) Adequately packaged for intended transportation, handling and storage conditions;

e) Supported by English language installation, operating and servicing instructions;

f) Adequately supported by Supplier capacity to provide technical Product support.

**NOTE:** Where required, a Product Warranty should indemnify the Corporation against claims made or losses suffered as a result of breach of the Warranty by means of Public and Products Liability Insurances as specified in the undertaking.

### 1.3.19 Purchasing Schedule

A Corporation purchase order, tender, schedule of prices, bill of quantities, or specification that details the nature, quantity and other characteristics of Product to be supplied, purchased or installed.

### 1.3.20 Quality System

A management system that establishes, documents, implements and maintains organizational structures, resources, responsibilities, processes and procedures for the manufacture of Product and provision of Product related services in accordance with the requirements of AS/NZS ISO 9001.

### 1.3.21 Strategic Product

An essential product whose performance is critical in eliminating risk to the safe and effective provision of water services, which are functions of the Corporation under the Water Corporation Act as licensed under the Water Services Coordination Act.

**NOTE 1:** Strategic product is most commonly an element of permanent Corporation infrastructure. Ancillary operational and safety equipment, not intended to form part of this infrastructure, may be considered strategic by virtue of enhanced operational performance or personnel safety.

**NOTE 2:** Plumbing products (end-of-line water service fittings DN 32 or smaller) used in strategic services may, by virtue of statutory and regulatory requirements, be considered strategic in Corporation applications.

### 1.3.22 Supplier

An entity or combination of entities that is responsible for the supply of Product.

**NOTE:** A Supplier may be a Product manufacturer, owner, producer, distributor or vendor or an agent, tenderer or contractor for supply of Product or Product related service.

### 1.3.23 Testing

The determination of Product characteristics by inspection and by the application of specified test procedures.

### 1.3.24 Valve

Valve or mains tapping ball valve referred to in this Specification shall mean service connection ball valve as defined in AS 4796 with an additional requirement to accommodate mains tapping.

### 1.3.25 WSAA

The Water Services Association of Australia of which the Water Corporation is a corporate member.

## 1.4 Designation of Size

Mains tapping ball valves referred to in this Specification shall be designated by the nominal sizes DN 20 and DN 25 and type of end connection.

# 2 Materials and Components

## 2.1 General

In addition to the requirements of Section 2 of AS 4796 valve materials shall comply with Table 2.1 below and the following. Table 2.1 provides for basic materials however alternative materials in accordance with AS 4796 may be used provided they are equivalent in performance, strength, durability and corrosion resistance. Grade 304 stainless steel shall not be used for continuously immersed components.

All materials in contact with water shall comply with AS/NZS 4020.

**Table 2.1 – Valve Components Materials**

| Component | Material | Standard | Grade |
|---|---|---|---|
| Body, end connection | Copper alloy | (Refer Note 1) | (Refer Note 1) |
| Ball | Copper alloy, PTFE coated | (Refer Notes 1 and 2) | (Refer Notes 1 and 2) |
| | Stainless steel | ASTM A 351M | CF-8M |
| Stem | Copper alloy | (Refer Note 1) | (Refer Note 1) |
| | Stainless steel | ASTM A276 | 431, 316 |
| Ball seat | Synthetic elastomer | AS 1646 | EPDM, NBR |
| | Synthetic polymer | - | RPTFE, PTFE |
| Stem thrust washer | Synthetic polymer | - | RPTFE, PTFE |
| Gland seals or packing | Synthetic elastomer | AS 1646 | EPDM, NBR |
| | Synthetic polymer | - | RPTFE, PTFE |
| Gland follower | Stainless steel | ASTM A276 | 316 |
| Operating handwheel | Copper alloy | (Refer Note 1) | (Refer Note 1) |
| Handwheel nut (if applicable) | Stainless steel | ASTM A276 | 316 |
| | Copper alloy | (Refer Note 1) | (Refer Note 1) |
| Handwheel nut spring washer (if applicable) | Stainless steel | - | 316 |

**NOTES:**

1. Copper alloy material shall comply with Clauses 2.2 and 2.5 of AS 4796
2. PTFE shall mean polytetrafluoroethylene

## 2.2 Non Metallic Materials

Non-metallic materials used in the components of the Product shall be fit for the intended purpose and shall exhibit dimensional stability after extended periods of immersion.

## 2.3 O-Rings (Elastomeric Toroidal Sealing Rings)

O-rings shall be made from an elastomeric material that is not injuriously affected by the fluid, temperature or environmental conditions to which the O-ring will be subjected in service and shall comply with AS 1646. The hardness of the moulded material shall be in the range 71 to 80 when tested in accordance with AS 1683.15.1 using ‘Standard’ specimen

# 3 Design and Manufacture

## 3.1 General

In addition to the requirements of Section 3 of AS 4796, the valve shall be designed in accordance with the following clauses. The valve shall be in-line, metal-bodied, handwheel-operated with screwed or screwed and compression type end connection suitable connecting to metric Polyethylene piping. The valve shall be designed for direct-burial and for installation in the vertical position without additional protection. The valve shall also be designed so as to minimize seizing from grit, sand, temperature or other causes.

## 3.2 Design

### 3.2.1 Ball

The valve ball shall be spherical and its external surface shall be highly polished or smooth. The ball waterway diameter shall be no less than 75% of the valve nominal diameter. The ball shall incorporate a generous drive key slot or equivalent feature to facilitate connection to the operating stem.

### 3.2.2 Stem

The stem shall incorporate a thrust collar and positive and robust drive key or other mechanism for operation of the ball.

### 3.2.3 Stem Thrust

A stem thrust washer or bearing shall be provided to accommodate the thrust force imposed by the ball.

### 3.2.4 Stem Seal

The stem shall be sealed to contain internal pressure by a minimum of two O-rings or equivalent PTFE seals or packing which shall also be designed to prevent the ingress of external contaminants e.g. dust and grit. A gland follower or washer shall be provided above the stem seal.

### 3.2.5 End Connections

Metallic threaded end connections shall comply with AS ISO 7.1 Compression end connections for polyethylene (PE) pipes shall comply with AS/NZS 4129.

The end connections for the mains tapping ball valves shall comply with Table 3.1.

**Table 3.1 – End Connection Sizes and Designation**

| Type | Size | End Connection | |
|---|---|---|---|
| | | **Inlet** | **Outlet** |
| Ball Valve with threaded End Connections for Inlet & Outlet | DN20 | R$^{3}$/4/20 Externally taper threaded | Rp$^{3}$/4/20 Internally threaded - parallel |
| | DN25 | R1//25 Externally taper threaded | Rp1/25 Internally threaded - parallel |
| Ball Valve with threaded inlet and compression joint outlet suitable for connecting to PE Piping | DN20xDN25 | R$^{3}$/4/20 Externally taper threaded | Compression type to suit metric DN25 PE piping |
| | DN25XDN32 | R1//25 Externally taper threaded | Compression type to suit metric DN32 PE piping |

Each valve end connection shall incorporate external hexagonal flats to assist in tightening to associated fittings using open-ended spanners.

### 3.2.6 Operating Handwheel

Clause 3.2 of AS 4796 shall be replaced by the following:

Valves shall be fitted with a handwheel permanently attached to the stem end and as specified below:

a) The handwheel shall have a diameter of 56 ± 1.00 mm and shall be attached to the operating spindle via a fastening nut or other means. The handwheel shape shall allow easy and comfortable operation.

b) The handwheel shall rotate by 90° from the fully open to fully closed position. The open and closed positions shall be clearly and permanently marked on the handwheel.

c) The handwheel shall incorporate a facility for locking the valve in the open or closed position. Body and handwheel locking components shall not protrude beyond the handwheel rim.

### 3.2.7 Operating Torque

The valve ball, seal and seat materials shall exhibit long-term stability so as not to cause an increase in operating torque over the life of the valve. Operating torques shall comply with Table I1 (Appendix I) of AS 4796.

## 3.3 Manufacture

The valve shall be manufactured in accordance with the relevant parts of Section 3 of AS 4796 and the following.

### 3.3.1 Castings

Castings shall be free from structural defects, laps, blowholes, pitting and sand inclusions. No casting repairs shall be permitted during the manufacture of the valve.

# 4 Testing

## 4.1 General

Product shall be tested in accordance with the test requirements of this Specification. Testing shall be deemed acceptable when test outcomes have been formally verified by a Certification Body or witnessed by a testing Officer. Product for which a test requirement has not been met shall be classified as non-compliant Product.

**NOTE 1:** Testing should be carried out by an organisation accredited by NATA or in accordance with ISO/IEC 17025.

**NOTE 2:** A testing Officer should normally be an Officer who has specialist knowledge of or training in product or materials testing appropriate to the Product characteristics to be tested.

## 4.2 Notification of Testing

The Corporation shall be notified in writing of each formal test proposal at least seven (7) days prior to the preparation of Product for testing except where a specified test has been the subject of a current valid Certificate issued by a Certification Body. This notification is required to enable the Corporation to make all necessary arrangements including appointment of a testing Officer in a timely manner.

## 4.3 Access to the Place of Manufacture

The testing Officer shall be afforded access, at all reasonable times, to all places of manufacture of Product or product components and shall be authorised to arrange or undertake such testing there as the Corporation deems appropriate to the testing regime specified.

## 4.4 Place of Manufacture other than WA

Where any Product or product component is being manufactured other than in Western Australia the Corporation may appoint a local inspecting Officer to undertake inspections and witnessed testing as required. The testing Officer shall be provided with all due authority and permits required to carry out testing at the place of manufacture.

**NOTE 1:** The cost of witnessed testing arranged by the Corporation will normally be borne by the Corporation unless otherwise negotiated.

## 4.5 Performance Test Requirements

### 4.5.1 General

Type tests shall be conducted in accordance with Table A1 (Appendix A) of AS4796 for metal-bodied valves.

### 4.5.2 Production Tests

Valves shall be tested for water tightness in accordance with the batch release test requirement contained in Table A1 (Appendix A) of AS 4796 for metal-bodied valves.

Compression end connections for polyethylene (PE) pipes shall be tested in accordance with section 2.4 of AS/NZS 4129.

### 4.5.3 Test Certificates

For the purposes of acceptance, each test certificate shall, as a minimum, bear the relevant Product item serial number and shall certify that the Product item has complied with the specified test requirements.

# 5 Marking and Packaging

## 5.1 Marking

### 5.1.1 Body Markings

Each Product shall be marked in accordance with Clause 1.4 Marking of AS 4796 and shall also be marked with the pressure class (PN).

## 5.2 Packaging

### 5.2.1 General

Product shall be packaged with appropriate protection, which shall prevent damage or defects as a result of handling, storage or transportation. Flexible packaging material shall have a minimum expected life in outside storage conditions of 12 months from the date of delivery.

### 5.2.2 Identification Tag

Wherever requested in the Purchasing Schedule each Product item shall be identified using a weatherproof marking pen on a corrosion resistant metal identification tag securely wired to the Product in a conspicuous position using a galvanized tie wire with the following information:

a) Material Master Record number (MMR)

b) Contract number

c) Purchase order number.

### 5.2.3 Marking of Packaging

Where requested in the purchasing schedule the Product shall be identified by marking on the outside of any protective packaging the same information as shown on the identification tag.

# 6 Manuals

## 6.1 Format and Language

Where required, Product shall be supplied complete with appropriate installation, operation and maintenance instructions or manuals, in clear diagrammatic and text format, in English.

## 6.2 Content

The manuals shall contain all the relevant information required to commission and maintain the Product in operational service, including the following:

a) Details of Product features

b) Operational adjustments

c) Installation and commissioning instructions

d) Preventative maintenance requirements and intervals

e) Testing procedures

f) Trouble shooting guidelines

g) Complete list of parts and associated exploded views or sectional diagrams and reference part numbers.

# 7 Spare Parts and Special Tools

## 7.1 Spare Parts

### 7.1.1 Interchangeability

All spare parts shall be interchangeable for a manufacturer's Product of the same size and model.

### 7.1.2 Availability

Spare parts and servicing facilities for the product shall be readily available in Western Australia.

## 7.2 Special Tools

Any special tools required for service and maintenance of the Product shall be supplied.

# 8 Transportation, Handling and Storage

## 8.1 General

Transportation, handling and storage facilities shall be designed to prevent Product damage or defects and to maintain Product free of deleterious matter. Product shall not be dropped off elevated vehicle platforms or sites. Mechanical handling equipment shall be in accordance with AS 2550.1, AS 2550.3, AS 2550.5 and AS 2550.11 and shall be appropriate to the loads to be lifted. Manual handling shall be in accordance with the National Standard for Manual Handling and the National Code of Practice for Manual Handling, published by National Occupational Health and Safety Commission, Australia. Product restraint during transportation shall be in accordance with Load Restraint Guide—Guidelines for Safe Carriage of Loads on Road Vehicles, published jointly by the Federal Office of Road Safety and the National Road Transport Commission, Australia.

**NOTE:** Where wire ropes or chains are used for loading and unloading, they should not come into direct contact with Product. Lifting elements in direct contact with Product should be of a non-abrasive design e.g. elastomeric or fabric webbing straps. During transportation, Product restraints should be checked for tension at regular intervals of travel and should not be released until the transporting vehicle is resting in a secure stable disposition on level ground.

## 8.2 Preservation of Product in Storage

Product shall be stored in original Product packaging in accordance with the published requirements of the manufacturer, prior to installation. Sensitive component materials shall be protected from extended exposure to direct sunlight and high temperatures e.g. elastomeric components shall be stored in accordance with the general principles of AS 1646.1 Clause 6. Designated Product storage areas shall be of sufficient size to accommodate Product deliveries and shall be flat, reasonably level and free of combustible vegetation, sharp stones or projections that could cause Product damage or defects.

# 9 Quality Assurance

## 9.1 Certification

### 9.1.1 Certification of Product

Wherever this Specification requires compliance with nominated Product and test Standards, conformance shall be certified by means of a Certification Scheme, conducted by a Certification Body. Each Certificate shall expressly attest compliance of all Product items with the nominated Standards. Wherever specified, Certificates shall be submitted to the Officer nominated for this purpose. Product shall be marked in accordance with the requirements of the Certification Body.

**NOTE:** Compliance of Product including related accessories and services with nominated Standards and specified requirements may be verified by means of a Product Verification Report provided by a Product Assessor. The Product Verification Report should identify all relevant Certificates of Product compliance, duly issued in accordance with Certification Scheme rules.

### 9.1.2 Quality System

The processes for manufacture, testing, supply, transportation, handling, delivery and storage of Product to be supplied in accordance with this Specification shall form part of a documented Quality System. The System shall be certified by a Certification Body as complying with the requirements of AS/NZS ISO 9001 and shall provide for identification and traceability, control of production and delivery to the specified destination, customer verification and control of documents and records.

### 9.1.3 Product Re-verification

Product compliance with the Specification shall be subject to re-verification by a Product Assessor when, during the agreed Product supply period, there occurs any:

a) Substantive change in Product design, material formulation or performance

b) Product failure to perform in operational service to the nominated performance specification.

Re-verification shall require the issue of a new or supplementary Product Verification Report. Product components and test outcomes that are not significantly affected by the Product change or failure may be excluded from the scope of re-verification, provided that these outcomes have already been reported in a current valid Product Verification Report that is acceptable to the Corporation.

Wherever the requirements of the Specification apply to a Product supply period in excess of three years, continuing acceptance of Product shall be subject to re-verification. The purpose of re-verification shall be to confirm the continuing compliance of Product quality and production control processes with the requirements of the Specification

## 9.2 Compliance and Acceptance

### 9.2.1 Means of Demonstrating Compliance

Compliance with this Specification shall be demonstrated by means of Product Appraisal and issue by a Product Assessor of a Product Verification Report that confirms compliance. Otherwise, Product shall be deemed non-compliant and ineligible for registration as Product authorized for use in Corporation infrastructure.

**NOTE 1:** Where a project includes design work including Product design, Product Appraisal may form part of the project design review process and the Product Assessor may be a member of the project design review team.

**NOTE 2:** A Product Verification Report should verify the extent of compliance with the Specification including all relevant 'Technical Compliance Schedule' Appendices and the currency of a Certificate where relevant to the Product.

### 9.2.2 Acceptance Criteria

For acceptance, Product shall be supplied as specified in the Purchasing Schedule.

Prior to the implementation of any arrangement to supply Product, the Supplier shall, in accordance with specified requirements:

a) Nominate applicable Product Warranty terms; and

b) Provide documentary verification in the form of a current valid Certificate or Product Verification Report as appropriate to the Product; and

c) Detail each element of Product that does not comply with the specified requirements together with the extent of non-compliance.

**NOTE :** Where the Specification includes Technical Compliance Schedules, the nature and extent of all non-compliances should be provided in accordance with the appropriate Schedules.

# 9.3 Non-compliant Product

## 9.3.1 General

Product whose design, workmanship or performance fails to conform to the specified requirements shall be clearly tagged and quarantined by the Supplier as non-compliant and shall be subject to rejection for return to and replacement by the Supplier.

Where the Specification includes a 'Technical Compliance Schedule', Product shall be deemed non-compliant except where a Supplier has demonstrated compliance in accordance with the requirements of the 'Technical Compliance Schedule' Appendices of the Specification.

## 9.3.2 Product Warranty

The Supplier shall replace non-compliant Product with Product that conforms to the acceptance criteria or shall repair or rectify all faults, damage or losses caused by defective Product. Except as may otherwise be specified, the Product Warranty shall indemnify and keep indemnified the Corporation against all losses suffered by the Corporation as a result of non-compliant Product for a period no less than 24 months after Product delivery or 12 months after Product installation, whichever period elapses first.

## 9.3.3 Product Repair

All reasonable proposals for repair or remedy of defects will be considered, provided that each such proposal is accompanied by a methodology statement that accords with the performance objectives of this Specification, as determined by the Corporation. For acceptance, a proposal for repair or remedy of Product defects shall not void or otherwise diminish the provisions of the Product Warranty.

# 10 Appendix A: Project Specific Requirements (Normative)

## 10.1 General

Project specific information and requirements, not included elsewhere in this Strategic Product Specification, shall apply as specified in the following Clauses.

## 10.2 Technical Requirements

The following table details project specific requirements for the mains tapping ball valves to be procured.

**TABLE 10.1: SCHEDULE OF PROJECT TECHNICAL REQUIREMENTS**

| MMR No | No Off | DN | PN | End Connections | Special Requirements[1] |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

**NOTES:**

1. Normally there would be no special requirements other than perhaps related to Packaging and Manuals.

# 11 Appendix B: Technical Compliance Schedules (Normative)

## 11.1 Compliance Schedules

Suppliers shall demonstrate Product compliance with the Specification by completing Technical Compliance Schedule 1 as shown in **TABLE 11.1** on an item by item basis. For acceptance, the extent of scheduled technical item compliance shall be supported by verifiable documentary evidence. Each scheduled item nominates a Specification clause number with which the extent of Product compliance shall be demonstrated.

The Supplier shall denote compliance of an item by ticking the unshaded 'Yes' column appropriate to that item. Where Product does not comply with specified requirements, the Supplier shall tick the 'No' column and shall detail the reasons for non-conformance and any proposed alternatives in the 'Comments' column. The Supplier shall denote acceptance and understanding of a Specification clause by ticking the corresponding 'Noted' column wherever unshaded.

**Failure to notify the Corporation of all non-compliant Product components, including the extent of non-compliance, may void an accepted offer to supply or may result in rectification of all non compliant Product elements, at the Supplier's cost**.

**TABLE 11.1: TECHNICAL COMPLIANCE SCHEDULE 1**

| Mains Tapping Ball Valves | | | | | |
|---|---|---|---|---|---|
| **Section/Clause** | | **Noted** | **Compliance** | | **Comments** |
| | | | **Yes** | **No** | |
| **1. SCOPE AND GENERAL** | | | | | |
| 1.1 | Scope | | | | |
| 1.2 | Referenced Documents | | | | |
| 1.3 | Definitions and Notations | | | | |
| 1.4 | Designation of Size | | | | |
| **2. MATERIALS AND COMPONENTS** | | | | | |
| 2.1 | General | | | | |
| 2.2 | Non Metallic Materials | | | | |
| 2.3 | O-rings | | | | |
| **3. DESIGN & MANUFACTURE** | | | | | |
| 3.1 | General | | | | |
| 3.2 | Design | | | | |
| 3.2.1 | Ball | | | | |
| 3.2.2 | Stem | | | | |
| 3.2.3 | Stem Thrust | | | | |
| 3.2.4 | Stem Seal | | | | |
| 3.2.5 | End Connections | | | | |
| | InletxOutlet MI x FI | | | | |
| | Inlet xOutlet -MIxPE | | | | |
| 3.2.6 | Operating Handwheel | | | | |
| 3.2.7 | Operating Torque | | | | |
| 3.3 | Manufacture | | | | |
| 3.3.1 | Castings | | | | |
| **4. TESTING** | | | | | |
| 4.1 | General | | | | |
| 4.2 | Notification of Testing | | | | |
| 4.3 | Access to the Place of Manufacture | | | | |
| 4.4 | Place of Manufacture other than WA | | | | |
| 4.5 | Performance Test Requirements | | | | |
| 4.5.1 | Type Tests | | | | |
| 4.5.2 | Production Tests | | | | |
| 4.5.3 | Test Certificates | | | | |
| **5. MARKINGS AND PACKAGING** | | | | | |
| 5.1 | Marking | | | | |
| 5.1.1 | Body Markings | | | | |
| 5.2 | Packaging | | | | |
| 5.2.1 | General | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5.2.2 | Identification Tag | | | | |
| 5.2.3 | Marking of Packaging | | | | |
| **6. MANUALS** | | | | | |
| 6.1 | Format and Language | | | | |
| 6.2 | Content | | | | |
| **7. SPARE PARTS & SPECIAL TOOLS** | | | | | |
| 7.1 | Spare Parts | | | | |
| 7.1.1 | Interchangeability | | | | |
| 7.1.2 | Availability | | | | |
| 7.2 | Special Tools | | | | |
| **8. TRANSPORTATION, HANDLING AND STORAGE** | | | | | |
| 8.1 | General | | | | |
| 8.2 | Preservation of Product in Storage | | | | |
| **9. QUALITY ASSURANCE** | | | | | |
| 9.1 | Certification | | | | |
| 9.1.1 | Certification of Product | | | | |
| 9.1.2 | Quality System | | | | |
| 9.1.3 | Product Re-verification | | | | |
| 9.2 | Compliance and Acceptance | | | | |
| 9.2.1 | Means of Demonstrating Compliance | | | | |
| 9.2.2 | Acceptance Criteria | | | | |
| 9.3 | Non-compliant Product | | | | |
| 9.3.1 | General | | | | |
| 9.3.2 | Manufacturing Repairs | | | | |
| 9.3.3 | Product Warranty | | | | |
| 9.3.4 | Product Repair | | | | |

Name of Supplier:

Signature: Date:

When requested by the Corporation, the Supplier shall provide the information required by Technical Compliance Schedule 2 as shown in **TABLE 11.2**.

## TABLE 11.2: TECHNICAL COMPLIANCE SCHEDULE 2

| **Mains Tapping Ball Valves** | | |
|---|---|---|
| **1.** | **SUPPLIER'S REPRESENTATIVE** | |
| 1.1 | Full name | |
| 1.2 | Postal address | |
| 1.3 | Facsimile number | |
| 1.4 | Email address | |
| 1.5 | Phone number | |
| 1.6 | Mobile number | |
| **2.** | **QUALITY ASSURANCE** | |
| 2.1 | Extent of third party accreditation of supplier | |
| 2.2 | Extent of third party accreditation of manufacturer | |
| 2.3 | Details of certificates and verification reports attached | (Yes/No) |
| **3.** | **TECHNICAL INFORMATION** | |
| 3.1 | Performance information | (Yes/No) |
| 3.2 | Details of the manufacturer's inspection and testing plans supplied. | (Yes/No) |
| 3.3 | Details of servicing facilities in Perth supplied. | (Yes/No) |
| 3.4 | Additional pamphlets and drawings in conjunction with the technical literature supplied. | (Yes/No) |
| **4.** | **DESIGN AND MANUFACTURE** | |
| 4.1 | Manufacturer's name | |
| 4.2 | Place of manufacture | |

| | | | | |
|---|---|---|---|---|
| 4.3 | Valve model | | | |
| 4.4 | Type e.g. in-line | | | |
| 4.5 | Size (DN) | | | |
| 4.6 | Pressure class (PN) kPa | | | |
| 4.7 | Inlet end connection – Threaded male or female | | | |
| 4.8 | Outlet end connection – Threaded male or female or compression end suitable for PE piping | | | |
| 4.9 | Inlet end connection screwing standard and thread series | | | |
| 4.10 | Outlet end connection screwing standard and thread series | | | |
| 4.11 | Type of thrust arrangement e.g. bearing or washer | | | |
| 4.12 | Type of valve actuation e.g. handwheel | | | |
| 4.13 | Handwheel diameter mm | | | |
| **5.0** | **COMPONENTS** | **MATERIAL** | **STANDARD** | **GRADE** |
| 5.1 | Body and end connection | | | |
| 5.2 | Ball | | | |
| 5.3 | Ball coating (if applicable) | | | |
| 5.4 | Ball seat | | | |
| 5.5 | Stem | | | |
| 5.6 | Stem seals | | | |
| 5.7 | Handwheel | | | |
| 5.8 | Handwheel nut (if applicable) | | | |
| 5.9 | Handwheel nut spring washer (if applicable) | | | |

Name of Supplier:

Signature: Date:

# 12 Appendix C: Material Master Records (Informative)

The following Material Master Records (MMR) comprise Corporation catalogue numbers that are unique to the particular products described for the purposes of Corporation activities or work.

| MMR | PURCHASE ORDER LONG TEXT |
|---|---|
| 19422 | Valve, Ball; Mains Tapping (In-Line); DN25; PN16; Copper Alloy Body;<br>End Connections Threaded Male to AS ISO 7.1 Series R1 x Female to AS ISO 7.1 Series Rp1;<br>Below Ground Use; C/W Copper Alloy Handwheel. |
| 19900 | Valve, Ball; Mains Tapping (In-Line) & Meter Assembly (In-Line); DN20; PN16; Copper Alloy Body; End Connections Threaded Male to AS ISO 7.1 Series R3/4 x Threaded Female to AS ISO 7.1 Series Rp3/4; Above & Below Ground Use; C/W Copper Alloy Handwheel. |
| 21860 | Valve, Ball; Mains (In-Line); Copper Alloy Body; DN20 x DN25;<br>PN16; End Connections Threaded Male R3/4 (20) to AS ISO 7.1 x Compression Type;<br>To Suit Metric DN25 Polyethylene Pipe; Below Ground Use; C/W Copper Alloy Handwheel. |
| 21865 | Valve, Ball; Mains (In-Line); Copper Alloy Body; DN25 x DN32;<br>PN16; End Connections Threaded Male R1 (25) to AS ISO 7.1 x Compression Type;<br>To Suit Metric DN32 Polyethylene Pipe; Below Ground Use; C/W Copper Alloy Handwheel. |

**END OF DOCUMENT**