

Water Supply and Sewerage Approved Products Manual - February 2006

Pressure Sewerage Products – Valves

Section SPO 01

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SPO 1-S1 GAS RELEASE VALVE

STANDARD	No applicable standard	
DESIGN	A gas release valve releases gas which accumulates during normal pipeline operation. As gas accumulates in the chamber, the sewage level is depressed until loss of buoyancy brings the ball from its seating. Gas is then discharged and the consequent rise in water level brings the ball up to reseal the outlet. The valve is not to close under air pressure alone. Where a ball seals against an orifice, the orifice is to be 2 mm minimum diameter. The orifice outlet is to be protected from outside contamination. The float is to withstand impact due to sudden closure without deformation. Floats are to have free movement to prevent intermediate arrest in the travel length. Seals, seats and floats are to be replaceable in the field without special tools.	
MATERIALS	Body and cover:	Grey cast iron grade AS 1830/T220 Ductile cast iron grade AS 1831/500-7 or 400-12 Gunmetal grade AS 1565/C83600 or C92410 (dezinc resistant to AS 2345) Brass grade AS 1565/C85210 (arsenic inhibited)
	Cover plate:	Corrosion resistant material Cast metal cover with polymeric protective coating to AS/NZS 4158 and SP30.
	Ball float:	Stainless steel grade AS 2837/304 or 316 Aluminium, nylon coated Polymer of polypropylene, ABS or polycarbonate
	Rigid seats:	Gunmetal grade AS 1565/C83600 Stainless steel grade AS 2074/H6C or ASTM A276/316 Gunmetal grade AS 1565/C92410 Brass grade AS 1565/C85210 (arsenic inhibited)
	Resilient seats:	Reinforced elastomer to BS 5292 as approved Materials other than those in BS 5292 may be approved for CL 16 and 21
	Float guides (support separate from body):	Gunmetal grade AS 1565/C83600 (dezincification resistant to AS 2345) Stainless steel to grade ASTM A 276/304 or 316 Brass grade AS 1565/C85210
	Float levers & linkages etc:	Arsenical brass grade AS 1568/259 or 486 Stainless steel grade ASTM A 276/304 or 316 Gunmetal grade A 1565/C92410 Brass AS 1565/C85210
	Fasteners:	Stainless steel grade ASTM A276/316 or 304
	Flat gaskets:	Reinforced elastomer to BS 5292 Moulded elastomer to BS 5292 Materials other than those in BS 5292 may be approved for CL 16 and 21
	O-rings:	Elastomers to AS 1646, durometer hardness 71 to 80
	Screws etc:	Same material as item being fixed
	Coating:	Complete polymeric coating of cast iron surfaces to AS/NZS 4158 Waterway coating to be continuous across surfaces for joint seals.
MATERIAL FINISH	Castings are to be sound and free of laps, blowholes and pitting. Minor surfaces are to be rectified by fettling. Small surface imperfections not affecting function or performance are acceptable. Metal cracks and tears are not to be repaired. Internal and external surfaces (including floats) are to be free of fins, burrs and sharp edges.	
JOINTING	Flanged end:	To AS 4087 for new, to AS 2129 for existing
	Screwed end:	To AS 1722.1 (BSP thread)
	Fasteners:	Bolts to AS/NZS 1111, Nuts to AS/NZS 1112, Washers to AS 1237
CLASSES	PN10 and PN14 (i.e. maximum working pressures of 1000 and 1400)	
BODY ID MARKINGS	Manufacturer's name or trademark Valve type Nominal size Year of manufacture	Working pressure (kPa) Body test pressure (kPa) Traceability code Place of manufacture (if not in traceability code)
MARKING METHOD	To be cast-on in legible block type, 15 mm or more high and 3 mm or more projecting or where not practicable, on stainless steel nameplate attached to the body using stainless steel fasteners.	

SPO 1-S2 COMBINATION GAS RELEASE VALVE

Specification under review

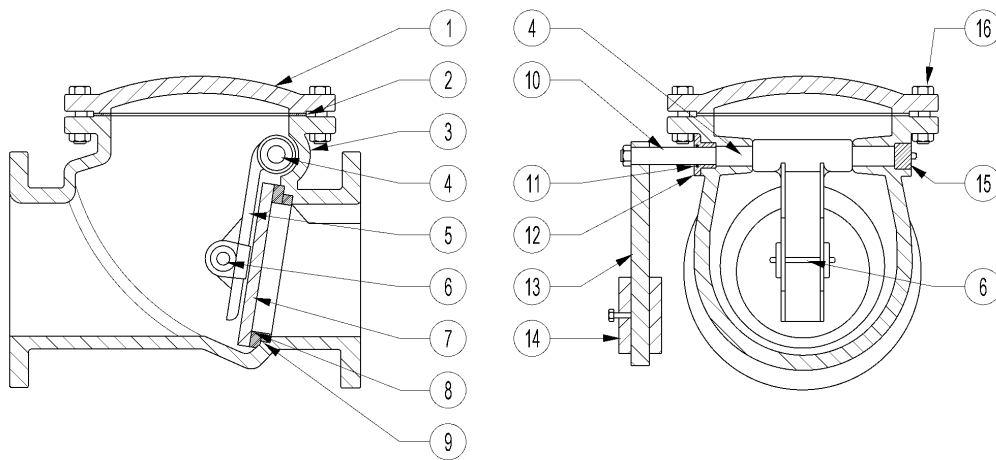
SPO 1-S3 SWING CHECK VALVE

STANDARD	AS 4794:2001 Non-return valves for waterworks purposes – Swing check and tilting disc	
DESIGN	<p>Swing check valves allow flow in one direction and can be used in both horizontal and vertical piping. Swing check valves have a hinged gate like disc, sealing against a tilted seating face. The sealing disc is held open by fluid flow. The disc is to seat by its own weight and is to stop reverse flow immediately forward flow ceases. External adjustable lever counterweights can be fitted to extended hinge pins for greater surety of sealing. Flow area through valve not to be less than area of circular body end ports. Disc to have minor movement of position at 1.5 to 4 m/s flow. Cover, disc and hinge to be removable in the field. Seat rings to be fixed to the body or disc by threading or mechanical deformation. A stop is to limit disc travel and prevent disc oscillation at flows above recommended minimum. Fit lever arm and weight where the valve has an extended hinge pin. Lever weight to have alternative key locations or other provision for both horizontal and vertical piping. Lever weights to provide maximum closing torque when valve fully open. Valves exceeding 25 kg to have lifting devices. Castings to be sound and free of laps, blowholes and pitting. Surfaces to be free of burrs, fins and sharp edges. Coated edges to be 3 mm min radius. Position indicators to have permanent marking of 'OPEN' and 'CLOSE' in lettering 5 mm or larger.</p>	
MATERIALS	<p>Body and cover: Disc with integral facing ring or partial disc encapsulation: Disc with separate facing ring or full disc encapsulation: Disc encapsulation: Disc facing and body seat ring:</p> <p>Hinge:</p> <p>Hinge pin, hinge to disc connection, washer split pin & plug: Cover fasteners:</p> <p>Cover gasket: O-ring: Gland and bearing:</p> <p>Lever arm:</p> <p>Lever weight: Inner/outer surfaces: External attachments: Flange joint bolts:</p>	<p>Ductile cast iron grade AS 1831/400-12 Copper alloy grade AS 1565/C83600 (dezinc. resistant to AS 2345)</p> <p>Ductile cast iron grade AS 1831/400-12 Grey cast iron grade AS 1830/T220 Ductile cast iron grade AS 1831/500-7 or 370/17 EPDM or Nitrile rubber to AS 1646.2 and SP15 Copper alloy grade AS 1565/C83600 (dezinc. resistant to AS 2345) Stainless steel grade ASTM A276/316 Flaked graphite austenitic CI grade L-Ni Cu Cr 1563 AS/NZS 1833 Copper alloy grade AS 1565/C92410 or C85210 arsenic inhibited</p> <p>Ductile cast iron grade AS 1831/400-12 Grey cast iron grade AS 1830/T220 Copper alloy grade AS 1565/C83600 (dezinc. resistant to AS 2345)</p> <p>Stainless steel grade ASTM A276/316 Stainless steel grade ASTM A276/431 Copper alloy grade A 1567/C48600 or C35200 (plug only) Stainless steel grade ASTM A 276/316 Carbon steel grade AS/NZS 1111/4.6 (where completely isolated)</p> <p>EPDM rubber to AS 1646.2 EPDM rubber (65-75 IRHD) to AS 1646.2 Copper alloy grade AS/NZS 1567/486 Copper alloy grade AS 1565/C83600</p> <p>Ductile cast iron grade AS 1831/400-12 Structural steel grade AS 3679.1/250 Grey cast iron grade AS 1830/T220</p> <p>Approved polymeric coating to AS/NZS 4158 and SP30 Hot-dip galvanised or polymeric coating to AS/NZS 4158 and SP30 Stainless steel grade ASTM A276/316</p>
CONNECTIONS	Flanges to AS 4087, at right angles to and concentric with the bore axis	

VALVE LENGTH (to flange faces)	Nominal Size		Nominal Size	
	DN	Length (mm)	DN	Length (mm)
	80	260	300	700
	100	330	375	820
	150	410	450	970
	200	540	500	1070
	225	610	600	1220
	250	640	750	1400

BODY ID MARKINGS	Manufacturer's name or mark	Class of valve
	Nominal size	Arrows on body to indicate direction of flow
	Year of manufacture	Number of Australian Standard i.e. AS 4794
	Body material designation, i.e. D.I.	Product certification mark e.g. StandardsMark

USE LIMITS Do not install immediately adjacent to a pump discharge.



Components	
1	Cover
2	Cover gasket
3	Body
4	Hinge pin
5	Hinge
6	Disc pin
7	Disc
8	Disc facing ring
9	Body seat ring
10	Hinge pin extension
11	O-ring
12	Plug gland
13	Lever arm
14	Lever weight
15	Plug
16	Fasteners

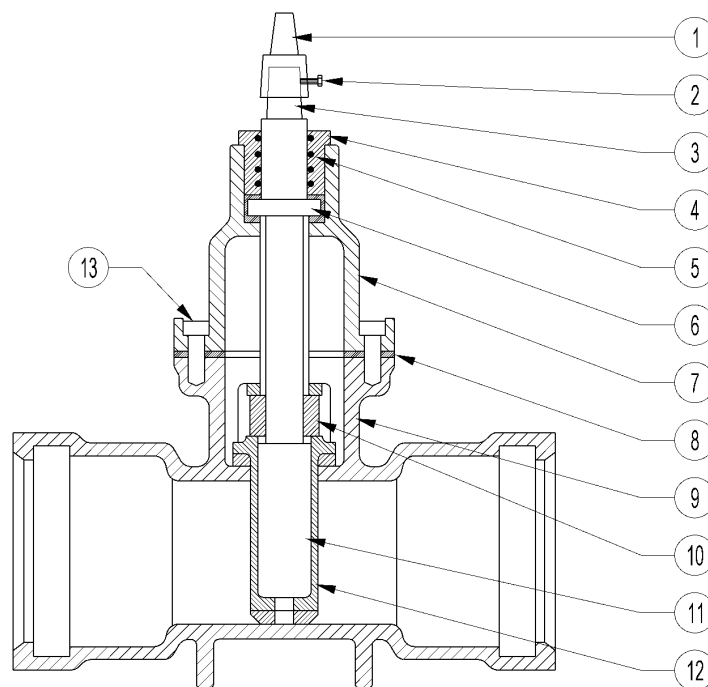
SPO 1-S4 RESILIENT SEATED GATE VALVE

STANDARD	AS 2638.2:2006 Gate valves for waterworks purposes Part 2: Resilient seated					
DESIGN	A valve sealed by a metal gate, which has complete rubber coating or, where the gate metal is corrosion resistant, has rubber coating on sealing surfaces. Valve is to be controlled by an inside screw non-rising stem. Gate is to align using an integral guide system. Gate is to raise clear of the valve's internal diameter. When the gate is in the closed position, there shall be full engagement of the spindle and nut. Components are to be elastomeric sealed. Components are able to be disassembled and assembled in the field. Spindle seals (2 minimum) are able to be replaced under maximum allowable operating pressures with valve fully open. Foreign matter is to be excluded using a restrained wiper ring above spindle seals. Supporting feet are to be cast on the body. Operation is to be manual by either removable ring key/bar or handwheel. Cap is to be removable where key operated. Valves are to be clockwise closing. Valves over 25 kg are to have lifting devices. AS 2638.2 only covers PN16 valves.					
MATERIALS	Body, bonnet & seal retainer housing:	Ductile cast iron grade AS 1831/400-15 min				
	Spindle:	Stainless steel ASTM A276 grades 316, 316L or 431 or DIN 17440 X2CrNiMo 17132				
	Spindle seal retainer & Gate Nut:	Gunmetal grade AS 1565/C83600 (dezinc. resistant to AS 2345) or BS 2872/BS 2784 grade CZ132				
	Gate:	Gunmetal grade AS 1565/C83600 (dezinc. resistant to AS 2345) or BS 2872 grade CZ132				
	Gate coating:	Ductile cast iron grade AS 1831/400-15 min Elastomer to AS 1646				
	Cap & handwheel:	Ductile cast iron grade AS 1831/400-15 min				
	Fasteners:	Stainless steel grade ASTM A276 grade 316 (where exposed) Carbon steel grade AS/NZS 1111/4.6 min (where unexposed)				
	Coating:	Complete polymeric coating of body/bonnet to AS/NZS 4158 and SP30				
	Gaskets:	EPDM elastomer to AS 1646				
	O-rings:	Nitrile elastomer to AS 1646, hardness 65-75 IRHD				
JOINTING	Sockets:	Minimum socket depth to comply with AS/NZS2280:2004				
	Spigots:	To AS/NZS 2280				
	Flanges:	Flanges to AS 4087 figure B5. Flange gaskets to AS 4087 Appendix C, Table C1. Anti-seize lubricant on all stainless steel fasteners before attachment.				
BODY LENGTH	Nom. size	Height *	Effective Length#	Nom. size	Height*	Effective Length#
	DN	(mm max)	Mm	DN	(mm max)	mm
	80	400	203	300	825	356
	100	450	229	375	985	381
	150	520	267	450	1145	432
	200	630	292	500	1270	457
	225	660	305	600	1560	508
	250	750	330	750	1900	610
	*from centre of waterway to top of pipe					
	# to outermost face of flanges, tolerance of ± 2 mm for DN 80 to 300, ± 3 mm for DN 350 to 750					
ALLOWABLE OPERATING PRESSURE	PN16:	1.6 MPa				
OPERATION MARKINGS	Cap and handwheel:	Marked 'CLOSE' with an arrow showing clockwise closure. End of cap and centre of handwheel to have mark of red ink, paint or clip-in disc to indicate clockwise closure visible from a distance of at least 3 m.				

BODY MARKINGS Manufacturer's name or trademark Number of the Australian Standard i.e. AS 2638.2
 Nominal size Product certification mark e.g. StandardsMark
 Year of manufacture Traceability code
 Class of valve
 Place of manufacture (may be incorporated in traceability code)

BODY MARKING METHOD Lettering shall be as large as practical but not less than 6 mm high for sizes DN 80-150, 10 mm high for sizes DN 200-300, 20 mm for sizes DN 350-600 and 25 mm high for sizes DN 700-750.

USE LIMITS Not permitted for greater than DN 600.
 Not permitted for high unbalanced heads, flow control or throttling.
 Not suitable for scour installations



Components	
1	Spindle (stem) cap
2	Spindle (stem) cap screw*
3	Spindle (stem)
4	Spindle (stem) seal nut or retainer
5	O-rings
6	Thrust collar
7	Bonnet (cover)
8	Cover/body seal
9	Body
10	Gate nut
11	Gate
12	Gate encapsulation
13	Fasteners*

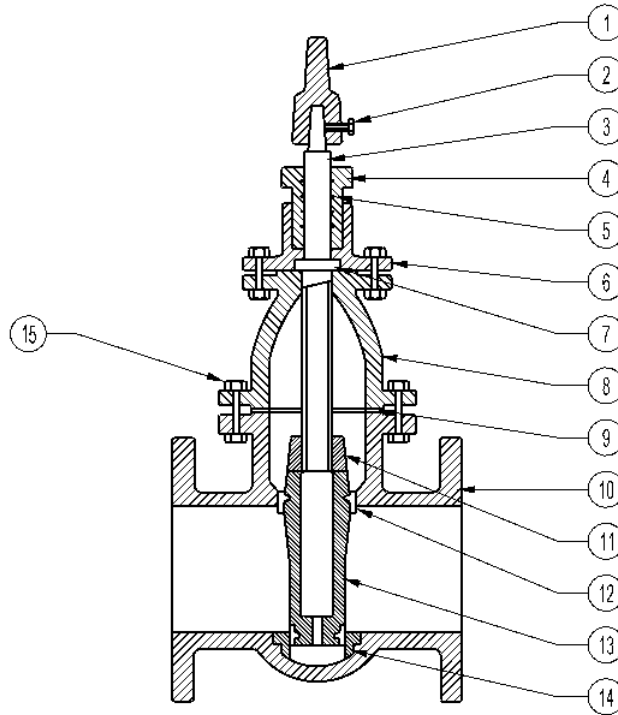
* Manufacturer's design variant

SPO 1-S5 METAL SEATED GATE VALVE

STANDARD	AS 2638.1:2002 Gate valves for waterworks purposes Part 1: Metal seated							
DESIGN	A valve sealed by a corrosion resistant uncoated metal gate. Valve is to be controlled by an inside screw non-rising spindle. Gate is to align using an integral guide system. Gate is to raise clear of the valve's internal diameter. When the gate is in the closed position, there shall be full engagement of the spindle and nut. Component joints are to be watertight and elastomeric sealed. Valve is to be installed with valve spindle vertical. Components are able to be disassembled and assembled in the field. Spindle seals (2 minimum) are able to be replaced under maximum allowable operating pressures with valve fully open. Supporting feet are to be cast on the body. Foreign matter is to be excluded using a restrained wiper ring above spindle seals. Operation is to be manual by either removable ring key/bar or handwheel. Cap is to be removable where key operated. Valves are to close clockwise. Valves over 25 kg are to have lifting devices.							
MATERIALS	Body, bonnet & seal retainer housing:	Ductile cast iron grade AS 1831/400-12 min.						
	Spindle:	Stainless steel ASTM A276 grades 316, 316L or DIN 17440 X2CrNiMo 17132 (class 16 valves) Stainless steel ASTM A276 grades 316, 316L or 431 or DIN 17440 X2CrNiMo 17132 (classes 35 valves)						
	Spindle cap:	Ductile cast iron grade AS 1831/400-15 min						
	Spindle seal retainer and gate nut:	Gunmetal grade AS 1565/C83600 (dezinc. Resistant to AS 2345) or BS 2872/BS 2784 grade CZ 132						
	Gate with integral facing ring:	Gunmetal grade AS 1565/C83600 (dezinc. Resistant to AS 2345) or BS 2872 grade CZ 132						
	Gate with separate facing ring:	Ductile cast iron AS 1831/400-15 min						
	Seating rings:	Gunmetal grade AS 1565/C83600						
	Cap and handwheel:	Ductile cast iron grade AS 1831/400-15 min						
	Fasteners:	Stainless steel ASTM A276 grade 316 (class 16 valves) Carbon steel AS/NZS 1111 grade 4.6 min (class 16 valves if isolated) Carbon steel AS/NZS 1252 grade 8.8 min (class 35 valves)						
	Coating:	Complete polymeric coating of body/ bonnet to AS/NZS 4158 & SP30						
	Gaskets:	EPDM elastomers to AS 1646						
	O-rings:	Nitrile elastomers to AS 1646, hardness 65-75 IRHD						
JOINTING	Sockets:	Minimum socket depth to comply with AS/NZS2280:2004						
	Spigots:	To AS/NZS 2280						
	Flanges:	Flanges to AS 4087 figure B5 for PN16 and AS4087 figure B6 for PN35. Flange gaskets to AS 4087 Appendix C, Table C1. Anti-seize lubricant on all stainless steel fasteners before attachment.						
BODY LENGTH	Nom. Size	Height* (mm max)	Effective length# (mm)		Nom. Size	Height* (mm max)	Effective length# (mm)	
	DN		PN16	PN35	DN		PN16	PN35
	80	400	203	280	300	825	356	430
	100	450	229	305	375	985	381	610
	150	520	267	330	450	1145	432	660
	200	630	292	380	500	1270	457	710
	225	660	305	405	600	1560	508	785
	250	750	330	420	750	1900	610	860
	**from centre of waterway to top of pipe							
	# to outermost face of flanges, tolerance of ± 2 mm for DN 80 to 300, ± 3 mm for DN 350 to 900							
ALLOWABLE OPERATING PRESSURE	PN16:	1.6 MPa						
	PN35:	3.5 MPa						

SPO 1-S5 METAL SEATED GATE VALVE

OPERATION MARKINGS	Cap and handwheel: Marked 'CLOSE' with an arrow showing clockwise closure. End of cap and centre of handwheel to have mark of red ink, paint or clip-in disc to indicate clockwise closure visible from a distance of at least 3 m.										
BODY MARKINGS	<table> <tr> <td>Manufacturer's name or trademark on body</td> <td>Body material designation</td> </tr> <tr> <td>Nominal size</td> <td>Number of the Australian Standard i.e. AS 2638.1</td> </tr> <tr> <td>Year of manufacture</td> <td>Product certification mark e.g. StandardsMark</td> </tr> <tr> <td>Class of valve</td> <td>Traceability code</td> </tr> <tr> <td>Place of manufacture (may be incorporated in traceability code)</td> <td></td> </tr> </table>	Manufacturer's name or trademark on body	Body material designation	Nominal size	Number of the Australian Standard i.e. AS 2638.1	Year of manufacture	Product certification mark e.g. StandardsMark	Class of valve	Traceability code	Place of manufacture (may be incorporated in traceability code)	
Manufacturer's name or trademark on body	Body material designation										
Nominal size	Number of the Australian Standard i.e. AS 2638.1										
Year of manufacture	Product certification mark e.g. StandardsMark										
Class of valve	Traceability code										
Place of manufacture (may be incorporated in traceability code)											
BODY MARKING METHOD	Lettering shall be as large as practical but not less than 6 mm high for sizes DN 80-150, 10 mm high for sizes DN 200-300, 20 mm high for sizes DN 350-600 and 25 mm high for sizes DN 700-900.										
USE LIMITS	Permitted for high unbalanced heads, e.g. for scour, by-pass around larger valves, zone division Not permitted for flow control or throttling										
NOTES	Effective length of a valve complying with AS 2638.1:1999 is greater than effective length of equivalent size valve complying with AS 2638.1:2002.										



Components	
1	Spindle (stem) cap
2	Spindle (stem) cap screw*
3	Spindle (stem)
4	Spindle seal nut or retainer
5	O-rings
6	Seal retainer housing
7	Thrust collar
8	Bonnet (cover)
9	Body/bonnet seal
10	Body
11	Gate nut
12	Seating ring
13	Gate
14	Gate guide
15	Fasteners*

* Manufacturer's design variant

GAS RELEASE VALVE

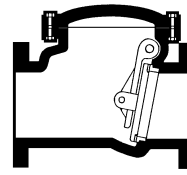


Nominal Size DN	Vent-O-Mat (RGX) PN 10	Vent-O-Mat (RGX) PN 16	CSA (SCF) PN10	CSA (SCF) PN16
50	I ¹	I ¹		I ⁵
80	I ²	I ²		I ⁵
100	I ³	I ³		I ⁶
150	I ⁴	I ⁴	I ⁶	

I = Interim approval

1. DN 50 RGX available standard as screwed male BSP connection.
2. DN 80 RGX available as flanged end with screwed studs to suit AS 2129 Table C, D and E; and AS 4087 Figure B5 Class 16 flange.
3. DN 100 RGX available as flanged end with screwed studs to suit AS 2129 Table C and D; and AS 4087 Figure B5 Class 16 flange, or AS 2129 Table E.
4. DN 150 RGX available as flanged end with screwed studs to suit AS 2129 Table C and D; and AS 4087 Figure B5 Class 16 flange, or AS 2129 Table E.
5. Flanged to AS 2129 Table D
6. Flanged to AS 2129 Table E

SWING CHECK VALVE
CLASS 16 FLANGE-FLANGE

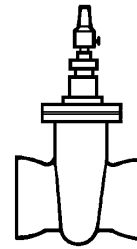


Nominal Size DN	AVK ¹ (Series 41) ²
50	✓
65	
80	✓
100	✓
150	✓
200	✓
225	
250	✓
300	✓
350	
375	
400	
450	
500	
600	

NOTES

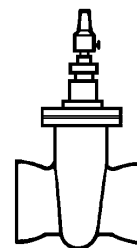
1. Resilient seated disc on swing check valves
2. The product identification is shown in brackets. For AVK Australia Pty Ltd, specify series 41/81 for valve without lever arm and weight and 41/82 for valve with lever arm and weight

RESILIENT SEATED GATE VALVE
CLASS 16 SOCKET-SOCKET (DI/CI/AC PIPE)



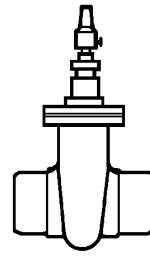
Nominal Size DN	AVK (Series 57/50)	Tyco Water (Series 500)
80	✓	
100	✓	✓
150	✓	✓
200	✓	✓
225	✓	✓
250	✓	✓
300	✓	✓
375		✓

RESILIENT SEATED GATE VALVE
CLASS 16 SOCKET-SOCKET (PVC SERIES 1 PIPE)



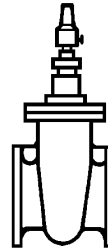
Nominal Size DN	AVK (Series 57/50)	Tyco Water (Series 500)
80	✓	
100	✓	✓
150	✓	✓
200	✓	✓
225	✓	✓
250	✓	✓
300	✓	✓
375		✓

RESILIENT SEATED GATE VALVE
CLASS 16 SPIGOT-SPIGOT (DI/CI/AC PIPE)



Nominal Size DN	AVK (Series 57/60)	Tyco Water (Series 500)
80		✓
100	✓	
150	✓	✓
200	✓	✓
225		✓
250		✓
300		✓

RESILIENT SEATED GATE VALVE
CLASS 16 FLANGE-FLANGE

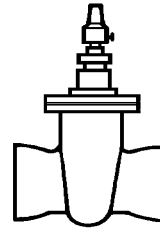


Nominal Size DN	AVK (Series 57/40)	Tyco Water (Series 500)
80	✓	✓
100	✓	✓
150	✓	✓
200	✓	✓
225	✓	✓
250	✓	✓
300	✓	✓
375	✓	✓
450		✓
500		✓
600		✓

NOTES

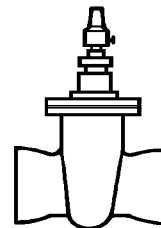
1. Flanges available drilled to AS 4087 figure B5/AS 2129 Table C, or to AS 2129 Table E.

METAL SEATED GATE VALVE
 CLASS 16 SOCKET-SOCKET (DI/CI/AC PIPE)



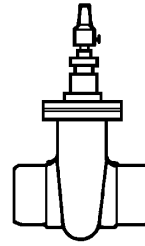
Nominal Size DN	Tyco Water (Series 400)
80	
100	✓
150	✓
200	✓
225	✓
250	✓
300	
375	

METAL SEATED GATE VALVE
 CLASS 16 SOCKET-SOCKET (PVC SERIES 1
 PIPE)



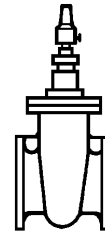
Nominal Size DN	Tyco Water (Series 400)
80	
100	✓
150	✓
200	✓
225	✓
250	✓
300	
375	

METAL SEATED GATE VALVE
 CLASS 16 SPIGOT-SPIGOT (DI/CI/AC PIPE)



Nominal Size DN
80
100
150
200
225
250
300

METAL SEATED GATE VALVE
 CLASS 16 FLANGE-FLANGE



Nominal Size DN	Tyco Water (Series 400)
80	✓
100	✓
150	✓
200	✓
225	✓
250	✓
300	✓
375	✓
450	✓
500	✓
600	✓