



SERIES 57 RESILIENT SEATED GATE VALVE INSTALLATION, OPERATION & MAINTENANCE MANUAL

Instruction for use

Thank you for selecting an AVK product. With correct use, it will give long and reliable service. This manual has been prepared to assist you install, operate and maintain the valve to the maximum efficiency. For ease of reference, it has been divided into sections covering all aspects of use, and it is in the users best interests to read it and ensure that it is fully understood.

Health and Safety

It is always recommended that wherever work is being carried out on a valve that the valve is fully depressurised prior to carrying it out, and for the convenience draining of the line may be beneficial.

It is essential that the user of the valve is aware of the weight of the components and/or assemblies that must be handled and manipulated during installation and maintenance. It is the users responsibility to ensure that safe working practices are followed at all times.

Whenever AVK products are installed, operated, or maintained, it is essential that the staff that undertake these operations be adequately trained. The hazards of pressurised liquids and gases can be severe, and it is the responsibility of the users to ensure that trained, competent staff undertake these duties. This manual has been designed to assist, but it can never fully replace quality training in the workplace. AVK technical staff will always be available to answer any questions relating to specific problems that may not be covered by this manual.

AVK products are designed and manufactured to be fit for purpose, and to a high and reliable standard. This provides a safe product with minimum risk to health when used correctly for the purpose for which it was designed. However, this assumes that the equipment is used and maintained in accordance with the manual, and the user is advised to study this manual, and to make it available to all staff that may need to refer to it.

AVK cannot be held responsible for any incidents arising from incorrect installation, operation or maintenance. The responsibility for this must rest wholly with the user.

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1. Introduction

AVK series 57 gate valves are available in DN50 to DN400. The valve has a full and straight bore corresponding to the nominal diameter and can be installed independent of the flow direction. To keep the advantage of the full and straight bore vertical installation is recommended, however, flow/pressure limitations outlined below should be observed.

The valves are 100% factory tested hydrostatically.

The valves can be applied in various end connections to suit application needs. See datasheets.

IT IS IMPORTANT TO STATE OPERATING TEMPERATURE, PRESSURE, MEDIUM AND OPERATING CONDITIONS WITH ENQUIRIES/ORDERS, SO THE MOST SUITABLE VALVE WILL BE SUPPLIED FOR YOUR SPECIFIC PURPOSE.

Materials:

Castings (gland flange, body, bonnet & stem cap)
Ductile Iron, 500-7 to AS 1831

Coating
Fusion bonded epoxy (FBE)

Stem, gland flange bolts
Stainless Steel

Wedge
Ductile Iron, with EPDM rubber

Bonnet bolts
DN50-250
PN16 Grade 8.8, PN25 Grade 12.9, sealed with hot melt
DN300-400
PN16 and PN25 Grade 12.9, sealed with hot melt

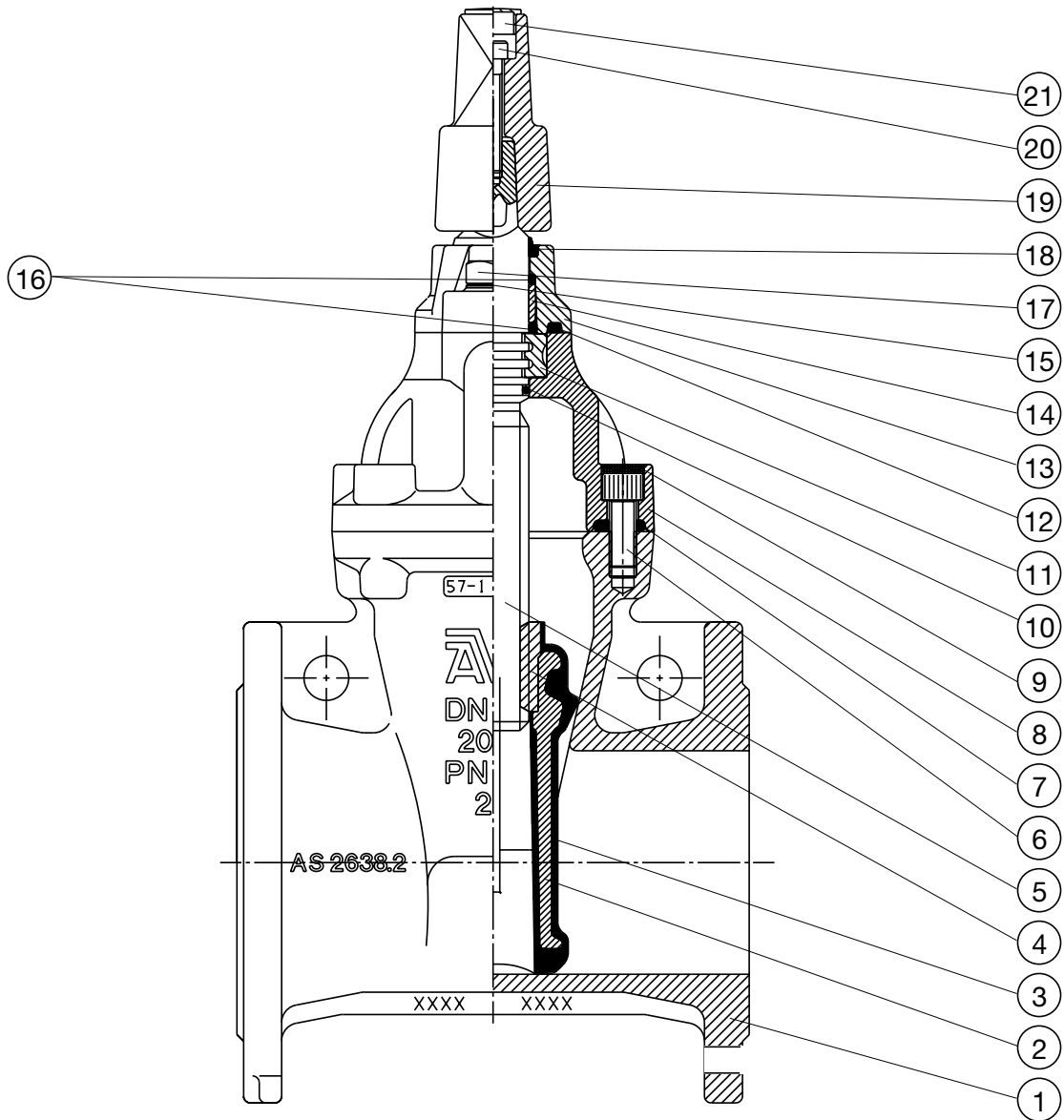
Refer to individual datasheets for specific information



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Component list

- | | | | |
|------------------|------------------|----------------------|-------------------|
| 1. Valve body | 7. Bonnet gasket | 13. Gland flange | 19. Stem cap |
| 2. Wedge casting | 8. Bonnet | 14. Bushing | 20. Stem cap bolt |
| 3. Wedge rubber | 9. Hot melt seal | 15. Washer | 21. Insert |
| 4. Stem nut | 10. O-ring seal | 16. O-ring seals (2) | |
| 5. Stem | 11. Stem collar | 17. Gland bolts | |
| 6. Bonnet bolts | 12. O-ring seal | 18. Wiper ring | |



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2. Installation

- When installing the gate valves, ensure that the seats and the flange faces are clean.
- When valves are provided with lifting lugs, plates or eye nuts, these must be used to lift the valve.
- To ensure adequate sealing it is important to select the correct type of gasket for the medium concerned, gaskets with the correct flange size must be used.
- Place valve between pipe flanges, and insert the bolts.
- Tighten bolts loosely.
- Tighten bolts in a diagonal sequence to ensure flanges are pulled parallel.
- Finally tighten bolts to correct torque levels as recommended in WSA 109.

2.1. Bolts

2.1.1 Bolt size




The following table shows bolt size you should use for which valve dimensions.

DN	Table B5		AS 2129 Table E		AS 2129 Table F	
	Bolts	Quantity	Bolts	Quantity	Bolts	Quantity
50	M16	4	M16	4	M16	4
80	M16	4	M16	4	M16	8
100	M16	4	M16	8	M16	8
150	M16	8	M20	8	M20	12
200	M16	8	M20	8	M20	12
225	M16	8	-	-	-	-
250	M16	8	M20	12	M24	12
300	M20	12	M24	12	M24	16
375	M24	12	M24	12	M27	16
400	M24	12	M24	12	M27	20

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3. Operation

Series 57 valves are suitable for use with clean water or neutral liquids up to 70°C. Minimum liquid temperature must be above freezing. Insulation is essential for external temperatures on 0°C to - 10°C. The valves can be operated manually by either ring key and bar, tee key, handwheel, gearbox or electric actuation. Direction of closing is on top of the gland flange (13).

VALVE TYPE	SIZE mm	No. of turns to fully open or close (without gearbox)	★ Maximum functional torque to achieve closure in Nm
SERIES: 57/90 57/98 57/55 57/65 57/75 	DN100	22	75 Nm
	DN150	28	110 Nm
<p>Note: These are the reduced weight valve series which also include a single start stem thread.</p>			
SERIES: 57/40 57/42 57/43 57/48 57/50 57/60 57/70 	DN80	8	75 Nm
	DN100	9	100 Nm
	DN150	14	150 Nm
	DN200	18	200 Nm
	DN225	19	200 Nm
	DN250	22	250 Nm
	DN300	26	300 Nm
	DN375	32	500 Nm
	DN400	35	550 Nm
SERIES: 55/74 55/34 	DN450	40	600 Nm
	DN500	44	660 Nm
	DN600	52	800 Nm

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4. Maintenance

4.1. General

The valve is designed for underground use with minimum maintenance and requires no lubrication.

In the event of a spares replacement becoming necessary the recommended procedure is as follows:

4.2 Replacement of Stem Seals

This can be carried out with valve under pressure in the pipeline, but take care over step 'a' to ensure a seal is formed between wedge and bonnet.

- a) Fully open valve to ensure it is back-seated.
- b) In the case of a stem cap being fitted carefully prise out plastic insert (21). Remove stem cap bolt (20) and stem cap (19).
- c) Remove 2 hexagon headed bolts (17) on top of gland flange (13).
- d) Gland flange (13) can now be lifted clear of stem (5) allowing access to the stem sealing arrangement. Lift clear of stem and replace the 2 'O' Rings (16). Refit bushing (14) on stem taking care not to nip or tear the new 'O' Rings.
- e) Refit gland flange (13) with a new gland flange 'O' Ring (12) and tighten the 2 hexagon headed bolts (17) using a torque wrench set at 35 Nm.
- f) Refit stem cap assembly i.e. (19) (20) (21).
- g) Close wedge by a few turns and check the integrity of the new seal arrangement.

4.3 Replacement of Wedge

- a) Isolate valve and ensure there is no pressure in the pipeline.
- b) Adjust handwheel or stem cap to put the wedge into a slightly open position.
- c) Remove hot melt/screw cover (9) to expose bonnet bolts (6) then remove bolts.
- d) Lift the entire bonnet assembly (8) and wedge (3) clear of valve body (1).
- e) Unscrew wedge (3) from the stem (5).
- f) Fit new wedge by reversing step 'e', take care that the wedge is in a mid-position on the stem so that when refitting it will be clear of the base and body.
- g) Replace bonnet gasket (7). It is suggested that the bonnet bolts (6) are inserted into the bonnet holes first and then the gasket (7) is fitted over them. The whole bonnet assembly can now be refitted onto the body (1).
- h) Tighten the bonnet bolts (6) following a diagonal sequence and using a torque wrench set at 25 Nm to 30 Nm. Re-set the torque wrench at 40 Nm to 50 Nm and re-tighten the bolts following a circumferential sequence.
- i) Check integrity of seal by re-charging the main.
- j) Should any leakage be found, tighten bonnet bolts (6) following the diagonal sequence as in h) with the torque wrench set at 75 Nm for stainless steel bolts, 60 Nm for Grade 8.8 and 12.9 bolts.
- k) We recommend that the bonnet bolt heads are re-sealed to prevent corrosion. Ensure the sealant is water resistant by using, for example, a silicone type sealant.

4.4 Replacement of Stem Seal 'O' Ring (Item 10)

- a) **Isolate** valve and ensure there is **no pressure** in the pipeline.
- b) Turn keyed stem to put the wedge into a slightly open position.
- c) In the case of a stem cap being fitted carefully prise out plastic insert (21).
Remove stem cap bolt (20) and stem cap (19).
- d) Remove 2 hexagon bolts (17) on top of gland flange (13).
- e) The gland flange (13) can now be lifted clear of stem (5) allowing access to the stem seal arrangement.
- f) Fully close the valve in order to raise the stem (5) clear of the bonnet (8) ensuring that the two stem collars (11) are retained for re-assembly.

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- g) Remove stem seal 'O' ring (12) and replace with a new 'O' ring (12), grease the 'O' ring with Water Regulations approved grease e.g. Rocol Aqua-Sil
- h) Replace the two 'O' rings (16) and nylon bushing (14) in the glandflange (13). Grease internally using the approved grease. Grease thrust collar grooves in stem (5). Screw stem (5) back into wedge (3) whilst fitting stem collars (11) ensuring they seat fully inside recess in bonnet (8).
- i) Refit gland flange (13) with a new gland flange 'O' ring (12) and tighten the 2 hexagon bolts (17) using a torque wrench set at 35 Nm.
- j) Refit stem cap (19), bolt (20) and insert (21).
- k) Close wedge by a few turns and check the integrity of the new seal arrangement
- l) The check the integrity of the new seal arrangement, it will be necessary to re-charge the main slowly and open and close the wedge (3) a few times.

NOTE: It is vitally **IMPORTANT** to ensure all air is vented prior to full charging the main.