DERWENT FLOW CONTROL

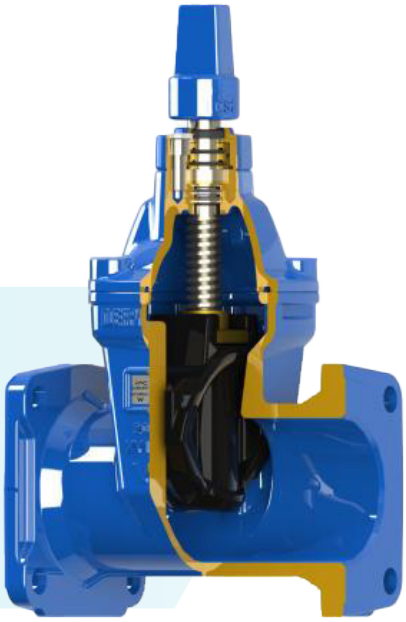
IOM

AS2638.2 RESILIENT SEATED GATE VALVE

INSTALLATION

OPERATION

MAINTENANCE



ALPINE FLOW CONTROL CO., LTD.

Please carefully read below guides:

This mark indicates important information and safety guides.

Potential risks may occur if

- Safety guidelines are ignored
- Equipment is used improperly
- Operators are insufficiently qualified

The applications fields should be permitted by the pressure/temperature of P/T.
Keep routine inspection of the basic points and performance of valves.

INSTRUCTION FOR USE

Thanks for selecting our 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 the user's 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 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 user's responsibility to ensure that safe working practices are always followed.

Whenever our products are installed, operated, or maintained, it is essential that the staff that undertake these operations have been adequately trained. The hazards caused by pressurized liquids 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. Our technical staff will always be available to answer any questions relating to specific problems that may not be covered by this manual.

Our products are designed and manufactured in accordance with AS2638. When used correctly and for the purpose for which it was designed this provides a safe product with minimum risk to health. However, this assumes that the valve 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.

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

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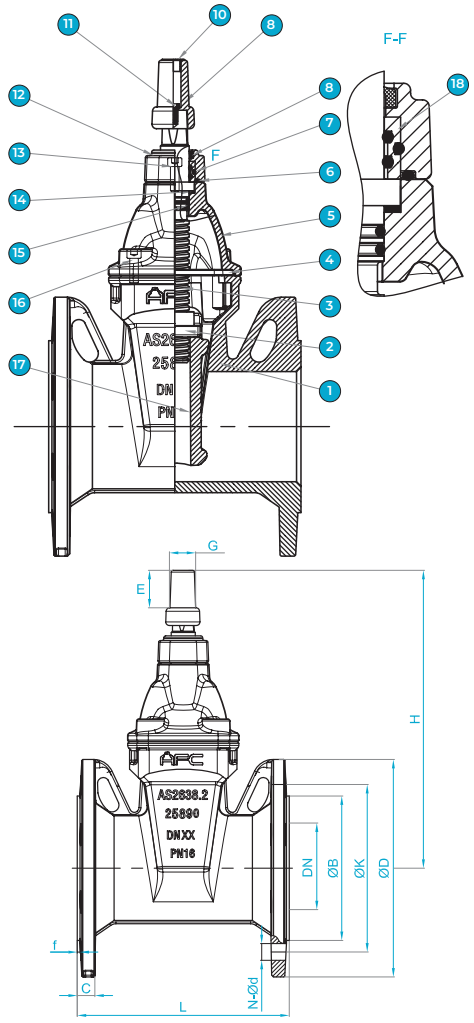
1. INTRODUCTION

We provide our NRS gate valve s from DN50 to DN600 .
Please see our catalogue for a full range of sizes and end connections.

Vertical installation is recommended. The valve can also be in stalled independent of the flow direction. All NRS gate valves are 100% tested in factory before shipping

1.1. SECTIONAL DRAWING AND COMPONENTS LIST



MATERIAL SPECIFICATIONS & PARTS LIST

NO.	PART NAMES	DESCRIPTION	MATERIAL
1	Body	Ductile Iron	AS 1831
2	Wedge Nut	Brass	AS/NZS 1567
3	Stem	Stainless Steel	ASTM A276
4	Gasket	Rubber	AS 1646 and AS 681.1
5	Bonnet	Ductile Iron	AS 1831
6	O-ring	Rubber	AS 1646 and AS 681.1
7	O-ring	Rubber	AS 1646 and AS 681.1
8	Dust Wiper	Rubber	AS 1646 and AS 681.1
9	Cap	Ductile Iron	AS 1831
10	Cap Cover	Plastic	Commercial
11	Hex Bolt	Stainless Steel	ASTM A276
12	Gland	Ductile Iron	AS 1831
13	Hex Bolt	Stainless Steel	ASTM A276
14	Bush	Brass	AS/NZS 1568
15	O-ring	Rubber	AS 1646 and AS 681.1
16	Hex Bolt	Stainless Steel	ASTM A276
17	Wedge	Ductile Iron + Vulcanized Rubber (Nylon Guide)	AS 1831 + AS 1646 and AS 681.1
18	Retainer	Brass	AS/NZS 1568

1.2. OPERATION TORQUE TABLE

DIMENSIONS (MM)

DN	L	H	ØB	ØD	ØK	N-Ød	C	E	f	G	Turns to close	Torque (N.M)
80	203	311	122	185	146	4-Ø18	18	50	3	35	7	80
100	229	340	154	215	178	4-Ø18	20	50	3	35	9	100
150	267	430	211	280	235	8-Ø18	23	50	3	35	13	150
200	292	550	268	335	292	8-Ø18	23	50	3	35	17	200
225	305	628	300	370	324	8-Ø18	24	57	3	35	21	225
250	330	628	328	405	356	8-Ø22	24	57	3	35	21	250
300	356	703	378	455	406	12-Ø22	30	57	4	35	25	300
375	381	920	463	550	495	12-Ø26	33	57	4	35	34	400
400	406	920	489	580	521	12-Ø26	33	57	4	35	34	400

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2. STORAGE & TRANSPORTATION

2.1. PROTECTION

Should be packed to ensure that the critical surfaces and g ate seal is kept from being damaged

2.2. STORAGE

If the valve s need to be stored for an extended period prior to installation, they should be kept in the original delivery packaging off the ground and in a dry and clean indoor area. If large valves are stored on their side for an extended period, then the valve may need to be opened and closed several times to reset the wedge.

2.3. TRANSPORTATION

2.3.1. Packed Valves

Remove valve from packaging. Correct lifting equipment should be used to lift and carry the packed valves, and / or hook on to them in specified position
All packaging materials comply with local safety regulations and requirements to ensure safe transportation

2.3.2. Unpacked Valves

Use appropriate method to lift and transport the unpacked valves within the carrying limit . Protect the machined surface (flange) / socket / spigot from damage. Lifting equipment should be kept a certain distance from the valve body to prevent damaging the coating. When lifting valves use accredited lifting equipment in accordance with relevant Australian Standards to load and lift them. Correct lifting procedures as per clients nominated lifting procedures should be used. Whilst lifting protect the complete valve to avoid possible damage.

3. INSTALLATION TO THE PIPELINE

WARNING!

- During installation and setting up the operator should use appropriate equipment including all required personal protective equipment.
- Must relieve the pipeline pressure before installation
- Only qualified staff with necessary training should install the valves.
- Do not lift valves by the handwheel.
- Verify the pipe pressure and temperature limits are within the application standard of the valves.
- Verify the fitness between the fluid media through the pipeline and application field of the valve.

3.1. WITNESS VIEWING

3.1.1. Carefully take out the valve from the package without damage, including the valve body, handwheel etc...

3.1.2. Check the materials shown on the rating label are suitable, as well as the using temperature and pressure., If no rating label, this valve is for general water service under PN16 and 0-80°C

3.1.3. Use of components from a third party may void any warranty of the valves.

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3.2. FITNESS OF FLANGE AND PIPELINE

Before installation, check the sealing method and drilling between valves and pipeline.

3.3. INSTALLATION

IMPORTANCE NOTICE.

- Must clear any debris in the pipeline before installation.
- Remove the protection materials from the valves.
- Avoid putting valve in the middle of two flanges prior to welding flanges onto the main pipe (for those connection with carbon steel pipe). This could damage the coating or could burn the rubber and cause leakage.
- The passageway center of the valve should align the center of the pipeline.
- To avoid heat or solder rubbish dropping on the wedge, during installation, measures to protect the wedge are required.
- Dry friction will variate the resilient seat, do not open or close the valve after installation before flow media goes through.
- After installation, the valve should be kept in the fully open position and to avoid damage to the wedge any debris in the pipeline should be removed by flushing the pipeline until clean.
- After installation, never use the valve as a supporter to the pipeline.

3.3.1. Installation

IMPORTANCE NOTICE.

Check that the matching flange surface is in good condition, no debris is on the wedge or guides, there has been no damage during the delivery, and the pipeline is already clear.

3.3.1.1. Ensure the distance between end flanges of two pipelines is enough for installation.

3.3.1.2. Ensure the seats and the flanges are clean when installing the gate valve.

3.3.1.3. Select the correct type of gasket. Gaskets with the correct flange size must be used.

3.3.1.4. When valves are provided with lifting lugs, plates or eye nuts, these must be used to lift the valve.

3.3.1.5. Place valves between pipe flanges and insert the bolts.

3.3.1.6. Tighten the bolt loosely.

3.3.1.7. Tighten the bolt in diagonal sequence to make sure flanges are pulled parallel.

3.3.1.8. To fasten the bolts in cross direction with torque to the relevant standard.

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4. OPERATION

GENERAL

The NRS valve is suitable for use with clean water or neutral liquids from 0°C to 80°C. Insulation is essential for external temperature from 0°C to -10°C. The NRS valve can be operated by either T-key, R-key, handwheel, gearbox or electrical actuator.

4.1. OPERATION DIRECTION

Clockwise Closing

4.1.1. **Valve closing:** Operate the stem in clockwise direction.

4.1.2. **Valve opening:** Operate the stem in anti-clockwise direction.

Anti-clockwise closing

4.1.3. **Valve closing:** Operate the stem in anti-clockwise direction.

4.1.4. **Valve opening:** Operate the stem in clockwise direction.

4.2. POSSIBLE RISK:

4.2.1. **Mechanical**: If the valve is operated manually, ensure there is enough space to operate the valve.

4.2.2. **Electric Actuation:** Static electricity could cause an explosion and due to this the valve should be correctly earthed in accordance with the relevant standards.

4.2.3. **Temperature:** For outside temperatures below 5°C or above 40°C protection for the internal components of the valve, like O-ring, rubber kits etc is required. People who operate the valve in these conditions should also have the necessary safety protection.

4.2.4. **Operational:** If the valve is closed too fast, water hammer may be caused which may cause damage to the valve. Caution should be taken to ensure water hammer is not caused.

5. MAINTENANCE

Valve will only need minimum maintenance and no lubrication is required.

WARNING!

- Before opening the valve bonnet ensure that pressure is relieved first and drain the water and pressure by un-fastening flange bolts. Maintenance to the valve unless for the replacement of Gland & Retainer O-ring must be under conditions where the internal valve pressure has been relieved to avoid potential injuries.
- Obtain required procedures prior to conducting any repair / maintenance to the valve.
- Correct equipment and safety procedures should always be followed.
- Only qualified staff should adjust and repair the valves.

5.1. MAINTENANCE:

Except for routine visual inspection to ensure the satisfactory operation and sealing of the valve, there is no need for daily maintenance and lubrication

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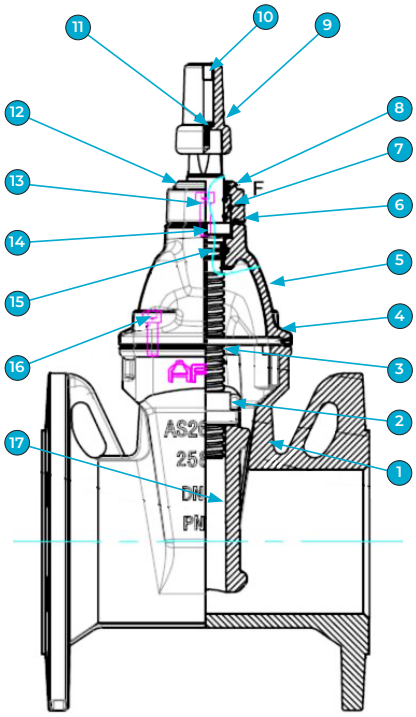
5.2. Possible Fault & Solution

DEFECTS	POSSIBLE CAUSE	SOLUTIONS
Could not Close the Valve	Rubbish in the valve interior	Clear any debris
Internal leakage wedge leak	Not close completely	Use higher torque to close
	Damage of Rubber Wedge/O ring	Change Rubber Wedge/O ring
Outside leaking from bonnet gasket	Rupture of gasket	Replace new gasket
Leakage from stem	Rupture of O ring seal	Replace all the top 2* O rings
Leakage from Gland	Rupture of gland O ring	Replace the O ring



No.	PART DESCRIPTION
1	Body
2	Wedge Nut
3	Stem
4	Gasket
5	Bonnet
6	0-Ring
7	0-Ring
8	Dust WIper
9	Cap
10	Cap Cover
11	In Hex Bolt
12	Gland
13	In Hex Bolt
14	Bushing
15	0-Ring
16	In Hex Bolt
17	Wedge
*18	Retainer

5.3. DAILY MAINTENANCE

Except routine inspection to ensure satisfactory operation and sealing, regular maintenance and lubrication are not necessary.

5.4. REPLACEMENT OF WEDGE

5.4.1. Isolate valve and ensure there is no pressure in the pipeline.

5.4.2. From a fully closed position
For Clockwise closing valves. Turn the stem in an An ti clockwise direction to put the wedge into slightly open position.
For Anti Clockwise closing valves. Turn the stem in a Clockwise direction to put the wedge into slightly open position.

5.4.3. Remove hot melt cover to expose the in hex bolt (16). Then remove the bolts (16)

5.4.4. Lift the entire bonnet assembly (5) and wedge (from the valve body).

5.4.5. Unscrew wedge (17) from the stem (3)

5.4.6. Fit new wedge on wedge nut (2)

5.4.7. Put the bonnet assembly (5) with wedge (17) into valve

5.4.8. Tighten the hex bolt (1 6) on the bonnet.

5.4.9. The hot cover on the hex bolt is suggested , but not necessary

5.5. REPLACEMENT OF GASKET

5.5.1. Isolate valve and ensure there is no pressure in the pipeline

5.5.2. From a fully closed position
For Clockwise closing valves. Turn the stem in an Anti clockwise direction to put the wedge into slightly open position.
For Anti Clockwise closing valves. Turn the stem in a Clockwise direction to put the wedge into slightly open position.

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5.5.3. Remove hot melt cover to expose the hex bolt (16). Then remove the bolts (16)

5.5.4. Lift the entire bonnet assembly (5) and wedge up from the valve body.

5.5.5. Replace the gasket (4) on the valve body.

5.5.6. Put the bonnet assembly (5) with wedge (17) into valve body.

5.5.7. Tighten the hex bolt (16) on the bonnet.

5.5.8. The hot cover on the hex bolt is suggested , but not necessary.

5.6. REPLACEMENT OF STEM O-RING SEAL

5.6.1. Isolate valve and ensure there is no pressure in the pipeline.

5.6.2. Remove hot melt cover to expose the hex bolt (13). Then remove the bolts (13)

5.6.3. Lift the entire gland assembly (15) from bonnet.

5.6.4. Remove hot melt cover to expose the hex bolt (16). Then remove the bolts (16)

5.6.5. Lift the entire bonnet assembly (5) and wedge from the valve body.

5.6.6. Unscrew wedge (17) and wedge nut (2) from the stem (3)

5.6.7. Take out the stem from the bonnet and then replace the pair of O rings (15) on the stem

5.6.8. Put the stem into bonnet.

5.6.9. Screw wedge (17) and wedge nut (2) on the stem.

5.6.10. Put the bonnet assembly (5) with wedge (17) into valve body.

5.6.11. Tighten the hex bolt (16) on the bonnet.

5.6.12. Put the gland assembly on the top of the bonnet (5).

5.6.13. Tighten the hex bolt (13).

5.7. REPLACEMENT OF GLAND & RETAINER O-RING (CAN BE DONE WITH VALVE UNDER PRESSURE)

5.7.1. Ensure that the valve is in the fully open position

5.7.2. Remove hot melt cover to expose the hex bolt (13). Then remove the bolts (13).

5.7.3. Lift the entire gland assembly (12) from bonnet.

5.7.4. Replace the O-Ring (6)(7) in the gland.

5.7.5. Put the gland assembly on the top of the bonnet (5).

5.7.6. Tighten the hex bolt (13).

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