



Operation & Maintenance Manual for NRS Gate Valve

Valve: DIN3352 F4 Non-Rising Stem Resilient Seated Gate Valve

Design: DIN3352;

Face-to-face: DIN3202 F4 (EN558-1 Series14)

Flange: EN1092-2;

Testing: EN12266-1

1. Product Description

This is DIN3352 non-rising stem (NRS) resilient seated gate valve with F4 short face-to-face dimension, flanged connection. The stem rotates without vertical movement, suitable for limited vertical space.

Wedge coated with elastomer for tight shutoff. **Valve for ON/OFF isolation only, NOT for throttling.**

- Design Standard: DIN3352
- Face to face: DIN3202 F4 (EN558-1 Series14)
- Flange: EN1092-2 PN10 / PN16
- Test Standard: EN12266-1
- DN: DN40 ~ DN600
- Pressure: PN10 / PN16
- Medium: clean water, sewage, neutral liquid. EPDM seal: -10°C ~ +80°C
- Body: Ductile iron GJS-450; Wedge: DI + EPDM coating; Stem: stainless steel; Stem nut: bronze
- Operation: Handwheel, gearbox, electric actuator (ISO5211 top flange optional)

WARNING: Operate only within rated pressure & temperature. Overpressure may cause body rupture and personal injury. **Do NOT use for throttling, partial opening will erode rubber seat.**

2. Safety Instructions

1. Installation, operation and maintenance to be performed by qualified personnel.
2. Depressurize, drain and cool pipeline before any maintenance. Never disassemble valve under pressure.
3. Operate only with original handwheel. Do NOT use levers or extension pipes to increase torque, risk of damage to stem and bronze nut.
4. Do NOT exceed nameplate rating.
5. End stops of gearbox / electric actuator are factory set. Do not adjust without manufacturer approval.
6. Wear PPE for sewage or corrosive media.

3. Storage & Handling

1. Store indoors, dry, protected from sun and rain. Keep flange protection covers in place.
2. Store valve in **fully open position** to avoid permanent compression of rubber seal.
3. Lift on valve body only. Never lift by handwheel, stem or actuator.
4. If stored >12 months, full stroke operation before commissioning, inspect stem O-rings and rubber wedge.

4. Installation

1. Pre-inspection: Check nameplate DN/PN; inspect body and rubber wedge for damage; full stroke test to confirm smooth movement; clean pipeline of weld slag and debris.
2. Mounting requirement: **Valve body horizontal, stem vertical upwards (NRS requirement). Do not install upside down or tilted.**
3. Flange installation:



- Pipe flanges flat and parallel, fit with proper gasket.
 - Center valve between two flanges.
 - Insert bolts, tighten gradually and cross-torque evenly, avoid uneven tightening causing body deformation.
4. Important notes:
- Remove valve during pipe welding to prevent heat damage to rubber wedge.
 - Clean pipeline before commissioning to prevent debris trapped in sealing face.
 - Valve shall NOT be used as end-of-line blind flange under pressure.

5. Operation

Manual handwheel / Gearbox

- Clockwise: Close; Counter-clockwise: Open (follow marking on valve).
- Non-rising stem: judge open/closed position by rotation count and position indicator on top, **stem height cannot indicate position.**
- Stop at end position, do not over-torque. Risk of bronze nut thread stripping or rubber wedge damage.
- Before commissioning: full stroke twice without pressure to verify position indicator matches wedge.
- For isolation only, avoid partial opening.

Electric actuator

Check stroke matching before power on. Follow actuator manual. Adjustment of end stops only after depressurization.

6. Pressure Test (EN12266)

- Shell test: $1.5 \times PN$; Seat tightness test: $1.1 \times PN$.
- Use clean water, raise pressure slowly, hold duration per EN12266. Release pressure slowly after test.

7. Maintenance

Depressurize & drain pipeline before maintenance!

1. Routine inspection: coating integrity, flange leakage, stem O-ring leakage.
2. Periodically lubricate stem thread and gearbox.
3. For idle valves: full stroke operation every 6 months to prevent thread seizure.
4. Replace rubber wedge and stem O-rings when worn or aged. EPDM rubber recommended inspection every 2 years.
5. Do not weld or grind valve body, protect epoxy coating.

8. Troubleshooting

Symptom	Possible Cause	Remedy
Internal leakage / not tight	Debris on seat; rubber wedge scratch; incomplete closing	Clean pipeline; inspect wedge; fully close valve
Stiff / hard to turn handwheel	Rust on stem thread; sediment; flange misalignment causing body stress	Depressurize, clean and lubricate; check flange alignment and bolt torque
External leakage at stem	Aging / worn O-rings	Replace stem O-rings
Flange joint leakage	Uneven bolt torque; non-parallel flanges	Cross retighten bolts evenly

9. Disposal

Separate metal parts and rubber components. Comply with local waste regulation.