# Operation & Maintenance Manual for Swing Check Valve

**Valve:** DIN3202 F6 Swing Resilient Flap Check Valve
**Face-to-face:** DIN3202 F6 (EN558 Series48)
**Flange:** EN1092-2;
**Testing:** EN12266-1

## 1. Product Description

This is flanged swing resilient flap check valve with DIN3202 F6 face-to-face dimension. It is an **automatic valve**, opened by forward fluid flow and closed automatically by disc weight and back pressure to prevent reverse flow. Widely used in pump discharge and water supply pipeline.

- Face to face: DIN3202 F6 (EN558 Series48)
- Flange: EN1092-2 PN10 / PN16
- Test Standard: EN12266-1
- DN: DN40 ~ DN600
- Pressure rating: PN10, PN16
- Medium: clean water, sewage, neutral liquid. EPDM flap: -10℃ ~ +80℃
- Material: Body Ductile iron GJS400/GJS450; Disc DI + EPDM coating; Hinge pin stainless steel; Seat rubber / bronze
- Function: unidirectional backflow prevention, **no manual operating mechanism, cannot be forced open/closed manually**

WARNING: Operate only within rated pressure & temperature. Evaluate water hammer risk for pump stop scenario. Reverse flow impact may damage rubber flap and valve body, causing personal injury.

## 2. Safety Instructions

1. Installation and maintenance to be performed by qualified pipeline personnel. This is automatic valve, no manual operation available.
2. Depressurize, drain and cool pipeline before disassembly. Never remove valve under pressure.
3. Do not strike or pry the flap; do not fit lever/weight to interfere disc movement.
4. Do not exceed nameplate rating. Hard particles in medium will scratch resilient sealing face.
5. For pump discharge, water hammer protection device may be required to avoid impact damage.
6. Keep clear of valve during pressure test.

## 3. Storage & Handling

1. Store indoors, dry, sheltered from sun and rain. Keep flange protective covers in place to avoid debris entering valve cavity.

2. Store valve with flap in free natural state, do not tie or fix flap to prevent permanent rubber deformation.
3. Lift on valve body only, never lift by bonnet or hinge pin.
4. If stored >12 months, inspect rubber flap and hinge pin for rust/aging before commissioning.

**4. Installation**

1. Pre-inspection: Check nameplate DN/PN; inspect body and rubber flap for damage; ensure flap swings freely without seizure; clean pipeline of weld slag and debris.
2. **Flow arrow marked on valve body must match fluid flow direction. Reverse installation is forbidden.**
3. Mounting orientation:
    - Horizontal pipeline: hinge axis horizontal (preferred);
    - Vertical pipeline: fluid flows **bottom to top**. Do not install for top-down flow.
4. Flange assembly:
    - Pipe flanges flat and parallel with proper gasket.
    - Center valve between two flanges.
    - Insert bolts, tighten gradually and cross-torque evenly, avoid uneven tightening causing body deformation.
5. Important notes:
    - Remove valve during pipe welding to prevent heat damage to rubber flap.
    - Min. straight pipe: ≥5DN upstream, ≥3DN downstream to reduce turbulence and disc chattering.
    - Valve shall NOT be used as end-of-line blind flange.
    - Not recommended for medium with large quantity of solid particles, particles may trap on sealing face and cause leakage.

**5. Operation**

This valve has no handwheel, fully automatic operation

1. Forward flow: fluid pushes rubber flap open, passage open.
2. Flow stop / reverse flow: flap closes by gravity + back pressure to block backflow.
3. Before commissioning: flush pipeline to remove debris; pressurize slowly, observe abnormal chattering noise.
4. Operation monitoring: normal operation without heavy impact noise. Continuous chattering indicates low flow velocity or pulsating flow, accelerating flap wear. Use non-slam version in such case.

**6. Pressure Test (EN12266)**

- Shell test:1.5 × PN; Seat tightness test:1.1 × PN, apply back pressure from downstream side and check leakage on upstream.
- 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: leakage at flange / bonnet gasket, noise and vibration.
2. Annual inspection: remove bonnet cover, inspect rubber flap for scratch, aging or delamination; check hinge pin wear and corrosion; apply compatible grease on pin.
3. For idle system: inspect valve cavity and sediment removal every 12 months.
4. Replace rubber flap when worn or damaged. EPDM rubber recommended inspection every 2 years.
5. Do not weld or grind valve body, protect epoxy coating.

**8. Troubleshooting**

| **Symptom** | **Possible Cause** | **Remedy** |
|---|---|---|
| Backflow / internal leakage | Debris trapped on seat; rubber flap scratch; seized hinge pin | Clean pipeline; replace flap; inspect pin and remove sediment |
| Continuous chattering & vibration | Low flow velocity; pulsating flow; insufficient straight pipe | Improve flow condition; add straight pipe; use non-slam check valve |
| Leakage at bonnet flange | Uneven bolt torque; gasket aging | Cross retighten bolts evenly; replace gasket |
| Sticky flap movement | Sediment and corrosion on pin | Depressurize, clean pin and apply lubricant |

**9. Disposal**

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