

Doebritz PA Quick-release rotary valve - Official Technical Overview & Datasheet

DOEBRITZ PA QUICK-RELEASE ROTARY VALVE

OFFICIAL TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

The Doebritz PA Quick-release rotary valve represents a precision-engineered solution for gravity-fed and pneumatic conveying systems requiring rapid disassembly, hygienic operation, and differential pressure integrity. Designed for food, pharmaceutical, chemical, and new energy material processing, the PA series combines a quick-release clamp mechanism with close-tolerance rotor-to-housing clearances (0.1–0.2 mm). The valve supports both positive pressure (up to 1 bar) and negative pressure (down to -1 bar) conveying, as well as variable-frequency-driven gravimetric metering. All contact surfaces are manufactured from SUS304 or SUS316L stainless steel, with optional tungsten carbide, PTFE, PE, PA, or ceramic coatings for abrasive or corrosive service. The PA series is available in ATEX Zone 20/21/22 configurations and is suitable for Class 10W, 30W, C/D cleanrooms.



HOUSING & ROTOR METALLURGY

- Base materials: SUS304, SUS316L, carbon steel painted, carbon steel nickel-plated
- Wear-resistant coatings: tungsten carbide, ceramic, polymer (PE/PTFE/PA)
- Internal surface finishes: mirror ($Ra \leq 0.4 \mu\text{m}$), $Ra \leq 0.8 \mu\text{m}$, $Ra \leq 1.6 \mu\text{m}$, or coated
- External finishes: sandblasted, shot blasted, anti-fingerprint, machined $< 0.8 \mu\text{m}$
- Rotor type: star-shaped discharge rotor, non-jamming geometry
- Rotor-to-housing radial clearance: 0.1–0.2 mm (precision CNC-machined)

KEY FEATURES

- Feature 1 – Rapid tool-less disassembly: The quick-release clamp mechanism allows full rotor and housing access without specialized tools, enabling manual cleaning, CIP, or WIP procedures. Changeover and maintenance downtime reduced by up to 70% compared to bolted designs.
- Feature 2 – Precision airlock sealing: With clearance held to 0.1–0.2 mm, air leakage across the valve is minimized, stabilizing pressure gradients in dilute- or dense-phase pneumatic conveying and reducing energy consumption.
- Feature 3 – ATEX & hygienic compliance: Available in explosion-proof configurations (Zone 20/21/22, pressure shock resistant to 16 bar) and certified for Class 10W, 30W, C/D cleanroom use. CE and TÜV certified.
- Feature 4 – VFD-ready metering control: Integrated with PLC automation for batch metering, recipe metering, and automated 配料. Speed can be adjusted from 0 to rated RPM without leakage or powder escape.
- Feature 5 – Corrosion & wear resistance: Full range of coated options (tungsten carbide, ceramic, PTFE, PA, PE) for lithium battery powders, silicon fines, titanium dioxide, carbon black, and other abrasive or corrosive bulk solids.

COMPLIANCE & SAFETY STANDARDS

- Pressure equipment: CE certified, TÜV certified, Statement certification
- Explosion protection: ATEX Zone 20, Zone 21, Zone 22 compatible; flameproof

construction rated 16 bar

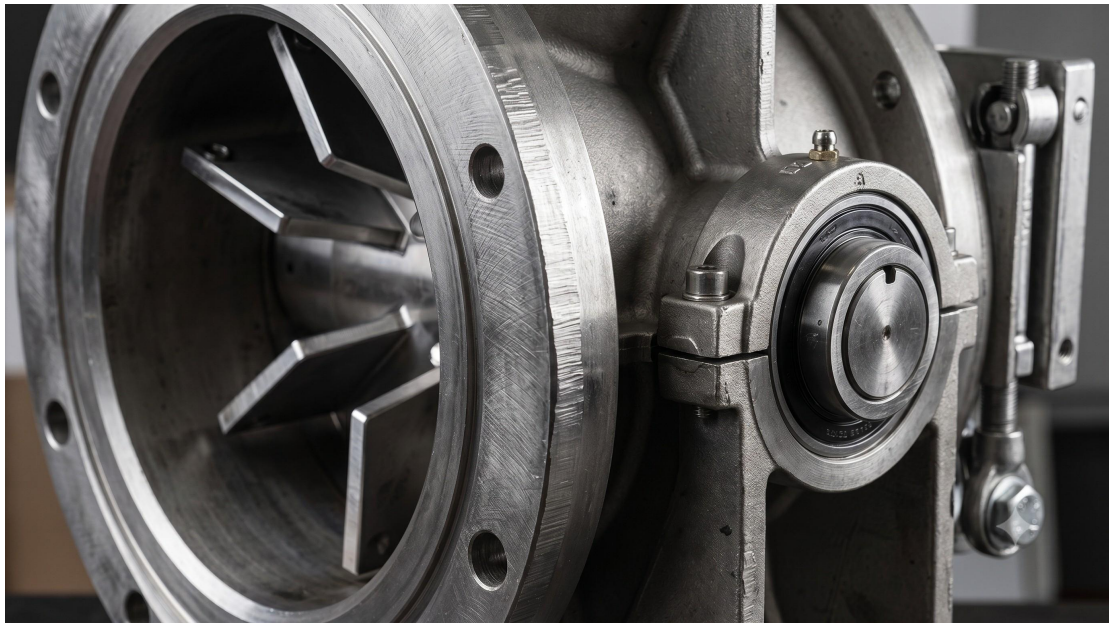
- Hygienic design: Suitable for Class W, 10W, 30W, Class C, Class D cleanrooms
- Sealing system: Lip seal with air-tight purge (gas purging option)
- Flange standard: HG20592 (custom DN50, DN100, DN150, DN200, DN300, DN350 available)
- Ambient temperature range: -15°C to +60°C
- Material temperature range: 0°C to +120°C (optional water cooling jacket for higher temperatures)

TECHNICAL SPECIFICATIONS

- Product series: PA Quick-release rotary valve (also known as quick-release airlock valve, star discharge valve, airlock feeder)
- Construction: Quick-release type / non-quick-release type; hygienic type / non-hygienic type
- Differential pressure range (positive): Low-pressure <0.4 bar; High-pressure 0.4–1 bar (VFD control)
- Differential pressure range (negative): Low-pressure >-0.4 bar; High-pressure -1 to -0.4 bar (VFD control)
- Gravity discharge: Adjustable flow rate, no leakage, no powder escape
- Metering integration: PLC control, automated batching, batch metering, recipe metering

- Shaft seal: Lip seal air-tight seal (packing seal optional for non-hygienic applications)
- Cooling: Optional water cooling jacket
- Clean-in-place: Manual cleaning after quick-release disassembly; Online CIP cleaning; Online WIP cleaning + manual inspection
- Typical size range: DN50 to DN350

Parameter	Specification
Capacity per revolution	2.5 to 100 Liters/rev (depending on DN size from DN50 to DN350)
Flange Standard	HG20592 (DN50, DN100, DN150, DN200, DN300, DN350)
Drive Configuration	Chain drive / Direct drive with VFD, PLC control, ATEX motor optional
Rotor-to-housing clearance	0.1–0.2 mm
Maximum differential pressure	1 bar (positive) / -1 bar (negative)
Material temperature range	0°C to 120°C (optional water cooling jacket)
Explosion protection	Zone 20/21/22, 16 bar pressure shock resistance
Cleanability	Quick-release manual cleaning, CIP, or WIP + inspection



INDUSTRIAL DEPLOYMENT

The Doebritz PA Quick-release rotary valve is field-proven across multiple industries:

- Food: Coffee, chocolate, flour, milk powder, whey powder, protein powder, spices, salt, starch, grains, bakery premixes.
- Pharmaceutical: Antibiotic powder, vitamin powder, lyophilized vaccine powder, probiotic powder, microcrystalline cellulose, lactose powder, recombinant protein.
- Chemical & new energy: Carbon black, PE/PP pellets, PTA, titanium dioxide, lithium battery cathode/anode materials, silicon powder, petroleum coke, pigments, fertilizers.

Typical system integration: Installed below hoppers, silos, cyclones, or bag filters. For pneumatic conveying, the PA valve serves as an airlock feeder (pressure or vacuum side). For gravity metering, it connects directly to a loss-in-weight feeder or batch scale with VFD and PLC coordination. Quick-release design enables daily washdown in food/pharma lines without removing the valve body from the piping.