

Doebritz Flour Airlock feeder - Official Technical Overview & Datasheet

DoeBRITZ FLOUR AIRLOCK FEEDER - OFFICIAL TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

Doebritz presents its Quick-release rotary valve specifically engineered for flour and fine powder handling in food-grade pneumatic conveying and gravity discharge systems. This equipment functions as a precision airlock feeder, maintaining system pressure differential while providing controlled volumetric discharge. Designed for flour mills, bakeries, and food processing plants, the unit delivers leakage rates below industry standard thresholds through rotor-to-housing clearances maintained at 0.1–0.2mm. The quick-release clamp mechanism enables tool-free disassembly for inspection and manual cleaning, addressing flour's tendency toward compaction and moisture absorption.



HOUSING & ROTOR METALLURGY

The flour airlock feeder utilizes SUS304 or SUS316L stainless steel as base material for all product-contact surfaces. Non-contact components are available in carbon steel with painted or nickel-plated finish. For abrasive flour variants such as whole grain or high-ash fractions, internal surfaces accept tungsten carbide, ceramic, or polymer coatings. Internal surface finish achieves $Ra \leq 0.4\mu\text{m}$ (mirror) or $Ra \leq 0.8\mu\text{m}$ as standard, preventing flour adhesion and bacterial harborage. External finish options include sandblasting, shot blasting, or anti-fingerprint treatment with machined surfaces $< 0.8\mu\text{m}$.

KEY FEATURES

- Feature 1: Quick-release clamp mechanism – No special tools required for

disassembly, enabling rapid access for manual cleaning or visual inspection between flour grade changeovers.

- Feature 2: Precision rotor-to-housing clearance – Maintained at 0.1–0.2mm, reducing air leakage across the airlock to stabilize pneumatic conveying pressure and minimize energy loss.

- Feature 3: Hygienic design compatibility – Supports WIP (wash-in-place) and manual cleaning protocols; optional CIP (clean-in-place) configuration available. Suitable for Class W, 10W, 30W, Class C, and Class D cleanroom environments.

- Feature 4: Variable frequency drive ready – PLC-compatible speed control enables batch metering, recipe metering, and automated 配料 integration for continuous or intermittent flour discharge.

- Feature 5: ATEX dust explosion protection – Configurable for Zone 22, 21, or 20 hazardous areas with flameproof housing rated to 16bar, explosion-proof motor, and precision gap design to contain deflagration.

COMPLIANCE & SAFETY STANDARDS

The Doebritz flour airlock feeder carries CE certification, TÜV certification, and Statement certification, confirming compliance with EU machinery directive, ATEX directive (2014/34/EU), and food contact material regulations. For flour handling in potentially explosive dust atmospheres, the unit meets Zone 22, 21, and 20 construction requirements with pressure shock resistance up to 16bar.

The equipment aligns with NFPA 69 standard for deflagration isolation when specified with flame arrestance features.

TECHNICAL SPECIFICATIONS

Material options: SUS304, SUS316L, carbon steel painted, carbon steel nickel-plated. Wear-resistant coatings: tungsten carbide, ceramic, PE, PTFE, PA.

Sealing type: Lip seal air-tight seal (standard); packing seal available.

Operating pressure range (positive): Low-pressure < 0.4bar; High-pressure 0.4–1.0bar with VFD.

Operating pressure range (negative): Low-pressure > -0.4bar; High-pressure -1.0 to -0.4bar with VFD.

Gravity discharge: Adjustable speed, no leakage, no powder escape, flow rate adjustable.

Temperature limits: Ambient -15°C to 60°C; Material 0°C to 120°C.

Cooling: Optional water cooling jacket.

Flange interface standards: HG20592, DN50, DN100, DN150, DN200, DN300, DN350.

Cleaning methods: Manual cleaning after quick-release disassembly; Online CIP cleaning; Online WIP cleaning plus manual inspection.

Parameter	Specification
Capacity per revolution	2.5 to 100 Liters/rev (depending on DN size)
Flange Standard	HG20592 / DN50 to DN350; compatible with DIN PN10 / ANSI 150# upon request
Drive Configuration	Chain drive or direct drive; VFD-ready for speed control
Max differential pressure	1.0 bar (positive), -1.0 bar (negative)
Rotor-to-housing clearance	0.1–0.2 mm
Explosion protection rating	Zone 20/21/22; flameproof housing 16bar
Surface finish (product contact)	$Ra \leq 0.4 \mu\text{m}$ (mirror) or $Ra \leq 0.8 \mu\text{m}$

INDUSTRIAL DEPLOYMENT

The Doebritz flour airlock feeder is field-proven in flour mills for mill pneumatics (negative pressure conveying from filter receivers), bakeries for ingredient receiving (positive pressure flour blowing systems), and food ingredient blending lines for gravimetric batch feeding. The quick-release design specifically addresses flour's tendency to compact on rotor tips and housing walls, enabling maintenance crews to clear buildup in under 15 minutes without specialized tools. For flour applications requiring frequent grade changes between whole wheat, white, rye, or gluten-free formulations, the hygienic surface finish and accessible interior prevent cross-contact and reduce changeover validation time.

