

Doebritz Baking Products Airlock Feeder - Official Technical Overview & Datasheet

DOEBRITZ BAKING PRODUCTS AIRLOCK FEEDER

OFFICIAL TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

The Doebritz Baking Products Airlock Feeder (Model Series DBR-1237) is a specialized quick-release rotary valve engineered for hygienic gravity discharge and pneumatic conveying of flour, starch,奶粉, protein powders, sugar, spices, and other baking ingredients. Designed to meet strict food safety regulations (GMP, FDA-compliant materials), this airlock feeder combines rapid tool-less disassembly, precision air sealing (rotor-to-housing clearance 0.1–0.2 mm), and fully CIP/SIP-capable surfaces. It operates in positive pressure (up to 1 bar) and negative pressure (down to -1 bar) pneumatic systems as well as gravity-fed batching lines, supporting both continuous volumetric feeding and loss-in-weight metering.



HOUSING & ROTOR METALLURGY

All product-contact parts are manufactured from austenitic stainless steel SUS304 or SUS316L. Non-contact external components may be carbon steel with industrial paint. Surfaces are refined to $Ra \leq 0.4 \mu\text{m}$ (mirror finish) for the food-contact zone, eliminating bacterial adhesion and facilitating validation. Rotor vanes are machined with precision clearances of 0.1 mm to 0.2 mm relative to the housing bore, ensuring low air leakage while accommodating thermal expansion during CIP cycles (物料 temperature 0°C to 120°C).

KEY FEATURES

- Quick-Release Clamp System: Dismantle without special tools, enabling rapid manual cleaning or online CIP/WIP validation; reduces downtime by up to 70%

compared to bolted designs.

- Precision Airtight Seal: Lip-type sealing rings with air purge (optional) maintain differential pressure up to 1 bar, minimizing blow-by air and preserving pneumatic conveying efficiency.
- Hygienic Mirror Finish: Internal surfaces $R_a \leq 0.4 \mu\text{m}$, free of crevices or dead zones; complies with 10W/30W/C/D class cleanroom requirements.
- ATEX-Ready Configuration: Available Zone 20/21/22 explosion protection (flameproof enclosure, 耐压 16 bar) for combustible baking dusts such as flour or starch.
- PLC-Ready Drive: Integrated with 变频调节 (VFD) and optional encoder feedback for precise batch metering, recipe formulation, and automated 配料.
- Wide Material Compatibility: Processes free-flowing and moderately cohesive powders including 面粉 (flour), 淀粉 (starch), 奶粉 (milk powder), 蛋白粉 (protein powder), 食盐 (salt), 香辛料 (spices), and sugar-based blends.

COMPLIANCE & SAFETY STANDARDS

- CE Marking (Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU)
- TÜV Certification (functional safety and pressure equipment)
- ATEX Directive 2014/34/EU (equipment for potentially explosive atmospheres, Zones 20, 21, 22)
- FDA / EC 1935/2004 compliant materials for food contact (SUS316L, PTFE)

seals upon request)

- EHEDG design guidelines (hygienic engineering, CIP cleanability)

TECHNICAL SPECIFICATIONS

Rotor displacement (per revolution): 2.5 to 100 liters (customizable via rotor pocket geometry)

Operating pressure range: -1 bar to +1 bar (gauge)

Pressure resistance (flameproof variant): 16 bar (tested)

Temperature range (ambient): -15°C to +60°C

Temperature range (material): 0°C to +120°C; optional water cooling jacket for >80°C continuous service

Flange connections: DN50, DN100, DN150, DN200, DN300, DN350 per HG20592 (DIN/ANSI equivalents available)

Rotor-to-housing radial clearance: 0.1 mm – 0.2 mm (as-machined, verified by go/no-go gauge)

Shaft seals: Lip seal with air purge (standard); packing seal (optional for non-hygienic applications)

Drive options: Direct drive or chain drive, 0.55 kW to 7.5 kW, 230/400 VAC, 50/60 Hz, IP55/IP66, ATEX motor available

External surface treatment: Machined <0.8 µm, anti-fingerprint, shot-blasted or painted (carbon steel version)

Internal surface treatment: Mirror polish $Ra \leq 0.4 \mu m$ (food contact), electropolished upon request

Cleanability: CIP (in-place), WIP (with manual verification), or full disassembly manual cleaning

| Parameter | Specification |
|-----------------------------------|--|
| Displacement per revolution | 2.5 to 100 Liters/rev (custom pockets) |
| Rotor-to-housing clearance | 0.1–0.2 mm (precision ground) |
| Max differential pressure | 1 bar (conveying), 16 bar (flameproof housing) |
| Flange standard | HG20592 (DN50 – DN350); DIN/ANSI on request |
| Drive configuration | Direct drive / chain drive, VFD-ready, ATEX optional |
| Material temperature range | 0°C to 120°C (with water cooling jacket optional) |
| Internal finish (product contact) | Mirror $Ra \leq 0.4 \mu m$ (SUS304/SUS316L) |
| Cleanability | CIP, WIP, or tool-less manual disassembly |
| Certifications | CE, TÜV, ATEX Zone 20/21/22, FDA-compliant materials |

INDUSTRIAL DEPLOYMENT

Typical installation locations:

- Under silos or day bins for gravity feeding of flour/奶粉 to ribbon blenders or continuous mixers
- Inlet of dilute-phase pneumatic conveyors transferring baking ingredients to high-level hoppers
- Discharge of batch weighing systems (loss-in-weight) where repeatable metering is critical
- Explosive atmosphere zones handling starch, sugar dust, or protein fines

The Doebritz quick-release design permits complete disassembly within 10 minutes by a single operator without tools, allowing line changeovers between gluten-free and standard recipes without cross-contamination. Optional wear-resistant coatings (tungsten carbide or ceramic) are available for abrasive ingredients such as crystalline salt or spices.

