

Doebritz DBR-1237 Gravity Rotary Valve - Official Technical Overview & Datasheet

DOEBRITZ DBR-1237 GRAVITY ROTARY VALVE: OFFICIAL TECHNICAL OVERVIEW & DATASHEET

EXECUTIVE SUMMARY

The Doebritz DBR-1237 is a premium, high-performance gravity-fed rotary valve engineered for precision airlock service in demanding powder and bulk solids handling applications. This quick-release rotary valve integrates a robust, hygienic design with advanced sealing technology to deliver superior air retention, consistent volumetric feeding, and rapid cleanability. It is the definitive solution for processing environments requiring stringent hygiene standards, explosion safety, and operational flexibility, serving as a critical interface between storage vessels and pneumatic conveying or metering systems. The DBR-1237 is a versatile platform suitable for a wide spectrum of materials, from fine, cohesive powders to free-flowing granules, across the food, pharmaceutical, chemical, and new energy industries.



HOUSING & ROTOR METALLURGY

The DBR-1237 is constructed with a focus on durability and process compatibility. The valve housing and rotor are manufactured from high-grade materials selected for their mechanical strength and corrosion resistance. The standard offering includes robust cast stainless steel options such as SUS304 and SUS316L, with the latter being critical for applications demanding superior resistance to chemical attack and pitting, particularly in pharmaceutical and food processing. For less demanding or abrasive applications, carbon steel variants with painted or nickel-plated finishes are available. The internal surfaces are precision-machined to exacting tolerances, with options for mirror polishing to a surface finish of $Ra \leq 0.4 \mu m$, $0.8 \mu m$, or $1.6 \mu m$, ensuring a smooth, non-stick surface for product flow and enhanced cleanability. The precision-cast components guarantee a high-strength, leak-proof body that

maintains its integrity under cyclical pressure and thermal stresses.

KEY FEATURES

- **Rapid Tool-Less Disassembly:** Engineered for swift and straightforward disassembly and reassembly without the need for specialized tools. This feature drastically reduces downtime for product changeovers, routine inspections, and manual cleaning, significantly increasing overall plant productivity.
- **Precision Air Sealing:** The rotor-to-housing clearance is meticulously controlled to a range of 0.1--0.2 mm. This precision, combined with the innovative lip seal air-tight shaft sealing, minimizes air leakage across the valve. The result is stable pressure differentials, reduced conveying air consumption, and significantly lower operational energy costs.
- **Hygienic Sanitary Design:** Available in a hygienic configuration compliant with the strictest cleanliness standards. The quick-release design and available high-grade surface finishes facilitate excellent cleanability, supporting in-place cleaning (CIP) and wash-in-place (WIP) protocols. This design prevents product entrapment and cross-contamination, validating the valve for use in GMP-compliant environments up to Class C/D and 10W/30W cleanrooms.
- **Versatile Material Compatibility:** Constructed from materials including SUS304, SUS316L, and carbon steel, with the ability to coat product-contact surfaces with advanced wear-resistant materials such as tungsten carbide, ceramic, or

polymer coatings (PE, PTFE, PA). This versatility makes the DBR-1237 suitable for handling everything from cohesive, fine powders to highly abrasive and corrosive bulk solids.

- Flexible Drive & Control Integration: Designed for seamless integration into modern, automated plants. The valve supports variable frequency drive (VFD) speed control, allowing for precise volumetric feeding rate adjustment. Full compatibility with PLC control systems enables automated batching, recipe metering, and continuous process optimization.

COMPLIANCE & SAFETY STANDARDS

The Doebritz DBR-1237 series is designed and certified to comply with the most rigorous international industrial safety, hygiene, and performance standards.

- Explosion Safety: The valve is available in variants certified for use in potentially explosive atmospheres, compliant with ATEX and NFPA standards for Zone 20, 21, and 22 environments. The explosion-proof and flameproof (flame-resistant) designs can withstand internal deflagration pressures up to 16 bar, ensuring containment in the event of an ignition.

- Hygienic & Cleanroom Compliance: Designed to meet the requirements of GMP, with configurations suitable for use in Class C and D cleanrooms, as well

as 10W and 30W cleanroom classifications. Materials and finishes are selected to prevent contamination and facilitate validation.

- Material & Operational Integrity: All metallurgy and coatings are selected to withstand the specified process conditions, including ambient temperatures from -15 °C to 60 °C and material temperatures up to 120 °C. The design complies with international flange standards (HG20592).

- Global Certifications: The DBR-1237 is backed by comprehensive certifications including CE and TÜV, confirming its conformity with European and international directives for machinery safety and performance. Statement certifications are also available upon request.

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

The DBR-1237 is a gravity-fed, quick-release rotary airlock valve designed for a broad spectrum of industrial applications. Its robust design and versatile material options ensure compatibility with a wide range of process conditions and bulk solids. The core of its operational excellence lies in the precision-machined rotor, which ensures minimal leakage and high volumetric efficiency.

CAPACITY AND DIMENSIONS

The DBR-1237 is available in multiple nominal sizes, from DN50 through DN350, offering a wide range of feed rates to suit any production scale. The valve's open-rotor design provides high volumetric efficiency, ensuring a consistent and predictable material flow. The exact capacity is dependent on the specific rotor profile (closed, adjustable, or open) and the drive speed. With VFD control, the output can be precisely managed from low feed rates for batch metering up to maximum capacity for bulk transfer.

Parameter	Specification
Nominal Sizes (DN)	DN50, DN100, DN150, DN200, DN300, DN350
Material Options	SUS304, SUS316L, Carbon Steel Painted, Carbon Steel Nickel-Plated
Wear & Corrosion Protection	Tungsten Carbide Coating, Ceramic Coating, PE/PTFE/PA Polymer Liners
Surface Finish (Internal)	Mirror Polish, Ra ≤ 0.4 μm, Ra ≤ 0.8 μm, Ra ≤ 1.6 μm
Rotor-to-Housing Clearance	0.1 - 0.2 mm
Shaft Sealing	Lip Seal Air-Tight Seal, Packing Seal (optional)

Maximum Differential Pressure	Up to 1.0 bar (with VFD), explosion-proof versions rated to 16 bar
Drive Configuration	Chain Drive, Direct Drive, VFD Speed Control
Connection Flange Standard	HG20592
Ambient Temperature Range	-15°C to 60°C
Material Temperature Range	0°C to 120°C
Cooling Option	Water Cooling Jacket (optional)
Cleaning Options	Manual Cleaning after Quick-Release Disassembly, Online CIP, Online WIP + Manual Inspection
Explosion Protection	Non-Explosion-Proof, ATEX Zone 20/21/22 Compliant
Certifications	CE, TÜV, Statement Certification

MECHANICAL & OPERATIONAL PERFORMANCE

The DBR-1237 is built to deliver outstanding performance across a variety of pneumatic conveying and gravity discharge applications. Its performance is characterized by robust pressure capabilities, effective sealing, and ease of

maintenance. The standard valve is designed for continuous operation, offering a long service life with minimal intervention. Key performance data, including permissible differential pressure and rotor speed, are detailed below, ensuring the DBR-1237 can be correctly specified for its intended duty.

[TABLE_1]

INDUSTRIAL DEPLOYMENT

The DBR-1237's superior design and robust construction make it the ideal solution for critical material handling applications across multiple high-value industries.

Food & Beverage: Ideal for the hygienic handling of fine and granular food products. Typical applications include discharging and metering materials such as coffee, chocolate, flour, milk powder, sugar, starch, protein powders, and spices. The rapid disassembly and available CIP capability ensure compliance with HACCP and FDA regulations, minimizing downtime between product runs.

Pharmaceutical & Biotechnology: Engineered for the stringent demands of pharmaceutical manufacturing. Suitable for handling active pharmaceutical ingredients (APIs), excipients, and finished formulations in powder, granule, or

pellet form. The DBR-1237 supports full GMP compliance with its cleanability, material traceability, and validation-readiness, making it perfect for processing vitamins, hormones, antibiotics, vaccines, and other sensitive compounds.

Chemical, New Energy & New Materials: Ruggedly designed to withstand the demanding conditions of chemical and advanced material processing. It is an excellent choice for handling abrasive, corrosive, or explosive materials. Typical applications include discharging carbon black, pigments, titanium dioxide, battery materials (lithium, graphite, silicon), PE/PP pellets, and specialty chemicals. The availability of advanced coatings such as tungsten carbide and ceramic ensures durability in high-wear applications, while the ATEX-certified variants provide crucial safety for combustible dusts.

