

ATEX & NFPA Technical Compliance Register: Doebritz ATEX certificate rotary valve

ATEX & NFPA TECHNICAL COMPLIANCE REGISTER: DOEBRITZ ATEX CERTIFICATE ROTARY VALVE

EXECUTIVE SUMMARY

This document serves as the official Technical Compliance Register for the Doebritz ATEX certificate rotary valve (Model Series DBR-1237). Designed as a critical safety interface for pneumatic conveying and gravity discharge systems in potentially explosive atmospheres, this equipment integrates precision mechanical engineering with certified explosion protection. The rotary valve functions as an airlock, maintaining system pressure while providing a material seal, and is engineered to prevent flame propagation and ignition source generation in Zone 20, 21, and 22 hazardous areas. This register details the constructional safety requirements, material specifications, and performance parameters that underpin its ATEX and NFPA compliance.



HOUSING & ROTOR METALLURGY

The valve body and rotor are precision-engineered from high-grade materials to ensure both structural integrity and corrosion resistance in demanding industrial environments. The standard offering includes:

- Stainless Steel (SUS304 / SUS316L): Offers excellent corrosion resistance and hygiene, suitable for food, pharmaceutical, and chemical applications.
- Carbon Steel (Painted / Nickel-Plated): Provides a cost-effective solution for less corrosive, high-wear applications.
- Specialized Coatings: For abrasive materials, the contact surfaces can be coated with Tungsten Carbide, Ceramic, or high-performance polymers (PE, PTFE, PA) to significantly extend service life.

Internal surfaces are meticulously finished, with options ranging from a

machined finish ($<0.8 \mu\text{m Ra}$) to a mirror polish ($\text{Ra} \leq 0.4 \mu\text{m}$), which is critical for hygienic applications and to prevent material hang-up. The robust housing is designed to withstand the mechanical stresses of continuous operation and potential deflagration events.

KEY FEATURES

- ATEX & NFPA CERTIFIED: Fully compliant with ATEX Directive 2014/34/EU and NFPA 69, suitable for use in Zone 20, 21, and 22 classified dust and gas atmospheres. The valve is engineered to prevent internal explosions from propagating to upstream or downstream equipment.
- PRECISION MACHINED ROTOR: The rotor is CNC-machined to maintain a critical clearance of 0.1 - 0.2 mm with the housing. This tight tolerance is fundamental to minimizing air leakage and ensuring effective pressure sealing, which is crucial for system efficiency and preventing dust cloud formation.
- FLAMEPROOF & EXPLOSION-PRESSURE RESISTANT: The housing is constructed to withstand an internal explosion pressure of up to 16 bar, containing any ignition event without rupturing. This is a key safety feature for high-risk applications.
- VARIABLE DRIVE & METERING CAPABILITY: Equipped for Variable Frequency Drive (VFD) control, the valve offers precise volumetric metering and flow rate adjustment, allowing it to function not only as an airlock but also as a reliable

feeder for batching and continuous processes. PLC integration for automated control is standard.

- **RAPID MAINTENANCE ACCESS:** The quick-release design allows for rapid dismantling without specialized tools, significantly reducing downtime for cleaning, inspection, and maintenance. This is essential for processes requiring frequent product changeovers or stringent hygiene standards.

COMPLIANCE & SAFETY STANDARDS

The Doebritz ATEX rotary valve is engineered and certified to meet the most rigorous international industrial standards:

- **ATEX DIRECTIVE (2014/34/EU):** Certified for use in potentially explosive atmospheres. The valve is designed with multiple layers of protection, including:

- **Ingress Protection:** Prevents ignition sparks from escaping the housing.
 - **Temperature Control:** Surface temperatures are maintained below the auto-ignition temperature of the conveyed dust or gas.
 - **Static Electricity Management:** Designed and constructed to prevent the build-up of dangerous electrostatic charges.
- **NFPA 69 (Standard on Explosion Prevention Systems):** The valve meets the requirements for explosion isolation systems, preventing the transmission of a

deflagration from one part of a system to another.

- CE & TÜV CERTIFICATION: The product carries CE marking and has been independently assessed by TÜV, confirming its compliance with European health, safety, and environmental protection standards.
- HYGIENIC DESIGN: For food and pharmaceutical applications, the valve can be configured to meet GMP and FDA guidelines, with options for polished surfaces and CIP/SIP cleaning.

TECHNICAL SPECIFICATIONS

The following specifications are based on the Doebritz Model Series DBR-1237.
Custom configurations are available upon request.

Parameter	Specification
Model Series	DBR-1237
ATEX Certification	Zone 20, 21, 22 (Gas & Dust)
Maximum Explosion Pressure Resistance	16 bar
Rotor-to-Housing Clearance	0.1 - 0.2 mm
Material of Construction	SUS304, SUS316L, Carbon Steel (Painted/Ni-plated)
Surface Finish (Internal)	Ra ≤ 0.4 μm (Mirror) to < 0.8 μm

	(Machined)
Flange Standard	HG20592, DN50 to DN350 (Customizable)
Drive Configuration	Direct Drive, Chain Drive, VFD Control
Temperature Range	Ambient: -15°C to 60°C Material: 0°C to 120°C
Optional Cooling	Water Cooling Jacket
Cleaning Options	Manual, CIP, WIP
Seal Type	Lip Seal with Air Purge (Packing seal optional)
Standards & Certifications	CE, TÜV, ATEX, NFPA 69

