Doebritz SUS304 Star discharge valve - Official Technical Overview & Datasheet

PRODUCT IDENTIFICATION: DOEBRITZ SUS304 STAR DISCHARGE VALVE (QUICK-RELEASE ROTARY VALVE)

INTERNAL AIRLOCK TOPOLOGY

The Doebritz Star discharge valve operates as a precision-engineered rotary airlock feeder. The core assembly consists of a multi-vane rotor rotating concentrically within a machined housing. The unit is designed for gravity-fed, pressure- or vacuum-differential applications. The valve establishes a mechanical material seal: as the rotor pockets index from the inlet to the discharge flange, a minimal quantity of conveyed product creates a dynamic bed seal, substantially reducing system air short-circuit. This topology is critical for preserving pneumatic conveying line pressure or vacuum, enabling stable volumetric metering and preventing system pressure collapse.

WEAR DEFENSE MECHANISMS

The base metallurgy is SUS304 stainless steel, providing inherent resistance to atmospheric and mild process corrosion. For applications involving abrasive powders (e.g., mineral fillers, crystalline products), Doebritz offers engineered surface protection applied to the rotor, housing bore, and endplates. Specifiable options derived from the master specification include tungsten carbide coating, ceramic coating, or application of engineering polymers (PE, PTFE, PA). The standard rotor-to-housing clearance is strictly controlled between 0.1 mm and 0.2 mm. This tight clearance, combined with optional hardened surfaces, minimizes erosive wear pathways and preserves airlock efficiency over an extended service life. The external housing can be specified with carbon steel painted, sandblasted, or shot-blasted finishes; the internal product-contact zone is available in Ra ≤ 0.4/0.8/1.6 μm surface finishes, including mirror polish for sanitary regimes.

OPERATIONAL ADVANTAGES

- QUICK-RELEASE MAINTENANCE: Tool-less or minimal-tool disassembly permits rapid access to the rotor and housing bore. Supports manual cleaning, online CIP (Clean-in-Place), or WIP (Wash-in-Place) followed by manual inspection. Drastically reduces downtime and prevents cross-contamination between batches.

- PRECISION AIR SEALING: The 0.1–0.2 mm running clearance reduces air leakage across the rotor, lowering pneumatic conveying energy consumption and preserving differential pressure (positive or negative) across the valve.

- VERSATILE DUTY CYCLES: Compatible with low-pressure positive conveying (<0.4 bar), high-pressure positive (0.4–1 bar, VFD-controlled), low-pressure vacuum (> -0.4 bar), and high-pressure vacuum (-1 to -0.4 bar, VFD-controlled). Also suitable for pure gravity discharge with adjustable flow.

- METERING & AUTOMATION: Integrates with variable frequency drives (VFD) and PLC control systems. Supports continuous volumetric feeding, batch metering, recipe metering, and automated 配料 (automated batching).

- COMPLIANCE READY: Can be configured for non-hazardous or ATEX Zone 20/21/22 duty. The flameproof/explosion-proof variant features pressure rating 16 bar, explosion-proof motor, and HG20592 flanges. Hygienic execution meets Class W, 10W, 30W, Class C, and Class D cleanroom requirements.

SPECIFICATION MATRIX

Parameter	**Specification**
Capacity / Volume (liters/rev)	DN50 to DN350 (discrete sizing per Doebritz datasheet, refer to volumetric table)
Flange Standard	HG20592 (standard); custom on

	request
Drive Configuration	VFD-ready / PLC integration; direct or chain drive per assembly
Material (Base)	SUS304 (also available: SUS316L, carbon steel painted, carbon steel nickel-plated)
Rotor-Housing Clearance	0.1 – 0.2 mm
Pressure Rating (Explosion-Proof)	16 bar
Temperature Range (Ambient)	-15°C to 60°C
Temperature Range (Material)	0°C to 120°C
Optional Cooling	Water cooling jacket
Shaft Seal	Lip seal air-tight seal (pneumatic); packing seal optional
Cleanability	Manual after quick-release / Online CIP / Online WIP + manual inspection

REGULATORY COMPLIANCE

Doebritz SUS304 Star discharge valves carry CE marking, TÜV certification, and Statement certification, confirming conformity with EU and international industrial safety, hygiene, and explosion protection standards. For ATEX / NFPA environments, the documented 0.1–0.2 mm rotor-to-housing gap and 16 bar

pressure containment are design pillars for flame isolation. For food/pharma applications, the quick-release geometry and polished stainless steel surfaces support GMP and FDA-compliant cleaning protocols.