

The safe and reliable sealing solution
for powder conveying machines and devices

EagleBurgmann[®]
Rely on excellence

PowderAce L9UD mechanical seal for powdery media

Different machines and devices with rotating shafts are used to convey, feed and store fine-grained pulverized media. The contents, nature and characteristics of powder and granules are diverse – from organic ingredients for food production to plastics.

Just like pumps in other industrial areas, the most frequently occurring components in the numerous processes which process powder and granules are discharge, dosing and blow through rotary feeders. The manufacturer mostly seals the shafts of these and other machines, such as e.g. vacuum dryers, rotary valves or screw feeders, with conventional compression (gland) packings.

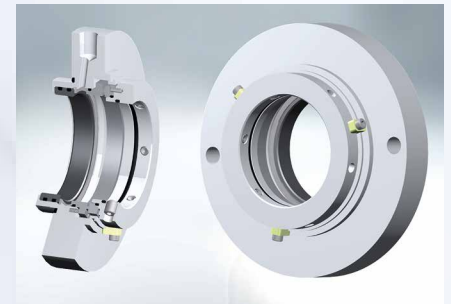
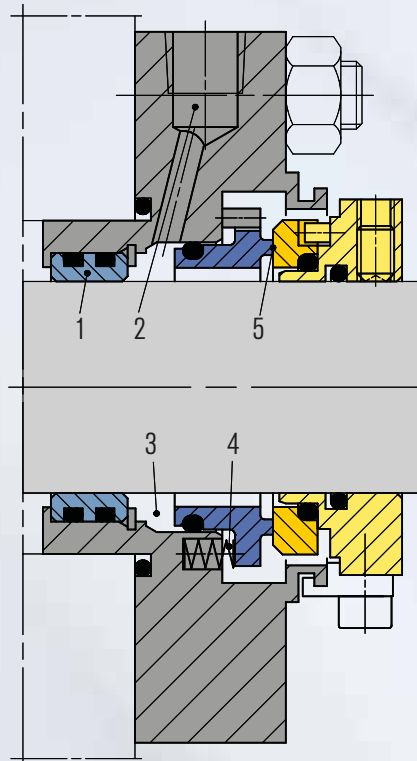


Discharging leaks when utilizing compression packings increases the risk of dust explosion

The challenge: Inappropriate sealing concepts

The frequently deployed compression packings in these applications represent a type of seal that is economical to procure. But there are often problems during operation which could prove to be very expensive for the plant operator:

- Increased leakage and product loss, with increased hazard of dust explosion as a result
- Increased maintenance expenditure to regularly retighten the stuffing box gland as required
- Shaft or shaft sleeve wear
- Shortened service life due to abrasive medium
- Increased power consumption due to friction



Cross section of an EagleBurgmann PowderAce

- 1 Double bearing floating bushing prevents medium penetration
- 2 Nitrogen gas purge
- 3 Generously configured clearances prevent powder accumulation
- 4 Springs and torque transmission face away from product
- 5 Specially treated sliding faces for dry running

Yellow parts rotating,
blue stationary;
gray: housing and shaft.

The solution: EagleBurgmann PowderAce L9UD

Using a modern, reliable and technically sophisticated mechanical seal of the type EagleBurgmann PowderAce will make the above stated problems a thing of the past.

The PowderAce is a compact, short-installation cartridge seal equipped with non-wearing face materials. Springs and torque transmission are arranged facing away from the product to omit clogging due to the conveyed medium.

The design of the seal prevents damage caused by running in to the shaft or shaft sleeve. The PowderAce can achieve minimal leaks, considerably reduced maintenance expenditure and significantly extended operating periods for the end user.

EagleBurgmann PowderAce L9UD at a glance

Operating range

Temperature: $t = \dots 100\text{ °C}$ (212 °F),
>100 °C: requires cooling jacket
Pressure: $p = 2\text{ bar}$ (29 PSI)
Sliding velocity: $v_g = 1\text{ m/s}$ (3 ft/s)

Materials

Seal face and seat: Specially treated silicon carbide
Secondary seals: Fluoroelastomer (FKM)
Metal parts: CrNiMo steel SS316, 1.4401 (G)

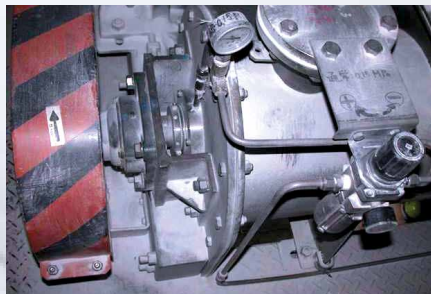
Example from practical experience: Successful retrofit of a rotary feeder

A rotary feeder in a Japanese company in the chemical industry conveys polypropylene granules for further processing. The shaft had been originally sealed with compression packings in combination with a nitrogen pressurized labyrinth seal.

The seal system required increased maintenance expenditure. Among other things, the stuffing box gland needed to be retightened every two weeks. After relocating the machine to the roof of the factory building to eliminate the dust explosion hazard, the complicated access had an additional negative impact. Also, the very short seal MTBF (Mean Time Between Failure) of just two to three months was unacceptable to the end user.

The solution: EagleBurgmann PowderAce L9UD

Measurable results were achieved directly after retrofitting the EagleBurgmann PowderAce. The availability of the system improved significantly, eliminating all of the end user's problems at once.



EagleBurgmann PowderAce installed in the rotary feeder of a Japanese end user



The PowderAce after 4 years of use: After a routine reworking of the sliding faces, the seal was reinstalled.

The result: No leakage, greatly increased operating period

There was no further leakage and the expenditures for maintenance, such as retightening the stuffing box gland, were omitted. The PowderAce ran for 4 years without complaint up to a scheduled inspection. The seal was serviced during that date. The sliding faces were also reworked they did not even need to be replaced.

The plant operator was so convinced and satisfied with the performance of the seal and the 4-year MTBM (Mean Time Between Maintenance) that the concept was also deployed at the sister company. Subsequently, all of the eligible machines were retrofitted to mechanical seals. In addition, the user specified the EagleBurgmann PowderAce with the OEM of the rotary feeders and prescribed it for the coming orders.

Operating conditions

Shaft diameter: $d = 90 \text{ mm (3.54")}$
Temperature: $t = +80 \text{ °C ... } +95 \text{ °C}$
($+176 \text{ °F ... } +203 \text{ °F}$)
Pressure: $p = 0.8 \text{ bar (11.6 PSI)}$
Speed: $n = 18.3 \text{ min}^{-1}$
Medium: Polypropylene granule

Do you have seal applications in powder media? EagleBurgmann also offers solutions for extreme operating conditions, alternative seal materials and special adaptations for different machines and applications. Why not give us a call?

Recommended applications

- Chemical industry
- Petrochemical industry
- Pharmaceutical industry
- Food industry
- Rubber processing
- Rotary valves
- Rotary / screw feeders
- Vacuum dryers
- Powdery media

EagleBurgmann Japan Co., Ltd.

1-12-15, Shiba-Daimon, Minato-ku,
Tokyo, 105-8587

Japan

Phone: +81 (0)33432 4771

Fax: +81(0)33438 2370

info@jp.eagleburgmann.com

eagleburgmann.jp