Abrasion-resistant Ceramic Rotary Valve
Rugged and reliable

Our abrasion-resistant rotary valve helps to maximize the performance and dependability of a pneumatic conveying system by combining many essential features in a single unit. The rotary valve’s ceramic lining and tungsten carbide coatings provide a long operating life with minimal maintenance requirements. It reduces downtime and maintenance costs, and has three to four times longer life compared to other designs.

The exceptional abrasion resistance is due to a 2.54mm (0.100 inch) thick ceramic bore and 2.54mm (0.100 inch) thick tungsten carbide rotor vane and shroud tips, and tungsten carbide throat protection.

Additional design details include:
- Cast body and end plates
- Heavy-duty fabricated 8-vane, closed-end rotor
- Air purge seal connections
- Air gap between seals and bearings
- Outboard sealed ball bearings
- Maximum operating temperature: 175°C (350°F)
- Maximum 15 psi differential pressure

The heavy-duty rotary valve can handle abrasive materials in both pressure and vacuum pneumatic conveying systems. The valve can feed material at up to 0.26 cubic meters (9.1 cubic feet) per revolution, handle differential pressures up to 15 psi, and operate in temperatures up to 175°C (350°F).

Exceptional abrasion-resistance on materials such as:
- Alumina
- Cement
- Coal
- Coke
- Copper concentrate
- Calcium carbonate
- Diatomaceous earth
- Feldspar
- Fly ash
- Gold ore
- Kaolin clay
- Lignite
- Raw limestone
- Rutile ore
- Sand
- and more
Case history #1 - a limestone producer in southwest USA
When a competitor’s hard-coated feeder failed after 3 - 6 months, it was replaced with FLSmidth’s 300 metric ceramic feeder.

Application: Airlock discharging limestone, 85 lb/cf from a screw conveyor to a 152 mm (6 inch) pneumatic convey system at a rate of 20 stph against a differential pressure of 8 psig.

Results: FLSmidth’s airlock has been operating successfully for over 4 years without any clearance degradation or loss of operating rate. The superior hard surfaces of ceramic tile and tungsten carbide ensure long operating life.

Case history #2 - a water treatment plant in midwest USA
When a competitor’s abrasion resistant feeder with hard shoe and rotor failed after 3 - 4 months it was replaced with FLSmidth’s 300 metric ceramic feeder.

Application: Airlock discharging pebble lime, 55 lb/cf from a silo discharge to a 152 mm (6 inch) pneumatic convey system at a rate of 18 stph against a differential pressure of 10 psig.

Results: FLSmidth’s airlock has been operating successfully for over 4 years without any clearance degradation or loss of operating rate. The FLSmidth feeder has had zero downtime while operating 18 hrs/day.

### Typical Application

<table>
<thead>
<tr>
<th>Size</th>
<th>Displacement</th>
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<tbody>
<tr>
<td>200mm (8 inch)</td>
<td>0.15 cu.ft./rev.</td>
</tr>
<tr>
<td>255mm (10 inch)</td>
<td>0.39 cu.ft./rev.</td>
</tr>
<tr>
<td>150mm (6 inch)</td>
<td>0.55 cu.ft./rev.</td>
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<tr>
<td>300mm (12 inch)</td>
<td>1.09 cu.ft./rev.</td>
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<tr>
<td>700mm (28 inch)</td>
<td>2.60 cu.ft./rev.</td>
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<tr>
<td>405x685mm (16x27 inch)</td>
<td>5.10 cu.ft./rev.</td>
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<tr>
<td>2500mm (98 inch)</td>
<td>9.08 cu.ft./rev.</td>
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Case in point:
Long life, minimal maintenance

Excerpt from “Rugged, reliable rotary valves seal the deal” - Powder & Bulk Engineering Magazine, Dec 2010

A coal-fired power plant solves a feeding problem by installing ceramic-lined rotary valves

AC Power operates a coal-fired power plant near Colver, PA. It uses a dilute-phase pressure pneumatic conveying system to inject pulverized limestone into the furnace. This injection system includes six rotary valves. The plant found that the limestone abraded and damaged the rotary valves, necessitating their frequent replacement. The plant needed to find more robust and reliable rotary valves.

Rick Fleegle, AC Power’s maintenance manager, contacted two rotary valve suppliers to test their valves. One supplier’s valves won hands down, says Fleegle.

“After a year of testing, we found that the first supplier’s rotary valves vastly outperformed the other supplier’s valve in price, reliability, and ease of maintenance. After completing the test, we replaced the airlocks with the first supplier’s valves.” This supplier, FLSmidth, Bethlehem, Pa., supplies equipment, services, and complete production lines to the power, cement, mineral, and other industries.

“The new valves provide a more consistent and reliable feedrate to the furnace,” says Fleegle. “Because of this, we’ve reduced our limestone consumption and housekeeping has been a lot easier and less time-consuming. Based on replacement costs alone, the return on investment for the new rotary valves was a little more than a year.”

- Rick Fleegle, Maintenance Manager, A C Power Inc, Colver, Pennsylvania

Original valves: The limestone abraded and damaged the internal components of the old rotary airlocks and fugitive dust escaped into the plant.

Replacement valves: FLSmidth’s rotary valve’s ceramic-lined housing and tungsten-carbide-coated components have allowed it to feed 120,000 tons of limestone per year for more than 3 years without showing significant signs of wear.