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ANDANTEX

OPERATING & MAINTENANCE

INSTRUCTIONS FOR

CONVEYING DIVERTER VALVES

BULK HANDLING SPECIALISTS

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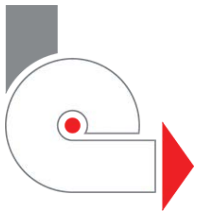

CONVEYING DIVERTER VALVES

OPERATING & MAINTENANCE INSTRUCTIONS
CONVEYING DIVERTER VALVES

Indicates relevance to Manual operation

Indicates relevance to Pneumatic operation

Indicates relevance to ATEX applications

Description

Conveying Diverter Valves are used in pneumatic conveying to re-route non-abrasive powders, pellets or granules from one discharge point to another.

The Rotolok Diverter consists of a robust cast metal body manufactured in two sections split at a centre flange for ease of access and assembly. The inlet section is internally cone shaped and the diverter plate and seal, being a true parabola, fully contacts the body and forms a complete seal without the use of ledges.

The unit is suitable for both manual and pneumatic operation as standard, electric actuators can be fitted in preference and constitute specials.

An operating lever with handle is fixed to the drive shaft.

An air cylinder, complete with solenoid valve and piping, actuates the valve. Limit switches are fitted and positioned to indicate open/closed conditions.

Flow restrictors are fitted to the cylinder airlines and set to restrict the flap operation speed to less than 1m/s. **The restrictor settings should not be altered**. The flap seal clamp plate fixings will be secured in their tapped holes with Loctite 270 (or equivalent).

For all actuations the metal diverter plate and metal clamp sandwich a rubber seal, polyurethane as standard with food quality neoprene, Viton or EPDM being offered as specials for applications such as the food industry or high temperature. The diverter plate does not contact the body while travelling from one position to the other so prolonging the life of the seal and increasing the sealing pressure and seal effect.

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Construction

Body:	Cast Aluminium LM4 or Cast Iron as standard. Alternative Cast Stainless Steel Grade 316.
Flap Plate and Shaft:	Mild Steel (Cast Iron body) or Stainless Steel Grade 304 (Aluminium body)
Diverter Seal * :	70 Shore Polyurethane as standard. Alternatives Viton, Neoprene, Rubber, other to suit application.
Actuation:	Manual lever or VDMA Air Cylinder with five port two way single Solenoid spring return valve.
Limit Switches:	Mechanical roller. Alternatives to suit application.
Earthing:	Threaded stud with nuts and anti-rotation washer.

*** The diverter seal material must have a surface resistivity less than 10^9 ohms for Atex applications.**

Actuation

A simple manual handle is taper fitted directly to the drive shaft and is used to move the Flap from one position to the other. A spring mechanism with over-centre toggle action exerts enough force to hold the flap in either position. Limit switches are not fitted as standard with manual actuation but can be specified.

Fitted with a single solenoid spring return valve with nylon piping feeding a double acting cylinder, front clevis/rear trunnion mounted type. All internal piping from the solenoid to the cylinder is supplied. The client needs to bring the air supply only to the solenoid valve. Limit switches are fitted as standard to indicate divert direction. The solenoid valve includes a manual override for testing and commissioning purposes.

Operation

It is important to ensure that the valve internals are free from product and any tramp materials before first operation and any subsequent reset or maintenance.

The operating lever is moved from side to side, either manually or by air cylinder, which moves the internal flap and diverter seal to block off one or other of the valve outlet ports. Product is then conveyed from the inlet to the open outlet port.

The air cylinder needs a supply of clean, dry air at 80 psi.

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Maintenance

Ensure the valve is completely empty of product prior to carrying out any maintenance. Isolate the valve electrically and pneumatically prior to carrying out any maintenance.

The valve is basically maintenance free as the only moving internal parts are the shafts, flap plate and diverter seal. The valve usage, product handled, actuation time and frequency will obviously affect the preventative maintenance schedule.

As a minimum it is recommended that the diverter seal, cone internals and the shaft o-ring seals should be checked as often as possible for signs of general wear. It is preferable, and usually easier, to remove the valve from the system and separate the two body parts. If it is possible, just remove the inlet section and flap, taking care not to damage any actuation components. Remove the scroll pin through the pneumatic lever arm boss before taking the arm off the shaft.

The diverter seal can be removed and replaced by releasing the countersunk head screws sandwiching the clamp plate to the flap plate welded to the shaft. On reassembly it is important that the screws are tightened adequately and suitable threadlock applied in any ATEX environment. Dress the sides of the new flap seal with a hand sander if required to maximise the seal contact on inlet cone. Ensure the flap can be operated by twisting the shaft by hand before reconnecting the actuation. Leaving the seal too wide by the shaft is the most common cause of stiffness as there is less flexibility in that area, spare seals are intentionally supplied oversize to allow for casting variations.

Check the cylinder movement is smooth at twelve monthly intervals, more frequently if the atmosphere is dusty or at an elevated temperature. Check at six monthly intervals that the actuation arm strikes the limit switches to ensure that the switches are not being overloaded by over travel.

IMPORTANT NOTE
Older models of diverter may not have the improved seal design with twin o-rings each side and slots machined in the shaft. Spare flap seals of the new design can still be fitted to old model diverters, but the stepped edge will need to be dressed flat to sit flush on the shaft surface when the clamp holes line up, and only two shaft o-rings are required.

Recommended Spares

When spare parts are required, always quote the valve serial number.

Flap Seal
Flap Plate, Clamp Plate and Seal Assembly
Shaft O-rings and Lateral O-ring Cord
Limit Switches

Handling

Lift valves using straps secured around the body castings of the unit. Avoid lifting from the shaft or actuation components. If fork trucks are used to move the valves, take care to prevent damage to the fabricated parts. Improper handling can cause distortion, misalignment and breakage, particularly on flanges.

Most valves, apart from the smaller manual units, will require the use of auxiliary lifting devices which must be operated in accordance with local health and safety regulations and site requirements.

Safety

In addition to standard safety regulations, the operator and maintenance personnel should be instructed to observe the following safety rules with pneumatically actuated diverter valves.

1. Ensure the valve cannot be operated remotely before removing any guards or performing any maintenance.

2. Ensure adequate guarding of all exposed moving parts.

3. Isolate the valve electrically and pneumatically prior to any maintenance.

4. Do not put body parts or tools inside the valve while in operation.

5. Ensure a continuous and suitable electrical earth connection is fitted to the threaded stud provided and tested for grounding.

Ignoring the safety rules could result in serious injury.

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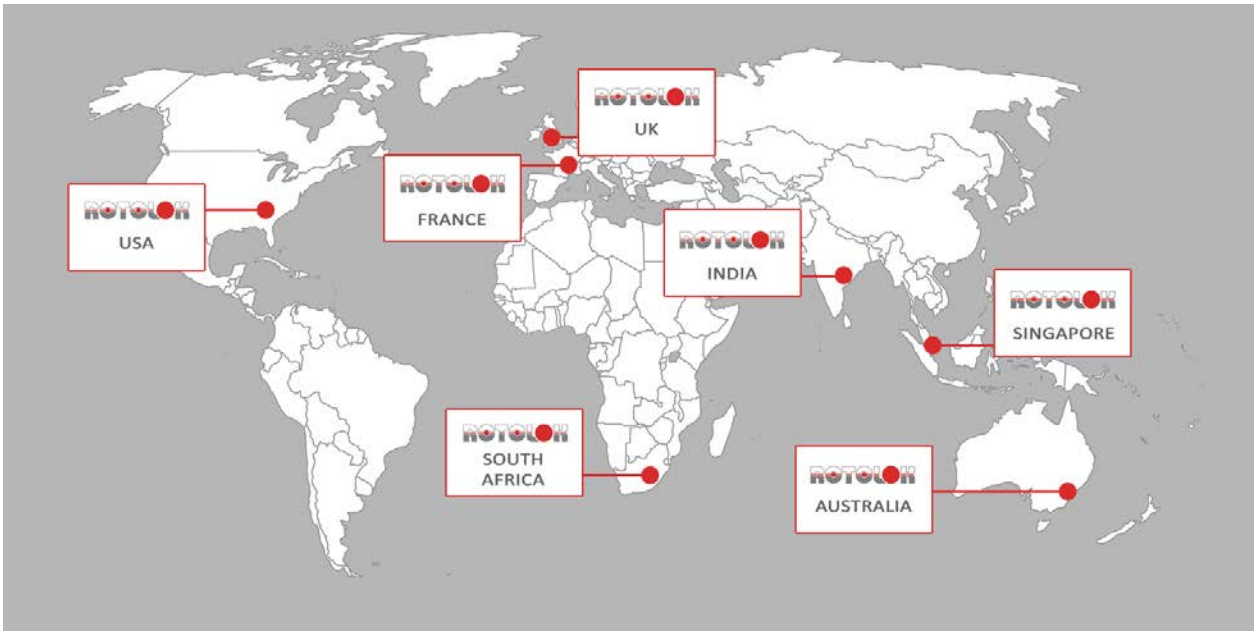

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