



OPERATING & MAINTENANCE INSTRUCTIONS **WEIGH VALVES**

Indicates relevance to Manual operation

Indicates relevance to Pneumatic operation

Description

Weigh Diverter Valves are a natural development from the Conveying Diverter used in pneumatic conveying to route non-abrasive powders, pellets or granules to a hopper or bulk bin which is process weighed.

The Rotolok Weigh Valve consists of a robust cast metal body manufactured in three sections split at two central flanges for ease of access and assembly. The inlet sections are internally cone shaped and the diverter plates and seals, being true parabolas, fully contact the body and form a complete seal without the use of ledges.

The unit is primarily designed for pneumatic operation as standard, electric actuators or manual handles can be fitted in preference and constitutes specials.

An operating lever with handle is fixed to one shaft and cross linked to the other.

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

For all actuations the metal diverter plate and metal clamp on each flap assembly 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 plates do 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.

Construction

Body: Cast Aluminium LM4 or Cast Iron as standard.
Alternative Cast Stainless Steel Grade 316.

Flap Plates and Shafts: Mild Steel (Cast Iron body) or
Stainless Steel Grade 304 (Aluminium body)

Diverter Seals *: 70 Shore Polyurethane as standard.
Alternatives Viton, Neoprene, Rubber, other to suit application.

Actuation: VDMA Air Cylinder with five port two way
single Solenoid spring return valve or
Manual lever.

Limit Switches: Mechanical roller.
Alternatives to suit application.



Actuation

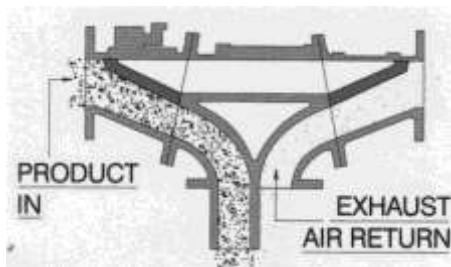
- A simple manual handle is taper fitted directly to one shaft and is used to move the Flap from one position to the other. An adjustable cross link ensures both flaps are moved at the same time. A spring mechanism with over-centre toggle action exerts enough force to hold the flaps in either position. 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. The lever arms have an adjustable cross link ensuring both flaps are moved at the same time. 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

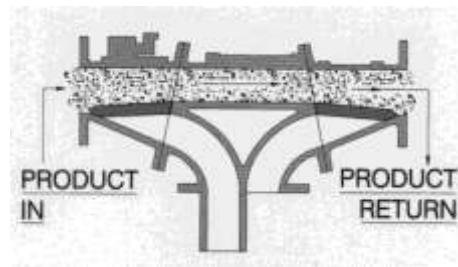
It is important to ensure that the valve internals are free from product and any tramp materials before first operation and any subsequent reset or maintenance.

The operating lever is moved from side to side, either manually or by air cylinder, which moves the internal flaps and diverter seals to direct the product flow either into the bin/hopper or allowing it to continue straight on to alternative weigh stations or conveyed back to its holding hopper.

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



Fill



Bypass

Standard configuration sets the flaps to Fill mode when the actuator is fully retracted and Bypass mode when extended.





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 plates and diverter seals. 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 seals, 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 three body parts. If it is possible, just remove each inlet section and flap in turn, 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. 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.

If the flap and shaft has been replaced it is important to ensure the actuator, levers and flaps are in coordinated positions before fixing the levers to the shafts. ie. With the pneumatic actuator extended, both flaps need to be in the bypass position.

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 weigh valve 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 weigh valves, 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 shafts 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 and feed/vent spout.

Most valves, apart from the smallest 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.

Ignoring the safety rules could result in serious injury.

