Operating and Maintenance Instructions

SINGLE SCALE DIVENTOR VALVE

Including

ATEX Zoned Areas

Britton Procol Valves
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GENERAL

Britton Procol Single Scale Valves are designed to control the direction of dry free flowing powders and granules in solids handling systems operating under pressure or vacuum conditions.

The valves are precision machined with close manufacturing tolerances and are supplied for use in a particular application. The valve should not be used for other applications without reference to our technical department.

Always refer to the valve serial number if further information or spare parts are required.

HEALTH AND SAFETY NOTES

Britton Procol Single Scale Valves are designed to divert the flow of dry, non-abrasive powders and granules in pneumatic conveying systems operating under positive pressure up to 1 bar g (15psig) or vacuum up to -0.3 bar g (-4.5psig).
Maximum pressure differential against which the vane will operate is 0.3 bar g (4.5psig).
Maximum operating temperature for standard Diverters: 90°C.

In the interest of Health and Safety at work it is essential that, before installation, all aspects relating to installation, mounting position, support and all other related matters are thoroughly considered. Technical details relating to this equipment are either shown in the relevant leaflets or are freely available on demand from our Technical Department. If further advice is required, do not hesitate to contact us.

Only qualified or approved personnel should undertake the installation, commissioning and maintenance of Britton Procol Valves.

Health and Safety aspects cannot be over-emphasised. The following notes highlight the major precautionary steps which must be adhered to.

Check list before running:

1) Observe fully all valve and actuator operating instructions and safety leaflets provided.
2) Always isolate and lock off the electrical and pneumatic power supplies before attempting any maintenance or other work on the valve.
3) Ensure that the conveying pipes or other equipment protects the valve inlet and outlets so that it is impossible for operatives or maintenance personnel to insert fingers, hands or any part of their bodies into the valve. Where the valve outlet is not connected to conveying pipes a mesh grille must be securely fastened over the exposed valve connection. The mesh must be small enough to prevent the insertion of fingers into the valve.

RESIDUAL HAZARDS

Single Scale Valves are for use in fully enclosed systems with feed and discharge equipment connected to the valve inlet and outlet ports to prevent access to the moving vane. The valve must not be used if either port remains uncovered.

Wear in the shaft seals can allow material to leak along the shaft.

Product may be retained within the valve when the vane or endplates are removed. Provision must be made for safely removing this product.

NOISE

Under normal circumstances the valve generates little noise. If the valve becomes noisy it indicates product build up, mechanical failure or trapped particles within the valve.

Excessive noise is usually caused by:

a) Product build up in the valve bore.
b) Product trapped between the vane and the endplate.
c) Bearing or other mechanical failure

HANDLING

Keep the Diverter in its packaging until ready for installation. It may be lifted using suitable handling equipment by positioning slings around the connecting pipes. DO NOT lift using the actuator or actuator mounting bracket.

STANDARD SPECIFICATION

Britton Procol single scale valves are designed to metric standards and all fasteners or threads are metric.

Body: Cast iron.
Precision machined to ensure a tight clearance.

Connecting Tubes: Bolt on connecting tubes to suit NB or OD pipes. Plain ends for "Morris" type couplings or flanged.

Vane Assembly: Precision machined cast iron vane block with a mild steel shaft.

Shaft Bearings: Sealed ball bearings in cast iron housings out-rigged from the endplates.

Shaft Seals: Nitrile rubber lip seal grease filled.

Actuator: Kinetrol quarter turn double acting pneumatic actuator.
Electric quarter turn actuators.
Hand lever with spring loaded locking peg.

Controls: Solenoid operated spring return air control valve direct mounted via a NAMUR interface block to the Kinetrol actuator.
Vane position indicator limit switches.

Finish: Air-drying semi-gloss Blue RAL5022 or customer specified colour.

SERVICES

Compressed Air
Max working pressure – 100 psi (7 Bar)
Max overload pressure – 150 psi (10 Bar)

Electricity
Solenoid coils (air valves) – see rating plate on solenoid coil.
Indicator switches – Max voltage 250v AC/DC (see also separate sheet)

Max working pressure for Diverter Valve 15 psig (1 bar g)
Max overload pressure for Diverter Valve 30 psig (2 bar g)

All units are works tested prior to dispatch and are ready for installation.

INSTALLATION

The Single Vane Scale valves are supplied with plain tube or flanged pipe connections. They may be installed in an upright position flange mounted at the base to the silo/hopper and the conveying pipes connected to the valve using slip-on pipe couplings or mating flanges.

An oil free air supply is required, filtered and regulated to a pressure of between 60 psig (4 bar g) and 100 psig (7 bar g). This should be connected to the inlet port on the valve sub-base and a porous silencer/filter into the sub-base exhaust port.

The indicator limit switches and the air control solenoid should be wired by competent personnel in accordance with the control system designer's instructions.

The valve body is provided with four tapped holes on the opposite side to the actuator for supporting the valve. Brackets or other means of mounting the valve should only be attached via these holes. Do not support the valve from the connecting tubes as this may tend to loosen the tubes in the cast body. Similarly, do not support the conveying tubes from the valve. Always ensure that tube supports are adjacent to the valve.

START-UP PROCEDURE

Before material is allowed through the valve, operate it several times and check that the vane moves freely.

Check the pneumatic fittings for air leakages and rectify as required.

Check that the indicator limit switches operate correctly and adjust the switch operating cams if necessary.

If the above tests are carried out and the valve operates satisfactorily, it is ready for production use.

GENERAL MAINTENANCE

Single scale valves require no maintenance apart from planned overhauls. The intervals between such routine overhauls will vary with the product being handled and total operating time. To a large degree the rate of wear for a particular application would be assessed by practical experience.

VANE REPLACEMENT

It is recommended that the valve is returned to Britton Procol Valves for such maintenance rework.

FAULT FINDING

1. **INDICATOR LIGHTS DO NOT OPERATE**
   - i) Check limit switch operating cam. Adjust as necessary.
   - ii) Check the wiring in both the switch housing and the control cabinet. Rectify as required.
   - iii) Check the limit switches for correct operation. Replace as required.

2. **ACTUATOR DOES NOT OPERATE**
   - i) Check air supply pressure (4.5 bar minimum : 7 bar maximum).
   - ii) Check the electrical supply to the air valve solenoid.
   - iii) Check the air valve for correct operation. Replace as necessary.
   - iv) Check the actuator is not already at the end of its travel in the direction the vane is to move i.e. if the vane has to move anti-clockwise, check by operating the vane manually (with power and air supply isolated) that the vane will travel anti-clockwise. If the actuator is at the end of travel, remove it from the diverter, manually operate it until the female square in the adaptor matches the square on the vane shaft and refit the actuator to the diverter.
   - v) Inspect the actuator vane seals and replace as required.

The above checks are a general guide to faults that may occur with a conveying diverter. If further information or technical advice is required, please contact our Technical Department.

RECOMMENDED SPARES

1off Bearing Kit
2 off Nitrile seal kits.
1off Actuator Seal Kit
1off Limit Switch Assembly

Optional Spares

1off Actuator/Switch Assembly
1off Indicator Switch Assembly
1off Air Valve Complete

ATEX REGULATIONS

Where Single Scale Valves are installed in potentially explosive atmospheres they will be certified for use in Zone 21 or Zone 22 areas. The installer must ensure that the valves are adequately earthed to prevent static discharges caused by non-conductive media.