



Operating and Maintenance Instructions

DOUBLE FLAP VALVES

Including

ATEX Zoned Areas

Britton Procol Valves

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GENERAL

Britton Procol Double Flap Valves are designed to continuously discharge abrasive, lumpy or smearing products which would stall or rapidly wear Rotary Valves. They may be used to discharge materials from dust collectors and cyclones or, when fitted with a pressure equalizing valve, to feed pneumatic conveying systems.

Double Flap Valves have two sealing doors which alternately open and close to allow material to pass through the valve. Because only one door is open at any time, a seal is maintained against the pressure differential across the valve. The operation of the sealing doors is mechanically synchronized from a heavy duty geared motor by a chain and linkage system.

Where Double Flap Valves are used to feed a pneumatic conveying system, a pressure relief valve is incorporated into the design. This valve is synchronized to prevent the sealing doors from operating against a pressure differential by equalizing the pressure across the doors before they open.

Material flow to Double Flap Valves must be regulated to a controlled rate which does not exceed the maximum rated capacity of the selected valve. This type of valve cannot be used as a feeder beneath a head of material.

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

HEALTH & SAFETY

This partly completed machine requires to be installed with corresponding equipment to enable correct operation and must not be run as a standalone piece of machinery and must be properly installed and guarded by a suitably qualified and experienced personnel only.

The valve contains moving parts which can cause injuries. It is the responsibility of the system installer and user to ensure the safe installation and operation of the valve. The valve must be adequately guarded in compliance with local Health and Safety Regulations. The motor must be isolated before any maintenance or adjustment is carried out. Do not operate the valve with the link guard or access hatches removed. Only

competent persons must be allowed to maintain the valve.

It is the purchaser's responsibility to ensure that these health and safety instructions are passed to those persons deemed to be at risk.

RESIDUAL HAZARDS

Double Flap Valves are for use in fully enclosed systems with ancillary equipment connected to the inlet and outlet ports to prevent access to the moving doors. The valve must not be used if either ports or access hatch remain uncovered.

The door access hatch covers and the link guard should only be removed after the motor supply is isolated and locked off.

Wear in the shaft gland seals can allow material to leak along the shaft and there may be product in the seal housing when the valve is disassembled for cleaning or maintenance – provision for dealing with this leakage must be made.

Product may be retained within the valve when the access hatches 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.

HANDLING

The valve should remain in its packaging until ready for installation in the system. It may be moved using equipment fit for purpose i.e. pallet trucks or fork lift trucks.

Before installation, remove all packaging. The valve may be lifted into position by attaching eye bolts, slings or forks under or around the top flange. Do not lift using the link guard, door shafts or geared motor.

INSTALLATION

Check the valve for external damage and install the valve with the inlet flange uppermost i.e. the geared motor will be on the left hand side when viewed from the link guard and decals will be the right way up.

The mating should be flat and a soft gasket or mastic should be inserted between the valve and the mating flange. This will ensure a dust and weather-tight seal and will help to prevent valve body distortion. Tighten the fixing bolts evenly to prevent flange distortion.

If fitted to the valve, connect air purge ports to a clean and dry air supply regulated to a pressure of 0.33 bar g (5 psi) above the maximum pressure within the valve.

Geared motors are normally supplied grease packed or oil filled and do not require lubrication. However, every unit must be checked and filled with the appropriate grade of oil or grease as stated in the manufacturer's instructions.

Connect the motor to a suitable electrical supply as shown on the motor plate.

Before running the valve, the approach equipment should be thoroughly cleaned and free from foreign matter. Serious damage may be caused to the valve by foreign objects if they are allowed to enter it.

ATEX REGULATIONS

Where Double Flap 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.

START-UP PROCEDURE

Check the following:

- 1) All safety equipment i.e. guards, cut-out flaps, inspection flaps and lids are closed, and that the valve is empty.
- 2) Where the valve is part of a material handling system, a check should be made

to ensure that the valve controls are correctly interlocked with those of other units in the system.

- 3) Check for correct rotation of the valve by reference to the direction of the rotation arrow on the link guard.
- 4) With all guards securely fitted, run the valve for 45 minutes to bed-in the packing gland shaft seals. Lightly tighten the seal follower adjusting nuts.
- 5) Isolate the power and check all retaining bolts for tightness.

If the above are satisfactory, the valve is ready to use.

INITIAL MAINTENANCE

BEFORE WORKING ON THE VALVE, ISOLATE AND LOCK-OFF THE ELECTRIC SUPPLY

After the first 100 hours of operation, the following should be checked and adjusted as necessary:

- 1) Packing Gland Shaft Seals: Inspect for signs of product leakage. Tighten the follower as required.
- 2) Drive Linkage: Remove the link guard cover and check the chain tension, Taperlock Bush retaining screws in the levers and the chain alignment. Adjust as necessary.
- 3) Geared Motor: Inspect the geared motor for lubricant leaks. If a leak occurs at the motor/gear interface, it may be possible to stop it by tightening the flange bolts. If this does not stop the leak, the geared motor should be removed from the valve and the relevant joint re-sealed using a commercial gasket compound.
- 4) Retaining Bolts: Check all retaining bolts for tightness and adjust as necessary.

GENERAL MAINTENANCE

Britton Procol Valves recommend the following maintenance, which should be carried out by skilled and suitably qualified personnel.

Shaft Seals

Check and adjust the shaft seals every month or more frequently if leakage from the seals occurs between inspections. Adjust the shaft seals with the power off, taking care to pull up the gland follower evenly. Do not over-tighten. If normal running adjustment is insufficient to prevent product leakage or gives rise to continual localised overheating, the gland packing should be completely renewed.

The importance of gland maintenance cannot be overstressed, since a leak-proof gland prevents the escape of dust particles and consequently wear due to erosion is largely eliminated.

Door Pull Chains

Check lower door chain tensioner every 3 months. Replace if it becomes worn or frayed.

Door Mounting Springs

The sealing doors are mounted on disc springs to allow the doors to “float” and fully seal against the hopper outlets. The M20 nyloc nut which holds the doors to the support levers should be checked for tightness every 3 months. Care must be taken not to over-tighten these nuts. The doors must float in order to maintain a tight seal.

Bearings

Standard bearings are grease-packed, sealed for life and maintenance-free. They should be checked every 3 months and replaced as required.

Geared Motors

Maintain the geared motor as described in the manufacturer’s instructions.

The sealing doors on Britton Procol Double Flap Valves are held in the closed positions by coiled watch-type springs. These are retained in yellow housings mounted on the non-drive side bearing housings.

Before attempting to remove the door return spring assembly, contact our technical department for instructions.

Injury may result if attempts are made to remove the spring units without proper safety procedures.

FAULT FINDING CHECKS

1. Motor fails to start.

Check:

- a) Electrical supply (phase and voltage)
- b) All isolators, fuses, overloads and re-set switches.
- c) Is motor burnt out? Check motor windings.
- d) Is gear unit seized?
- e) Valve has not jammed

2. Valve motor functions but valve fails to deliver material.

Check:

- a) Material is being fed into valve.
- b) Blockages are occurring inside equipment upstream of the valve.
- c) Non-drive end of the door shaft is moving – this indicates that the door shaft is not broken.

3. Valve produces excessive noise.

Check:

- a) Foreign bodies inside of valve.
- b) Bearings worn or in need of lubrication.
- c) Gear box malfunctioning.
- d) Bearings malfunctioning.

4. Valve produces excessive vibration.

Check:

- a) Faulty components i.e. sealing broken away from door arm.
- b) Material build up in valve.
- c) Worn bearings.

5. Bearing failure.

Check:

- a) Seal failure allowing material into bearings.

VALVE SPARES

2off SCH20 Bearings

a) RECOMMENDED SPARES:

1off Set (12 coils) Gland Packing
2off NP35 Bearings
2off 1135-35 Bearing Inserts

b) OPTIONAL SPARES:

1off Geared Motor
1off Sealing Door Assembly
1off Door Return Spring Assembly