



Installation & Operation Instructions

BulkTite™ powder and bulk solids seal

1 Description of Use

The BulkTite seal is a product sealing solution using a positive gas purge to contain product in the equipment and/or prevent contamination ingress.

2 Hazard Summary

To ensure safe and reliable operation of this seal follow all installation and operation instructions. Failure to comply with these instructions may result in frictional wear of the seal components and/or product leakage.

3 Preparations for Installation

- 3.1 Check seal assembly drawing for any special instructions, modifications to the equipment, adapters or sleeves for seal installation and act accordingly.
- 3.2 Remove existing seals.
- 3.3 Inspect surfaces under gaskets to ensure they are free from pits or scratches. Break all sharp corners on shaft steps, threads, reliefs, shoulders, key ways, etc. over which gasket(s) must pass and/or seal against.
- 3.4 Thoroughly clean shaft and housing to remove oil and debris.
- 3.5 Shaft and housing surface must be 0.8 micrometer (32 µin) Ra or better.
- 3.6 Shaft tolerance +/- 0.051 mm (0.002 inch).
- 3.7 Mounting surface flatness to be 0.05 mm (0.002 inch) or better.
- 3.8 Seal mounting surface squareness to the centerline of the shaft should be within the values shown in Table 1. See Figure 1.

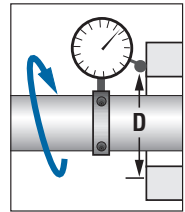


Figure 1

Maximum Squareness Allowed (TIR)

Table 1

Shaft Diameter (inch)	Maximum Shaft Angle	Indicator Reading (TIR, inch)							
		Indicator Contact Diameter, D (inch)							
		3	4	5	6	7	8	9	10
1	2°	0.104	0.139	0.174	0.209	0.244	0.279	0.314	0.349
2	2°	0.104	0.139	0.174	0.209	0.244	0.279	0.314	0.349
3	1°		0.069	0.087	0.104	0.122	0.139	0.157	0.174
4	1°			0.087	0.104	0.122	0.139	0.157	0.174
5	0.5°				0.052	0.061	0.069	0.078	0.087
6	0.5°					0.061	0.069	0.078	0.087

4 Installation

- 4.1 Do not disassemble seal, it is designed to be installed as an assembly.
- 4.2 Apply gas to the seal during the installation process to prevent internal damage at a minimum of 4 bar (60 psi) with a minimum flow rate of 7 lpm (0.25 cfm).
- 4.3 Lightly lubricate O-ring (item 76 - shipped unassembled) with lubricant provided; install in rotor; remove any lubricant from rotor face. Lightly lubricate shaft.
- 4.4 Install on the shaft with the gasket towards the mounting surface and slide the seal down the shaft into approximate final position.
- 4.5 Leaving the seal loose on the shaft, complete the bearing assembly locating the shaft into final position.
- 4.6 Install seal against the mounting surface concentric to the shaft. Position with vent pointed in the downward position between 4 and 8 O'clock.
- 4.7 Do not over tighten bolts when securing seal. Tighten to torque values for 304 SS cap screws:
 - #8-32 bolts to 20 in-lb
 - #10-24 bolts to 24 in-lb
 - 1/4-20 bolts to 75 in-lb
- 4.8 Plumb final gas line to both gland fittings.
- 4.9 Remove nylon centering screws and replace with plug screws shown in Figure 2. No thread sealant is required.
- 4.10 Do not operate equipment or introduce process without gas pressure supplied to the seal.



Figure 2

5 Standard Operation

- 5.1 Maximum radial runout: 6.35 mm (0.250 inch) TIR.
- 5.2 Maximum seal mounting surface temperature: 93°C (200°F).
- 5.3 For product pressures < 1 bar (15 psi) gas pressure should be regulated to a minimum of 4 bar (60 psi). See Table 2 for estimated gas consumption rate. For product pressure > 1 bar (15 psi) consult Engineering.
- 5.4 Maintain gas to the seal at all times while shaft is spinning or product is in the equipment.

Estimated Gas Consumption

Seal Size	LPM (SCFM) +/- 25% estimated gas consumption at 4 bar (60 psi) gas pressure	
1.00"	4.8	(0.17)
2.00"	6.5	(0.23)
3.00"	7.4	(0.29)
4.00"	9.9	(0.35)
5.00"	11.6	(0.41)
6.00"	13.3	(0.47)

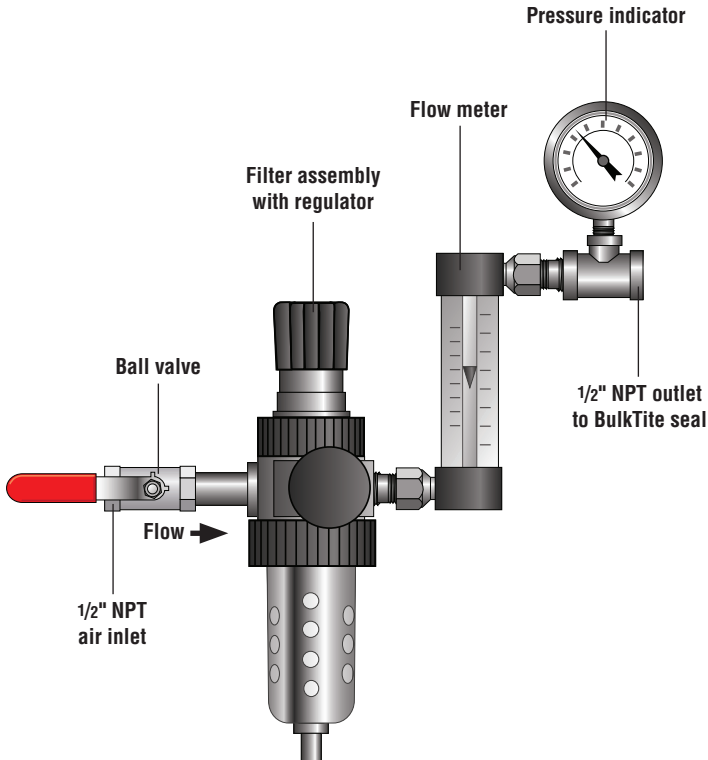
6 Gas Supply

- 6.1 For best operation, gas supply must be clean and dry.
- 6.2 The recommended Flowserve gas control panel provides a 3 micron or better particulate filter, pressure regulator, visual flow meter, and pressure indicator to ensure the best performance of the BulkTite seal.
- 6.3 Optional additional components depending on gas quality: desiccant dryer and coalescing oil filter.
- 6.4 For more information on a recommended gas control panel see Flowserve BM# B0298647.

Gas Panel for BulkTite Seal

Figure 3

Pressure range	0.34 - 8.6 bar (5-125 psi)
Flow range	7-70 LPM (0.3-3.3 CFM)





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