



Model No. GRXX

ORIFICE GATE

History: Worldwide, plant managers and maintenance engineers recognize the Vortex® Orifice Gate™ as the industry standard. It was the first valve specifically designed for handling dry bulk solid materials, and is “the original” orifice gate valve.

Purpose: Prior to the Orifice Gate, conventional knife gates and butterfly valves were commonly used in dry bulk solid material handling systems. Though knife gates and butterfly valves are well-designed for handling liquids and gases, they are ill-equipped for handling dry bulk solids. With their deficiencies in mind, the Vortex Orifice Gate was designed to present a high-quality solution specifically for dry bulk solids handling.



Studded

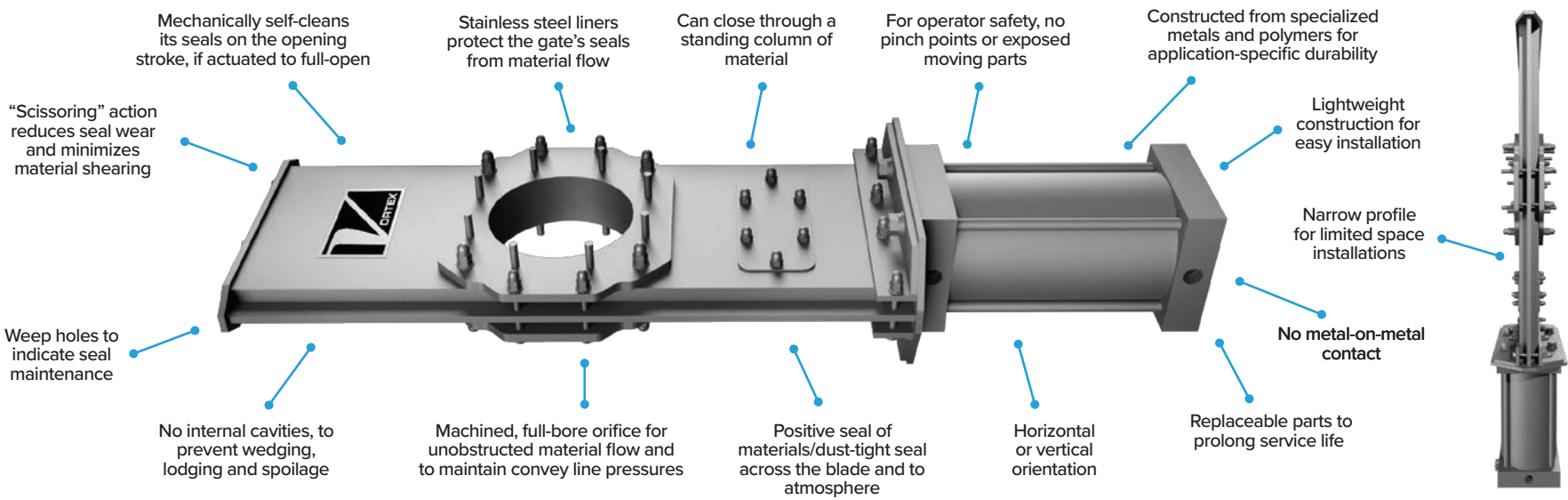


ANSI-DIN

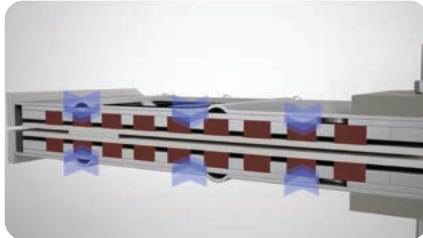


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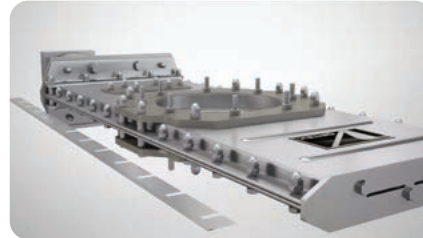
OPTIONS



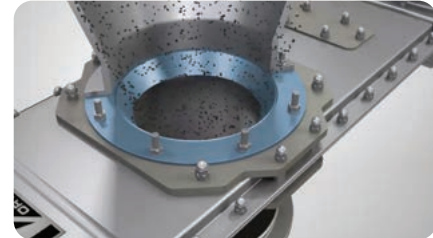
KEY FEATURES



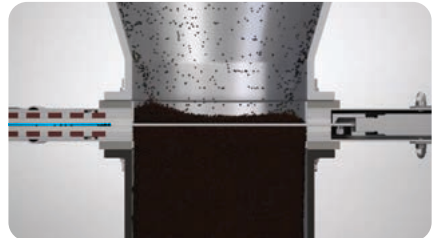
Live loaded, wear compensating hard polymer pressure plate seals



Shimming system for in-line maintenance



Optional Special Service Inlet minimizes material contact with the seals



Displacement area as an alternative to packing materials into an end seal

TECHNICAL SPECIFICATIONS

Conveyance Type	Gravity flow & dilute phase pneumatic conveying applications. Can handle differential pressures up to 15 psig 1 barg 0.1 MPa, depending on gate size. Can be used in pressure or vacuum systems.
Materials Handled	Non-abrasive to moderately abrasive powders, pellets and granules. Modifications available for handling corrosive materials and/or for wash-down.
Standard Sizes	2 – 16 in 50 mm – 400 mm
Opening	Available in round sizes
Overall Height	2 – 3 in 50 – 75 mm
Weight	10 – 225 lb 5 – 100 kg
Flange Options	Standard stud bolt pattern, thru-bolt pipe connection, ANSI #125/150, DIN PN10, JIS 10 Custom flanges are available
Material Temperatures	180° F 80° C for standard gate, with modifications that allow up to 400° F 205° C
Body/Frame Options	Aluminum, 304 stainless steel, painted carbon steel
Material Contact Options	304 or 316L stainless steel
Pressure Plate Options	Nylon, PET, UHMW-PE, glass-filled PTFE, molybdenum disulphide-impregnated nylon
Load Seal Options	Natural rubber and/or silicone rubber
Drive/Actuation	Double-acting air cylinder, hand wheel/crank, chain wheel, electric actuator (see pages 61 & 62)
Position Confirmation	Magnetic reed, proximity or mechanical limit switches, and/or clear bonnet cover for visual indication (see page 63)
Material Flow Controls	AVP, IVP, VPO, VPC (see pages 65 & 66) <i>* Gate must cycle to full-open between runs to keep the displacement area clear of materials</i>
Other Options	Sealed body air purge (see page 64) Special Service inlet (see page 67)
Compliance	ATEX Zone 20 (internal), ATEX Zone 21 (external), FDA



THE POWER OF COMPARISON

Vortex Orifice Gate vs. Alternatives

- Many alternative slide gates and butterfly valves rely on soft rubber seals which are directly exposed to the material flow stream. These seals rapidly erode or tear away in service. Others rely on bonnet packing, which can relax and allow material packing in the seals. These deficiencies promote leakage of materials and dusts past the gate and to atmosphere, in addition to actuation issues and several other maintenance concerns. The Vortex® Orifice Gate™ addresses these issues by incorporating "live loaded" hard polymer pressure plate seals. Hard polymer provides greater wear resistance and longer service life than alternative sealing materials. The hard polymer seals are "live loaded" with compressed rubber backing to ensure even as the polymer experiences frictional wear from many actuations over time, the rubber load seals continuously force the polymer seals against the sliding blade. The seals are also shielded from the material flow stream, to protect them from abrasion. This design maintains the gate's positive seal of materials/dust-tight seal with infrequent maintenance intervention.
- Many alternative slide gates and butterfly valves have open cavities where materials can wedge and prevent positive material shut-off. Wedging can also create seal wear and material degradation, and can cause a gate to seize and bind. Wedged materials also create risk for cross-contamination and spoilage. To prevent wedging and ensure positive gate closure, the Orifice Gate's sliding blade is designed to mechanically clear materials away from the sealing surfaces with each opening stroke. This ensures migrant materials are forced back out of the seals and are discharged into the process line, rather than packing in the seals and causing actuation issues.
- Many alternative slide gates allow metal-on-metal sliding, which creates galling. This causes a gate to seize and bind, and can create foreign metal fragment contamination. The Orifice Gate's hard polymer seals eliminate metal-on-metal contact to resolve each of these concerns.
- A butterfly valve's rotating disc is directly exposed to the material flow steam, which creates wear to the disc itself. The exposed disc also disrupts convey line pressures and obstructs material flow as they pass through the valve, which can cause line plugs and other maintenance concerns. To resolve these issues, the Orifice Gate's sliding blade is machined with an unobstructed, full-bore orifice that maintains convey line pressures and allows unrestricted material movement.
- If the pressure plate seals have partially worn and the compression load is lessened, slight dusting may be present through the weep holes at the front of the gate. With this maintenance indication, the Orifice Gate's shimming system can be utilized to restore the gate's dust-tight seal. Unlike alternative valves, which require spare parts be kept on-hand for seal maintenance, the Orifice Gate requires removal of parts. By simply loosening the nuts along the lateral aspects of the gate, shim(s) can be removed from each side and the nuts retightened to restore the pressure plate seals' compression load. This maintenance process can be performed while the gate remains in-line, and can be repeated several times before the shims and pressure plate seals must be replaced.
- The Orifice Gate is designed with several replaceable parts, including actuator, sliding blade, clevis, pressure plate seals and shims, among others. If maintained and operated as recommended, these should be the gate's only wear parts. In several cases, this has allowed an Orifice Gate to remain in service for many years –and sometimes, even decades.

For more information & technical resources, please visit:

www.vortexglobal.com