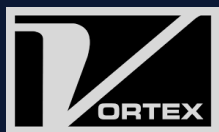


SYCSA[®]

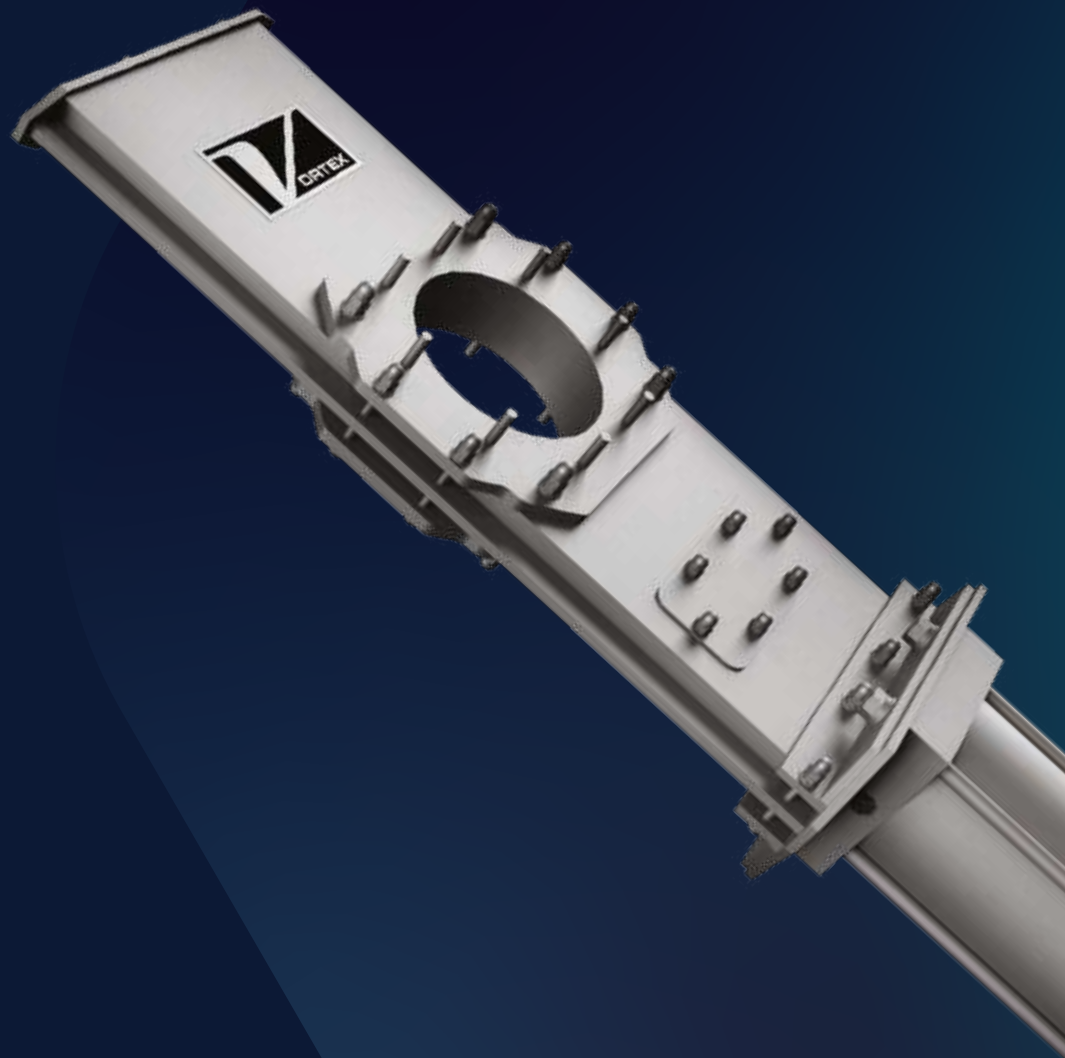
Orifice Gate

Quantum
Series

Model No. GRXX



PARTNER **SYCSA[®]**



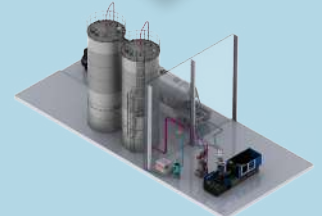


Nuestras soluciones



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DISEÑAMOS



INSTALAMOS



AUTOMATIZAMOS



BRINDAMOS SERVICIO POSTVENTA

FAST TRACK

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



-P

OPTIONS

Mechanically self-cleans its seals on the opening stroke, if actuated to full-open

Stainless steel liners protect the gate's seals from material flow

Can close through a standing column of material

For operator safety, no pinch points or exposed moving parts

Constructed from specialized metals and polymers for application-specific durability

Lightweight construction for easy installation

Narrow profile for limited space installations

No metal-on-metal contact

Replaceable parts to prolong service life

Horizontal or vertical orientation

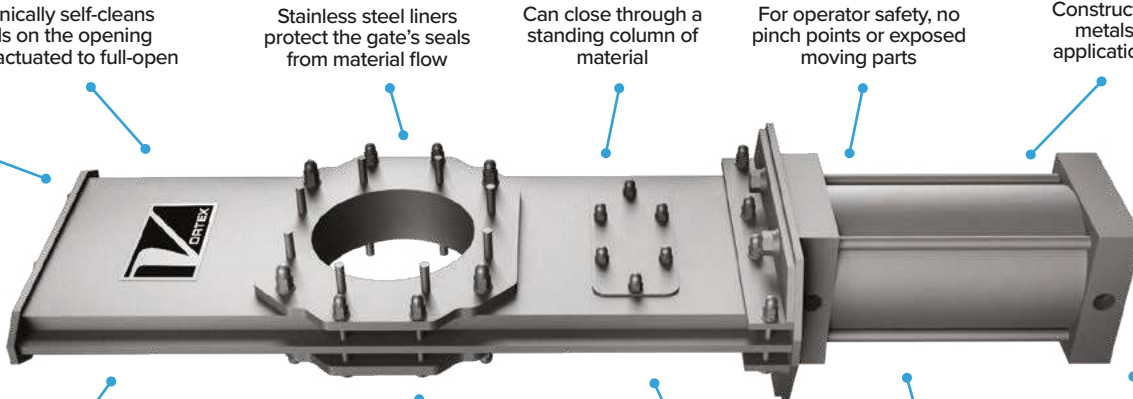
Positive seal of materials/dust-tight seal across the blade and to atmosphere

Machined, full-bore orifice for unobstructed material flow and to maintain convey line pressures

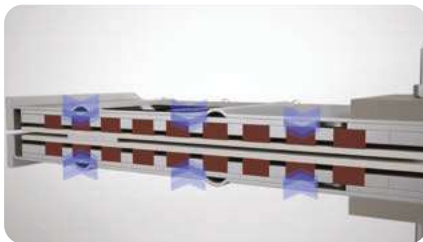
No internal cavities, to prevent wedging, lodging and spoilage

Weep holes to indicate seal maintenance

“Scissoring” action reduces seal wear and minimizes material shearing



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

PARTNER

SYCSA

Orifice Gate

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.


CASE STUDY

Multi-Port Diverter Handling Flour

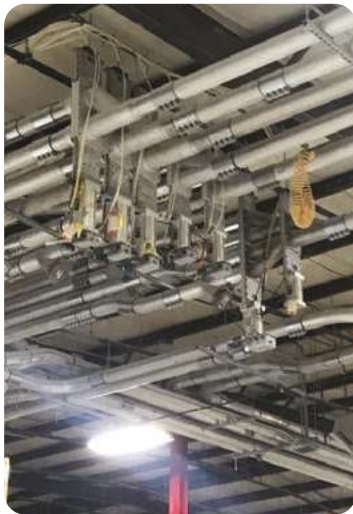
Client: Pasta producer

Application: Pneumatically convey/divert flour from a main supply line into 8 silos. Each silo feeds a separate production line. Each line produces a different pasta type.

Results:

The client previously used a manual hose switching station in this process. They were concerned about labor intensity, workplace safety, profitability, explosion potential, waste reduction and maintenance costs, among other things.

With the Vortex Multi-Port Diverter, the automated system ensures the different grades of flour are conveyed into their proper silo. The client has already saved dollars and labor hours, plus avoided potential processing errors and improved plant safety.


CASE STUDY

Gates & Diverters Handling Plastics

Client: Manufacturer of styrofoam cups, plates & bowls

Application:

- Reintroduce plastic scrap/regrind into the extrusion process.
- Convey resins/compounds into the extrusion process.
- Converge resins from various holding bins into a common convey line.

Valves:

- 7 Roller Gates
- 31 Wye Line Diverters
- 32 Orifice Gates

Results:

This client operates 5 shifts, 24 hours per day — and all but two days each year.

With the addition of Vortex gates and diverters, this client has a solution for automated material transport — and has reduced their manufacturing waste to less than 1%.


CASE STUDY

Seal Tite Diverter Handling Pet Food

Quantity: 4

Special Features: Spin knobs, for easy in-line access without using tools.

Application: Divert kibble into two disc conveyors, to be transported to a packaging line.


CASE STUDY

Iris Valve Handling Powdered Drink Mix

Quantity: 2

Application: Avoid contamination when handling food & beverage materials.

Special Features: A Teflon-coated body was specified because Teflon does not chemically react or corrode from material contact, which would otherwise compromise taste and create contamination. Teflon also assures food purity because it does not absorb preservatives. Because Teflon is non-stick, it also provides ease of maintenance.



TECHNICAL ARTICLE

How to Select a Valve for Solids & Bulk — Handling

Valve suppliers should have the application engineering knowledge and experience to know what valves and modifications should be applied for certain application parameters. Make sure your supplier is asking the right questions.

Many people think that selecting a slide gate or diverter valve for handling dry bulk solid materials is a relatively simple process. They typically assume the only information needed is:

- Opening shape & size
- Available stack-up height
- Matching connections or bolt hole patterns

But in reality, valve suppliers need much more information to be able to identify the right valve for the application. The more information a valve supplier has about the application parameters, costly mistakes are avoided. Misinformation can put you on either end of the spectrum — whether it be using an expensive valve for a simple application, or an inexpensive valve that is poorly designed for the application.

1. Valve Selection

The most critical questions are:

- What is the valve intended to do?
- Is a slide gate, diverter valve, iris valve or butterfly valve needed to best fulfill the application?

Follow-up questions include:

- What is the valve's opening size? Is the opening square, round or rectangular?
- What is the shape and size of the conveying line? Are the lines tube or pipe? If the lines are pipe, is it schedule 10 or 40?
- Will the valve be used in a pressure, vacuum or gravity flow application? If pressure or vacuum, how much? If pressure, will the system convey material in dilute or dense phase?
- Will the valve be installed indoors or outside?
- What is the temperature of the air and materials being conveyed?

- What should the valve be constructed from (aluminum, stainless steel, carbon steel, etc.)?
- Will the valve be subject to wash-downs? If so, will it be washed with hot water or a caustic liquid?
- If the valve is installed below a bin or silo — Will there be flow aides (aeration, vibration, etc.)? What is the sequence of operations for the system (e.g. When are the flow aides activated, in relation to the cycle of the gate valve)? How is material conveyed into the bin or silo?

Then, you must consider material characteristics:

- What is the material?
- Is it in powder, pellet or granular form?
- What is its particle size?
- What is its weight per cubic foot?
- Is it sticky? Abrasive? Corrosive?
- Is there sanitary or spoilage concerns?
- If multiple materials will pass through a common conveying line, is there cross-contamination concerns?

2. Actuator Selection

The most critical questions are:

- What is your power availability? Is compressed air available?
- What is the cycle frequency?
- Will the valve close on material? If yes, will the material be a standing or flowing column?
- Does actuation speed matter?
- If only intended for maintenance purposes, can I use manual actuation?
- If installed outside, will the valve be subject to cold temperatures?
- What are the cost variables for replacement and repair?
- Will the valve operate in a potentially explosive environment?

3. Standard Modifications

Your valve supplier should offer standard modifications to suit your application/material-specific requirements.

When selecting valve modifications, some application-specific factors that should be considered are:

- Is the application high-cycle?
- Is the material handled abrasive duty? Corrosive? Friable? Food-specific?
- Is chemical compatibility a concern?
- How often will the valve be serviced? Are in-line maintenance features desired?

4. Valve Location & Orientation

The most critical questions are:

- Where will the valve be installed (e.g. below a bin/silo, etc.)?
- Will it be installed in a vertical or horizontal orientation?

This helps determine which accessories may be required for your application. For example, if a slide gate is mounted below a surge hopper, a variable positioning assembly may be required to meter material into the weigh hopper.

5. Features Selection

Common modifications include:

- Abrasion-resistant blade & liners
- Adjustable blade rollers
- Custom valve sizes
- Sealed body with an air purge assembly
- Replaceable seals, liners & wetted parts
- Wear-compensating seals
- Wear-reducing material deflectors
- Wear-resistant blade, bucket blade or pivoting chute

...to name a few.

6. Accessory Selection

When specifying valve accessories, there are four distinct areas:

- Variable positioning assemblies — Vortex offers a VPO/VPC (relay control with manual adjustability); AVP (PLC control with manual adjustability); and an IVP (infinite positioning via a 4-20mA signal).
- Feedback — Vortex offers push-button control panels, and valve/sensor manifold technologies with a variety of PLC interfaces.
- Safety devices — A vented ball valve should always be installed in front of the air control valve, in order to bring the slide gate or diverter valve to a “zero mechanical” state before servicing. This type of ball valve bleeds off any residual downstream pressure contained in the air lines supplying the air cylinder. The ball valve should always be installed within arm's reach of the air control.
- Fabricated accessories — Fabricated transitions provide flexibility when mating up to existing equipment. This includes matching special bolt hole patterns, tube stubs, or blind flanges that allow in-the-field hole placement and installation.

- **EQUIPOS PARA RECEPCIÓN, CARGA Y DESCARGA**

- Descarga de sacos y supersacos
- Descarga de liners
- Descarga de ferrocarril
- Boquillas telescópicas
- Rompebóvedas
- Sistema de aireación
- Activadores de tolva

- **ALMACENAMIENTO**

- Silo atornillado
- Silo soldado
- Silo híbrido
- Silo mezclador
- Silo pesador
- Tanque atornillado
- Tanque presurizable
- Tolva

- **VÁLVULAS**

- Guillotinas
- Diversora
- Mariposa
- Rotatoria
- Iris

- **SISTEMAS DE SEGURIDAD**

- Sistemas pararrayos
- Válvulas de alivio vacío/presión
- Paneles de explosión
- Sistemas de supresión
- Válvulas de aislamiento
- Arrestador de flama

- **MEZCLADO**

- Mezcladora tipo listón
- Mezcladora de paletas
- Mezcladora para lodos
- Mezcladores para plásticos

- **TRANSPORTE MECÁNICO**

- Elevadores de cangilones.
- Transportadores de banda sencillo o reversible
- Alimentadores vibratorios
- Transportadores de rastra
- Transportadores helicoidales
- Transportadores tubulares de discos

- **SISTEMAS DE MONITOREO Y TRAZABILIDAD**

- Silos y tolvas pesadoras
- Sistemas de pesaje en línea
- Sistemas de trazabilidad
- Tableros de control
- Celdas de carga
- Básculas camioneras y ferrocarrileras
- Medición de nivel

- **TRANSPORTE NEUMÁTICO**

- Transporte fase diluida
- Transporte fase densa
- Sopladores
- Motosopladores
- Bomba neumática

- **EQUIPO PERIFÉRICO**

- Cargadores
- Enfriadores para aire de transporte
- Secadoras de aire caliente
- Cristalizado de PET
- Secadoras dehumificadoras

- **COMPONENTES PARA LÍNEA DE TRANSPORTE**

- Lanzas y mirillas
- Empaques
- Tubos y curvas
- Coples
- Mangueras PVC y metálicas
- Manifold para vacío
- Caja de vacío

- **DOSIFICACIÓN Y ALIMENTACIÓN A MÁQUINAS**

- Dosificadores volumétricos
- Dosificadores gravimétricos
- Adición de pigmentos o aditivos

- **FILTRADO Y LIMPIEZA DE MATERIAL**


- Filtros para venteo
- Filtros recibidores
- Colectores de polvo
- Trampas magnéticas
- Cribas

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