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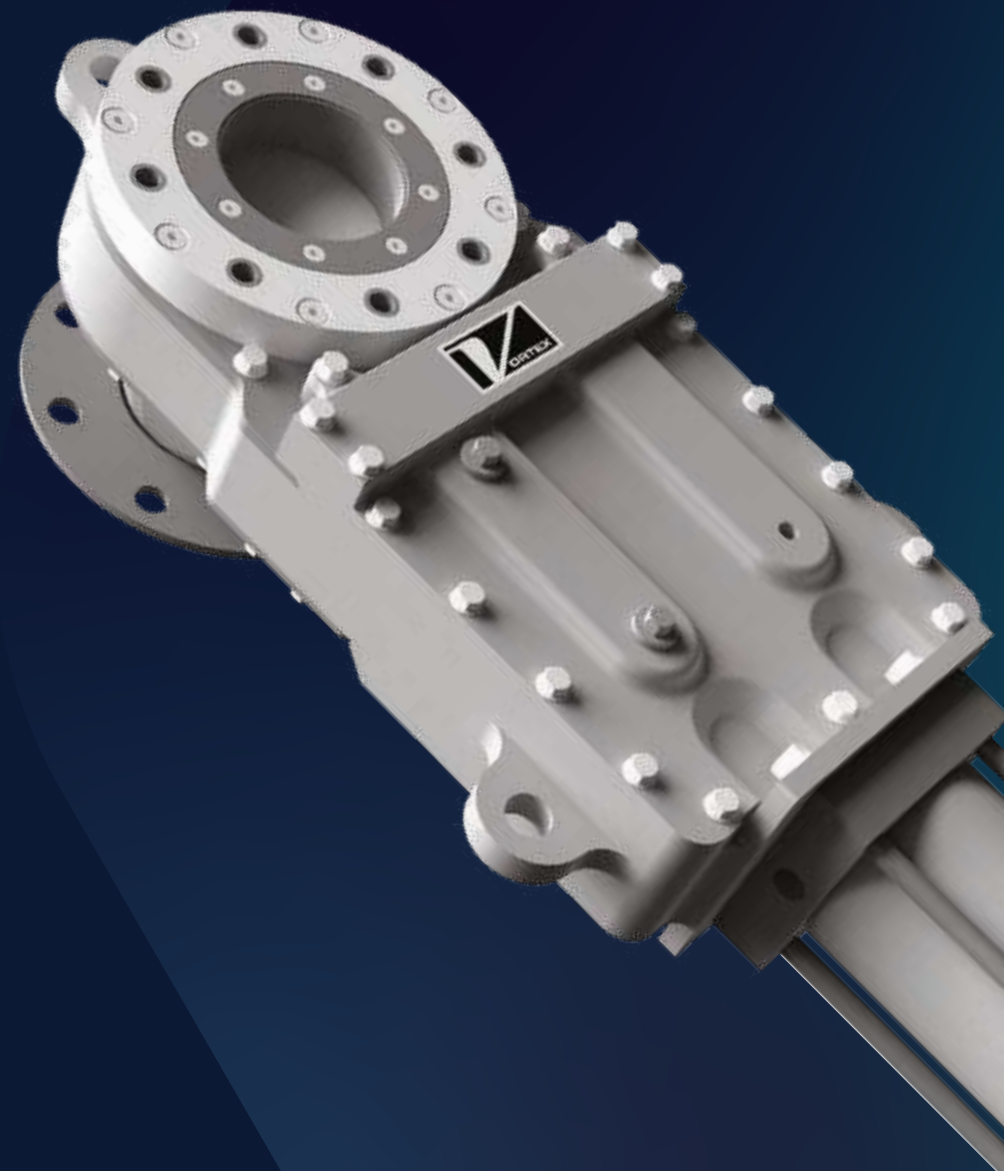

HDPV2 Gate

Quantum Series

Model No. HDPXX

PARTNER **SYCSA®**

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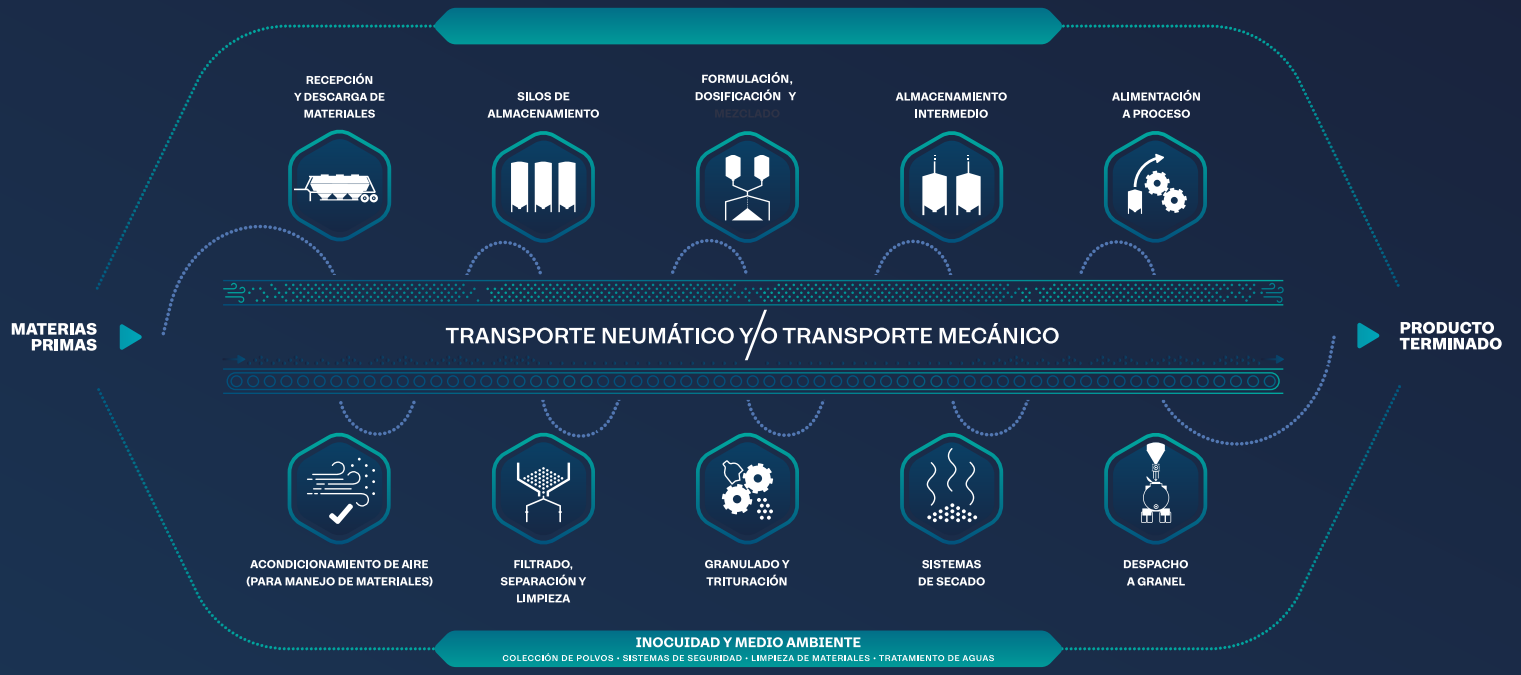

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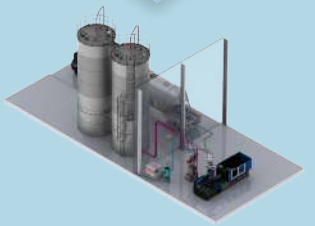


DISEÑAMOS

INSTALAMOS

AUTOMATIZAMOS

BRINDAMOS SERVICIO POSTVENTA

Model No. HDPXX

HDPV2 GATE

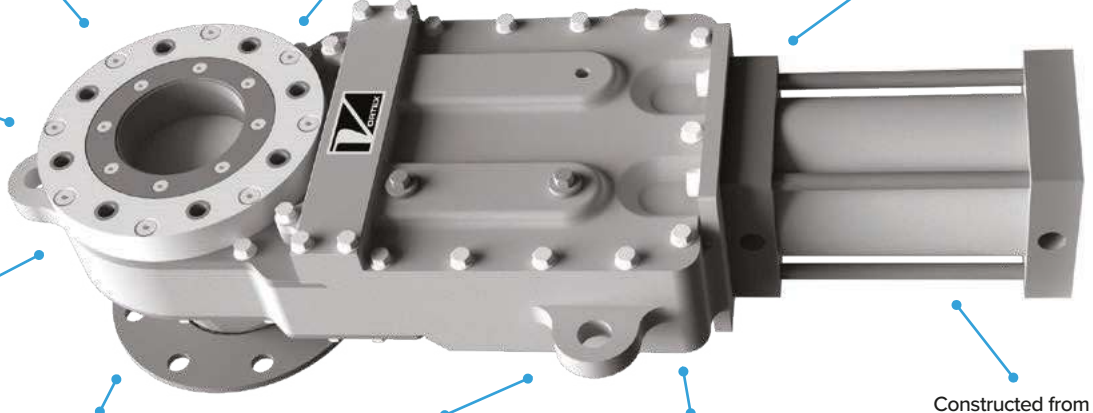
The HDPV2 Gate was originally developed to isolate silos in applications where high pressure aeration is used to fluidize powder discharge. Over time, the HDPV2 Gate has been redesigned and modified for greater application versatility.

Ideal application: Higher-pressure applications when handling non-abrasive to moderately abrasive powders, pellets or granules.

Standard Inlet

Special Service Inlet

OPTIONS



Optional Special Service Inlet minimizes material contact with the seals

Unobstructed opening for unrestricted material flow and to maintain convey line pressures

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

Optional air purge assembly keeps fine materials in the flow stream, to prevent them from collecting in the gate's body

Seals fine materials

Must be installed so that the actuator is parallel to the horizontal plane

No internal cavities, to prevent wedging, lodging and spoilage

Closing action reduces seal wear and minimizes material shearing

Lifting lugs for ease of installation

For operator safety, no pinch points or exposed moving parts

Constructed from specialized metals and polymers for application-specific durability

KEY FEATURES

Externally adjustable blade for in-line maintenance

Patented “rising blade” action to positively seal against high pressures

Replaceable parts for in-line maintenance and prolonged service life

End seal displacement pocket to prevent material packing upon closure

TECHNICAL SPECIFICATIONS

Conveyance Type	Gravity flow, dilute phase and dense phase pneumatic conveying applications up to 75 psig | 5 barg | +0.5 MPa, depending on gate size. Can be used in pressure or vacuum systems.
Materials Handled	Non-abrasive to moderately abrasive powders, pellets and granules. Well-suited for handling sticky and/or corrosive materials, and for wash-down.
Standard Sizes	4 – 16 in | 100 – 405 mm ID & OD diameters are available. Also available in schedule 10, 20 or 40 pipe sizes.
Opening	Available in round sizes
Overall Height	8 – 9 in | 200 – 230 mm
Weight	75 – 425 lb | 35 – 195 kg
Flange Options	ANSI #125/150, DIN PN10 Custom flanges are available
Material Temperatures	250° F | 120° C for standard gate, with modifications that allow up to 400° F | 205° C
Body/Frame Construction	Cast aluminum
Material Contact Options	304 or 316L stainless steel, carbon steel
O-Ring Seal Construction	Silicone
Drive/Actuation	Double-acting air cylinder (see pages 61 & 62)
Position Confirmation	Magnetic reed, proximity or mechanical limit switches (see page 63)
Material Flow Controls	AVP (see pages 65 & 66)
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 HDPV2 Gate vs. Alternatives

- Many alternative slide gates and butterfly valves rely on seals which are directly exposed to the material flow stream. These seals rapidly erode or tear away in service. This deficiency promotes leakage of materials and dusts past the gate and to atmosphere, in addition to actuation issues and several other maintenance concerns. The Vortex® HDPV2 Gate™ addresses these issues by incorporating a durable, silicone (durometer 70) O-ring seal, which provides greater wear resistance and longer service life than alternative sealing materials. To hinder materials from migrating into the gate body, the HDPV2 Gate also features a bonnet seal cartridge, which houses a PTFE-treated packing gland. PTFE-treated packing gland also provides greater wear resistance and longer service life than alternative sealing materials. Within the bonnet seal cartridge, the packing gland expands to create a dust-tight seal around the vertical perimeter of the blade. The bonnet seal cartridge shields the packing gland from the material flow stream, to protect it from abrasion. This design maintains the gate's positive seal with infrequent maintenance intervention. Once the packing gland has experienced significant frictional wear, it can be removed and replaced to restore the gate's dust-tight seal. This maintenance process can be performed while the gate remains in-line.

- 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, when the HDPV2 Gate is open, its sliding blade is recessed to create an unobstructed opening that maintains convey line pressure and allows unrestricted material movement.

- The HDPV2 Gate is specifically designed to mechanically clear materials away from the sealing surfaces with each actuation. The HDPV2 Gate's packing gland is designed to mechanically self-clean the blade with each opening stroke. This prevents the blade from carrying materials back into the gate body, which could otherwise cause actuation issues and other maintenance concerns. At the closing end of the gate, the HDPV2 Gate can be designed with a partial Special Service Inlet to create a slight void between the leading edge of the blade, the material flow stream, and the O-ring seal. As the leading edge of the blade nears the O-ring seal, a Special Service Inlet ensures any residual materials remaining at the blade's leading edge have an opportunity to fall away into the process line, prior to the blade contacting the O-ring seal. By protecting the O-ring seal from material contact, it reduces seal wear and maintains the gate's positive seal with infrequent maintenance intervention.

- Many alternative slide gates pack materials into an end seal, preventing positive closure. This promotes material leakage through the valve, can cause blade damage, and can cause other actuation issues. Upon gate closure, the HDPV2 Gate's sliding blade "rises" upward into a seat, rather than a true end seal, so that materials remaining at the leading edge of the blade can fall away into the process line below, rather than packing into an end seal. The rising blade design also lifts the blade against the O-ring seal for a better seal of materials and dusts in high pressure applications.

- When the gate is closed, if materials and dusts begin to leak past the blade, it indicates the O-ring seal has partially worn and the compression load is lessened, causing the blade to no longer be forced against the O-ring seal as it should be. With this maintenance indication, the HDPV2 Gate's blade is externally adjustable to restore the gate's dust-tight seal. Using simple tools, the nut beneath the lower bonnet cover can be tightened. This "lifts" the blade to restore its compression load against the O-ring seal. This maintenance process can be performed while the gate remains in-line, and can be repeated several times before the O-ring seal must be replaced.

CASE STUDY

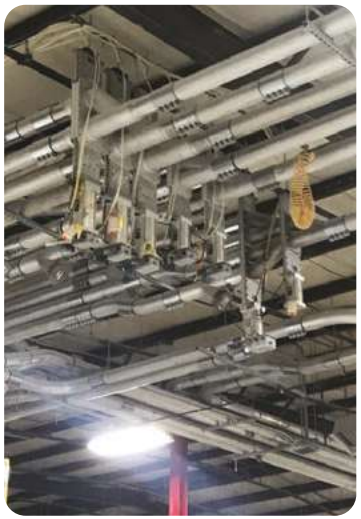
Multi-Port Diverter Handling Flour

Client: Pasta producer

Application: Pneumatically convey/divert flour from a main supply line into 8 silos. Eash 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 porcessing 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.

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