GEMCO VALVE

PRODUCT OVERVIEW

SPHERICAL DISC VALVES

PRE-ENGINEERED VALVES FOR POWDERS, DRY BUILK SOLIDS, AND SLURRIES



STRAHMAN GROUP

an fch business

About Gemco Valve

In the 21st century Gemco Valve remains committed to the same core values of our founders in 19th and 20th centuries. These ideals of innovation in design, excellence of manufacturing and superior customer service has allowed us to penetrate the global market with the same dedication and support we have established domestically. We continue to research and develop with valve designs and prototype testing for NASA's extended lunar habitation and manned Mars missions.

GEMCO Valve, now part of The Strahman Group, designs and manufactures industrial process valves for the most demanding material handling applications. For decades, processors have relied on GEMCO Spherical Disc Valves, also commonly referred to as segmented ball valves, for handling powders, solids, slurries, and bulk materials across pharmaceutical, food, chemical, battery, mining, and specialty chemical industries.

At our plant in Bethlehem, PA, our skilled welders, polishers, CNC machinists and assemblers, who average over 20 years of service, are dedicated to working with the newest manufacturing practices. All our employees work in Total Quality Management teams to promote the best possible service and products.

Choosing The Right Valve

Some of the factors to consider when choosing a Gemco Valve are:

Material of construction
The powders and/or solvents to be processed will dictate the product contact material. Cast Iron, Carbon Steel, and Aluminum can be used for many industrial applications. Corrosive processes will call for the use of Stainless Steel, and in some cases material laden with solvents or other corrosives will justify the extra expense of using Hastelloy or other high nickel alloy to prolong valve life.

For Stainless Steel valves of welded construction, 316L grade is preferred, as carbon content prevents carbon precipitation from welded joints.

Seat material
Very abrasive material will tend to dictate using metal seats versus the more commonly used reinforced Teflon seats. The metal seal will give longer life and can be used at higher temperatures than Teflon but the shut-off sealing is limited to dust tight, ANSI class IV or ANSI class V. Reinforced Teflon can be used up to 450 degrees F (230 C), and provide pressure assisted Class VI shut-off. For bi-directional Class VI shut-off, an Inflatable seat is typically required.

Cleanability
The sanitary requirements of the process will govern the surface finishes and other sanitary options. We define our finishes as follows:

No surface finish (Ra) specified. Sometimes referred to as "mill finish" or "as cast". Fabricated valves will only have the internal welds ground smooth and flush. Commonly used in general industrial applications where cross contamination or cleanability are not a concern.

#2 finish - Ra 33 to 65 micro inch - 150 to 180 grit. Also referred to as "buffed, blended or uniform appearance finish". Often specified for the outside of equipment that will be washed down.

#4 polish - Ra 16 to 32 micro inch - 180 to 240 grit. All fabrication and handling marks removed. Surface is buffed to a uniform satin finish. The #4 polish is typical for the interior of equipment that needs to be cleaned between batches to prevent cross contamination.

#7 polish - Ra 10 to 15 micro inch - 240 to 320 grit. All surface imperfections are repaired. Often referred to as "pit free" and "mirror finish". Used for high purity applications such as processing potent pharmaceutical actives. Also used for products that tend to adhere to surfaces.

For automatic cleaning, spray balls or jets should be considered. Another option is a valve that can be dismantled by hand for inspection and cleaning. For safety reasons the size of such valves are typically limited to an 8" port diameter due to the weight of individual components.

Weight
The weight of a valve is especially important for mobile or rotating equipment. High performance and heavy-duty models can weigh four times as much as its regular-duty counterpart. Dust tight, full vacuum, and 1 bar service, is considered to be regular duty service. 90 PSI (6 bar) to 150 PSI (10 bar) is high performance. An 8-inch manually operated regular duty valve can weigh 55 lbs (25Kg), versus nearly 200 lbs. (90Kg) for an 8" high performance model.

Mounting arrangements
The typical ANSI 150 # and DIN drilling is used as an industry standard for heavy duty and high performance models. Quick clamps can be used for applications up to 30 PSI (2 bar) and port sizes up to 8".

Some valves will include blind tapped holes, which may be a problem if the valve is mating with existing blind tapped holes. Another option is to choose oversized flanges, which allows for through holes.

For regular duty service valves, ANSI and DIN bolting can be overkill and alternative bolting patterns are available.

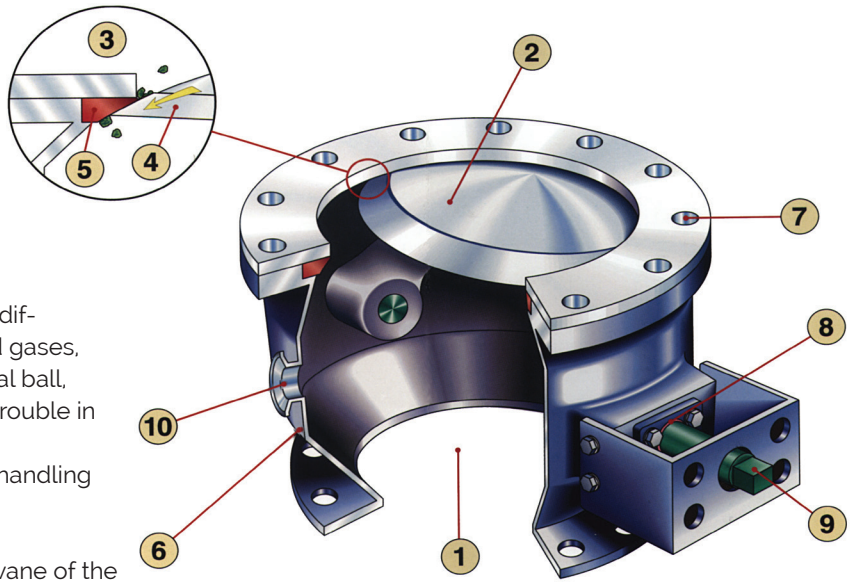
Actuation
As with other quarter turn valves; levers, gear drives or chain operators are available. Pneumatic and hydraulic, operators are available in double acting or fail-safe modes. Pneumatic operation should be the first choice for price, reliability, and speed. When handling solids a higher factor of safety is used to calculate seat torque requirements. The factor is typically 1.5 instead of the 1.25 used for liquid and gas valve calculations.

For solids that "set-up" or harden oversized actuators and specially designed discs that can break through the hardened cake are used. Actuators are typically sized for 80-PSI (5.3 bar) pressure. If the available supply air pressure is dependably higher (100 to 120 PSI) or lower (40 to 60 PSI), this will factor in the sizing of the actuator.

For fail-safe operation, spring return actuators are the norm. When a spring return type actuator is used, it is oversized to compensate for the spring as well as the unseating, run, and seating torque required for valve operation. This can lead to weight and space problems as well as extra cost. An alternate fail-safe option is to use a double acting actuator with a pneumatic accumulator sufficiently sized to close the valve. If there is a loss of pneumatic pressure, a pressure switch activates the accumulator and operates the valve.

Flow Control
Fast acting (1 to 5 seconds), quarter turn valves are ideal for flow control of solids. A pneumatic (3 to 15 PSI) or electro-pneumatic (4 to 20 milliampere) positioner can take a signal from a manual adjusted pressure regulator, or from a computer controller. The pneumatic positioner is often used in manually operated filling stations, while the electro-pneumatic positioner is typical for automatic loss-in-weight systems.

Design Principles



Solids and slurries have completely different characteristics than liquid and gases, so don't be surprised when traditional ball, butterfly and slide gate valves give trouble in solids processing applications.
The most common problems when handling solids with these valves are:

1. Material bridging on the center vane of the butterfly resulting in the use of vibrators, ramrods, sledgehammers and other instruments of destruction.
2. Material jamming into the tracks of slide gate valves resulting in sealing surface abrasion with every cycle of the valve.
3. Material packing into the tight cavities of ball valves until the valve ceases or the seat tears apart.

All Gemco valves address these crucial issues. The P21 model goes even further, easily handling high-performance applications where compliance to international standards, cleanability and containment are required.
Top 10 Features of the P21 Gemco Valve

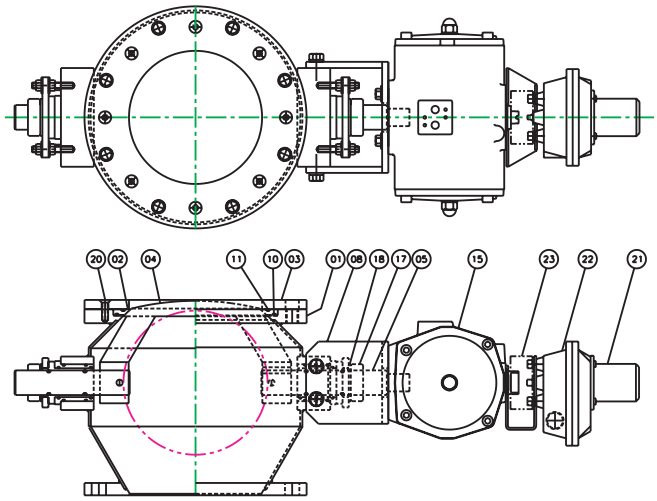
1. Full port opening. Unlike a butterfly valve, the shutoff disc swings completely out of the flow of the material, preventing bridging and promoting mass flow.
2. No pinch points. Unlike a ball valve, there are no tight cavities for materials to pack and jam-up the operation.
3. Self-cleaning sealing area. Unlike a gate valve, the self-cleaning action wipes the material away from the sealing area instead of jamming abrasives into the sealing track.
4. Shut-off disc precision machined from solid plate for high pressure applications.
5. Seats available in Teflon or Stellite (both standard).
6. Body designed, fabricated and tested to ASME section VIII (pressure vessel) and Section IX (welding procedures) from any weldable alloy. Finishes include mill, #4 polish or #7 mirror finish.
7. ANSI or DIN bolt patterns available (both standard).
8. Exclusive double eccentric bearings for adjustment of seat disc clearance to achieve an ANSI class VI shut off.
9. Standard ISO 5211 actuator mounting allows a greater range of actuator choices.
10. Optional CIP ports for spray balls or nozzles available.

P21 Valve

High performance spherical disc valve

The **P21 High Performance Spherical Disc Valve** is designed to meet tomorrow's demanding requirements for containment of solids, powders and slurries. Engineered for pressure assisted sealing from full vacuum to 150 PSI. GEMCO valves use a spherical disc which moves across the seat wiping material away from the sealing area. This self wiping action eliminates pinch points - the source of most valve wear. The P21 is offered with standard ANSI or DIN flanges and ISO actuator mounting.

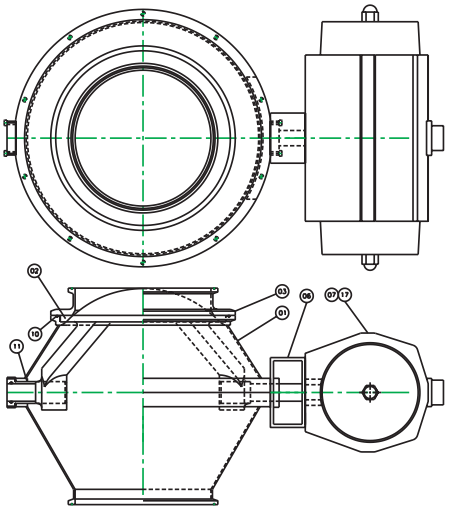




Sani K Valve

Sanitary K Valve is designed to USDA and FDA guidelines

The **sanitary K Valve** is designed to USDA and FDA guidelines eliminating threads, keyways and crevices. The split body design means the K-valve can be completely disassembled with simple hand tools, allowing quick and easy inspection and cleaning. It is used for charging/discharging or in-line with standard quick clamps allowing fast installation and removal. The K valve is offered in sizes from 3" to 8" (75 to 200 mm) in practically any weldable alloy with the option of #4 satin or #7 mirror finish. Commonly used in the food, pharmaceutical and nutraceutical industries or anywhere where cleanability and quick change over is required.



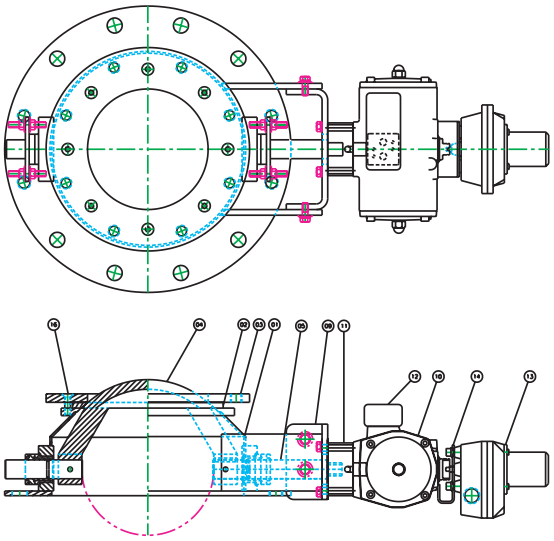


TLD Valve

Versatile and lightweight

The versatile and lightweight Type **TLD Valve** is typically used for processing less dense materials such as foods and pharmaceuticals and on rotating and mobile equipment where weight is a concern. It is available in a range of weldable alloys including 316 stainless steel and Hastelloy. The sanitary version of the TLD Valve has full interior and exterior polishes. ANSI and DIN drilling patterns are offered in addition to the Gemco standard pattern. The valve is offered for dust tight, full vacuum and low-pressure (1 bar) services. Common installations of the TLD Valve include inlet/outlet valves on rotating or stationary blenders and Intermediate Bulk Containers.



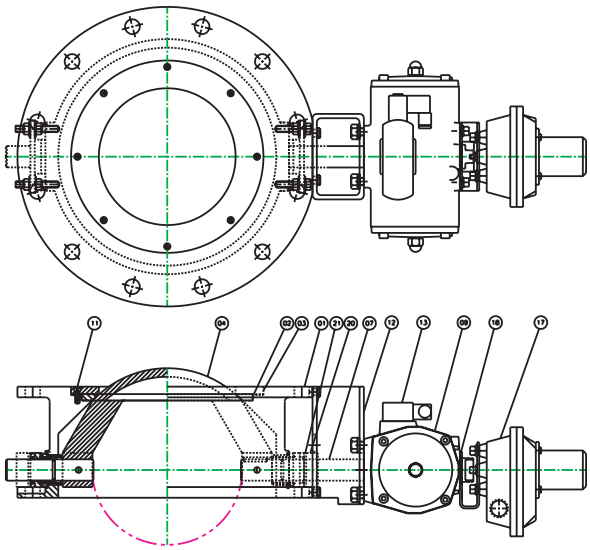


T Valve

For heavy duty service

The **Type T Valve** is designed for heavy-duty service. It is typically used for slurries, abrasives, and dense materials. The T valve is available in 316 stainless steel and Cast Iron as standard and can be fabricated from any weldable alloy with the full range of sanitary finishes. Options include high temperature designs. T valves are commonly used for charging and discharging hoppers, tanks, silos, conveying systems, and weighing systems.



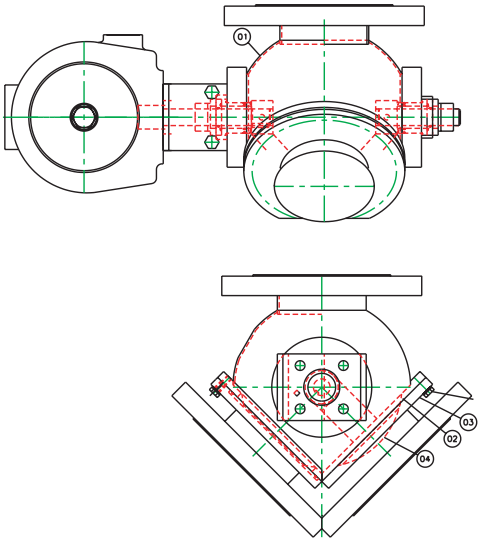


D2 Diverter Valve

'Y' junction valve

The **D-2 Diverter Valve** places the Gemco Spherical Disc Valve in a 'Y' junction that allows the valve to select a product feed from one of the two inputs, or to direct one incoming stream of material to either of the two outlets. The standard D-2 valve is constructed of 316 stainless steel, but it can be made from any weldable alloy. The two ports can be positioned at 30 degrees, 45 degrees, or 60 degrees off the center-line of the third port. Typical Diverter applications take advantage of its rugged design and its optional sanitary version in uses varying from rock crushers to food processing.



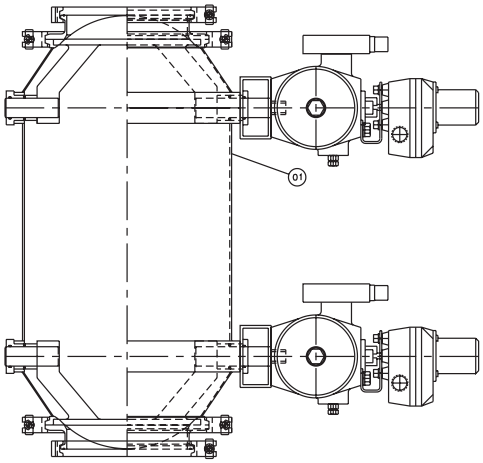


Double Dump Airlock

For flow of material between two

Gemco **Airlocks** are designed to control the flow of material between two atmospheres or pressures. They typically consist of two standard Type T Valves connected by an intermediate chamber and are often used instead of rotary feeders, which are prone to high maintenance and leakage of material and gases. Normal cycling varies from one to three times per minute. Slower cycling is possible and nominal material flows of one half to ten cubic feet per cycle are available. Chamber purge, sight glasses, clean-out ports, and automatic cycling controls are among the custom engineered options available.





Wash Down Equipment

Cleaning and sanitizing equipment for applications where safety is the number one concern — built to outlast and outperform all others.

Valve Automation

FM Approved Fire-Safe Thermal Shut-off Valves, Fusible Links, Actuators, Ball Valves, Butterfly Valves, and Accessories

Engineered Valves

High quality customized tailored solutions for unique applications challenges for powders, dry bulk materials, and slurries.

Process valves

Engineered solutions for the transfer of fluid and flow control for highly critical applications from sampling to inline process to permanent isolation.



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