Minerals

Delta Industrial™
Knife Gate Valves


DELTA
CF8M
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Innovative design, industry leading performance, customisable features, and outstanding dependability ensure our Delta Industrial™ knife gate valves perform under the most demanding conditions.

For more than 20 years, Delta Industrial™ knife gate valves have been serving the mining and processing industries worldwide, setting the standard for slurry knife gate valve performance.

Our committed team of industry experts and experienced engineers utilise their unsurpassed attention to detail and quality to ensure Weir Minerals lead the industry in product innovation.

Our world class manufacturing facility in the USA is equipped with the latest in manufacturing and testing technology to ensure our customers' requirements and quality standards are met at all times.

Your trusted operating partner

Delta Industrial™ knife gate valves are backed by the vast Weir Minerals Services™ network, which means our experts are there to support you, every step of the way, wherever you may be.

By focusing on performance and reliability, we work with you towards achieving maximum productivity and efficiency for your operation, combined with flexible commercial options.

We have an extensive global network able to provide services on-site, or at one of our 120 dedicated service centres.

With a unique transverse seal, and mechanically retained gate seal with precision machined metal-to-metal back up seating, Delta Industrial™ knife gate valves guarantee zero leakage.

Many knife gate valves have serious limitations such as leakage to external environments during valve cycling and a non-cutting gate tip that pushes product into the gate seat.

Our Delta Industrial™ knife gate valves are different. Their construction provides a zero leakage guarantee due to their unique transverse seal and shear gate design. Combined with its highly-engineered seating arrangement, our range of knife gate valves provide exceptional pipeline isolation, proving them to be one of the highest performing valves in heavy duty applications.

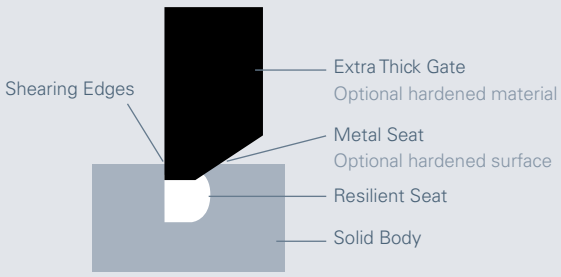
Design features

- Bi-directional, zero-leakage shut-off.
- Packingless design. Transverse seal, no gate or stem packing.
- Enclosed body prevents leakage to the environment.
- Seal retained out of the flow stream and flush with the bottom port.
- Full port flow reduces pressure drop and turbulence, thus minimising wear.
- Fully guided, bevelled edge machined gate shears through obstructions in flowing media.
- Elastomer port seal is mechanically retained by machine groove with pinhole anchoring.
- No seat cavities where solids can collect and cause gate interference.
- Will operate under vacuum conditions.
- Top-works enclosed with tough LEXAN polycarbonate material with OSHA (Occupational Safety and Health Administration) compliant lock-out mechanism.
- Yoke design allows fitting for various designed actuators.
- Optional coatings, wear rings and overlays for tough slurry duties available.

Elastomer seal

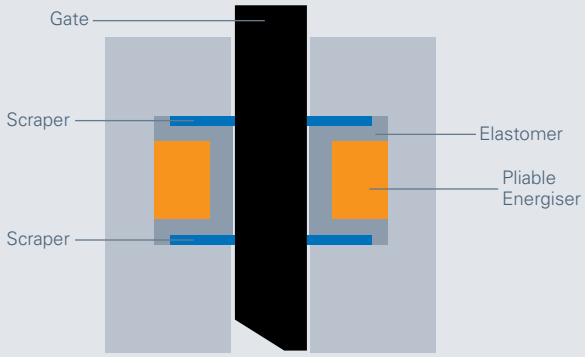
Delta Industrial™ knife gate valves have a primary elastomer seal. This is provided by an interference fit cord stock (ring seal) on the perimeter of the gate that, by design, is protected from the flow. The precision machined metal seat provides a secondary seal and over-closure protection. The angled leading edge on the blade is capable of shearing through objects in the flow media. The primary wear surface is metal as opposed to an elastomer sleeve. This means it can be repaired by replacing the wear rings or re-coating the overlay. The body and wear areas can be manufactured from a wide range of materials to ensure optimum wear and corrosion protection.

The Shear-Seal Advantage



Above: Side view of bottom port, gate and dual seat.

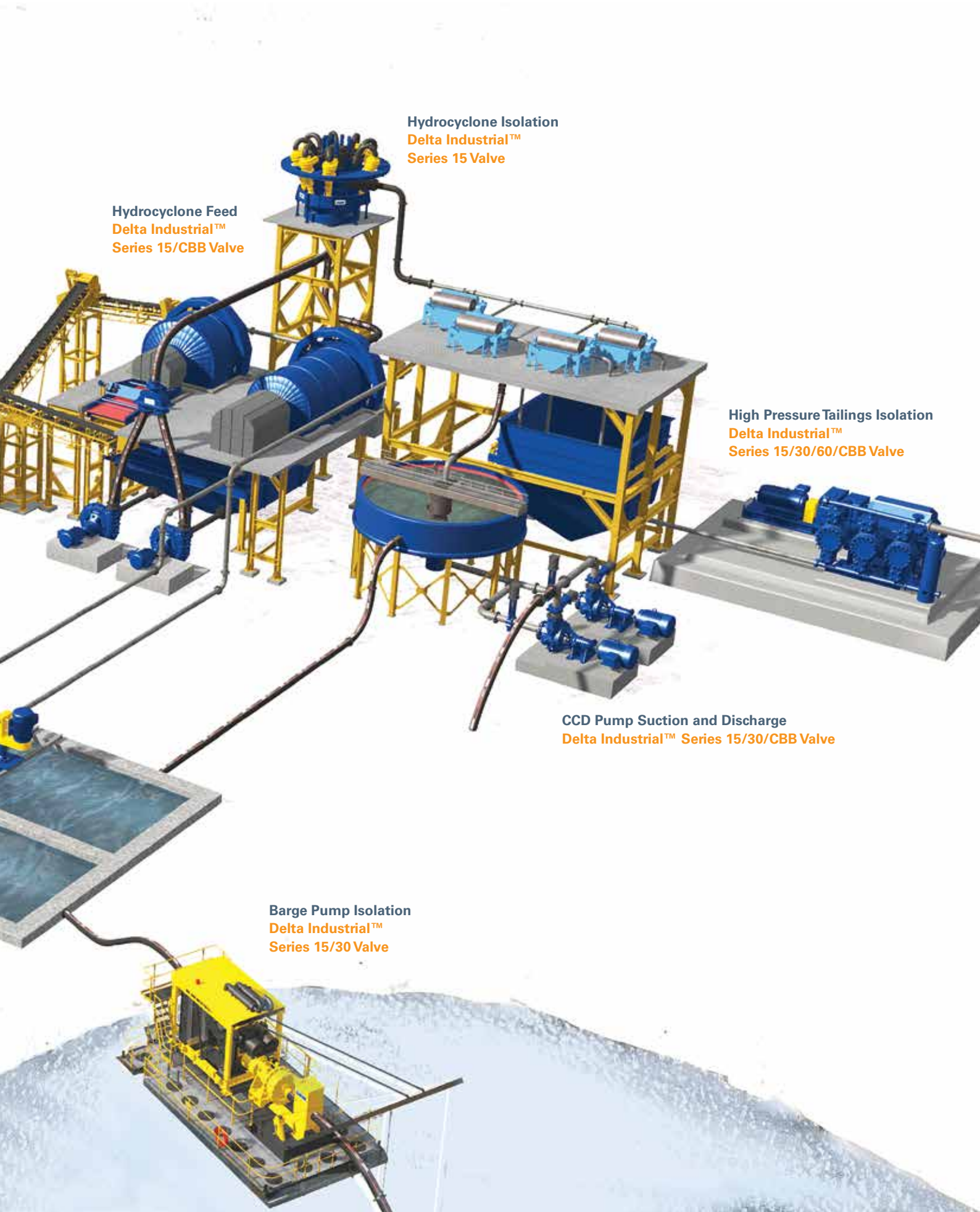
Delta Industrial™ Valve's Transverse Gate Seal



Transverse gate seal

To seal from external leakage, the Delta Industrial™ knife gate valve utilitises an in-service, repackable, transverse (gate) seal. The transverse seal features an upper and lower scraper, and an elastomer energised by a pliable compound that can be added while the valve is in service. The gate is completely removed from the process flow in the full open position.

Our Delta Industrial™ knife gate valves are designed to handle extreme abrasive, erosive and corrosive environments.


Hydrocyclone Isolation
Delta Industrial™
Series 15 Valve
Hydrocyclone Feed
Delta Industrial™
Series 15/CBB Valve
High Pressure Tailings Isolation
Delta Industrial™
Series 15/30/60/CBB Valve
CCD Pump Suction and Discharge
Delta Industrial™ Series 15/30/CBB Valve
Barge Pump Isolation
Delta Industrial™
Series 15/30 Valve

Our Delta Industrial™ knife gate valves are designed to deliver superior performance at high pressures, across a wide range of applications.

There are a number of processes within a mine site which require specialised valves designed to handle highly abrasive environments. Delta Industrial™ knife gate valves are ideal for many of these demanding processes.

Mill circuit

The mill circuit presents a number of issues when selecting a valve. Large particle sizes, high percentages of solids, and high specific gravity make selecting the correct valve critical to achieving the least possible downtime. We can customise our Delta Industrial™ valves to provide optimal performance in any part of the mill circuit. The Delta Industrial™ 15 series and Centre, Block and Bleed (CBB) valves provide outstanding isolation performance, with zero leakage shut-off and no discharge to the environment during operation.

Tailings and slurry transport

Tailings consist of ground rock and process effluents that are generated in a mine processing plant. Mechanical and chemical processes are used to extract the desired product from the run of the mine ore and produce a waste stream known as tailings. The pressure in these lines can exceed 50bar (725psi), necessitating engineered valve solutions for safe and reliable operation. We have developed the Delta Industrial™ 60 series valves for such applications, being capable of handling 102bar (1480psi).

Separation

Separation areas process large volumes of slurry, classifying it based on differences in size and/or specific gravity. The output from any of these processes produce high density slurries that are challenging to securely isolate. The Delta Industrial™ 15 series or CBB valve, with their self-flushing, pocketless design, are ideally suited to provide reliable isolation whenever it is required.

Leaching

Leaching processes provide some of the most difficult operating conditions for valves; high wear applications, coupled with highly corrosive fluid and often high temperatures. The outstanding design features of our Delta Industrial™ valves, such as the encapsulated resilient seat and the transverse seal,
deliver zero leakage, and provide superior wear and isolation capabilities. In addition, all of our valve components are made from high alloy materials.

Our Delta Industrial™ 15, 30 and CBB series valves are particularly suited to these extreme conditions.

Other industries

Delta Industrial™ knife gate valves deliver dependable reliability, providing zero leakage isolation, across many severe service applications in general industry. Our knife gate valves provide low maintenance and superior operational performance in industries such as:

Pulp and paper

- heavy duty cleaners
- liquors and lime slurry
- high density stock
- repulpers

Effluent water plants

- digester sludge
- sewerage isolation
- grit slurry lime
- thickeners

Steel industry

- scrubbers
- blast furnace slurry
- reactors
- power industry
- ash handling

FGD

- burner lime
- pulverised feed isolation
- switch separation and tailings slurry transport

Our Delta Industrial™ knife gate valves are designed to reliably perform under the most demanding conditions.

Our Delta Industrial™ knife gate valves guarantee zero leakage.

On discharge isolation, where the valves must seal tightly from either direction under varying pressure differentials, our Delta Industrial™ knife gate valves perform with outstanding reliability.

Delta Industrial™ series 15S or 15L valve

The Delta Industrial™ series 15 valve is a fully rated ASME Class 150# (PN20) guided shear gate from 50mm (2") through 1800mm (72"). Its standard face-to-face dimensions conform to MSS-SP81 and MSS-SP135 and operates to a maximum pressure of 1965kPa (285psi), dependent upon materials selected. In addition, our Delta Industrial™ series 15 valve is available with custom face-to-face dimensions designed for specific installations. (Delta Industrial™ series 150 valve is also available to a maximum pressure rating of 1035kPa (150psi.)

Delta Industrial™ series 30 valve

Delta Industrial™ series 30 valve is a fully rated ASME Class 300# (PN50) guided shear gate from 50mm (2") through 900mm (36"). Its standard face-to-face dimensions conform to MSS-SP135 and operates to a maximum pressure of 5100kPa (740psi), dependent upon materials selected. In addition, our Delta Industrial™ series 30S or 30L valve is available with custom face to face dimensions designed for specific installations. (Delta Industrial™ series 301 valve also available to a maximum pressure rating of 2068kPa (300psi.)

Delta Industrial™ series 60 valve

The Delta Industrial™ series 60 valve is a fully rated ASME Class 600# (PN100) guided shear gate from 50mm (2") through to 600mm (24"). It operates to a maximum pressure of 10200kPa (1440psi), dependent upon materials selected. The Delta Industrial™ series 60 valve features a hardened 17-4-PH™ Steel gate with options such as wear rings, Chromium Carbide (CCO) or Tungsten Carbide (TCO) body overlays for the harshest conditions.

Delta Industrial™ series CBB valve

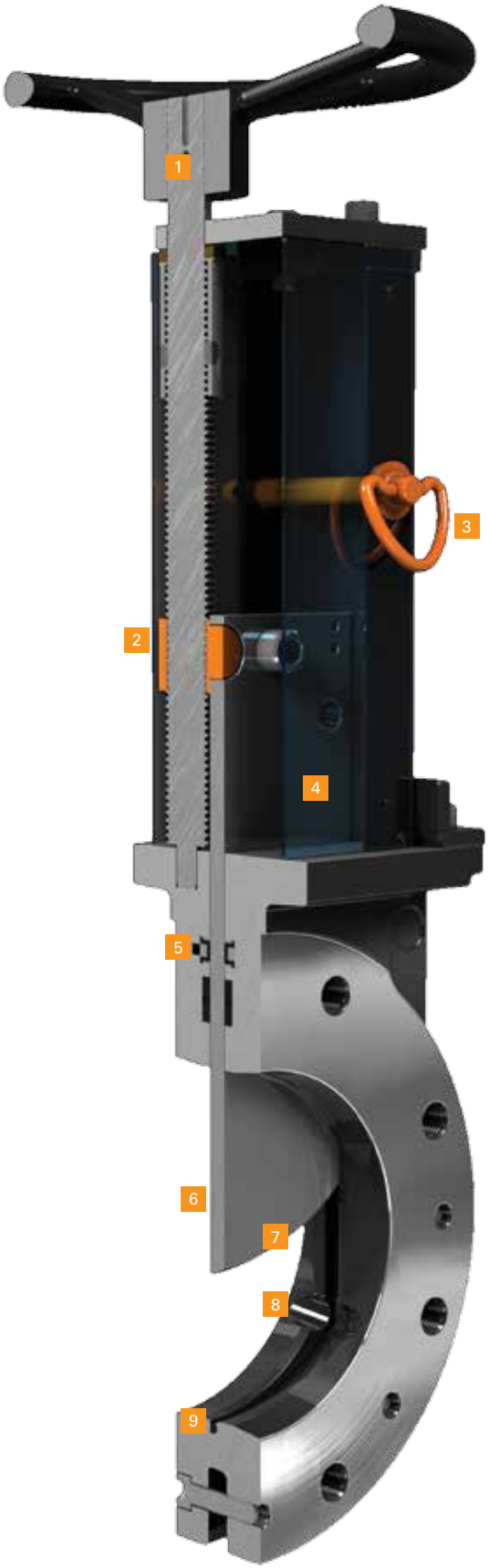
The Delta Industrial™ series Centre, Block and Bleed (CBB) valve combines two separate gates in one body, each sealed with their own gate seal and transverse seals, and operated by a single actuation mechanism. The centre section hosts the drain, purge or bleed connections and can be customised for each specific application. Maximum operating pressures of 5100kPa (740psi), dependent upon materials selected.

Delta Industrial™ Transmitter Isolation valve

The Delta Industrial™ Transmitter Isolation valve (pictured left) is a customised 80mm (3") series 150 guided isolation valve. It is designed for close coupling to a tank wall and operated by a ratchet handle to minimise dead space when using transmitters to measure level, pH, pressure and so forth. The flange face on the tank side is dual drilled with both B16.5 and tank flange drilling.

Delta Industrial™ Stelson™ valve

The Delta Industrial™ Stelson™ series valve is a range of 1034kPa (150psi) CWP rated knife gate valves from 50mm (2") through 400mm (16"). Its standard face-to-face dimensions conform to MSS-SP81 and it operates to a maximum pressure of 1034kPa (150psi), dependent upon materials selected. Higher pressure versions are available.



Delta Industrial™ Knife Gate Valve
Product Features

1. Solid stainless steel non-rising stem for excellent corrosion resistance and minimum clearance.
2. Highly visible fluorescent coloured stem nut to verify position. Threads of nut coated with XYLAN coating to eliminate the need for stem lubrication.
3. OSHA compliant lockout pin for open and close position.
4. Cover made of tough LEXAN polycarbonate material protects internal components and eliminates pinch points.
5. Unique transverse seal design and scrapers deliver superior sealing even in high cycle applications.
6. Bevelled edge gate to cut through tough solids.
7. Fully guided gate eliminates gate movement during closing and eliminates gate deformation.
8. Flush-out areas ensure product is expelled by the blade closing action.
9. Mechanically retained seal prevents shifting during valve operation. Seal location and seat design provide full bi-directional sealing and zero leakage.

The zero leakage design of our Delta Industrial™ valves protects both the operator and the environment from process fluids.

Selecting your Delta Industrial™ knife gate valve

Personal safety and the environment are critically important in all situations. For optimal performance of our Delta Industrial™ knife gate valves, it is vital to have the correct process information.

Below are some of the major considerations and options when selecting your valve:

Pressure determines the model

- For slurry up to 20 bar (up to 285 psi) use Delta Industrial™ series 15 valve
- For slurry 20 to 51 bar (285 - 740 psi) use Delta Industrial™ series 30 valve
- For slurry 51 to 102 bar (740 - 1480 psi) use Delta Industrial™ series 60 valve

Chemical make-up of slurry determines the materials

For slurries where corrosion is of concern, optional materials include: 316ss, 17-4-PH ss, Alloy 20, HASTELLOY C alloy, titanium, and duplex stainless steel

Particle size, consistency, and percentage of solids determines the wear options

Wear options include: Single or dual wear rings, CCO or TCO overlays, body and blade coatings, hardened blades, and overlays on blade tip

Operating mechanism determines the actuation

Optional actuations include: Handwheel, bevel gear, fast acting lever, double acting pneumatic, failsafe pneumatic, hydraulic, and electro hydraulic

Control and monitoring options determine the accessories

Optional accessories include: Limit switches, proximity switches, position transmitters, positioners, solenoids, regulators, air filters, speed controllers, and junction boxes

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