

DeZURIK VPB V-PORT BALL VALVES



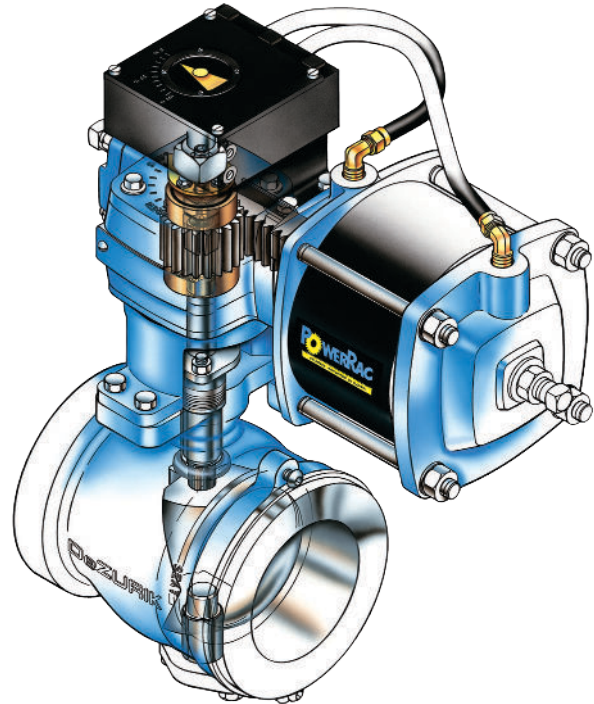
VPB V-Port Ball Valves

Design and Construction

DeZURIK V-Port Ball Valves deliver superior performance and reliability required to optimize process performance. This versatile valve is designed for control of fibrous suspension applications, in addition to clean, dirty, viscous and corrosive liquids and gases.

The VPB is available in ASME Class 150 in size range 1-20" and is available in ASME Class 300 in size range 1-12". DeZURIK V-Port Ball Valves feature one-piece body construction and are available in flanged or flangeless end connections. They conform to or exceed North American and International Standards for control valves. Superior control performance is designed into the geometry of the ball for critical management of flow. A locked ball-to-shaft connection ensures no lost motion for critical control. Bearings, covers and fasteners are designed for maximum valve reliability.

When operated by a high quality DeZURIK actuator and controlled by one of many high performing positioners, the DeZURIK V-Port Ball control valve can deliver control accuracy exceeding 0.5% as measured by the BenchMark Control Valve Diagnostics™ System. Control accuracy will increase process plant efficiency, improve overall profitability and reduce control valve life-cycle costs.



In the event maintenance is needed, DeZURIK's unique design facilitates fast, easy breakdown and assembly of valve components with no special tools required. The result is reduced maintenance time and the lowest overall cost of ownership.

Drop-in-place, self-aligning and interchangeable seat options offer ease in maintenance. Available seat options include reinforced PTFE, flexible metal, rigid metal and clearance.

Streamlined Flow Passages

DeZURIK V-Port Ball Valves feature a streamlined flow passage, providing maximum efficiency (Cv/Kv per valve size) and minimizing erosion inside the valve body.

Rugged, Easy-to-Maintain Construction

The heavy-duty cast body is a one-piece design for increased installed-pipe integrity and minimal potential leak paths. Stainless steel construction combined with drop-in seats and a splined shaft and ball connection makes the DeZURIK V-Port Ball Valve easy to maintain.

Carbon Steel and High Alloy Valves Available

VPB valve bodies are available in 316 and 317 stainless steel, carbon steel and Hastelloy C.



Laying Length Flexibility

DeZURIK VPB valves offer the ultimate in face-to-face flexibility. The solid one-piece body is available in either ASME B16.10 or ASME/ISA take-out dimensions. V-Port Ball valves are available in flanged or flangeless construction to meet individual requirements and common piping standards. For added versatility, these valves meet IEC, ISO and EN face-to-face dimensions. In plants that have an installed base of both ASME B16.10 and ASME/ISA control valves, VPB users have been able to minimize storeroom inventory by stocking valve bodies, ASME/ISA retainers and ASME B16.10 retainers. A replacement valve with either face-to-face dimension can be quickly installed. DeZURIK also offers an integrally flanged one-piece ASME B16.10 body. Laying length flexibility is one example of how the VPB can save money.

International Flange Drilling

DIN 10, 16, 25 and 40, and JIS 10, 16 and 20 flange drilling bolt circle options are available in addition to ASME B16.5.



V-Ball Design

Utilizing computer-aided design and extensive flow-loop testing, the v-orifice was designed to provide the high rangeability and precision throttling required on fibrous suspension applications, as well as clean or dirty liquids and gases.

The straight through flow passage provides maximum efficiency and excellent erosion resistance. The ball can be furnished with a range of high-alloy materials, all provided with a heat-treated nickel overlay. This overlay provides a non-porous and lubricious surface, resulting in greater corrosion resistance and less sliding friction. For abrasive and high temperature applications, a 317 stainless steel ball can be furnished with a tungsten carbide overlay or a Hastelloy C ball with nickel overlay can be provided.

Uninterrupted Gasket Surface

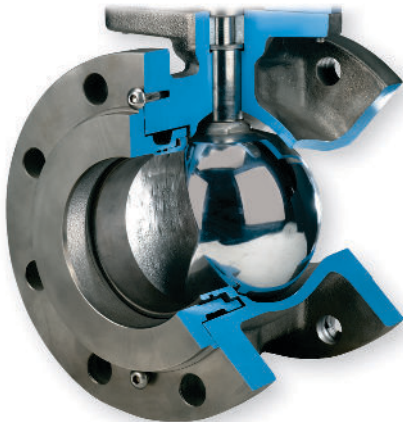
DeZURIK V-Port Ball Valves feature a full, uninterrupted, raised-face gasket surface that provides maximum gasket integrity. The gasket surface provides full seal contact area with ASME B16.20 gaskets.

Sealed Bearings

The sealed-bearing option prevents media from entering the bearing areas, which can hinder valve operation. PFA Fluoropolymer or FFKM Perfluoroelastomer seals are available for bearings that need exceptional protection from scaling, plating, abrasive or polymerizing media.

Corrosion-Resistant Bearings

The one-piece bearing provides a large area of radial support to the shaft. The shaft is fully supported, greatly reducing shaft fatigue. The 317 stainless steel wire mesh reinforced PTFE bearing has a low coefficient of friction that minimizes operating torques and reduces actuator sizing requirements. For severe-service applications, a cobalt-chromium alloy bearing is available. A sealed-bearing option is also available.



Self-Aligning Ball and Seat

The self-aligning ball and seat on the VPB valve reduces lengthy setup time during repair and reassembly. Valves can easily be returned to like-new performance without time-consuming special procedures. And because of the spring-loaded metal seat design, the ball and seat self-compensate for wear on either surface.

Stainless Steel Fasteners

As standard, all DeZURIK V-Port Ball Valve fasteners are stainless steel, providing easy disassembly. An additional maintenance feature is a bottom access cover for valve disassembly and reassembly.

Splined Shaft with Solid Ball-to-Shaft Connection

The splined shaft and ball with locking torque screw on DeZURIK V-Port Ball Valves provide a high-strength, positive connection that effectively eliminates mechanical backlash and hysteresis. The splined connection with locking torque screw ensures accurate, precise positioning of the ball. The machined diameter of the shaft provides blow-out proof protection.



Common Valve Components

DeZURIK's V-Port Ball Valve was designed to share a majority of valve components with the DeZURIK RCV Rotary Control Valve. The two valves use the same bodies, packing components, bearings, brackets and fasteners. The common components reduce spare parts in inventory and associated costs for plants utilizing both styles of DeZURIK control valves.

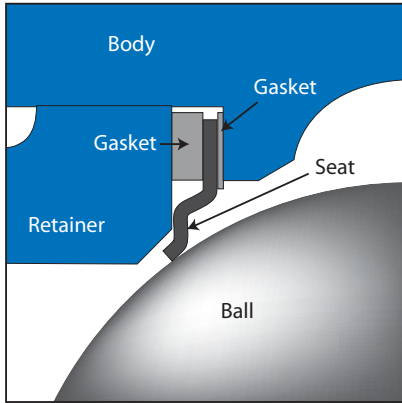
Streamlined Maintenance

DeZURIK V-Port Ball Valves feature the simplest maintenance procedures among control valves available. There are no threaded trim parts.

The seat retainer and trim components drop in place ensuring precise alignment of plug and seat. Disassembly and reassembly are easily completed with no special wrenches or other special tools required. On viscous and suspended fibrous services where routine maintenance is expected, the VPB's drop-in trim, optional sealed bearings and self-aligning ball/seat reduce maintenance costs and minimize lost production.

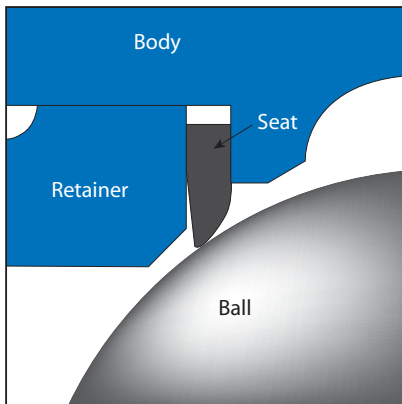


Seat Options



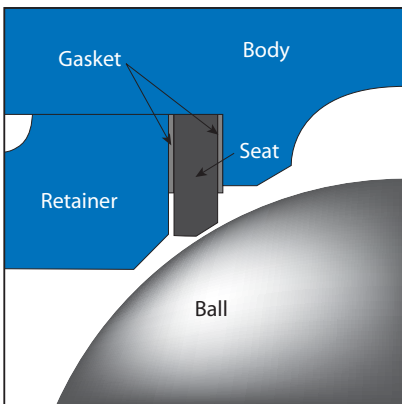
Flexible Metal Seat

The flexible metal seat is designed to shear fibrous fluids and provides shutoff up to ANSI/FCI 70.2 Class IV standard. Flexible metal seats are rated to the full valve pressure rating with the valve installed in the flow-to-open direction and rated to 150 psi (1030 kPa) pressure differential when installed in the flow-to-close direction.



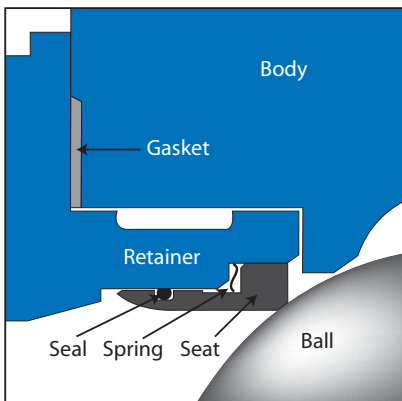
Reinforced PTFE Seat

Reinforced PTFE seats are typically used on clean fluid applications where ANSI/FCI 70.2 Class VI shutoff is required. DeZURIK V-Port Ball Valves feature a reinforced PTFE seat, designed for flow-to-open operation, rated to 285 psi (1895 kPa) pressure differential. For added versatility, all V-Port Ball valve seat options are field-interchangeable.



Clearance Seat

The clearance seat provides maximum controllability and minimum hysteresis in applications that do not require tight shutoff. This bi-directional seat eliminates seat friction. Shutoff is 5% of valve's maximum flow when closed.



Rigid Seat

Rigid seats are available for abrasive application including reclaimed fiber systems and applications with suspended chemical solids. The rigid seat provides shutoff performance to ANSI/FCI 70.2 Class IV. Materials include 317 stainless steel and Hastelloy C, all with heat treated nickel overlay. For enhanced abrasion resistance, a 317 stainless steel seat with tungsten carbide seating surface and solid Cobalt-Chromium alloy bearing is available.

An optional nickel-chromium spring can be substituted for the 17-4 PH stainless steel seat spring when added corrosion resistance is required.

The rigid seat is designed for flow-to-open operations and is field-interchangeable with the reinforced PTFE, flexible metal and clearance seats.

Actuators

Actuator Flexibility Options

V-Port Ball valves are available with DeZURIK PowerRac® or Diaphragm actuators. The actuator top mounting pads or adapter brackets of currently manufactured DeZURIK rotary control and isolation valves (RCV, VPB, BHP, BOS) are compatible with the ISO 5211 standard. This common actuator platform increases flexibility and helps reduce spare parts inventory.

Cylinder Actuators

PowerRac® Cylinder actuators are available as double-acting or spring return. They feature a high opening torque for on-off applications and also maintain a high operating torque throughout the full stroke for modulating service.

Diaphragm Actuators

Diaphragm actuators DR-40B & DR-85B are 316 stainless steel construction to provide corrosion resistance for a wide range of demanding industrial environments. They are designed for on-off or modulating service in either a Reverse (spring-to-close) or Direct (spring-to-open) mode. Fail action can be easily changed in the field by flipping the actuator over with no additional parts required. Larger size diaphragm actuators DR-145 & DR-250 are available to accommodate larger valve sizes and higher shutoff pressure differentials.



Close Coupling of Actuator to Valve

DeZURIK Diaphragm and PowerRac® actuators rigidly connect to the valve and the positioner on the actuator housing. This accurately feeds exact valve position directly to the positioner. In addition, the close coupling of the actuator to the valve makes the total package as compact as possible.



Throttling Control

The V-Port Ball valve design ensures unsurpassed accuracy over the 90° range of operation. Splined and locked ball-to-shaft connection, characterized v-port ball, low-friction bearings and low-friction packing combine to give superior control, including fast, accurate response to signal changes. These rigid connections effectively eliminate mechanical backlash and hysteresis.

The V-Port Ball valve with a high quality DeZURIK actuator and one of many high performing positioners will exceed 0.5% control accuracy, delivering over 200 discrete positions. This exceeds industry valve dynamic performance standards as well as the accuracy levels of most pneumatically actuated control valves.

To enhance accuracy of the VPB in real world process systems, the control valve assembly can be fitted with a smart digital positioner that not only provides near zero air bleed. This allows precise control and feedback of valve performance to the Distributed Control System (DCS).

Intelligent Positioners

Digital positioners improve reliability and performance through accurate calibration. Accurate calibration is achieved by the touch of a button; the positioner self-calibrates. They also offer diagnostic capabilities which monitor variables in the valves such as valve travel, valve friction, air consumption, and more to ensure operation is at peak performance. Digital positioners are available with HART, Foundation Fieldbus, or Profibus communication protocols. Digital positioners can also be used in a conventional 4-20 mA, analog control environment.



DeZURIK P30A



DeZURIK P85

Performance Testing

Control valve performance is tested with a BenchMark Control Valve Diagnostic™ system. Each valve has a discrete test result that can be referenced through the valve's serial number. V-Port Ball valve performance accuracy provides in excess of 200 repeatable positions. With routine maintenance, field monitoring or monitoring through a digital positioner, this performance level can be maintained throughout the life of the valve.

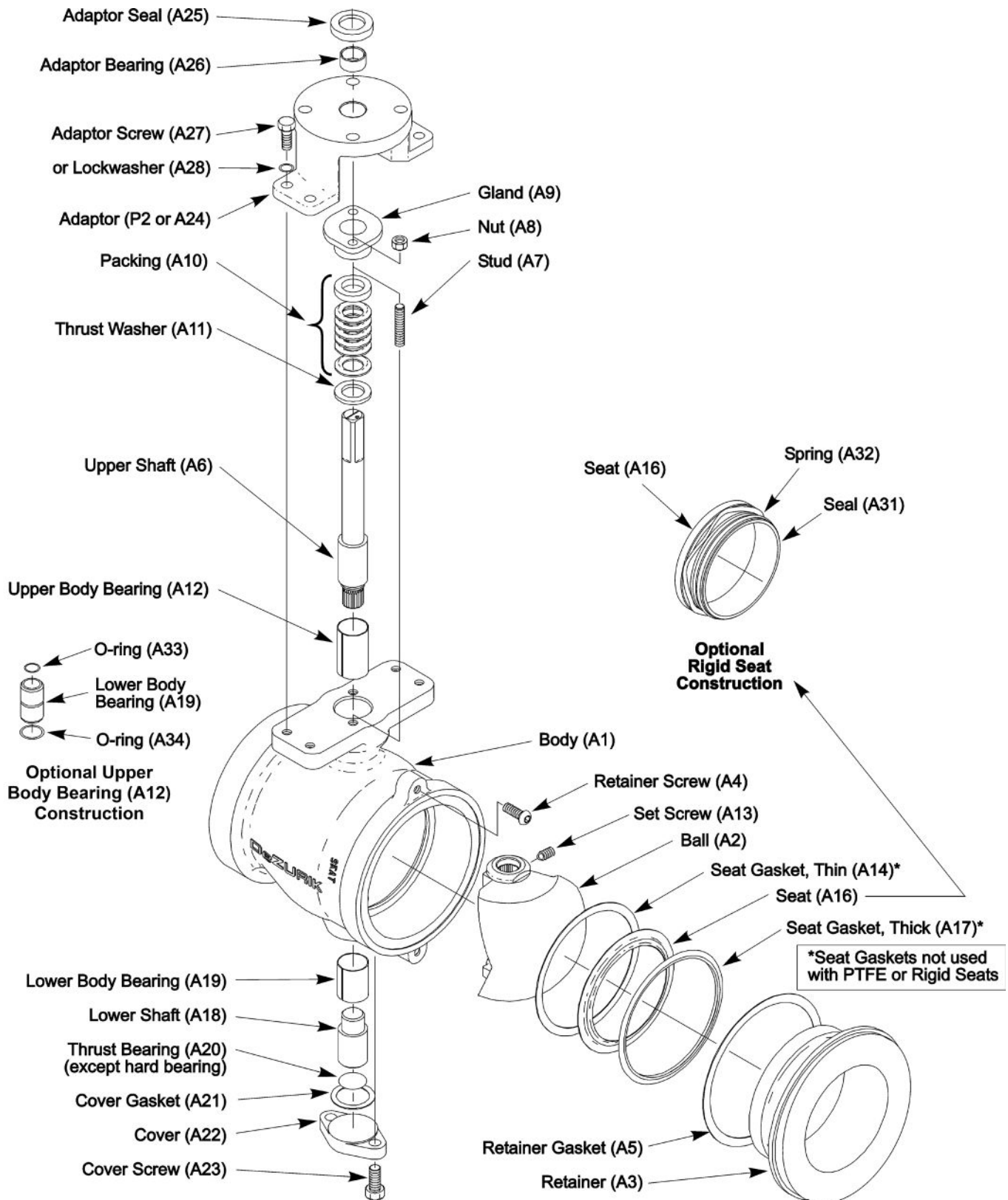
Control Valve Test Report

All VPB valve/actuator/positioner assemblies are tested for accuracy. The optional CVT Control Valve Test Report can be ordered which documents the response measurement from step inputs per ISA-75.25.01-2000 (R2010).

Accessories

A full line of accessories integrated to the actuator system is available to meet your individual mill/plant requirements.

Materials of Construction

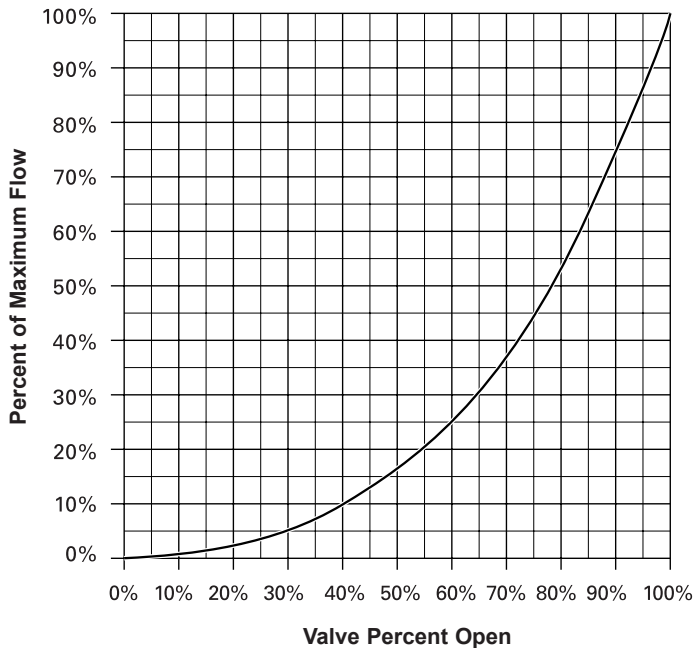


Materials of Construction

| Item | Description | Order Code | Material |
|------|---|------------------|--|
| A1 | Body | S2 | 316 Stainless Steel, ASTM A 351, Grade CF8M |
| | | S3 | 317 Stainless Steel, ASTM A 351, Grade CG8M |
| | | CS | Carbon Steel, ASTM A 216, Grade WCB |
| | | HC | Hastelloy C, ASTM A 494, Grade CW2M |
| A2 | Ball | S3NH | 317 Stainless Steel, ASTM A 351, Grade CF8M, with Heat Treated Nickel Overlay |
| | | S3S | 317 Stainless Steel, ASTM A 351, Grade CF8M, with Tungsten Carbide Overlay |
| | | HCNH | Hastelloy C, ASTM A494, Grade CW2M with Heat Treated Electroless Nickel Overlay |
| A3 | Retainer | S2 | 316 Stainless Steel, ASTM A 351, Grade CF8M |
| | | S3 | 317 Stainless Steel, ASTM A 351, Grade CG8M |
| | | CS | Carbon Steel, ASTM A 216, Grade WCB |
| | | HC | Hastelloy C, ASTM A 494, Grade CW2M |
| A4 | Screw, Retainer | All | 18-8 Stainless Steel |
| A5 | Gasket, Retainer | All | Flexible Graphite |
| A6 | Shaft, Upper | S10 | 2205 Duplex Stainless Steel |
| | | S5 | 17-4 PH Stainless Steel |
| | | HCC | Hastelloy C, ASTM B 574, Alloy N06022 Ceramic Coated |
| | | TNC | Titanium, Ceramic Coated |
| A7 | Stud, Packing | All | 18-8 Stainless Steel |
| A8 | Nut, Packing | All | 18-8 Stainless Steel |
| A9 | Gland | S2, CS | 316 Stainless Steel, ASTM A 351, Grade CF8M |
| | | S3 | 317 Stainless Steel, ASTM A 351, Grade CG8M |
| | | HC | Hastelloy C, ASTM A 494, Grade CW2M |
| A10 | Packing | TC | PTFE Chevron |
| | | G2 | Braided Carbon Graphite |
| A11 | Thrust Washer | S2, CS | 316 Stainless Steel, ASTM A 276, Type 316 |
| | | S3 | 317 Stainless Steel, ASTM A 276, Type 317 |
| | | HC | Hastelloy C, ASTM B 574 or B 575 |
| A12 | Bearing, Upper | FT | 317 Stainless Steel Wire Mesh Reinforced PTFE |
| | | HC | Hastelloy C |
| | | SL | Cobalt Chromium Alloy |
| | | S9 | 440C Stainless Steel |
| A13 | Set Screw | S2, CS | 316 Stainless Steel |
| | | S3, HC | Alloy 20 Stainless Steel |
| A14 | Gasket, Seat | S2, S3, HC | Flexible Graphite |
| A16 | Seat | RT | Reinforced PTFE, Filled 15% Glass, 5% Molybdenum |
| | | S6N | Super Austenitic Stainless Steel (AL-6XN®), Electroless Nickel Plated, Heat Treated |
| | | S5C | 17-4 PH Stainless Steel, H 1150 |
| | | S3R | 317 Stainless Steel, ASTM A351, Grade CG8M, Electroless Nickel Plated, Heat Treated |
| | | S3S | 317 Stainless Steel, ASTM A351, Grade CF8M, UCAR 100 and SDG Tungsten Carbide Coated |
| | | S3RI | 317 Stainless Steel, ASTM A351, Grade CG8M, Hard Faced, Heat Treated |
| | | S3SI | 317 Stainless Steel, ASTM A351, Grade CG8M, Hard Faced, Heat Treated |
| HCRI | Hastelloy C, ASTM A494, Grade CW2M, Electroless Nickel Plated, Heat Treated | | |
| A17 | Gasket, Seat | S3 | 317L Stainless Steel, Flexible Graphite Filled |
| | | HC | Hastelloy C, Flexible Graphite Filled |
| A18 | Shaft, Lower | S10 | 2205 Duplex Stainless Steel |
| | | S5 | 17-4 PH Stainless Steel |
| | | HCC | Hastelloy C, ASTM B 574, Alloy N06022 Ceramic Coated |
| | | TNC | Titanium, Ceramic Coated |
| A19 | Bearing, Lower | FT | 317 Stainless Steel Wire Mesh Reinforced PTFE |
| | | HC | Hastelloy C |
| | | SL | Cobalt Chromium Alloy |
| | | S9 | 440C Stainless Steel |
| A20 | Bearing, Thrust | FT | PTFE Fabric Bonded to 317 SS |
| | | FT, HC | PTFE Fabric Bonded to Hastelloy C |
| | | SL | Graphite |
| A21 | Gasket, Cover | All | Graphite |
| A22 | Cover | S2 | 316 Stainless Steel, ASTM A 351, Grade CF8M |
| | | S3 | 317 Stainless Steel, ASTM A 351, Grade CG8M |
| | | CS | Carbon Steel, ASTM A 216, Grade WCB |
| | | HC | Hastelloy C, ASTM A 494, Grade CW2M |
| A23 | Screw, Cover | All | 316 Stainless Steel |
| A24 | Adaptor | All | Ductile Iron |
| A25 | Seal, Adaptor | DR, PR | Nitrile Rubber, Carbon Steel Case |
| A26 | Bearing, Adaptor | DR55, 85 | Oil-Impregnated Bronze |
| A27 | Screw, Adaptor | All | 18-8 Stainless Steel |
| A28 | Lockwasher, Adaptor | All | 18-8 Stainless Steel |
| A31 | Seal, O-Ring | All | Fluoro Rubber, Encapsulated in PFA |
| A32 | Spring | All | Fluoro Rubber, Encapsulated in PFA |
| A33 | O-ring | S9VS, SLVS, HCVS | Fluoropolymer Seal |
| | | SLKS, HCKS | FFKM Perfluoroelastomer Seal |
| A34 | O-ring | S9VS, SLVS, HCVS | Fluoropolymer Seal |
| | | SLKS, HCKS | FFKM Perfluoroelastomer Seal |

Valve Selection

Flow Characteristic



Applicable Standards

| DeZURIK VPB V-Port Ball Valves are designed and/or tested to meet the following standards: | |
|--|--|
| ASME B16.10 | Face-to-Face dimensions, short pattern requirements |
| ASME B16.34 | Body Wall Thickness and Pressure/temperature ratings for Class 150 and 300 Valves |
| ASME B16.5 | Flange dimensions conform to Pipe flanges and Flanged Fittings for Class 150 and 300 |
| ANSI/FCI 70.2 | Control valve seat leakage |
| EN 558-1 PN 10/16 | Basic Series 3, Face-to-Face dimensions |
| IEC 534-3-2 F-F | Face-to-Face dimensions, Industrial Process Control Valves |
| ANSI/ISA-75.02 | Control Valve Capacity Test Procedures |
| ANSI/ISA-75.08.02 | Face-to-Face dimensions for Flanged and Flangeless Rotary Control Valves |
| ISO 5211/1 & 2 | Part-turn valve actuator attachment, Part 1: Flange dimensions and Part 2: Flange and Coupling performance characteristics |
| ISO 5752 PN 10/16 | Basic Series 3, Face-to-Face dimensions |
| MSS-SP-25 | Data Plate and body identification conform to marking requirements |

Flow Parameters

| Valve Size | Cv*/Kv* 100% Open | |
|------------|------------------------------------|-----------------------------------|
| | Flexible Metal & Rigid Metal Seats | Reinforced PTFE & Clearance Seats |
| 1" | 36 | 40 |
| 25mm | 31 | 35 |
| 1.5" | 120 | 135 |
| 40mm | 104 | 117 |
| 2" | 210 | 235 |
| 50mm | 182 | 203 |
| 2.5" | 260 | 295 |
| 65mm | 225 | 255 |
| 3" | 360 | 420 |
| 80mm | 311 | 363 |
| 4" | 600 | 690 |
| 100mm | 519 | 597 |
| 6" | 1230 | 1290 |
| 150mm | 1064 | 1116 |
| 8" | 2015 | 2190 |
| 200mm | 1743 | 1894 |
| 10" | 3000 | 3180 |
| 250mm | 2595 | 2751 |
| 12" | 4225 | 4390 |
| 300mm | 3655 | 3797 |
| 14" | 5830 | 6060 |
| 350mm | 5043 | 5242 |
| 16" | 7500 | 7770 |
| 400mm | 6488 | 6721 |
| 18" | 9500 | 9840 |
| 450mm | 8218 | 8512 |
| 20" | 12000 | 12430 |
| 500mm | 10380 | 10752 |

*Cv = Flow in GPM of water at 1 psi pressure drop.
*Kv = Flow in m³/hr. of water at 100 kPa pressure drop.

Valve Weights

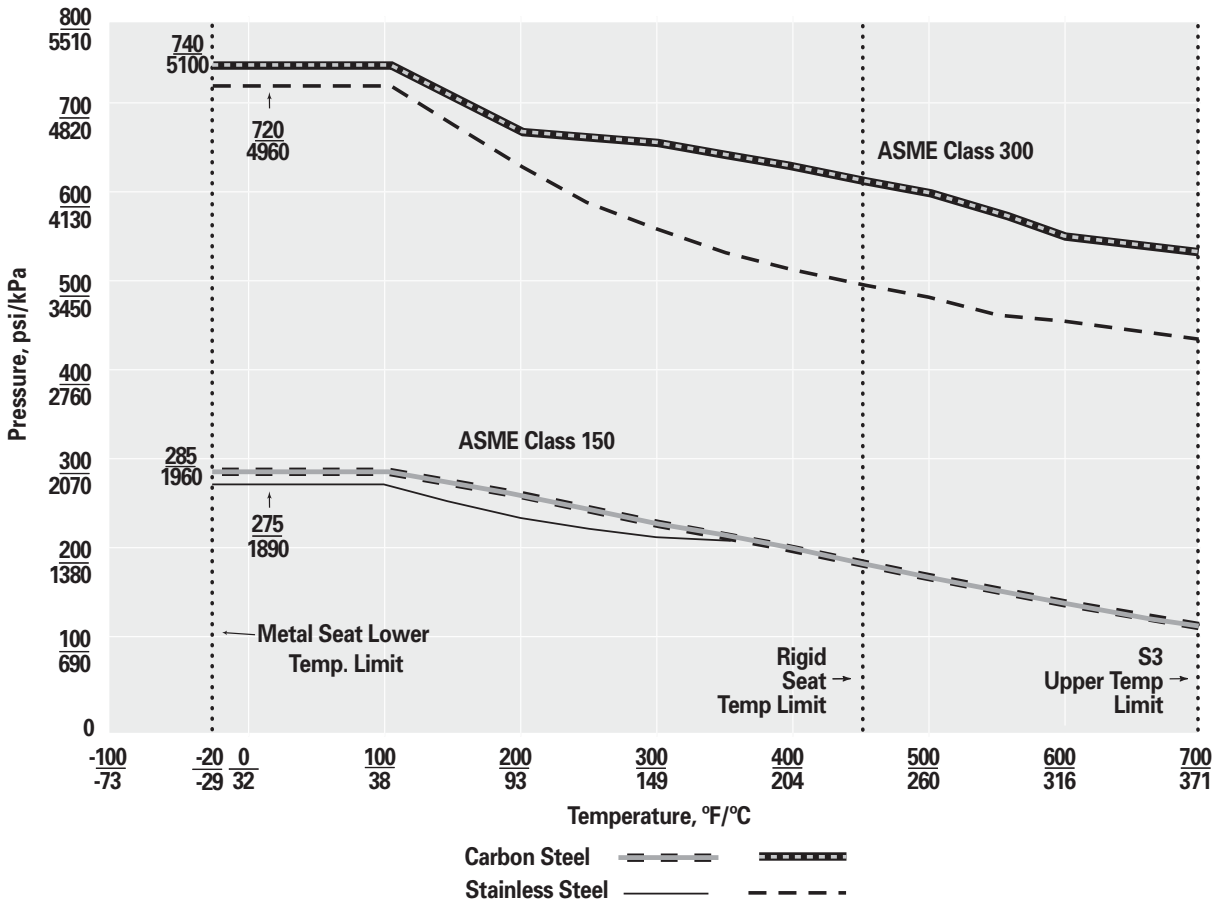
| Valve Size | Class 150 | | | Class 300 |
|------------|---------------------|------------------|-------------------------|---------------|
| | Flanged (F1S & F1A) | Flangeless (W1S) | Add for Long Body (F1L) | Flanged (F2S) |
| 1" | 12 | 9 | 0.5 | 15 |
| 25mm | 6 | 5 | 1 | 7 |
| 1.5" | 17 | 12 | 2.0 | 24 |
| 40mm | 8 | 6 | 1 | 11 |
| 2" | 21 | 13 | 2.8 | 27 |
| 50mm | 10 | 6 | 2 | 13 |
| 2.5" | 32 | 20 | 3.0 | 40 |
| 65mm | 15 | 10 | 2 | 19 |
| 3" | 47 | 35 | 3.3 | 58 |
| 80mm | 22 | 16 | 2 | 27 |
| 4" | 63 | 42 | 3.5 | 79 |
| 100mm | 29 | 20 | 2 | 36 |
| 6" | 95 | 74 | 10.5 | 142 |
| 150mm | 44 | 34 | 5 | 65 |
| 8" | 152 | 116 | 15.3 | 208 |
| 200mm | 69 | 53 | 7 | 95 |
| 10" | 236 | 182 | 17.5 | 342 |
| 250mm | 108 | 83 | 8 | 156 |
| 12" | 368 | 314 | 11.3 | 516 |
| 300mm | 167 | 143 | 6 | 235 |
| 14" | 560 | — | — | — |
| 350mm | 255 | — | — | — |
| 16" | 695 | — | — | — |
| 400mm | 316 | — | — | — |
| 18" | 890 | — | — | — |
| 450mm | 404 | — | — | — |
| 20" | 1105 | — | — | — |
| 500mm | 501 | — | — | — |

Pounds
Kilograms

Valve Selection

Pressure Ratings

Flex Metal*, Rigid Metal and Clearance Seats (S6N, S5C, S3R, S3S, S3RI, S3SI, HCRI)



Shut-Off Capabilities

| Seat type | Flow | Shut-Off Class (ANSI /FCI 70-2) |
|-------------------|-----------------|---------------------------------|
| Flexible Metal* | Bi-Directional | IV |
| Rigid Metal | Uni-Directional | IV |
| Reinforced PTFE** | Uni-Directional | VI |
| Clearance Seat | Bi-Directional | 5% of max flow when closed |

NOTE: Uni-directional valves must be installed with flow-to-open (forward flow; flow into the convex side of ball). Flow-to-open is the preferred direction for bi-directional valves. Seats are rated to the full valve pressure rating unless noted below.

* Flexible metal seats are rated to 150 psi (1030kPa) pressure differential when installed in the flow-to-close direction.

** Reinforced PTFE seats are rated to 285 psi (1895 kPa) maximum shutoff pressure differential.

Ordering

To order, simply complete the valve order code from information shown. An ordering example is shown for your reference.

Valve Style

Give valve style code as follows:

VPB = V-Port Ball Valve

Valve Size

Give valve size code as follows:

| | |
|-------------------|------------------|
| 1 = 1" (25mm) | 8 = 8" (200mm) |
| 1.5 = 1.5" (40mm) | 10 = 10" (250mm) |
| 2 = 2" (50mm) | 12 = 12" (300mm) |
| 2.5 = 2.5" (65mm) | 14 = 14" (350mm) |
| 3 = 3" (80mm) | 16 = 16" (400mm) |
| 4 = 4" (100mm) | 18 = 18" (450mm) |
| 6 = 6" (150mm) | 20 = 20" (500mm) |

End Connection

Give end connection code as follows:

Flangeless

W1S = Class 150, ANSI/ISA-75.08.02 and IEC 534-3-2-F 1-12" valves

Flanged

F1S = Class 150, ANSI/ISA-75.08.02 and IEC 534-3-2F-F 1-20" valves
 F2S = Class 300, ANSI/ISA-75.08.02 and IEC 534-3-2F-F 1-12" valves
 F1L = Class 150, ASME B16.10, ISO 5752 and EN 558-1 PN 10/16, 1-12" valves
 F1A = Class 150, ASME B16.10, ISO 5752 and EN 558-1 PN 10/16 (Long body) 1-12" excluding 2.5" valve size.

Body Material

Give body material code as follows:

S3 = 317 stainless steel (Class 150 only) S3 bodies must be ordered with S3NH or S3S ball, S10 shaft and S3, S3S, S3R or RT seat.
 CS = Carbon Steel. CS bodies must be ordered with S3NH or S3S ball, S10 shaft, and S3, S3S, S3R or RT seat.
 S2 = 316 stainless steel (Class 300 only). S2 bodies must be ordered with S3NH or S3S ball, S5 or S10 shaft, and either S3, S3S, S3R or RT seat.
 HC = Hastelloy C. HC body must be ordered with HCNH ball, HCC or TNC shaft, HCRI or RT seat, and HC, HCVS or HCKS bearings.

Packing Material

Give packing material code as follows:

TC = PTFE Chevron, to 500°F (260°C)
 G2 = Braided carbon graphite, to 1000°F (540°C) (Available with S3 seat and S9 or SL bearings)

Trim Combination

Give ball, shaft, seat and bearing codes as follows:

S3NH = 317 stainless steel heat treated nickel overlay, to 700°F (370°C)
 S3S = 317 stainless steel with tungsten carbide overlay, to 1000°F (540°C) (Available with S3S, S3SI or S3 seats only)
 HCNH = Hastelloy C with heat treated electroless nickel overlay, to 700°F (370°C)

Shaft Material

S10 = 2205 Duplex stainless steel
 S5 = 17-4 PH stainless steel
 HCC = Hastelloy C Ceramic Coated (HC Bearings only)
 TNC = Titanium Ceramic Coated

Seat Material

RT = Reinforced PTFE, to 500°F (260°C)
 S6N = Flexible Super Austenitic Stainless Steel (AL-6XN®) with heat treated electroless nickel overlay, to 700°F (370°C)
 S5C = Clearance Seat, 17-4PH Stainless Steel to 1000°F (540°C)
 S3R = Rigid 317 stainless steel with heat treated nickel overlay, to 450°F (230°C)
 S3S = Rigid 317 stainless steel with tungsten carbide overlay, to 450°F (230°C) (Available with S3S Ball only)
 S3RI = Rigid 317 stainless steel with heat treated electroless nickel overlay and nickel-chromium spring, to 450°F (230°C)
 S3SI = Rigid 317 stainless steel with tungsten carbide overlay and nickel-chromium alloy spring, to 450°F (230°C)
 HCRI = Rigid Hastelloy C with heat treated electroless nickel overlay and nickel-chromium alloy spring, to 450°F (230°C)

Bearing Material

FT = 317 stainless steel wire mesh reinforced PTFE, to 500°F (260°C)
 S9 = 440C stainless steel bearings, to 1000°F (540°C)
 S9VS = 440C stainless steel bearings with PFA Fluoropolymer seal to 450°F (230°C)
 SL = Solid Cobalt-Chromium Alloy, to 1000°F (540°C)
 SLVS = Solid Cobalt-Chromium Alloy with PFA Fluoropolymer seal, to 450°F (230°C)
 SLKS = Solid Cobalt-Chromium Alloy with FFKM Perfluoroelastomer seal, to 550°F (288°C)

On Application

HC = Hastelloy C 1000°F (540°C)
 HCVS = Hastelloy C with PFA Fluoropolymer seal, to 450°F (230°C)
 HCKS = Hastelloy C with FFKM Perfluoroelastomer seal, to 550°F (288°C)

On Application

Give options code as follows:

BAA = Buy American Act
 CMC = Certificate of Material Conformance
 CRT = Certified Material Physical & Chemical Test Report
 DTR = DeZURIK Standard Certified Production Hydrostatic Shell & Seat Test Report
 ST3 = Pennsylvania Steel Procurement Act
 G1 = DIN 10 or BS4504/10 Drilling (W1S, F1L & F1S only)
 G2 = DIN 16 or BS4504/16 Drilling (W1S, F1L & F1S only)
 G3 = DIN 25 or BS4504/25 Drilling (F2S only)
 G4 = DIN 40 or BS4504/40 Drilling (F2S only)
 J1 = J1S 10 Flange Drilling (F1L or F1S only)
 J6 = J1S 16 Flange Drilling (F1L or F1S only)
 J2 = J1S 20 Flange Drilling (F2S only)

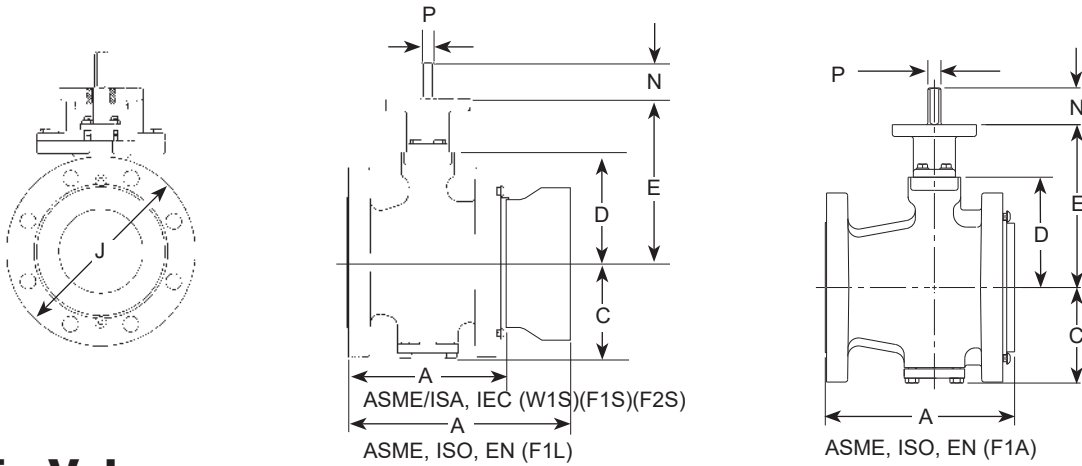
On Application

Pressure Equipment Directive (CE Mark)

Ordering Example

VPB,4,F1L,S3,TC,S3NH-S10-RT-FT,G1*PR-R1A-PC4

Dimensions



Basic Valve

Inches
Millimeters

| Valve Size | A | | C | D | E | J | | | N | P Diameter | P Square |
|--------------|---------------|--------------|--------------|--------------|--------------|-------------------|----------------------|-------------------|------------|------------|--------------|
| | ASME /ISA IEC | ASME ISO EN | | | | Flanged Class 150 | Flangeless Class 150 | Flanged Class 300 | | | |
| 1" 25mm | 4.00 102 | 5.00 127 | 2.75 70 | 3.25 83 | 5.62 143 | 4.25 108 | 2.44 62 | 4.88 124 | 1.75 44 | .62 16 | .50 13 |
| 1.5" 40mm | 4.50 114 | 6.50 165 | 2.94 75 | 3.47 88 | 5.84 148 | 5.00 127 | 3.06 78 | 6.12 155 | 1.75 44 | .62 16 | .50 13 |
| 2" 50mm | 4.88 124 | 7.00 178 | 3.22 82 | 3.75 95 | 6.12 155 | 6.00 152 | 3.81 97 | 6.50 165 | 1.75 44 | .62 16 | .50 13 |
| 2.5" 65mm | 5.50 140 | 7.50 191 | 3.75 95 | 4.44 113 | 6.94 176 | 7.00 178 | 4.38 111 | 7.50 190 | 1.75 44 | .75 19 | .62 16 |
| 3" 80mm | 6.50 165 | 8.00 203 | 4.00 102 | 4.69 119 | 7.19 183 | 7.50 191 | 5.19 132 | 8.25 210 | 1.75 44 | .75 19 | .62 16 |
| 4" 100mm | 7.62 194 | 9.00 229 | 4.56 116 | 5.25 133 | 7.75 197 | 9.00 229 | 6.38 162 | 10.00 254 | 1.75 44 | .75 19 | .62 16 |
| 6" 150mm | 9.00 229 | 10.50 267 | 5.72 145 | 6.50 165 | 9.50 241 | 11.00 279 | 8.50 216 | 12.50 317 | 1.75 44 | 1.25 32 | .94* 24 |
| 8" 200mm | 9.56 243 | 11.50 292 | 7.28 185 | 8.12 206 | 11.12 282 | 13.50 343 | 10.62 270 | 15.00 381 | 1.75 44 | 1.50 38 | 1.19 30 |
| 10" 250mm | 11.69 297 | 13.00 330 | 8.91 226 | 9.50 241 | 13.38 340 | 16.00 406 | 13.12 333 | 17.50 444 | 1.75 44 | 2.00 51 | 1.62** 41 |
| 12" 300mm | 13.31 338 | 14.00 356 | 9.91 252 | 10.50 267 | 14.38 365 | 19.00 483 | 15.38 391 | 20.50 521 | 1.75 44 | 2.00 51 | 1.62 41 |
| 14" 350mm | 15.75 400 | — | 10.86 276 | 11.47 291 | 15.34 390 | 21.00 533 | — | — | 1.75 44 | 2.00 51 | 1.62 41 |
| 16" 400mm | 15.75 400 | — | 13.25 337 | 14.06 375 | 18.56 471 | 23.50 597 | — | — | 1.75 44 | 2.50 64 | 1.81 46 |
| 18" 450mm | 18.00 457 | — | 14.44 367 | 15.25 387 | 19.75 502 | 25.00 635 | — | — | 1.75 44 | 2.50 64 | 1.81 46 |
| 20" 500mm | 20.00 508 | — | 15.56 395 | 16.38 416 | 20.38 518 | 27.50 686 | — | — | 1.75 44 | 2.50 64 | 1.81 46 |

Note: All dimensions are subject to change without notice.
Request certified drawings for use in preparing piping layouts.

*6" (150mm) $\frac{.88}{22}$ for DR-40B actuators

**10" (250mm) $\frac{1.19}{30}$ for DR-85B actuators

Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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DeZURIK, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.
Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only
and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.