

IVP 250 16 inch

Specifications

IVP412SPECS v1.1 Revised August 2013

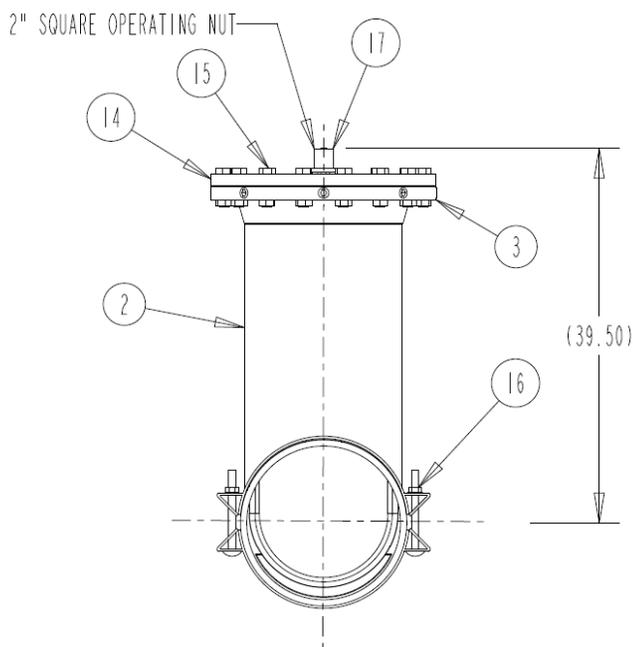
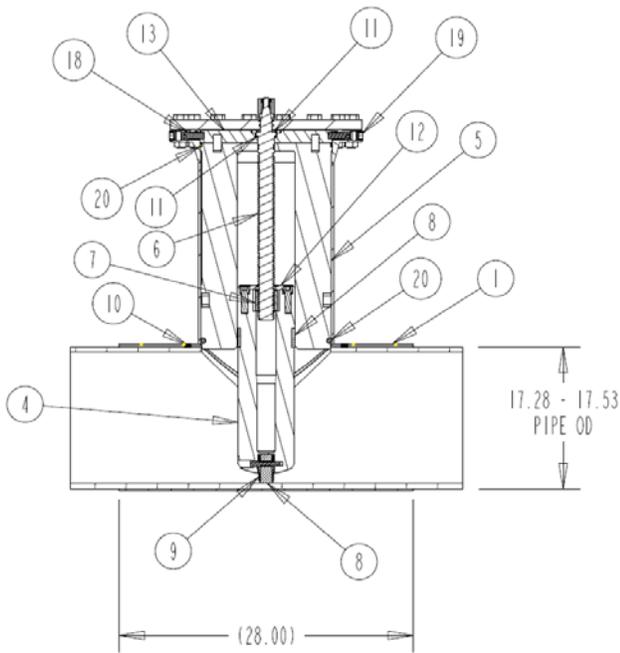
HYDRA-STOP[®]

IVP 250

Valve Insertion System - 16 inch Nominal Size

Product Specifications

The 16" IVP 250 from Hydra-Stop is an insertable gate valve that is design to be installed onto a working, pressurized pipe to provide a control point in a piping system the same day. Like the Insta-Valve Plus product line offered by Hydra-Stop, the IVP 250 installs in three basic steps: 1. Mount the valve body onto the host pipe; 2. Hot Tap the host pipe; 3. Insert the valve cartridge into the valve body. This procedure is able contain the pipe pressure though out the entire process through the use of a temporary knife gate valve that installs onto the flange of the IVP valve body.



ITEM	DESCRIPTION	MATERIAL
1	VALVE BODY CLAMP	STAINLESS STEEL
2	VALVE BODY BRANCH	STAINLESS STEEL
3	VALVE BODY FLANGE	STEEL (PAINTED)
4	GATE*	CAST NYLON
5	GATE HOUSING	CAST NYLON
6	VALVE STEM**	STAINLESS STEEL
7	STEM NUT	ALUMINUM BRONZE
8	GATE SEALS	EPDM
9	PADDLE SHIELD	ALUMINUM (ANODIZED)
10	VALVE BODY GASKET	BUNA-N
11	THRUST WASHERS (2)	ACETAL
12	RETENTION PLATE	ALUMINUM
13	COMPLETION PLUG	ALUMINUM
14	TOP FLANGE***	CARBON STEEL (EPOXY COATED)
15	FLANGE NUTS AND BOLTS	STAINLESS STEEL
16	VALVE BODY NUTS, BOLTS, AND WASHERS	STAINLESS STEEL
17	OPERATING NUT****	DUCTILE IRON (PAINTED)
18	PINS (8)	STEEL (ZINC PLATED)/ BUNA-N
19	PLUGS (8)	STEEL (PAINTED)
20	GATE HOUSING O-RINGS (2)	BUNA-N
* CONTAINS STAINLESS STEEL HARDWARE		
** SEALS: TWO BUNA-N O-RINGS		
*** SEALS: BUNA-N X-RING AND BUNA-N/URETHANE LIP SEAL		
**** SECURED TO VALVE STEM WITH STAINLESS STEEL NUT AND ZINC PLATED STEEL LOCK WASHER		

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General Specifications*:

- For use on 15.3 - 16.80 inches inside diameter Ductile Iron, PVC pipe or AC pipe. Please consult Hydra-Stop for proper shell cutter, valve cartridge and valve body combinations.
- Allows for Bi-Directional Flow
- Installation results in an Unobstructed Waterway
- Non-Rising Stem available in the open left and open right directions
- IVP-250 Weight = 865 lbs
 - Valve Cartridge = 245 lbs
 - Valve Body = 620 lbs

* Contact Hydra-Stop for custom applications

Performance Specifications:

- Maximum Working Pressure: 250 psid
- Maximum Test Pressure: 375 psid for the IVP-250
- Operating Temperature: 33° - 125° F
- Leakage: 0 GPM
 - Note: Leakage is dependent on the condition of the pipe and a proper installation and a small amount of bypass (<1 GPM) may result depending on these factors
- Number of Turns to Close: 50-54
 - The number of turns is dependent on the amount of gate seal rubber compression and expansion required to seal on the inside diameter of the host pipe; pipes with larger inside diameters will be on the high end of the range
- Operating Torque for Closing: 150 – 350 ft-lbs Typical
 - The operating torque to close is dependent on the amount of gate seal rubber compression and expansion required to seal on the inside diameter of the host pipe; pipes with larger inside diameters will be on the high end of the range
- Operating Torque for Opening: 100 – 850 ft-lbs Typical

The operating torque to open is dependent on the pressure differential across the closed gate at the start of opening, where a full 250 psid pressure differential will require the most torque to bring the gate off its seat. As the gate opens and pressure is relieved, the torque will reduce significantly.

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Components:

Valve Body:

The valve body houses the internal components of the valve and clamps onto the host pipe. The valve body is made of three subcomponents; the valve clamp, branch and flange welded together. Each of these subcomponents is described in detail below.

Valve Body Clamp:

The valve body clamp is the bottom portion of the valve body that secures the valve to the host pipe. The clamp is made of a top and bottom section that are shaped to fit onto the host pipe. Along the sides of the two sections are lug bars that receive the threaded studs or bolts and provide the surfaces that support the nuts that are tightened onto the threaded studs or bolts, which results in the top and bottom sections of the clamp to be pulled toward one another and squeeze the host pipe. This mounting process creates the foundation for the valve. The valve body clamp is made of 304 Stainless Steel with a passivated finish.

The following components are included in the valve body clamp assembly:

- Gasket – The gasket is glued into a circular groove on the inside of the top portion of the clamp and creates a seal between the valve body and host pipe to contain pressure after the pipe is tapped. The two rubber seals extending from the gasket to the inside diameter of the valve body branch form a seal with the gate when that valve is closed and between the host pipe and clamp. The gasket is made of Buna-N and SBR.
- Hardware – The hardware used to mount the clamp onto the pipe includes threaded studs (14) for the IVP-250 or bolts (14) for the IVP-150, washers (56), and nuts (28). All hardware is made of 304 Stainless Steel.

Valve Body Branch:

The valve body branch is the cylindrical portion of the valve body that extends from the clamp. The valve body branch contains, in addition to the valve body flange, houses the valve cartridge. The valve body branch is made of 304 Stainless Steel with a passivated finish.

Valve Body Flange:

The valve body flange provides a bolt pattern on the top of the valve that is used to install the temporary knife gate valve during installation and fasten the top flange for final assembly. The valve body flange also provides the means of securing the valve cartridge, making a pressurized installation possible, through eight ports along the outside diameter of the flange that receive pins that hold the valve cartridge. The valve body flange is made from carbon steel and is painted for rust protection.

The following components are included in the valve body flange assembly:

- Pins – Eight pins thread into the ports on the outside diameter of the valve body flange and are threaded deeper into the flange during the valve insertion process to enter slots in the valve cartridge's completion plug. The pins are made of high strength 1144 Steel to hold the valve cartridge against the upward thrust from the pressurized pipe and are zinc plated for corrosion resistance. Each pin exhibits a Buna-N o-ring to minimize the water that discharges from the port during the valve insertion process.

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- Plugs – Each pin of the eight pins is backed up by a plug that threads into the start of each port. The plugs are required to seal off each port during pressure testing of the valve body and provide backup seals for the valve cartridge. The plugs are made of steel and are painted for rust protection
- O-Ring – The face of the valve body flange contains a o-ring groove that contains a Buna-N o-ring that forms a seal between the valve body flange and top flange. This seal provides back up for the valve cartridge seals.

Gate:

The gate valve component that travels down into and seals upon the host pipe to isolate pressure and stop flow. The gate is made from Food Grade Cast Nylon, Type 6 for its light weight and low friction characteristics. The gate assembly contains a variety of components that enable the travel of the gate and allow the gate to seal onto the pipe.

The following components are included in the valve stem assembly:

- Gate Seals – the gate utilizes two gate seals, both made of EPDM rubber, to form a seal on the host pipe. The top gate seal wraps around the gate and forms a seal on the gate housing and the inside of the valve body. The bottom gate seal forms a seal primarily inside of the host pipe and inside of the valve body as well. Continued closing of the gate after the bottom seal makes contact with the host pipe results in compression and expansion of the gate seal that forms a complete seal on the inside diameter of the host pipe.
- Paddle Shields (2) – On each side of the bottom gate seal, or paddle, is a paddle shield that supports the rubber seal against severe flow conditions. The paddle shields are made of aluminum and are hard coat anodized.
- Retention Plate – The retention plate is made from high strength 7075 Aluminum and bolts into the top of the gate to retain the stem nut.
- Gate Hardware – A variety of hardware is contained within the gate to hold the retention plate, bottom gate seal, and paddle shields in place. All hardware is made of Stainless Steel.

Gate Housing:

The gate housing is the valve component that directs the gate travel into the host pipe. When the valve stem of the valve is rotated, the gate housing prevents the rotation of the gate, which results in gate travel in the direction of the valve stem. In addition to enabling gate travel, the gate housing is critical for valve sealing and installation as it makes up the bulk of the valve cartridge. The gate housing is made from Food Grade Cast Nylon, Type 6 for its light weight and low friction characteristics.

The following components are included in the valve stem assembly:

- Completion Plug – The completion plug is secured to the top of the nylon gate housing to provide a stronger material, aluminum, to support the upward thrust on the valve cartridge caused by pressure within the host pipe. The completion plug is loaded by the upward thrust at the eight slots along the outside diam-

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eter that each receive a pin that is threaded into the valve body flange. The higher strength of the aluminum in comparison to nylon is critical again to support the valve stem during the opening of the valve as the shaft collar of the valve stem rotates within the completion plug.

- O-Rings (2) – The gate housing contains an o-ring at the top of the assembly that forms a seal inside of the valve body flange and second o-ring, in two separate sections, that forms a seal on the inside of the valve body branch as well as the gate seal. Both o-rings are made of Buna-N

Valve Stem:

The valve stem is part of the valve cartridge assembly and allows valve operation or opening and closing through its rotation. The valve stem uses 2-3 stub Acme threads (2" major diameter, 3 threads per inch), which results in 1" of gate travel for every three rotations in one direction. The smaller threads, on the end opposite the Acme threads are used to fasten the valve cartridge to the insertion tool during the installation process and to secure the 2" square operating nut with a nut after valve insertion is complete. The valve stem is made from UNS S30300 303 Stainless Steel per ASTM A582, which is compliant with the AWWA C509-09 standard.

The following components are included in the valve stem assembly:

- O-Rings (2) – Two Buna N o-rings fit into o-ring grooves above the ACME threads and create a redundant seal between the gate housing and valve stem
- Thrust Washers (2) – Thrust washers are positioned above and below the shaft collar of the valve stem to reduce operating torque by providing a low friction surface the valve stem rotates against. Both thrust washers are made of Acetal.
- Operating Nut- The 2" square operating nut is secured the top of the valve stem though a stainless steel nut that thread on the end of the valve stem and down onto the operating nut. A steel lock washer with a galvanized finish is placed under the nut to keep tension on the threads to prevent the nut from loosening. The operating nut provides a means for the valve operator to input torque to rotate the valve stem. The operating is cast using ductile iron, as specified in AWWA C509-09 and is painted for corrosion resistance. Open left operating nut are painted black and open right operating nuts are painted red according to AWWA C509-09.

Stem Nut:

The stem nut is contained within the gate and is threaded onto the valve stem through its internal 2-3 stub Acme threads (2" minor diameter, 3 threads per inch). Within the gate, the stem nut is prevented from rotating when the valve stem is turned. With the stem nut fixed inside of the gate and threaded onto the valve stem, rotating the valve stem results in gate travel. The stem nut is made from UNS C95400 Aluminum Bronze per ASTM B148.

Top Flange:

The top flange fastens to the valve body flange to provide a cover for the valve and also serves as a stop for the valve

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step during the closing of the valve. The top flange is made from steel per AWWA C207 and is epoxy coated black for rust protection.

The following components are included in the blind flange assembly:

- Nuts and Bolts (16 of each) – Sixteen nuts and bolts are used to fasten the top flange to the valve body flange. The nuts and bolts are made from 316 Stainless Steel.
- X-Ring – An x-ring is contained within a groove in the inside diameter of the top flange and seals upon the valve stem to provide a backup to the valve cartridge seals. The x-ring is made of Buna-N
- Lip Seal – A lip seal is pressed into the top of the top flange and seals upon the valve stem to keep debris outside of the valve. The lip seal is made of urethane and Buna-N.

APPROVED BY:

Name: _____

Title: _____

Date: ____/____/____