

Specifications

INSERTION VALVE and EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

The Equipment shall be capable of installation, without shutdown, at one location, of pipe sizes, in the range of 4” to 12” diameters. The capabilities specified herein are minimum mandatory requirements that must be met by any Insertion Equipment or Insertion Valve offered

1.02 SCOPE OF WORK

The work of this section shall include the furnishing, installation, and testing of all insertion valves as specified herein, shown on the plans, and as required to make the facility operable and complete. Items to be provided include, but shall not be limited to the following:

- A. Insertion Valves Material as to AWWA C – 509-09
- B. Insertion Valve Installation Equipment complete

1.04 SUBMITTALS

Provide the following in conformance with applicable requirements contained in Submittals.

- A. Shop Drawings. Submit shop drawings for Insertion Valves and miscellaneous components.
- B. Erection Drawings. Erection drawings shall include the procedures to be used in setting and supporting valves.

1.05 QUALITY ASSURANCE

All Insertion Valves and miscellaneous components shall be new, free from defects or contamination, and wherever possible shall be the standard product of the manufacturer.

1.06 EQUIPMENT STORAGE AND HANDLING

Insertion Valves and Insertion Valve Installation Equipment shall be handled with equipment designed to prevent damage to the components. Insertion Valves and Installation equipment shall be stored in a manner that prevents exposure to the elements. Installation Equipment shall be stored in the storage container furnished with the equipment.

PART 2 - PRODUCTS

2.01 GENERAL

All Insertion Valves shall be provided as shown in the plans, schedules, and as specified herein. Buried Insertion Valves shall be non-rising stem, and wrench operated. The valve assemblies shall be furnished complete and adequate for the specified or shown purpose, and shall include all essential components of equipment, together with all mountings and other appurtenances normal and necessary for proper installation, whether shown or not. Insertion Valves shall be equipped with a 2-inch square AWWA operating nut.

2.1.0 INSERTION VALVE

- 2.1.1** The INSERTION Valve shall be capable of pressure-tight assembly to exterior of the pipe in which flow is to be stopped at a working pressure not to exceed 250 PSI.
- 2.1.2** The INSERTION Valve shall be constructed of a two (2) piece, Ductile Iron casting (Top & bottom), to be bolted together, using Ductile Iron bolts with zinc alloy anodes (Corrosion protection), manufactured to the ductile iron specification of ASTM 536 65-45-12.
- 2.1.3** The INSERTION Valve shall meet AWWA Material Specification of C509-09 for Resilient Seal Valves suitable for Potable water service.
- 2.1.4** The Ductile Iron Gate shall have a resilient rubber seal 360 degrees around the gate and is expandable to the ID (Inside Diameter) of the pipe.
- 2.1.5** The valve stem shall be made of Stainless Steel with a tensile strength of 60,000psi.
- 2.1.6** The valve body shall have a Corrosion Protection E Coating.
- 2.1.7** The INSERTION Valve shall use Stainless Steel fasteners joining the Valve Bonnet to the Valve top casting, unless otherwise noted in assembly drawings.

- 2.1.8 The Cutting / Drilling: Slot to thickness of Wedge and 120 degrees across the pipe
- 2.1.9 The design of the valve shall have a satisfactory seal against the pipe exterior in the following ranges, using multiple gaskets if necessary. Valves shall conform to the operational (turns) requirements of AWWA C – 509-09 with specified turns to open Right (Clockwise) or open Left (Counter Clockwise).

<u>PIPE SIZE</u>	<u>DIAMETRICAL OD RANGE</u>			
	Small	Standard	Over-sized	Maximum
4"	4.50	4.80	5.30	5.55
6"	6.625	6.90	7.30	7.55
8"	8.625	9.05	9.35	9.70
10"	10.750	11.10	11.40	12.12
12"	12.750	13.20	13.55	14.40

Valve Turns

- 4" 15- Full
- 6" 21- Full
- 8" 27 - Full
- 10" 34- Full
- 12" 39 - Full

2.2.0 VALVE INSERTION EQUIPMENT

The size and weights of each (4" though 12") Valve insertion unit shall be, once lowered into an excavation hole, that two (2) employees can mount the equipment onto the valve. The equipment shall be capable of installation, without shutdown, at one location, of pipe sizes, in the range of 4" to 12" diameters. The capabilities specified herein are minimum mandatory requirements that must be met by any Insertion Equipment or Insertion Valve offered

- 2.2.1 Equipment shall consist of cutting unit, and a detachable rotary chain drive feed.
- 2.2.2 End Mill cutting system shall have a positive “Stop” Mechanism located on the opposite end of the the rotary chain feed drive, to prevent under or over rotation of the 120 Degree slotting operation.
- 2.2.3 The End Mill cutting unit shall be able to cut size (4” – 12”) pipe with one (1) size end mill cutter 45 MM (4”, 6”, & 8”) and one (1) size end mill cutter 60 MM (10” – 12”).
- 2.2.4 Drive motor shall be electric, hydraulic, or pneumatic (specified by purchaser) interchangeable and capable of installation and removable from cutting machine without any modification.
- 2.2.5 The end mill cutter shall be manually advanced laterally by the work person to prevent cutter damage due to inclusions (hard spots, etc.) in the pipe. The cutter teeth shall be able to be field replaceable if necessary.
- 2.2.6 The End Mill process shall constitute a rotary End Mill that through the rotation of the Valve casting, cuts a slot, 120 degrees across the top of the pipe only. This allows for the insertion of the resilient wedge mechanism.
- 2.2.7 During the End Mill operation, the “Chips” created by the End Mill Cutter shall be flushed outside of the pipe, through the Chip Flushing Hose attached to the Valve body port located 180 degrees from the End Mill.

2.2.8 Insertion Valve Installation Equipment

<u>Quantity</u>	<u>Description</u>
1 each	End Mill Machine (4” – 12” Capability)
1 each	Drive Motor: Hydraulic, Pneumatic, or Electric
2 each	End Mill Cutter (4’-8” & 10’-12”)
2 each	Replaceable teeth (set’s 4”-8” & 10”-12”)
1 each	Rotating Gear Box Feed Apparatus (4”-12”)
2 each	End Rings (4”) with Mounting Plate
2 each	End Rings (6”) with Mounting Plate
2 each	End Rings (8”) with Mounting Plate
2 each	End Rings (10”) with Mounting Plate
2 each	End Rings (12”) with Mounting Plate
1 each	Rotary Chain
1 each	Export Hose
1 each	Misc. Tool Kit
1 each	Storage Box

2.04 ACCEPTABLE MANUFACTURERS

Acceptable manufacturers are Advanced Valve Technologies, Elk Grove Village, Illinois. Whenever a material or article is specified or described by using the name of proprietary product or the name of a particular manufacturer or vendor, the specific item

mentioned shall be understood as establishing the type, function, and quality desired. Substitutions or proposed equals shall be pre-approved prior to the bid opening.

- 2.05** Warranty of components not manufactured by AVT shall not exceed the warranty of the component manufacture (air, hydraulic or electric drive: one (1) year warranty. A two (2) year warranty limited applies to ductile iron body parts: a (2) year limited warranty applies to the stainless steel feed screw and / or any EPDM rubber material. A one (1) year limited warranty applies to all EZ Valve Installation/Equipment. The AVT components excluded from this limited warranty includes chain, drills and fasteners. **** NOTE** AWWA Manual of Water Supply Practices M44, Valve Maintenance. Inspections should be made of each valve in system on a regularly scheduled basis (annually if possible) cycled from open to close.**
- 2.06** Operating and Maintenance Manual One (1) complete sets of operation and maintenance shall be furnished for system
- 2.07** Demonstration with a qualified representative of the manufacturer shall provide demonstration and training in the use of equipment specified. The demonstration and training shall be conducted under actual job conditions.

PART 3 - EXECUTION

3.01 TEST

- A. Field-Tests. Test all valves and appurtenances for proper operating adjustments and settings and for freedom from vibration, binding, scraping, and other defects. Upon installation all valves shall be opened and closed under pressure in the presence of the OWNER.