



**SERIES PVII
AWWA C517 FULL PORT
ECCENTRIC PLUG VALVES
3"-12"**



OPTCO Ltd.
High Performance Products

Series PVII

Full Port Plug Valves
to AWWA C517



CONFIGURABLE OPERATOR

An intelligently designed topworks allows for multiple configurations of either direct nut operator, gearbox, handwheel, chain-wheel, or motor operator with no custom brackets/mounting

FULL PULL DOWN PACKING

A full pull down type packing of multiple v-rings is utilized for the ultimate sealing. Packing is replaceable with the valve in line and under pressure

NO FLAT GASKETS

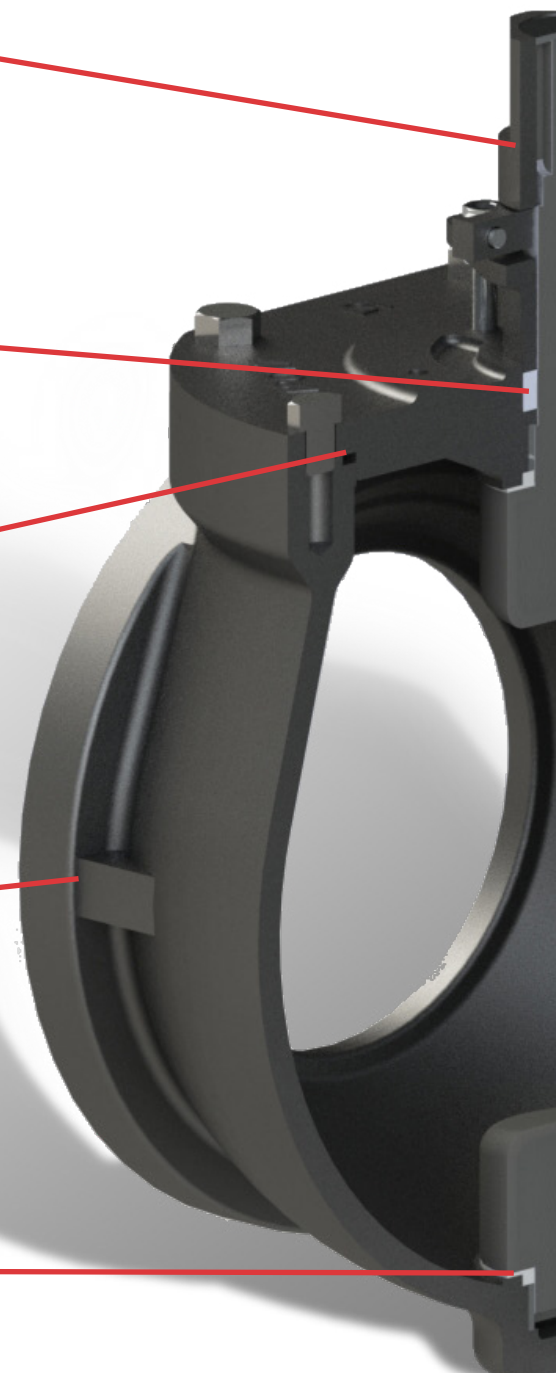
O-ring type seals at body to bonnet flanges ensure a good seal and allow easy service in the field.

HIGH PRESSURE BODY

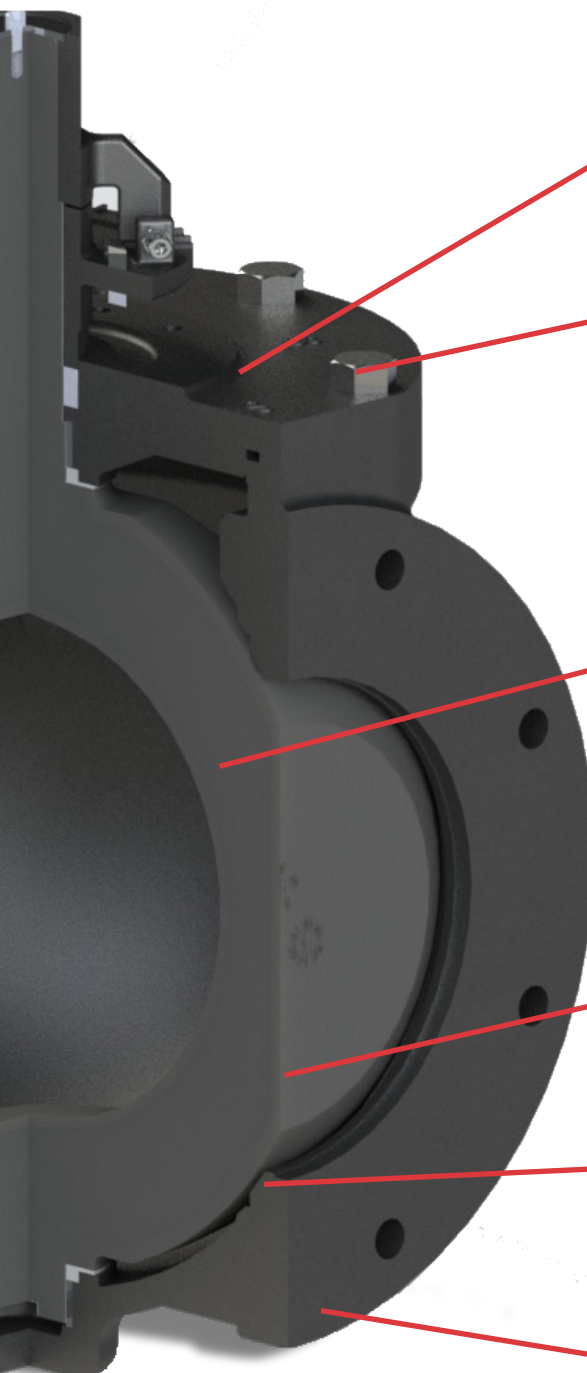
Designed for todays modern high pressure and volume pumping applications, the Series PVII features thick wall, support webbing, and high quality Ductile Iron castings.

DOUBLE SEALED STEM

Binding/stuck valves are a thing of the past with the Series PVII double sealed stem. Line debris is kept from the valve bearings by a PTFE grit seal and a rubber sealing ring.



PAGE 2



LARGE TOP SERVICE PORT

The large top service port allows for complete rebuilding of the valve in the field without removing the valve from the line.

STAINLESS HARDWARE

Valves come standard with Stainless Steel 304 hardware for long service life in buried/submerged and harsh service conditions. Additional options available for corrosive and extreme exposures.

ONE PIECE PLUG

The plug is constructed of a one piece durable casting. This design reduces galvanic corrosion points and ensures absolute zero backlash control.

FULLY ENCAPSULATED PLUG

Standard Ductile Iron plug fully encapsulated over 100% of surface ensuring a bubble-tight seal in the harshest of service and eliminating plug corrosion

WELDED-NICKEL SEAT

The corrosion and wear resistant 95% nickel raised seat is robotic welded and ground for the ultimate in precision leading to consistent operating torques

EPOXY COATING

Valve is fully coated with a fusion-bonded epoxy conforming to AWWA C550 in true black color Suitable for buried service or field applied topcoats.

Series PVII

Full Port Plug Valves
to AWWA C517



The VSI Advantage

Review the literature of many competitor's plug valves and you will find nice catch phrases like "full port", "full discharge", "low restriction", etc. Read closely between the lines however and you will find these valves often consider "Full" as somewhere close to nominal, but not quite, and often the plug interferes with a full clear port.

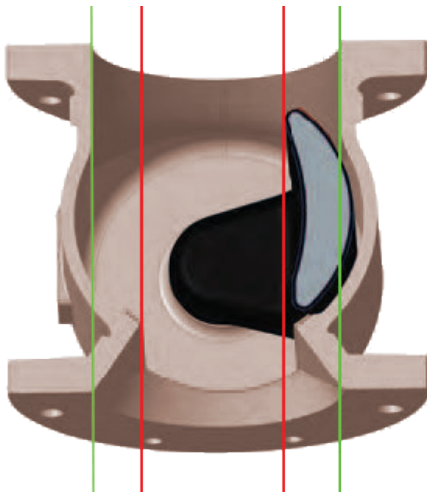
The Series PVII full round port plug valve stands clear of the competition with a FULL CLEAR 100% PORT. The large port are a is round in shape on both the entrance and exit. The extra large offset ensures the plug is fully clear of the pipe flow when in the open position. The port area of all valves in the Series PVII range is 100% of the nominal valve size or larger. All sizes are capable of passing solids with a diameter equal to the nominal pipe size!



PAGE 4

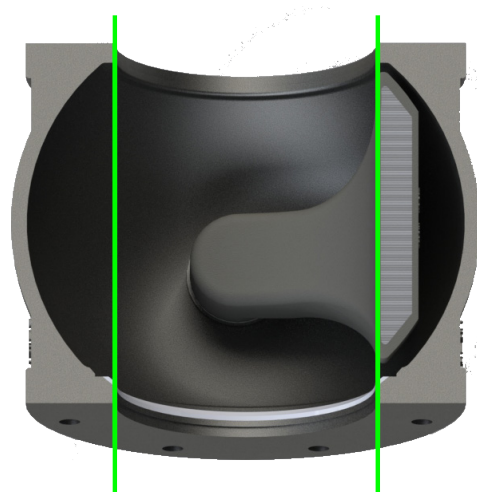
Competitors

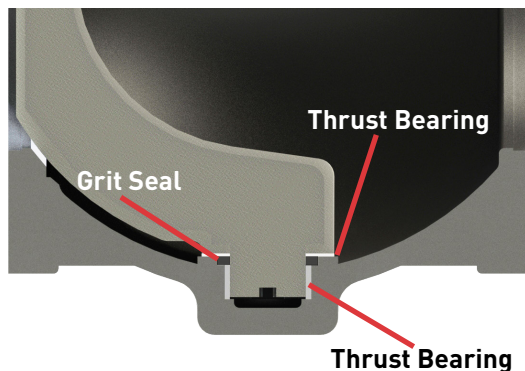
- Discharge is typically nominal sized
- Seat is reduced, or rectangular creating flow restrictions
- Plug does not fully clear seat opening or discharge opening



Series PVII

- Discharge and seat is 100% nominal sized
- Seat diameter equal/greater than pipe nominal size
- Plug fully clears creating clear opening from intake to discharge on sizes 8" and smaller



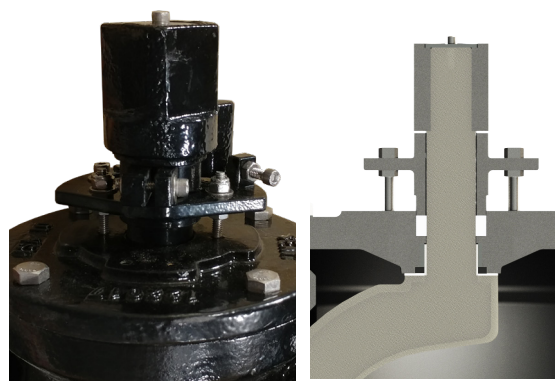


Double Sealed Bearings

The permanently lubricated Type 304 stainless steel bearings are double sealed on the upper and lower journals. The thrust bearings ensure the plug is centered in the seat for accurate sealing while also keeping debris from the journals. The grit seal ensures that any debris that makes it past the thrust bearings never impact the bearings.

V-Packing

The pull down type multiple v-ring style packing ensures easy adjustment and long packing life. No special shims needed, all adjustment can be made with simple spanner wrenches. The packing gland is easily accessed on all above ground applications without removal of the gearbox or operator.



PAGE 5



Applications

The Series PVII 100% full port eccentric plug valve can be used in many applications when solids, grit, or slurries may be present. They are capable of providing either on-off or process control functions in many industries.

- Raw water or Sewer lines
- Lift station pump discharge isolation
- Wastewater treatment plant control
- Sludge lines
- Mining
- Industrial fluids with suspended solids
- Many others



Sample Specification

1. Full Round Port Plug Valves for Waterworks Service

- 1.1. This specification covers the design, manufacture, and testing of eccentric plug valves from 3 inch (80 mm) through 12 inch (300 mm) under service pressure of up to 250 psig (1725 kPa).
- 1.2. Plug valves shall be resilient seated and of the quarter turn, non-lubricated, eccentric type.

2. GOVERNING STANDARDS

- 1.3. All eccentric plug valves shall be in full conformance with the design, manufacturing, and testing standards set forth by the American Water Works Association (AWWA) in Standard ANSI/AWWA C517.
- 1.4. When requested, manufacturer shall provide an Affidavit of Proof of Design Testing in accordance with AWWA C517.

3. CONNECTIONS

- 3.1. Flanged valves shall conform to all standards of ANSI B16.1, Class 125 or Class 250.
- 3.2. Flanged valves' lay length shall conform to AWWA C517
- 3.3. Mechanical joint valves shall conform to all standards of ANSI/AWWA C111/A21.11.

4. MARKINGS

- 4.1. Each valve shall be marked with the manufacturer's name, valve size, body material, and pressure rating cast into the body of the valve. Lettering shall be a minimum of 1/2 inch tall and project 1/10 inch from body.
- 4.2. All plug valves, except buried or submerged valves, shall be equipped with a tag identifying size, model number, year of manufacture, resilient seat material, and a batch/serial number.

5. DESIGN

- 5.1. Port areas of valves in relation to pipe areas shall not be less than 100%. Ports for valves sizes 8" and smaller shall be round, capable of passing rigid pigging equipment. When the valve is fully open the plug shall clear fully the valve port.
- 5.2. All valves shall be capable of passing a rigid solid of a minimum of 95% of the nominal pipe diameter without clogging.
- 5.3. Valves shall be equipped with a minimum 95% nickel seat directly bonded to a machined finished surface on valve body. Plated or removable seats are not acceptable.
- 5.4. Valve shall be equipped with a set of V-type stem packing with an adjustable gland. Valve stem packing shall be replaceable without removing the cover or bonnet of the valve.
- 5.5. Radial shaft bushings shall be supplied in the upper and lower bearing journals. Thrust bearings shall be supplied between the plug and body in both the upper and lower journal areas.
- 5.6. The valves shall be equipped with a mounting area for operators conforming to Manufacturers Standard Society(MMS) 101 or International Organization of Standardization(ISO) 52111. There shall be sufficient clearance to directly mount standardized operators with easily accessible fasteners.

6. MATERIALS

- 6.1. The valve body, cover, and bonnet if equipped shall be constructed of ASTM A536 Ductile Iron.
- 6.2. The plug shall be constructed of ASTM A536 Ductile Iron and shall be one piece. The resilient plug encapsulation shall conform to ASTM D429 testing.
- 6.3. Radial bearings shall be made of permanently lubricated SS304
- 6.4. Thrust bearings shall be made of permanently lubricated PTFE
- 6.5. All submerged coatings shall conform to AWWA C550, be holiday free, and have a minimum total dry film thickness of 10 mils.
- 6.6. All uncovered, submerged, or buried valves shall have type 304 or 316 stainless steel hardware. All others shall have zinc plated carbon steel hardware unless specified.

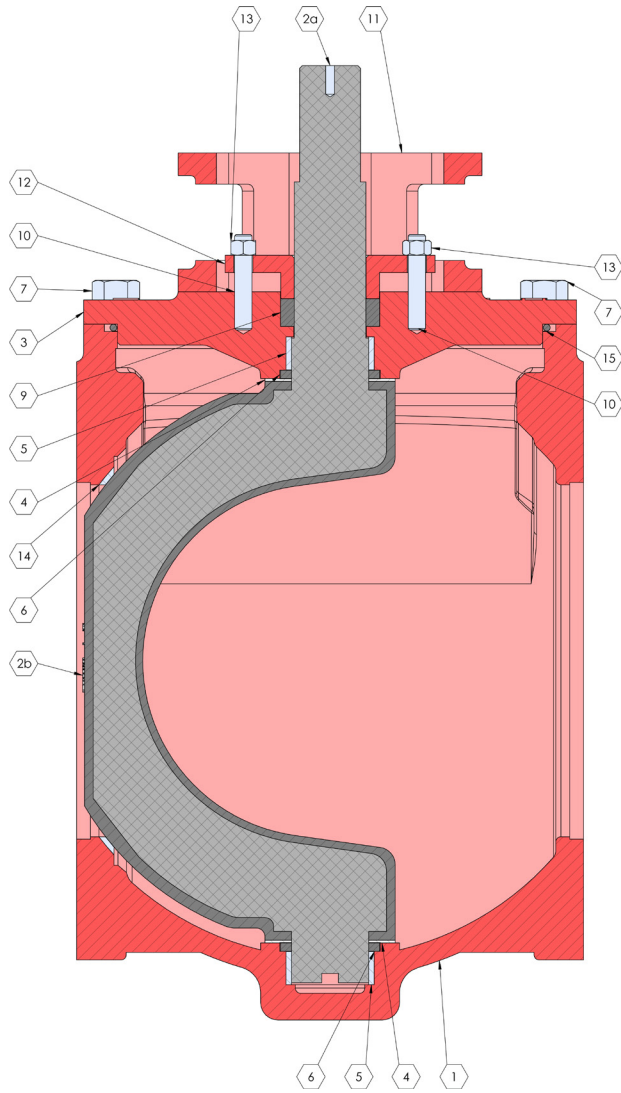
7. OPERATORS

- 7.1. All manually operated valves shall be capable of withstanding a 300 ft-lb input force
- 7.2. All valve for bi-directional service shall be equipped with a worm gear actuator, all others may utilize a direct nut or lever operator.
- 7.3. All actuators shall be permanently sealed and suitable for buried service.
- 7.4. All 2 inch square operating nuts, exposed hardware and shafts shall be made of corrosion resistant stainless steel or epoxy coated.
- 7.5. All actuators equipped with handwheels shall have a maximum rim pull of 50lbs.

8. MANUFACTURER

- 8.1. Eccentric plug valves shall be VSI Series PVII as manufactured by Valve Solutions, Inc., Alpharetta, GA USA or approved equal.
- 8.2. All valves shall be warranted by manufacturer for a minimum of 24 months

Materials of Construction



Item	Description	Materials Available	Standard
1	Body	Ductile Iron*	ASTM A536 65-45-12
		Cast Iron	ASTM A126 Class B
		Stainless Steel 304	ASTM A351 CF8
		Stainless Steel 316	ASTM A351 CF8M
2a	Plug	Same as Body	
2b	Plug Encapsulation	Buna-N (NBR)*	
		Chloroprene	
		EPDM Viton (FPM)	
3	Upper Cover	Same as Body	
4	Thrust Bearing	PTFE	
5	Radial Bearing	SS304*	MPIF 35 SS-304L-13
		SS316	MPIF 35 SS-316L-15
		Bronze	MPIF 35 CZ-2xxx-xx
6	Grit Seal	Same as Encapsulation	
7	Exterior Hardware	Stainless 304*	ASTM F593/594
		Stainless 316	ASTM F593/594
		Plated Steel	ASTM A325 Type 1
		Bronze	C651
9	V-Packing	Same as Encapsulation	
10	Adjusting Stud	Same as Exterior Hardware	
11	Gear Adapter or Nut Operator	Ductile Iron	ASTM A536 65-45-12
12	Packing Gland	Ductile Iron	ASTM A536 65-45-12
13	Packing Adjustment Hardware	Same as Exterior Hardware	
14	Body Seat	95% Nickel, Robotic Welded	
15	Cover O-Ring	Same as Encapsulation	
NS	Coating/Lining	Fusion Bonded Epoxy, Black*	
		Two-Part Epoxy	
		Glass Lining Coal-Tar Epoxy	
NS	Tag	Aluminum*	
		Stainless Steel	
NS	Assembly Lubricant	ANSI/NSF 61 Listed Silicone Lubricant	
NS	Operator	Varies	

Additional material options available as special order.



Design Standards

Size Range	3" - 12" Flanged End 3" - 12" MJ End
Construction	AWWA C517* ASME B16.34
Coatings	AWWA C550* ANSI/NSF 61 Compliant*
Connections	ANSI B16.1 Class 125/ANSI B16.5 Class 150* ANSI B16.1 Class 250/ANSI B16.5 Class 300 ANSI/AWWA C111/A21.11 (MJ)*
Lay Length	AWWA C517* (ex. MJ)
Bonnet	ISO 5211* MSS SP-101

*Standard Option



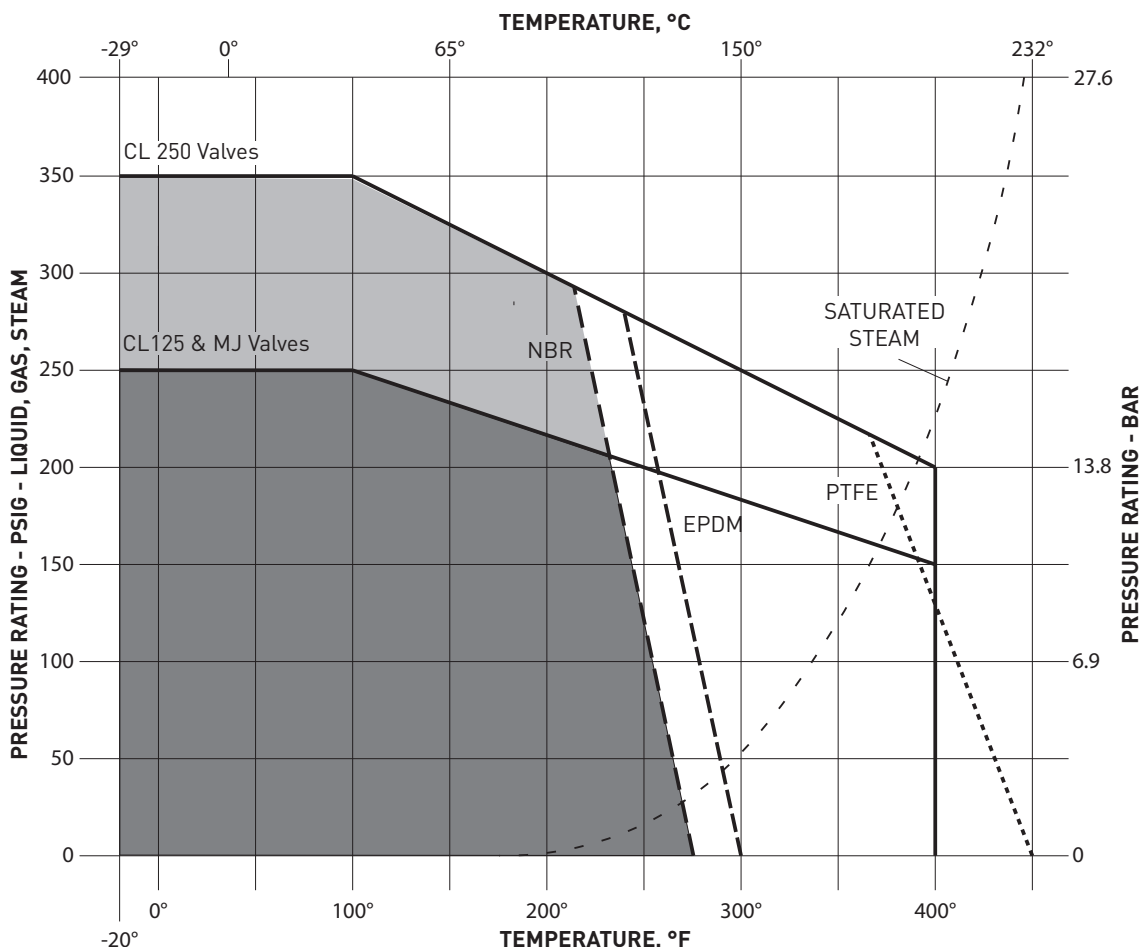
American Water Works
Association

Resistance Guide

Designation	Common Names	Composition	Min/Max Temperature Range	General Properties	Resistant to:	Attacked by:
NBR	NBR, Buna-N	Nitrile-butadiene	-30F/225F	Excellent resistance to petroleum-based fluids. Good physical properties	Many hydrocarbons, fats, oils, greases, hydraulic fluids, chemicals	Ozone, ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
FPM	FPM, Viton®	Hexafluoropropylene-vinylidene fluoride	-10F/400F	Excellent oil and air resistances both at low and high temperatures. Very good chemical resistance	All aliphatic, aromatic, and halogenated hydrocarbons, acids, animal and vegetable oils	Ketones, low molecular weight esters and nitro containing compounds
PTFE	PTFE, Teflon®	Polytetrafluoro-ethylene	-100F/450F	Excellent abrasion resistance and chemically inert	Acids, harsh inorganic and organic chemicals, oils, oxidizing agents, and solvents	Molten alkali metals and fluorine at high temperatures
EPDM	EPDM, EPM	Ethylene-propylene-diene Monomer	-40F/250F	Excellent ozone, chemical, and aging resistance. Poor resistance to petroleum-based fluids	Animal and vegetable oils, ozone, strong and oxidizing chemicals.	Mineral oils and solvents, aromatic hydrocarbons



Pressure/Temperature Ratings



In determining field pressure ratings for Series PVII Plug Valves that are constructed of Ductile Iron the above chart should be used. Pressure cast on valve represents maximum seating pressure; maximum hydrostatic pressure is temperature dependent, and may be higher than nominal pressure rating.

Cold Working Pressure Rating

SIZE	FORWARD CLOSEOFF W/GEAR	REVERSE CLOSEOFF W/ GEAR	FORWARD CLOSEOFF NUT AND/OR LEVER	REVERSE CLOSEOFF NUT AND/OR LEVER
3"	250 PSI	175 PSI	175 PSI	50 PSI
4"	250 PSI	175 PSI	175 PSI	50 PSI
6"	250 PSI	175 PSI	175 PSI	50 PSI
8"	250 PSI	175 PSI	175 PSI	50 PSI
10"	250 PSI	175 PSI	NA	NA
12"	250 PSI	175 PSI	NA	NA

Series PVII

Full Port Plug Valves
to AWWA C517



Flow Characteristics

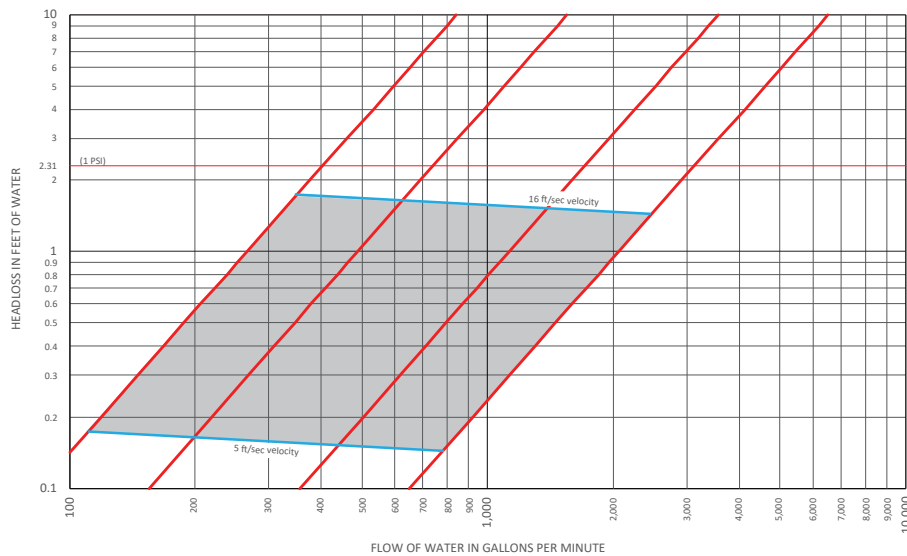
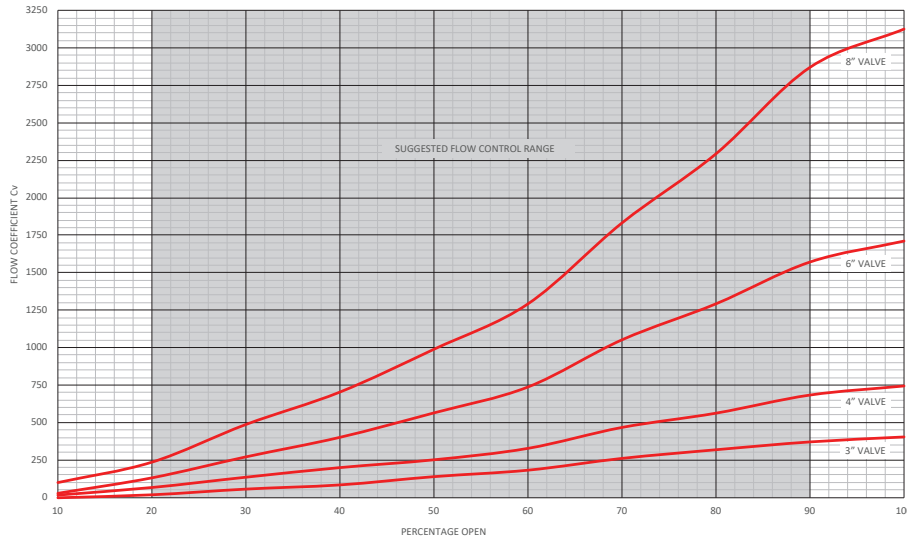
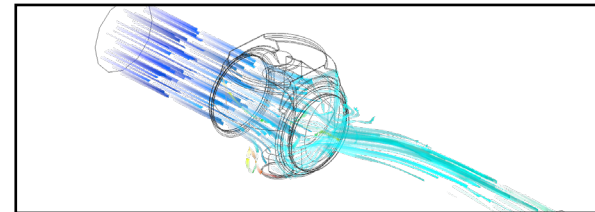
VSI has stepped above the rhetoric in the industry involving plug valve port sizes and flow. An independent ILAC MRA testing laboratory was contracted to test not only all sizes of the Series PVII but also to do comparative testing on competitors products.

As expected the Series PVII flowed up to 7% more than competitors similar valve. A further investigation of one manufacturer's publicly available documents list an

absurdly large flow coefficient for a 3" valve then a headloss chart showing a different, more realistic, flow coefficient. Other manufacturer's have data that when examined is very obviously extrapolated from the test of a single valve size.

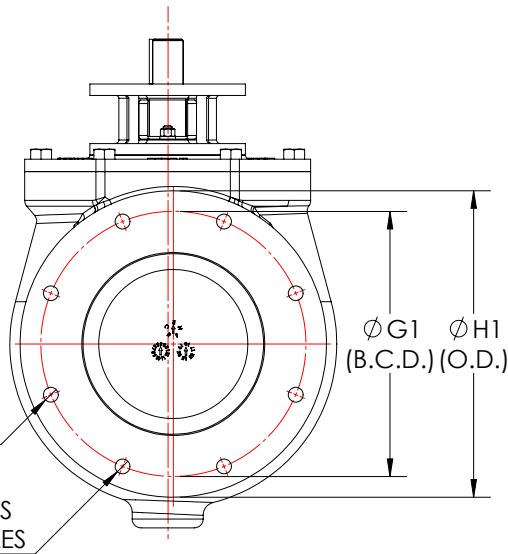
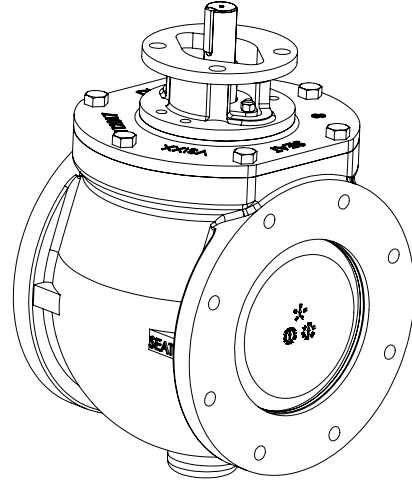
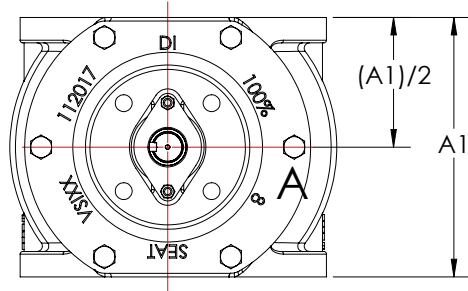
VSI knows engineers and specifiers rely on accurate information. We guarantee the flow characteristics of our valves and back it up with independent flow test data and simulation using ANSYS AIM, the top tier computational fluid dynamics application in the industry today.

SIZE	Cv	Kv
3"	404.1	349.4
4"	743.5	642.8
6"	1710	1478
8"	3125	2702
10"	-	-
12"	-	-



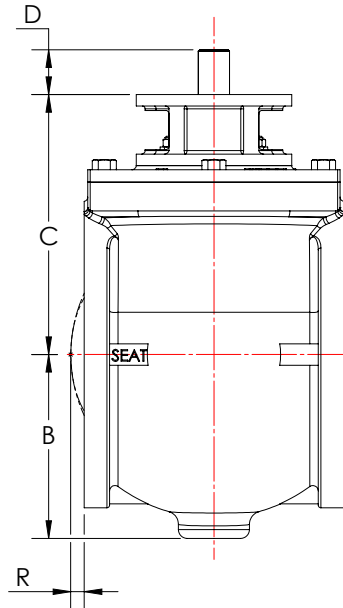


Flanged With ISO Mount



L1=# OF THRU HOLES
M1=# OF THRU HOLES

J1=# OF TAPPED HOLES
K1=SIZE OF TAPPED HOLES



PAGE 11

SIZE	A1	B	C	D	G1	H1	J1	K1	L1	M1	R
3"	8.00	4.3	7.0	1.43	6.00	7.9	4	5/8-11UNC	-	-	-
4"	9.00	5.2	7.7	1.59	7.50	9.1	8	5/8-11UNC	-	-	-
6"	10.50	6.7	9.7	1.59	9.50	11.2	8	3/4-10UNC	-	-	-
8"	11.50	8.2	11.5	1.59	11.75	13.6	8	3/4-10UNC	-	-	0.75
10"	13.00	8.9	12.3	3.10	14.25	16.0	4	7/8-9UNC	8	1.00	0.80
12"	14.00	10.2	14.0	3.15	17.00	19.0	4	7/8-9UNC	8	1.00	0.85

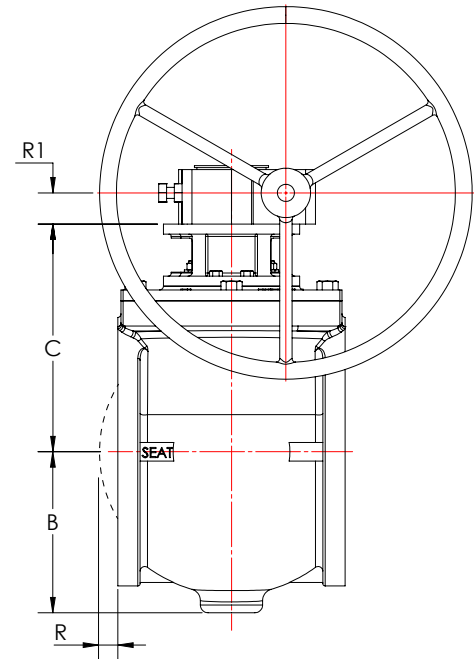
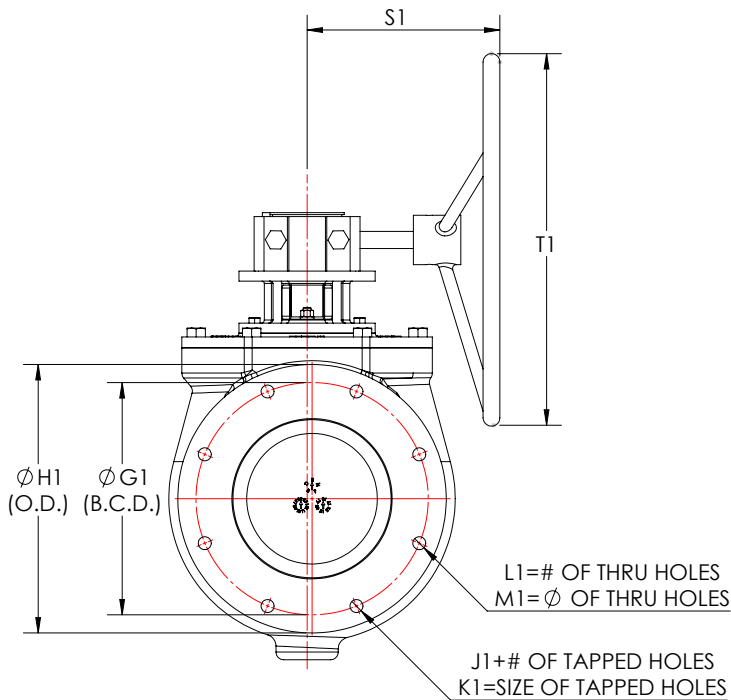
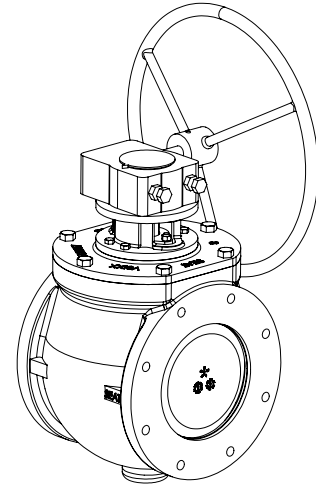
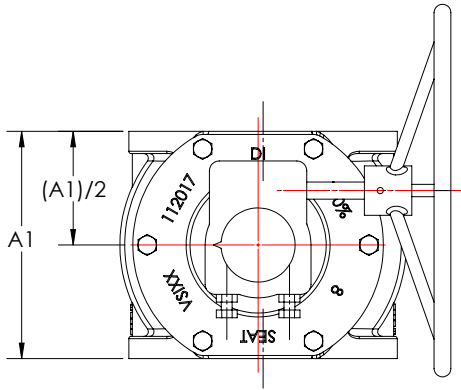
See drawing PVII-1020 for detailed dimensions

Series PVII

Full Port Plug Valves
to AWWA C517



Flanged With Worm Gear & HW



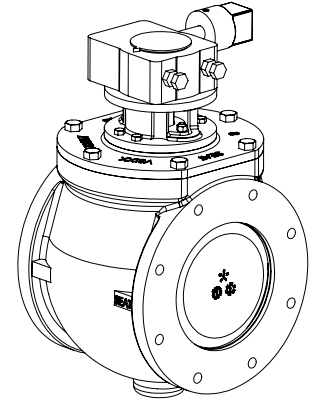
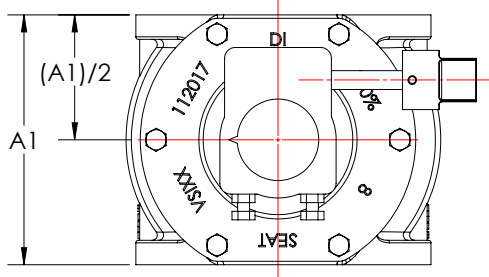
PAGE 12

SIZE	A1	B	C	G1	H1	J1	K1	L1	M1	R	R1	S1	T1 175 PSI	T1 250 PSI
3"	8.00	4.3	7.0	6.00	7.9	4	5/8-11UNC	-	-	-	1.65	X	8.0	8.0
4"	9.00	5.2	7.7	7.50	9.1	8	5/8-11UNC	-	-	-	1.57	8.8	8.0	8.0
6"	10.50	6.7	9.7	9.50	11.2	8	3/4-10UNC	-	-	-	1.57	8.8	12.0	16.0
8"	11.50	8.2	11.5	11.75	13.6	8	3/4-10UNC	-	-	0.75	1.57	8.8	18.0	20.0
10"	13.00	8.9	12.3	14.25	16.0	4	7/8-9UNC	8	1.00	0.80	1.90	9.5	20.0	-
12"	14.00	10.2	14.0	17.00	19.0	4	7/8-9UNC	8	1.00	0.85	1.90	9.5	24.0	-

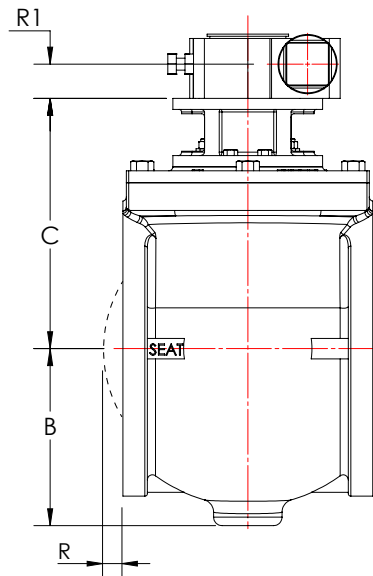
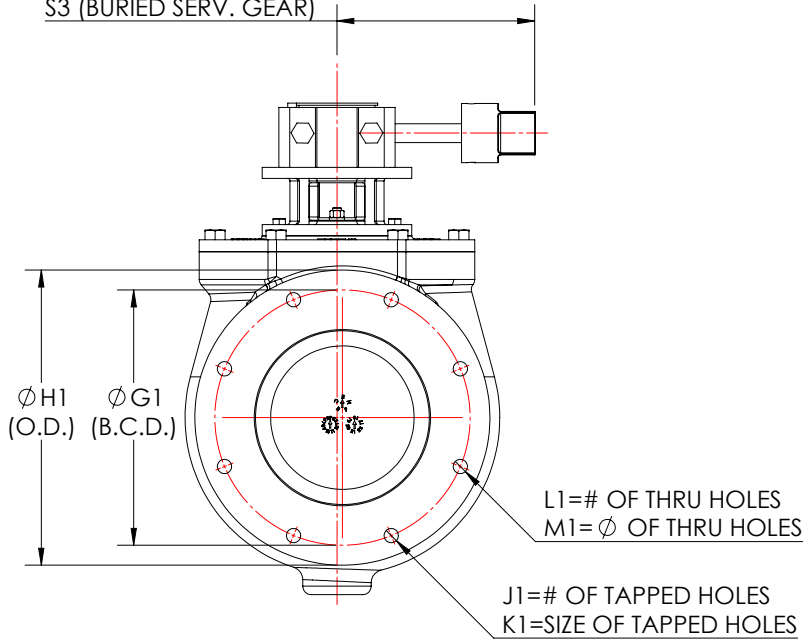
See drawing PVII-1021 for detailed dimensions
**Handwheels sized for 175psi as standard option.



Flanged With Worm Gear & 2" Nut Op.



S2 (STD. SERV. GEAR)
S3 (BURIED SERV. GEAR)



SIZE	A1	B	C	G1	H1	J1	K1	L1	M1	R	R1	S2	S3
3"	8.00	4.3	7.0	6.00	7.9	4	5/8-11UNC	-	-	-	1.65	X	X
4"	9.00	5.2	7.7	7.50	9.1	8	5/8-11UNC	-	-	-	1.57	9.1	5.9
6"	10.50	6.7	9.7	9.50	11.2	8	3/4-10UNC	-	-	-	1.57	9.1	5.9
8"	11.50	8.2	11.5	11.75	13.6	8	3/4-10UNC	-	-	0.75	1.57	9.1	5.9
10"	13.00	8.9	12.3	14.25	16.0	4	7/8-9UNC	8	1.00	0.80	1.90	9.8	7.4
12"	14.00	10.2	14.0	17.00	19.0	4	7/8-9UNC	8	1.00	0.85	1.90	9.8	7.4

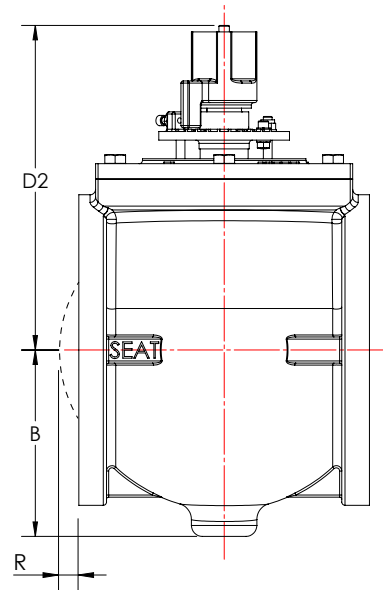
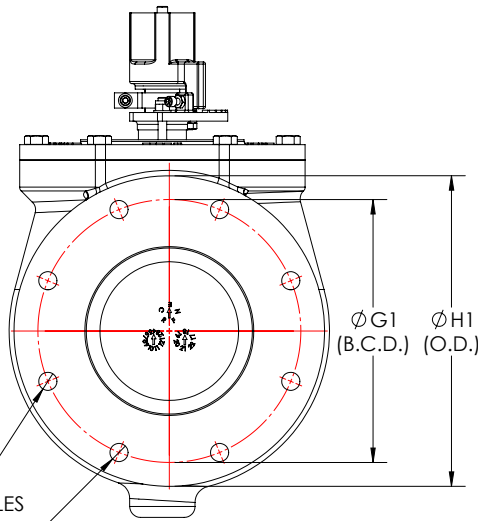
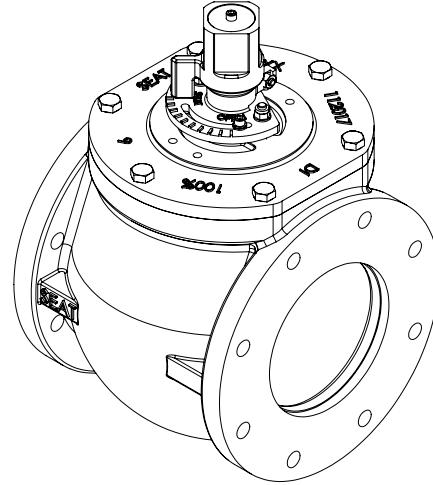
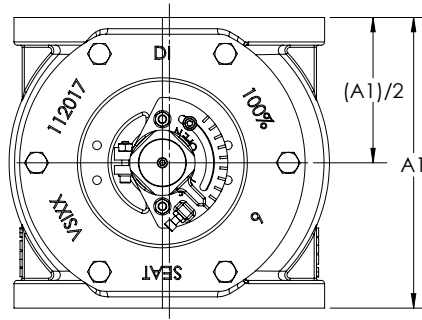
See drawing PVII-1022 for detailed dimensions

Series PVII

Full Port Plug Valves
to AWWA C517



Flanged With Direct 2" Nut Op.



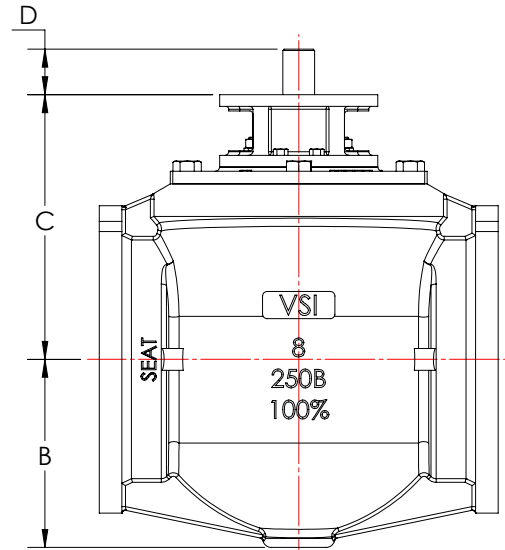
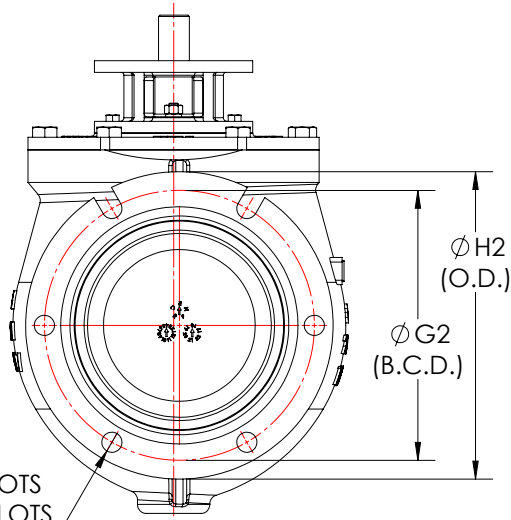
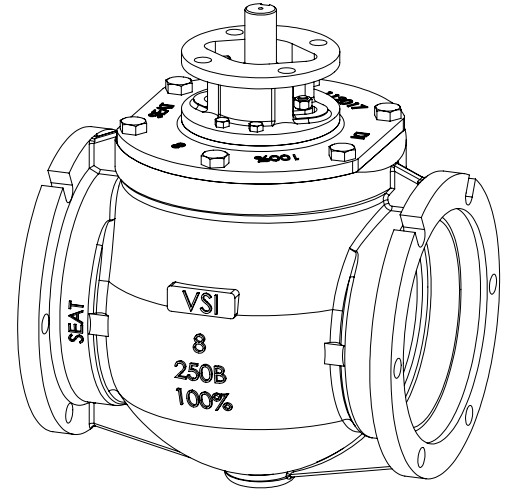
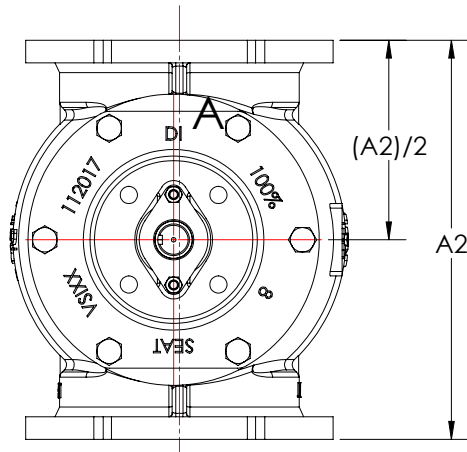
PAGE 14

L1=# OF THRU HOLES
M1=Ø OF THRU HOLES
J1 = NUMBER OF TAPPED HOLES
K1 = SIZE OF TAPPED HOLES

SIZE	A1	B	D2	G1	H1	J1	K1	L1	M1	R
3"	8.00	4.3	9.46	6.00	7.9	4	5/8-11UNC	-	-	-
4"	9.00	5.2	10.19	7.50	9.1	8	5/8-11UNC	-	-	-
6"	10.50	6.7	11.73	9.50	11.2	8	3/4-10UNC	-	-	-
8"	11.50	8.2	13.87	11.75	13.6	8	3/4-10UNC	0.75	-	-

See drawing PVII-1023 for detailed dimensions

Mechanical Joint With ISO Mount



L2=# OF HOLES/SLOTS
M2=Ø OF HOLES/SLOTS

SIZE	A2	B	C	D	G2	H2	L2	M2
3"	11.50	4.3	7.0	1.43	6.19	7.72	4	0.88
4"	14.25	5.2	7.7	1.59	7.50	9.13	4	0.88
6"	15.75	6.7	9.7	1.59	9.50	11.22	6	0.88
8"	17.37	8.2	11.5	1.59	11.75	13.38	6	0.88
10"	19.38	8.9	12.3	3.10	14.00	15.62	8	0.88
12"	20.75	10.2	14.0	3.15	16.25	17.87	8	0.88

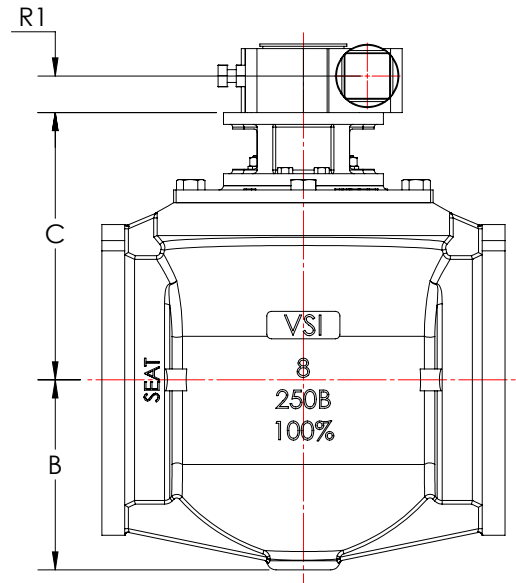
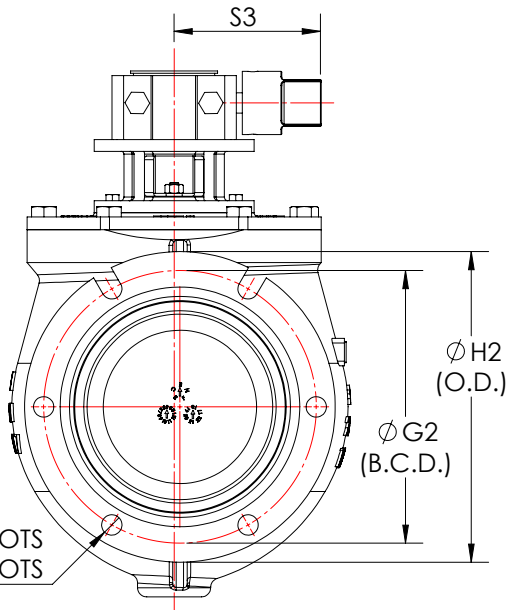
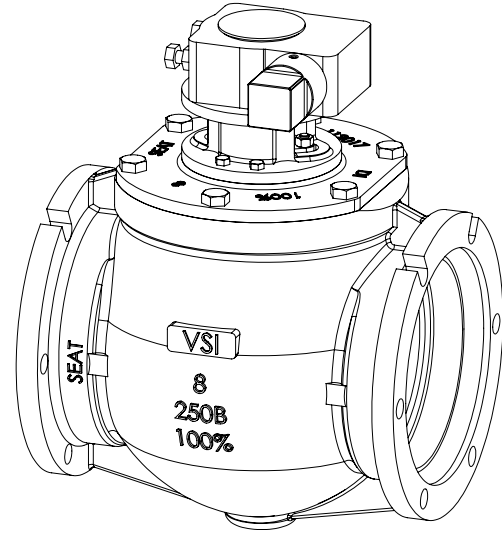
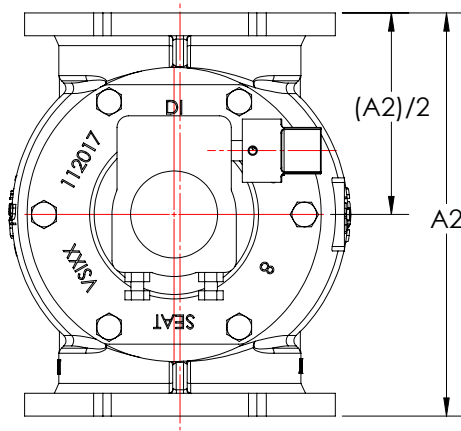
See drawing PVII-1040 for detailed dimensions

Series PVII

Full Port Plug Valves
to AWWA C517



Mechanical Joint With Worm Gear & 2" Nut Op.



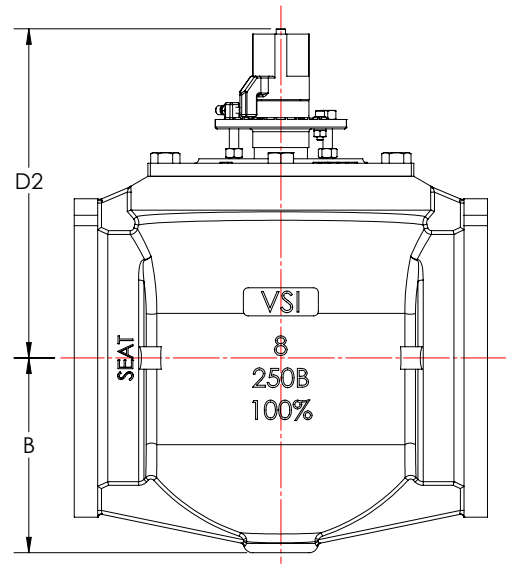
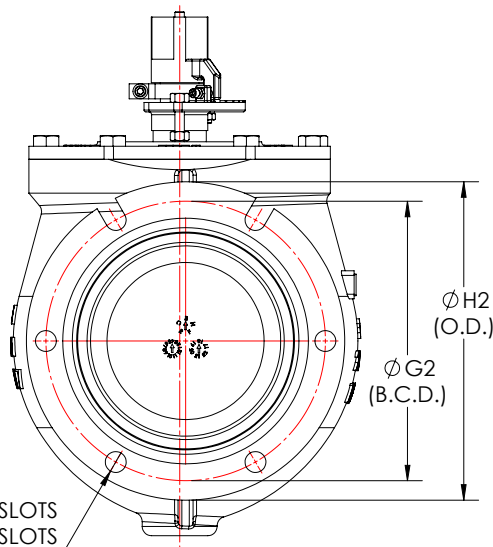
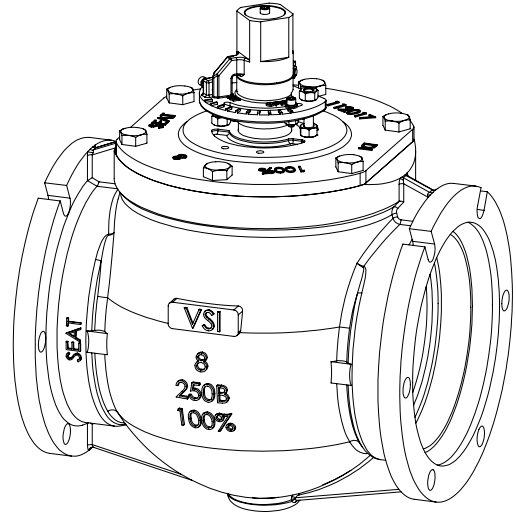
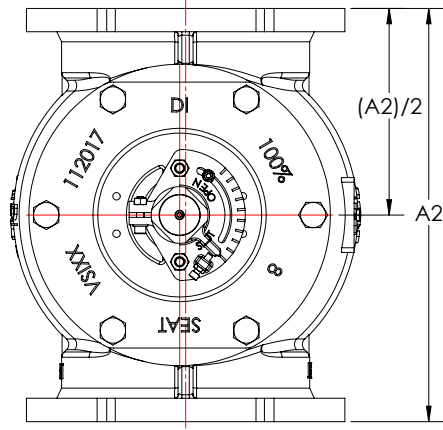
PAGE 16

SIZE	A2	B	C	G2	H2	L2	M2	R1	S3
3"	11.50	4.3	7.0	6.19	7.72	4	0.88	1.65	X
4"	14.25	5.2	7.7	7.50	9.13	4	0.88	1.57	5.9
6"	15.75	6.7	9.7	9.50	11.22	6	0.88	1.57	5.9
8"	17.37	8.2	11.5	11.75	13.38	6	0.88	1.57	5.9
10"	19.38	8.9	12.3	14.00	15.62	8	0.88	1.90	7.4
12"	20.75	10.2	14.0	16.25	17.87	8	0.88	1.90	7.4

See drawing PVII-1041 for detailed dimensions



Mechanical Joint With Direct 2" Nut Op.

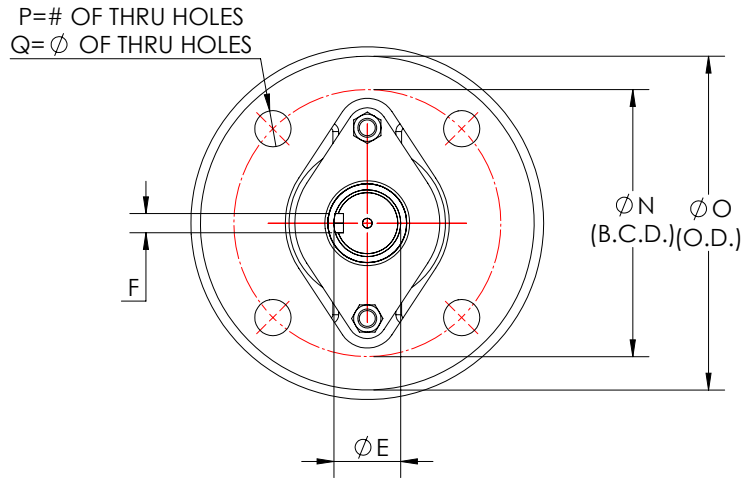


SIZE	A2	B	D2	G2	H2	L2	M2
3"	11.50	4.3	9.46	6.19	7.72	4	0.88
4"	14.25	5.2	10.19	7.50	9.13	4	0.88
6"	15.75	6.7	11.73	9.50	11.22	6	0.88
8"	17.37	8.2	13.87	11.75	13.38	6	0.88

See drawing PVII-1042 for detailed dimensions



ISO Actuator Mount Dimensions



SIZE	ISO	E	F	N	O	P	Q
3"	F10	0.945 [24mm]	0.315 [8mm]	4.02	4.9	4	0.47
4"	F12	1.220 [31mm]	0.394 [10mm]	4.95	5.9	4	0.47
6"	F12	1.220 [31mm]	0.394 [10mm]	4.95	5.9	4	0.47
8"	F14	1.496 [38mm]	0.472 [12mm]	5.51	6.9	4	0.75
10"	F14	1.625 [41.3mm]	0.472 [12mm]	5.51	6.9	4	0.75
12"	F16	2.000 [50.8mm]	0.630 [16mm]	6.50	8.3	4	0.87

Valve Weights

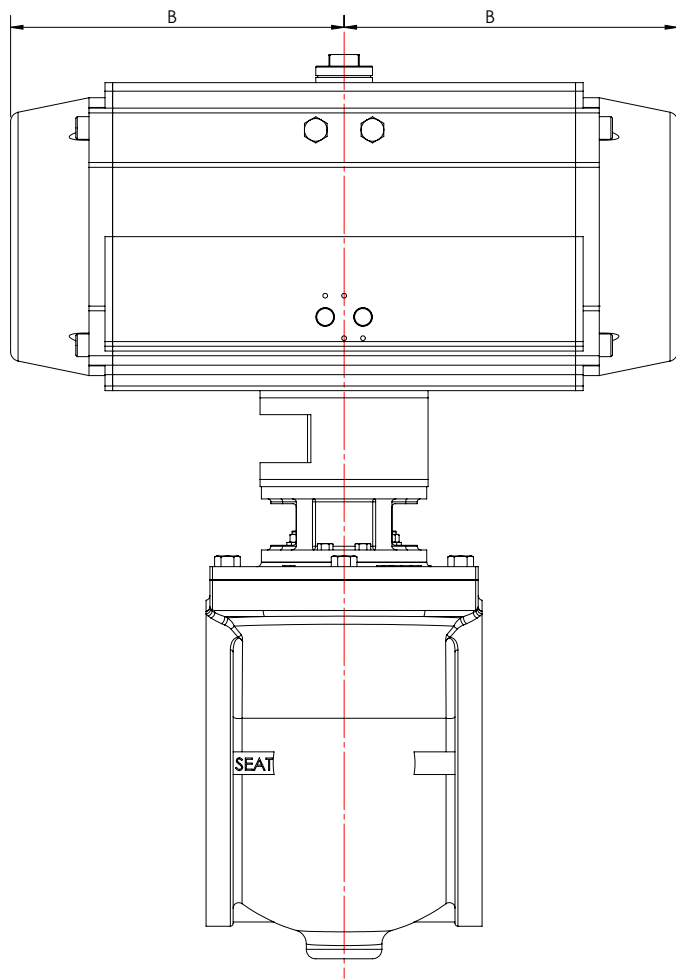
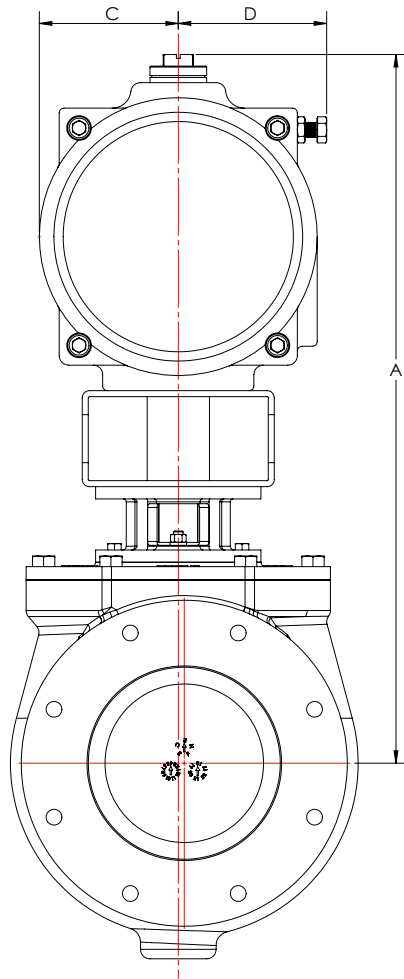
SIZE	Flanged ISO Mount	Flanged w/ Gear & HW	Flanged w/Gear & Nut Op.	Flanged w/ Direct Nut Op.
3"	58	71	70	56
4"	80	105	105	78
6"	121	147	146	119
8"	195	224	223	186
10"	256	300	298	NA
12"	359	403	400	NA

SIZE	MJE ISO Mount	MJE w/Gear & Nut Op.	MJE w/Direct Nut Op.
3"	63	75	60
4"	91	115	88
6"	141	165	138
8"	218	242	215
10"	265	309	NA
12"	366	410	NA

All weights in lbs



Pneumatic Operated Assembly



PAGE 19

SIZE	ACTUATOR MODEL	A	B	C	D
3"	C-DA105	15.4	5.2	2.0	2.2
4"	C-DA140	17.6	5.9	2.7	2.9
6"	C-DA210	22.9	10.3	4.1	4.1
8"	C-DA240	24.7	10.3	4.1	4.1
10"	-	-	-	-	-
12"	-	-	-	-	-

SIZE	ACTUATOR MODEL	A	B	C	D
3"	C-SR140	16.9	5.9	2.7	2.9
4"	C-SR160	18.3	7.7	3.0	3.0
6"	C-SR270	25.3	11.9	5.1	5.1
8"	C-SR300	28.5	14.2	5.8	5.8
10"	-	-	-	-	-
12"	-	-	-	-	-

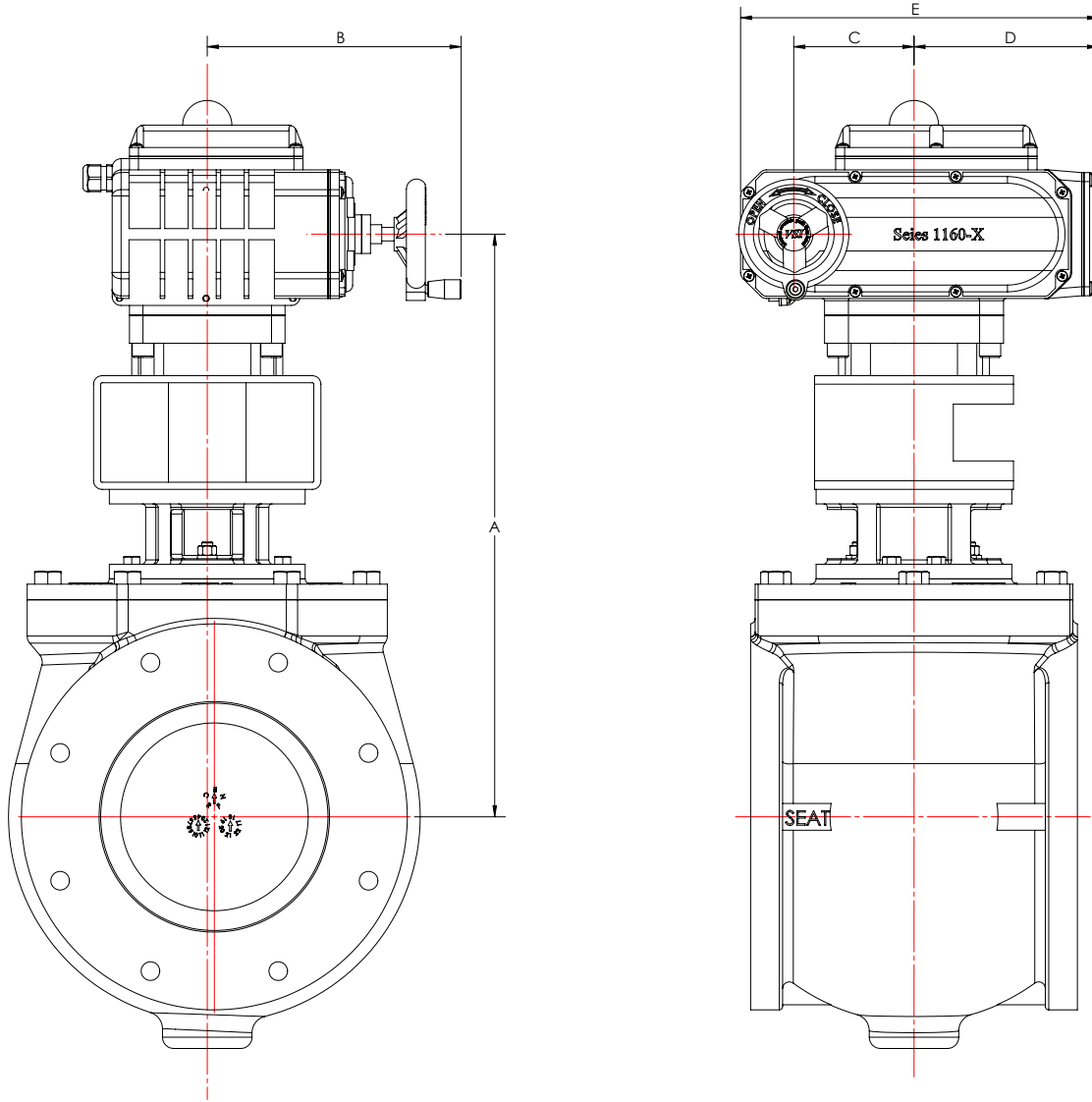
See drawing PVII-1020 and Series C brochure for detailed dimensions

Series PVII

Full Port Plug Valves
to AWWA C517



Standard Duty Electric Operated Assembly



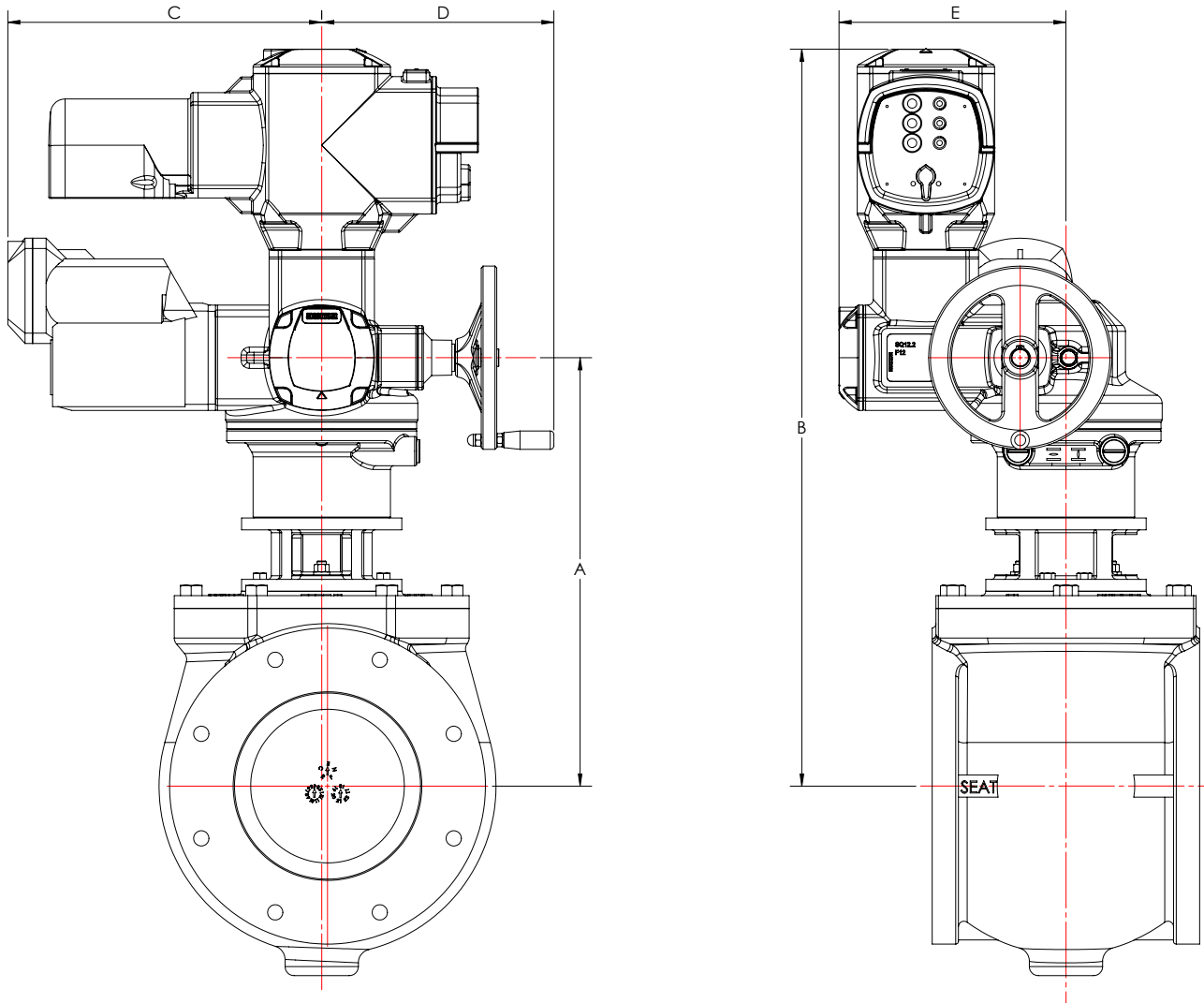
SIZE	O/C ACTUATOR	MODULATING ACTUATOR	A	B	C	D	E
3"	1020-X	1020/S-X	14.1	7.2	-0.7	5.3	10.0
4"	1040-X	1040/S-X	14.8	7.2	-0.7	5.3	10.0
6"	1100-X	1100/S-X	17.7	8.5	4.2	6.4	12.2
8"	1160-X	1160/S-X	19.5	8.5	4.2	6.4	12.2
10"	-	-	-	-	-	-	-
12"	-	-	-	-	-	-	-

See drawing PVII-1020 and Series 1000-X brochure for detailed dimensions

PAGE 20



AWWA Duty Electric Operated Assembly

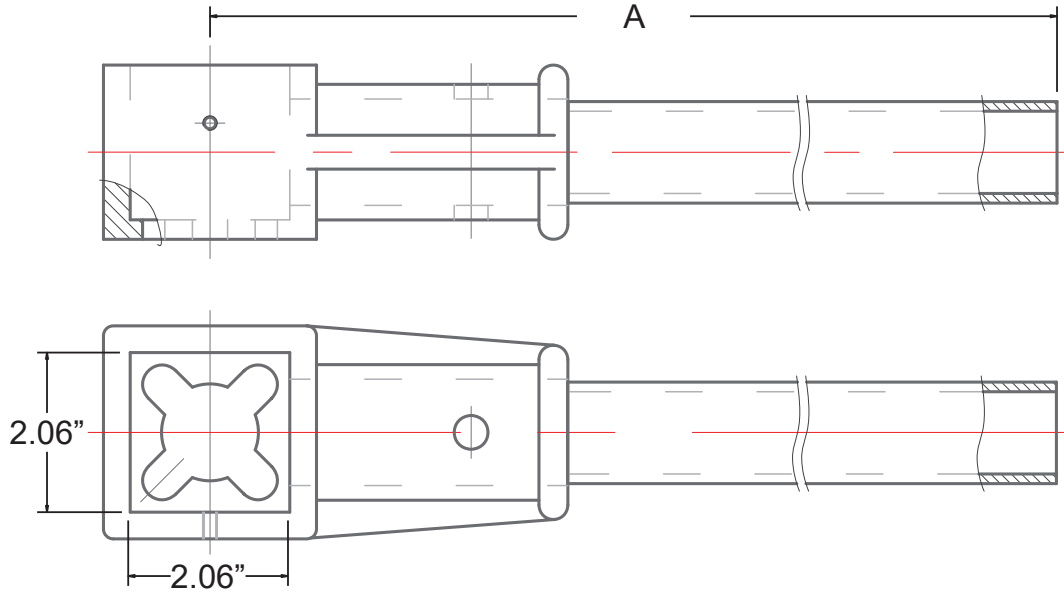


SIZE	MODEL	A	B	C	D	E
3"	SQ/SQR10.2	12.9	26.2	10.4	10.0	9.8
4"	SQ/SQR12.2	14.6	27.9	10.4	10.0	9.8
6"	SQ/SQR12.2	16.6	29.9	10.4	10.0	9.8
8"	SQ/SQR14.2	19.8	33.1	10.4	10.0	9.8
10"	-	-	-	-	-	-
12"	-	-	-	-	-	-

See drawing PVII-1020 or Series SQ/SQR brochure for detailed dimensions



Lever Operator for 2" Nut Op.



SIZE	LEVER PART NUMBER	A	FORWARD CLOSEOFF (PSI)	REVERSE CLOSEOFF (PSI)
3"	2NT-F-LEVER1	14.5	175PSI	50PSI
4"	2NT-F-LEVER1	14.5	175PSI	50PSI
6"	2NT-F-LEVER2	25.5	175PSI	50PSI
8"	2NT-F-LEVER2	25.5	175PSI	50PSI
10"/12"	Not Available			

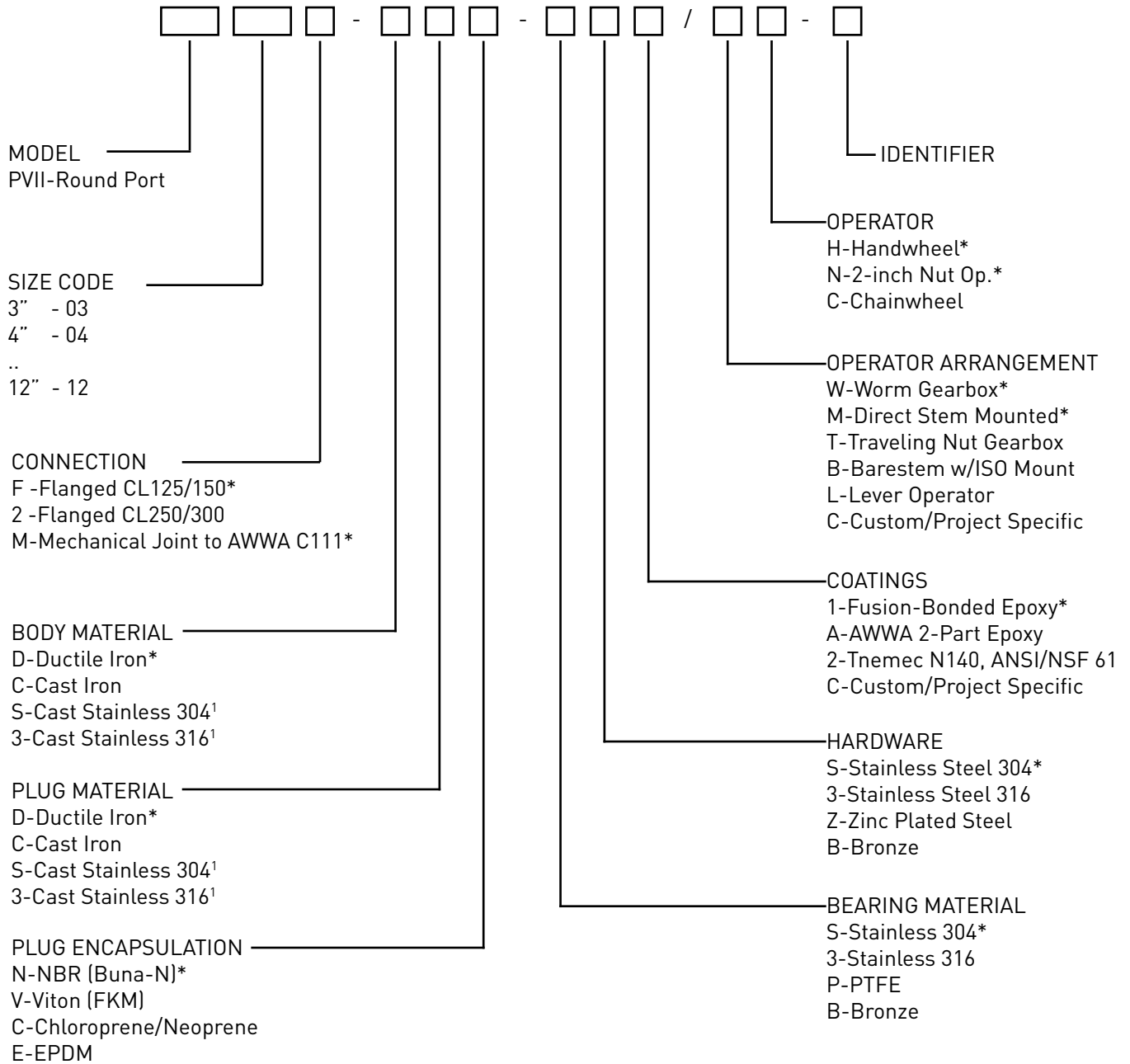
Operating Torque/Force

Barestem/Direct Nut Torque (inlbs)				Gear Operator w/ Nut Operator Torque (inlbs)				Gear Operator w/HW Rim Pull (lbs)			
SIZE	0 PSI	175 PSI	250 PSI	SIZE	0 PSI	175 PSI	250 PSI	SIZE	0 PSI	175 PSI	250 PSI
3"	531	673	850	3"	49	61	77	3"	6.1	7.6	9.6
4"	974	1,593	1,947	4"	89	145	177	4"	7.4	12	22.2
6"	1,998	5,209	9,897	6"	182	474	900	6"	15	40	56
8"	2,655	7,877	12,656	8"	241	716	1150	8"	13	40	58
10"	3515	11875	-	10"	221	747	-	10"	22	75	-
12"	4395	17300	-	12"	276	1088	-	12"	23	91	-

All torques are in inlbs, all forces are lbs. For liquid service only.



PART NUMBER MATRIX



PAGE 23

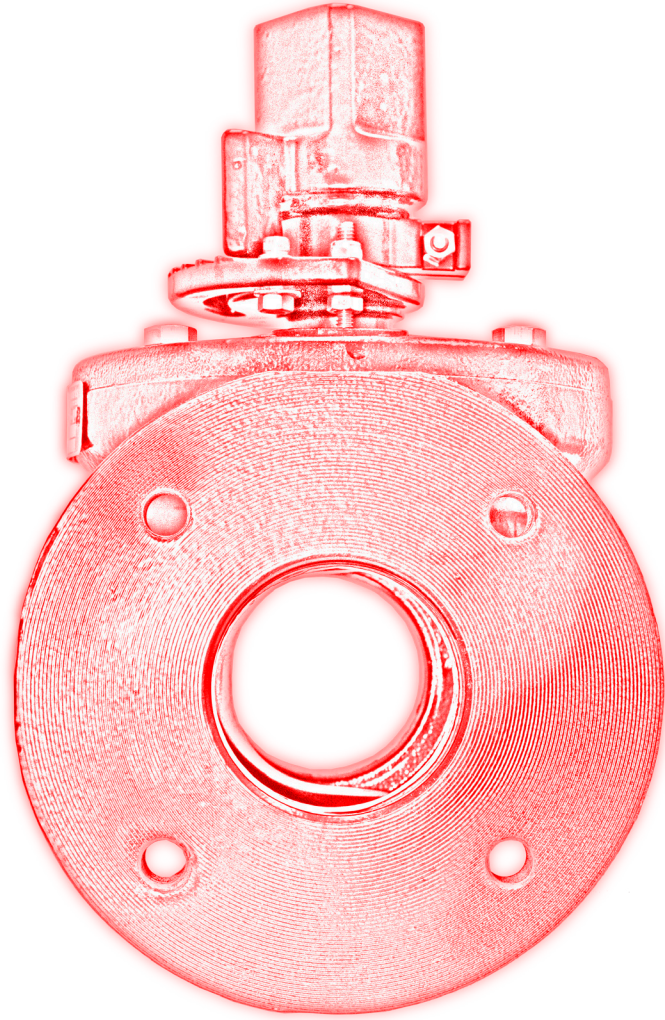
* Standard Material

1 - May not be available for all configurations/sizes

EXAMPLE:

PV1106F-DDN-SS1/WC-J

A 6" flanged round full port plug valve with Ductile Iron body and plug, NBR plug encapsulation, SS304 bearings, SS304 hardware, black FBE coating, worm gearbox with chainwheel operator.



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