

A technical drawing of a gate valve is overlaid on the red background. The drawing shows various views of the valve, including a top view, a side view, and a detail view of the gate. Dimensions are provided in millimeters and inches. Labels include "ENLARGED", "OTHER", "A VIEW", and "A3822.23".

**SERIES GVII**  
**AWWA C500 Solid Wedge Metal**  
**Seated Gate Valves**  
**2"-96"**



# Series GVII

Solid Wedge Metal Seated Gate Valves  
to AWWA C500



## 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.

## THRUST BEARINGS

Replaceable thrust bearings above and below the thrust collar reduce operating friction and extend the life of the valve

## REPLACEABLE O-RINGS

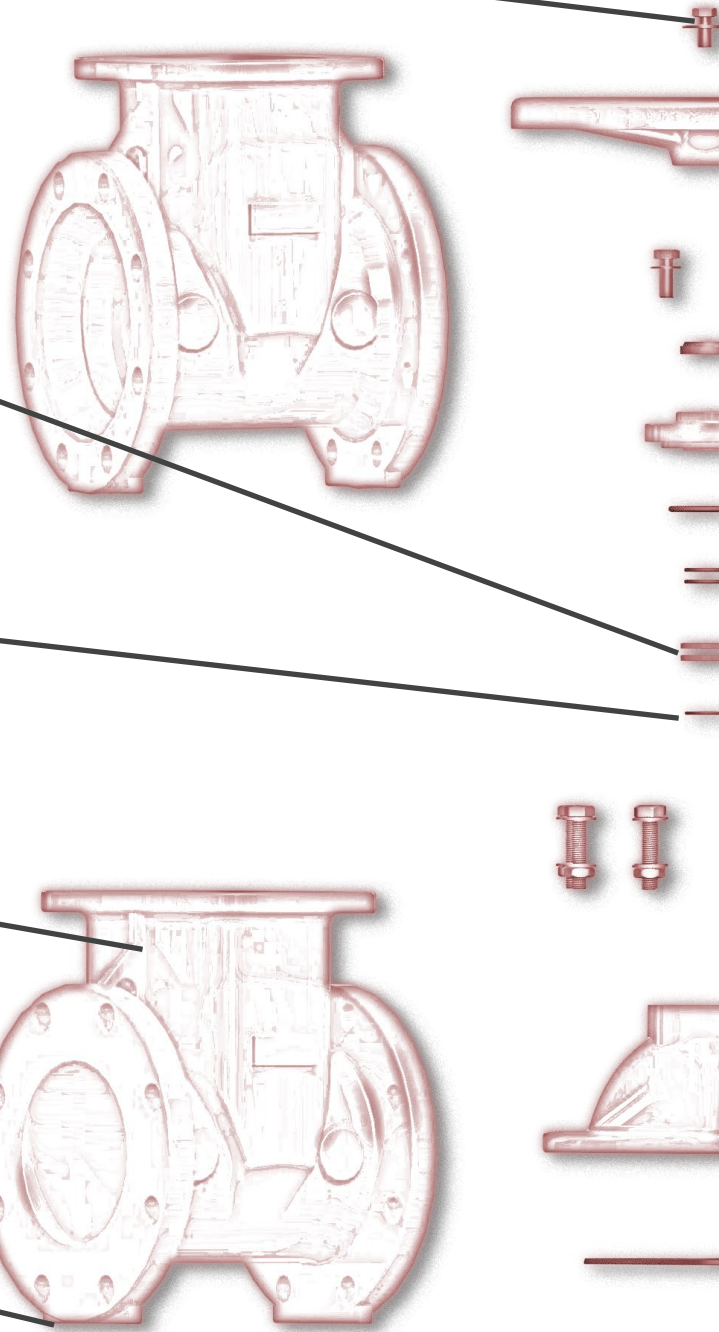
Triple O-ring sealed with upper two O-rings replaceable with the valve fully open and subjected to the full rated pressure.

## EPOXY COATING

Valve is fully coated with a fusion-bonded epoxy conforming to AWWA C550 in traditional gate valve red. Suitable for buried service or field applied topcoats.

## EASY STORAGE

Bodies feature flat pads on the bottom of all valves to hold the valve in the upright position during storage, preventing damage from outside elements.



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### STAINLESS STEEL STEM

Stainless Steel 304 stems are standard on the Series GVII gate valve. The corrosion resistant Stainless Steel features high tensile strength for a long trouble free life. Additional options available tailored to line media compatibility.

### INTEGRAL THRUST COLLAR

The forged shaft features an integral thrust collar with the wear surfaces being replaceable thrust bushings instead of the shaft itself.

### COPPER ALLOY STEM NUT

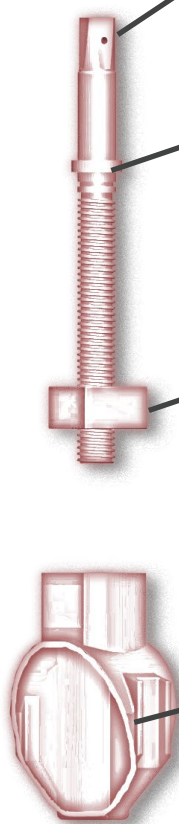
The copper alloy stem nut assures there will be no seizing or galvanic corrosion between it and the stem, while also providing a convenient affordable failure point.

### BRONZE SEAT RINGS

Bronze seat rings on the gate and body seal off against the highest pressure with minimal leakage and can be refinished to extend life of valve

### NO FLAT GASKETS

Formed seals at stuffing box and body to bonnet flanges ensure a good seal and allow easy service in the field.



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## The VSI Advantage

All Series GVII Gate Valves come standard with the far superior Ductile Iron body and gate. Ductile Iron features a Tensile Strength of over twice that of competitor's standard Gray Cast Iron. The higher Yield Strength and elongation of Ductile Iron add to the superior pressure vessel characteristics. Gray Cast Iron's very low elongation, very near zero, make it brittle and subject to stress fracture. The increased elongation of Ductile Iron makes it ideal for use in earthquake zones, buried pipelines where settling may occur, and other applications where the valve or pipe may be subject to outside stresses

Material	Ductile Iron	Gray Cast Iron
Tensile Strength	65,000 psi	31,000 psi
Yield Strength	45,000 psi	31,000 psi
Elongation	12%	~0%



As standard all Series GVII non-rising stem Gate Valves feature a one-piece forged shaft with an integral thrust collar supported in both directions by replaceable permanently lubricated thrust bearings. The one-piece shaft eliminates the seal damage and leakage that often occurs with gate valves that utilize a split ring collar to retain thrust. Shafts are stainless as standard, with many options available to meet project requirements.

All Series GVII non-rising stem Gate Valves utilize triple o-ring sealing to assure zero external leakage and ease of maintenance. The primary lower sealing o-ring rides in a recess on the shaft, facilitating easier replacement than o-rings that must be retrieved from a recess in the body.

The bronze stem nut provides a convenient failure point in the case of vandalism or excessive torque input. Over torque on the valve input will cause the replaceable stem nut to fail, leaving the shaft and valve body unharmed. The low coefficient of friction of the bronze stem nut also reduces friction, lowering the needed operating force required.

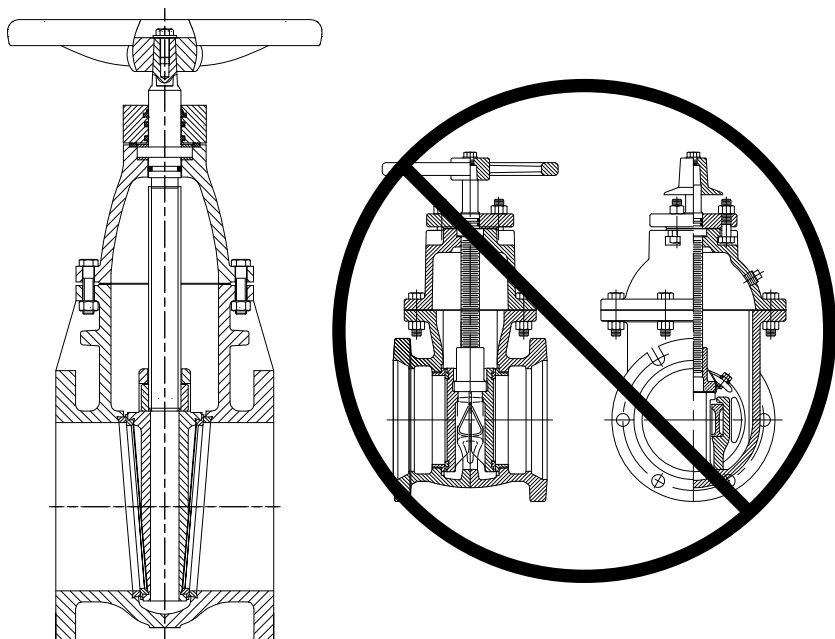


**Implementations**

The Gate Valve has long been the standard for low cost full port isolation applications. The metal seated variation of the Gate Valve adds the characteristic of reliable low torque seating to this list. Operating torques in the Gate Valve are the lowest of any isolation valve relative to size.

**100% Port Area**

All VSI Metal Seated Gate Valves come standard with a port area equal to 100 percent of the nominal pipe size port area. By including this feature as standard, valve flow coefficients are optimized across the entire line. The full port body allows for minimal flow loss and lower pumping costs. Most standard full size tapping cutters are compatible with this valve design.



**Why Solid Wedge?**

Simplicity. Solid wedge gate valves utilize a single unit close off mechanism compared to competitors double disc gate valves that utilize no less than 5 separate components in the gate. The result is easier maintenance, less spare parts, and a reduced amount of failure points.



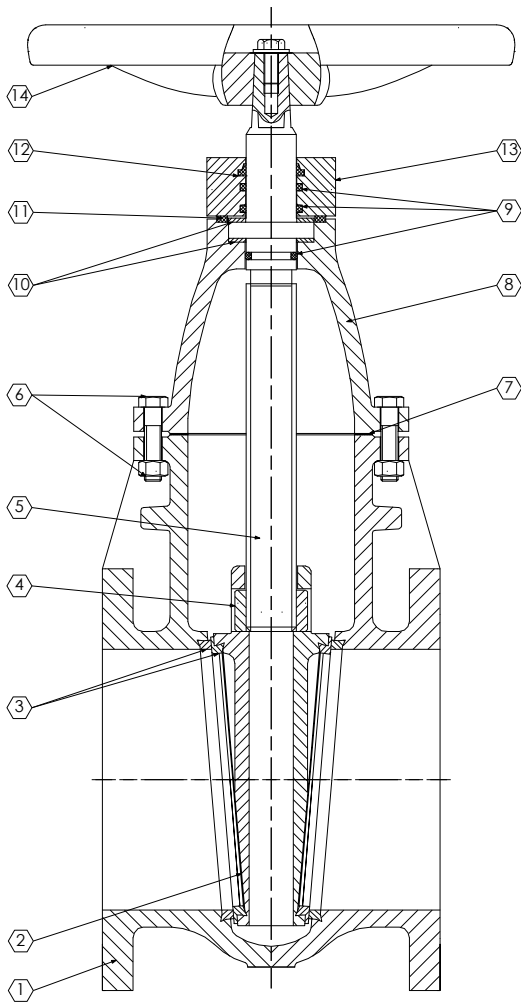
## Sample Specification

### Metal Seated Gate Valves for Waterworks Service

- 1.1. This specification covers the design, manufacture, and testing of cast metal seated gate valves 2 inch (75 mm) and larger under service pressure of up to 250 psig (1724 kPa).
- 1.2. Metal seated gate valves shall be solid wedge and of the non-rising stem or outside stem and yoke type.
2. GOVERNING STANDARDS
  - 2.1. All metal seated gate 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 C500.
  - 2.2. When requested, manufacturer shall provide an Affidavit of Proof of Design Testing in accordance with AWWA.
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 ASME B16.10.
  - 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. When requested resilient seated gate valves, except buried or submerged valves, shall be equipped with a tag identifying body, gate, resilient encapsulation, and stem material in addition to manufacturer's name, pressure rating, size, date of manufacturer, and date of testing.
5. DESIGN
  - 5.1. Valves shall be equipped with a gate with integral wedge seats.
  - 5.2. Valve stem shall be of the non-rising type an integral thrust collar. Split rings shall not be allowed on gate valves. Valves to be OSY type where specified.
  - 5.3. Valve shall be equipped with a minimum of one seal or o-ring below the thrust collar and two above on non-rising stem valves and conventional packing with gland on OSY valves.
  - 5.4. Thrust bushings shall be supplied acting upon the integral thrust collar in both the opening and closing direction.
  - 5.5. The valve should have a smooth waterway equal to 100% ±5% the nominal pipe size.
  - 5.6. Valve sizes 36 inch and larger shall be equipped with an AWWA C500 bypass gate valve sized per AWWA C500 Table 11 when required.
  - 5.7. Valves 30 inch and larger where the final installation results in the valve stem being more than 22.5 degrees from vertical shall utilize friction reducing tracks and guides.
  - 5.8. The valves shall be equipped with a mounting area for operators conforming to Manufacturers Standard Society (MMS) 101 or International Organization of Standardization (ISO) 5211 if equipped with a gearbox, pneumatic, hydraulic, or electric actuator. There shall be sufficient clearance to directly mount standardized operators with easily accessible fasteners.
  - 5.9. Stem diameter at drive shall be the preferred dimension stated in ISO 5211 Table 4 for pneumatic, hydraulic, or electric actuators.
  - 5.10. Valves shall meet or surpass the leakage rate specified in AWWA C500.
6. MATERIALS
  - 6.1. The valve body, gate, and bonnet if equipped shall be constructed of ASTM A536 Ductile Iron.
  - 6.2. The valve seat rings shall be made of Bronze copper alloy, Type 304, or Type 316 Stainless Steel as specified.
  - 6.3. The stem shall be made of ASTM A276 type 304 or 316 stainless steel.
  - 6.4. Thrust bearings shall be made of permanently lubricated PTFE, or lead free Bronze.
  - 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 valves shall have type 304 or 316 stainless steel exterior hardware.
7. OPERATORS
  - 7.1. All manually operated valves 16 inches and larger shall be equipped with a bevel or spur gear actuator. Operator should be designed to hold the valve in any intermediate position without creeping.
  - 7.2. All actuators shall be permanently sealed and suitable for buried service.
  - 7.3. All actuators equipped with handwheels shall have a maximum rim pull of 50lbs plus 5%.
8. MANUFACTURER
  - 8.1. Resilient seated wedge gate valves shall be VSI Series GVII as manufactured by Valve Solutions, Inc., Alpharetta, GA USA.
  - 8.2. All valves shall be warranted by manufacturer for a minimum of 12 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
		Carbon Steel	ASTM A216 WCB
2	Gate	Same as Body	
3	Seat Rings	Bronze*	ASTM B148
		Stainless Steel 304	ASTM A276 304
4	Stem Nut	Stainless Steel 316	ASTM A276 316
		Bronze*	ASTM B16
5	Stem	Naval Bronze	ASTM B21 C464
		Stainless 304*	ASTM A276 304
		Stainless 316	ASTM A276 316
		Bronze	ASTM B16
		Stainless 416	ASTM A582 416
6	Exterior Hardware	17-4PH	ASTM A693 Grade 630
		Super Duplex 2507	ASTM A240 2507
		Stainless 304*	ASTM F593/594
		Stainless 316	ASTM F593/594
7	Body Seal	Plated Steel	ASTM A325 Type 1
		Bronze	C651
		EPDM*	
8	Upper Body	Buna-N (NBR)	
		Viton (FPM)	
9	O-Rings	Same as Body Seal	
10	Bearings	Nylon*	
		PTFE	
		Bronze	ASTM B16
11	Cap/Mount Seal	Stainless 316	ASTM A276 316
		Same as Body Seal	
12	Dust Seal	Same as Body Seal	
13	Cap/Mount	Same as Body	
14	Operator	Same as Body	

Additional material options available as special order.

# Series GVII

Solid Wedge Metal Seated Gate Valves  
to AWWA C500



## Design Standards

Size Range	2"-96" Flanged End 2"-48" MJ End 2"-48" Flanged x MJ
Construction	AWWA C500* ASME B16.34 API 598
Coatings	AWWA C550* 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)* ISO 7005
Lay Length	ASME B16.10* (ex. MJ) ISO 5752
Bonnet	MSS SP-101* ISO 5211



American Water Works  
Association

\*Standard Option

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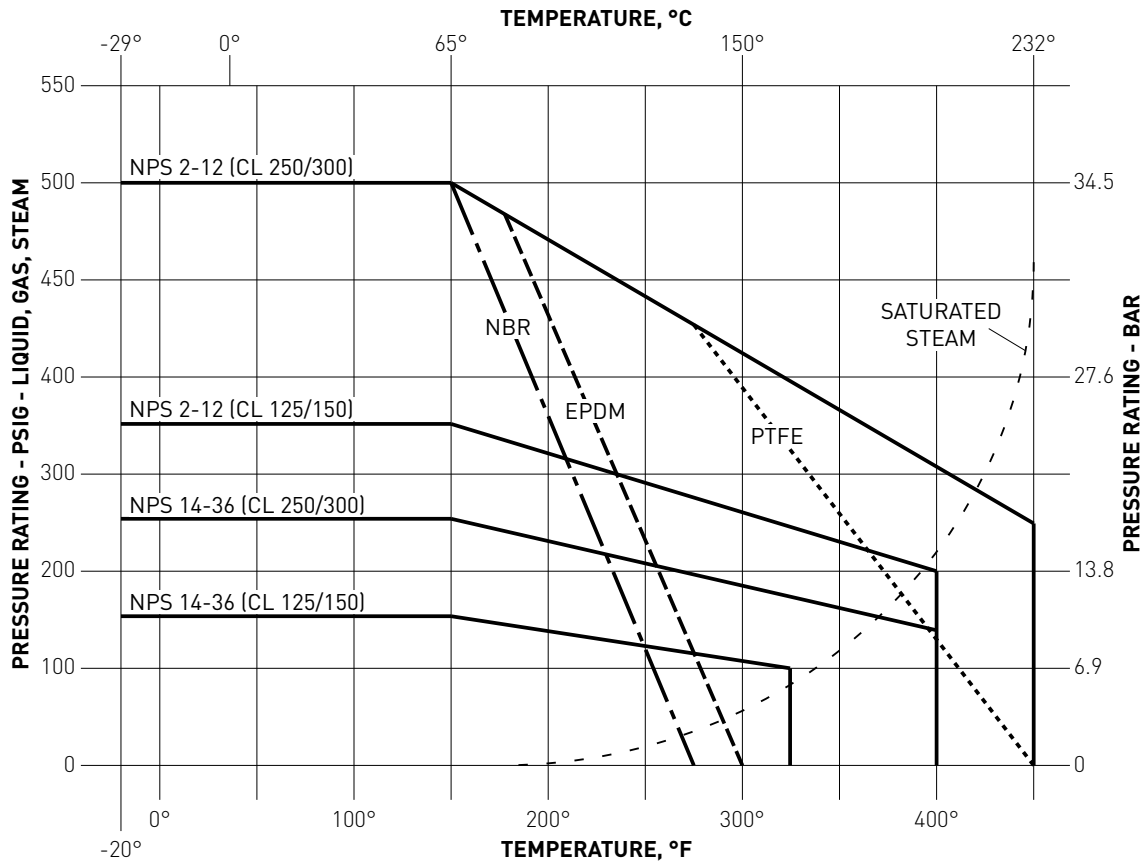
## Resistance Guide

Designation	Common Names	Composition	Min/Max Temperature Range	General Properties	Resistant to:	Attached by:
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
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





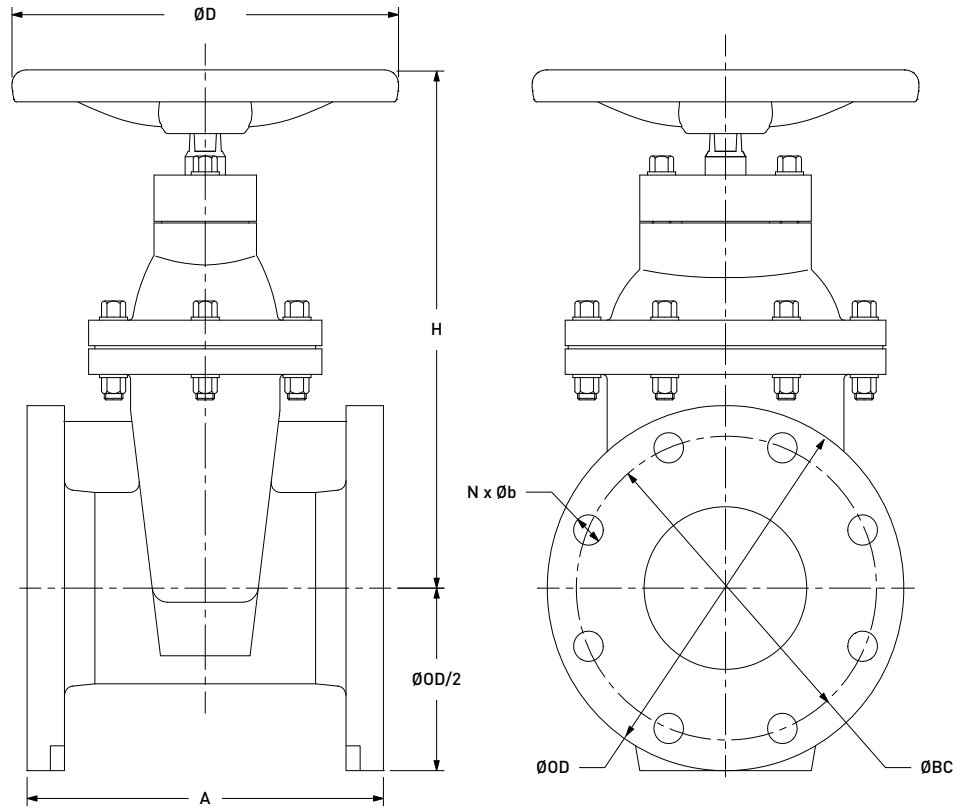
## Pressure/Temperature Ratings



In determining field pressure ratings for Series GVII Gate 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.



## Flanged With Direct Handwheel



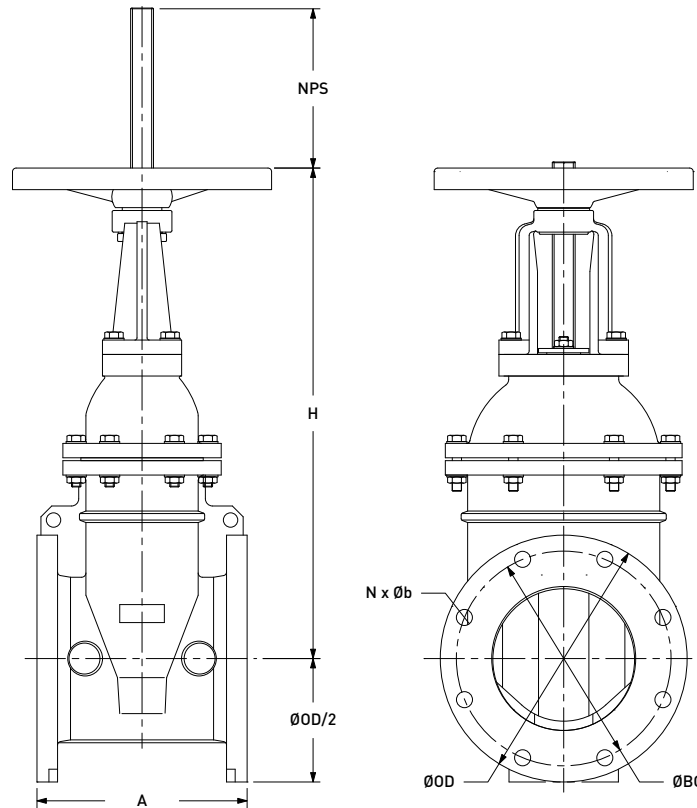
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SIZE	A	OD	BC	N	b	H	D	TURNS	WEIGHT
2"	7	6	4 3/4	4	3/4	10 3/8	8	8	33
2-1/2"	7 1/2	7	5 1/2	4	3/4	11 3/8	9	9	40
3"	8	7 1/2	6	4	3/4	12 1/2	9	11	46
4"	9	9	7 1/2	8	3/4	13 7/8	10	14	66
5"	10	10	8 1/2	8	7/8	16	10	17	93
6"	10 1/2	11	9 1/2	8	7/8	17 1/2	12	20	106
8"	11 1/2	13 1/2	11 3/4	8	7/8	21	14	27	185
10"	13	16	14 1/4	12	1	24 1/2	16	33	260
12"	14	19	17	12	1	27 3/8	16	39	364
14"	15	21	18 3/4	12	1 1/8	30 3/4	18	45	547
16"	16	23 1/2	21 1/4	16	1 1/8	33 3/4	18	52	683
18"	17	25	22 3/4	16	1 1/4	36 3/4	20	58	959
20"	18	27 1/2	25	20	1 1/4	39 3/4	20	64	1102
24"	20	32	29 1/2	20	1 3/8	46	20	77	1543

Gearbox recommended for valves larger than 14". Flanged valves available with nut operator as option. Apply for larger sizes to 96".



## Flanged Outside Stem and Yoke (OSY)



SIZE	A	OD	BC	N	b	H	D	TURNS	WEIGHT
2"	7	6	4 3/4	4	3/4	11 5/8	8	8	-
2-1/2"	7 1/2	7	5 1/2	4	3/4	13	9	9	-
3"	8	7 1/2	6	4	3/4	14 3/8	10	11	-
4"	9	9	7 1/2	8	3/4	16 3/4	11	14	-
5"	10	10	8 1/2	8	7/8	20	11	17	-
6"	10 1/2	11	9 1/2	8	7/8	22 5/8	13	20	-
8"	11 1/2	13 1/2	11 3/4	8	7/8	29	14	27	-
10"	13	16	14 1/4	12	1	34	16	33	-
12"	14	19	17	12	1	39 1/4	18	39	-
14"	15	21	18 3/4	12	1 1/8	44 1/4	20	45	-
16"	16	23 1/2	21 1/4	16	1 1/8	49 1/2	20	52	-
18"	17	25	22 3/4	16	1 1/4	54 1/2	24	58	-
20"	18	27 1/2	25	20	1 1/4	59 5/8	24	64	-
24"	20	32	29 1/2	20	1 3/8	70	24	77	-

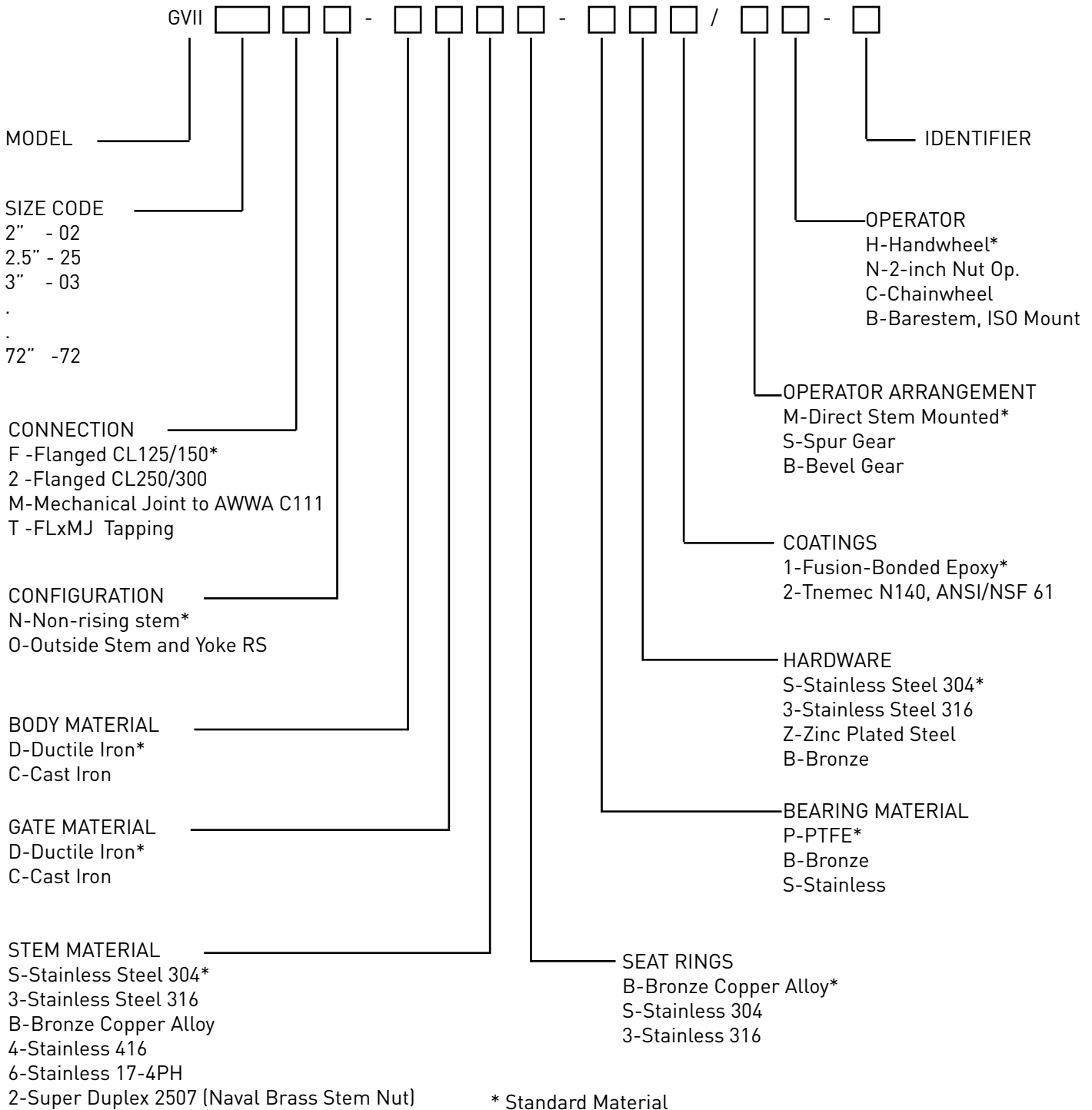
Gearbox recommended for valves larger than 16". Apply for larger sizes to 96".

# Series GVII

Solid Wedge Metal Seated Gate Valves  
to AWWA C500



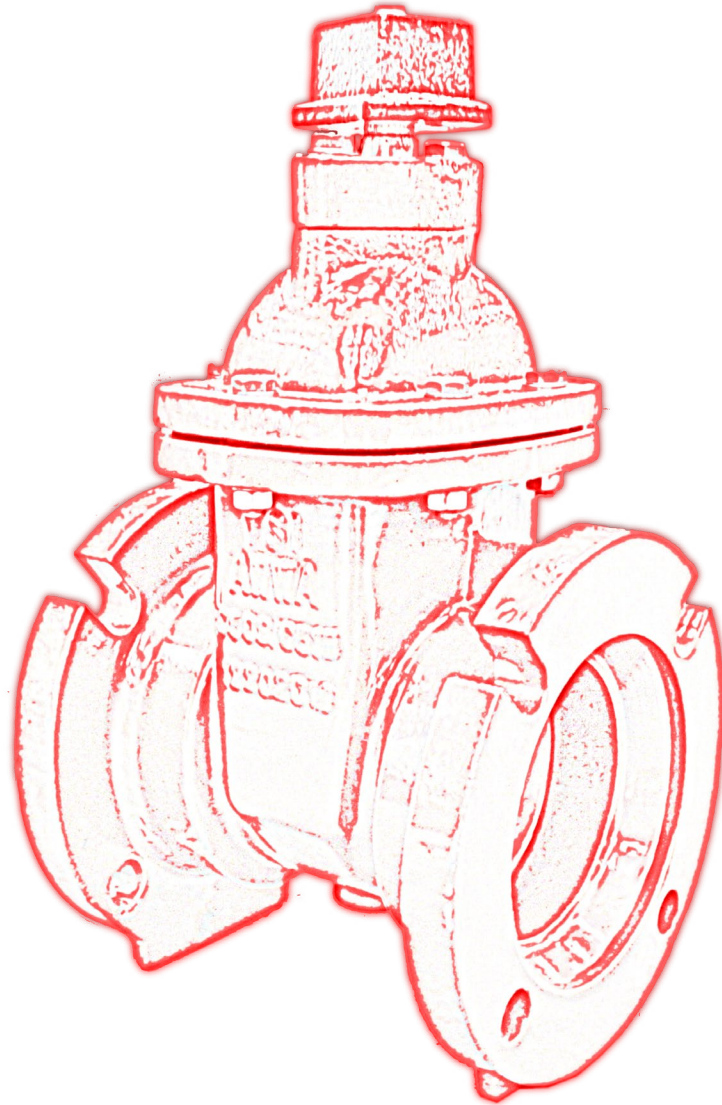
## PART NUMBER MATRIX



**EXAMPLE:**

GVII06FO-DDSB-BS1/MH-H

A 6" flanged OSY gate valve with Ductile Iron body and gate, SS304 shaft, Bronze seat rings, Bronze bushings, SS304 hardware, fusion-bonded epoxy coatings with direct handwheel operator



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