R/W VALVE

Material Specifications

CAST IRON Specification ASTM A126 Class B

Physical Properties

Minimum tensile strength	31,000 psi
Minimum transverse strength	3,300 lbs.
Minimum deflection (12" Centers)	.12 in

Chemical Analysis (percent)

Phosphorus (maximim)	.75
Sulfur (maximum)	.15

Ductile Iron ASTM A536

Minimum tensile strength	65,000 psi
Minimum yield strength	45,000 psi
Elogation	10-12%

Urethane Rubber

Hardness	78 ± 2
100% Modulus (PSI)	820
Tensile (PSI)	5,400
Elongation (%)	460

Seat Rubber (SBR)

Hardness	78 ± 2
100% Modulus (PSI)	820
Tensile (PSI)	5,400
Elongation (%)	460
Compression Set, ASTM D395 Method B	18% max.

R/W VALVE

Material Specifications

STANDARD

CAST BRONZE--ASTM B584 CDA844 (Stem Nut)

Physical Properties

Minimum tensile strength	29,000 psi
Minimum yield strength	13,000 psi
Minimum elongation (in 2 inches)	18%

Chemical Analysis

Copper	78.0-82.0
Lead	6.0-8.0
Tin	2.3-3.5
Nickel (maximum)	1.0
Zinc	7.0-10.0

CAST BRONZE--ASTM B584 CDA867 (Stem)

Physical Properties

Minimum tensile strength	80,000 psi
Minimum yield strength	32,000 psi
Minimum elongation (in 2 inches)	15%

Chemical Analysis

Copper	55.0-60.0
Lead (maximum)	.50-1.5
Aluminum	1.0-3.0
Iron	1.0-3.0
Nickel (maximum)	1.0
Zinc	30.0-38.0
Manganese	1.0-3.5
Tin (maximum)	.2

ALTERNATE

CAST BRONZE--NDZ-S CA. NO. 995 (Stem)

Physical Properties	
Minimum tensile strength	70,000 psi
Minimum yield strength	40,000 psi
Minimum elongation (in 2 inches)	12%
Chemical Analysis	
Copper	82.8
Lead (maximum)	.25
Aluminum (maximum)	2.0
Iron (maximum)	5.5
Nickel (maximum)	5.5
Zinc (maximum)	2.0
Silicon (maximum)	2.0

4"-12" R/W VALVE UL/FM

Performance Information

1. Valve complies with AWWA specs where applicable.

2. Valve complies with Underwriters Laboratory standard UL 262.

3. Valve is rated at 200 psi working pressure.

4. Valve is bubble-tight at all pressures up to full rated pressure (200 psi).

5. Valve is capable of bubble-tight seal at twice the rate pressure (400 psi) for short periods of time.

6. 2" thru 6" valve sizes have been hydrostatically shell tested at five (5) times the rated pressure (1000 psi).

7. 8", 10", and 12" valve sizes have been hydrostatically shell tested at four (4) times the rated pressure (800 psi).

8. Valve has been subjected to torques 150 percent of the designated minimum required torques.

9. Valve has been cycle tested 5,000 times without loss of bubble-tight seal.

10. Rubber to iron bond on wedge is inspected for strength as per ASTM D 429-73 specification.

For complete data on the tests Underwriters Laboratories performed reference UL File EX2697 Project 87NK7353.

2"-12" R/W VALVE AWWA SERVICE

Performance Information

1. Valve complies with AWWA C509 specs where applicable.

2. Valve is rated at 250 psi working pressure.

3. Valve is bubble-tight at all pressures up to full rated pressure (250 psi).

4. Valve is capable of bubble-tight seal at twice the rate pressure (500 psi) for short periods of time.

5. 2" thru 12" valve sizes have been hydrostatically shell tested at 2.5 times the rated pressure (625 psi).

6. Valve has been subjected to torques 150 percent of the designated minimum required torques.

7. Valve has been cycle tested 5,000 times without loss of bubble-tight seal.

8. Rubber to iron bond wedge is inspected for strength as per ASTM D 429-73 specification.

14"-24" R/W VALVE AWWA SERVICE

Performance Information

1. Valve complies with AWWA C515 specs where applicable.

2. Valve is rated at 250 psi working presure.

3. Valve is bubble-tight at all pressure up to full rated pressure (250 psi).

4. Valve is capable of bubble-tight seal at twice the rate pressure (500 psi) for short periods of time.

5. 14" thru 24" valve sizes have been hydrostatically shell tested at 2.5 times the rated pressure (625 psi).

6. Valve has been subjected to torques 150 percent of the designated minimum required torques.

7. Valve has been cycle tested 5,000 times without loss of bubble-tight seal.

8. Rubber to iron bond on wedge is inspected for strength as per ASTM D 429-73 specification.

R/W RESILIENT WEDGE GATE VALVE

Product Analysis

Features	Benefits
Bubble Tight Closure at 250 psi (AWWA SERVICE)	• No leakage--no loss of water
Smooth, Unobstructed Waterway	• High flow characteristics • 100% smooth passage without turbulent flow • No sediment build-up • Will not impede travel of line cleaning tools
Only Three Internal Parts	• Virtually maintenance free.
No Seat Rings	• Nothing to be damaged by scoring.
Delrin* Anti-Friction Thrust Bearing	• Operating torque to close and open held to absolute minimum.
Solid, Bronze Stem Nut and High Strength Bronze Stem	• No corrosion • Trouble-free service
Stem Nut is Self Centering	• Eliminates possible stress on stem and wedge
Two "O" Ring Seals Above Stem Thrust Collar	• Can be replace with valve in service
High Strength Iron Wedge Fully Encapsulated with Rubber Permanently Bonded to Metal. Wedge Design Incorporates Two Seating Surfaces.	• Trouble free service with minimum maintenance • No leaks--no wear

CR (CORROSION RESISTANCE) COATING

	EPOXY RATING			EPOXY RATING	
CHEMICAL	**70°F**	**180°F**	**CHEMICAL**	**70°F**	**180°F**
ACIDS:			**ALKALIES:**		
Acetic, 10%	F	N	Ammonium Hydroxide	E	G
Benzene Sulfide, 10%	E	E	Calcium Hydroxide	E	E
Benzoic	E	E	Potassium Hydroxide	E	E
Boric	E	E	Sodium Hydroxide	E	E
Chloracetic, 10%	E	E	**ACID SALTS:**		
Chromic, 5%	F	N	Aluminum Sulfate	E	E
Citric, 10%	E	N	Ammonium Chloride*	E	E
Fatty Acids	E	E	Copper Chloride*	E	E
Fromic, 90%	E	F	Iron Chloride*	E	E
Hydrobromic, 20%	G	G	Nickel Chloride*	E	E
Hydrochloric, 20%	E	G	Zinc Chloride*	E	E
Hydrocyanic	E	E	**ALKALINE SALTS:**		
Hydrofluoric, 20%	G	G	Barium Sulfide	E	E
Hypochlorous, 5%	F	N	Sodium Bicarbonate	E	E
Lactic, 5%	F	N	Sodium Carbonate	E	E
Maleic, 25%	E	E	Sodium Sulfide	E	E
Nitric, 5%	E	G	Trisodium Phosphate	E	E
Nitric, 30%	G	P	**NEUTRAL SALTS:**		
Oleic	E	E	Calcium Chloride*	E	E
Oxalic	E	E	Magnesium Chloride*	E	E
Phosphoric	G	F	Potassium Chloride*	E	E
Picric	G	F	Sodium Chloride*	E	E
Steraric	E	E	**SOLVENTS:**		
Sulfuric, 50%	G	F			
Tannic	E	E			
Ketones	F	F			

Ethers	F	F	Alcohols	E	E
Esters	F	F	Aliphatic Hydrocarbons	E	E
Gasoline	E	E	Aromatic Hydrocarbons	E	E
Cargon Tetrachloride	E	E	Benzene	E	E
			Formaldehyde, 37%	E	G
			Phenol, 5%	G	F
			Mineral Oils	E	E
			Vegetable Oils	E	E
ORGANICS:			Chlorobenzene		
Anitine	G	P			

KEY: E - no attack
G - appreciably no attack
F - some attack, but useable in some instances
P - attacked, not recommended for use
N - rapidly attacked
* - and nitrate and sulfate

CR (CORROSION RESISTANCE) COATING (INTERIOR & EXTERIOR)

Clow CR Coating is a high performance, one-part, heat-curable, thermoset coating which provides superior corrosion resistance protection for mteal parts.

Clow CR Coating material is a stable, non-toxic resin consisting of 100% solids. It is impervious to and imparts no taste to potable water. Clow CR Coating is formulated from materials deemed acceptable in the Food and Drug Administrations Document Tilte 21 of the Federal Regulations on food additives. Section 175.300 entitled "Resinous and Polymeric Coatings".

Clow CR Coating is applied by a heat application, fusion--bonding process which secures the coating material to the metal vale components. This process provides a continuous coating 9 mils thick with excellent adhesion qualities.

The durable Clow CR Coating has a hard finish and exhibits excellent corrosion resistance in most aqueous solutions and good abrasion resistance. It will not sag or cold flow or become soft during long-term storage. In addition to excellent corrosion resistance to aqueous solutions, the coating has excellent stability and resistance to acidic soil conditions.

Clow CR Coating meets the requirements of the American Water Works Association Standard C-550 entitled "Protective Interior Coatings for Valves and Hydrants". This high performance coating has a ten year history of satisfactory service as a corrosion protection coating used in corrosive potable water applications and soil conditions.

2" THRU 12" R/W VALVE

Flow Coefficients

VALVE SIZE	Cv (FULL OPEN)	K (FULL OPEN)
2	300	0.150
21/2	500	0.130
3	800	0.115
4	1,500	0.105
6	3,600	0.090
8	6,700	0.080
10	10,500	0.080
12	15,000	0.080

$$Cv = \sqrt{\frac{Q}{\Delta P}} \qquad K = f\ \frac{L}{D}$$

Values given are calculated, based on hydraulic lab tests on 6" R/W valve.

RESILIENT WEDGE GATE VALVES

Recommended Specifications

Valves shall conform to the latest revision of AWWA Standard C-509 Covering resilient sealed gate valves.

The valves shall be either, non-rising stem or rising stem, opening by turning stem left or right and provided with 2" square operating nut or handwheel with the word Open and an Arrow cast in the metal to indicate direction to open.

The wedge shall be of cast iron completely encapsulated with rubber.

The sealing rubber shall be permanently bonded to the cast iron wedge to meet ASTM tests for rubber metal bond ASTM D429.

Stems for NRS assemblies shall be cast bronze with integral collars in full compliance with AWWA. OS & Y stems shall be on bronze bar stock. The NRS stem stuffing box shall be the o-ring seal type with tworings located above thrust collar; the two rings shall be replaceable with valve fully open and subjected to full rated working pressure.

There shall be two low torque thrust bearings located above and below the stem collar. The stem nut shall be independent of wedge and shall be made of solid bronze. There shall be a smooth unobstructed waterway free of all pockets, cavities and depressions in the seat area.

The body and bonnet shall be coated with a fusion coating both interior and exterior to meet C550. Each valve shall have maker's name, pressure rating and year in which manufactured cast on the body. Prior to shipment from factory, each valve shall be tested by hydrostatic pressure equal to twice the specified working pressure.