

**RESILIENT  
WEDGE VALVES**

**CLOW VALVE COMPANY**

**CLOW AWWA Resilient Wedge Gate Valves  
Meet or Exceed the Requirements of  
AWWA Standard C509**

| Size Range      | Water Working Pressure psi | Bubble Tight Test psi | Hydrostatic Shell Test psi |
|-----------------|----------------------------|-----------------------|----------------------------|
| AWWA 2"-12"     | 250                        | 250                   | 500                        |
| ULFM 2 1/2"-12" | 200                        | 200                   | 400                        |

**Available in either non-rising stem, outside screw & yoke.**

**Available End Connections & Size Range**

**Figure No.**

|                           |                        |        |
|---------------------------|------------------------|--------|
| FLG End (NRS)             | 2"-12"                 | F-6102 |
| M.J.                      | 2"-12" (except 2 1/2") | F-6100 |
| FLG & M.J.                | 3"-12"                 | F-6106 |
| Push-on for PVC (SDR)     | 2"-12"                 | F-6110 |
| FLG End (OS & Y)          | 2"-12"                 | F-6136 |
| M.J. for Tapping          | 3"-12"                 | F-6114 |
| Tyton for D.I. & C900 PVC | 4"-12"                 | F-6112 |
| M.J. Cutting-in           | 4"-12"                 | F-6111 |
| Tyton for D.I. X FLG      | 4"-12"                 | F-6113 |
| Threaded                  | 2"-3"                  | F-6103 |

**Accessories (Illustrated in the Gate Valve Section)**

|                          |                               |
|--------------------------|-------------------------------|
| Indicator Posts          | 2" Sq. Operating Nuts         |
| "T" Handles              | Handwheels                    |
| Stem Guides              | Extension Stems               |
| Electric Motor Actuators | Floor Boxes                   |
|                          | Chain Wheels                  |
|                          | Floorstands (non-rising stem) |

|       |      |      |      |                        |
|-------|------|------|------|------------------------|
| MODEL | 2639 | AWWA | C509 | FULL BODY DUCTILE IRON |
| MODEL | 2640 | AWWA | C509 | FULL BODY GRAY IRON    |

**R/W VALVE**  
**Material Specifications**  
**CLOW VALVE COMPANY**

**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 (maximum) .75

Sulfur (maximum) .15

**Ductile Iron ASTM A536**

Minimum tensile strength 65,000 psi

Minimum Yield strength 45,000 psi

(EPDM) 10-12 %

**Seat Rubber (EPDM)**

Hardness 80+/-2

100% Modulus (PSI) 600

Tensile (PSI) 1,450

Elongation (%) 150

Compression Set, ASTM D395 Method B 18% max

**CLOW VALVE COMPANY**

STANDARD

Copper Alloy - ASTM B584 CDA836 (Stem Nut)

Physical Properties

|                                  |            |
|----------------------------------|------------|
| Minimum tensile strength         | 30,000 PSI |
| Minimum yield strength           | 14,000 PSI |
| Minimum elongation (in 2 inches) | 20%        |

Chemical Analysis

|                  |             |
|------------------|-------------|
| Copper           | 84.0 - 86.0 |
| Lead             | 4.0 - 6.0   |
| Tin              | 4.0 - 6.0   |
| Nickel (maximum) | 1.0         |
| Zinc             | 4.0 - 6.0   |

Copper Alloy - 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           | 57.0 * - 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  |

RW Gate Valve  
EPDM Wedge Compatibility Chart

**CLOW VALVE COMPANY**

| Chemical               | Rating |
|------------------------|--------|
| Acetic (10%)           | 1      |
| Alcohols               | 2      |
| Aliphatic Hydrocarbons | 4      |
| Aluminum Sulfate       | 1      |
| Ammonium Chloride      | 1      |
| Ammonium Hydroxide     | 1      |
| Aniline                | 2      |
| Aromatic Hydrocarbons  | 4      |
| Barium Sulfide         | 1      |
| Benzene                | 4      |
| Benzene Sulfonic (10%) | 4      |
| Benzoic                | 4      |
| Boric                  | 1      |
| Calcium Chloride       | 1      |
| Calcium Hydroxide      | 1      |
| Carbon Tetrachloride   | 4      |
| Chloracetic (10%)      | 2      |
| Chlorobenzene          | 4      |
| Chromic (5%)           | 2      |
| Citric (10%)           | 1      |
| Copper Chloride        | 1      |
| Esters                 | 3      |
| Ethers                 | 3      |
| Fatty Acids            | 3      |
| Formaldehyde (37%)     | 2      |
| Formic (90%)           | 1      |
| Gasoline               | 4      |
| Hydrobromic (20%)      | 1      |
| Hydrochloric (20%)     | 3      |
| Hydrocyanic            | 1      |

| Chemical            | Rating |
|---------------------|--------|
| Hydrofluoric (20%)  | X      |
| Hypochlorous (5%)   | 2      |
| Iron Chloride       | 1      |
| Ketones             | 1      |
| Lactic (5%)         | 1      |
| Magnesium Chloride  | 1      |
| Maleic (25%)        | 2      |
| Mineral Oils        | 3      |
| Nickel Chloride     | 1      |
| Nitric (30%)        | 3      |
| Nitric (5%)         | 2      |
| Oleic               | 4      |
| Oxalic              | 1      |
| Phenol (5%)         | 4      |
| Phosphoric          | 1      |
| Picric              | 1      |
| Potassium Chloride  | 1      |
| Potassium Hydroxide | 1      |
| Sodium Bicarbonate  | 1      |
| Sodium Carbonate    | 1      |
| Sodium Chloride     | 1      |
| Sodium Hydroxide    | 1      |
| Sodium Sulfide      | 1      |
| Stearic             | 2      |
| Sulfuric (50%)      | 4      |
| Tannic              | 1      |
| Trisodium Phosphate | 1      |
| Vegatable Oils      | 3      |
| Zinc Chloride       | 1      |

- 1 = Satisfactory
- 2 = Fair (usually acceptable for static seal)
- 3 = Doubtful (sometimes acceptable for static seal)
- 4 = Unsatisfactory
- X = Insufficient Data

***Ratings are based on solutions at room temperature. Specific conditions of each application, such as flow and temperature, can significantly affect results. Always test under actual service conditions.***

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

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

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 rated 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 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

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

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 rated 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 on wedge is inspected for strength as per ASTM D 429 specification.

**R/W RESILIENT WEDGE GATE VALVE**  
Product Analysis

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

| <b>Features</b>  | <b>Benefits</b>  |
|--|--|
| Bubble Tight Closure at 250 psi (2"-12")<br>(AWWA SERVICE)   | <ul style="list-style-type: none"> <li>• No leakage—no loss of water</li> </ul>  |
| Smooth, Unobstructed Waterway  | <ul style="list-style-type: none"> <li>• High flow characteristics</li> <li>• 100% smooth passage without turbulent flow</li> <li>• No sediment build-up</li> <li>• Will not impede travel of line cleaning tools</li> </ul> |
| Only Three Internal Parts  | <ul style="list-style-type: none"> <li>• Virtually maintenance free</li> </ul>   |
| No Seat Rings  | <ul style="list-style-type: none"> <li>• Nothing to be damaged by scoring</li> </ul>   |
| Delrin* Anti-Friction Thrust Bearing   | <ul style="list-style-type: none"> <li>• Operating torque to close and open held to absolute minimum</li> </ul>  |
| Solid, Copper Alloy Stem Nut and High Strength Copper Alloy Stem   | <ul style="list-style-type: none"> <li>• No corrosion</li> <li>• Trouble-free service</li> </ul>   |
| Stem Nut is Self Centering   | <ul style="list-style-type: none"> <li>• Eliminates possible stress on stem and wedge</li> </ul>   |
| Two "O" Ring Seals Above Stem Thrust Collar  | <ul style="list-style-type: none"> <li>• Can be replaced with valve in service</li> </ul>  |
| High Strength Iron Wedge Fully Encapsulated with Rubber Permanently Bonded to Metal. Wedge Design Incorporates Two Seating Surfaces. | <ul style="list-style-type: none"> <li>• Trouble-free service with minimum maintenance</li> <li>• No leaks—no wear</li> </ul>  |

\*DuPont Trademark

**CR (CORROSION RESISTANCE)  
COATING (INTERIOR & EXTERIOR)**

**CLOW VALVE COMPANY**

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



CR (CORROSION RESISTANCE) COATING

CLOW VALVE COMPANY

| CHEMICAL              | EPOXY RATING |       | CHEMICAL               | EPOXY RATING |       |
|-----------------------|--------------|-------|------------------------|--------------|-------|
|                       | 70°F         | 180°F |                        | 70°F         | 180°F |
| <b>ACIDS:</b>         |              |       | <b>ALKALIES:</b>       |              |       |
| Acetic, 10%           | F            | N     | Ammonium Hydroxide     | E            | G     |
| Benzene Sulfonic, 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     | <b>ACID SALTS:</b>     |              |       |
| Chromic, 5%           | F            | N     | Aluminum Sulfate       | E            | E     |
| Citric, 10%           | E            | N     | Ammonium Chloride*     | E            | E     |
| Fatty Acids           | E            | E     | Copper Chloride*       | E            | E     |
| Formic, 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     | <b>ALKALINE SALTS:</b> |              |       |
| Hydrofluoric, 205     | 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     | <b>NEUTRAL SALTS:</b>  |              |       |
| 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     |
| Steric                | E            | E     | <b>SOLVENTS:</b>       |              |       |
| Sulfuric, 50%         | G            | F     | Alcohols               | E            | E     |
| Tannic                | E            | E     | Aliphatic Hydrocarbons | E            | E     |
|                       |              |       | Aromatic Hydrocarbons  | E            | E     |
| Ketones               | F            | F     | Benzene                | E            | E     |
| Ethers                | F            | F     | Formaldehyde, 37%      | E            | G     |
| Esters                | F            | F     | Phenol, 5%             | G            | F     |
| Gasoline              | E            | E     | Mineral Oils           | E            | E     |
| Carbon Tetrachloride  | E            | E     | Vegetable Oils         | E            | E     |
| Organics:             |              |       | Chlorobenzene          |              |       |
| Aniline               | 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

2" THRU 12" R/W VALVE  
Flow Coefficients

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

| <b>VALVE<br/>SIZE</b> | <b>Cv<br/>(FULL OPEN)</b> | <b>K<br/>(FULL OPEN)</b> |
|-----------------------|---------------------------|--------------------------|
| 2                     | 300                       | 0.15                     |
| 2½                    | 500                       | 0.130                    |
| 3                     | 800                       | 0.115                    |
| 4                     | 1500                      | 0.105                    |
| 6                     | 3600                      | 0.090                    |
| 8                     | 6700                      | 0.080                    |
| 10                    | 10,500                    | 0.080                    |
| 12                    | 15,000                    | 0.080                    |

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

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

## RESILIENT WEDGE GATE VALVES

Recommended Specifications

**CLOW VALVE COMPANY**

MODEL 2639 & 2640

Valves shall conform to the latest revision of AWWA Standard C-509 covering resilient wedge 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 copper alloy with integral collars in full compliance with AWWA. OS & Y stems shall be copper alloy. The NRS stem stuffing box shall be the o-ring seal type with two o-rings located above thrust collar and one o-ring below. The two o-rings above the thrust collar 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 copper alloy. 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 fusion bonded epoxy both interior and exterior, complying with AWWA C550 and be NSF 61 certified. 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 requirement for both AWWA (twice the specified working pressure) and 400 PSI ULFM requirements.