

Resilient Seated Gate Valves

Valves shall meet all applicable requirements of AWWA C509 and AWWA C515. Valves shall provide bubble tight closure up to 200 psi when closed and provide a clear, unobstructed waterway when open. Valves shall be non-rising stems with clockwise operation to open. The end configuration shall be mechanical joint. Stem seals shall be O-ring capable of replacement under pressure when valve is fully open. Resilient seats shall be bonded or mechanically attached to either the gate or valve body. If the resilient seat is rubber material, the method used for bonding or vulcanizing shall be proved by ASTM D429. The valves shall be hydrostatically tested with twice the specified rated pressure applied to one side of the gate and zero pressure on the other side. The test shall be made in each direction across the gate. Valves shall be epoxy-coated on the inside, including the interior of the gate, in accordance with AWWA C550. Outside of valve, including bolt holes, shall be coated with epoxy. The gate shall be provided with a drain in the bottom to flush the internal cavity of foreign material each time the valve is opened. All valves 16" and larger shall be horizontal in orientation.

The Contractor shall submit specifications and blueprints of manufacture showing detail dimensions and giving the kind of material used, also tensile strength and elastic limit of metal, and shall give weight of valves and diameter of stem at bottom of thread.

The Contractor shall furnish the Engineer with certificates of inspection, sworn to by the factory inspector in the presence of a Notary Public, stating that the valves were made and satisfactorily tested in full compliance with the specifications.

Approved Manufacturers Valves 2" through 36"

Mueller Company (Decatur, Illinois) A-2360
American Flow Control (American Darling Valve - Waterous)
Ken-Seal (Division of ITT - Grinell), Elmira, New York No. 1571-X
US Pipe (Birmingham, Alabama) "Metroseal" - Dwg. No. 860146
M & H (Bradford, PA.) Style 4067 & Style 7000

Stockham Valves & Fittings (Birmingham, Alabama)
Model G-701-0

Clow Corporation (now owned by McWane)
Clow AWWA, F-6100 Catalog 82

These valves are used to separate pressure system, isolate sections and change direction of flow.

Concrete Valve Boxes and Footing Blocks

Valve Boxes: Precast concrete sections, 12" to 18" deep, 11" x 13-1/4" inside dimensions, 3" thick, No. 2 reinforcing rods, in accordance with standard drawing of Department (Drawing No. W-10).

Footing Blocks: Concrete blocks 12" x 12" x 4", 1:2:4 mixture, no reinforcing (Drawing No. W-9).

Approved Local Manufacturer:

Concrete Products of Nashville, Inc.
218 - 36th Avenue North
Nashville, TN 37209

Cloud Concrete Products
125 International Boulevard
LaVergne, TN 37086

Jim Hula
12092 Stewarts Ferry Pike
Lebanon, TN 37090

Cast Iron Frames & Covers

Frames and covers shall be 195 pounds minimum weight, cover dimensions 11-3/4" x 14" x 1", frame dimensions 17" x 19-1/4" x 6-1/6. The work "water" is to be cast into the checked pattern top of the cover.

Approved Local manufacturers:

John Bouchard & Sons Company
1024 Harrison Street
Nashville, TN 37203

Other manufacturers or Distributors:

Neenah Foundry Company
P. O. Box 729
Neenah, WI 54956

Accu Cast Iron
1105 Wooded Acres
Waco, TX 76710

Langston Enterprises
2714 Union Avenue Extension
Memphis, TN 38112

Vulcan
P. O. Box 905
Denham Springs, LA 70727

Russco = (Russell Pipe & Foundry Co., Inc.)
910 Washington Street
P. O. Box 59
Alexander City, AL 35011

Approved Manufacturers - 3" - 12" Gate Valves for Use in Meter Boxes

Gate valves to be iron body with bronze mountings, flanged ends, vertical double or single gate, wheel valve with opening to the left (counter clockwise). Rated working pressure of 150 psi.

Mueller Company
Mueller AWWA, No. A-2380-6

Dresser Manufacturing Division (Dresser Industries, Inc.)
M & H AWWA, NRS Style 67-02

United States Pipe and Foundry Company
Metropolitan

Crane Company
Catalog 60, No. 461

Clow Corporation
Catalog 75, No. F-5070

American Cast Iron Pipe Company (New Name - American Flow Control)
American Darling

Red - White Valve Corporation
Red - White 415

Approved Manufacturers of 2" - 12" Resilient Seated Gate Valves for Water Services in Street or Sidewalks

Gate valves to be iron body with mechanical joints, resilient seated gate with 2" square nut on top of stem and opening to the right (clockwise). Rated working pressure of 200 psi.

United States Pipe and Foundry Company (3" - 12")
Metropolitan 5460

Clow Corporation (2" - 12")
F-6100

Mueller Company (2" - 12")
Mueller AWWA, No. A-2360

Dresser Manufacturing Division (Dresser Industries, Inc.) (2" - 12")
M & H AWWA, NRS Style 4067

American Flow Control (American Darling Valve - Waterous) (2" - 12")

Ken- Seal (McWane) (3" - 12")
1571-X

Approved Manufacturers of Swing Gate Valves in Meter Box - Size 3/4", 1", 1-1/2", 2"

All check valves shall be constructed of brass or bronze and have threaded ends and have a rated working pressure of 150 psi.

Jenkins Brothers

Jenkins 250 psi, Figure 92-A (Catalog 77)

Crane Company

Crane 200 psi, Figure No. 36 (Catalog 60)

Walworth Company

Walworth 150 psi

Red - White Valve Corporation

Red - White 415

Kitz Corporation of American

Code No. 29

Approved Manufacturers of Swing Gate Check Valves in Meter Box - Size 3" through 12"

All check valves shall be constructed of cast or ductile iron with bronze mountings, swing gate, and have flanged ends and a rated working pressure of 150 psi.

Crane Company

Catalog No. 60, Figure No. 373

M & H Valve Co.

Dresser M & H, Style 59-02

Clow Corporation

Clow F-5347-B (Clow Catalog No. 75)

Jenkins Bros.

Catalog 77, Figure 624 (200 psi)

American Valve & Hydrant Division (American Cast Iron Pipe Company)

American 50

Approved Manufacturers of 2" Gate And Ball Valves for Blow Off Assemblies

Gate valves to be bronze body (Class 125 or higher) or iron body (AWWA) with bronze mountings, threaded ends, non-rising stems, vertical double or single gate, wheel valve with opening to the left (counter clock-wise) and a rated working pressure of 150 psi.

Gate:

Clow Corporation (Catalog 75)
AWWA, No. F-5068

Red - White Valve Corp.
AWWA, Red - White 415
(specify threaded ends)

Mueller Company
Mueller AWWA, No. A-2380-8

Kitz Corp. of America
(Catalog No. 112EA)
Bronze, Code No. 40

M & H Valve Company
M & H AWWA, NRS Style 67-07

Stockham Valves & Fitting
AWWA, G-739
(specify handwheel)

United States Pipe and Foundry Company
Bronze, B-103
AWWA, Metropolitan

Ball valves should be forged brass (ASTM-B283-C37700), threaded ends, lever handle, have blowout-proof stem and minimum working pressure of 150 psi

Ball:

Red - White Valve Corporation
Model #5044 F

Kitz Corporation
Model # 68

TAPPING SLEEVES AND VALVES

Tapping Sleeve and Valves (12" and smaller)

The sleeve shall be held together by bolts, and the valves shall be bolted to sleeves. Rubber gaskets shall be furnished for use with the bolted sleeves. The valves on the connecting or outlet sides shall have mechanical joints suitable for cast iron or ductile iron pipe.

The valves shall be of standard make, double gate, cast iron body bronze mounted, to be vertical valves, open to the right (clockwise) have a 2" square nut on top of stems, and have oversize seat

rings to permit entry of the tapping machine cutters. The valves shall be suitable for safely opening and closing when subjected to full working water pressure on one side of gates and zero pressure on the other side. Rubber gaskets shall be furnished for use between the flanges of the tapping sleeves and the tapping valve.

All tapping sleeves and valves shall be tested at not less than 400 pounds per square inch hydrostatic pressure and be suitable and guaranteed to safely stand a working pressure of 200 pounds per square inch. As minimum requirements, these valves must conform in every respect to the AWWA specifications C500 for valves. The O-Ring stem will be accepted. All sleeves must have a test tap.

The Contractor shall submit specifications and blueprints of manufacture showing detail dimensions and giving the kind of metal used, also tensile strength and elastic limit of metal, and also shall give weight of valves and also the weight of sleeves and the diameter of stems at bottom of threads.

The Contractor shall furnish the Engineer with certificates of inspection, sworn to by the factory inspector, in the presence of a Notary Public, stating that the tapping sleeves and valves were made and satisfactorily tested in full compliance with the specifications.

Approved Manufacturers of Tapping Sleeves and Valves 12" and smaller

Mueller Company H615 - D.I.P. - H616 - Old Pit Cast

American Valve & Hydrant Division (American Cast Iron Pipe Company)
American Darling Tapping Sleeve No. 2800 with Valve No. 565
(Double Disc Type), or Valve No. 865 (Resilient Seated Type)

M & H Valve Co. 1574 - D.I.P.
M & H AWWA Class C - 1674 - Old Pit Cast

Clow Corporation (now owned by McWane) F-5205

Tyler Model 5-149 C.I. or D.I.

Used to install new mains without having to shut down existing facilities. Eliminates having to cut in a tee for new mains or services.

Tapping Sleeves and Valves (16" and larger)

The valves must be of standard make, double gate, cast iron body, bronze mounted with oversized seats to permit entry of the tapping machine cutters, have bevel gearing, set horizontal lie to the right or left when standing on sleeve and looking down on valve, as specified on order, open to the right (Clockwise), have a 2" square nut on top of stem. Valves shall be furnished with grease case and equipped with drain plug. Grease cases shall be simple and rugged in construction and shall be designed to provide reasonable access to the valve stem packing gland. Bypass for the valve (required on valves 20" in size and larger) shall satisfactorily meet the same pressure test as the main valves. Bypass valves shall open to the right (clockwise) and shall have a 2" square nut on top

of stem. Valves shall be designed to lie horizontal and shall be equipped with solid bronze tracks securely fastened in body and bonnets carrying the weight of the gates throughout their length of travel on rollers. The disc shall be carried on solid bronze rollers securely attached to the gates also bronze scrapers shall be provided to traverse the tracks ahead of the rollers in both directions, removing any foreign matter which may have accumulated on the tracks. The valves must be suitable for safely opening or closing when subjected to full working water pressure on one side of gates and zero pressure on the other side or such a condition as occurs when the pipe on either side of the valve breaks.

All tapping sleeves and valves must be tested at not less than 300 pounds per square inch hydrostatic pressure and be suitable and guaranteed to safely stand a working water pressure of 150 pounds per square inch. As minimum requirements, these valves must conform in every respect to AWWA Standard C-500 for valves. All sleeves must have a test tap.

The Contractor shall submit specifications and blueprints of manufacturer showing detail dimensions and giving the kind of metal used, tensile strength and elastic limit of metal, weight of valves and also the weight of sleeves and the diameter of stems at bottom of threads. The Contractor shall furnish the Engineer with certificates of inspection, sworn to by the factory inspector, in the presence of a Notary Public, stating that the tapping sleeves and valves were made and satisfactorily tested in full compliance with the specifications.

Approved Manufacturers of Tapping Sleeves and Valves - Mechanical Joint (16" and larger)

United States Pipe and Foundry -

Mueller Company Model - H615 - D.I.P. - H616 - Old Pit Cast - Model T-9 (30" & 36" water mains)

M & H Valve Company

M & H AWWA Class C - 1574 - D.I.P. - 1674 - Old Pit Cast

American Valve & Hydrant Division (American Cast Iron Pipe Company)

American Darling Series 1004 or Series 2800

The JCM 412 & Ford FTSC will be acceptable with prior approval of Metro Water Services for pit cast or old cast iron mains ONLY.

Used to install new mains without having to shut down existing facilities. Eliminates having to cut in a tee for new mains or services.

Horizontal Check Valves

Approved Manufacturers of Horizontal Check Valves - 3" through 12"

All check valves shall be constructed of cast or ductile iron with bronze mountings, swing gate and have mechanical joint ends and design working pressures of 150 psi.

Clow Corporation

Clow F-5346-B (Clow Catalog No. 75)

M & H Valve Co.
M & H, Style 59-01

American Valve & Hydrant Division (American Cast Iron Pipe Company)
American 50 with MJ ends

Kennedy Valve Manufacturing Co., Inc.
Kennedy Figure 106 LS

GA Industries, Inc.
Heavy Duty Swing Check Figure #220 and #230

Contractor will be requested to submit shop drawings and specifications for approval by this Department.

The swing check valve shall be installed on the discharge side of a pump with the flow direction (horizontal or vertically) and shall function to prevent reverse flow back through the pump when the pump is not running. The valve shall be made to operate without slam.

Manufacturers claiming equal status with above organizations should apply to Metro Water Services, 1600 Second Avenue North, Nashville, TN 37208 ATTN: Don Mason (615) 862-4555.

Approved Manufacturers of Horizontal Check Valves - 16" through 36"

All check valves shall be constructed of cast or ductile iron with bronze mountings, swing gate and have mechanical joint ends and design working pressure of 150 psi.

Crane Company
Chapman tilting disc with by-pass,
flange ends and equipped with indicator

Distributor is:

Tallman Associates
415 East Paces Ferry Road
P. O. Box 11988
Atlanta, GA 30305

The swing check valve shall be installed on the discharge side of a pump with the flow direction (horizontal or vertically) and shall function to prevent reverse flow back through the pump when the pump is not running. The valve shall be made to operate without slam.

AIR AND VACUUM VALVES

An Air & Vacuum Valve (AVV) is float operated, having a large discharge orifice equal in size to the valves inlet. This valve allows great volumes of air to be exhausted from or admitted into a system as it is filled or drained.

Used on pipelines, the following conditions would prevail.

Prior to filling, a pipeline may be thought to be empty, but this is not true. In reality it is filled - with air, and presence of air must seriously be considered when filling, because air must be exhausted in a smooth uniform manner to prevent pressure surges and other destructive phenomenon from occurring in the pipeline.

Additionally, air must be allowed to re-enter the pipeline in response to a negative pressure, to prevent potentially destructive vacuum from forming and even in those instances where vacuum protection is not a primary concern, air re-entry is still essential to efficiently drain the pipeline. At locations where column separation is anticipated an air and vacuum valve will allow air to enter, preventing destructive vacuum from forming which is as damaging as pressure surges.

To perform the functions outlined (AVV) must be installed on each high point or change in grade.

Air and Vacuum Valve Operation

As the pipeline is filled, air is exhausted to atmosphere through (AVV) mounted on each high point. As air is exhausted from the pipeline, water will enter the valve and lift the float to close the valve orifice. The rate air is exhausted is a function of a pressure differential, which develops across the valve discharge orifice. This pressure differential develops as water filling the pipeline, compresses the air sufficiently, to give it an escape velocity, equal to that of the incoming fluids. Since the size of the valve controls the pressure differential, at which the air is exhausted, valve size selection is a very important consideration.

Any time during system operation, should internal pressure of the pipeline approach a negative value, due to column separation, draining of the pipeline, power outage or pipeline break, the float will immediately drop away from the orifice and allow air to re-enter the pipeline. Air re-entry during water column separation will prevent a vacuum protecting the pipeline against collapse. The size of the (AVV) will dictate the degree vacuum is prevented, therefore correct valve size selection is very important. The (AVV), having opened to admit air into the pipeline in response to a negative pressure, is now ready to exhaust air again. This cycle will repeat as often as necessary.

During system operation and while under pressure, small amounts of air will enter the (AVV) from the pipeline and displace the fluid. Eventually, the entire (AVV) may fill with air, but it will not open because the system pressure will continue to hold the float closed against the valve orifice. To re-iterate, an (AVV) is intended to exhaust air during pipeline fill and to admit air during pipeline drain. It will not open and vent air as it accumulates during system operation - Air Release Valves are used for this purpose.

Characteristics of Air Flow Through an Air and Vacuum Orifice

Linear velocity of air, discharged through the orifice of an Air & Vacuum Valve, increases as pressure differential across the orifice increases, until reaching a maximum velocity of approximately 300 feet per second. This maximum air velocity occurs at about 7 psi and remains a constant thereafter, regardless of further increase in the pressure.

EXPLANATORY NOTE: unlike liquids, the volume of air that fills one cubic foot at atmospheric pressure, will occupy a progressively lesser volume, as its pressure increases.

The amount of air actually expelled through the orifice, however, continues to increase indefinitely as the pressure increases, because while there is no further increase in the escape velocity beyond 7 p.s.i. approximately, the air escaping at this velocity itself becomes progressively denser and hence, represents a greater amount when expressed in cubic feet at atmosphere, i.e. C.F.F.A.M.

To accommodate this condition, flow of air is always referred to in cubic feet air per minute (C.F.F.A.M.) even though the air under consideration is usually at some other pressure than atmosphere.

Approved Manufacturers of Air and Vacuum Release Valves - 1" through 8"

APCO/Valve and Primer Corporation
1420 S. Wright Boulevard
Schaumburg, IL 60196

(Model 145-C) 1" & 2" Iron Pipe Threads
(Model 149-C) 3" - 8" Flange

GA (A GA Industries Company)
P. O. Box 807
Mars, PA 16046

(Fig. 950)
1" & 2" Iron Pipe Threads
3" - 8" Flange

ALTITUDE VALVES

These valves can be either single or double acting.

As a single acting valve, it is installed in the supply line to an elevated tank, basin, or reservoir to prevent overflow by shutting off the supply when the high water level is reached. The valve opens for refilling the tank when the water level recedes. This type valve is used for filling only. Discharge from tank is by a line other than supply line or by by-pass with check valve around altitude valve.

Double acting valve is designed for two-way flow installed in the supply line to an elevated tank, basin or reservoir, it closes to prevent over-flow when the tank is full. When the distribution or supply pressure becomes less than the full tank head, the valve opens to return water from the tank to system.

Approved Manufacturers of Altitude Valves

Ross Valve Manufacturing Company, Inc.
Model 40, Bulletin 102-2

GA Industries, Inc.

Contractor will be requested to submit shop drawings and specifications for approval by this Department.

PRESSURE REDUCING VALVE

The purpose of valve is to reduce an undesirable high initial pressure to a safe operating pressure. It should maintain a constant reduced discharge pressure regardless of variations in flow or changes in upstream pressure.

Contractor will be requested to submit shop drawings and specifications for approval by this Department.

Approved Manufacturers of Pressure Reducing Valves - (1-1/2" to 8")

Cla-Val Company
Clayton 90-01

Ross Valve Manufacturing Company, Inc.
Model 22 and 40, Bulletin 101-2

Mueller Company (2" and smaller)
Mueller Regulator H-9300

GA Industries, Inc.
Figure 4500-D and 43-D

Pump Control Valve

The purpose of this is to dampen starting and stopping surges of both the booster and deep well pump by slowly placing the pump on line and slowly taking it off-line. As a secondary function this valve will act as a check valve to prevent reverse flow in installations where a swing check valve is not used.

Contractor will be requested to submit shop drawings and specifications for approval by this Department.

Approved Manufacturers of Pump Control Valves for Booster Pump Stations

GA Industries, Inc.

Ross Valve Manufacturing Company, Inc.

Cla-Val Company
Clayton 60G-01

Bermad Company

**Manufacturers claiming equal status with above organizations should apply to
Metro Water Services, 1600 Second Avenue North, Nashville, TN 37208
ATTN: Tommy Dodson (615) 862-4867.**