

SECTION 22 05 23

GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 OPERATION AND MAINTENANCE DATA

- A. Include documentation of inspections and tests performed, including logs, curves, and certificates.
- B. Documentation shall note replacement of equipment or components that failed during testing.
- C. Drinking water components shall meet NSF/ANSI Standard 61 or NSF/ANSI Standard 372.

PART 2 PRODUCTS

2.01 ACCEPTABLE PRODUCTS

- A. Reduced Pressure Backflow Prevention Assemblies:
 - 1. "In Line" devices
 - a) Sizes 3/4" - 2": Febco LF825Y or Zurn Wilkins 975XL2 or Watts LF009QT
 - b) Sizes 2-1/2" - 8": Febco LF860 or Zurn Wilkins 375 or Watts 957
 - 2. Compact Configuration ("N" and "Vertical")
 - a) Sizes 2-1/2" - 10": Febco LF880/LF880V or Zurn Wilkins 475/475V or Watts 957
 - b) Valve Setter, 2-1/2" Flange x Flange: Febco 611 or Wilkins FLS
 - c) Valve Setter, 3" - 10" Mechanical Joint x Mechanical Joint: Febco 611 or Zurn Wilkins MJS
- B. Pressure Type Vacuum Breaker Assemblies – Angle Pattern:
 - 1. Interior Kitchen Equipment, Size 1/2": Watts LF008PCQT-SC
 - a) Satin chrome finish, spill resistant
 - 2. Exterior, Sizes 1/2" – 2": Febco 765 or Zurn Wilkins 720A or Watts 800M4QT
- C. Atmospheric Vacuum Breaker:
 - 1. Sizes 1/2" – 3/4": Febco 715 or Zurn Wilkins 35XL or Watts LF288A
 - 2. Sizes 1" - 2": Febco 710 or Zurn Wilkins 35XL or Watts LF288A
- D. Strainers:
 - 1. "Y" Pattern cast iron or bronze body
 - 2. Fusion epoxy coated cast iron – internal and external
 - 3. Blow off connection: 1" for sizes 2-1/2" & 3"; 1-1/2" for 4" size; 2" sizes 6" - 10"
 - 4. Screen
 - a) Sizes 2-1/2" - 4": Type 302/304 stainless steel with 1/16" perforation
 - b) Sizes 6" - 10": Type 302/304 stainless steel with 1/8" perforation
 - c) Blow off connection shall have removable plug.
 - d) 175 psi W.P.
- E. Building shut off valves up stream of backflow preventers, interior installations:
 - 1. Domestic Potable Systems
 - a) Resilient wedge
 - b) Fully rubber encapsulated wedge gate
 - c) Cast iron body with epoxy coating – internal and external

- d) Flanged ends
- e) 200 psi W.P.
- f) AWWA-C509 NRS (Non-rising stem)
- g) Provide plugs for test cock tapings
- h) Schedule

Make	<u>FEBCO</u>	<u>WATTS</u>	<u>WILKINS</u>
Model	781-005 thru 010	405 RW 700/102 thru 700/109	48 Series
Sizes	2-1/2" thru 10"	2" thru 12"	2-1/2" thru 10"

F. Butterfly Valves:

- 1. Brass cast body with copper-tube dimensioned grooved ends.
- 2. Aluminum-bronze disc.
- 3. Stainless steel stem; offset from the disc centerline to provide complete 360-degree circumferential seating.
- 4. Pressure-responsive fluoroelastomer seat.
- 5. 300 psi C.W.P. @ 180 degree F water temperature.
- 6. UL classified in accordance with NSF-61 for potable water service. The system shall meet the low-lead requirements of NSF-372.
- 7. Make: Victaulic Series 608N.

G. Ball Valves:

- 1. Straight pattern
- 2. Bronze body
- 3. Stainless or chrome plated ball
- 4. 300 psi W.P. @ 180°F water temperature
- 5. Acceptable manufacturers
 - a) Pro Press
 - b) Acceptable substitute

H. Flanges Cast Iron, Ductile, and Bronze:

- 1. 250 psi min. W.P.

I. Hose End Anti Siphon Vacuum Breaker:

- 1. ¾" FHT x ¾" MHT
- 2. Non removable (break of set screws)
- 3. Finish: plain brass
- 4. Woodford (Nidel) 34HD or Zurn Wilkins BFP-8F

J. Wafer Check Valve:

- 1. Nibco # W-910/960 series or equivalent

K. Double Check Backflow Prevention Assemblies for Steam Pressure Cabinet:

- 1. Watts series LF7 or Zurn Wilkins 700XL

L. Ball Valves – up to 2":

- 1. Bronze body, tunnel balls
- 2. Acceptable manufacturers
 - a) Apollo

- b) Kitz
 - c) Hammond
 - d) Jamesbury
 - e) Jenkins
 - f) Milwaukee
 - g) Nibco
 - h) Pro Press
 - i) Watts
- M. U.L., F.M. Approved or Listed Valve approved manufacturers:
- 1. Grinnell
 - 2. Kennedy
 - 3. Keystone
 - 4. Mission
 - 5. Mueller
 - 6. Nibco
 - 7. Victaulic
- N. Bronze pressure-rated valve approved manufacturers:
- 1. Apollo
 - 2. Hammond
 - 3. Lunkenheimer
 - 4. Milwaukee
 - 5. Nibco
 - 6. Stockham
 - 7. Walworth
- O. Iron body pressure-rated valve approved manufacturers:
- 1. Apollo
 - 2. Kennedy
 - 3. Lunkenheimer
 - 4. Milwaukee
 - 5. Mueller
 - 6. Stockham
 - 7. Walworth
- P. Stop valves: Shall be ¼” turn ball valve type; no plastic: Stems: Use stops with brass stems. Exposed stops must be keyed.
- Q. General valve requirements:
- 1. Pressure rated type
 - 2. Either flanged or threaded ends; solder ends are not acceptable
 - 3. Rising stem or ball valves
- R. Gate valves, steam only: Refer to standard Division 23.
- S. Balancing valves: See standard Division 23.

T. Anti Flood System:

1. Anti flood system controller equipment furnished and installed by Contractor
 - a) UPS power supply, 120VAC
 - b) 24AC volt power supply in control panel
 - c) Integral control panel: Geo Tech GT2000, relay 2 N.C., 2 N.O. 120VAC contacts, water level floats, pilot lights and reset
2. Control valve furnished and installed by Contractor
 - a) Bermad 410 with manual override, 24VAC solenoid pilot
 - b) N.C. held open type, electrical activation and hold
 - c) ASCO (Automatic Switch Co. solenoid valve only 24VAC)
3. Other anti flood system equipment furnished by Owner and installed by Contractor
 - a) Time Delay Relays: 2 N.O. and 2 N.C. Contacts, square D Model 9050 JCK 70V14
 - b) Water Level Floats: 24VAC
4. Alarm
 - a) Provide conduit and wire for alarming the main security system panel.
 - i) Terminate at the main security alarm panel in a junction box.
 - ii) Refer to security system standards.
 - b) Final connection to security alarm panel by DPS Security personnel
5. Control conduit: EMT
6. Controls: Coordinate controls standards with DPS and the DPS Controls Application Engineer.

ANTI FLOOD SYSTEM CONTROL SEQUENCE

• **Condition Normal:**

Float Switches in non detection mode

Main Valve solenoid in energized condition holding normally closed main control valve in open position

Control panel has GREEN pilot activated indicating power on

Control panel has YELLOW pilot activated indicating panel is online

• **Backflow Discharge Overflowing Containment Basin:**

Float type sensors detecting water level in containment basin

Controller de-energizes solenoid valve at supply control valve allowing normally closed, held open control valve to close discontinuing all water flow to and through the backflow preventer(s)

Activates remote alarm and local light on panel

Control panel has GREEN pilot indicating power on to control panel

Control panel has RED pilot indicating unit is tripped and control valve is in closed position

• **Loss of Power – Power Failure – UPS Failure.**

Loss of power de-energizes the control panel

At de-energization of the control panel the solenoid allows the normally closed, held open control valve to close

Contacts are closed for alarm condition - no alarm due to power failure

The control valve can be opened manually by the manual override provision on the valve

With return of power the panel will go to normal activation

- Note: Under normal power failure, the UPS system will activate immediately and keep the panel in normal operation for a minimum of thirty minutes. If UPS failure occurs, the course of operation will be as noted for “LOSS OF POWER AND UPS FAILURE.”

U. Containment Basin:

1. Field built or premanufactured; see drawings for sizes and standard details.
 - a) All basins are to be concrete. No plastic basins.
2. Provide necessary piping for complete drainage of basin.

V. Heated Enclosure for Backflow Preventers:

1. Provide a weatherproof heated enclosure for backflow prevention devices installed above grade exterior to building. 1” insulation for enclosures containing devices up to 2” - 1½” insulation for 2 ½” and larger. Flame Spread of 25 per ANSI/ASHRAE, service temperature of -100°F to 250°F minimum “R” factor of eight (8). Insulation shall be fastened securely to enclosure and shall not be subject to loosening and peeling. Structural components shall be aluminum. Fiberglass, wood or wood products will not be allowed in the assembly; this includes the roof, walls and access panels. All assembly shall be accomplished by the manufacturer, factory assembled; on-site assembly of any kind will not be allowed. Provide locks and access space as required, complete with dual bolted hasps, and furnished with two heavy duty padlocks with 3 keys each.
2. Openings for drainage shall be provided and shall remain closed against wind and intrusion except when the device is discharging. Openings shall be designed to accommodate the maximum discharge of the device, and shall protect against intrusion of 40 MPH wind, debris, insects and animals, through the use of separate aluminum or stainless steel screen and wind flaps.
3. Unit and heater must be able to withstand and provide for interior temperature of +40°F with an ambient exterior temperature of -30°F and a wind velocity of 15 MPH.
4. Electric power shall be protected with a ground fault interrupter located within the basin with 18” clearance from receptacle base to grade.
5. All mounting hardware and assembly fasteners shall be Stainless Steel type 302-18-8 or better, anchor hardware to be adjustable vertically to accommodate reasonable uneven foundation slabs.

6. Make: Hot Box company or approved equivalent

Plan Code:	*HTB-__	*HTB-__	*HTB-__
Style:	HOT BOX	LOK BOX	HOT ROK
Model:	HB SERIES	LB SERIES	HR SERIES

* (fill in unit plan code number or letter)

Specific No.	HB-__	LB-__	HR-__
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Electrical Requirements ____watts –120v-60-1ph (for heater)

7. Provide the following accessories:
 - a) Power out alarm with battery and charger, Model PLAHBO plug in 120v wireless remote temperature alarm, Model TA4, 120v
 - b) Provide duplex 120v outlets for alarms. Verify locations with manufacturer.

W. Irrigation System Backflow Preventer Strong Box:

1. Schedule 40 galvanized steel pipe end frames, 1” angle iron base, ½” #13 gauge diamond pattern flat rolled expanded steel with all welded construction, 4” o.c., all powder coated finish, vandal resistant, tamperproof hardware, forest green color
2. BPDI: GuardShack GS Series

PART 3 EXECUTION

3.01 INSTALLATION

- A. Low-pressure, compressed-air piping:
 - 1. Ball valves, NPS 2 and smaller: One-piece, 400-psig CWP rating, copper alloy
 - 2. Equipment-isolation ball valves, NPS 2 and smaller: Safety-exhaust, bronze
 - 3. Ball valves, NPS 2-1/2 and larger: Class 150, ferrous alloy
- B. Domestic water (hot and cold):
 - 1. General
 - a) NPS ½ – 2: threaded, solder or press fp ball
 - b) NPS 2 ½ and larger: flanged epoxy coated resilient wedge
 - 2. Hot water circulating
 - a) All sizes: Threaded circuit setter or ball valve with limit stop
 - 3. Check valves (swing) TO BE USED IN HORIZONTAL INSTALLATION ONLY
 - a) NPS ½ - 2: Threaded, press, or solder end
 - b) NPS 2 and larger: Flanged iron body or press
 - 4. Check valves (silent or lift) USED IN VERTICAL OR HORIZONTAL INSTALLATIONS
 - a) NPS ½ - 2": Threaded, press, or solder end
 - b) NPS 2 and larger: Wafer, flanged, or press
- C. Backflow Preventer:
 - 1. Install backflow preventers of the same size as the line sizes in which installed.
 - 2. Provide containment/detection basin, exterior drain discharge through wall, or heated exterior enclosure as detailed on drawings.
 - 3. Mount reduced pressure backflow preventer(s) in accordance with all local regulations. Where regulations do not exist mount backflow preventor a minimum of 30 inches and maximum 60 inches above finished floor and a minimum of 18 inches away from any wall.
 - 4. Provide line size strainer upstream of all backflow preventers.
 - 5. Provide wafer check valves on inlet and outlet of the reduced pressure backflow preventor assembly.
 - 6. All backflow prevention devices must be tested by a certified cross-connection control technician, with copies of report included in O & M manuals and submitted to Denver Water. Provide a copy of the report to DPS QA/QC or Plumbing Shop.
 - 7. Contractor shall provide a reinforced concrete slab of sizes required and with anchors for attachment of the enclosure. Verify requirements with enclosure manufacturer, and install per the manufacturers recommendations and requirements. Install perfectly plumb and level, provide vandal resistant construction.

END OF SECTION 22 05 23