

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
    - .1 ASME B16, Fittings and Valves Package.
    - .2 ASME B16.5-2009, Pipe Flanges and Flanged Fittings: NPS ½ through NPS 24 Metric/Inch Standard.
    - .3 ANSI/ASME B16.10-2009, Face-to-Face and End-to-End Dimensions Valves.
    - .4 ANSI/ASME B16.25-2007, Buttwelding Ends.
    - .5 ANSI/ASME B16.34-2009, Valves Flanged, Threaded and Welding End. Includes Supplement (2010).
  - .2 American Petroleum Institute (API)
    - .1 API STD 598-2009, Valve Inspection and Testing.
  - .3 Canada Green Building Council (CaGBC)
    - .1 LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
  - .4 Green Seal Environmental Standards (GS)
    - .1 GS-11-11, Standard for Paints and Coatings.
    - .2 GS-36-11, Standard for Commercial Adhesives.
  - .5 Manufacturers Standardization Society of the Valve and Fittings Industry (MSS)
    - .1 MSS SP-25-2008, Standard Marking System for Valves, Fittings, Flanges and Unions.
    - .2 MSS SP-61-2009, Pressure Testing of Valves.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
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1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS  
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- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for each valve and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Sustainable Design Submittals:
  - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
  - .2 Building Energy and Water Consumption: submit Measurement and Verification Plan following IPMVP for monitoring end-uses including but not limited to:
    - .1 Air heat recovery cycle.
    - .2 Building-related process energy systems and equipment.
    - .3 Indoor water systems.
  - .3 Construction Waste Management:
    - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
    - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged.
    - .4 Regional Materials: submit evidence that project incorporates 30% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.

- 1.3 CLOSEOUT SUBMITTALS
- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Operation and Maintenance Data: submit operation and maintenance data for valves for incorporation into manual.
- 1.4 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
  - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .3 Storage and Handling Requirements:
    - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
    - .2 Store and protect valves from nicks, scratches, and blemishes.
    - .3 Replace defective or damaged materials with new.
  - .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
  - .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
- 1.5 MAINTENANCE MATERIAL SUBMITTALS
- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Extra Stock Materials:
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- 1.5 MAINTENANCE MATERIAL SUBMITTALS  
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- .3 Furnish following spare parts:
    - .1 Valve seats: one for every 10 valves each size, minimum 1.
    - .2 Discs: one for every 10 valves, each size, minimum 1.
    - .3 Stem packing: one for every 10 valves, each size. Minimum 1.
    - .4 Valve handles: 2 of each size.
    - .5 Gaskets for flanges: one for every 10 flanged joints.

PART 2 - PRODUCTS

- 2.1 MATERIAL
- .1 Valves:
    - .1 To be of single manufacturer.
    - .2 Test valves individually.
  - .2 Requirements common to valves, unless specified otherwise:
    - .1 Pressure-temperature ratings: to ANSI B16.34.
    - .2 Inspections and tests: to API 598.
    - .3 Pressure testing: to MSS SP-61.
    - .4 Flanged valves:
      - .1 Face-to-face dimensions: to ANSI B16.10.
      - .2 Flange dimensions: to ANSI B16.5 with 1.6 mm raised face.
    - .5 Butt-weld valves:
      - .1 End-to-end dimensions: to ANSI B16.10.
      - .2 End dimensions: to ANSI B16.25 bored for standard pipe schedule.
    - .6 Handwheel: non-heating type with raised rim of die-cast aluminum alloy to ASTM B 85 or malleable iron to ASTM A 49.
    - .7 Markings: to MSS SP-25.
    - .8 Identification:
      - .1 Plate showing catalogue number, size, material of body disc, stem seat, fluid, pressure-temperature rating.
      - .2 Body markings: manufacturer, size, primary service rating, material symbol.
    - .9 CRN registration number required for all products.
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- 2.2 GATE VALVES .1 NPS 2 1/2 - 12, rising stem, OS&Y, solid flexible wedge disc, flanged butt-weld ends, Class 150 300:
- .1 Body and multiple-bolted integral yoke and bonnet: cast steel to ASTM A 216/A 216M WCB, with full length disc guides designed to ensure correct re-assembly.
  - .2 Body/bonnet joint: flat face with corrugated metallic gasket.
  - .3 Bonnet studs: to ASTM A 193/A 193M Type B7.
  - .4 Bonnet nuts: to ASTM A 194/A 194M Type 2H.
  - .5 Stuffing box: including non-galling two-piece ball jointed packing gland, with swing-type eye bolts and nuts.
  - .6 Gland packing: containing corrosion inhibitor to prevent stem pitting.
  - .7 Yoke sleeve: Ni-Resist, minimum melting point above 954 degrees C.
  - .8 Hydraulic grease fitting: for lubrication of yoke sleeve bearing surfaces.
  - .9 Disc: with disc stem ring to connect to stem, guided throughout its travel.
    - .1 NPS 2 1/2 - 6: solid corrosion and heat resistant 13% chromium steel with minimum hardness of 350 HB.
  - .10 Seat ring: seamless carbon steel with hard-faced cobalt-chromium-tungsten alloy seating surface, slipped in, seal welded, ground to match disc.
  - .11 Stem: heat treated corrosion and heat resistant 13% chromium steel with accurately-cut precision-machined Acme or 60 degrees V threads, top screwed for handwheel nut, T-head disc-stem connection.
  - .12 Operator: see elsewhere in this Section.

- 2.3 VALVE OPERATORS .1 Handwheel: on all valves.
- .2 Handwheel with chain operators: on valves installed more than 2400 mm above floor in boiler rooms and mechanical equipment rooms.

- 2.4 CHECK VALVES .1 NPS 2 1/2 and over, butt-weld ends, Class 150: swing check.
- .1 Body and multiple-bolted cap: cast steel to ASTM A 216/A 216M WCB.
  - .2 Cap studs: to ASTM A 193/A 193M Type B7.
  - .3 Cap nuts: to ASTM A 194/A 194M Type 2H.
  - .4 Body/cap joint: male-female face with corrugated metallic gasket.
  - .5 Disc: heat treated corrosion and heat resistant 13% chromium steel.
  - .6 Seat rings: heat treated corrosion and heat resistant 13% chromium steel, slipped in, seal welded, ground to match disc.
  - .7 Hinge: ASTM A 182/A 182M.
  - .8 Hinge pin: ASTM A 182/A 182M.
  - .9 Hinge pin plugs: ASTM A 182/A 182M.

- 2.5 SILENT CHECK VALVES .1 Construction:
- .1 Body: cast steel to with integral seat.
  - .2 Pressure rating: Class 125.
  - .3 Connections: flanged ends.
  - .4 Double bronze disc with SS seat and stem. Renewable disc, seat, stem and spring. Spring rating must match system design for silent operation and installation.
  - .5 Stainless steel spring, heavy duty.
  - .6 Seat: regrindable.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
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3.2 INSTALLATION .1 Install in accordance with manufacturer's recommendations in upright position with stem above horizontal.

3.3 COMMISSIONING .1 As part of commissioning activities, develop schedule of valves and record thereon identifier, location, service, purchase order number and date, manufacturer, identification data specified above.

3.4 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.  
.1 Leave Work area clean at end of each day.  
.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.  
.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.  
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION .1 Protect installed products and components from damage during construction.  
.2 Repair damage to adjacent materials caused by cast steel valve installation.