SECTION 400574.13 - DIAPHRAGM VALVES

Note that this section has only been edited for NYSOGS standardization and has not been technically edited. The designer shall make all technical edits specific to the project for this section.

This Section specifies diaphragm valves for use in water- and wastewater-treatment plants. Both metallic and plastic diaphragm valves are specified.

For water- and wastewater-treatment projects, valving is typically defined via a valve schedule, which describes the valve type and characteristics required for that system. A sample valve schedule is provided in Section 400551.

When selecting valve materials for corrosive fluids, consult with valve manufacturer and select materials based on specific application.

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes:

Metallic diaphragm valves.

Plastic diaphragm valves.

* + - * 1. Related Requirements:

List other Sections directly related to or affecting Work of this Section. Include Sections specifying information expected to be found in this Section as well as Sections required to describe complete system or assembly requirements.

Section 400551 - Common Requirements for Process Valves: Basic materials and methods related to valves commonly used for process systems.

* + - 1. REFERENCE STANDARDS

List reference standards included within text of this Section, with designations, numbers, and complete document titles.

* + - * 1. ASME International:

ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

* + - * 1. ASTM International:

ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

ASTM A536 - Standard Specification for Ductile Iron Castings.

ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

* + - 1. SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

* + - * 1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the

General Conditions.

* + - * 1. Manufacturer’s installation instructions shall be provided along with product data.
        2. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
        3. Product Data: Submit manufacturer information, indicating materials of construction and compliance with indicated standards.
        4. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate Paragraphs for additional certifications.

* + - * 1. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
        2. Source Quality-Control Submittals: Indicate results of [**shop**] [**factory**] tests and inspections.
        3. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        4. Qualifications Statement:

Coordinate following Subparagraph with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer.

* + - 1. QUALITY ASSURANCE

Include this Article to specify compliance with overall reference standards affecting products and installation included in this Section.

In following Paragraph insert "State of \_\_\_\_\_\_\_\_ Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

* + - * 1. Perform Work according to <**\_\_\_\_\_\_\_\_**> standards.

Include following Paragraph only when cost of acquiring specified standards is justified.

* + - * 1. Maintain <**\_\_\_\_\_\_\_\_**> [**copy**] [**copies**] of each standard affecting Work of this Section on Site.
      1. QUALIFICATIONS

Coordinate following Paragraph with requirements specified in SUBMITTALS Article.

* + - * 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience.
      1. DELIVERY, STORAGE, AND HANDLING
         1. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
         2. Store materials according to manufacturer instructions.
         3. Protection:

Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

Provide additional protection according to manufacturer instructions.

* + - 1. EXISTING CONDITIONS
         1. Field Measurements:

Verify field measurements prior to fabrication.

Indicate field measurements on Shop Drawings.

* + - 1. WARRANTY

This Article extends warranty period beyond one year. Extended warranties may increase construction costs and Owner enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for diaphragm valves.

1. PRODUCTS
   * + 1. METALLIC DIAPHRAGM VALVES

Diaphragm valves, also referred to as "membrane valves," consist of a valve body, a diaphragm, and a seat upon which diaphragm closes valve.

Diaphragm valves are generally recommended for following service conditions:

- Fully open and fully closed.

- Throttling.

- Handling of slurries, highly corrosive fluids, or fluids to be protected from contamination.

- Low system pressures.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12538&mf=04&src=wd):

designer to provide two manufacturers and approved equivalent for all listed products.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

In following Subparagraph insert "State of \_\_\_\_\_\_\_\_ Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.

Insert descriptive specifications below to identify Project requirements and to eliminate conflicts with products specified above.

* + - * 1. Description:

[**Minimum**] Working Pressure: [**<\_\_\_\_\_\_\_\_> psig at <\_\_\_\_\_\_\_\_> deg. F**] [**As indicated in valve schedule**].

Maximum Fluid Temperature: [**<\_\_\_\_\_\_\_\_> deg. F**] [**As indicated in valve schedule**].

Actuation: [**Manual**] [**Pneumatic**] <**\_\_\_\_\_\_\_\_**>.

Furnish diaphragm position indicator.

End Connections: [**Flanged, ASME B16.1**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Materials:

Body: [**Cast iron, ASTM A126**] [**Ductile iron, ASTM A536**] [**Carbon steel**] [**Type 316 stainless steel**] [**Aluminum**] <**\_\_\_\_\_\_\_\_**>.

Seals: [**Natural rubber**] [**Elastomer**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. PLASTIC DIAPHRAGM VALVES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12581&mf=04&src=wd):

designer to provide two manufacturers and approved equivalent for all listed products.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

In following Subparagraph insert "State of \_\_\_\_\_\_\_\_ Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.

Insert descriptive specifications below to identify Project requirements and to eliminate conflicts with products specified above.

* + - * 1. Description:

[**Minimum**] Working Pressure: [**<\_\_\_\_\_\_\_\_> psig at <\_\_\_\_\_\_\_\_> deg. F**] [**As indicated in valve schedule**].

Maximum Fluid Temperature: [**<\_\_\_\_\_\_\_\_> deg. F**] [**As indicated in valve schedule**].

Actuation: [**Manual**] [**Pneumatic, fail closed**] [**Pneumatic, fail open**] [**Pneumatic, double acting**] <**\_\_\_\_\_\_\_\_**>.

Furnish diaphragm position indicator.

End Connections: [**Flanged, ASME B16.5 and ASTM D1784**] [**Union**] [**Butt fusion**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Materials:

Body: [**PVC, ASTM D1784**] [**Polypropylene**] [**PTFE**] <**\_\_\_\_\_\_\_\_**>.

Seals: [**EPDM rubber**] [**PTFE**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. SOURCE QUALITY CONTROL
         1. Provide shop inspection and testing of completed valve assembly.

Include one or both of following Paragraphs to require Director's inspection or witnessing of test at factory.

* + - * 1. Director’s Inspection:

Make completed diaphragm valves available for inspection at manufacturer's factory prior to packaging for shipment.

Notify Director’s Representative at least [**seven**] <**\_\_\_\_\_\_\_\_**> days before inspection is allowed.

* + - * 1. Director’s Witnessing:

Allow witnessing of factory inspections and test at manufacturer's test facility.

Notify Director’s Representative at least [**seven**] <**\_\_\_\_\_\_\_\_**> days before inspections and tests are scheduled.

Include following Paragraph if reliance on manufacturer's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance:

If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.

Specified shop tests are not required for Work performed by approved manufacturer.

1. EXECUTION
   * + 1. EXAMINATION
          1. As specified in Section 400551 - Common Requirements for Process Valves.
       2. INSTALLATION
          1. As specified in Section 400551 - Common Requirements for Process Valves.
       3. FIELD QUALITY CONTROL
          1. As specified in Section 400551 - Common Requirements for Process Valves.

END OF SECTION 400574.13