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## **SECTION 23 21 16**

### Hydronic Piping Specialties

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Unit shall be a Bell & Gossett® CRS Coalescing Style Air & Sediment Separator, as manufactured by Xylem.

##### **1.02 RELATED SECTIONS**

- A. Section 23 01 70 - Operation & Maintenance of Central HVAC Equipment.
- B. Section 23 20 00 - HVAC Piping and Pumps.
- C. Section 23 21 13 - Hydronic Piping.

##### **1.03 REFERENCES**

- A. ASME - American Society of Mechanical Engineers.
- B. ANSI - American National Standards Institute.
- C. ISO - International Standards Organization.

##### **1.04 SUBMITTALS**

- A. Submit data cover sheet.
- B. Dimensional print(s).
- C. Sales bulletin.
- D. Installation, operation & maintenance manual.

##### **1.05 ASSURANCE**

- A. The product manufacturer shall be fully certified by the International Standards Organization per ISO 9001.
- B. The manufacturer shall carry a minimum product liability insurance of \$5,000,000.00 per occurrence.

##### **1.06 MAINTENANCE MATERIAL SUBMITTALS**

#### **PART 2 PRODUCTS**

##### **2.01 AIR & SEDIMENT COMBO SEPARATORS**

- A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
  - 1. Xylem Inc. Bell & Gossett CRS (Models CRS, CRSN, CRS-HV, CRSN-HV, CRSA, CRSA-HV, CRSD, CRSD-HV, CRSDN, or CRSDN-HV).
  - 2. Pre-approved equal.
- B. The Air & Sediment Separator shall be designed, constructed, and stamped in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors.
- C. The Air & Sediment Separator shall carry a standard 5 year warranty.
- D. The Air & Sediment Separator shall be rated for 150 psi (1,034 kPa) maximum working pressure.
- E. The Air & Sediment Separator shall have a maximum temperature rating of 450°F (232°C).
- F. The Air & Sediment Separator body shall be made of carbon steel.

- G. The Air & Sediment Separator body shall be at least two times the nominal inlet/outlet pipe diameter and should include two equal chambers above and below the inlet/outlet nozzles.
- H. The Air & Sediment Separator shall have an internal coalescing medium consisting of corrugated stainless steel sheets with 3/16" perforations and 58% open area. The coalescing medium shall be made of 304 stainless steel.
- I. (Optional) Coalescing medium shall be removable to facilitate routine cleaning.
- J. The Air & Sediment Separator should be capable of removing 100% of free and entrained air and 99% or more of total suspended particulate.
- K. The Air & Sediment Separator shall include threaded blow down connection to allow for sediment to be regularly cleaned out of the unit.
- L. The Air & Sediment Separator shall include a threaded air removal connection on top of the unit so an air vent or expansion/compression tank can be connected, allowing collected air to be removed from the unit.
- M. The Air & Sediment Separator shall include a threaded skim valve connection on the side of the unit to allow floating sediment to be removed.
- N. The Air & Sediment Separator shall be available with either NPT end connections (2" thru 4" sizes only), flanged end connections, or grooved end connections.
- O. Flange end connections should be designed according to ANSI Standards.
- P. (Optional) The Air & Sediment Separator shall include a magnetic insert for removal of iron oxide and other magnetic sediment. The magnetic insert shall be made of Neodymium 45H and should have a gauss strength of at least 13,550

## 2.02 AIR-ONLY SEPARATORS

- A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
  - 2. Xylem Inc. Bell & Gossett® CRS (model CRSA or CRSA-HV).
  - 3. Pre-approved equal.
- B. The Air Separator shall be designed, constructed, and stamped in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors.
- C. The Air Separator shall carry a standard 5 year warranty.
- D. The Air Separator shall be rated for 150 psi (1,034 kPa) maximum working pressure.
- E. The Air Separator shall have a maximum temperature rating of 450°F (232°C).
- F. The Air Separator body shall be made of carbon steel.
- G. The Air Separator body shall be at least two times the nominal inlet/outlet pipe diameter.
- H. The Air Separator shall have an internal coalescing medium consisting of corrugated stainless steel sheets with 3/16" perforations and 58% open area. The coalescing medium shall be made of 304 stainless steel.
- I. The Air Separator should be capable of removing 100% of free and entrained air.
- J. The Air Separator shall include threaded blow down connection to allow for unit to be drained.
- K. The Air Separator shall include a threaded air removal connection on top of the unit so an air vent or expansion/compression tank can be connected, allowing collected air to be removed from the unit.
- L. The Air Separator shall include a threaded skim valve connection on the side of the unit to allow floating sediment to be removed.
- M. The Air Separator shall be available with either NPT end connections (2" thru 4" sizes only), flanged end connections, or grooved end connections.

N. Flange end connections should be designed according to ANSI Standards.

### 2.03 SEDIMENT-ONLY SEPARATORS

- A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
2. Xylem Inc. Bell & Gossett® CRS (model CRSD, CRSDN, CRSD-HV, or CRSDN-HV).
  3. Pre-approved equal.
- B. The Sediment Separator shall be designed, constructed, and stamped in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors.
- C. The Sediment Separator shall carry a standard 5 year warranty.
- D. The Sediment Separator shall be rated for 150 psi (1,034 kPa) maximum working pressure.
- E. The Sediment Separator shall have a maximum temperature rating of 450°F (232°C).
- F. The Sediment Separator body shall be made of carbon steel.
- G. The Sediment Separator body shall be at least two times the nominal inlet/outlet pipe diameter.
- H. The Sediment Separator shall have an internal coalescing medium consisting of corrugated stainless steel sheets with 3/16" perforations and 58% open area. The coalescing medium shall be made of 304 stainless steel.
- I. (Optional) Coalescing medium shall be removable to facilitate routine cleaning.
- J. The Sediment Separator should be capable of removing 99% or more of total suspended particulate.
- K. The Sediment Separator shall include threaded blow down connection to allow for sediment to be regularly cleaned out of the unit.
- L. The Sediment Separator shall include a threaded air removal connection on top of the unit so an air vent or expansion/compression tank can be connected.
- M. The Sediment Separator shall include a threaded skim valve connection on the side of the unit to allow floating sediment to be removed.
- N. The Sediment Separator shall be available with either NPT end connections (2" thru 4" sizes only), flanged end connections, or grooved end connections.
- O. Flange end connections should be designed according to ANSI Standards.
- P. (Optional) The Sediment Separator shall include a magnetic insert for removal of iron oxide and other magnetic sediment. The magnetic insert shall be made of Neodymium 45H and should have a gauss strength of at least 13,550

### 2.04 ACCESSORIES

- A. Air & Sediment Separator Accessories
2. Blowdown Valve.
  3. Skim Valve.
  4. Air Vent.

PART 3 **EXECUTION**

3.01 INSTALLATION

- A. Install Air & Sediment Separator in accordance with manufacturer's instructions.
- B. Unit shall be a Bell & Gossett CRS Coalescing Style Air & Sediment Separator Model CRS-\_\_\_\_, CRSN-\_\_\_\_, CRS-HV-\_\_\_\_, CRSN-HV-\_\_\_\_, CRSA-\_\_\_\_, CRSA-HV-\_\_\_\_, CRSD-\_\_\_\_, CRSD-HV-\_\_\_\_, CRSDN-\_\_\_\_, or CRSDN-HV-\_\_\_\_.

END OF SECTION



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