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**SPECIFICATIONS** Domestic Pump VCMD-CMHD-A

SECTION 235300

HEATING BOILER FEEDWATER EQUIPTMENT

**PART 1 GENERAL**

1.01 SECTION INCLUDES

# Unit shall be a Domestic® combonation heating boiler feedwater and vacuum duplex unit, series VCMD™, style CMHD-A™, as manufactured by Bell & Gossett, a Xylem brand®.

# Furnish and install extended life pumps with capacities as

indicated in the plans.

1.02 RELATED SECTIONS

1. Section 235313 – Boiler Feedwater Pumps.
2. Section 262716 – Electrical Cabinets and Enclosures.

1.03 REFERENCES

1. HI - Hydraulic Institute.
2. ANSI - American National Standards Institute.
3. NEMA - National Electrical Manufacturers Association.
4. UL - Underwriters Laboratories.
5. ETL - Electrical Testing Laboratories.
6. CSA - Canadian Standards Association.
7. NEC - National Electric Codes.
8. ISO - International Standards Organization.
9. IEC - International Electrotechnical Commission.

1.04 SUBMITTALS

1. Submit Data Cover Sheet.
2. Unit Description Sheet.
3. Dimensional Print(s).
4. Sales Bulletin.
5. Piping Diagram(s).
6. Wiring Diagram(s).
7. Installation, Operation & Maintenance Manual.

1.05 QUALITY ASSURANCE

1. The manufacturer shall have a minimum of 30 years experience in the design and construction of combination heating boiler vacuum feedwater equipment.
2. The pump manufacturer shall be fully certified by the International Standards Organization per ISO 9001. Proof of this certification shall be furnished at the time of submittal.

# The manufacturer shall carry a minimum product liability insurance of $5,000,000.00 per occurrence.

1. The Unit shall be UL listed or recognized by Underwriters’ Laboratories, Inc as a complete combination heating boiler vacuum feedwater package.

**PART 2 PRODUCTS**

2.01 MANUFACTURERS

# Subject to compliance with these specifications, the following manufacturers shall be acceptable:

1. Bell & Gossett, a Xylem brand Domestic® Series VCMD™, style CMHD-A™ duplex.
2. Pre-approved equal.

2.02 COMPONENTS

1. Condensate steel receiver
2. Shall be horizontal welded steel construction.
3. Receiver heads shall be convex (dished).
4. Head and shell thickness shall be a minimum of 3/16” (5mm) as indicated in the drawings.
5. Receiver shall have a net working capacity of no less than that shown in the drawings.
6. Receiver shall be floor mounted on fabricated heightless steel cradles.
7. Receiver shall have an inlet with cascade baffle, vent, and overflow opening to provide means of secondary venting.
8. Receiver shall be sized for 10 minutes net storage.
9. Receiver shall be furnished with:
10. One water level gauge glass for visual tank level inspection.
11. One dial thermometer.
12. Two bronze suction isolation gate valves placed between the receiver and pump suction for pump serviceability.
13. Two lifting eyes for unit placement.
14. Water pump

# Two water pumps shall each be a series C35™, C17™, or B35™ bronze fitted, centrifugal pump, close-coupled to a 3500 RPM or 1750 RPM motor, permanently aligned, and flange mounted for vertical operation.

# C35™ and C17™ pumps shall include:

# One cast Iron volute with:

# One discharge gauge port tapping.

# One drain tapping.

# One dynamically balanced enclosed bronze centrifugal impeller.

# One renewable bronze wearing ring.

# One stainless steel shaft.

# Carbon/ceramic/Buna N/stainless steel mechanical seal suitable for 250oF (121°C) operation.

# B35™ pumps shall The water pump shall deliver its full capacity with condensate temperatures up to 212° F (100° C) at sea level at 2 ft. NPSH (net positive suction head).include, in addition to the above:

# One bronze propeller stem.

# One bronze diffuser.

# One cast bronze, axial flow, first-stage impeller.

# For higher pressure and flows at higher condensate temperatures, horizontal B style pumps are available upon request.

# Each pump shall be sized for two times the system return rate.

# Each motor shall meet NEMA specifications and shall be the size, voltage, insulation class, duty rating, and enclosure called for in the plans.

# Capacities and electrical characteristics for the pump shall be scheduled on the drawings.

1. Two water make up assemblies shall be installed:
2. Water side make up assembly shall be located on the receiver of capacity equal to one boiler feed pump.
3. The make up assembly shall consist of:
4. One electric solenoid that shall be packless, piston pilot operation type with cushioned closing feature and epoxy resin molded waterproof coil.
5. One water level float switch.
6. One Y-strainer located upstream of the solenoid valve.
7. A vacuum unit shall consist of:
8. Multi-jet vacuum producer(s).

# (Manual by-pass valve around the water make-up solenoid consisting of:)

1. Two ball valves to isolate the solenoid valve.
2. One gate valve for the direct water feed line.

# (Air gap fitting for make-up valve.)

# (Pump discharge pressure gauge.)

# (Cast iron inlet basket strainer with vertical self-cleaning bronze screen and large dirt pocket for sediment collection. The screen shall be easily removable for cleaning, requiring no additional floor space for servicing. This option ships loose for field installation.)

# (TEFC or explosion proof motors as required.)

# [Two Consolitrol® NEMA 2, UL electrical panels (one air / one water) mounted and wired with drip lip and piano hinged door. Each is available with the following options:]

1. (NEMA 4 and NEMA 12 Electrical panels mounted and wired as required.)
2. (NEMA 7 control panels suitable for Class I, Group D, Class II, Groups F & G.)
3. (Two combination magnetic starters with disconnect devices, either fusible or circuit breaker type with cover interlock and adjustable thermal overload protection.)
4. (One fused control circuit transformer when the motor voltage exceeds 230V.)
5. [Two selector switches (water):]
6. (“Off-Hand-Lead-Lag” for units with automatic pump standby.)
7. (“Auto-Off-Hand” for units with manual pump standby.)
8. (Two pump running pilot lights.)
9. (Two “Push to Test” buttons.)
10. (One numbered terminal strip.)
11. (Two auxiliary contacts on the magnetic starters normally open for remote monitoring of pump operation.)
12. (A removable control component mounting plate.)
13. (Two elapsed time meters (UL).)
14. (An audible alarm to indicate water level conditions.)
15. (Audible alarm is available with or without silencing relay.)
16. (A tank mounted level switch should be provided with audible alarm.)
17. (Alarm may be provided with alarm light to provide visual indication of alarm condition.)
18. (One single point power connection.)
19. (One electrical alternator.)
20. (Control power switching relay shall allow the switch over of control power from one pump to the other in the event of a power failure or pump failure.)

# (Liquid tight conduit suitable for NEMA 2, NEMA 4 & NEMA 12 applications. NEMA 7 units shall be supplied with suitable rigid conduit.)

**PART 3 EXECUTION**

* 1. INSTALLATION

1. Install equipment in accordance with manufacturer’s instructions.
2. Power wiring, as required, shall be the responsibility of the electrical contractor. All wiring shall be performed per manufacturer’s instructions and applicable state, federal and local codes.
3. All factory wiring shall be numbered for easy identification and the numbers shall coincide with those shown on the wiring diagram.
4. All interconnecting wiring between the pump controls and control panel shall be enclosed in liquid tight flexible conduit.
5. The unit shall be factory tested as a complete unit and the unit manufacturer shall furnish elementary and connection-wiring diagrams and piping diagrams. Installation and operation instructions shall also be provided.
6. The unit manufacturer shall furnish, mount on the unit and wire a NEMA 2 control cabinet with drip lip and piano hinged door.
7. The unit shall be shipped completely assembled.
8. The factory shall provide a certified test report.

**Items in parentheses denotes optional items**

1. Unit shall be a Domestic® Series VCMD™, style CMHD-A™ duplex as manufactured by Bell & Gossett, Morton Grove, IL.

###### END OF SECTION

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