**SPECIFICATIONS** Domestic Pump CBEM Simplex



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**SECTION 235300**HEATING BOILER FEEDWATER EQUIPTMENT

**PART 1 GENERAL**

1.01 SECTION INCLUDES

# Unit shall be a Domestic® heating boiler feedwater simplex unit, series CBEM™, 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 heating boiler 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.

# The Unit shall be UL listed or recognized by Underwriters’ Laboratories, Inc as a complete Boiler 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 CBEM simplex.
2. Pre-approved equal.

2.02 COMPONENTS

## A. Condensate receiver

## The boiler feed receiver shall be of close grained cast iron construction (warranted for 20 years from the date of shipment against failure due to corrosion).

1. The receiver shall be sized for five minutes net storage based on the boiler evaporation rate.
2. Receiver shall have an inlet, vent and an overflow opening to provide means of secondary venting.
3. Receiver shall have provisions for future addition of second pump.
4. Receiver shall be elevated 24” (609 mm) on a fabricated steel base.
5. Receiver shall be furnished with one bronze suction isolation gate valve placed between the receiver and pump suction for pump serviceability.
6. The water make up shall be installed on the receiver of capacity equal to one boiler feed pump. The make up assembly shall consist of:
7. One electric solenoid that shall be packless, piston pilot operation type with cushioned closing feature and epoxy resin molded waterproof coil.
8. One water level float switch.
9. One Y-strainer located upstream of the solenoid valve.

# Water pump

**Items in parentheses denote optional items**

# Water pump shall be a two-stage series B35™ bronze fitted, centrifugal pump, close-coupled to a 3500 RPM motor, permanently aligned, and flange mounted for vertical operation. 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).

# Each pump 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.

# One bronze propeller stem.

# One bronze diffuser.

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

# 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.

# (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.)
3. (Air gap fitting for make-up valve.)
4. (Water level gauge glass for visual tank level inspection.)
5. (Lifting eye bolts for unit placement.)
6. (A dial thermometer.)
7. (Pump discharge pressure gauge.)
8. (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.)
9. (TEFC or explosion proof motors as required.)
10. (Consolitrol® NEMA 2, UL electrical panel mounted and wired with drip lip and piano hinged door is available with the following options:)
11. (NEMA 4 and NEMA 12 Electrical panels mounted and wired as required.)
12. (NEMA 7 electrical panels suitable for Class I, Group D, Class II, Groups F & G.)
13. (One magnetic starter with thermal overload protection. Starters may be provided with disconnect devices, either:)
14. (Fusible disconnect with cover interlock or)
15. (Circuit breaker type with cover interlock.)
16. (One fused control circuit transformer when the motor voltage exceeds 250V.)
17. (One “Auto-Off-Hand” selector switch.)
18. (One pump running pilot light.)
19. (One “Push to Test” button.)
20. (One numbered terminal strip.)
21. (One auxiliary contact on the magnetic starter normally open for remote monitoring of pump operation.)
22. (A removable control component mounting plate.)
23. (One elapsed time meter (UL).)
24. (An audible alarm to indicate water level conditions.)
25. (Audible alarm is available with or without silencing relay.)
26. (A separate tank mounted level switch should be provided with audible alarm.)
27. (Alarm may be provided with alarm light to provide visual indication of alarm condition.)
28. (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.
9. Unit shall be a Domestic series CBEM simplex as manufactured by Bell & Gossett, Morton Grove, IL.

###### END OF SECTION



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