Basic to the optimal performance of any boiler feed system is the proper selection of the boiler feed pump. The following are sizing guidelines for both continuous and on-off (intermittent) service. In each case, per ASME Power Boiler Code, the feedpump(s) “shall be capable of supplying water to the boiler at a pressure of 3% higher than the highest setting of any safety valve on the boiler,” and of quantity “to prevent damage to the boiler.”

**Continuous Service**
Use centrifugal type pump sized for 150% (not inclusive of bypass) of maximum steaming capacity assuming 10-20 psi drop across the feedwater control valve, plus line loss and boiler head to water level, less suction head and DA pressure. PRECISION uses centrifugal pumps manufactured by Goulds, Grundfos, Peerless, Weinman, Flowserve, etc. depending on application and performance fit.

**Intermittent Service**
Use turbine or centrifugal type pumps sized for 200% of maximum steaming capacity plus line loss and boiler head to water level, less suction head and DA pressure. PRECISION uses high quality single or multiple stage turbine pumps manufactured by MTH Pumps, and single or multiple stage centrifugal pumps as listed above.

**NOTE**
Feeding of water into boilers too rapidly may cause a collapse of steam bubbles of sufficient magnitude to effect a low water alarm/trip on the boiler.

**STANDARD FEATURES AND ACCESSORIES**
- Non-code 1/4” Steel tank
- Structural steel legs & base
- Overflow, Return & Vent connections
- Makeup Water Valve (float-type)
- Sight & Temperature Gauges
- Pump suction Strainer & Stop Valve
- Pump suction Flex Connector
- Motor Control Panel
- Fused Magnetic Motor Starter(s)
- H-O-A switch(es) with Pilot Light
- Pump(s) mounted, piped & wired
- Simplex or Duplex configuration
- Full-port Drain Valve
- Handhole (4” x 6”)

**OPTIONAL EQUIPMENT AND ACCESSORIES**
- Stainless Steel Tank
- Code Tank (ASME Sect. VIII, Div. 1)
- Sparge-tube Preheater assembly
- Temperature control Steam Valve
- Pump discharge Pressure Gauge(s)
- Pump discharge Pressure Switch(es)
- Pump discharge Stop & Check valves
- U-tube Preheater assembly
- Pump Alternator
- Pump standby/run Selector Switch
- Solenoid Makeup Valve w/float switch
- Makeup water Spray Valve
- Level Switch(es)
- Alarm Bell (w/pilot light & silence PB)
- Chemical Feed Connection
- UL Listed Control Panel
PRECISION Model CF boiler feed systems are designed to receive condensate, accommodate condensate surges, and, when condensate return is insufficient, automatically add make-up to maintain sufficient boiler or deaerator water supply. Standard receiver tanks are vented (non-code) and are constructed of high quality 1/4” thick carbon steel.

Make-up valves are either internal or external float-operated to maintain a minimum water level. Systems can be supplied with single or multiple pumps, their starters and controls, and optional items such as alternators, alarm system, auto standby provision, sparge-tube preheat system, makeup water spray valve, special tank materials/linings, etc.

MODEL NUMBERS, RATINGS AND DIMENSIONS

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Tank Capacity</th>
<th>Max Boiler Rating</th>
<th>Dimensions</th>
<th>Standard Connections (NPT)</th>
<th>Approx. Ship Wt. (Lbs.)****</th>
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* Suffix Model Number with S, D or T to signify Simplex (1 pump), Duplex (2 pump) or Triplex (3 pump)
** Based on 10 minute storage and one pump sized @ twice the steaming rate
*** Height may vary due to installation limitations and/or pump NPSH requirements
**** Add pump weight(s) to obtain total shipping weight
1. **GENERAL**
Furnish and install as shown on the plans a Condensate Return / Boiler Feedwater System, fabricated per these specifications, including all accessories and construction features as described herein.

2. **Tank**
Tank shall be _____ gallon capacity □ non-code or □ code (ASME Section VIII) of nominal dimensions _______ diameter x _______ long with flat heads (non-code) or dished heads (code). Connections shall include anti-vortex pump suction, overflow, return, vent, drain and all necessary connections for sight gauge, makeup valve, and thermometer.

3. **Pumps**
Quantity _____ boiler feed pump(s) will be supplied. Pump(s) shall be □ Centrifugal or □ Turbine type with mechanical seals. Pump(s) will have a capacity of _______ GPM @ _______ PSIG for 210°F water. Pump(s) shall be driven by _______ HP, _______ VOLT, ____ PHASE, _______ HERTZ, _______ RPM, □ ODP or □ TEFC Motor(s).

4. **Connections**
Pump(s) will be piped to tank suction with full port ball valve(s) and strainer(s). Suction piping shall also include flexible coupling(s). Control Panel to be complete with hand-off auto switch(es), pilot light(s) and magnetic starter(s) in a NEMA number ____ enclosure. Panel shall be mounted on steel unit frame and wired to motor(s) using liquid-tight conduit system. (Optional UL Panel Available)

5. **Makeup Control**
Make-up control valve shall be □ internal or □ external and shall have a capacity equal to the total evaporation rate of the boiler(s) at a minimum water pressure of 40 PSIG.

6. **Trim**
System trim shall include sight gauge with bronze shut off cocks, drain, glass and glass protector rods, Bi-metal thermometer, drain valve, and optional items as listed.

6. **Manufacturer**
System shall be PRECISION Model CF-_____—_____ or approved equivalent.

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**CONTACT US FOR THESE QUALITY PRODUCTS**

- Electric Hot Water and Steam Boilers 10KW-5000KW to 3000 PSI; Carbon Steel & Stainless Steel
- Electric Storage Heaters 125 to 5500 Gallons
- Electrode High Voltage Boilers
- Thermal Storage Systems Space Heating & Domestic or Process Water; Electric, Gas or Steam Fired
- Pressure Vessels Water Storage Tanks Flash Tanks Blowdown Tanks
- Unfired Hot Water and Steam Generators
- Deaerators and Surge Tanks
- Steam Superheaters-Electric
- Circulation Heaters-Electric
- Gas or Oil-Fired Vertical Firetube Boilers and Water Heaters
- Gas or Oil-Fired Water Tube Boilers (Flextube Type)
- Chemical Bypass Feeders and Automatic Chemical Feed Systems

**NOTE:** In pursuing our policy of continuous development of products, PRECISION reserves the right to vary any detail in this bulletin without notice.

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Represented in your area by:

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WEB: www.precisionboilers.com

CF - 10.10.11
Condensate return systems are designed to receive condensate, accommodate condensate surges and, when return is insufficient, automatically make-up and maintain sufficient boiler water.

Precision’s CF systems are available in simplex, duplex, triplex and quadplex models with different pumps, control and trim packages available.

The CF can be used as a stand alone unit or for the convenience and speed of installation the CF can be factory packaged on a common skid with all inter-connecting piping with single point connections for electricity/gas, service water and drains.

Other Precision Boiler room equipment can also be packaged on the skid including blowdown separators, blowdown and flash tanks, water softeners and chemical feed tank.