



ITT

Bulletin S-944L

Domestic Pump[®] Condensate Transfer Equipment



CONDENSATE RETURN UNITS



BOILER FEED UNITS



LOW NPSH PUMPS



VACUUM HEATING UNITS



INDUSTRIAL VACUUM UNITS

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Engineered for life

Condensate Return Units



Series CC

Series CC™

Condensate return units for systems up to 150,000 sq. Ft. EDR. Receivers sized from 6 - 250 gallon (23 - 946 liters). The cast iron receiver includes a 20 year warranty against corrosion. CC units are available in either simplex or duplex design. Receivers have a low height NPT inlet for easy return line piping and a separate NPT overflow that can be used as a secondary vent. All simplex units include a two pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. Pumps are available in 3500 or 1750 RPM. (See bulletin S215)

- Maximum discharge pressure is 90 psi (621 kPa).
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is *200°F (93°C)

*Specific duty points can be rated up to 209°F (98°C) requiring only 2' NPSH. Contact your local ITT HVAC Representative for more details.



Series CS

Series CS™

Condensate return units for systems up to 150,000 sq. Ft EDR. Steel receivers sized from 6-250 gallon (23-946 liters). Galvanized or stainless steel receivers are available. CS units are available in either simplex or duplex design. Receivers have a low height NPT inlet for easy return line piping and a separate NPT overflow that can be used as a secondary vent. All simplex units include a two-pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. Series B35 pumps can be provided for 210°F (99°C) applications. Stainless Steel pumps are available. Pumps are available in 3500 or 1750 RPM.

- Maximum discharge pressure (using Centriflo® or Series B pumps) 90 psi (621 kPa)
- Maximum seal temperature is 250° F (121° C)
- Maximum pump temperature is 200°F (93°C) with Centriflo® Pumps (210°F (99°C) with Series B pumps).



Series CED

Series CED™

Condensate return units for systems up to 550,000 sq. Ft. EDR. The CED offers a flexible solution for handling condensate in commercial applications. The CED has an elevated receiver that is available in Steel, Galvanized Steel, Epoxy Lined Steel, ASME construction or Stainless Steel. The receiver is sized for 5 minute net storage, with a fabricated steel base with suction piping and isolation valves. The CED is offered with either the Centriflo® or Series B pumps, including the B35, HB35 and HB17 styles. The B pumps have a suction inducer to create a positive pressure at the centrifugal impeller. The feature lowers the NPSH requirement of the pump. The CED is available in simplex and duplex configurations. Additional pumps are available on request. All simplex units include a two-pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts (See Bulletin S240). Stainless Steel pumps are available.

- Maximum discharge pressure (using Centriflo® or Series B pumps) 175 psi (1207 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 212°F (100°C) with Series B pumps.

Series CB™

Condensate return units for systems up to 90,000 sq. Ft. EDR. The CB is designed for systems with low return lines. This condensate unit features the B-35 pumps which has a suction inducer to create a positive pressure at the centrifugal impeller thus guaranteeing low NPSH pump requirements. The CB units require only 2' NPSH and can pump condensate up to 210°F (99°C) at sea level. Series CB units include cast iron receivers, sized from 6 - 250 gallon (23 - 946 liters). The cast iron receiver includes a 20 year warranty against corrosion. CB units are available in either simplex or duplex design. Receivers have a low height NPT inlet for easy return line piping and a separate NPT overflow that can be used as a secondary vent. All simplex units include a two-pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. (See bulletin S225)

- Maximum discharge pressure 100 psi (690 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 210°F (99°C)



Series CB

Condensate Return Units

Series CBE



Series CBE™

Condensate return units for systems up to 135,000 sq. Ft. EDR. Series CBE receivers are elevated 24" (0.6M) above the floor on a welded steel stand. These units are recommended for high temperature condensate applications where the height of the return lines permit their use. This condensate unit features the B-35 pumps which have a suction inducer to create a positive pressure at the centrifugal impeller. This feature lowers the NPSH requirement of the pump. The CBE units require only 2'NPSH and can pump condensate up to 212°F (100°C) at sea level. Series CBE units include cast iron receivers, sized from 6 - 250 gallon (23 - 946 liters). The cast iron receiver includes a 20 year warranty against corrosion. CBE units are available in either simplex or duplex design. Receivers have a low height NPT inlet for easy return line piping and a separate NPT overflow that can be used as a secondary vent. All simplex units include a two-pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. (See bulletin S225)

- Maximum discharge pressure 100 psi (690 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 212°F (100°C)

Series CU



Series CU™

Below grade condensate return units for systems up to 90,000 sq. Ft. EDR. This unit includes 24" diameter cast iron receiver or 18", 30", 36", 42" and 48" diameter epoxy coated steel receivers designed for installations with low or below grade return lines. The receiver is sized for 1 minute net storage with a depth of 36" or 48". Pumps are pre-selected to deliver 1 GPM per every 1000 EDR or 2 times the system return rate. The pump(s) are mounted to a steel cover plate that is bolted to the receiver.

Series CHD



The pump bearings are carbon graphite for improved abrasion and wear resistance. The mechanical seal can be replaced without removing the pump from the receiver. The condensate level in the receiver is monitored by a heavy duty two-pole float switch. These units can be designed for vacuum service with vacuum tight construction. (See bulletin S230)

- Maximum discharge pressure 50 psi (621 kPa)
- Maximum seal temperature is 250°F (121°C)
- Standard temperature rating is 200°F (93°C) Maximum of 209°F (98°C) on specific duty points.

Series CHD™

Condensate return units for systems up to 550,000 sq. Ft. EDR The CHD offers a flexible solution for handling condensate in commercial applications. The CHD has a floor mounted receiver that is available in Steel, Galvanized Steel, Epoxy Lined Steel, ASME construction or Stainless Steel. The receiver is sized for 5-minute net storage. The CHD is offered with either the Centriflo® or B35 pump styles. The B pumps have a suction inducer to create a positive pressure at the centrifugal impeller. The feature lowers the NPSH requirement of the pump. The CHD is available in simplex and duplex configurations. Additional pumps are available on request. All simplex units include a two-pole float switch. Duplex units include float switches (a mechanical alternator is available). All pumps are bronze fitted with bronze case wear rings and stainless steel shafts (See Bulletin S240). Stainless Steel pumps are available.

- Maximum discharge pressure (using Centriflo® or Series B pumps) 90 psi (621 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 210°F (99°C) with Series B pumps.

HIGH TEMPERATURE CONDENSATE

Series SP™ (not shown)

Pumpless condensate return units for high temperature returns. SP units use high pressure steam or air as the motive force to return high temperature condensate. Single phase electric or pneumatic controls are required. The receivers are ASME code stamped. SP packages are available in 10 different sizes for capacities up to 60,000 lbs/hr. (See bulletin S270)

- Maximum discharge pressure 100 psi (1207 kPa)
- Maximum temperature is 338°F (121°C)

Boiler Feed Units

Series CM



Series CM (or CSM not shown)

Boiler feed units for systems up to 650 BHP; Series CM units include low inlet, durable cast iron receivers for maximum corrosion resistance. Series CSM units include low inlet, rectangular steel receivers. Galvanized or Stainless Steel CSM receivers are available. Units are available in simplex and duplex configurations. CM and CSM units include a float switch and solenoid valve with "Y" strainer to add make up water on low level. Pumps are Centriflo® Series C35 or C17. CSM units may be provided with Series B-35 pumps. Stainless Steel pumps are available.

- Maximum discharge pressure is 90 psi (621 kPa) with Centriflo® pumps.
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is *200°F (93°C) with Centriflo® pumps
- Specific duty points can be rated up to 209°F (98°C) require only 2' NPSH. Contact your local ITT HVAC Representative for more details.
- CSM units with B-35 pumps can be rated for 210°F (99°C)

Series CBM



Series CBM™

Boiler feed units for systems up to 600 BHP. The CBM receivers have a low height NPT inlet for systems with low return lines and a separate NPT overflow that can be used as a secondary vent. This boiler feed unit features the B-35 pump which has a suction inducer to create a positive pressure at the centrifugal impeller thus guaranteeing low NPSH pump requirements. The CBM unit requires only 2' NPSH and can pump condensate up to 210°F (99°C) at sea level. CBM units are available in either simplex or duplex design. All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. The Series CBM includes a float switch and solenoid valve with "Y" strainer to add make-up water on low level. (See bulletin S120)

- Maximum discharge pressure 100 psi (690 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 210°F (99°C)

Series CBEM



Series CBEM™

Boiler feed units for systems up to 600 BHP. Series CBEM receivers are elevated 24" (0.6M) above the floor on a welded steel stand. These units are recommended for high temperature condensate applications where the height of the return lines permit their use. This boiler feed unit features the B-35 pumps which have a suction inducer to create a positive pressure at the centrifugal impeller thus guaranteeing low NPSH pump requirements. The CBEM units requires only 2' NPSH and can pump condensate up to 212°F (100°C) at sea level. CBM units are available in either simplex or duplex design. All pumps are bronze fitted with bronze case wear rings and stainless steel shafts. The Series CBEM includes a float switch and solenoid valve with "Y" strainer to add make-up water on low level. (See bulletin S120)

- Maximum discharge pressure 100 psi (690 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 212°F (100°C)

Series CMHD



Series CMHD

Large boiler feed units for systems up to 1895 BHP (or larger on request), Series CMHD units include cylindrical

steel tanks with dished heads. Galvanized, Epoxy Lined, ASME construction or Stainless Steel tanks are available. The tanks are sized for 10-minute net storage of system water requirements. Tanks also include inlet cascade baffle, floor supports lifting lugs, gauge glass, dial thermometer and low-level cut-off switch. The CMHD is offered with either the Centriflo® or Series B35 centrifugal pumps. The B-35 pumps have a suction inducer to create a positive pressure at the centrifugal impeller. This feature lowers the NPSH requirement of the pump. Stainless steel pumps are available. The Series CMHD includes a float switch and solenoid with "Y" strainer to add make up water on low lever. (See Bulletin S140)

- Maximum discharge pressure (using Centriflo® or Series B pumps) 100 psi (690 kPa)
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 210°F (99°C) with Series B35 pumps.

Series CMED

Large boiler feed units for systems up to 1895 BHP (or larger on request), Series CMED units include elevated cylindrical steel tanks with dished heads. Galvanized, Epoxy Lined, ASME construction or Stainless Steel tanks are available. The tanks are sized for 10-minute net storage of system water requirements, elevated on a fabricated steel base with suction piping and isolation valves. Tanks also include inlet cascade baffle, floor supports lifting lugs, gauge glass, dial thermometer and low-level cut-off switch. The CMED is offered with the Centriflo® or Series B35, HB35, HB17, DB, or DB-F centrifugal pumps. The B pumps have a suction inducer to create a positive pressure at the centrifugal impeller. This feature lowers the NPSH requirement of the pump. Stainless steel pumps are available. The Series CMED includes a float switch and solenoid with "Y" strainer to add make up water on low lever. (See Bulletin S150)

- Maximum discharge pressure (using Centriflo® or Series B35 pumps) 100 psi (690 kPa). Higher discharge pressures are available with alternative pumps. Consult your local ITT HVAC Representative for more details.
- Maximum seal temperature is 250°F (121°C)
- Maximum pump temperature is 212°F (100°C) with Series B35 pumps.

Series CMED



Series CMU™

Below grade boiler feed return units for systems up to 580 BHP. This unit includes a cast iron or epoxy coated steel receiver designed for installations with low or below grade return lines. The receiver is sized for 10 minutes net storage to absorb surges in rate of condensate return. Pumps are pre-selected to deliver two times the system condensate return rate. The pump/s are mounted to a steel cover plate that is bolted to the receiver. The pump bearings are carbon graphite for improved abrasion and wear resistance. The pump mechanical seal can be replaced. The CMU includes a float-switch operated solenoid make-up valve assembly to maintain a minimum water level in the receiver. These units can be designed for vacuum service with vacuum tight construction. (See bulletin S230)

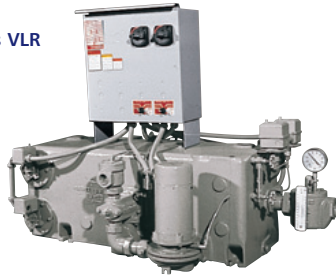
- Maximum discharge pressure is 50 psi (621 kPa).
- Maximum seal temperature is 250°F (121°C)
- Standard temperature rating is 200°F (93°C) Maximum of 212°F (100°C) on specific duty points.

Series CMU



Vacuum Heating and Industrial/Clinical Vacuum Units

Series VLR



Series VL



Series VCD



Series MJ



Series WSC & WSS



VACUUM HEATING UNITS

Series VLR

Series VLR vacuum heating units provide fast, even distribution of steam throughout the steam heating system. Units sized for systems up to 20,000 EDR. The VLR receiver is separated into two chambers, the upper chamber holds the recirculated water that is pumped through the multi-jet nozzle and venturi creating the vacuum. The lower chamber acts as condensate accumulator and is under the same vacuum as that maintained in the return piping. The result is a compact, economical design. The VLR is available in simplex or duplex configuration. For older systems with higher air leakage rates, special capacity units are available to provide additional air removal capacity. (See bulletin S310)

- Maximum temperature is 180°F (82°C)
- Pressures to 40 psi (276 kPa)

Series VL

Series VL vacuum heating units provide fast, even distribution of steam throughout the steam heating system. The VL is designed for systems from 25,000 to 65,000 EDR. The compact design has a cast iron receiver designed for low returns. The unit recirculates water that is pumped through the multi-jet nozzle and venturi creating the vacuum. When the condensate level in the receiver raises, a discharge valve opens allowing the recirculated water to discharge from the VL unit back to the condensate return system. The VL unit is available in standard capacity and special capacity for increased air capacities and higher vacuums for older systems. (See bulletin S320)

- Maximum temperature is 180°F (82°C)
- Pressures to 40 psi (276 kPa)

INDUSTRIAL/CLINICAL VACUUM UNITS

Series MJ

The Series MJ vacuum pump is ideal for hospital, laboratory, and industrial applications. The MJ uses the multi-jet vacuum producers to provide smooth reliable operation for years. A centrifugal pump circulates water through the multi-jet nozzle and venturi to create the vacuum. The water is discharged into a separation chamber and reused by the pump. Units available in simplex and duplex configuration. (See bulletin S500)

- Capacities to 344 CFM
- Vacuum level to 28" Hg.

Series VCD (or VCDS not shown)

The series VCD vacuum heating unit is designed for large systems through 150,000 sq. Ft. EDR. The VCD include durable cast iron receivers, warranted for 20 years against failure due to corrosion. The VCDS includes an economical steel receiver alternative. These units feature individually sized and separately controlled vacuum producing pumps and condensate handling pump. These units are available with one vacuum and one condensate pump (simplex), one vacuum and two condensate pumps (semi-duplex) or two vacuum pumps and two condensate pumps (duplex). Optional temperature controls may be added to stop the vacuum pumps or add cold water when high water temperatures are sensed. (See Bulletin S330)

- Maximum temperature is 180°F (82°C)
- Pressures to 75 psi (517 kPa)

Series VCMD

Series VCMD is a combination vacuum and boiler feed unit that offers a wide selection of cast iron, steel, and underground boiler feed receivers in conjunction with the dependable water jet vacuum units. The vacuum unit can be mounted on the boiler feed unit to conserve floor space or be furnished separately. Individually sized and separately controlled vacuum and water pumps permit maximum flexibility to meet the required design conditions. (See bulletin S160)

Series VCMD



MAKE-UP SUPPLY UNITS

Series WSC or WSS

Series WSC and WSS are water make-up supply units. Both units include a positive air-gap to eliminate the likelihood of backflow and possible contamination of city water supply. These units supply a detached, central, make-up supply reservoir for deaerators, boiler feed units, process loads, cooling systems and towers. The WSC unit has a cast iron receiver. The WSS has a fabricated steel receiver. A float switch operated solenoid make-up valve supplies water to the receiver through the air gap fitting. Available in either simplex or duplex configuration with Centriflo® pumps.

- Available in 3500 RPM (Series C35) and 1750 RPM (Series C17)
- Capacities to 600 GPM (37.8 l/s)
- Pressures to 100 psi (690 kPa)

Centrifugal Pumps

Series C35 & C17



Centriflo® Series C35™ or C17™

These pumps are the heart of Domestic Pump condensate-handling equipment. Designed for the rigorous demands of this service, Centriflo® pumps require a lower NPSH than conventional pumps. Vertical mounting of the pump saves floor space and gets the motor up above dirt and water. For more information see bulletin S410C. Standard features include:

- Cast iron, bronze fitted with stainless steel shaft
- Carbon/ceramic mechanical seals designed for 250°F (121°C)
- Available in 3500 RPM (Series C35) and 1750 RPM (Series C17)
- Capacities to 600 GPM (37.8 l/s)
- Pressures to 100 psi (690 kPa)

Series B35™ 2' NPSH

The original low NPSH pump, specifically designed for high temperature pumping. The axial flow propeller provides the necessary NPSH to the impeller, assuring cavitation free operation. For more information see bulletin S430. Standard features include:

- Rated for 210°F (99°C) condensate in vented heightless applications
- Cast iron, bronze fitted with stainless steel shaft
- Carbon/ceramic mechanical seals designed for 250°F (121°C)
- Capacities to 150 GPM (9.5 l/s)
- Pressures to 100 psi (690 kPa)

Series B35



Series HB35 & HB17



Series HB35™ & HB17™ 2' NPSH

End-suction pump with axial flow propeller for low NPSH applications. These are moderate pressure at high volume pumps. (See bulletin S430)

- Rated for 210°F (99°C) condensate in vented heightless applications
- Cast iron, bronze fitted with stainless steel shaft
- Carbon/ceramic mechanical seals designed for 250°F (121°C)
- Capacities to 350 GPM (9.5 l/s) 1750 RPM
- Pressures to 100 psi (690 kPa) 3500 RPM

Series DB



Series DB™ 2' NPSH

The DB is a close coupled pump with two centrifugal impellers back-to-back. Placement of the impellers balances the axial thrust and opposed discharges balance the radial thrust. The mechanical seal operates between the stages to prevent excessive wear. (See bulletin S431)

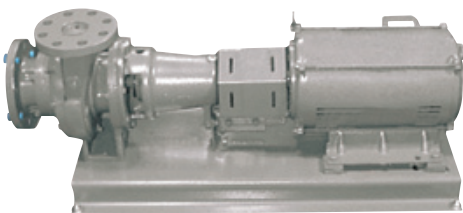
- Rated for 210°F (99°C) condensate in vented heightless applications
- Cast iron, bronze fitted with stainless steel shaft
- Carbon Tungsten Carbide mechanical seals designed for 250°F (121°C)
- Capacities to 350 GPM (9.5 l/s)
- Pressures to 250 psi (690 kPa)

Series DB-F™ 2'NPSH

Base mounted, back pull out design with flexible couple permits ease of service. Coupling shielded by a dual rated, ANSI B15.1, Section 8 and OSHA 191.219 compliant coupling guard and containing viewing windows for inspection of the coupling. This pump has two centrifugal impellers, back to back. Placement of the impellers balances the axial thrust and opposed discharges balances the radial thrust. The mechanical seal operates between the stages to prevent excessive wear. (See Bulletin S431)

- Rated for 210°F (99°C) condensate in vented heightless applications.
- Cast iron, bronze fitted pump with stainless steel pump shaft.
- Carbon Tungsten Carbide mechanical seals designed for 250°F (121°C)
- Capacities to 350 GPM (9.5 l/s)
- Pressures to 250 psi (690 kPa)

Series DB-F



State of the Art Facilities



Factory Testing

- All built-to-order products are tested as a complete unit to meet customer's duty-point.
- Electrical and mechanical components are adjusted and tested for trouble-free installation.
- Manufactured in an ISO 9001 certified, state of the art facility.



Little Red Schoolhouse®

A Leader Educating the Industry

ITT is known throughout the HVAC business as the industry's educator. Our Little Red Schoolhouse®, a completely equipped learning center, has trained more than 60,000 engineers, contractors and installers in the proper design, installation and maintenance of HVAC systems.



ITT offers the most complete line of products needed for steam systems. The line includes:

Domestic Pump and Hoffman Pump:

Provide the full line of condensate transfer equipment including condensate transfer units, boiler feed units, vacuum heating units, clinical vacuum units and low NPSH pumps.

Hoffman Specialty:

Offers a complete line of steam traps, regulators and accessories.

Bell & Gossett Heat Transfer:

Designs and manufactures an extensive line of heat exchangers for HVAC and industrial applications. Products include U-Tube, Straight Tube (with fixed or floating tube sheet), Brazed Plate and Gasketed Plate Heat Exchangers.



Condensate Transfer Units



Steam Traps



Heat Exchangers



Regulators



Engineered for life

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