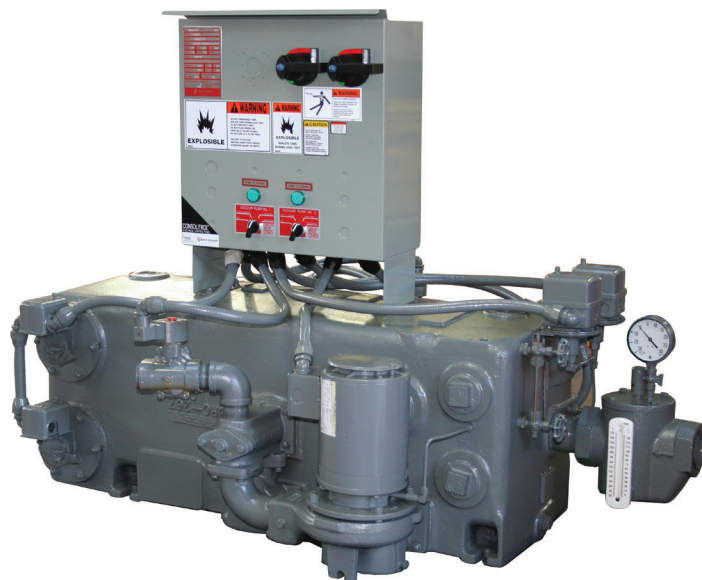
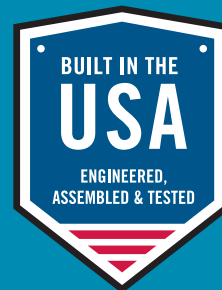


- Complete factory assembly includes integral wiring of control equipment - no hidden extra cost.
- Above atmospheric pressure on centrifugal pump suction with exceptionally low suction passage velocities provides best service for hot condensate.
- Long life at peak effectiveness prevents down-time losses and expensive maintenance.
- Vertical pump mounting protects motors - saves space.
- Domestic Multi-Jet Vacuum Producers are efficient for low or high vacuum systems.
- All vital parts, including the pump assembly, can be readily inspected without disturbing the piping.
- Bronze Fitted Pump - resists corrosion.
- Cast Iron Receiver warranted for 20 years from date of shipment against failure due to corrosion.



Domestic® Pump Series VLR™ Vacuum Heating Units

SIMPLEX OR DUPLEX 1,000 THRU 20,000 SQ. FT. EDR
250 THRU 5,000 LB/HR



Bell & Gossett
a xylem brand

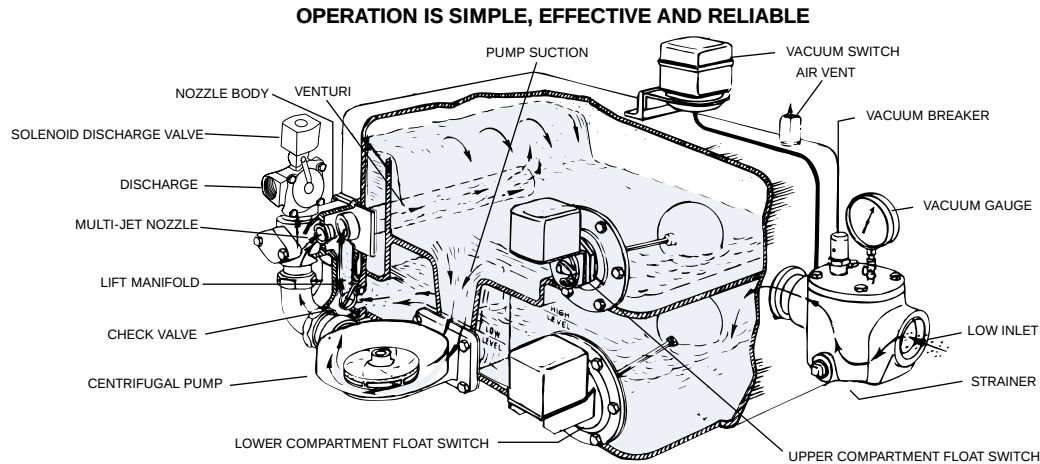
Domestic vacuum heating units promote fast, even distribution of steam throughout the system by providing sufficient pressure drop, even at low supply pressure.

The heart of the Domestic VLR vacuum unit is the dependable multi-jet vacuum producer. This proven device offers several important advantages:

- Removes air far in excess of rated air capacity at start of heating cycle. The resulting shorter warm-up period and operating cycle reduces fuel and power costs.
- Original efficiency continues for many years because there are no moving parts to wear or score. There are no close clear-

ance adjustments. The simple components can be readily serviced at the pump location.

- The air removal rate characteristically increases if air leakage into the system increases, promoting dependability of the entire system.
- Inherently quiet, vibration-free performance requires no air silencers, vibration dampeners or special foundations. Smooth, steady vacuum pumping action contributes to long system component life.



SIMPLEX UNIT SECTIONAL VIEW ILLUSTRATES CONDENSATE AND AIR FLOW THRU VLR UNITS

Domestic VLR units have a two compartment receiver which is divided horizontally. The lower compartment acts as an accumulator and is under the same vacuum as that maintained in the return piping. The upper compartment is used to separate the air from the condensate and must always be open to atmosphere. For initial starting the upper compartment must be half-filled with water as indicated in the gauge glass. With the line disconnect switch closed, the pump motor then operates in response to the float and vacuum switches, while the upper compartment float switch and the solenoid operated discharge valve controls the discharge of condensate.

Condensate and air entering the lower compartment thru the strainer actuates either the lower float switch or vacuum switch or both to start the pump motor. When the pump is operating, "hurling water" enters the pump suction from the upper compartment and is discharged thru an elbow into the forward part of the nozzle body, then thru the multi-jet nozzle and venturi and returned to the upper compartment. The water driving at high velocity across the gap between nozzle and venturi creates a smooth, steady vacuum which draws condensate, air and gases from the lower compartment and heating system thru the lift manifold and rear section of the nozzle body. This mixture is

entrained in the jet streams and discharged thru the venturi into the upper compartment of the receiver where the air and gases separate from the condensate and are vented.

As the condensate level rises in the upper compartment, it causes the upper compartment float switch to close. This energizes and opens the solenoid operated discharge valve allowing condensate to flow out of the discharge. The centrifugal pump then pumps condensate thru the discharge valve as well as thru the multi-jet nozzles. Thus the unit continues to remove air at the normal rate while discharging condensate. When the water level drops to a predetermined level, the float switch breaks contact deenergizing and closing the solenoid operated discharge valve. This configuration retains a volume of "hurling water" in the upper compartment even though the pump may continue operation as an air pump.

When the vacuum and float switches have been satisfied and the pump stops, the check valve in the lift manifold closes, preventing the return of air and water to the lower compartment. The purpose of the float switch in the upper compartment is to continue the operation of the pump or pumps to return the maximum amount of condensate each cycle, and to operate the solenoid discharge valve.

STANDARD UNIT FEATURES

- **Receiver** – Two compartment, close grained, cast iron construction with low inlet. Warranted for 20 years from date of shipment from failure due to corrosion.
- **Inlet strainer** – has vertical self-cleaning bronze screen with large dirt pocket.
- **Vertical pump & motor assembly** – Close-coupled and permanently aligned features bronze fitted construction with enclosed, bronze impeller and renewable bronze wearing ring. Oversized suction passages with low inlet velocities are specially designed for handling hot water.
- **Electric motors** – are vertically mounted drip-proof, ball bearing type. Standard voltages are: Three phase – 208V-230/460V or Single phase – 115/230V.
- **Multi-jet vacuum producer** – consists of a simple, yet efficient nozzle and venturi assembly. This sound design does not require close clearances or critical adjustments. Its proven

ability to retain original efficiencies eliminates the need for oversizing.

- **Gauges** – Vacuum Gauge, Gauge Glass and Angle Thermometer furnished with unit.
- **Float switches** – in both upper and lower compartments are double pole type, externally adjustable, operated by a stainless steel float, mounted on stainless steel rod.
- **Vacuum switch** – diaphragm type, double pole switch, with minimum differential of 4" Hg.
- **Solenoid operated discharge valve** – upper compartment float switch energizes valve to control discharge of condensate while retaining adequate "hurling water" for the air evacuation cycle.
- **Control panels** – See page 4 description of standard and optional panels and components.

SELECTION DATA DOMESTIC VLR VACUUM UNITS – SIMPLEX AND DUPLEX

STANDARD CAPACITY — Recommended for normal heating systems and especially for finned tube radiation.

CAPACITY SQ. FT. EDR (LB./HR)	RATING 5½" HG. VACUUM AT 160°F			DISCH. PRESS PSI (kPa) AT PUMP	MOTOR HORSEPOWER		SIMPLEX UNIT MODEL NO.	DOUBLE CAPACITY DUPLEX UNIT MODEL NO.
	WATER ONLY GPM¹ (L/M)	SIMULTANEOUS			RPM 3500	RPM 1750		
		WATER GPM² (L/M)	AIR CFM					
1,000 thru 5,000 (250 thru 1,250)	7.5 (28)	2.5 (9)	2.5	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	¾ 1 1½	 ¾ 1½	5VLR1-20-35 -20-17 -30-35 -30-17 -40-35	5VLR2-20-35 -20-17 -30-35 -30-17 -40-35
10,000 (2,500)	15 (57)	5 (19)	4	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	1 1½ 2	 1 1½	10VLR1-20-35 -20-17 -30-35 -30-17 -40-35	10VLR2-20-35 -20-17 -30-35 -30-17 -40-35
15,000 (3,750)	22.5 (85)	7.5 (28)	5.4	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	1 1½ 2	 1½ 2	15VLR1-20-35 -20-17 -30-35 -30-17 -40-35	15VLR2-20-35 -20-17 -30-35 -30-17 -40-35
20,000 (5,000)	30 (114)	10 (38)	6.8	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	1½ 2 3	 2 3	20VLR1-20-35 -20-17 -30-35 -30-17 -40-35	20VLR2-20-35 -20-17 -30-35 -30-17 -40-35

¹ Pump discharge – three times system condensing rate for ample safety factor.

² System condensing rate entering receiver corresponding to EDR listed.

SPECIAL CAPACITY — Recommended when greater air capacities and higher vacuums are necessary.

CAPACITY SQ. FT. EDR (LB./HR)	RATING 5½" HG. VACUUM AT 160°F			DISCH. PRESS PSI (kPa) AT PUMP	MOTOR HORSEPOWER		SIMPLEX UNIT MODEL NO.	DOUBLE CAPACITY DUPLEX UNIT MODEL NO.
	WATER ONLY GPM¹ (L/M)	SIMULTANEOUS			RPM 3500	RPM 1750		
		WATER GPM² (L/M)	AIR CFM					
1,000 thru 5,000 (250 thru 1,250)	7.5 (28)	7 (26)	3	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	¾ 1 1½	 ¾ 1½	5VLRS1-20-35 -20-17 -30-35 -30-17 -40-35	5VLRS2-20-35 -20-17 -30-35 -30-17 -40-35
10,000 (2,500)	15 (57)	14 (53)	6	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	1 1½ 2	 1½ 2	10VLRS1-20-35 -20-17 -30-35 -30-17 -40-35	10VLRS2-20-35 -20-17 -30-35 -30-17 -40-35
15,000 (3,750)	22.5 (85)	21 (79)	9	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	1½ 2 3	 2 3	15VLRS1-20-35 -20-17 -30-35 -30-17 -40-35	15VLRS2-20-35 -20-17 -30-35 -30-17 -40-35
20,000 (5,000)	30 (114)	28 (106)	11	20 (138) 20 (138) 30 (207) 30 (207) 40 (276)	2 3 3	 2 3	20VLRS1-20-35 -20-17 -30-35 -30-17 -40-35	20VLRS2-20-35 -20-17 -30-35 -30-17 -40-35

¹ Pump discharge – three times system condensing rate for ample safety factor.

Optional Features available:

- Combination Magnetic Starters with Fused Disconnect or Circuit Breaker
- Automatic Electric Alternation
- Control Circuit Transformers
- TEFC Motors and NEMA 4 Controls
- Accumulator Tanks for Low Return Line Heights
- For Systems requiring larger capacities Series VL™ Vacuum Heating Units are available.

Ordering Instructions:

Specify model no., phase and operating voltage. See page 4 for standard and optional controls.
Specified optional features to be supplied at extra cost.



NEMA 2 – U.L. LISTED PANELS ARE STANDARD

Consoliditrol Control Cabinets are available to comply with other NEMA or JIC specifications.

- Magnetic starters must be used on all 3 phase motors and single phase motors 3 HP and larger; **control panels with magnetic starters are furnished mounted and wired on the unit as standard, except for 1 phase up to 2 HP where not required.**
- Selector switches, “OFF – FLOAT & VACUUM – FLOAT ONLY – CONTINUOUS” selector switches are provided on duplex units with magnetic starters. All other units have “FLOAT & VACUUM – FLOAT ONLY – CONTINUOUS” selector levers on vacuum switches.

Description of Optional Panel Components:

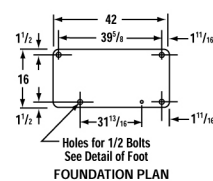
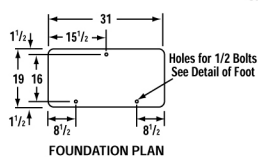
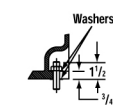
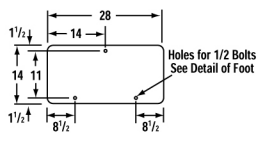
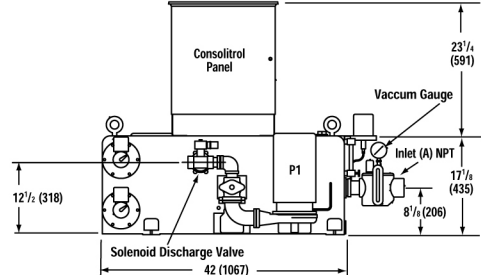
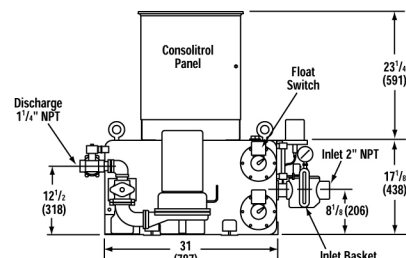
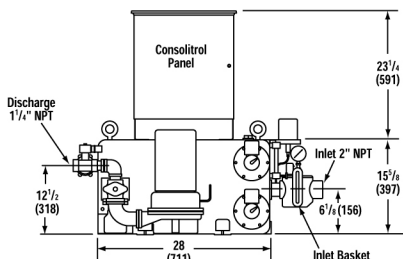
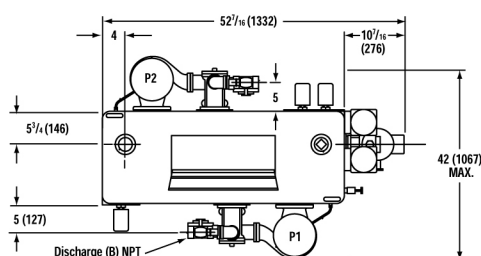
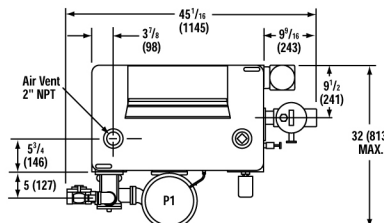
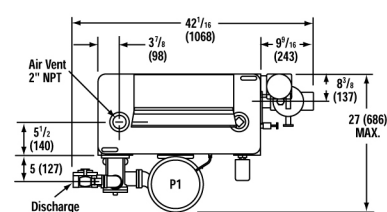
- Disconnect Switches and Circuit Breakers – either fuses or a circuit breaker is required ahead of the starters to protect against short circuits. A disconnect switch or circuit breaker also provides a means of shutting off power for service.
- Transformers are required to reduce control voltage when power supply exceeds 230 volts. Transformers are recommended when voltage exceeds 120 volts.
- Control power switching relay should be supplied in Duplex or Triplex units when individual pump disconnect switches are specified and a control power transformer is required. This relay is recommended in order to maintain control power in the event pump #1's disconnect switch is turned off or pump #1 fails. In this event the control power will be automatically supplied by pump #2.
- Specified optional panel components will be furnished with the unit at extra cost.

Roughing-in Dimensions

All dimensions in inches (mm)

Not to be used for installation – CERTIFIED DIMENSIONS ON REQUEST.

Actual Dimensions shown will vary upon pump selected.



SIMPLEX 23 Gal (87 L) RCVR
5000 EDR (125 lb/hr)

SIMPLEX 37 Gal (140 L) RCVR
10000 EDR (2500 lb/hr)
15000 EDR (3750 lb/hr)

	Inlet (A) NPT	Disch. (B) NPT
DUPLEX 43 Gal (163 L) RCVR		
5000 EDR (1250 lb/hr)	2	1.25
10000 EDR (2500 lb/hr)	2	1.25
15000 EDR (3750 lb/hr)	2	1.25
20000 EDR (5000 lb/hr)	2	1.50
SIMPLEX 43 Gal (163 L) RCVR		
20000 EDR (5000 lb/hr)	2.5	1.50

We value your feedback. Please take our 3 question survey at bellgossett.com/survey to let us know how we are doing.



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