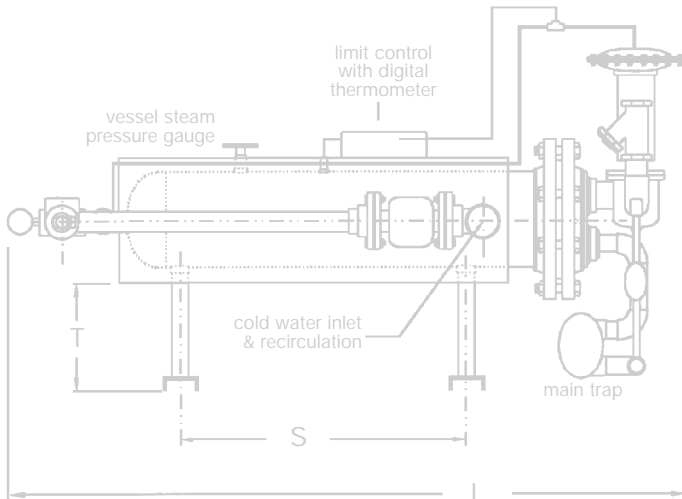
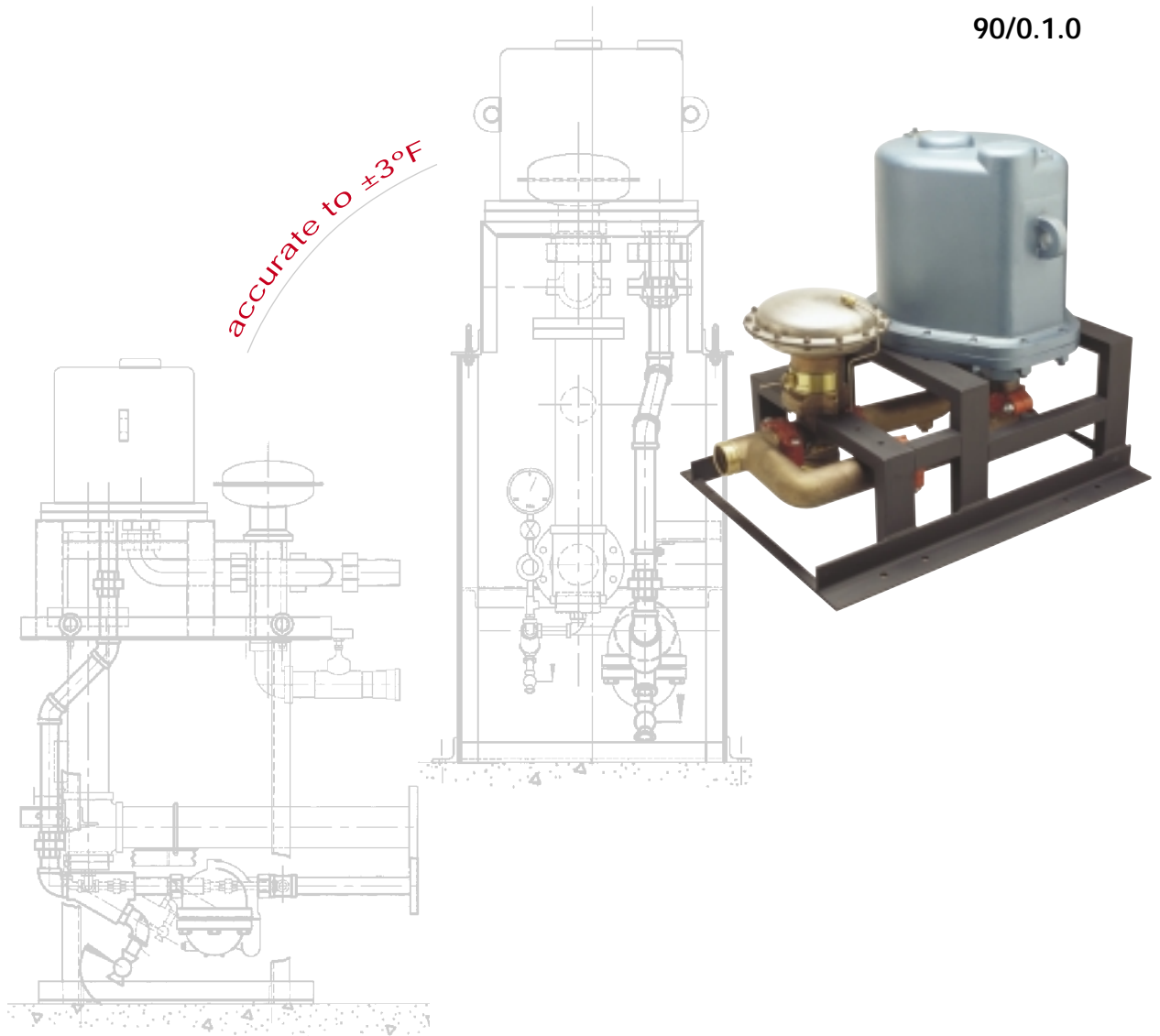


*accurate to  $\pm 3^{\circ}\text{F}$*



*water heated on demand*

# HEATER handbook

# ISO 9001 CERTIFIED

## *Product Support and Documentation*

The quality standards maintained by Leslie Controls are among the most rigorous in the industry. All Leslie valves are 100% tested utilizing calibrated equipment which conforms to the requirements of most quality specifications. Our Quality Assurance System has been certified to ISO 9001\*.

Every product we sell is supported by extensive technical data that provides all of the engineering and applications information required for making a proper selection. These detailed data sheets are provided upon request without cost or obligation.

In addition to the published material, our factory trained representatives are always willing to discuss your application. If the situation warrants, we will visit your site and survey your requirements.

Now, as always, throughout our century year old business history, we are committed to unconditional customer satisfaction. Our products carry clear warranty statements and we will never knowingly attempt to apply a product that is wrong for your application. If any dissatisfaction develops in the course of your dealings with Leslie Controls, *we will make things right.*

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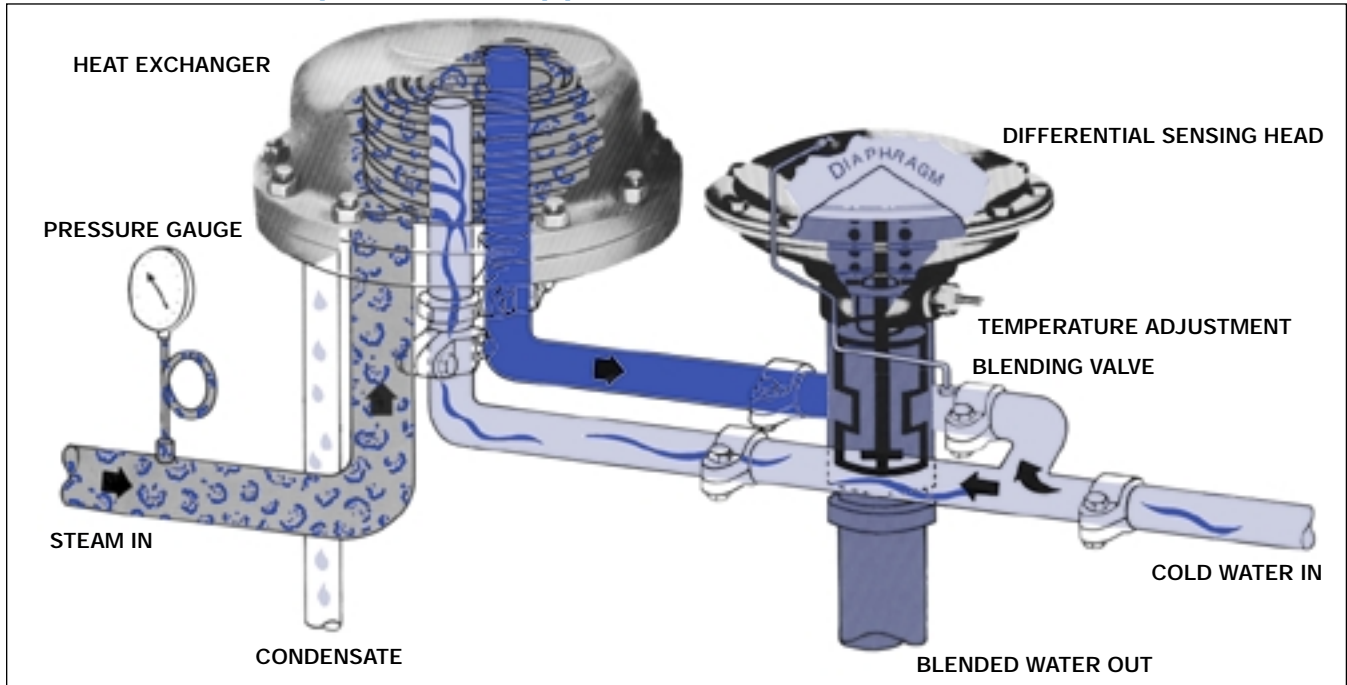
\* Assessed and certified by ABS Quality Evaluations, Inc., Houston, Texas

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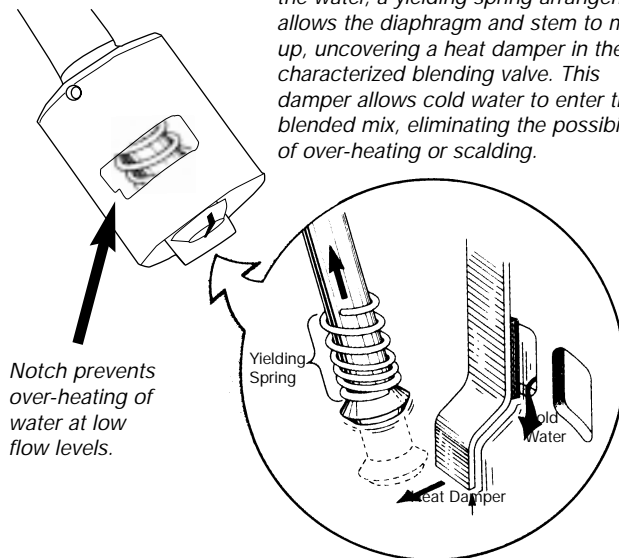
# CONSTANTEMP COMPACT PRE-PIPED DESIGN AND FEEDFORWARD OPERATION OFTEN IMITATED, BUT NEVER MATCHED

Constantemp for Most Applications - (Constant Steam Pressure)



## Two Innovations to Ensure Safety.

*Should movement of the blending valve be restricted by foreign matter carried in the water, a yielding spring arrangement allows the diaphragm and stem to move up, uncovering a heat damper in the characterized blending valve. This damper allows cold water to enter the blended mix, eliminating the possibility of over-heating or scalding.*



*Notch prevents over-heating of water at low flow levels.*

## WARRANTY

The heat exchanger shall carry an extended warranty in addition to the manufacturer's warranty as follows:

**COILS**—The heat exchanger coils shall carry an unconditional, non-prorated 10 year guarantee against failure due to thermal shock, mechanical failure or erosion.

**PRESSURE VESSEL**—The heat exchanger pressure vessel shall carry an unconditional, non-prorated 10 year guarantee against any failure.

All other parts of the package, such as blending valve, gauges and traps, etc. have the standard LESLIE warranty.

# CONSTANTEMP OPERATION

## FLOW DEMAND

The central component of the Constantemp steam-water heater is the feed forward blending valve that is activated by a differential pressure sensing head.

An impulse line to the top of the blender's differential sensing head comes from a connection to the cold water supply line. Blended water is sensed under the diaphragm through ports in the blending valve.

The proportioning action of the blending valve occurs as changes in the sensed pressure differential across the diaphragm are created by flow demand.

As demand for blended hot water increases, a drop in blended water pressure is sensed under the diaphragm. This pressure drop causes the stem in the blending valves to move downward, lining up the hot and cold water ports of the valve plug with the ports in the body of the blending valve.

This action automatically proportions the hot and cold water blend ratio to maintain the set temperature for all flow demands. Water is blended instantly... automatically, with virtually no lag in response to demand.

The blending valve plug (a piston or slider-type valve) moves down to open and is rotated during its

travel to perform the proportional blending of hot and cold water to the desired temperature. The rotation rate during the valve movement is set by the demand on the system.

Should movement of the blending valve be restricted by foreign matter carried by the water flow, a yielding spring arrangement allows the diaphragm and stem to move up, uncovering a "heat damper" in the characterized blending valve. This damper will allow more cold water to enter the blended mix, reducing the possibility of overheating or scalding.

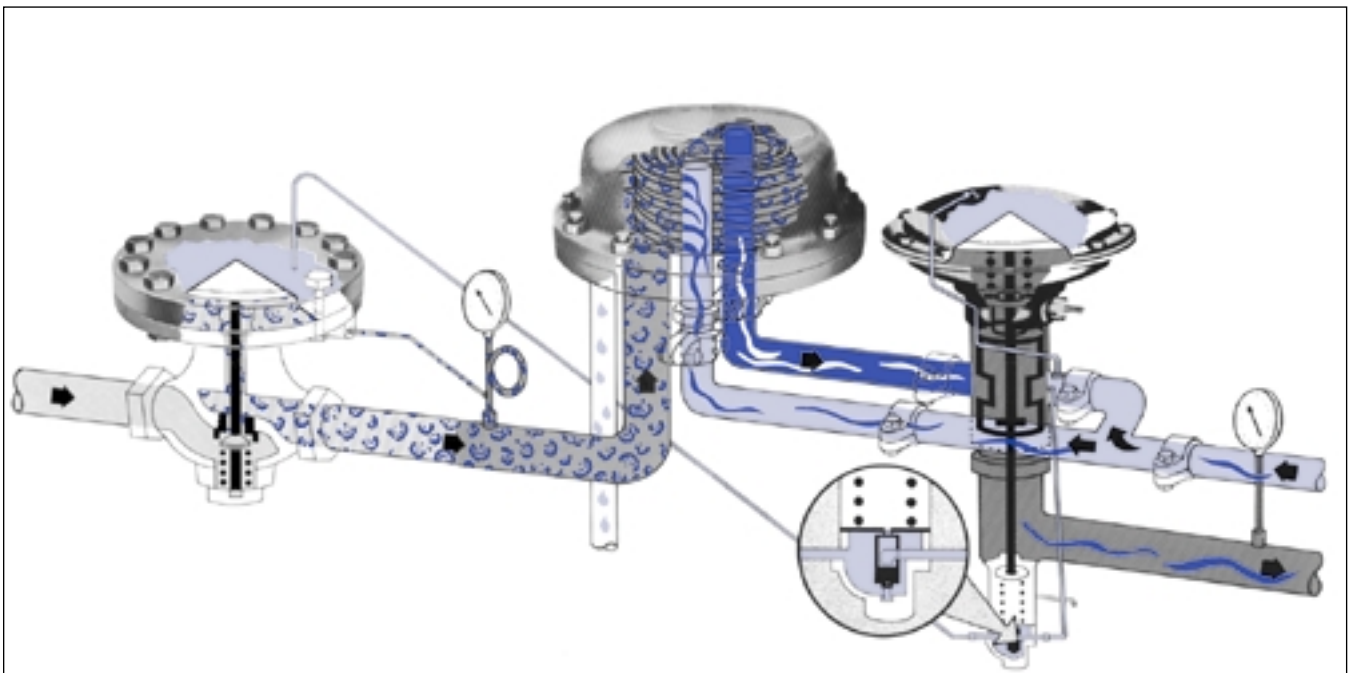
Temperature settings are easily made by using the adjusting rod located on the stem of the blending valve. A simple movement of the rod in one direction or the other allows outlet water temperature to be preset.

## PRE-PIPED SYSTEM

The Constantemp steam-water package is a completely pre-piped system with properly sized accessories supplied as part of the package.

Models operating with steam pressures above 15 psig are supplied with steam pressure reducing valve. All features are supplied with traps, strainers, steam pressure gauge and thermometer.

## Variable Steam Pressure Constantemp - for greater flows at maximum temperature rises



# CONSTANTEMP HEATER



## FEATURES

---

- Single or Double Wall Exchanger
- Accuracy  $\pm 3^{\circ}\text{F}$
- Feed-Forward Control
- Flows up to 120 GPM
- Adjustable Temperature 105-180 $^{\circ}\text{F}$
- No Storage Tank Required
- Built In Safety
- Heats Water Only on Demand
- Fits Through Standard Doorways
- High Turndown

## OPTIONS

---

- Skidded
- Recirculation Kit
- Automatic Descaler
- Insulated Cover
- Pressure Gradient Monitor

## MODELS

---

- L - Single Wall
- LDW - Double Wall

## APPLICATION DATA

---

- Hospital Patient & Domestic Hot Water
- University Dormitories
- Safety Shower Systems
- Industrial Shower Rooms
- Booster Heater
- Building Heat

## RATINGS

---

### Adjustable temperature range:

45-120 GPM: 105-180 $^{\circ}\text{F}$  (41-82 $^{\circ}\text{C}$ )  
15 and 30 GPM: 105-150 $^{\circ}\text{F}$  (41-65 $^{\circ}\text{C}$ )

**Steam pressure:** 2-250 PSIG (14-1725 kPa)  
over 15 (104 kPa), requires steam reducing valve

**Water pressure:** 150 PSI max. (1034 kPa)  
Option: 250 PSI max. (1723 kPa)(single wall only)

### Flow ranges:

Single Wall: 15, 30, 45, 60, 75, 90, 105, 120 GPM  
(57, 114, 170, 227, 284, 341, 397, 454 L/min)

Double Wall: 30, 60, 90, 120 GPM (114, 227, 341,  
454 L/min)

SIZING INFORMATION  
GENERAL PAGE 22  
CONSTANTEMP PAGE 26

# CONSTANTEMP HEATER

## SPECIFICATIONS

Leslie Constantemp \_\_\_\_\_ \* low pressure steam water heater, for use on 2-15\*\* psig steam consisting of an integrally piped (single wall) (double wall) heat exchanger, mounted on a heavy-duty angle iron frame. Heater control package shall be capable of supplying \_\_\_\_\_ GPM of hot water when heated from \_\_\_\_\_°F to \_\_\_\_\_°F without the use of thermostatic control devices or storage tanks. Heater shall be capable of maintaining  $\pm 3^{\circ}\text{F}$  over a flow range of a few percent to 100%. The water shall flow through the tubes and steam in the shell. If recirculation is required, the heater shall be equipped with a recirculation system with a non-adjustable valve to set the recirculation temperature. The recirculation system shall be integrally mounted and shall not alter the overall dimensions of the heater. The overall dimensions shall not exceed \_\_\_\_\_.\*\*\* The unit shall provide connections in the manifolds to measure pressures and temperatures.

## MATERIALS OF CONSTRUCTION

Exchanger: Ductile Iron (single wall only)(75psi) (517 kPa)  
 Cast Steel .....(150 psi) (1034 kPa)  
 (ASME SEC. VIII div. 1)

Blending Valve

Body: .....Bronze

Plug: .....Hastalloy

Coils: Standard .....Copper

Optional - Single Wall: .....Admiralty, Cupro-nickel,  
 StainlessSteel

\* Insert model number from chart.

\*\* For higher steam pressure use a pressure regulator to reduce pressure to 15 psi.

\*\*\* Insert dimensions from chart.

Piping Connections inches (mm)

Model	CW Inlet	HW Outlet	Steam in	Condensate out
E-1500L & E-300L	1½ (38)	2 (50)	3 (76)	1¼ (32)
F-340LDW	1½ (38)	2 (50)	3 (76)	1½ (38)
E-4500L & E-600L	1½ (38)	2 (50)	4 (102)	2 (50)
F-640LDW	1½ (38)	2 (50)	4 (102)	1½ (38)
E-7500L† & E-900L† E-10500L† & E-1200L†	2½ (64)	2½ (64)	4 (102)	1½ (38)
F-940LDW & F-1240LDW	2½ (64)	2½ (64)	4 (102)	2 (50)

† Steam inlet is flanged.

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Series/Model	Width	Length	Height	Weight*
1500L & 300L	22½ (571.5)	31½ (800.1)	24 (609.6)	270 (122.5)
340 LDW	13¾ (350)	140 (3556)	18¾ (475)	600 (272)
4500L & 600L	22½ (571.5)	31½ (800.1)	27 (685.8)	360 (163.3)
640 LDW	13¾ (350)	141 (3581)	22 (559)	825 (374)
7500L & 900L	24 (609.6)	29½ (749.3)	31 (787.4)	600 (272.2)
940LDW	13¾ (350)	119 (3023)	13¾ (591)	1250 (567)
10500L & 1200L	27¾ (706.1)	34¾ (873.1)	31 (787.4)	720 (326.6)
1240LDW	13¾ (350)	142¾ (3626)	23¾ (591)	1375 (624)

\* Excluding traps, stainers, etc.

# CONSTANTEMP VARIABLE PRESSURE HEATER



## APPLICATION DATA

---

- High temperature washdowns
- Dishwashers

## RATINGS

---

### Adjustable temperature range:

105-180°F (41 - 82°C)

**Steam pressure:** 15-250 PSIG (103.5 - 1724.5 kPa)

**Water pressure:** 150 PSI maximum (1034 kPa)

Option: 250 PSI maximum (1723 kPa)

**Flow ranges:** 15, 30, 45, 60 GPM  
(57, 114, 170, 227 L/min)

## FEATURES

---

- Accuracy  $\pm 3^\circ\text{F}$
- Feed-Forward control
- Greater flows at high temperature rises
- Flows up to 60 GPM
- Adjustable temperature 105-180°F
- No storage tank
- Built in safety
- Heats water only on demand
- High turndown
- Fits through standard doorway

## OPTIONS

---

- Skidded
- Recirculation Kit
- Automatic Descaler
- Insulated Cover
- Pressure Gradient Monitor

SIZING INFORMATION  
GENERAL PAGE 22  
VARIABLE PRESSURE PAGE 30



# CONSTANTEMP VARIABLE PRESSURE HEATER

## SPECIFICATIONS

Leslie Constantemp \_\_\_\_\_\* variable steam pressure water heater, for use on 15-250 psig steam, consisting of an integrally piped heat exchange, mounted on a heavy duty angle iron frame, heater control package capable of supplying \_\_\_\_\_\* GPM of hot water when heated from \_\_\_\_\_ °F to \_\_\_\_\_ °F without the use of thermostatic control devices or storage tanks. Heaters shall be capable of maintaining the  $\pm 3^{\circ}\text{F}$  over a flow of a few percent of 100%. The water shall flow through the tubes and steam in the shell. Steam pressure to the exchanger shall be controlled by a water loading valve on the blending valve. If recirculation is required the heater shall be equipped with an integral recirculation system with an adjustable valve to set the recirculation temperature. The recirculation system shall be integrally mounted and shall not alter the overall dimensions of the heater. The overall dimensions shall not exceed \_\_\_\_\_\*\*. The unit shall include connections in the manifolds to measure pressures and temperatures.

## MATERIALS OF CONSTRUCTION

Exchanger: Ductile Iron .....(75 psi) (517 kPa)  
 Cast Steel .....(150 psi) (1034 kPa)  
 (ASME SEC. VIII div. 1)

Blending Valve:

Body: .....Bronze

Plug: .....Hastalloy

Coils: Standard .....Copper

\* Insert model number from chart.

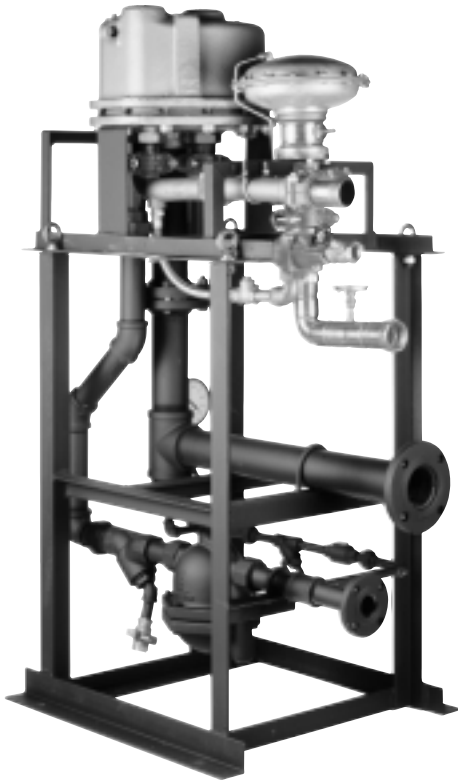
\*\* Insert dimensions from chart.

Piping Connections inches (mm)				
Model	CW Inlet	HW Outlet	Steam in	Condensate out
E-1500	1½ (38)	2 (50)	3 (76)	1¼ (32)
E-300	1½ (38)	2 (50)	3 (76)	1¼ (32)
E-4500	2 (50)	2 (50)	4 (102)	2 (50)
E-600	2 (50)	2 (50)	4 (102)	2 (50)

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)				
Model	Width	Length	Height	Weight*
1500 Series	22.5 (571.5)	31.5 (800.1)	24 (609.6)	270 (122.5)
300 Series	22.5 (571.5)	31.5 (800.1)	24 (609.6)	270 (122.5)
4500 Series	22.5 (571.5)	31.5 (800.1)	27 (685.8)	360 (163.3)
600 Series	22.5 (571.5)	31.5 (800.1)	27 (685.8)	360 (163.3)

\*Excluding traps, strainer, etc.

# CONSTANTEMP SKID MOUNTED HEATER



E-600L SKIDDED STEAM WATER HEATING SYSTEM

## APPLICATION DATA

---

- See individual heaters

## RATINGS

---

See individual heaters

SIZING INFORMATION  
SEE INDIVIDUAL HEATERS

## FEATURES

---

- Save Time
- Save Manpower
- Feed-forward control
- Economical
- Completely assembled
- Only 4 connections required
  - Steam
  - Cold water
  - Hot water
  - Condensate
- 100% Leslie components
- 100% Leslie assembly
- 100% pressure tested

## OPTIONS

---

- Recirculation Package
- Recirculation Pump
- Steam Reducing Valve
- Pressure Assisted Condensate Pump
- Pressure Gradient Monitor

# CONSTANTEMP SKID MOUNTED HEATER

## SPECIFICATIONS

Constantemp heater to be mounted on a skid with all traps, strainers, pressure and temperatures gauges all fully assembled and piped. Complete package to be pressure tested for leaks.

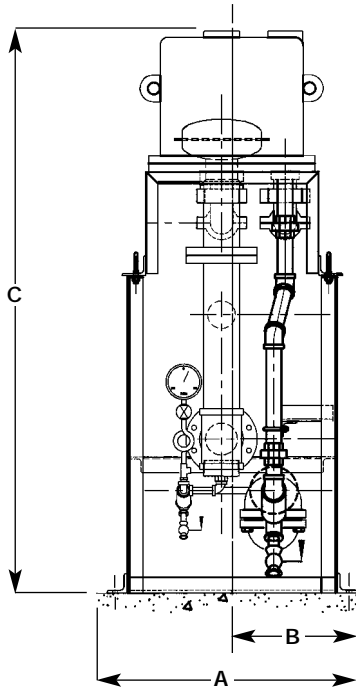
Unit to be assembled so that is sufficient room between heat exchanger and traps for proper operation.

Customer shall only need to hook up steam, cold water in, hot water out and condensate.

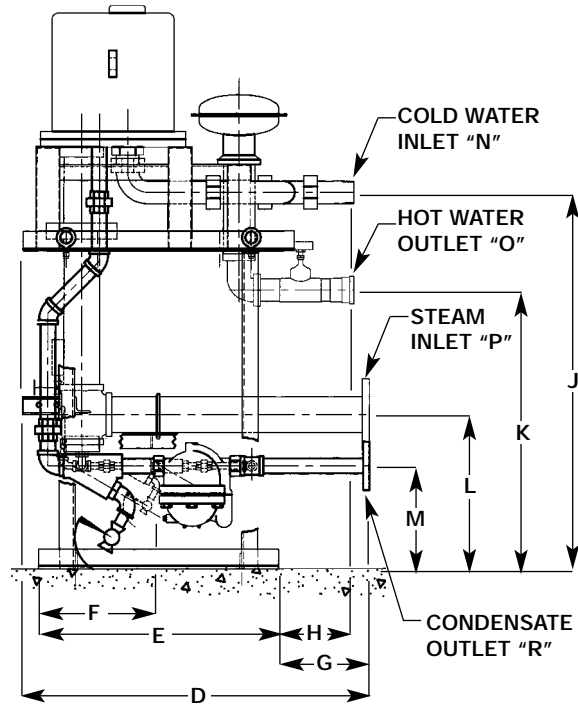
## MATERIALS OF CONSTRUCTION

Heater: .....See Individual Heater

Skid: .....2½ x 2½ x ¼ Angle Iron



FRONT ELEVATION



END ELEVATION

### DIMENSIONS inches (mm)

Model	A	B	C	D	E	F	G	H	J	K	L	M		
E1500L/E300L	28¼ (718)	14⅞ (359)	55½ (1410)	37½ (953)	30½ (775)	15¼ (387)	6⅞ (162)	4¼ (108)	45⅛ (1167)	34⅞ (879)	22½ (572)	12 (305)	22.5 (559)	12 (305)
E4500L/E600L	28¼ (718)	14⅞ (359)	58¼ (1480)	39⅞ (1006)	30½ (775)	15¼ (387)	8½ (216)	4⅞ (111)	46⅞ (1188)	35¼ (895)	22¼ (565)	13¼ (349)	22¼ (565)	13¼ (349)
E7500L/E900L	28¼ (718)	14¼ (359)	68¼ (1734)	42⅞ (1083)	30½ (775)	15¼ (387)	11½ (292)	4¼ (121)	47⅞ (1210)	35¼ (895)	19 (483)	11 (279)	19 (483)	11 (279)
E10500L/E1200L	31½ (800)	15¼ (387)	68¼ (1734)	44 (1118)	30½ (775)	15¼ (387)	11½ (292)	9½ (241)	47⅞ (1210)	35¼ (895)	19 (483)	11 (279)	19 (483)	11 (279)

End Connection	E1500L/300L	E4500L/600L	E7500L/900L	E1050L/1200L
"N" Cold Water Inlet	1½ MNPT	2 MNPT	2½ MNPT	2½ MNPT
"O" Hot Water Outlet	2 FNPT	2 FNPT	2½ FNPT	2½ FNPT
"P" Steam Inlet	3 150# Fig. RF	3 150# Fig. RF	4 150# Fig. RF	4 150# Fig. RF
"R" Condensate Outlet	1 150# Fig. RF	1½ 150# Fig. RF	1½ 150# Fig. RF	1½ 150# Fig. RF

Dimensions are approximate and may vary slightly then shown. All dimensions are in inches. Standard tolerance for location of all pipe connections and envelope dimensions is plus or minus 1/2".

# CONSTANTCOIL™ HEAT EXCHANGERS



## APPLICATION DATA

---

- Process Heating
- Sanitation
- Process Booster Heater
- High temperature washdowns

## RATINGS

---

**Exchanger:** 75psi rating - Ductile Iron  
150psi rating - Cast Steel

**Size:** 15, 30, 45, 60, 75, 90, 105 & 120 gpm

**Liquid pressure:** 150 PSI maximum  
Option: 250 PSI maximum (1732 kPa)

## FEATURES

---

- Helical Coil
- Compact
- Efficient
- Single Source System
- 100% Leslie assembly
- Ductile Iron or Steel Shell
- Four choices of coil material

## OPTIONS

---

- A.S.M.E. Stamp
- Electronic De-scaling
- Insulated Covers
- Steam Pressure Reducing Valves

SIZING INFORMATION  
SEE PAGE 33

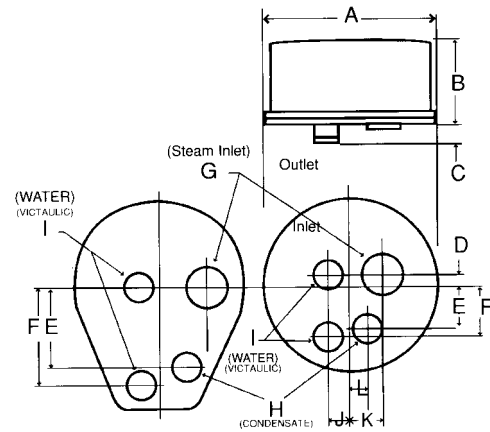
# CONSTANTCOIL™ HEAT EXCHANGERS

## SPECIFICATIONS

The Leslie ConstantCoil is a compact, highly efficient, steam/liquid instantaneous heat exchanger, offering maximum heat exchange surface in a minimum amount of space.

ConstantCoil heat exchangers are basically a shell and a tube type with steam in the shell and liquid in the tubes.

ConstantCoil compactness and energy efficiency are derived from the spiral wound copper tubes which provide a huge heat transfer area in a very small package.



## MATERIALS OF CONSTRUCTION

Coil: Standard .....Copper  
 Optional ....Admiralty, Cupro-nickel, Stainless Steel  
 Shell: .....Ductile Iron, Carbon Steel  
 (ASME SEC. VIII div. 1)  
 Water Connections: Standard .....Victaulic  
 Optional.....Threaded (NPT)

### DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

MODEL	A	B	C	D	E	F	G	H	I	J	K	L	WGT.
1500, 300	15½ (394)	7 (178)	2½ (59)	1½ (21)	3½ (97)	4½ (116)	3 (76)	1¼ (32)	1¼ (32)	1½ (24)	2½ (70)	1½ (40)	122 (55)
4500, 600	17½ (454)	10½ (270)	1½ (46)	—	5½ (130)	6½ (175)	3 (76)	2 (51)	2 (51)	1½ (37)	3½ (86)	2½ (60)	198 (90)
7500, 900	17½ (454)	18½ (460)	1½ (46)	—	5½ (140)	6½ (175)	4 (102)	1½ (38)	2 (51)	1½ (37)	3½ (86)	1½ (40)	325 (147)
10500, 1200	18½ (470)	18½ (470)	3½ (78)	—	8 (203)	8 (203)	4 (102)	1½ (38)	2½ (64)	1½ (46)	4 (102)	1½ (46)	397 (180)

# LES PACKAGED WATER HEATER



## FEATURES

---

- Compact size
- Flows to 330 GPM
- Steam or HTHW as heating source
- SS tank
- $\pm 5^{\circ}\text{F}$  accuracy
- Industrial quality steam control valve
- Coil can be removed without disturbing heater

## OPTIONS

---

- Double wall coils
- Vacuum breaker
- 235 MAWP pressure rating

## APPLICATION DATA

---

- Hospital patient and domestic hot water
- Industrial shower rooms
- Building heat
- University dormitories

## RATINGS

---

**Shell:** 150 psi

**Tubes:** 150 psi

SIZING INFORMATION  
SEE PAGE 34

# LES PACKAGED WATER HEATER

## SPECIFICATIONS

For specifying a LES Series Steam-Fired Water Heater, select the model(s) from the charts provided and use the specifications covered below. Contact your local Leslie representative or consult the factory.

Heater shall be Leslie Series "LES" factory assembled and packaged, rated to heat specified GPM of water from \_\_\_\_ to \_\_\_\_ °F, temperature rise and control the outlet within  $\pm 5^{\circ}\text{F}$  of the selected temperature when supplied with \_\_\_\_ psig saturated steam before the control valve. The packaged water heater shall be constructed with a 316L Stainless Steel tank, with Stainless Steel threaded openings, copper coil, 1/2" tubes, copper lined tube sheet and fabricated steel steam chamber.

Heater shall be mounted on a steel support skid and shall have lifting lugs. Heater shall be foam insulated and protected by an enameled metal jacket, 20 gauge minimum thickness. Heater shall be factory assembled and piped including:

Steam Units - Incoming steam strainer, pneumatic control valve, main and auxiliary float and thermostatic steam traps.

Coil shall be baffled and shall have an integral bronze valve circulator with shut off valves to circulate the water across the coil.

Heater shall be furnished with A.S.M.E. pressure-temperature relief valve of sufficient size to relieve total BTU input of the coil, water thermometer, water pressure gauge and steam pressure gauge.

For Vertical - Heater shall be Leslie Controls, Inc. Model V \_\_\_\_ LES \_\_\_\_

For Horizontal - Heater shall be Leslie Controls, Inc. Model H \_\_\_\_ LES \_\_\_\_

## MATERIALS OF CONSTRUCTION

Coil: Standard .....Copper  
Optional .....Cupro-nickel, Stainless Steel  
Shell: .....316 L SS  
Piping: .....Copper  
Circulating Pump: .....Bronze

## BASIC LES PACKAGE COMPONENTS:

Compact size  
A.S.M.E. Code constructed National Board registered storage tank  
Pressure Rating 150 psig (10 bar)  
316-L Stainless steel tanks  
316-L Stainless steel threaded connections  
2" (5 cm) Foam insulation  
20 Gauge steel jacket with hammertone enamel paint  
Structural steel base  
A.S.M.E. relief valve-pressure and temperature  
Digital thermometer  
Water pressure gauge  
Drain Valve  
Copper U-Bend heating coil, rolled into copper lined tube sheet  
Integral bronze circulator  
High temperature cutoff  
Double safety solenoid system

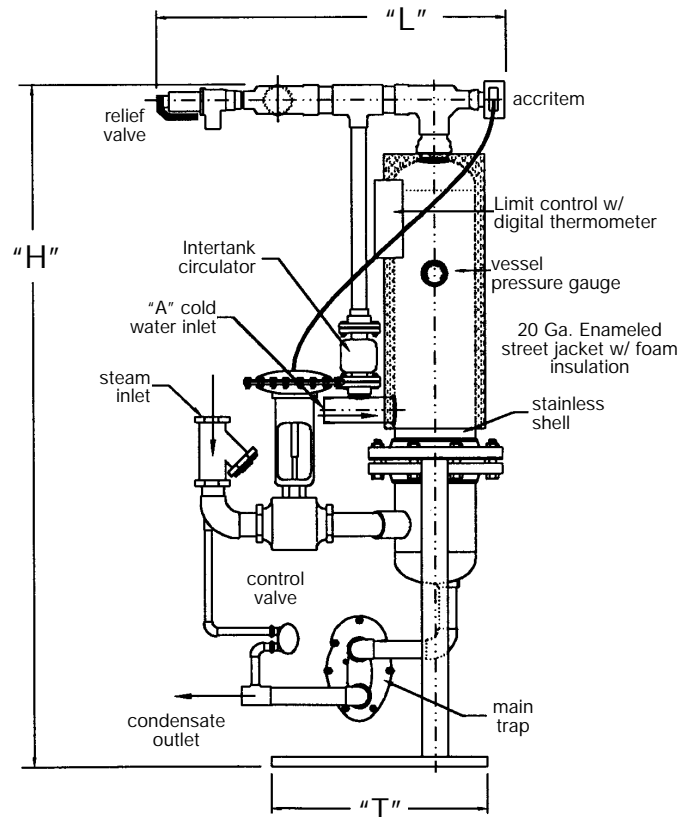
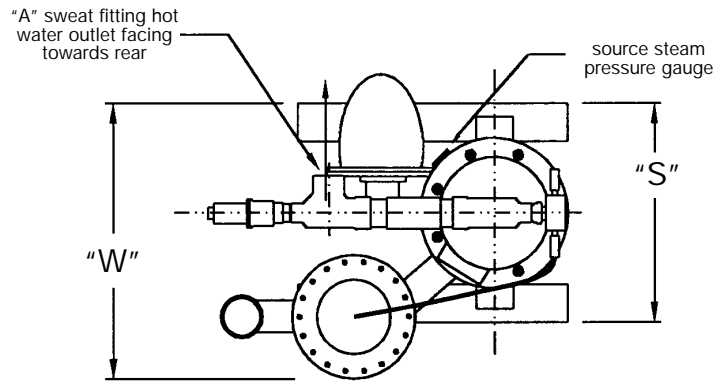
## STANDARD STEAM PACKAGE COMPONENTS:

Steam temperature control valve  
Steam traps-main inlet and auxiliary  
Steam stainer, inlet  
Steam pressure gauge

## STANDARD BOILER WATER/HIGH TEMPERATURE HOT WATER PACKAGE COMPONENTS:

Boiler water control valve (Two way or three way)  
Boiler water temperature gauge  
High temperature hot water units with 90:10 CuNi tubing.  
400 psi (27 bar) maximum pressure

# LES PACKAGED WATER HEATER DIMENSIONS - VERTICAL

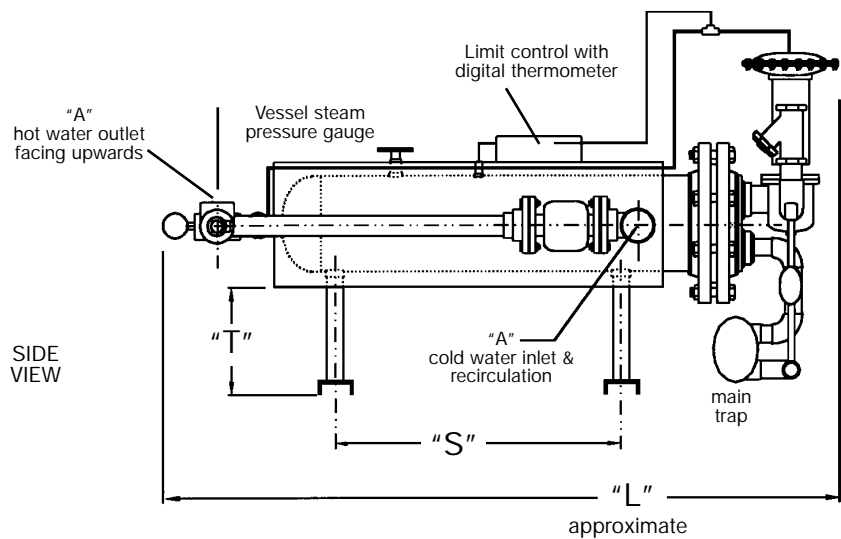
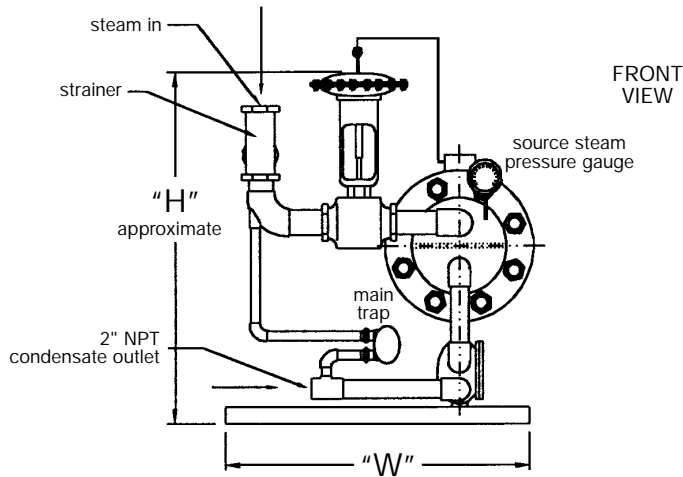


**VERTICAL CONFIGURATION DIMENSIONS** inches (mm)

Model #	H	L	W	S	T	A
V6LES624	62 (1575)	20 (508)	24 (610)	18¾ (476)	24 (610)	2 (51)
V8LES820	74 (1880)	24 (610)	25 (635)	21¼ (540)	30 (762)	2½ (64)
V8LES830	74 (1880)	24 (610)	25 (635)	21¼ (540)	30 (762)	2½ (64)
V10LES1030	74 (1880)	28 (711)	29 (737)	23¾ (603)	32 (813)	2½ (64)
V10LES1036	86 (2184)	30 (762)	29 (737)	23¾ (603)	32 (813)	3 (76)
V12LES1236	86 (2184)	32 (813)	32 (813)	26¾ (679)	34 (864)	3 (76)
V12LES1242	100 (2540)	34 (864)	32 (813)	26¾ (679)	34 (864)	3 (76)
V14LES1442	100 (2540)	34 (864)	34 (864)	28¾ (730)	36 (914)	4 - 150# flange (102)



# LES PACKAGED WATER HEATER DIMENSIONS - HORIZONTAL



**HORIZONTAL CONFIGURATION DIMENSIONS** inches (mm)

Model #	H	L	W	S	T	A
H6LES624	38 (965)	50 (1270)	25 (635)	14 (356)	15 (381)	2 (51)
H8LES820	40 (1016)	56 (1422)	29 (737)	17½ (445)	15 (381)	2½ (64)
H8LES830	40 (1016)	56 (1422)	29 (737)	17½ (445)	15 (381)	2½ (64)
H10LES1030	42 (1067)	56 (1422)	29 (737)	17 (432)	15 (381)	2½ (64)
H10LES1036	42 (1067)	62 (1575)	29 (737)	23 (584)	15 (381)	3 (76)
H12LES1236	48 (1219)	62 (1575)	31 (787)	23 (584)	15 (381)	3 (76)
H12LES1242	48 (1219)	68 (1727)	31 (787)	28¾ (730)	15 (381)	3 (76)
H14LES1442	54 (1372)	68 (1727)	35 (889)	26¾ (676)	15 (381)	4 - 150# flange (102)

# UNFIRED STEAM GENERATORS



## APPLICATION DATA

- Clean steam
- Humidification
- Sterilization
- Food processing
- Parts cleaning

## RATINGS

**Steam pressure:** 0- 125 psi (8.6 bar) steam

**Steam flow:** 0 - 20,000 #/hr of steam

**Source steam:** 10-125 PSI (.7-8.6 bar)

**Source hot water:** 250-500°F (121-260 bar)

SIZING INFORMATION  
CONSULT FACTORY

## FEATURES

- Steam or high temperature water as energy source
- Stainless steel or carbon steel construction
- A.S.M.E. code constructed
- Horizontal or vertical construction

## OPTIONS

- Vacuum Breaker
- Bell
- Control
- Centrifugal Boiler Blow Off/Condensate Cooler (CBO)
- High Water Cut Off
- Make-up Water Feeding options
- Solenoid Valve
- Feed Water Pump
- Automatic Blowdown Options
- Automatic Blowdown - Time Method
- Automatic Blowdown - Total Dissolved Solids Method

The Leslie unfired steam generators are designed to produce clean steam with steam or high temperature hot water as an energy source.

# UNFIRED STEAM GENERATORS

## SPECIFICATIONS

Unfired Steam Generator shall be as manufactured by Leslie Controls, Tampa, FL.

Unfired Steam Generator shall be furnished as a complete package ready for installation.

Unfired Steam Generator shall be ASME Code constructed and stamped in accordance with Section VIII, Division I, for Unfired Steam Generators. Unfired Steam Generators shall be registered with the National Board of Boiler and Pressure Vessel Inspectors, and signed copy of shop inspection report shall be furnished. Unfired Steam Generator shall be built in accordance with Section VIII "Unfired Steam Generators" and shall bear the "UB" stamp.

Unfired Steam Generator and all components subject to steam side shall be (316-L grade stainless) (carbon) steel.

Unfired Steam Generator shall be insulated with not less than 3" of Fiberglass insulation, protected by not less than 20 ga. thick enameled steel jacket.

Unfired Steam Generator shall be mounted on a suitable I-Beam support skid, which shall be permanently welded to the shell.

Unfired Steam Generator shall have submerged coil of (16) (18) (20) BWG (copper) (90:10 Copper-Nickel) ((316) (304) stainless steel tubes) expanded into a (steel) ((316) (304) stainless steel) tube sheet with cast iron heads.

Unfired Steam Generator shall be furnished with ASME Code Section I pressure relief valve or valves with a capacity to relieve the total BTU of output of the generator.

All components for the Unfired Steam Generator shall be factory mounted, piped, and tested and the unit shall be shipped from the factory as a complete unit ready for installation. Unfired Steam Generator shall be furnished with a steam separator.

## MATERIALS OF CONSTRUCTION

Tubes: .....Copper, 90:10 Copper-nickel,  
304 or 316 Stainless Steel

Coil Head: .....Cast Iron, or Carbon Steel

Level Control: .....Cast Iron or Stainless Steel

## ADDITIONAL SPECIFICATIONS FOR HIGH TEMPERATURE HOT WATER AS ENERGY SOURCE

Unfired Steam Generator shall be furnished with an (air) (electronic) operated (2) (3) - way control valve to modulate the in-coming HTHW to maintain the desired output of steam pressure  $\pm 2$  psi. Control valve shall be suitable for 400 psi at 400°F. Control valve pilot shall monitor output steam pressure and modulate the HTHW to maintain constant output pressure.

Unfired Steam Generator shall be furnished with a vessel steam gauge, thermometer to monitor the incoming HTHW temperature. Unfired Steam Generator shall be furnished with (electronic)(float type) level controller. Water column shall also be furnished with gauge glass.

Unfired Steam Generator shall be furnished with tandem blow off valves.

Unfired Steam Generator shall be Leslie Model \_\_\_\_\_, designed with an output of \_\_\_\_\_ pound per hour at \_\_\_\_\_ psi pressure and feed water of \_\_\_\_\_ °F. when supplied with \_\_\_\_\_ GPM of \_\_\_\_\_ °F boiler water.

## ADDITIONAL SPECIFICATIONS FOR STEAM AS ENERGY SOURCE

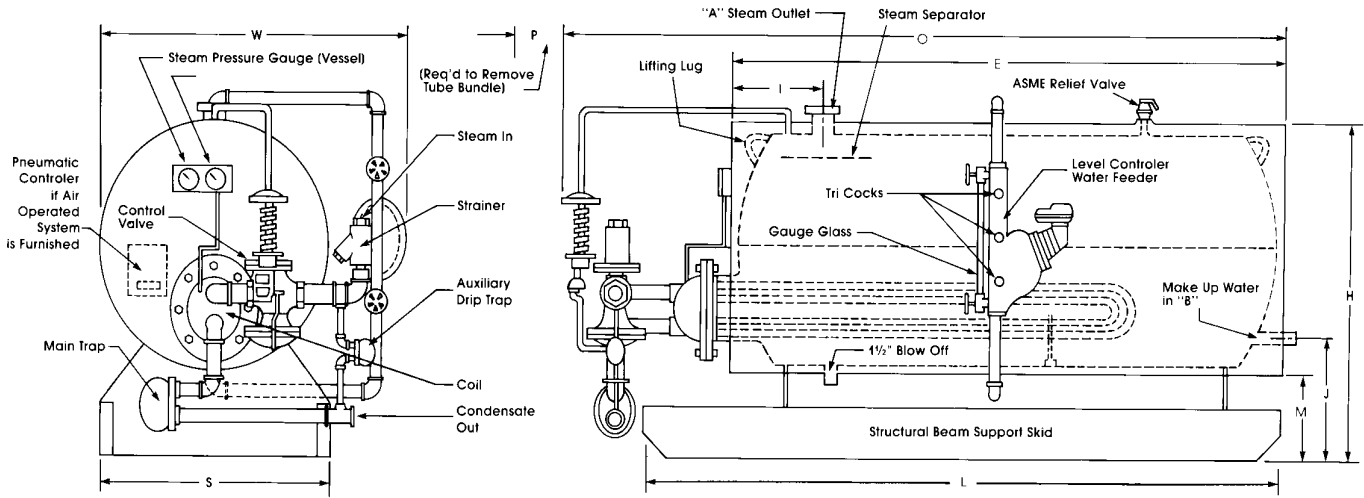
Unfired Steam Generator shall be furnished with an (air) (pilot) (electric) operated control valve to modulate the in-coming steam to maintain the desired output of steam pressure  $\pm 2$  psi. Control valve shall be suitable for 150 psi. Control valve pilot shall monitor output steam pressure and modulate the steam to maintain constant output pressure.

Unfired Steam Generator shall be factory supplied with dual float and thermostatic traps, one for the coil and one for the drip before the control valve. Unfired Steam Generator shall have incoming strainer.

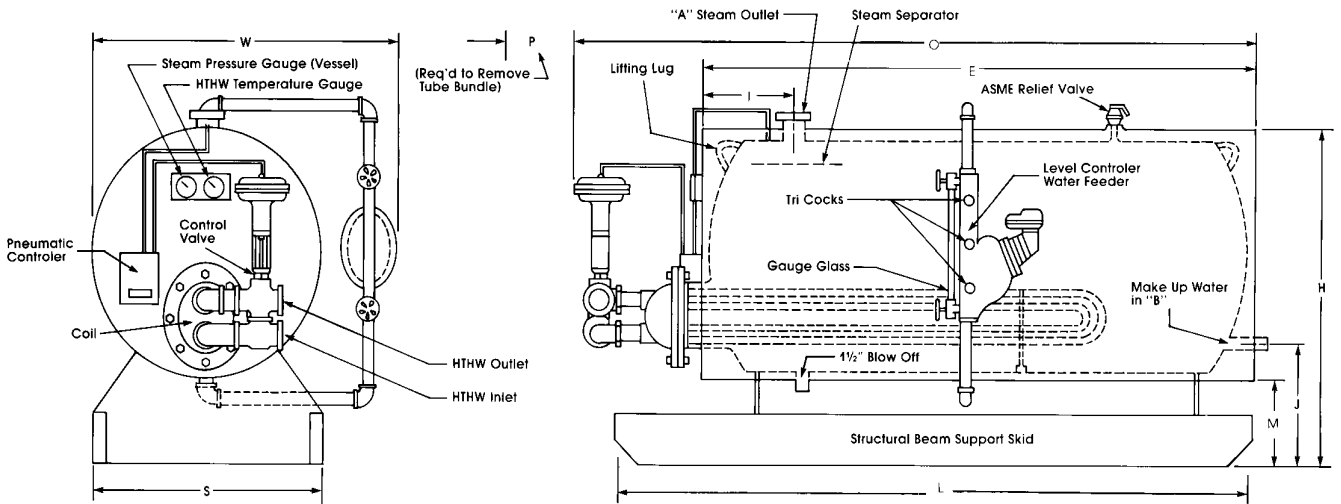
Unfired Steam Generator shall be furnished with a vessel steam gauge. Unfired Steam Generator shall be furnished with electronic level controller. Water column shall also be furnished with gauge glass. Unfired Steam Generator shall be furnished with tandem blow off valves.

Unfired Steam Generator shall be Leslie Model \_\_\_\_\_, designed with an output of \_\_\_\_\_ pounds per hour at \_\_\_\_\_psi pressure and feed water of \_\_\_\_\_°F. when supplied with \_\_\_\_\_ psi steam to the control valve.

# UNFIRED STEAM GENERATORS DIMENSIONS - HORIZONTAL



Horizontal - Energy Source: Steam



Horizontal - Energy Source: High Temperature Hot Water

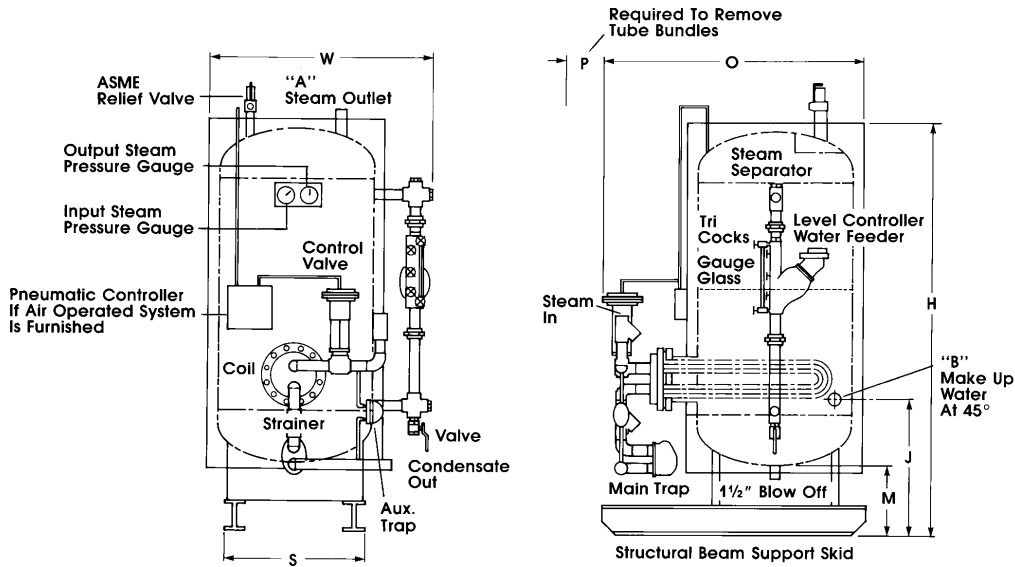
## HORIZONTAL CONFIGURATION DIMENSIONS inches (mm)

Model Number	Boiler Vessel Size	W	H	O	S	E	M	J	I	P*	A**	B	L
H60LUSG	20 x 48 (508 x 1219)	34 (864)	42 (1067)	70 (1778)	24 (610)	52 (1321)	18 (457)	24 (610)	17 (432)	48 (1219)	1½ NPT (38)	¾ NPT (19)	64 (1626)
H120LUSG	24 x 63 (610 x 1600)	38 (965)	46 (1168)	84 (2134)	28 (711)	67 (1702)	18 (457)	24 (610)	17 (432)	60 (1524)	1½ NPT (38)	¾ NPT (19)	79 (2007)
H205LUSG	30 x 72 (762 x 1829)	44 (1118)	49 (1245)	95 (2413)	34 (864)	76 (1930)	15 (381)	21 (533)	18 (457)	72 (1829)	2 NPT (50)	1 NPT (25)	88 (2235)
H395LUSG	36 x 96 (914 x 2438)	50 (1270)	52 (1321)	123 (3124)	40 (1016)	100 (2540)	12 (305)	20 (508)	20 (508)	96 (3438)	3 NPT (76)	1 NPT (25)	112 (2845)
H670LUSG	42 x 120 (1067 x 3048)	56 (1422)	58 (1473)	151 (3835)	46 (1168)	124 (3150)	12 (305)	20 (508)	22 (559)	120 (3048)	4 FLG (102)	1½ NPT (38)	140 (3556)
H860LUSG	48 x 12 (1219 x 3048)	62 (1575)	64 (1626)	149 (3785)	52 (1321)	124 (3150)	12 (305)	20 (508)	24 (610)	120 (3048)	5 FLG (127)	1½ NPT (38)	140 (3556)
H1085LUSG	54 x 120 (1372 x 3048)	68 (1727)	70 (1778)	152 (3861)	58 (1473)	124 (3150)	12 (305)	22 (559)	28 (711)	120 (3048)	6 FLG (152)	2 NPT (51)	140 (3556)

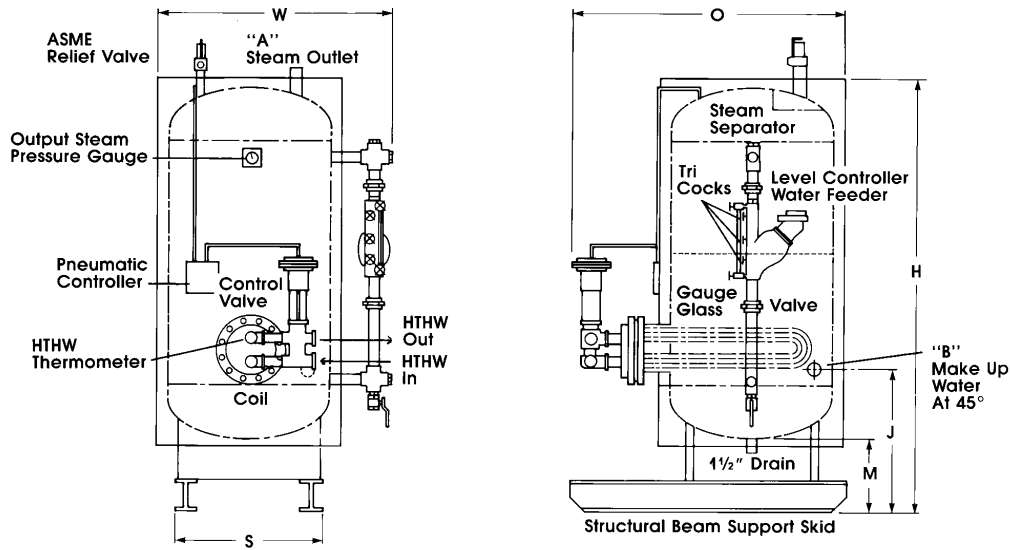
\* This dimension is for the longest coil available, shorter coils with a corresponding shorter "P" dimension are available. Consult factory.

\*\* Dimension A can be changed to suit customer requirements.

# UNFIRED STEAM GENERATORS DIMENSIONS - VERTICAL



Vertical  
Energy Source:  
Steam



Vertical  
Energy Source:  
High Temperature  
Hot Water

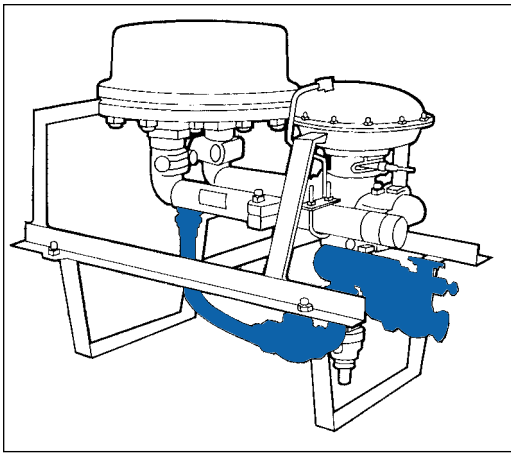
VERTICAL CONFIGURATION DIMENSIONS inches (mm)

Model Number	W	H	O	S	M	J	P	A	B
V45LUSG	34 (864)	50 (1270)	36 (914)	20 (508)	10 (254)	20 (508)	10 (254)	1½ (38)	¾ (19)
V90LUSG	38 (965)	62 (1575)	42 (1067)	20 (508)	10 (254)	24 (610)	14 (356)	2 (50)	¾ (19)
V160LUSG	44 (1118)	68 (1727)	48 (1219)	24 (610)	10 (254)	28 (711)	20 (508)	3 (76)	1 (25)
V240LUSG	50 (1270)	74 (1880)	54 (1372)	30 (762)	10 (254)	28 (711)	26 (660)	4 FLG (102)	1 (25)
V320LUSG	56 (1422)	74 (1880)	60 (1524)	36 (914)	10 (254)	30 (762)	30 (762)	5 FLG (127)	1 (25)
V410LUSG	62 (1575)	74 (1880)	66 (1676)	42 (1067)	10 (254)	30 (762)	38 (965)	6 FLG (152)	1½ (38)
V510LUSG	68 (1727)	74 (1880)	72 (1829)	48 (1219)	10 (254)	31 (287)	44 (1118)	8 FLG (203)	1½ (38)

\* This dimension is for the longest coil available, shorter coils with a corresponding shorter "P" dimension are available. Consult factory.

\*\* Dimension A can be changed to suit customer requirements.

# CONSTANTEMP RECIRCULATION KIT



## FEATURES

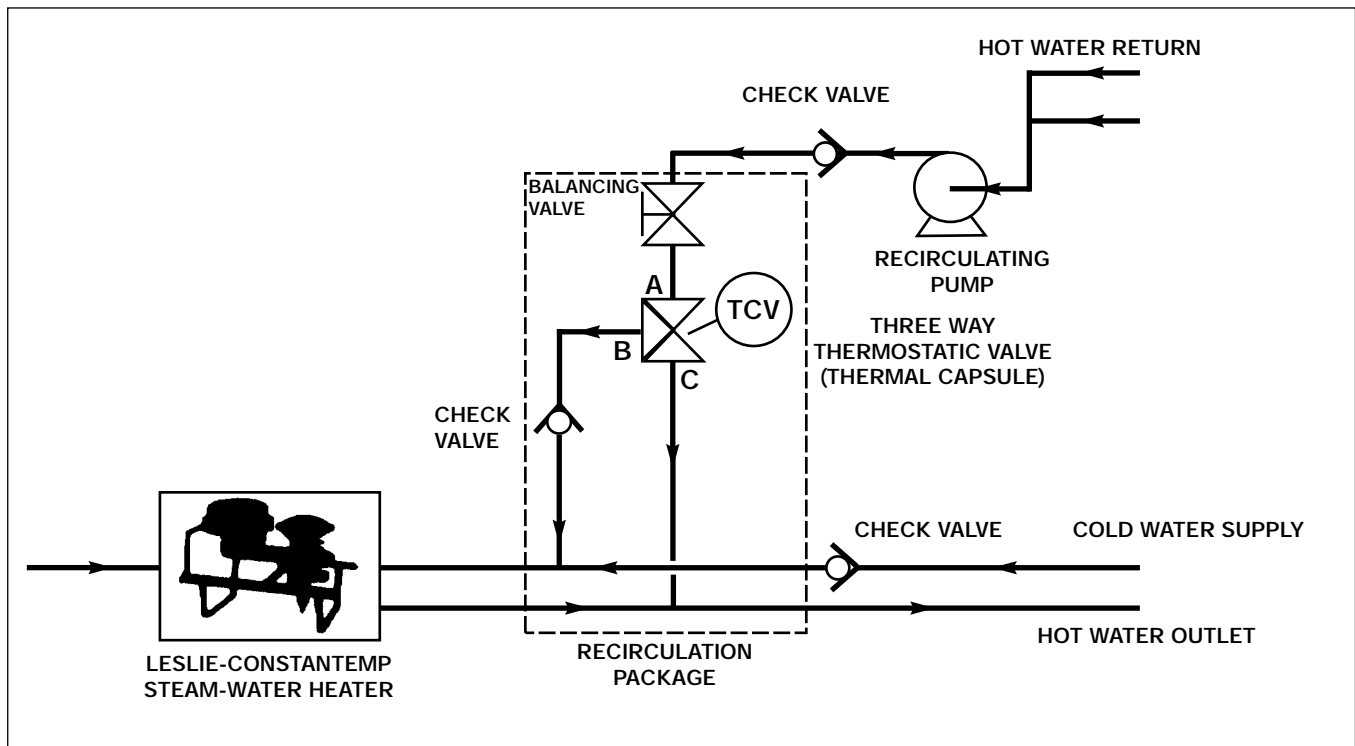
- Pre-piped
- Controls Recirculation
- Fits entirely within heater envelope
- Non-adjustable
- Rugged thermostatic valve

The recirculation system is integrally mounted within the heater system. You need only to connect the return line to the recirculation connection on the heater.

## APPLICATION DATA

- Long piping runs in:
  - Hospitals
  - Universities
  - Military bases
  - Industrial plants

## Operation Schematic



# TRI-TRON ELECTRONIC SCALE CONTROLLER

Pressures to 150 psi

Temperatures to 211°F



## APPLICATIONS

- Hard water used for:
  - Domestic water
  - Process water

## PRINCIPLE OF OPERATION

Scale build up is prevented by applying an AC field of appropriate frequency and strength to the flowing water. Under the influence of this field, the solvent cage or bond that normally holds dissolved minerals in solution is broken. These freely exposed ions will convert to carbonates when mixed with the normal gasses in the water. During this period, a neutralization occurs. The new state of the water is dynamically unstable and will return to its normal state over a period of time.

## WARRANTY

If the Tri-Tron does not perform as specified when properly installed and operated, a full refund of the purchase price will be made.

## FEATURES

- Stop plugging of coils
- Reduce maintenance costs
- No chemicals to be added
- Full performance warranty

## DESCRIPTION

Scale build up is a recognized problem in hot water systems. As water is heated, minerals precipitate out in the form of scale and adhere to the walls of heating coils. The scale build up insulates the pipes resulting in reduction of heat transfer.

The Tri-Tron Electronic Scale Controller is a device designed to prevent scale build up and to remove existing scale in water heating systems.

## SPECIFICATIONS

7/5" long X 7.5" wide X 4.5" deep  
110 VAC., 60 cycles, 60 Hz  
NEMA 12 (Std.). Other ratings optional.  
Generator Temperature Range -25 to 125°F  
0 - 100% humidity

## MATERIALS OF CONSTRUCTION

Cell: .....Type M Copper with Optional Electroplating  
Electrode: .....Hardened Process Alloy  
Insulator: .....Mircata, Hard Polymer

# INSULATED COVER

## APPLICATIONS

- Safety - prevents burns
- Save energy
- Use on all Constantemps

## FEATURES

- Slips on existing heaters
- Easily removable for maintenance of heat exchanger
- Handy ties to hold in place
- Reduces heat loss by 90%

## DESCRIPTION

Reusable insulation cover designed to fit the individual shape of each model Leslie heater. Each cover fits smoothly over the heat exchanger and ties snugly around the bottom to prevent heat loss. Cover is ruggedly designed to last through years of service.

# SIZING - GENERAL

## CONSTANTEMP HEATER SIZING

1. Determine inlet temperature, set point, required flow and steam pressure from the customer. If flow in GPM is not known, use the ASHRAE fixture count method in this sizing section to determine flow.
2. If steam pressure is greater than 15 PSI, use the Reducing Valve Selection Chart.
3. To determine heater size, enter the left hand side of the chart at the inlet temperature and corresponding outlet temperature (set-point).
4. Read across to your steam pressure and then read down till you see a flow equal to or greater than the system requirements.
5. Then read across to the right to the corresponding heater model number.

## STEAM FLOW REQUIREMENTS

$$\frac{\#}{\text{HR}} = \frac{(\text{GPH})(T2 - T1)}{100}$$

## CONDENSATE FLOW

$$\frac{\#}{\text{HR}} \div 500 = \text{GPM CONDENSATE}$$

## EXAMPLE

<b>Inlet</b>	<b>40°F</b>
<b>Outlet</b>	<b>140°F</b>
<b>Steam</b>	<b>15 PSI</b>
<b>Flow</b>	<b>65 GPM</b>

Selection E-7500L heater

## VARIABLE PRESSURE HEATER SIZING

1. Determine inlet temperature, set point, required flow and steam pressure from the customer. If flow in GPM is not known use the ASHRAE fixture count method in this sizing section to determine flow.
2. Determine required steam valve size from steam valve selection chart.
3. To determine heater size enter the left hand side of the chart at the inlet temperature and corresponding outlet temperature (set-point).
4. Read across to your inlet steam pressure and then read down till you see a flow equal to or greater than the system requirements.
5. Then read across to the right to the corresponding heater model number.

## CONSTANTEMP HEATER CODE SELECTION CHART

Model	Flow GPM	Exchanger Material	Coil Material	Design	Tube Pressure	
<b>E</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>L</b>	<b>H</b>	<b>W</b>
1	2	3	4	5	6	7

<b>Model</b> - Position 1 E - Single Wall F - Double Wall
<b>Flow GPM*</b> - Position 2 15 = (15 GPM) 3 = (30 GPM) 45 = (45 GPM) 6 = (60 GPM) 75 = (75 GPM) 9 = (90 GPM) 105 = (105 GPM) 12 = (120 GPM)

<b>Exchanger Material</b> - Position 3 0 = Ductile iron, 75 psi 2 = Cast steel, 150 psi 4 = Cast steel, 150 psi, ASME 'U' Stamp 5 = Cast steel, 150 psi, ASME 'UM' Stamp
<b>Coil Material</b> - Position 4 0 = Copper 1 = Admiralty 2 = Cupro-Nickel 3 = Stainless steel

<b>Design</b> - Position 5 Blank - High pressure (up to 60 GPM only) L - Low pressure (all sizes)
<b>Tube Pressure</b> - Position 6 & 7 Blank - 150 psig HW - 250 psig DW - Double Wall

\* Nominal Flow in GPM based on 100°F rise

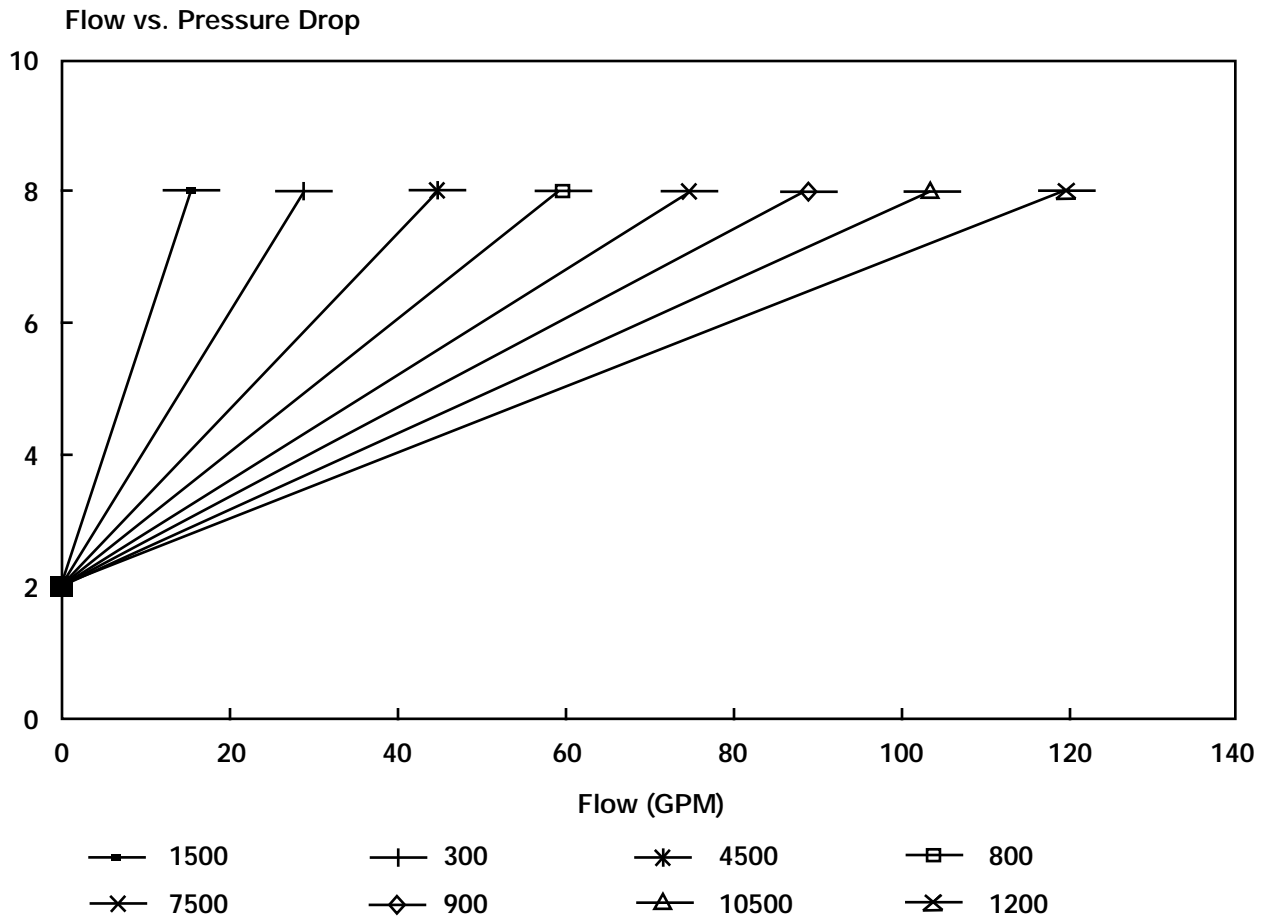


# SIZING - GENERAL

## PRESSURE DROP VERSUS FLOW LESLIE-CONSTANTEMP HEATERS

Capacity tables for Leslie Constantemp Heaters show various capacities for each model number, depending upon the temperature rise and inlet steam pressure.

The curves shown below give the water pressure drop versus the flow in GPM for Leslie Constantemp Heaters. It is important to calculate the pressure drop for any particular application from these curves to be sure the pressure drop through our heater does not exceed the customer requirements.



# SIZING - GENERAL

## DETERMINING LESLIE-CONSTANTEMP STEAM-WATER HEATER LOAD REQUIREMENTS\*

When sizing the Leslie-Constantemp heater it is necessary to determine the maximum instantaneous flow in gallons per minute (GPM). If the customer cannot provide flow in GPM, it is necessary to perform a count of all fixtures that the heater will serve.

Fixture units (Table 1) are selected for each fixture using hot water and are totalled. Maximum hot water demand in GPM is obtained from Fig. 1 or 2 by matching total fixture units to the curve for the type of building and reading GPM. Hot water for fixtures and outlets that have constant flows should be added to demand.

Unusual hot water requirements in a building should be analyzed to determine if additional capacity is required. An example is a dormitory in a military school where all showers and lavatories can be used simultaneously when students return from a parade. In such a case, the heater should be sized for the full flow of the system.

To make preliminary estimates of hot water demand when the fixture count is not known, use Table 2 with Fig. 1 or 2. The results will usually be higher than the demand determined from the actual fixture count. Actual heater size should be determined from Table 1.

*Example:* Determine the hot water flow rate for sizing a heater for a 600-student elementary school with the following fixture count; 60 public lavatories, 6 slop sinks, 4 kitchen sinks, 6 showers, and 1 dishwasher at 8 GPM.

*Solution:* For a preliminary, estimate, use Table 2 to find estimated flow. The basic flow is determined from curve D of Fig. 2, at 600 students x 0.3 fixture units per student = 180 fixture units, plus 6 showers x 1.5 fixture units = 9, or 189 fixture units, for a total flow of 23 GPM.

To size the unit based on actual fixture count and Table 1, the calculation is as follows:

60	public lavatories	x 1	F.U. =	60 F.U.
6	service sinks	x 2.5	F.U. =	15 F.U.
4	kitchen sinks	x 0.75	F.U. =	3 F.U.
6	showers	x 1.5	F.U. =	9 F.U.
Subtotal				87 F.U.

At 87 fixture units, curve D of Fig. 2 shows 16 GPM, to which must be added the dishwasher requirement of 8 GPM. Thus, the total flow is 24 GPM.

Comparing the flow based on actual fixture count to that obtained from the preliminary estimate shows the preliminary estimate to be slightly lower. It is possible that the preliminary estimate could have been as much as twice the final fixture count result. To prevent oversizing the equipment, it is imperative to use the actual fixture count method to select the unit.

**TABLE 1. Hot Water Demand in Fixture Units [140°F (60°C) Water]**

	Apartment House	Hotels and Gymnasium	Industrial Hospital	Dormitories	Plant	Office	Building	School	YMCA
Basins, private lavatory	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Basins, public lavatory	-----	1	1	1	1	1	1	1	1
Bathtubs	1.5	1.5	-----	1.5	1.5	-----	-----	-----	-----
Dishwashers	1.5			Five (5) Fixture Units per 250 Seating Capacity					
Therapeutic bath	-----	-----	-----	5	-----	-----	-----	-----	-----
Kitchen sink	0.75	1.5	-----	3	1.5	3	-----	0.75	3
Pantry sink	-----	2.5	-----	2.5	2.5	-----	-----	2.5	2.5
Service sink	1.5	2.5	-----	2.5	2.5	2.5	2.5	2.5	2.5
Showers	1.5	1.5	1.5	1.5	1.5	3.5	-----	1.5	1.5
Circular wash fountain	-----	2.5	2.5	2.5	-----	4	-----	2.5	2.5
Semicircular wash fountain	-----	1.5	1.5	1.5	-----	3	-----	1.5	1.5

<sup>a</sup> - In applications where all showers can be used at one time the actual flow from each shower should be multiplied by the number of showers and added to flow obtained by the fixture unit method.

**TABLE 2. Preliminary Hot Water Demand Estimate**

Type of Building	Unit	Fixture Units Per Unit	Type of Building	Unit	Fixture Units Per Unit
Hospital or nursing home	Bed	2.50	Elementary school	Student	0.30 <sup>a</sup>
Hotel or motel	Room	2.50	Jr. and Sr. high school	Student	0.30 <sup>a</sup>
Office building	Person	0.15	Apartment house	Apartment	3.00

<sup>a</sup>Plus shower load.

# SIZING - GENERAL

Fig. 1 Modified Hunter Curve for Hot Water Flow Rate  
(Corrected for Type of Building Usage)

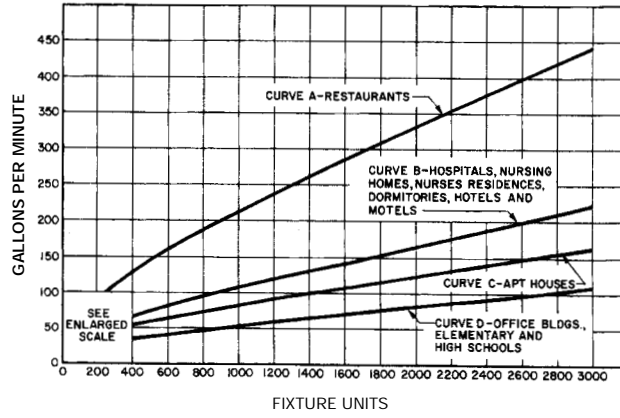
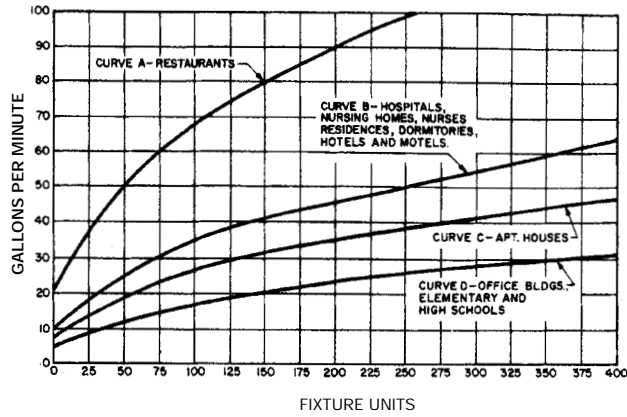


Fig. 2 Enlarged Section of Modified Hunter Curve for Hot Water Flow Rate  
(Corrected for Type of Building Usage)



\* Portions of text and tables "Reprinted by permission from ASHRAE Handbook -- 1999 Systems"

# CONSTANTEMP SERIES SIZING CHART (GPM)

Inlet Temp °F	Set Temp °F	Steam Pressure - PSIG				Model
		2	5	10	15	
40	105 to 110	15	15	15	15	1500L
		29	30	30	30	300L
		22	25	27	35	F-340LDW
		44	45	45	45	4500L
		58	60	60	60	600L
		54	60	62	65	F-640LDW
		73	75	75	75	7500L
		87	90	90	90	900L, F-940LDW
		102	105	105	105	10500L
		116	120	120	120	1200L, F-1240LDW
40	120	14	15	15	15	1500L
		27	30	30	30	300L
		22	25	27	35	F-340LDW
		41	45	45	45	4500L
		54	60	60	60	600L
		54	60	62	65	E-640LDW
		68	75	75	75	7500L
		81	90	90	90	900L, F-940LDW
		95	105	105	105	10500L
		108	120	120	120	1200L, F-1240LDW
40	140	10	11	12	14	1500L
		20	22	24	27	300L
		22	25	27	35	F-340LDW
		33	38	41	44	4500L
		46	54	58	60	600L
		54	60	62	65	F-640LDW
		58	68	73	75	7500L
		69	81	87	90	900L, F-940LDW
		81	95	102	105	10500L
		92	108	116	120	1200L, F-1240LDW
40	150	10	10	11	12	1500L
		17	19	21	23	300L
		20	21	23	25	F-340LDW
		29	34	37	39	4500L
		40	49	53	54	600L, F-640LDW
		50	61	66	68	7500L
		60	73	79	81	900L, F-940LDW
		70	86	93	95	10500L
		80	98	106	108	1200L, F-1240LDW
		40	160	—	—	—
—	—			—	—	300L
—	—			—	—	F-340LDW
26	31			33	35	4500L
34	41			44	46	600L, F-640LDW
43	51			55	58	7500L
51	61			66	69	900L, F-940LDW
60	72			77	81	10500L
68	82			88	92	1200L, F-1240LDW
40	180			—	—	—
		—	—	—	—	300L
		—	—	—	—	F-340LDW
		16	17	19	21	4500L
		21	23	25	28	600L, F-640LDW
		26	29	31	35	7500L
		31	34	37	42	900L, F-940LDW
		37	40	44	49	10500L
		42	46	50	56	1200L, F-1240LDW

Inlet Temp °F	Set Temp °F	Steam Pressure - PSIG				Model
		2	5	10	15	
60	105 to 110	15	15	15	15	1500L
		30	30	30	30	300L
		30	30	33	35	F-340LDW
		45	45	45	45	4500L
		60	60	60	60	600L
		60	62	63	65	F-640LDW
		75	75	75	75	7500L
		90	90	90	90	900L, F-940LDW
		105	105	105	105	10500L
		120	120	120	120	1200L, F-1240LDW
60	120	15	15	15	15	1500L
		30	30	30	30	300L
		30	30	33	35	F-340LDW
		45	45	45	45	4500L
		60	60	60	60	600L
		52	57	62	65	F-640LDW
		75	75	75	75	7500L
		90	90	90	90	900L, F-940LDW
		105	105	105	105	10500L
		120	120	120	120	1200L, F-1240LDW
60	140	12	13	14	15	1500L
		23	25	27	30	300L
		25	27	30	35	F-340LDW
		40	42	44	45	4500L
		57	59	60	60	600L
		52	57	62	65	F-640LDW
		71	74	75	75	7500L
		85	88	90	90	900L, F-940LDW
		100	103	105	105	10500L
		114	118	120	120	1200L, F-1240LDW
60	150	10	11	12	14	1500L
		20	22	24	27	300L
		23	25	27	30	F-340LDW
		35	38	41	44	4500L
		49	54	57	60	600L
		52	57	62	65	F-640LDW
		61	68	71	75	7500L
		73	81	85	90	900L, F-940LDW
		86	95	100	105	10500L
		98	108	114	120	1200L, F-1240LDW
60	160	—	—	—	—	1500L
		—	—	—	—	300L
		—	—	—	—	F-340LDW
		32	37	38	42	4500L
		42	49	51	56	600L, F-640LDW
		53	61	64	70	7500L
		63	73	76	84	900L, F-940LDW
		74	86	89	98	10500L
		84	98	102	112	1200L, F-1240LDW
		60	180	—	—	—
—	—			—	—	300L
—	—			—	—	F-340LDW
22	25			29	33	4500L
29	33			39	44	600L, F-640LDW
36	41			49	55	7500L
43	49			58	66	900L, F-940LDW
51	58			68	77	10500L
58	66			78	88	1200L, F-1240LDW

To calculate the capacity of available alternate coils, multiply the capacity from the table by the following factors: (Double wall only available in copper.)

Coil Materials (single wall only)	Capacity Factor
Admiralty	0.95
Cupro-nickel	0.81
Stainless steel	0.85

# CONSTANTEMP SERIES SIZING CHART (LPM)

Inlet Temp °C	Set Temp °C	Steam Pressure - BAR				Model
		0.1	0.3	0.7	1	
4.4	40 to 43	57	57	57	57	1500L
		110	114	114	114	300L
		83	95	102	132	F-340LDW
		167	170	170	170	4500L
		220	227	227	227	600L
		204	227	235	246	F-640LDW
		276	284	284	284	7500L
		329	341	341	341	900L, F-940LDW
		386	397	397	397	10500L
		439	454	454	454	1200L, F-1240LDW
4.4	49	53	57	57	57	1500L
		102	114	114	114	300L
		43	95	102	132	F-340LDW
		155	170	170	170	4500L
		204	227	227	227	600L
		204	227	227	246	F-640LDW
		257	284	284	284	7500L
		307	341	341	341	900L, F-940LDW
		360	397	397	397	10500L
		409	454	454	454	1200L, F-1240LDW
4.4	60	38	42	45	53	1500L
		76	83	91	102	300L
		83	95	102	132	F-340LDW
		125	144	155	167	4500L
		174	204	220	227	600L
		204	227	235	246	F-640LDW
		220	257	276	284	7500L
		261	307	329	341	900L, F-940LDW
		307	360	386	397	10500L
		348	409	439	454	1200L, F-1240LDW
4.4	66	38	38	42	45	1500L
		64	72	79	87	300L
		76	79	87	95	F-340LDW
		110	129	140	148	4500L
		151	185	201	204	600L, F-640LDW
		189	231	250	257	7500L
		227	276	299	307	900L, F-940LDW
		265	326	352	360	10500L
		303	371	401	409	1200L, F-1240LDW
		4.4	71	—	—	—
—	—			—	—	300L
—	—			—	—	F-340LDW
98	117			125	132	4500L
129	155			167	174	600L, F-640LDW
163	193			208	220	7500L
193	231			250	261	900L, F-940LDW
227	273			291	307	10500L
257	310			333	348	1200L, F-1240LDW
4.4	82			—	—	—
		—	—	—	—	300L
		—	—	—	—	F-340LDW
		61	64	72	79	4500L
		79	87	95	106	600L, F-640LDW
		98	110	117	132	7500L
		117	129	140	159	900L, F-940LDW
		140	151	167	185	10500L
		159	174	189	212	1200L, F-1240LDW

Inlet Temp °C	Set Temp °C	Steam Pressure - BAR				Model
		0.1	0.3	0.7	1	
15.5	40 to 43	57	57	57	57	1500L
		114	114	114	114	300L
		114	114	125	132	F-340LDW
		170	170	170	170	4500L
		227	227	227	227	600L
		235	235	238	246	F-640LDW
		284	284	284	284	7500L
		341	341	341	341	900L, F-940LDW
		397	397	397	397	10500L
		454	454	454	454	1200L, F-1240LDW
15.5	49	57	57	57	57	1500L
		114	114	114	114	300L
		114	114	125	132	F-340LDW
		170	170	170	170	4500L
		227	227	227	227	600L
		227	227	235	246	F-640LDW
		284	284	284	284	7500L
		341	341	341	341	900L, F-940LDW
		397	397	397	397	10500L
		454	454	454	454	1200L, F-1240LDW
15.5	60	45	49	53	57	1500L
		87	95	102	114	300L
		95	102	114	132	F-340LDW
		151	159	167	170	4500L
		216	223	227	227	600L
		216	233	235	246	F-640LDW
		269	280	284	284	7500L
		322	333	341	341	900L, F-940LDW
		379	390	397	397	10500L
		432	447	454	454	1200L, F-1240LDW
15.5	66	38	42	45	53	1500L
		76	83	91	102	300L
		87	95	102	114	F-340LDW
		132	144	155	167	4500L
		185	204	216	227	600L
		197	216	235	246	F-640LDW
		231	257	269	284	7500L
		276	307	322	341	900L, F-940LDW
		326	360	379	397	10500L
		371	409	432	454	1200L, F-1240LDW
15.5	71	—	—	—	—	1500L
		—	—	—	—	300L
		—	—	—	—	F-340LDW
		121	140	144	159	4500L
		159	185	193	212	600L, F-640LDW
		201	231	242	265	7500L
		238	276	288	318	900L, F-940LDW
		280	326	337	371	10500L
		318	371	386	424	1200L, F-1240LDW
		15.5	82	—	—	—
—	—			—	—	300L
—	—			—	—	F-340LDW
83	95			110	125	4500L
110	125			148	167	600L, F-640LDW
136	155			185	208	7500L
163	185			220	250	900L, F-940LDW
193	220			257	291	10500L
220	250			295	333	1200L, F-1240LDW

To calculate the capacity of available alternate coils, multiply the capacity from the table by the following factors: (Double wall only available in copper.)

Coil Materials (single wall only)	Capacity Factor
Admiralty	0.95
Cupro-nickel	0.81
Stainless steel	0.85

# SIZING - CONSTANTEMP SERIES

## REDUCING VALVE SELECTION CHART

(Gallon Per Minute)

Inlet Temp	Set Temp	Steam Supply	Size "GPK or GPKP" series valve								
			1500L	300L 340LDW	4500L	600L 640LDW	7500L	900L 940LDW	10500L	1200L 1240LDW	
°F	°F	PSIG									
40	105 to 110	20	1 1/4	2 1/2	3	4	4	4	4	4*	
		25	1	1 1/2	2 1/2	3	3	4	4	4	
		50	3/4	1	1 1/4	1 1/2	2	2 1/2	2 1/2	3	
		75	1/2	3/4	1	1 1/4	1 1/2	1 1/2	2	2	
		100	1/2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		125	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/2	
40	120	150	1/2	1/2	3/4	1	1	1	1 1/4	1 1/4	
		175	1/2	1/2	3/4	3/4	1	1	1	1 1/4	
		20	1 1/2	2 1/2	3	4	4	4	4*	4*	
		25	1 1/4	2	2 1/2	3	3	4	4	4	
		50	3/4	1 1/4	1 1/2	1 1/2	2 1/2	2 1/2	3	3	
		75	3/4	1	1 1/4	1 1/4	1 1/2	2	2	2 1/2	
40	140	100	1/2	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	2	
		125	1/2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		150	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	
		175	1/2	3/4	3/4	3/4	1	1	1 1/4	1 1/4	
		20	1 1/2	3	4	4	4	4*	4**	4**	
		25	1 1/4	2	3	4	4	4	4	4*	
40	150	50	3/4	1 1/4	1 1/2	2	2 1/2	3	3	3	
		75	3/4	1	1 1/4	1 1/2	2	2 1/2	2 1/2	2	
		100	1/2	3/4	1	1 1/4	1 1/2	1 1/2	2	2 1/2	
		125	1/2	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	2	
		150	1/2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		175	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/2	
40	160	20	—	—	2 1/2	4	4	4*	4*	4**	
		25	—	—	3	3	4	4	4	4*	
		50	—	—	1 1/2	2	2 1/2	2 1/2	3	3	
		75	—	—	1 1/4	1 1/2	1 1/2	2	2 1/2	2 1/2	
		100	—	—	1	1 1/4	1 1/2	2	2	2	
		125	—	—	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
40	180	150	—	—	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		175	—	—	3/4	1	1	1 1/4	1 1/4	1 1/2	
		20	—	—	3	3	4	4	4	4*	
		25	—	—	2 1/2	2 1/2	3	3	4	4*	
		50	—	—	1 1/4	1 1/2	1 1/2	2 1/2	2 1/2	2 1/2	
		75	—	—	1	1 1/4	1 1/4	1 1/2	1 1/2	2	
40	180	100	—	—	1	1	1 1/4	1 1/2	1 1/2	1 1/2	
		125	—	—	3/4	1	1	1 1/4	1 1/4	1 1/2	
		150	—	—	3/4	3/4	1	1	1 1/4	1 1/4	
		175	—	—	3/4	1	3/4	1	1	1 1/4	
		20	—	—	—	—	—	—	—	—	—
		25	—	—	—	—	—	—	—	—	—

Inlet Temp	Set Temp	Steam Supply	Size "GPK or GPKP" series valve								
			1500L	300L 340LDW	4500L	600L 640LDW	7500L	900L 940LDW	10500L	1200L 1240LDW	
°F	°F	PSIG									
60	105 TO 110	20	1 1/4	1 1/2	2 1/2	3	3	4	4	4	
		25	1	1 1/4	1 1/2	2 1/2	2 1/2	3	3	3	
		50	1/2	1	1	1 1/4	1 1/2	1 1/2	2	2	
		75	1/2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		100	1/2	3/4	3/4	1	1	1	1 1/4	1 1/4	
		125	1/2	3/4	3/4	3/4	1	1	1	1 1/4	
60	120	150	1/2	1/2	3/4	3/4	3/4	1	1	1	
		175	1/2	1/2	3/4	3/4	3/4	3/4	1	1	
		20	1 1/4	2	2 1/2	3	4	4	4	4	
		25	1	1 1/2	2	2 1/2	3	3	4	4	
		50	3/4	1	1 1/4	1 1/4	1 1/2	2	2 1/2	2 1/2	
		75	3/4	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
60	140	100	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/2	
		125	1/2	3/4	3/4	1	1	1	1 1/4	1 1/4	
		150	1/2	3/4	3/4	3/4	1	1	1	1 1/4	
		175	1/2	3/4	3/4	3/4	3/4	1	1	1	
		20	1 1/2	2 1/2	3	4	4	4	4*	4*	
		25	1 1/4	2	2 1/2	3	3	4	4	4	
60	150	50	3/4	1 1/4	1 1/2	1 1/2	2	2 1/2	3	3	
		75	3/4	1	1 1/4	1 1/2	2	2 1/2	2 1/2	2 1/2	
		100	1/2	3/4	1	1 1/4	1 1/4	1 1/2	1 1/2	2	
		125	1/2	3/4	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		150	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/2	
		175	1/2	3/4	3/4	3/4	1	1	1 1/4	1 1/4	
60	160	20	—	—	4	4	4	4*	4*	4**	
		25	—	—	3	3	4	4	4	4*	
		50	—	—	1 1/2	2	2 1/2	3	3	3	
		75	—	—	1 1/4	1 1/2	1 1/2	2	2 1/2	2 1/2	
		100	—	—	1	1 1/4	1 1/4	1 1/2	2	2	
		125	—	—	1	1	1 1/4	1 1/4	1 1/2	2	
60	180	150	—	—	1	1	1	1 1/4	1 1/4	1 1/2	
		175	—	—	3/4	1	1	1 1/4	1 1/4	1 1/2	
		20	—	—	—	—	—	—	—	—	—
		25	—	—	—	—	—	—	—	—	—
		50	—	—	1 1/2	2	2 1/2	2 1/2	3	3	
		75	—	—	1 1/4	1 1/2	2	2	2 1/2	2 1/2	
60	180	100	—	—	1	1 1/4	1 1/4	1 1/2	1 1/2	2	
		125	—	—	1	1	1 1/4	1 1/4	1 1/2	1 1/2	
		150	—	—	3/4	1	1	1 1/4	1 1/4	1 1/2	
		175	—	—	3/4	1	1	1 1/4	1 1/4	1 1/2	
		20	—	—	—	—	—	—	—	—	—
		25	—	—	—	—	—	—	—	—	—

# SIZING - CONSTANTEMP SERIES

## REDUCING VALVE SELECTION CHART

(Liter Per Minute)

Inlet Temp	Set Temp	Steam Supply	Size "GPK or GPKP" series valve							
			1500L	300L 340LDW	4500L	600L 640LDW	7500L	900L 940LDW	10500L	1200L 1240LDW
°C	°C	PSIG								
4.4	40 TO 43	20	32	65	80	100	100	100	100	100
		25	25	40	65	80	80	100	100	100
		50	20	25	32	40	50	65	65	80
		75	15	20	25	32	40	40	50	50
		100	15	20	25	25	32	32	40	40
		125	15	20	20	25	25	32	32	40
4.4	49	150	15	15	20	25	25	32	32	32
		175	15	15	20	20	25	25	25	32
		20	40	65	80	100	100	100	100	100
		25	32	50	65	80	80	100	100	100
		50	20	32	40	40	65	65	80	80
		75	20	25	32	32	40	50	50	65
4.4	60	100	15	20	25	32	32	40	40	50
		125	15	20	25	25	32	32	40	40
		150	15	20	20	25	32	32	32	32
		175	15	15	20	20	25	25	32	32
		20	40	80	100	100	100	100	100	100
		25	32	50	80	100	100	100	100	100
4.4	66	50	20	32	40	50	65	80	80	80
		75	20	25	32	40	50	65	65	50
		100	15	20	25	32	40	40	50	65
		125	15	20	25	32	32	40	40	50
		150	15	20	25	25	32	32	40	40
		175	15	15	20	25	25	32	32	40
4.4	71	20	—	—	65	100	100	100	100	100
		25	—	—	80	80	100	100	100	100
		50	—	—	40	50	65	65	80	80
		75	—	—	32	40	40	50	65	65
		100	—	—	25	32	40	40	50	50
		125	—	—	25	25	32	32	40	40
4.4	82	150	—	—	25	25	32	32	40	40
		175	—	—	20	25	25	32	32	32
		20	—	—	80	80	100	100	100	100
		25	—	—	65	65	80	80	100	100
		50	—	—	32	40	40	65	65	65
		75	—	—	25	32	32	40	40	25
4.4	82	100	—	—	25	25	32	32	40	40
		125	—	—	20	25	25	32	32	32
		150	—	—	20	20	25	25	32	32
		175	—	—	20	25	20	25	25	32

Inlet Temp	Set Temp	Steam Supply	Size "GPK or GPKP" series valve							
			1500L	300L 340LDW	4500L	600L 640LDW	7500L	900L 940LDW	10500L	1200L 1240LDW
°C	°C	PSIG								
15.5	40 to 43	20	32	40	65	80	80	100	100	100
		25	25	32	40	65	65	80	80	80
		50	15	25	25	32	40	40	50	50
		75	15	20	25	25	32	32	40	40
		100	15	15	20	25	25	25	32	32
		125	18	15	20	20	25	25	25	32
15.5	49	150	15	15	20	20	20	25	25	25
		175	15	15	15	20	20	20	25	25
		20	32	50	65	80	100	100	100	100
		25	25	40	50	65	80	80	100	100
		50	20	25	32	32	40	50	65	65
		75	15	20	25	25	32	32	40	40
15.5	60	100	15	20	20	25	25	32	32	40
		125	15	15	20	25	25	25	32	32
		150	15	15	20	20	25	25	25	32
		175	15	15	20	20	20	25	25	25
		20	40	65	80	100	100	100	100	100
		25	32	50	65	80	80	100	100	100
15.5	66	50	20	32	40	40	50	65	80	80
		75	20	25	32	40	40	50	65	65
		100	15	20	25	32	32	40	40	50
		125	15	20	25	25	32	32	40	40
		150	15	20	20	25	25	32	32	40
		175	15	15	20	20	25	25	32	32
15.5	71	20	—	—	100	100	100	100	100	100
		25	—	—	80	80	100	100	100	100
		50	—	—	40	50	65	80	80	80
		75	—	—	32	40	40	50	65	65
		100	—	—	25	32	32	40	50	50
		125	—	—	25	25	32	32	40	50
15.5	82	150	—	—	25	25	25	32	32	40
		175	—	—	20	25	25	32	32	32
		20	—	—	80	100	100	100	100	100
		25	—	—	80	80	100	100	100	100
		50	—	—	40	50	65	65	80	80
		75	—	—	32	40	50	50	65	65
15.5	82	100	—	—	25	32	32	40	50	50
		125	—	—	25	25	32	32	40	40
		150	—	—	20	25	25	32	32	40
		175	—	—	20	25	25	32	32	40

# SIZING - CONSTANTEMP VARIABLE PRESSURE SERIES

## Constantemp Variable Pressure Steam Control Valve Selection Tables

### Model 1500/300

DIMENSIONS inches (mm)

Steam Supply Press. PSIG	Steam Valve Size
15 (1)	3 (76)
20-40 (1.4-2.8)	2½ (64)
40-50 (2.8-3.4)	2 (51)
50-75 (3.4-5.2)	1½ (38)
75-125 (5.2-8.6)	1¼ (32)
125-250 (8.6-17.2)	1 (25)

### Model 4500/600

DIMENSIONS inches (mm)

Steam Supply Press. PSIG	Steam Valve Size
15-30 (1-2)	4 (102)
30-40 (2-2.8)	3 (76)
40-75 (2.8-5.2)	2½ (64)
75-125 (5.2-8.6)	2 (51)
125-250 (8.6-17.2)	1½ (38)



# SIZING - CONSTANTEMP VARIABLE PRESSURE SERIES

## CONSTANTEMP HIGH FLOW/TEMPERATURE HEATER SIZING CHART (GALLON PER MINUTE)

### HEATER SIZING CHART (GALLON PER MINUTE)

Inlet Temp F	Set Temp F	Steam Pressure - PSIG						Model
		10	15	20	25	30	35-250	
40	105 to 110	—	—	13	16	18	18	1500
		—	—	26	32	35	35	300
		—	—	39	48	53	53	4500
40	120	—	—	52	64	70	70	600
		—	—	12	15	16	16	1500
		—	—	24	30	33	33	300
40	140	—	—	36	45	50	50	4500
		—	—	48	60	66	66	600
		—	—	11	14	15	15	1500
40	150	—	—	22	28	30	30	300
		—	—	33	42	45	45	4500
		—	—	44	56	60	60	600
40	160	—	—	10	13	14	14	1500
		—	—	20	26	28	28	300
		—	—	30	39	42	42	4500
40	180	—	—	40	52	56	56	600
		—	7	10	12	13	13	1500
		—	14	19	24	26	26	300
40	180	—	—	29	36	39	39	4500
		—	—	38	48	52	52	600
		—	6	9	11	12	12	1500
60	105 to 110	—	—	15	19	20	20	1500
		—	—	29	37	40	40	300
		—	—	44	56	61	61	4500
60	120	—	—	58	74	81	81	600
		—	—	14	18	19	19	1500
		—	—	28	35	38	38	300
60	140	—	—	43	54	58	58	4500
		—	—	57	73	78	78	600
		—	—	13	16	17	17	1500
60	150	—	—	25	31	34	34	300
		—	—	38	47	51	51	4500
		—	—	50	62	68	68	600
60	160	—	—	12	15	16	16	1500
		—	—	23	29	32	32	300
		—	—	35	44	48	48	4500
60	180	—	—	46	58	64	64	600
		—	8	11	14	15	15	1500
		—	16	22	28	30	30	300
60	180	—	—	33	42	45	45	4500
		—	—	44	56	60	60	600
		—	7	10	12	13	13	1500
60	180	—	—	14	19	24	26	300
		—	—	29	36	39	39	4500
		—	—	38	48	52	52	600

### HEATER SIZING CHART (LITERS PER MINUTE)

Inlet Temp C	Set Temp C	Steam Pressure - PSIG						Model
		.7	1	1.4	1.7	2	2.4-17	
4.4	40 to 43	—	—	49	61	68	68	1500
		—	—	98	121	132	132	300
		—	—	148	182	201	201	4500
4.4	49	—	—	197	242	265	265	600
		—	—	45	57	61	61	1500
		—	—	91	114	125	125	300
4.4	60	—	—	136	170	189	189	4500
		—	—	182	227	250	250	600
		—	—	42	53	57	57	1500
4.4	60	—	—	83	106	114	114	300
		—	—	125	159	170	170	4500
		—	—	167	212	227	227	600
4.4	71	—	—	38	49	53	53	1500
		—	—	76	98	106	106	300
		—	—	114	148	159	159	4500
4.4	82	—	—	151	197	212	212	600
		—	26	38	45	49	49	1500
		—	53	72	91	98	98	300
15.5	40 to 43	—	—	110	136	148	148	4500
		—	—	144	182	197	197	600
		—	23	34	42	45	45	1500
15.5	49	—	—	45	64	83	87	300
		—	—	98	121	132	132	4500
		—	—	129	163	174	174	600
15.5	60	—	—	57	72	76	76	1500
		—	—	110	140	151	151	300
		—	—	167	212	231	231	4500
15.5	66	—	—	220	280	307	307	600
		—	—	53	68	72	72	1500
		—	—	106	132	144	144	300
15.5	71	—	—	163	204	220	220	4500
		—	—	216	276	295	295	600
		—	—	49	61	64	64	1500
15.5	82	—	—	95	117	129	129	300
		—	—	144	178	193	193	4500
		—	—	189	235	257	257	600
15.5	71	—	—	45	57	61	61	1500
		—	—	87	110	121	121	300
		—	—	132	167	182	182	4500
15.5	82	—	—	174	220	242	242	600
		8	30	42	53	57	57	1500
		16	61	83	106	114	114	300
15.5	82	—	—	125	159	170	170	4500
		—	—	167	212	227	227	600
		7	26	38	45	49	49	1500
15.5	82	14	53	72	91	98	98	300
		—	—	110	136	148	148	4500
		—	—	144	182	197	197	600

\* 'R' on class designates low pressure heater requiring a reducing valve to reduce pressure to 15 PSIG. To calculate the capacity of available alternate coils, multiply the capacity from the table by the following factors:

Coil Materials	Capacity Factor
Admiralty	0.95
Cupro-nickel	0.81
Stainless steel	0.85

# SIZING - CONSTANTEMP SERIES

## MAXIMUM STEAM SUPPLY TEMPERATURE FOR CONSTANTEMP HEATERS

The steam supply temperature for Constantemp Heaters must be limited in order to prevent boiling or flashing of the water in the coil during no-load conditions.

A) Heaters With Reducing Valves In The Steam Supply

For all E-1500, E-300, E-4500, E-600 heaters, and low pressure heaters with a steam reducing valve, the maximum allowable superheat can be determined from Figure .

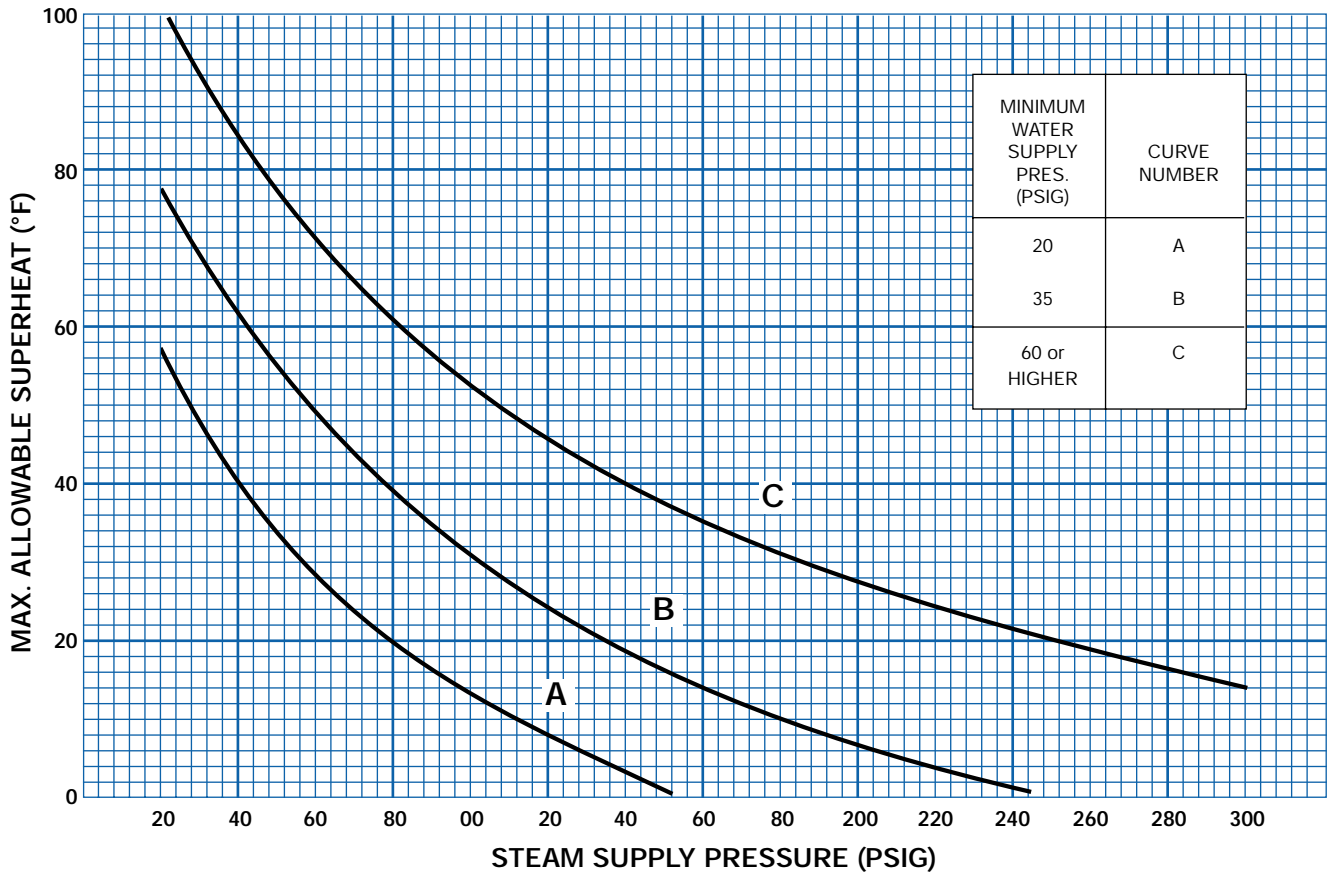
B) Low Pressure Heaters Without Reducing Valves

For low pressure heaters without reducing valves, the maximum steam temperatures are:

MINIMUM WATER SUPPLY PRESSURE (PSIG)	MAXIMUM STEAM SUPPLY (TEMP. °F)*
20	310
35	330
60 or higher	355

\* Based on 2 - 15 PSIG Steam

**MAXIMUM ALLOWABLE SUPERHEAT FOR CONSTANTEMP HEATERS WITH REDUCING VALVES ON THE STEAM SUPPLY**



# SIZING - CONSTANTCOIL™ HEAT EXCHANGER

The following table indicates the heater models, maximum operating pressures on the tube side and shell side, number and size of tubes and the Heat Exchanger surface:

	MAX. COIL PRESS.	MAX. SHELL PRESS.	NO. TUBES & SIZE	HEAT TRANSFER AREA FT. 2
E-300 E-300L Etc.	150 PSIG	75 PSI C.I. 150 PSI Steel	Nine 1/2" O.D.	9.0
E-600 E-600L Etc.	150 PSIG	75 PSI C.I. 150 PSI Steel	Fifteen 1/2" O.D.	20.9
E-900L Etc.	150 PSIG	75 PSI C.I. 150 PSI Steel	Thirty 1/2" O.D.	41.7
E-1200L Etc.	150 PSIG	75 PSI C.I. 150 PSI Steel	Twenty Four 5/8" O.D.	48.0

# SIZING - LES PACKAGED WATER HEATER

## LES HEATER SIZING

1. Determine inlet temperature, set point, required flow and steam pressure from the customer. If flow in GPM is not known use the ASHRAE fixture count method in this sizing section to determine flow.
2. Read across top of chart to column matching customers steam pressure. Read down to section of chart that matches customers inlet and outlet temperatures.
3. Read down until you see a flow equal to or greater than the system requirements.
4. Then read across to the left to the corresponding heater model number.
5. Calculate the steam consumption using the formula #/HR= (GPH x Temp Rise) / 100.
6. Read across steam control valve selection chart till you match the customers inlet steam pressure then read down until you find a valve with equal to or greater than the steam flow requirement.
7. Read to the left to find corresponding control valve model size and code.

8. To size the steam trap enter appropriate trap for incoming steam pressure and determine trap size based on condensate requirement. (Note steam flow in #/HR equals condensate flow in #/HR.

### EXAMPLE

**Inlet** 40°F  
**Outlet** 140°F  
**Steam** 75 PSI  
**Flow** 65 GPM  
**From table heater size is V8LES830**

**Calculate steam requirement:**  
**#/HR = (GPH x Temp Rise) / 100**  
 = (60 x 65 x 100) / 100  
 = 3,900

**Select steam valve from table**  
**Use 2" DDLO**  
**Select steam trap**  
**Use 2" FTB-175**

STEAM VALVE SIZING

		Maximum flow rate in pounds per hour of steam							
Model/Code	Size inches (mm)	Inlet Steam Pressure psig/(bar)							
		5 (0.3)	10 (0.7)	15 (1)	20 (1.4)	40 (2.8)	60 (4)	80 (5.5)	100 (6.9)
DDLO U851A1B1DF0	1/2 (12)	88 (40)	126 (57)	171 (78)	206 (94)	265 (120)	314 (143)	356 (162)	394 (179)
DDLO U851B1B1GF0	3/4 (19)	199 (90)	284 (129)	385 (175)	463 (210)	597 (271)	706 (321)	801 (364)	885 (402)
DDLO U851C1B1JF0	1 (25)	332 (150)	473 (215)	642 (292)	772 (351)	996 (453)	1177 (535)	1335 (607)	1476 (671)
DDLO U851E1F1LF0	1 1/2 (38)	664 (302)	945 (430)	1285 (584)	1543 (701)	1992 (905)	2355 (1070)	2670 (1214)	2952 (1342)
DDLO U851F1H1MF0	2 (50)	1260 (573)	1796 (816)	2441 (1110)	2932 (1333)	3785 (1720)	4474 (2034)	5073 (2306)	5608 (2549)
DDBOY U841G1H1SJ0	2 1/2 (64)	1990 (905)	2835 (1289)	3855 (1752)	4630 (2100)	5976 (2716)	7065 (3211)	8010 (3641)	8856 (4025)
DDBOY U841H2H1SJ0	3 (76)	2765 (1257)	3938 (1790)	5354 (2434)	6430 (2923)	8300 (3773)	9812 (4460)	11125 (5057)	12300 (5591)
DDBOY U841J2N1SJ0	4 (102)	4535 (2061)	6458 (2935)	8780 (3991)	10545 (4793)	13612 (6187)	16092 (7315)	18245 (8293)	20172 (9169)

TRAP SIZING

15 PSI (BAR) Steam to Valve Based Upon 1/2 PSI Differential			30 PSI (BAR) Steam to Valve Based Upon 1 PSI Differential			75 PSI (BAR) Steam to Valve Based Upon 5 PSI Differential			125 PSI (BAR) Steam to Valve Based Upon 10 PSI Differential		
Series	Size	#/Hr. Steam	Series	Size	#/Hr. Steam	Series	Size	#/Hr. Steam	Series	Size	#/Hr. Steam
FT-015H	3/4 (19)	500 (227)	FT-030H	3/4 (19)	630 (286)	FT-075H	3/4 (19)	520 (236)	FT-125H	3/4 (19)	410 (186)
FT-015H	1 (25)	500 (227)	FT-030H	1 (25)	630 (286)	FT-075H	1 (25)	520 (236)	FT-125H	1 (25)	410 (186)
FT-015H	1-1/4 (32)	770 (350)	FT-030H	1-1/4 (32)	740 (336)	FT-075H	1-1/4 (32)	2200 (1000)	FT-125C	1-1/4 (32)	1800 (818)
FT-015C	1-1/2 (38)	1700 (773)	FT-030C	1-1/2 (38)	1700 (773)	FT-075C	1-1/2 (38)	2200 (1000)	FT-125C	1-1/2 (38)	1800 (818)
FT-015H	2 (50)	3150 (1432)	FT-030C	2 (50)	3100 (1409)	FT-075C	2 (50)	2950 (1340)	FT-125C	2 (50)	2600 (1182)
FT-015X	2 (50)	8000 (3636)	FT-030X	2 (50)	6400 (2909)	FT-075X	2 (50)	7600 (3455)	FT-125X	2 (50)	6600 (3000)
FT-015C	2-1/2 (64)	20000 (9090)	FT-030C	2-1/2 (64)	20900 (9500)	FT-075C	2-1/2 (64)	19600 (8909)	FT-175	2-1/2 (64)	17100 (7773)

# SIZING - LES PACKAGED WATER HEATER

## RECOVERY CAPACITY - STEAM Single Wall Coils

The listing below is for those steam pressures and temperature rises which are most widely used. Coils are available for other steam pressures and/or different temperature rises. Consult factory for further information.

Model No.	STEAM PRESSURE PSIG AND (BAR)							
	2 (0.1)	5 (0.3)	10 (0.7)	15 (1)	25 (1.7)	50 (3.5)	75 (5.2)	100 (7)
<b>Recovery GPM (LPM) / 40-120°F (4-49°C)</b>								
*6LES624SW	22 (83)	23 (87)	25 (95)	28 (106)	31 (117)	38 (144)	43 (163)	47 (178)
*8LES830SW	60 (227)	65 (246)	71 (269)	77 (291)	86 (326)	92 (348)	92 (348)	92 (348)
*10LES1030SW	91 (344)	91 (344)	112 (424)	116 (439)	116 (439)	116 (439)	116 (439)	116 (439)
*10LES1036SW	114 (432)	116 (439)	116 (439)	116 (439)	116 (439)	116 (439)	116 (439)	11 (439)
*12LES1236SW	169 (640)	169 (640)	175 (662)	180 (681)	208 (787)	208 (787)	208 (787)	208 (787)
*12LES1242SW	207 (784)	207 (784)	208 (784)	208 (784)	208 (784)	208 (784)	208 (784)	208 (784)
*14LES1442SW	212 (803)	212 (803)	212 (803)	212 (803)	212 (803)	212 (803)	212 (803)	212 (803)
<b>Recovery GPM (LPM) / 40-140°F (4-60°C)</b>								
*6LES624SW	14 (53)	15 (57)	17 (64)	18 (68)	21 (79)	27 (102)	31 (117)	34 (129)
*8LES830SW	40 (151)	44 (167)	49 (185)	53 (201)	61 (231)	74 (280)	85 (322)	92 (348)
*10LES1030SW	60 (227)	66 (250)	77 (291)	84 (318)	95 (360)	116 (439)	116 (439)	116 (439)
*10LES1036SW	77 (291)	87 (329)	98 (371)	106 (401)	116 (439)	116 (439)	116 (439)	116 (439)
*12LES1236SW	113 (428)	113 (428)	118 (447)	140 (530)	177 (670)	209 (791)	209 (791)	209 (791)
*12LES1242SW	140 (530)	140 (530)	162 (613)	181 (685)	209 (791)	209 (791)	209 (791)	209 (791)
*14LES1442SW	199 (753)	210 (795)	213 (806)	213 (806)	213 (806)	213 (806)	213 (806)	213 (806)
<b>Recovery GPM (LPM) / 40-180°F (4-82°C)</b>								
*6LES624SW	5 (19)	6 (23)	7 (26)	9 (34)	11 (42)	14 (53)	17 (64)	19 (72)
*8LES830SW	18 (68)	20 (76)	24 (91)	27 (102)	32 (121)	42 (159)	49 (185)	55 (208)
*10LES1030SW	28 (106)	33 (125)	38 (144)	43 (163)	51 (193)	67 (254)	78 (296)	87 (329)
*10LES1036SW	36 (136)	42 (159)	49 (185)	55 (208)	65 (246)	84 (318)	98 (371)	109 (412)
*12LES1236SW	49 (185)	49 (185)	72 (272)	81 (307)	96 (363)	124 (469)	145 (549)	162 (613)
*12LES1242SW	62 (235)	70 (265)	87 (329)	101 (382)	119 (450)	153 (579)	178 (674)	198 (750)
*14LES1442SW	94 (356)	104 (394)	120 (454)	134 (507)	158 (598)	202 (765)	215 (814)	215 (814)

\* Add "V" (for vertical) or "H" (for horizontal) to model number.

## RECOVERY CAPACITY - BOILER WATER

Recovery Capacity Boiler Water For selection using boiler water or high temperature hot water as the energy source, consult factory or your local Leslie representative.

# SIZING - LES PACKAGED WATER HEATER

## RECOVERY CAPACITY STEAM Double Wall Coils

Leslie Water Heaters are available with double wall coils. Double wall coils have inner and outer tubes with a vented leak path. If either the inner or outer tube fails there can be no cross contamination of potable water and a visible indication of the leak will show.

Some building codes require vented double wall coils to guard against cross contamination of potable water.

Model No.	STEAM PRESSURE PSIG AND (BAR)							
	2 (0.1)	5 (0.3)	10 (0.7)	15 (1)	25 (1.7)	50 (3.5)	75 (5.2)	100 (7)
<b>Recovery GPM (LPM) / 40 - 120°F (4-49°C)</b>								
*6LES624DW	11 (42)	12 (45)	13 (49)	14 (53)	16 (61)	20 (76)	23 (87)	25 (95)
*8LES830DW	32 (121)	34 (129)	37 (140)	40 (151)	45 (170)	55 (208)	62 (235)	68 (257)
*10LES1030DW	49 (185)	54 (204)	59 (223)	64 (246)	71 (269)	88 (333)	97 (367)	104 (394)
*10LES1036DW	64 (242)	70 (265)	77 (291)	83 (314)	93 (352)	104 (394)	104 (394)	104 (394)
*12LES1236DW	93 (352)	93 (352)	115 (435)	124 (469)	139 (526)	168 (636)	186 (704)	186 (704)
*12LES1242DW	116 (439)	123 (466)	140 (530)	153 (579)	171 (647)	186 (704)	186 (704)	186 (704)
*14LES1442DW	154 (583)	162 (613)	178 (674)	191 (723)	203 (768)	203 (768)	203 (768)	203 (768)
<b>Recovery GPM (LPM) / 40 - 140°F (4-60°C)</b>								
*6LES624DW	7 (26)	7 (26)	8 (30)	9 (34)	11 (42)	14 (53)	16 (61)	18 (68)
*8LES830DW	21 (79)	22 (83)	25 (95)	27 (102)	31 (117)	39 (148)	44 (167)	49 (185)
*10LES1030DW	33 (125)	36 (136)	40 (151)	45 (170)	50 (189)	62 (235)	70 (265)	77 (291)
*10LES1036DW	44 (167)	47 (178)	53 (201)	58 (220)	65 (246)	80 (303)	91 (344)	100 (379)
*12LES1236DW	61 (231)	67 (254)	79 (299)	86 (326)	98 (371)	120 (454)	137 (519)	151 (572)
*12LES1242DW	77 (291)	86 (326)	99 (375)	107 (405)	121 (458)	148 (560)	169 (640)	185 (700)
*14LES1442DW	104 (394)	111 (420)	123 (466)	134 (509)	151 (572)	185 (700)	205 (776)	204 (772)
<b>Recovery GPM (LPM) / 40 - 180°F (4-82°C)</b>								
*6LES624DW	2 (8)	3 (11)	3 (11)	4 (15)	5 (19)	7 (27)	9 (34)	10 (38)
*8LES830DW	8 (30)	10 (38)	12 (45)	13 (49)	16 (61)	21 (79)	25 (95)	29 (110)
*10LES1030DW	14 (53)	16 (61)	19 (72)	22 (83)	26 (98)	34 (129)	41 (155)	46 (174)
*10LES1036DW	20 (76)	22 (83)	26 (98)	29 (110)	35 (132)	45 (170)	53 (201)	60 (227)
*12LES1236DW	28 (106)	32 (121)	38 (144)	43 (163)	52 (197)	68 (257)	80 (303)	90 (341)
*12LES1242DW	35 (132)	41 (155)	49 (185)	55 (208)	65 (246)	85 (322)	99 (375)	111 (420)
*14LES1442DW	47 (178)	52 (197)	61 (231)	69 (261)	82 (310)	106 (401)	124 (469)	138 (522)

\* Add "V" (for vertical) or "H" (for horizontal) to model number.

# Commitment to Excellence



ISO 9001  
CN 30057

## Fabrication, Service & Repair

### *Remanufacturing, Testing, Preventative Maintenance, Customer Training and Fabrication*

Circor International operates three service centers (New Jersey, Virginia and Florida) where valves of many major manufacturers are returned to original factory specifications and given a new service warranty at a fraction of the original purchase cost. We also have an international network of Leslie licensed and trained "Red Seal" Service Centers capable of performing the same quality of work as our service centers.

Circor Service Centers are also authorized to service valves manufactured by K&M, R.G. Laurence, CPC-Cryolab, Spence Engineering, Nicholson, KF, Circle Seal, SSI Equipment, Hoke, Aerodyne Controls, SKVC, Watts ACV, Go Regulator, Pibiviesse, Telford, Chas. M. Bailey, and Contromatic.

In addition to handling factory repairs, each Service Center has available factory trained Field Service Technicians to provide on-site repairs and preventative maintenance where

removal is impractical or extended shutdown is unacceptable. Circor Service Centers also provide custom tailored, in-depth, hands-on training programs in operation, instrumentation and maintenance of all supported equipment. Training is conducted at one of our specially designed, fully equipped repair facilities or at your location using your own equipment.

Another service provided at the Circor Service Centers is panel board fabrication. Whenever it is not practical to assemble components on-site, our experts can design, build, and ship or deliver and install a unit customized to suit your needs.

Service is a fundamental part of the Leslie operating philosophy and we urge you to request additional documentation and descriptive material.

\* Assessed and certified by ABS Quality Evaluations, Inc., Houston, Texas

Since LESLIE CONTROLS was founded in 1900, we have been an industry leader in quality fluid control equipment. We have developed a full line of engineered products to suit your requirements, including diaphragm control valves, control instrumentation, pressure and temperature regulators and steam water heaters.



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