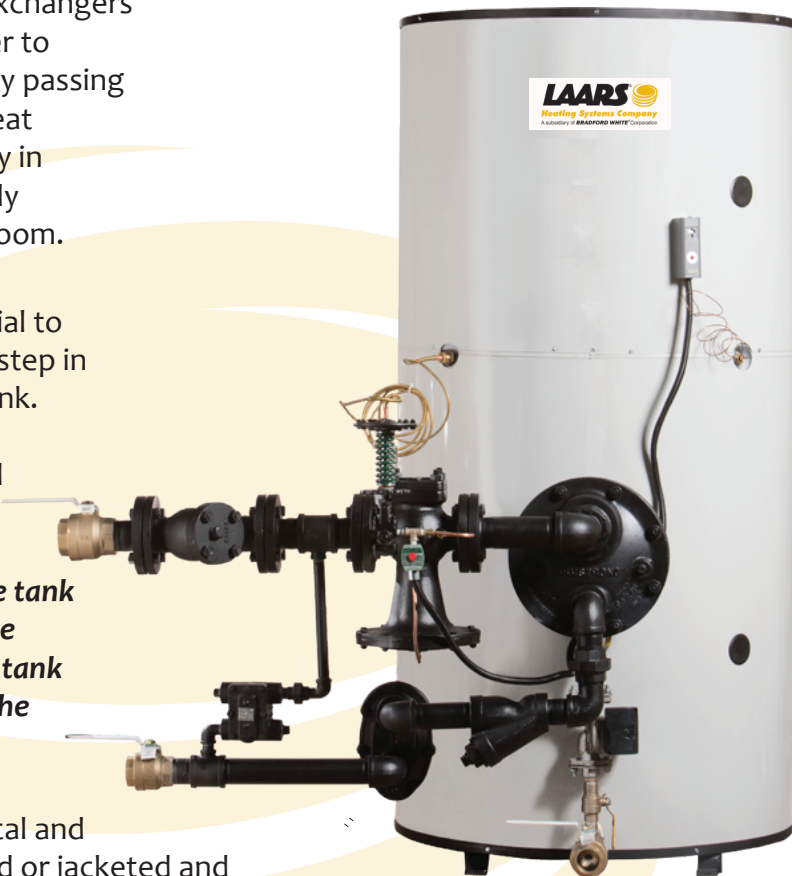


Laars Hot Water Generators are equipped with 2 or 4 pass, single or double wall construction, U-bend tube bundle heat exchangers. We supply both steam to water and water to water systems. The system is operated by passing steam or hot water through the coil to heat the tank contents. Large heating capacity in small spaces makes this heater particularly suitable for boiler rooms with low head room.

Proper sizing in tank and bundle is essential to achieve optimum performance. The first step in designing your system is to choose the tank. Laars offers many configurations of glass lined, epoxy lined and stainless steel constructed tanks.

Please refer to the list below to choose the tank that best fits your project. Please pay close attention to the overall dimensions of the tank to ensure it will fit within the confines of the room.

Our selection of tanks come in both vertical and horizontal configurations, bare, topcoated or jacketed and insulated. Select from our standard design or customize as needed. All tank fittings come standard as NPT but flanged or grooved ends are available. Glass lining, Double Glass Lining, Epoxy Lining, 316L, 317, 2205 & 2507 stainless steel are also available.



Prefix:

S = Vertical Bare Tank
JS = Vertical Jacketed and Insulated Tank
BH = Horizontal Bare Tank
JH = Horizontal Jacketed and Insulated Tank

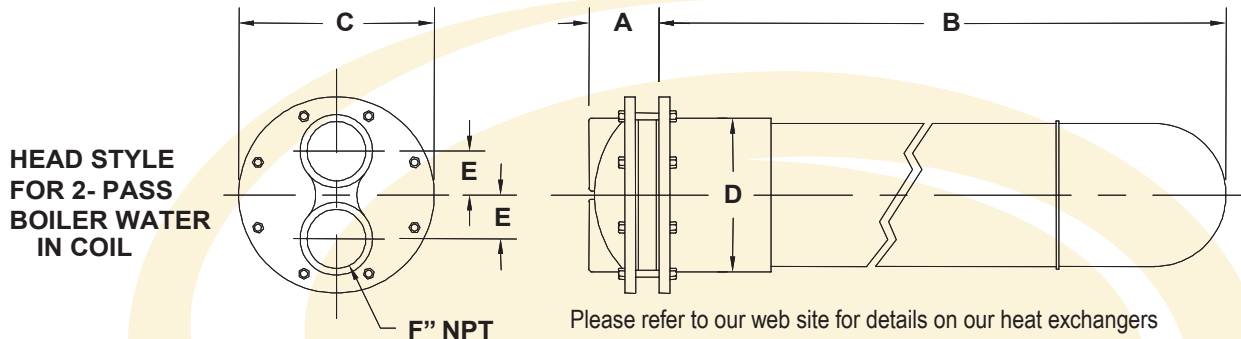
Suffix:

TC = Topcoated Insulation
E = Epoxy
5 = 150 PSI
SS = Stainless Steel 316L, 317, 2205, 2507
(grade must be selected)
DG = Double Glass (10 Yr)

HOT WATER GENERATORS

Laars Tube bundles are typically 2 or 4 pass U-bend heat exchangers. The bundle offers many advantages as it can be operated by passing either steam or hot water through the coil and is an excellent heater for hard water territories. Large capacity in small spaces makes this heater particularly suitable for boiler rooms with low head room.

Laars offers both water to water and steam to water "U" Tube Designs in copper, stainless steel and cupro-nickel. The tube bundle is of "U" bend construction with tube ends expanded into a stationary tube sheet. This construction permits ample expansion or contraction for wide temperature variations. Water in the tank is heated by a fluid or steam circulated through the tubes. This unit is designed primarily for natural convection in the tank.



The first step in sizing your hot water generator is to know how much hot water you need.

Our hot water generators are based from our standard tank designs in both vertical and horizontal configurations, bare, jacketed and insulated or topcoated. **For proper sizing, please provide the above information.**

1. Determine Capacity Required

Heat Load - _____ Btu
(if known)

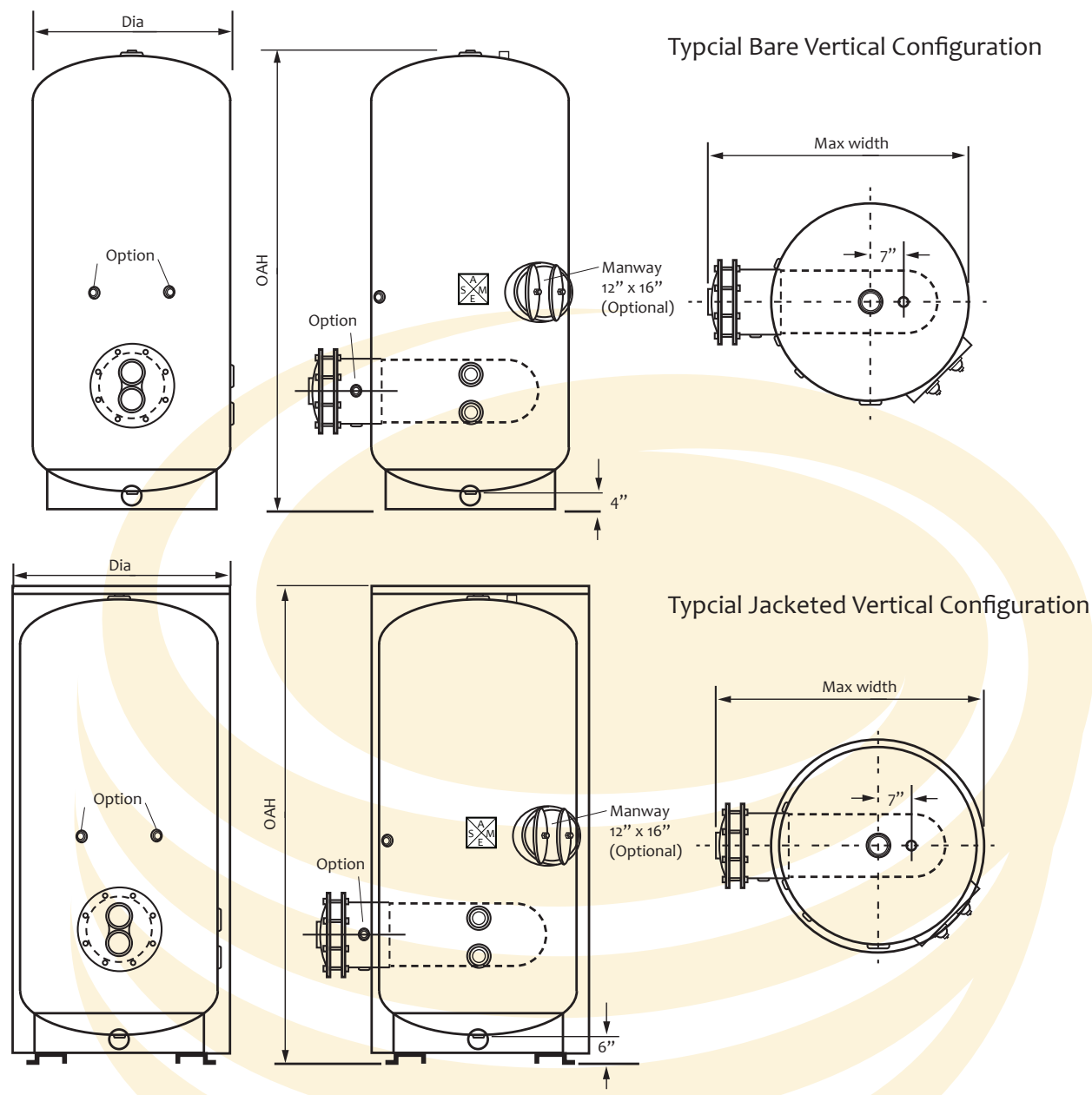
Boiler Water:
Fluid _____
Fluid Temp: _____ F
GPM Available _____ F
(if known)

Steam:
Pressure Available _____ Psi

Tank:
Gallons _____
Pressure Rating _____
Diameter _____ Length _____
Vertical _____
Horizontal _____
Recovery Rate _____ GPH Time _____
Start Temperature _____ °F Final Temperature _____ °F
Other _____

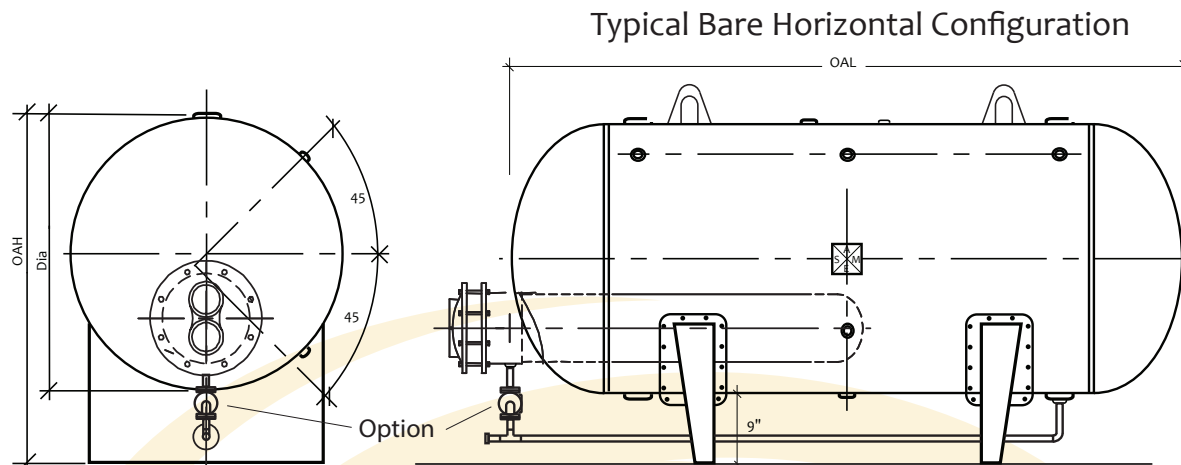
Tube Bundle:
Single Wall _____ Recirculation Pump _____
Double Wall _____ Controls Self Operating _____

HOT WATER GENERATORS



Tank Diameter	Coil Diameter Dimension B				Dimensions	
	8'	10'	12'	14'	C	D
30	21	22	n/a	n/a	17½	47¾
36	23⅜	24⅜	n/a	n/a	19	53¾
42	23⅞	24⅞	25⅞	26½	20½	59¾
48	25⅞	26⅞	27⅞	28½	22	65¾

HOT WATER GENERATORS



Horizontal tanks are also available with steel jacket and insulation

Tank Diameter	Coil DiameterDimension B				Dimensions	
	8"	10"	12"	14"	C	D
30	18½	19¾	21⅜	n/a	39	17¾
36	19⅝	20½	21⅞	23½	45	17¾
42	19¾	21	22½	24	51	17¾
48	20⅜	21⅝	23⅜	26⅝	57	17¾

NOTES:

- Standard materials for potable tank water include copper tubes, 316L stainless steel tank side tube sheets, and spacers and cast iron heads.
- For construction materials other than standard, consult factory.
- An additional carbon steel tube sheet present in double wall units is not shown in these layouts
- Dimensions shown represent 125 PSI standard tank construction. For additional dimensional information, consult the factory.
- Clearance should be provided at installation to permit coil removal and access to the manway if required.

2. Select the proper unit

- First refer to proper temperature rise (typically 40°F to 140°F)
- Next refer to proper steam pressure or boiler water temperature.
- Select tank size from appropriate table.
- Consult Factory for Heat Exchanger sizes and conditions not listed.

VERTICAL JACKETED AND INSULATED TANKS

Model Number	Actual Gallons	Nominal Gallons	Diameter	Overall Height	Weight	Power Anode	
JS-30-063-G	175	193	34"	71"	548 Lbs	1	
JS-30-075-G	210	229	34"	83"	613 Lbs	1	
JS-30-085-G	240	260	34"	93"	673 Lbs	1	
JS-30-099-G	280	303	34"	107"	700 Lbs	2	
JS-30-111-G	320	340	34"	119"	730 Lbs	2	
JS-36-072-G	285	318	40"	80"	714 Lbs	2	400mm
JS-36-078-G	310	344	40"	86"	782 Lbs	2	
JS-36-085-G	340	375	40"	93"	845 Lbs	2	
JS-36-090-G	360	397	40"	98"	894 Lbs	2	
JS-36-102-G	415	449	40"	110"	982 Lbs	2	
JS-36-114-G	465	502	40"	122"	1106 Lbs	2	
JS-36-126-G	515	555	40"	134"	1194 Lbs	2	
JS-42-081-G	435	486	46"	89"	1024 Lbs	2	
JS-42-084-G	453	504	46"	92"	1074 Lbs	2	
JS-42-093-G	505	558	46"	101"	1168 Lbs	2	
JS-42-105-G	575	630	46"	113"	1292 Lbs	2	
JS-42-117-G	645	702	46"	125"	1392 Lbs	2	
JS-42-129-G	720	774	46"	137"	1498 Lbs	2	
JS-42-139-G	790	846	46"	147"	1587 Lbs	2	
JS-48-073-G	500	572	52"	81"	1381 Lbs	2	800mm
JS-48-084-G	580	658	52"	92"	1539 Lbs	2	
JS-48-096-G	675	752	52"	104"	1653 Lbs	2	
JS-48-108-G	765	846	52"	116"	1803 Lbs	2	
JS-48-120-G	860	940	52"	128"	1947 Lbs	2	
JS-48-141-G	1040	1128	52"	149"	2216 Lbs	2	
JS-54-099-G	875	981	58"	109"	1776 Lbs		Consult Factory
JS-54-113-G	1000	1119	58"	123"	2900 Lbs		
JS-60-096-G	1174	1000	64"	106"	3325 Lbs		Consult Factory
JS-60-114-G	1245	1395	64"	124"	3326 Lbs		
JS-60-128-G	1430	1565	64"	138"	3501 Lbs		
JS-60-138-G	1530	1689	64"	148"	3541 Lbs		

Tank Construction - All Laars tanks have either a glass lining or an epoxy lining.

Also available in 316L, and 2205 stainless steel.

ASME Construction - All Laars tanks are manufactured in accordance with the ASME code and certified for 125 psi working pressure. Optional 150 psi is also available

Anode Protection - All glass lined tanks are equipped with standard magnesium anode rods to provide protection against corrosion. Optional non-consumable Power anodes are available.

Manway - Manways are only provided as standard on our epoxy lined tanks. They are ordered as optional equipment on glass lined tanks.

Tank Circulator Pump - Circulator packages are available as optional equipment.

Five Year Limited Warranty - All glass lined tanks come with a standard 5 year warranty for tank protection.

A 10 year limited warranty is available with our Double Glass Option. See full warranty for details.

One-Year Limited Warranty - Tube bundles and parts have a standard 1 year limited warranty. See warranty for details.

Temperature Controls are available as an option.

VERTICAL BARE TANKS / TOPCOAT ADDER

Vertical Bare Tanks / Topcoat adder

Model No.	Actual Gallons	Nominal Gallons	Dia.	Overall Height	Wt.		Model No.	Actual Gallons	Nominal Gallons	Dia.	Overall Height	Wt.
S-30-063-G	175	193	30"	67"	340 Lbs		S-72-100-G	1500	1763	72"	106"	2677 Lbs
S-30-075-G	210	229	30"	79"	387 Lbs		S-72-117-G	1800	2062	72"	123"	3035 Lbs
S-30-085-G	240	260	30"	89"	420 Lbs		S-72-120-G	1865	2115	72"	126"	3099 Lbs
S-30-099-G	280	303	30"	103"	483 Lbs		S-72-128-G	2000	2256	72"	134"	3267 Lbs
S-30-111-G	320	340	30"	115"	530 Lbs		S-72-144-G	2285	2538	72"	150"	3304 Lbs
S-36-072-G	285	318	36"	76"	550 Lbs		S-72-157-G	2500	2767	72"	163"	3878 Lbs
S-36-078-G	310	344	36"	82"	588 Lbs		S-72-168-G	2700	2961	72"	174"	4110 Lbs
S-36-085-G	340	375	36"	89"	633 Lbs		S-72-192-G	3115	3384	72"	198"	4616 Lbs
S-36-090-G	360	397	36"	94"	664 Lbs		S-72-216-G	3530	3807	72"	222"	5122 Lbs
S-36-102-G	415	449	36"	106"	742 Lbs		S-72-250-G	4120	4406	72"	256"	5616 Lbs
S-36-114-G	465	502	36"	118"	818 Lbs		S-84-121-G	2500	2901	84"	127"	4265 Lbs
S-36-126-G	515	555	36"	130"	894 Lbs		S-84-138-G	2915	3310	84"	144"	4747 Lbs
S-42-081-G	435	486	42"	85"	783 Lbs		S-84-162-G	3480	3886	84"	168"	5428 Lbs
S-42-084-G	453	504	42"	88"	805 Lbs		S-84-186-G	4045	4462	84"	192"	6109 Lbs
S-42-093-G	505	558	42"	97"	874 Lbs		S-84-210-G	4610	5038	84"	216"	6789 Lbs
S-42-105-G	575	630	42"	109"	963 Lbs		S-84-256-G	5695	6141	84"	262"	8094 Lbs
S-42-117-G	645	702	42"	121"	1052 Lbs		Please visit www.laars.com for full details and dimensions					
S-42-129-G	720	774	42"	133"	1140 Lbs							
S-42-139-G	790	846	42"	143"	1217 Lbs							
S-48-073-G	500	572	48"	77"	1038 Lbs							
S-48-084-G	580	658	48"	88"	1161 Lbs							
S-48-096-G	675	752	48"	100"	1298 Lbs							
S-48-108-G	765	846	48"	112"	1433 Lbs							
S-48-116-G	836	909	48"	120"	1522 Lbs							
S-48-120-G	860	940	48"	124"	1577 Lbs							
S-48-141-G	1040	1128	48"	145"	1805 Lbs							
S-48-168-G	1225	1306	48"	172"	2186 Lbs							
S-54-099-G	875	981	54"	105"	1596 Lbs							
S-54-113-G	1000	1119	54"	119"	1827 Lbs							
S-54-123-G	1110	1219	54"	129"	1889 Lbs							
S-54-134-G	1200	1327	54"	140"	1969 Lbs							
S-54-147-G	1340	1457	54"	153"	2182 Lbs							
S-54-165-G	1500	1635	54"	171"	2484 Lbs							
S-54-183-G	1690	1814	54"	189"	2722 Lbs							
S-60-096-G	1000	1174	60"	96"	2007 Lbs							
S-60-114-G	1245	1395	60"	120"	2376 Lbs							
S-60-138-G	1530	1689	60"	144"	2797 Lbs							
S-60-168-G	1820	1983	60"	174"	3210 Lbs							
S-60-177-G	2000	2165	60"	183"	3481 Lbs							
S-60-186-G	2105	2276	60"	192"	3639 Lbs							
S-60-210-G	2395	2570	60"	216"	3922 Lbs							

HOT WATER GENERATORS

Standard Features:

ASME tank Construction
Glass Lined Tank
5 Year Limited Warranty
One-Year Limited Warranty on Tube Bundle and Parts

Optional Features:

Vacuum Breaker
Manway
150 PSI
High Limit Solenoid Valve
Temperature and Pressure Gauge
Air Vent
Re-Circulation Pump Package
Power Anodes
Double Ultonium Glass Inning (10 Year Warranty)
R-16 Topcoat Insulation
Jacket & Insulated ASHRAE 901b
Vertical or Horizontal configurations

Tank Linings Options:

Epoxy

Tank Material Options:

316L, 317, 2205 & 2507 Stainless Steels

Controls:

Steam to Water Controls:

High limit shut-off valve
2-way self operated temperature control valve
2 - Isolation valves
Float and thermostatic steam trap
2 - Wye strainers
Unions and connections
All necessary piping

Water to Water Controls

High limit shut-off valve
2-way Self operated temperature control valve
3 - Isolation valves
1 - Wye strainers
Unions, by-pass loop and connections
All necessary piping

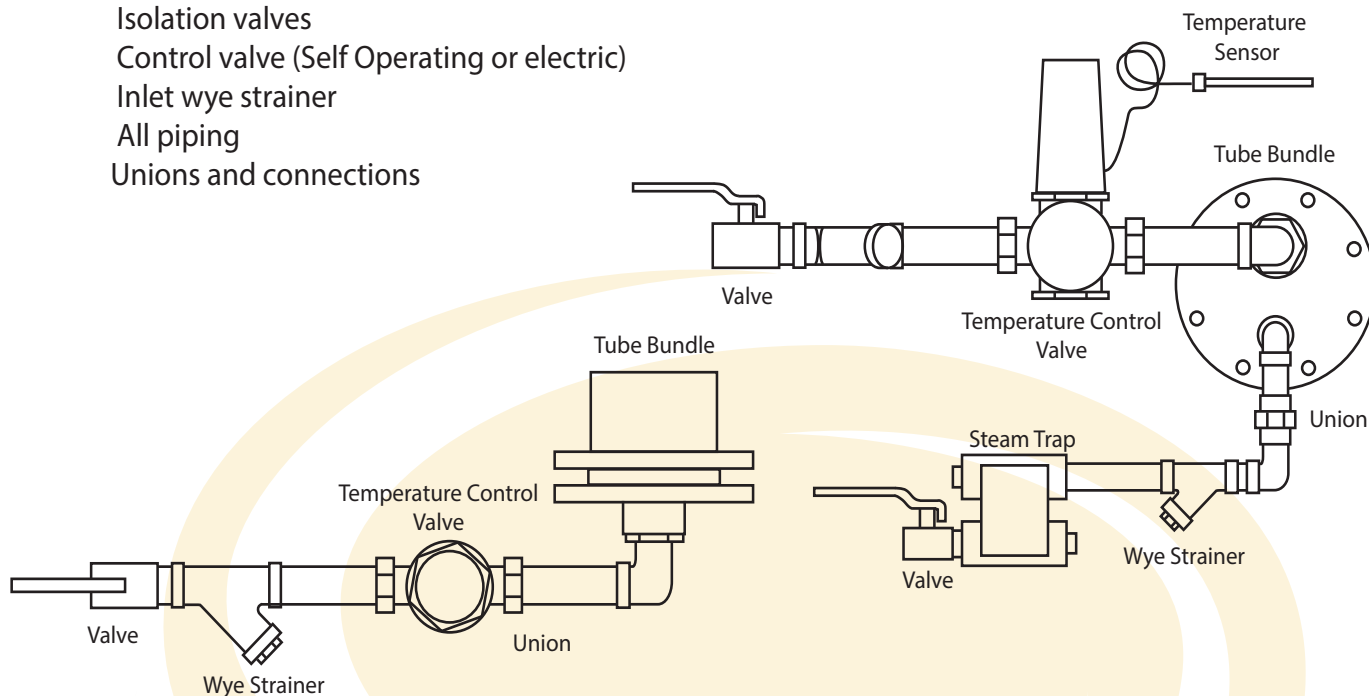
High Limit Option:

This valve is located on the inlet side of the boiler water or steam and require a high limit thermostat mounted to the tank.

Control Packages

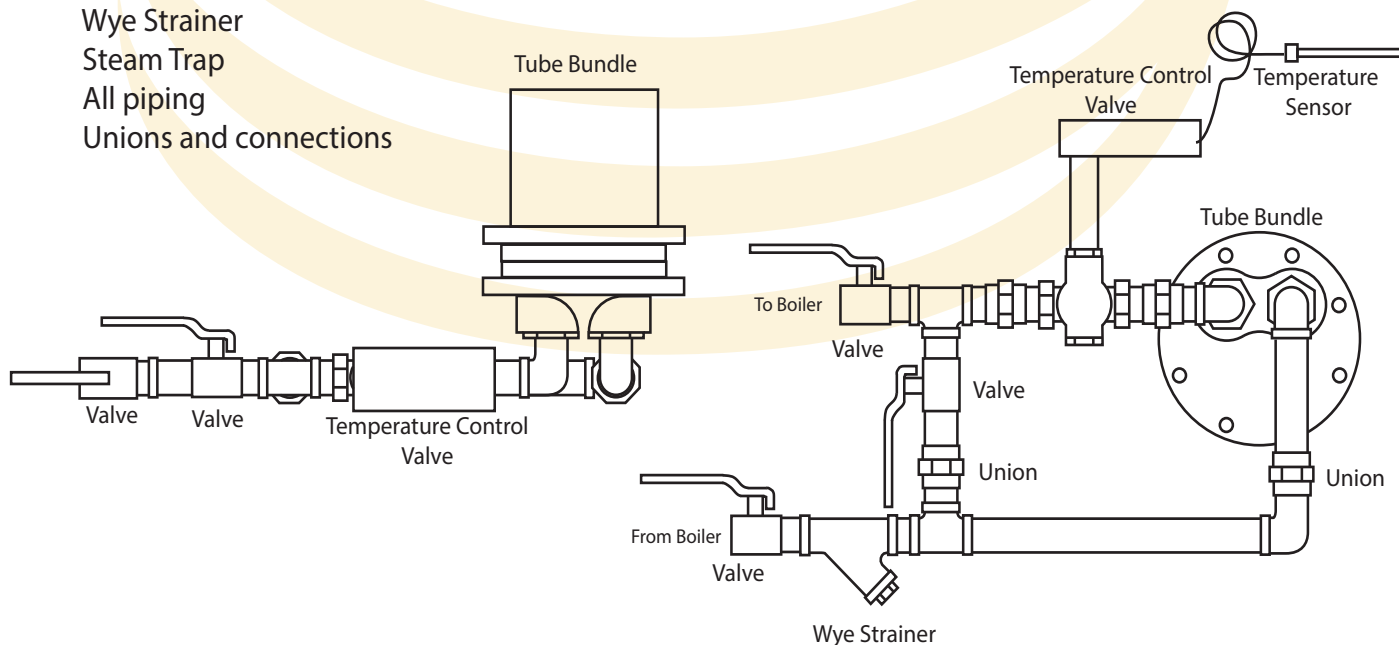
Water to Water control package includes:

Isolation valves
Control valve (Self Operating or electric)
Inlet wye strainer
All piping
Unions and connections



Steam to Water Control Package Includes:

Isolation valves
Temperature Control Valve
Wye Strainer
Steam Trap
All piping
Unions and connections



Glossary of Terms

Tubesheet:

A metallic disk in which the U-tubes are inserted. The tubes are expanded against the holes in the tubesheet to form a leak tight mechanical joint. Common tubesheet materials are steel, stainless steel and brass. The tubesheet is normally sandwiched between the shell flange and the element head. Thickness of the tubesheet must be calculated for various pressure services.

U-Tubes:

Round thin-walled pipe that will carry either one of the two mediums required for the heat transfer process. Normally copper is the preferred material due to its corrosion resistance and high energy transfer rates. Common diameters are 1/2" and 3/4" – O.D. Material selection may depend on operating conditions and the aggressiveness of the environment to which they will be exposed.

Double Wall Tubes:

Double wall U-tubes are required in some areas by law. The intent is to provide a system of detection prior to cross contamination occurring within the system. These are highly specialized tubes in which there is a tube within a tube with a very tight connection between the two. In addition there is a leak path for any failure of either the inner or outer tube. This construction requires the use of (2) tubesheets. The process to mechanically seal both tubes is highly specialized. Generally, double wall tube bundles are not repairable.

Double Wall Tubesheet:

Used with double wall tube bundles, the double wall tubesheet is identified by the presence of two tubesheets set back to back with a thin divider plate in between. Double wall tubesheets also have a weep hole or "leak detection port". Most commonly, two holes are used for leak detection. The weep holes are located between the tubesheets and are positioned 180 degrees from each other.

Spacer Plates:

A spacer plate is a thin plate, usually made of nonferrous material. Its purpose is to maintain correct spacing of the tubes so the liquid can pass freely over them. On long tube bundles, the weight of the tubes can create a natural sag that is avoided if spacers are located at bundle support bars.

Element Head:

The element head is the "end cap" of the tube bundle assembly. The element head provides access for the fluid to enter the U-tubes. The head is usually constructed of carbon steel or cast iron. Generally the element head is 2-pass allowing the fluid to pass through the upper portion of the tubes and return via the bottom portion. Also, there are other applications that require the fluid to pass through the tubes 4 to 6 times. The element head provides the correct flow pattern.

Tie Rod:

A bar maintains correct spacing or locations of spacers and baffles.

Tube Passes:

The number of times circulated fluid in tubes changes direction of flow.

Pass Partition:

A plate located in the element head to divert the flow in the tubes. Arrangement and number will depend on the number of tube passes required.

Housing/ Collar/ Neck:

Nozzle or sheath in which the tube bundle is inserted.

Gasket Material:

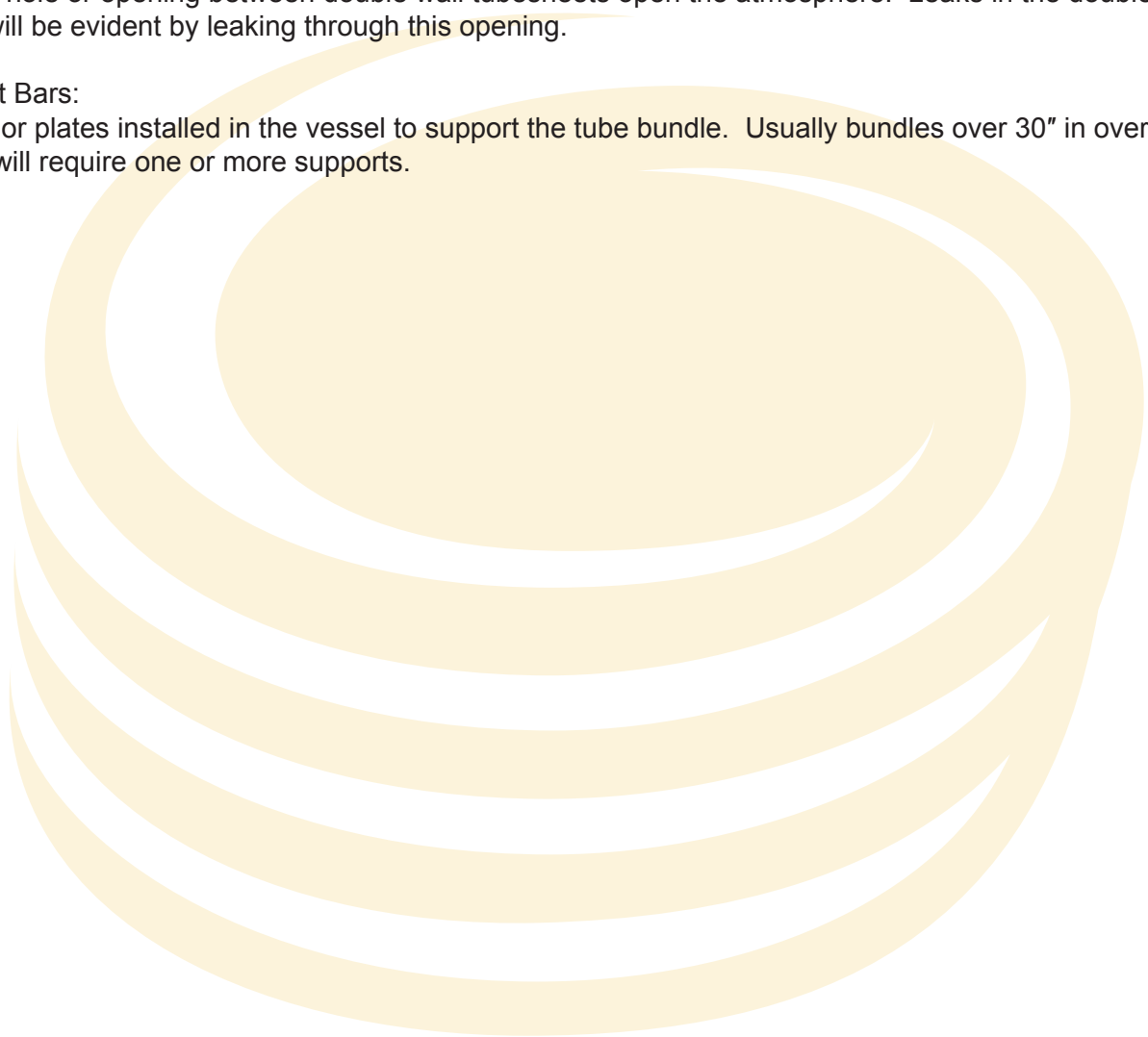
Material which forms a seal between the element head and the tubesheet. It also includes an additional gasket between the element neck/ housing and the tubesheet. Material selection depends on the pressure, fluids and temperatures particular to the given service.

Weep Hole:

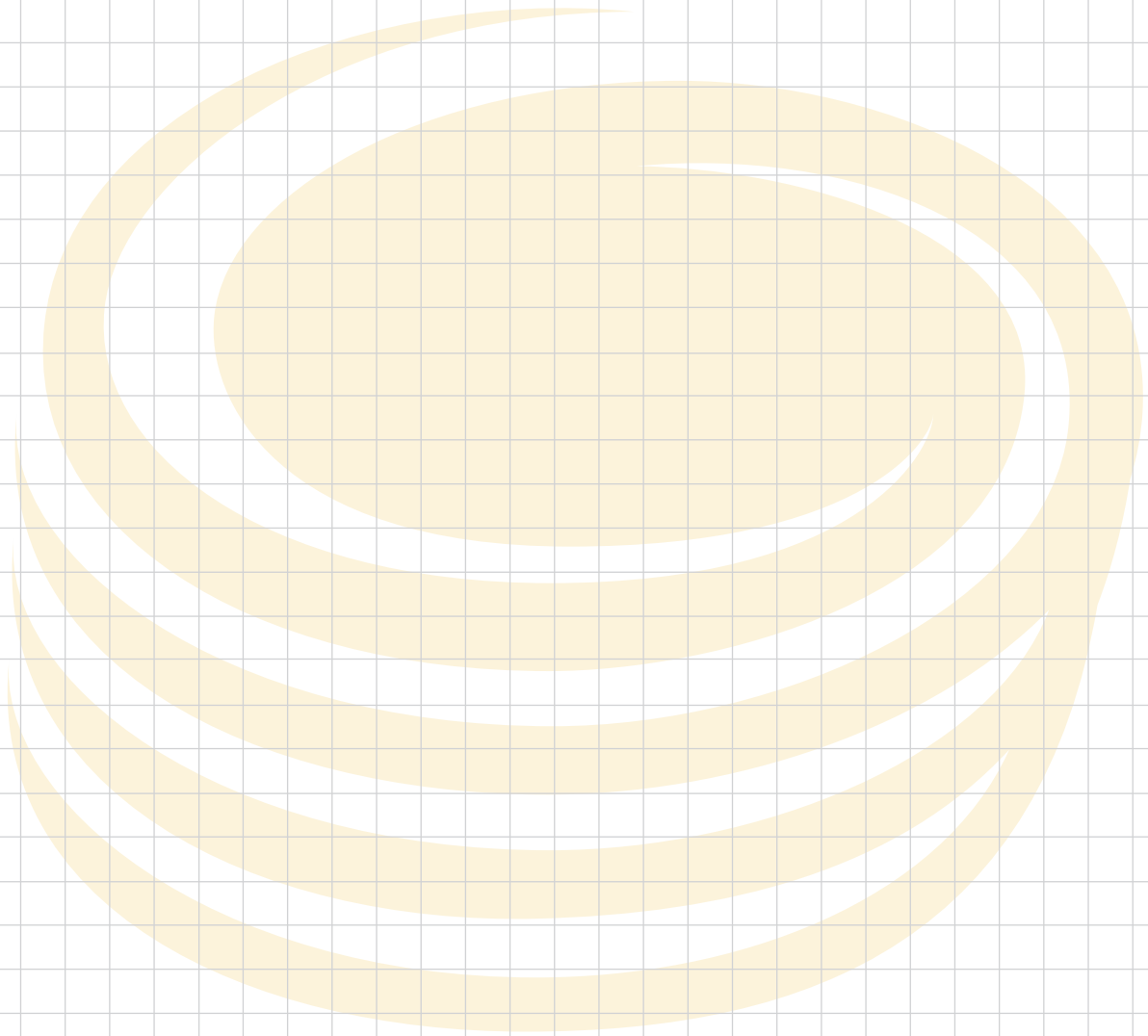
A small hole or opening between double wall tubesheets open the atmosphere. Leaks in the double wall tubes will be evident by leaking through this opening.

Support Bars:

Angles or plates installed in the vessel to support the tube bundle. Usually bundles over 30" in overall length will require one or more supports.

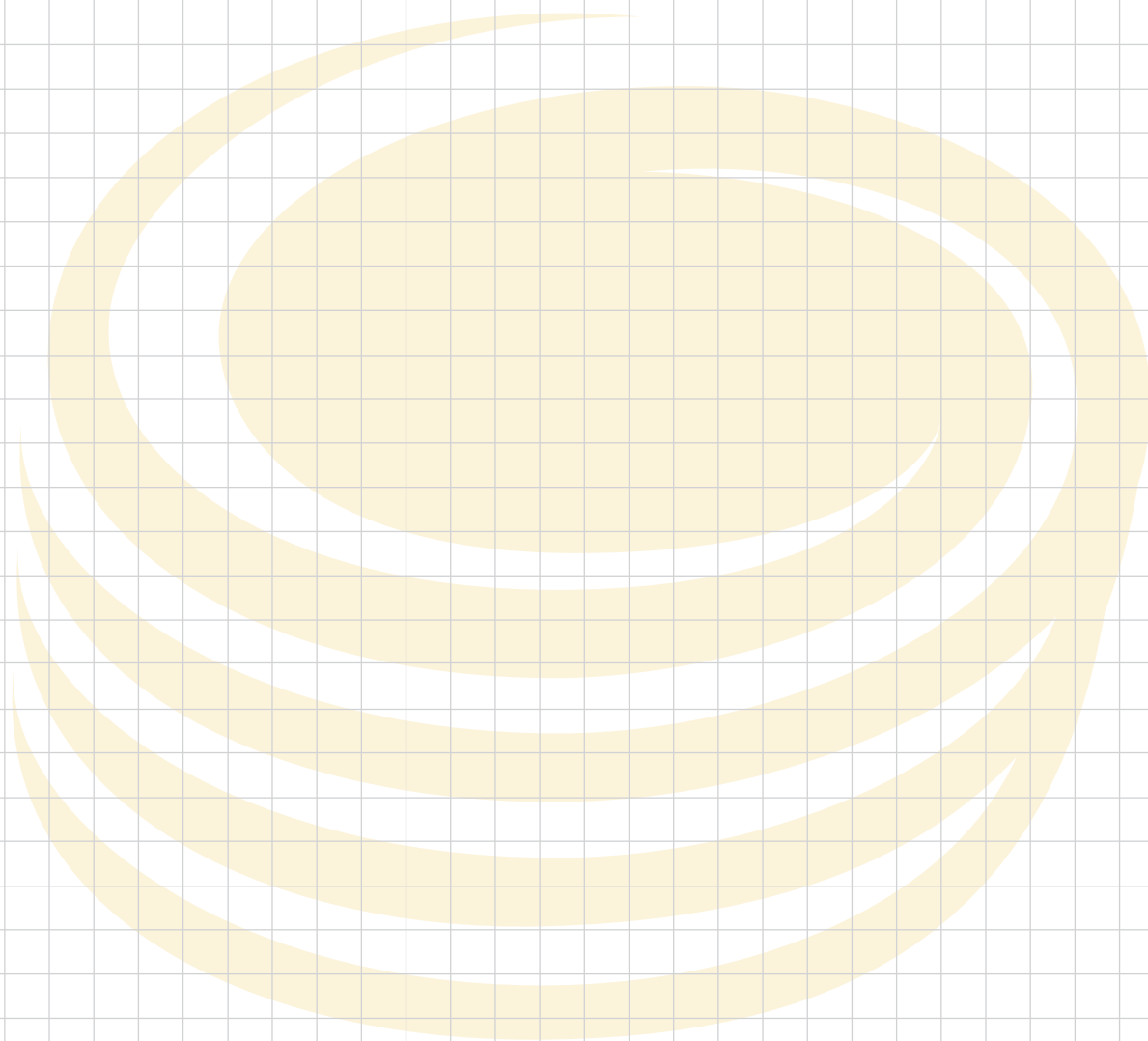


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