



**SEC** *Heat Exchangers*

**TECHNICAL CATALOGUE**

# Table of Contents

<b>TABLE OF CONTENTS</b> .....	2
<b>DESCRIPTION OF SEC HEAT EXCHANGERS</b> .....	3
<b>SEC HEAT EXCHANGER TECHNOLOGY COIL TUBE DESIGNS</b> .....	4
<b>CONSTRUCTION FEATURES</b> .....	5
<b>OPERATING PRINCIPLE</b> .....	6
<b>SEC MODEL INFORMATION &amp; DRAWINGS</b> .....	7
C.3.12.90 HEAT EXCHANGER .....	7
C.8.19.90 HEAT EXCHANGER .....	8
C.14.21.90 HEAT EXCHANGER .....	9
P.12.92.50 HEAT EXCHANGER .....	10
C.12.92.50 HEAT EXCHANGER .....	11
P.21.53.50 HEAT EXCHANGER .....	12
C.21.53.50 HEAT EXCHANGER .....	13
CS.24.76.50 HEAT EXCHANGER .....	14
CS.33.80.50 HEAT EXCHANGER .....	15
C.24.76.50 HEAT EXCHANGER .....	16
P.43.06.50 HEAT EXCHANGER .....	17
C.43.06.50 HEAT EXCHANGER .....	18
C.33.80.50 HEAT EXCHANGER .....	19
P.61.35.50 HEAT EXCHANGER .....	20
C.61.35.50 HEAT EXCHANGER .....	21
<del>C.51.67.50 HEAT EXCHANGER .....</del>	<del>22</del>
P.107.64.50 HEAT EXCHANGER .....	23
C.107.64.50 HEAT EXCHANGER .....	24
<del>C.79.65.50 HEAT EXCHANGER .....</del>	<del>25</del>
C.73.41.50 HEAT EXCHANGER .....	26
C.59.20.50 HEAT EXCHANGER .....	27
C.44.13.50 HEAT EXCHANGER .....	28
P.188.37.50 HEAT EXCHANGER .....	29
C.188.37.50 HEAT EXCHANGER .....	30
<del>C.151.77.50 HEAT EXCHANGER .....</del>	<del>31</del>
<del>C.102.26.50 HEAT EXCHANGER .....</del>	<del>32</del>
C.76.42.50 HEAT EXCHANGER .....	33
<del>C.62.43.50 HEAT EXCHANGER .....</del>	<del>34</del>
C.59.74.50 HEAT EXCHANGER .....	35
<b>PL/PLT TYPE HEAT EXCHANGERS</b> .....	36
Engineering Data .....	37
<b>Brazed Plate Series</b> .....	38
Engineering Data .....	39
Flow Diagrams .....	40
<b>Performance Charts</b> .....	41
Domestic Hot Water .....	41
Radiant (Floor) Heating .....	42
Snow Melt .....	43
<b>Plate and Frame Series</b> .....	44
Construction Features .....	45
<b>Titanium Series</b> .....	46
<b>Shell and Tube Series</b> .....	47
Steam/Fluid Model Charts 4 - 30 inch .....	48-60
Fluid/Fluid Model Charts 4 - 30 inch .....	61-73
Mounting Data .....	74
Fluid/Fluid Comparison Charts #1 & #2 .....	75-78
Steam/Fluid Cross Reference Charts .....	79
Fluid/Fluid Cross Reference Charts .....	80
<b>Non-Metallic Series</b> .....	81
<b>Custom Series</b> .....	82
<b>Oil Coolers</b> .....	83
<b>Energy Transfer Systems</b> .....	84
<b>NOTES</b> .....	85
<b>NOTES</b> .....	86
<b>SEC HEAT EXCHANGERS QUOTE FORM</b> .....	87

## Description Of SEC Heat Exchangers

Counter flow units made of stainless steel used in both heating and cooling systems. Non-removable parts. Ideal for steam or water heating systems. Helically corrugated tubes coiled in a spiral tube bundle. Vertical installation reduces space requirements.

### Where They Can Be Installed

- Heating systems
- Chilled water systems
- Ground water systems
- Residential use

### Advantages Of SEC Heat Exchangers

**Low maintenance:** helically corrugated tubes cause turbulence which results in an increase in heat transfer efficiency and in reduction of scale buildup and fouling.

**Compact size and light weight** requires less installation space and low installation costs.

**Flexibility of design:** wide range of types and configurations. Increase or decrease required capacity by adding or removing units.

**Flexibility of conditions:** wide range of pressures, flows and temperatures.

**Low cost of maintenance:** compact, lightweight and can be easily removed from piping systems and flushed if necessary.

**High efficiency:** helically corrugated tubes dramatically increase efficiency of heat transfer in comparison to existing plate or shell & tube heat exchangers.

Our heat exchangers are designed, tested, and manufactured to ASME Code Sec. VIII, Div.1 and will bear U or UM stamp accordingly. SEC heat exchangers are certified by many international and national technical inspection authorities. The heat exchangers are CSA approved, ISO-9002 registered and have obtained the CRN in the Canadian provinces.



## **SEC Heat Exchanger Technology**

SEC heat exchangers were designed with the end-user in mind, a high efficiency shell and tube heat exchanger fabricated from stainless steel 316L that is flexible to use in a wide range of capacities and applications. Its unique features include circular layers of helically, corrugated tubes, a compact design and connection angles ranging between 100°-105°.

Turbulent flow is the dominant mode of fluid flow through the heat exchanger. Whereas in a laminar flow the flow structure is characterized by smooth motion of fluid layers with no mixing of adjacent fluid layers, a turbulent flow is characterized by random, three-dimensional motion of fluid particles. The mixing of fluid layers is a result of velocity fluctuations present in turbulent flow.

Turbulent flow, or mixing of fluid layers, is desired in the heat exchangers. It provides a better mixing, or distribution, of heat in both the shell and tube. The random movement of fluid particles also reduces deposit buildup by performing a “scoop ‘n lift” action with debris lodged along the heat exchanger surfaces. Although turbulence is a direct function of the density and viscosity of the fluid, the flow velocity, and size of the tubes, the corrugated tubes inside SEC heat exchangers induces more turbulence to the flow due to its “bumpy” shape. As a result, the heat exchangers are highly efficient units and may be categorized as self-cleansing.

SEC heat exchangers differ from other shell & tube heat exchanger by the shape and placement of the corrugated tubes inside the shell. The tubes are fabricated into helical coils. The coils are placed inside each other to form circular layers that makes up the tube bundle. Each layer flows in the opposite direction to the layers surrounding it resulting in an overall crisscross pattern.

This design offers many advantageous over the conventional, straight tube heat exchangers. The large number of tubes closely packed together provides a large heat transfer area within a compact space, resulting in higher performance at a relatively lower cost. The layers of tubes in the criss-cross pattern provides rapid and more uniform heating of fluids which increases the overall heat transfer coefficient.

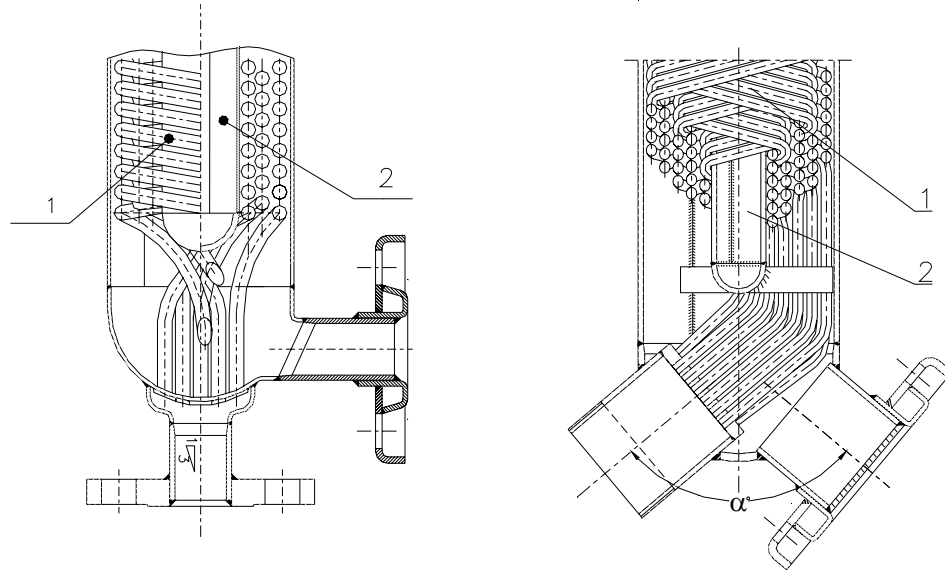
The heat exchangers are designed for vertical installation. This, along with their compact size, enables them to be installed in any application. The design requires less installation space and low installation costs.

Depending on the type of heat exchanger, the center-to-center angle of the connections ranges from 100° to 105°, not the traditional 90° angle. This forms a gradual flow entrance and reduces any sharp corners where flow separation may occur, resulting in an appreciable head loss. The entrance angle also prevents debris from lodging in corners, which often occurs with sharp corners.

## Construction Features

The heat exchangers are designed and fabricated as a single unit with non-removable parts.

The cylindrical shell encloses a tube bundle, which consists of circular layers of helically, corrugated tubes.



**Figure 1 Cross-section of C.xx.xx.90 (left) and C or Pxx.xx.50 (right) type heat exchangers. 1-Tube bundle, 2-Core**

Each layer flows in the opposite direction to the layers surrounding it in a criss-cross manner. The tube bundle has perforated bottoms which are welded near the connections. Both ends of the cylindrical shell are enclosed within hemispherical heads.

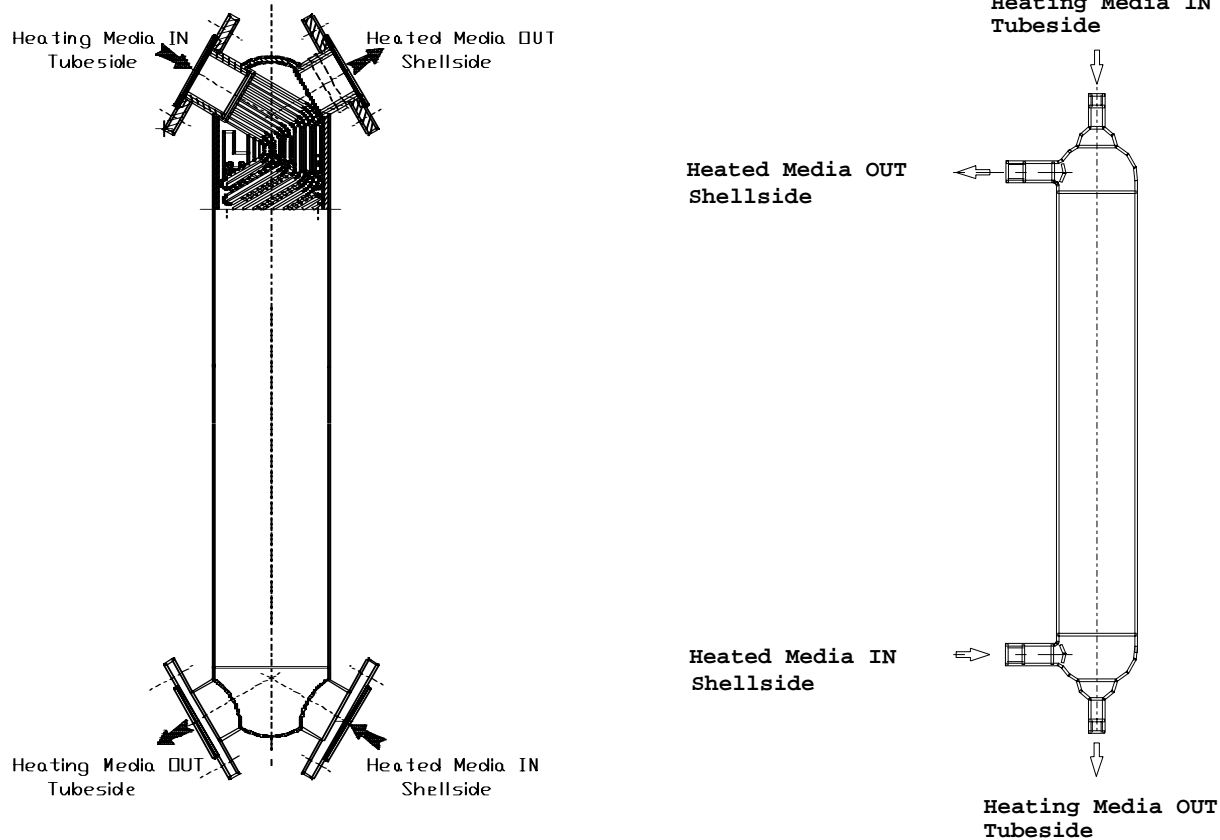
**P-type** heat exchangers consist of tube bundles made of smooth tubes. **C-type** heat exchangers consist of tube bundles with corrugated tubes. **CS-type** heat exchangers are shortened versions of the C-type and are usually installed in applications where there are height limitations. C.xx.xx.90 type heat exchangers have straight, 90° angle connections. C.xx.xx.50 type heat exchangers have connections at 50° from the central axis.

Each heat exchanger has a total of four (4) symmetrically located connections, two on each hemispherical head. One pair of opposing connections is connected to the tube side while the other pair is connected to the shell side.

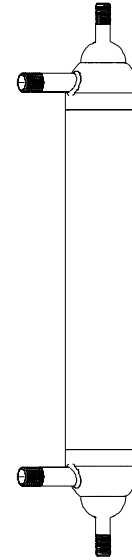
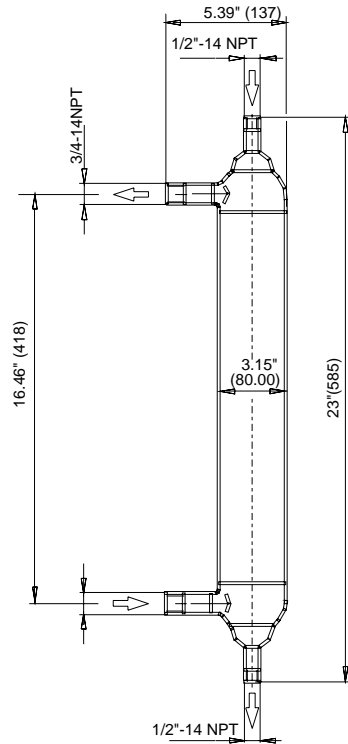
## SEC Heat Exchangers Operating Principle

A heat exchanger is a device in which heat is transferred from one flowing fluid to another. Shell and Tube heat exchangers are the most common type of heat exchangers for liquid/liquid service although many applications also involve steam and certain gases. SEC heat exchangers are counter flow units, which from a thermodynamic point of view extract more heat from a given fluid stream than the other common types of heat exchangers.

Normally, the heating medium flows through the tubes, although for specific properties or conditions ( e.g. high viscosity, high pressure drops), the heating medium can flow through the shell side. Thermal energy is transferred through the tube walls. The total heat load is dependent on the flow parameters of the fluid.

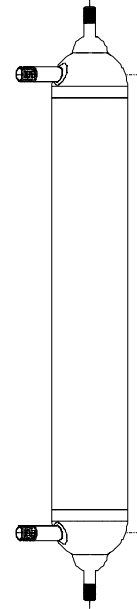
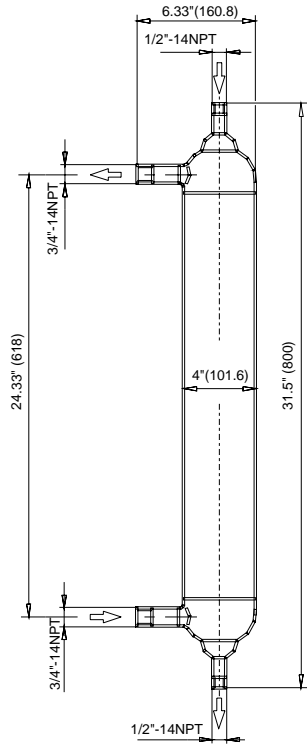


**C.3.12.90 HEAT EXCHANGER**



Type	C.3.12.90 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	3.12 ft <sup>2</sup> (0.29 m <sup>2</sup> )
Connections		
	Tube side	threaded NPT 3/4"
	Shell side	threaded NPT 3/4"
Material	stainless steel AISI 316L	
Volume		
	Shell side	0.25gal (1.0 L)
	Tube side	0.13gal (0.5 L)
Weight		
	threaded connections	11.0lb (5.0 kg)

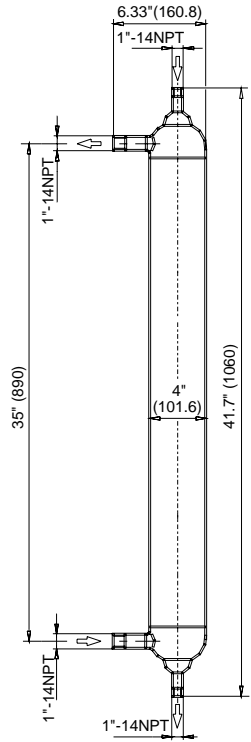
**C.8.19.90 HEAT EXCHANGER**



Type	C.8.19.90 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes $\varnothing$ 8 mm
	size	8.19 ft <sup>2</sup> (0.761 m <sup>2</sup> )
Connections		
	tube side	threaded NPT 1"
	shell side	threaded NPT 1"
Material	stainless steel AISI 316L	
Volume		
	shell side	0.63gal (2.4 L)
	tube side	0.29gal (1.1 L)
Weight		
	threaded connections	17.6lb (8.0 kg)

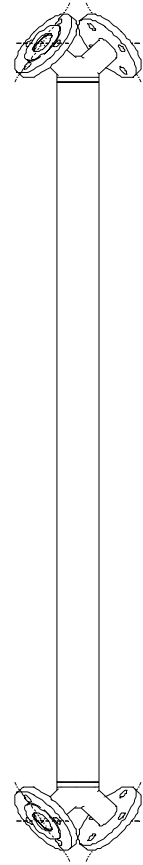
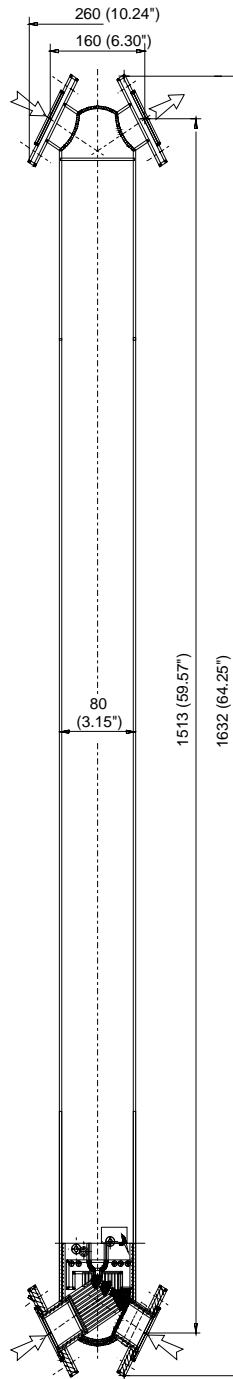


**C.14.21.90 HEAT EXCHANGER**



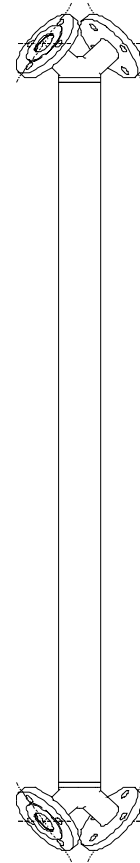
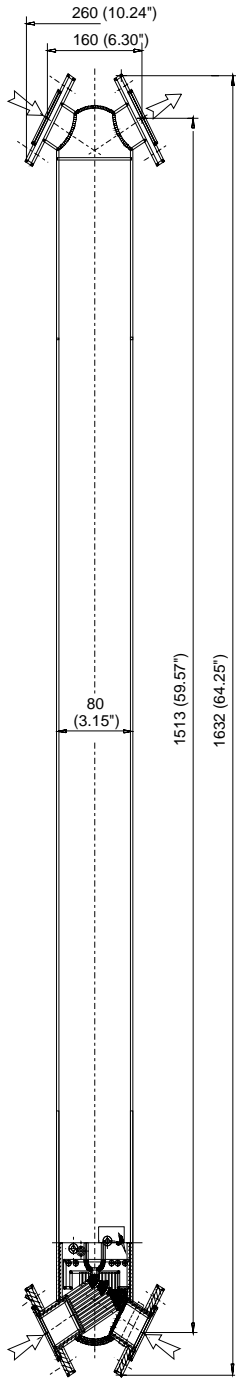
Type	C.14.21.90 counter flow heat exchanger
Working Pressure	250 psi @ 406 F
Working Temperature	min -4 F to max 406 F
Hydraulic Characteristics	logarithmic
Heat Transfer Surface	
type	corrugated tubes $\varnothing$ 8 mm
size	14.20 ft <sup>2</sup> (1.32 m <sup>2</sup> )
Connections	
tube side	threaded NPT 1"
shell side	threaded NPT 1"
Material	stainless steel AISI 316L
Volume	
shell side	0.79gal (3.0 L)
tube side	0.50gal (1.9 L)
Weight	
threaded connections	22.0lb (10.0 kg)

**P.12.92.50 HEAT EXCHANGER**



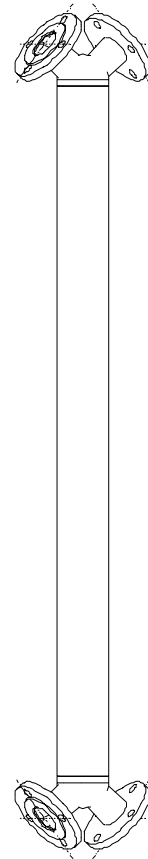
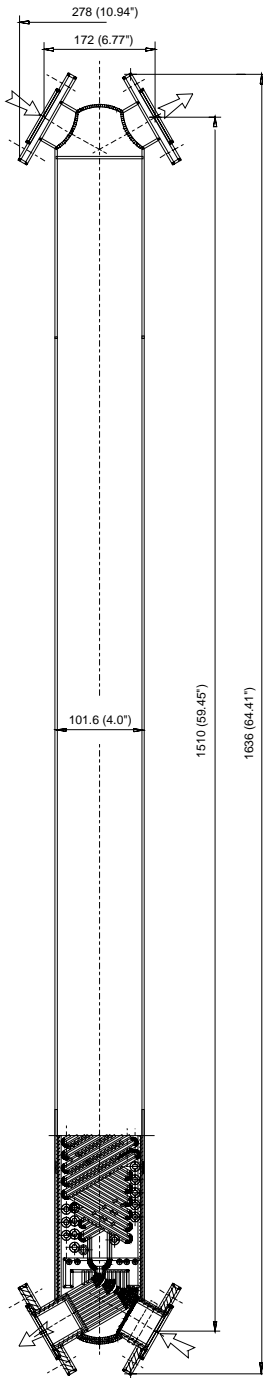
Type	P.12.92.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	smooth tubes Ø 8 mm
	size	12.91 ft <sup>2</sup> (1.2 m <sup>2</sup> )
Connections		
	tube side	1 ½" FNPT or Die Formed Flanges (compatible to 1 ½" CL 300)
	shell side	1 ½" FNPT or Die Formed Flanges (compatible to 1 ½" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	1.72gal (6.5 L)
	tube side	0.95gal (3.6 L)
Weight		
	threaded connections	43.0lb (19.5 kg)
	flanged connections	51.8lb (23.5 kg)

**C.12.92.50 HEAT EXCHANGER**



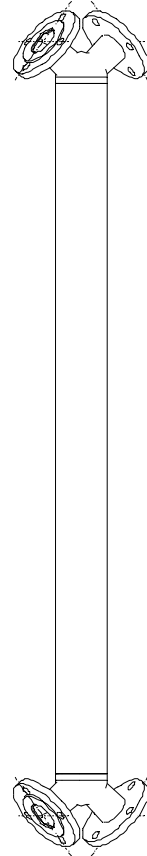
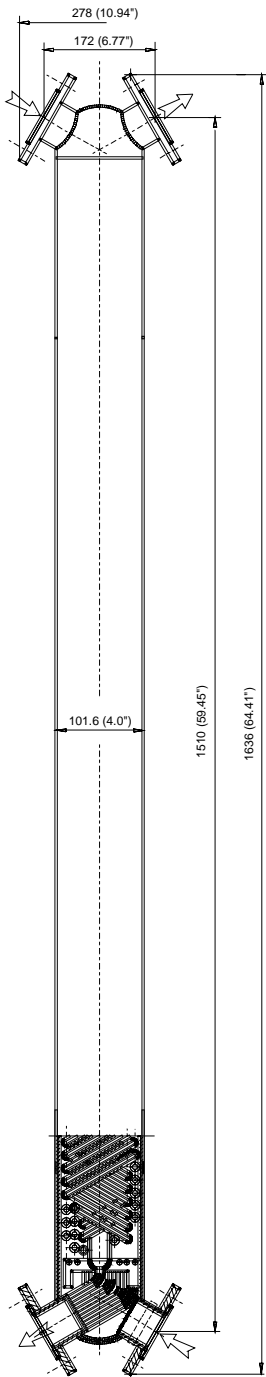
Type	C.12.92.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
type	corrugated tubes Ø 8 mm	
size	12.91 ft <sup>2</sup> (1.2 m <sup>2</sup> )	
Connections		
tube side	1 ½" FNPT or Die Formed Flanges (compatible to 1 ½" CL 300)	
shell side	1 ½" FNPT or Die Formed Flanges (compatible to 1 ½" CL 300)	
Material	stainless steel AISI 316L	
Volume		
shell side	1.72gal (6.5 L)	
tube side	0.95gal (3.6 L)	
Weight		
threaded connections	43.0lb (19.5 kg)	
flanged connections	51.8lb (23.5 kg)	

**P.21.53.50 HEAT EXCHANGER**



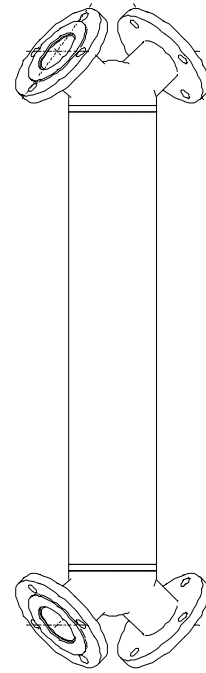
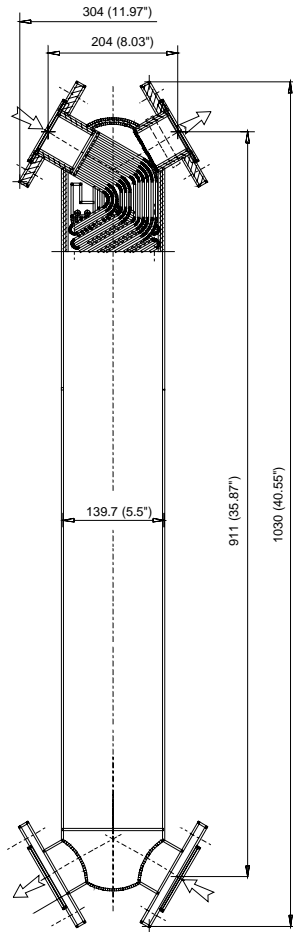
Type	P.21.53.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	smooth tubes Ø 8 mm
	size	21.52 ft <sup>2</sup> (2.0 m <sup>2</sup> )
Connections		
	tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
	shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	1.48gal (5.6 L)
	tube side	0.79gal (3.0 L)
Weight		
	threaded connections	51.1lb (23.2 kg)
	flanged connections	61.7lb (28.0 kg)

**C.21.53.50 HEAT EXCHANGER**



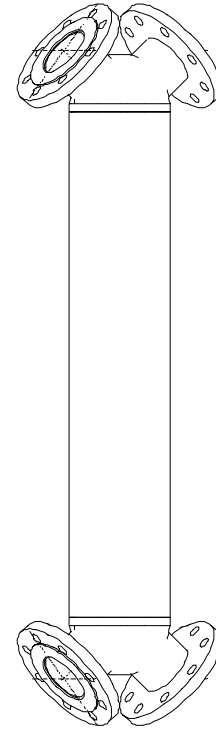
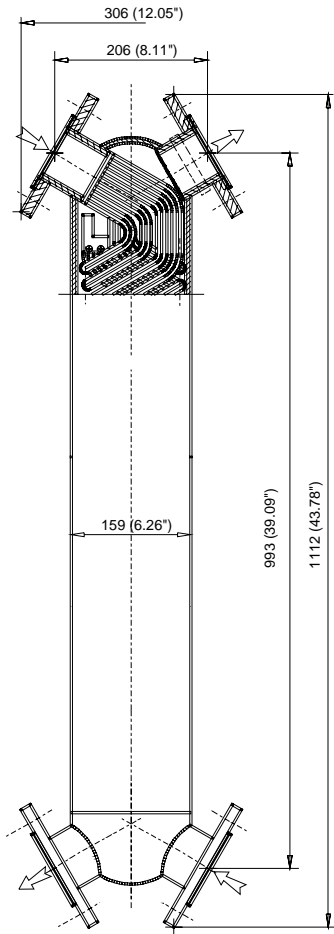
Type	C.21.53.50 counter flow heat exchanger
Working Pressure	250 psi @ 406 F
Working Temperature	min -4 F to max 406 F
Hydraulic Characteristics	logarithmic
Heat Transfer Surface	
type	corrugated tubes $\varnothing$ 8 mm
size	21.52 ft <sup>2</sup> (2.0 m <sup>2</sup> )
Connections	
tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L
Volume	
shell side	1.48gal (5.6 L)
tube side	0.79gal (3.0 L)
Weight	
threaded connections	51.1lb (23.2 kg)
flanged connections	61.7lb (28.0 kg)

**CS.24.76.50 HEAT EXCHANGER**



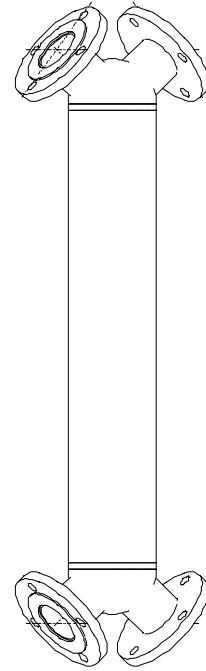
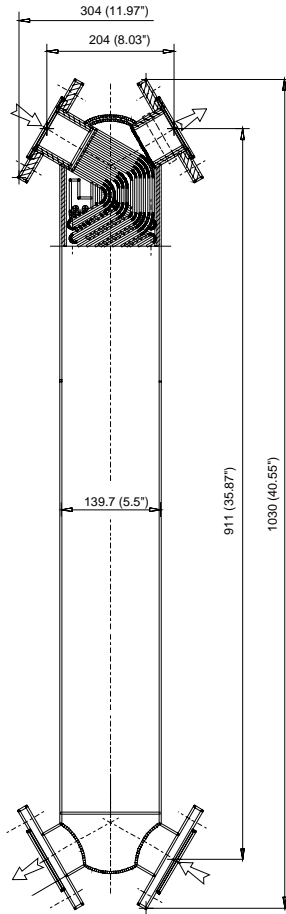
Type	CS.24.76.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	24.75 ft <sup>2</sup> (2.3 m <sup>2</sup> )
Connections		
	tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
	shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	1.64gal (6.2 L)
	tube side	0.86gal (3.3 L)
Weight		
	threaded connections	54.0lb (24.5 kg)
	flanged connections	63.9lb (29.0 kg)

**CS.33.80.50 HEAT EXCHANGER**



Type	CS.33.80.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	33.79 ft <sup>2</sup> (3.14 m <sup>2</sup> )
Connections		
	tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
	shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	2.58gal (9.8 L)
	tube side	1.20gal (4.5 L)
Weight		
	threaded connections	68.3lb (31.0 kg)
	flanged connections	77.2 lb (35.0 kg)

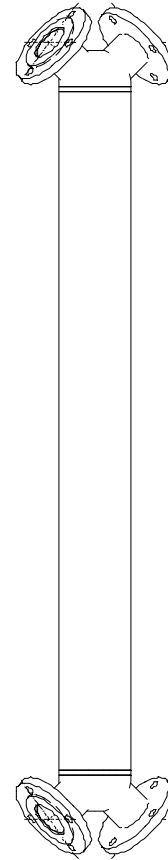
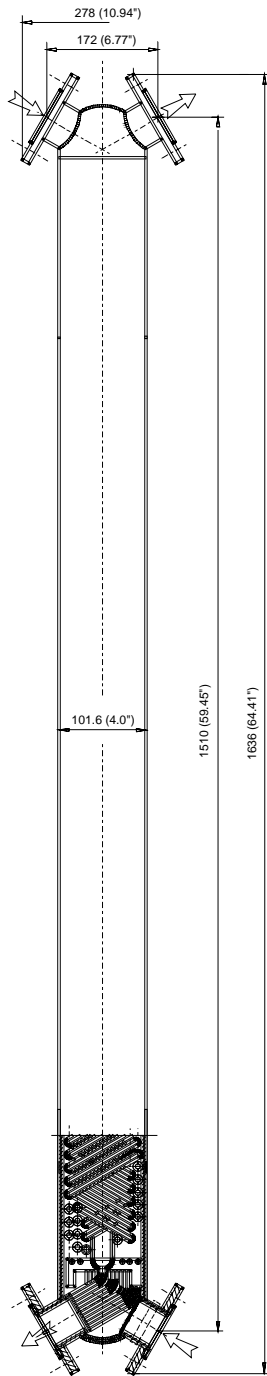
**C.24.76.50 HEAT EXCHANGER**



Type	C.24.76.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	24.75 ft <sup>2</sup> (2.3 m <sup>2</sup> )
Connections		
	tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
	shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	1.32gal (5L)
	tube side	1.06gal (4.8 L)
Weight		
	threaded connections	54.0lb (24.5 kg)
	flanged connections	63.9lb (29.0 kg)

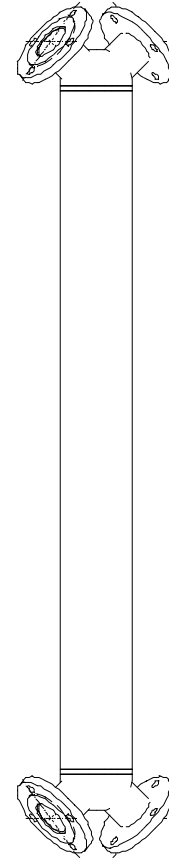
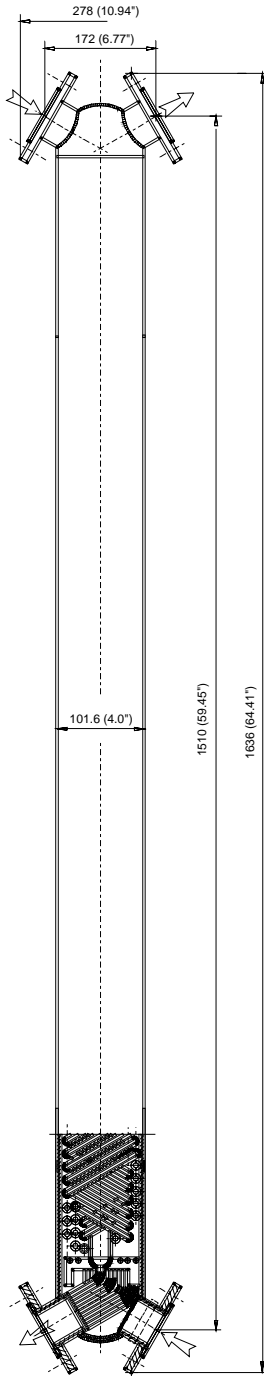


**P.43.06.50 HEAT EXCHANGER**



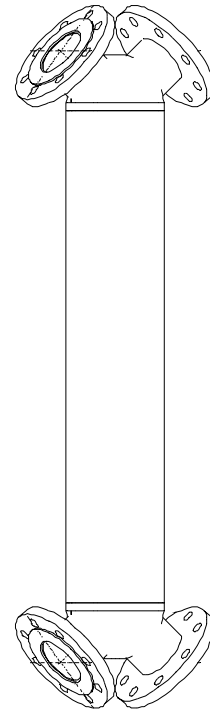
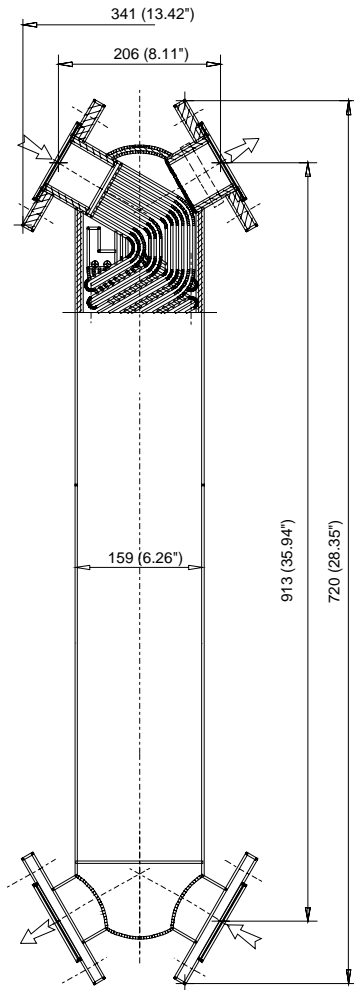
Type	P.43.06.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
type	smooth tubes Ø 8 mm	
size	43.04 ft <sup>2</sup> (4.0 m <sup>2</sup> )	
Connections		
tube side	2 ½" FNPT or Die Formed Flanges (compatible to 2 ½" CL 300)	
shell side	2 ½" FNPT or Die Formed Flanges (compatible to 2 ½" CL 300)	
Material	stainless steel AISI 316L	
Volume		
shell side	3.01gal (11.4 L)	
tube side	1.93gal (7.3 L)	
Weight		
threaded connections	85.3lb (38.7 kg)	
flanged connections	95.9lb (43.5 kg)	

**C.43.06.50 HEAT EXCHANGER**



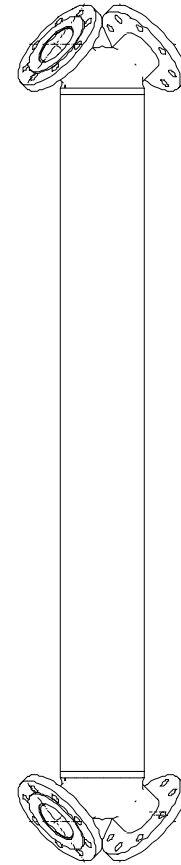
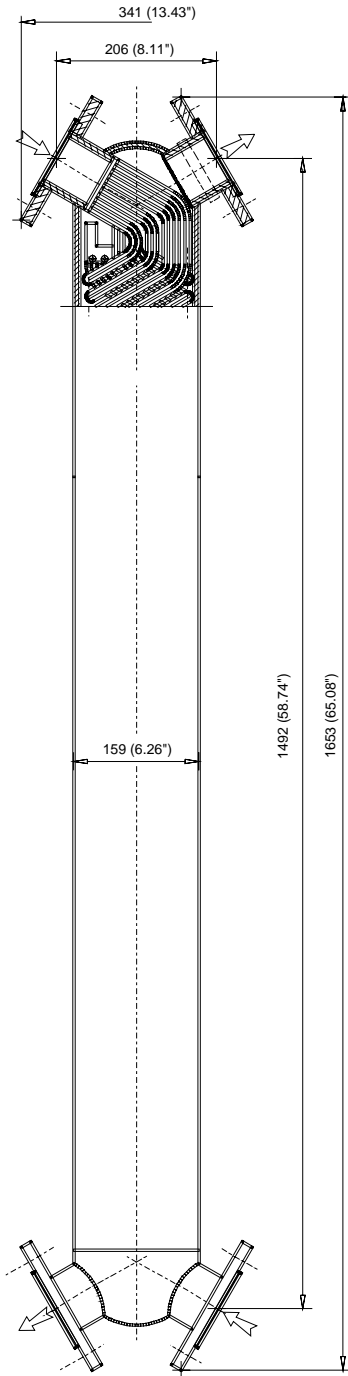
Type	C.43.06.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	43.04 ft <sup>2</sup> (4.0 m <sup>2</sup> )
Connections		
	tube side	2 ½" FNPT or Die Formed Flanges (compatible to 2 ½" CL 300)
	shell side	2 ½" FNPT or Die Formed Flanges (compatible to 2 ½" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	3.01gal (11.4 L)
	tube side	1.93gal (7.3 L)
Weight		
	threaded connections	85.3lb (38.7 kg)
	flanged connections	95.9lb (43.5 kg)

**C.33.80.50 HEAT EXCHANGER**



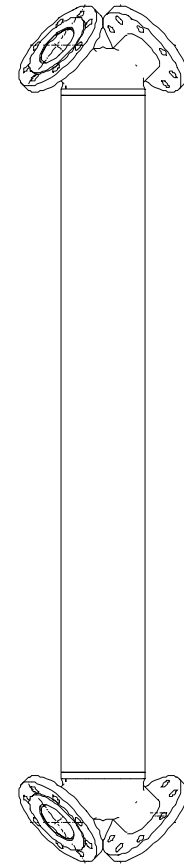
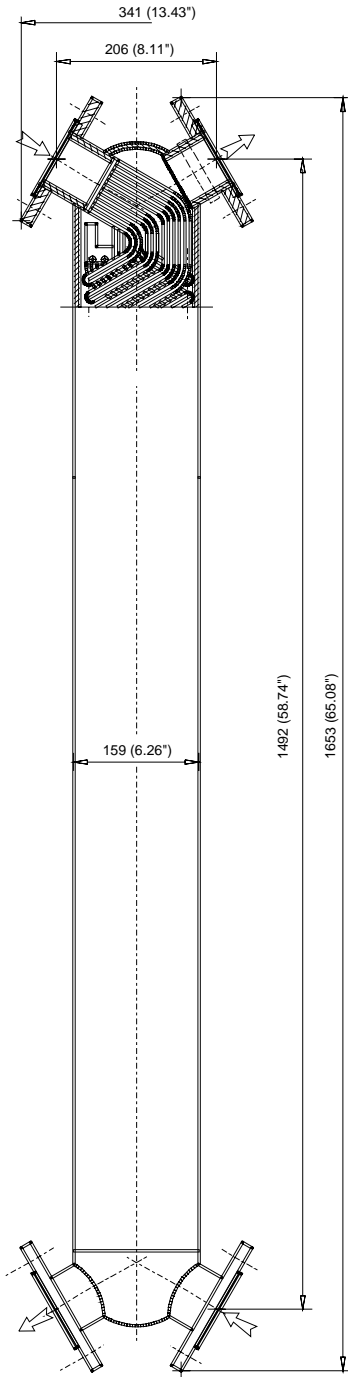
Type	C.33.80.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	33.79 ft <sup>2</sup> (3.14 m <sup>2</sup> )
Connections		
	tube side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
	shell side	2" FNPT or Die Formed Flanges (compatible to 2" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	2.58gal (9.8 L)
	tube side	1.20gal (4.5 L)
Weight		
	threaded connections	68.3lb (31.0 kg)
	flanged connections	77.2 lb (35.0 kg)

**P.61.35.50 HEAT EXCHANGER**



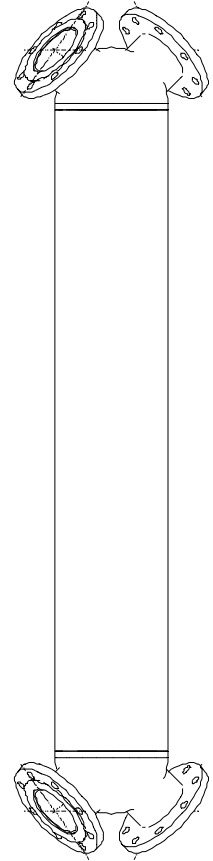
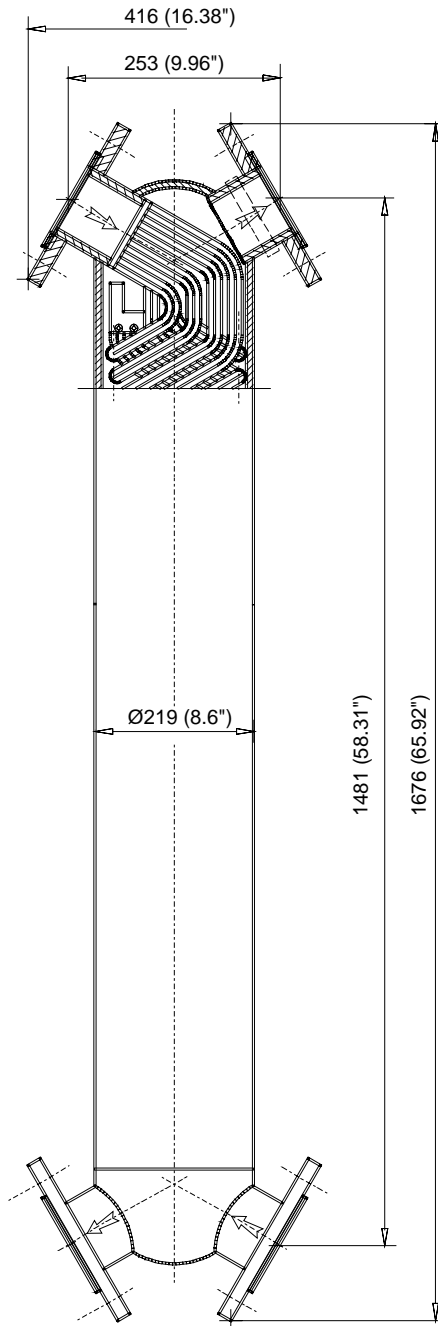
Type	P.61.35.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	smooth tubes $\varnothing$ 8 mm
	size	61.33ft <sup>2</sup> (5.7 m <sup>2</sup> )
Connections		
	tube side	3" Die Formed Flanges (compatible to 3" CL 300)
	shell side	3" Die Formed Flanges (compatible to 3" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	3.96gal (15.0L)
	tube side	2.56gal (9.7 L)
Weight		
	threaded connections	101.4lb (46.0 kg)
	flanged connections	121.3lb (55 kg)

**C.61.35.50 HEAT EXCHANGER**



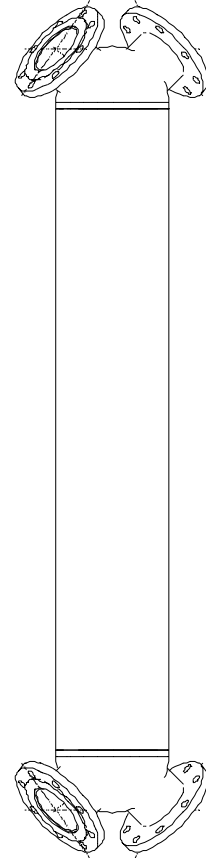
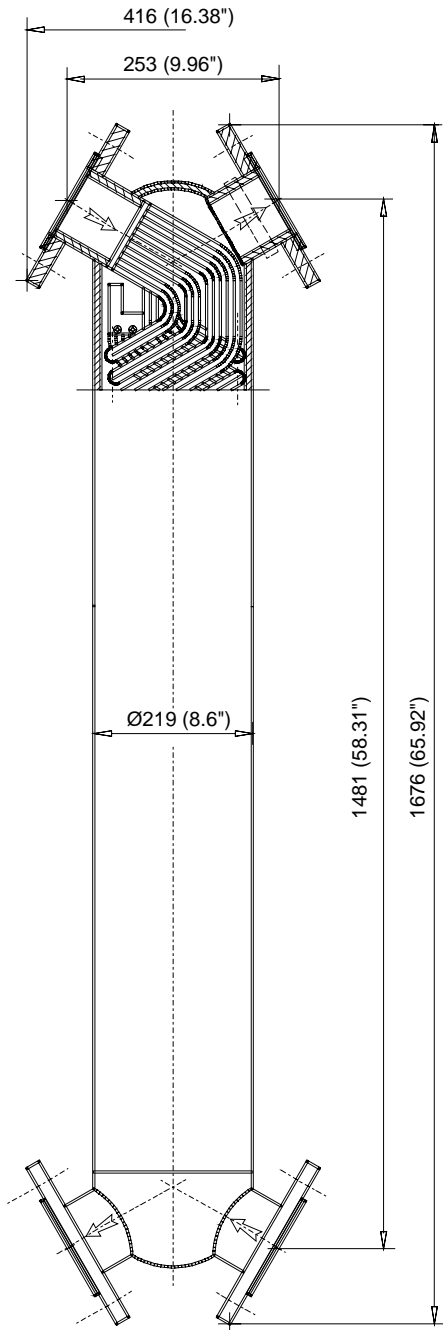
Type	C.61.35.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	61.33ft <sup>2</sup> (5.7 m <sup>2</sup> )
Connections		
	tube side	3" Die Formed Flanges (compatible to 3" CL 300)
	shell side	3" Die Formed Flanges (compatible to 3" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	3.96gal (15.0L)
	tube side	2.56gal (9.7 L)
Weight		
	threaded connections	101.4lb (46.0 kg)
	flanged connections	121.3lb (55 kg)

**P.107.64.50 HEAT EXCHANGER**



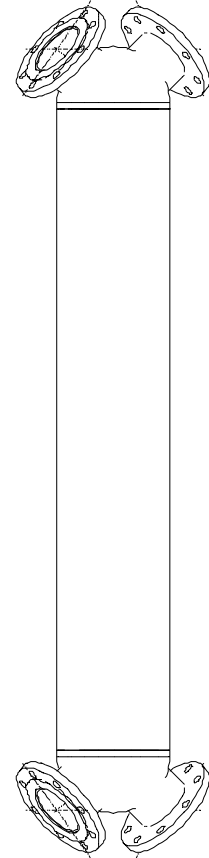
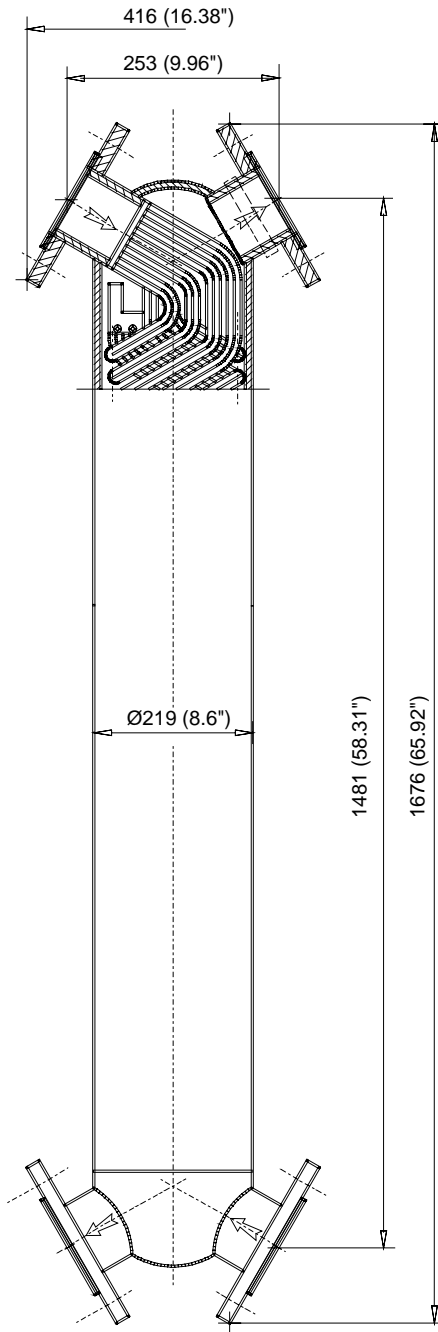
Type	P.107.64.50 counter flow heat exchanger
Working Pressure	250 psi @ 406 F
Working Temperature	min -4 F to max 406 F
Hydraulic Characteristics	logarithmic
Heat Transfer Surface	
type	smooth tubes Ø 8 mm
size	107.6 ft <sup>2</sup> (10.0 m <sup>2</sup> )
Connections	
tube side	4" Die Formed Flanges (compatible to 4" CL 300)
shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L
Volume	
shell side	7.66gal (29.0 L)
tube side	4.23gal (16.0 L)
Weight	
flanged connections	209.4lb (95.0 kg)

**C.107.64.50 HEAT EXCHANGER**



Type	C.107.64.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	107.6 ft <sup>2</sup> (10.0 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	7.66gal (29.0 L)
	tube side	4.23gal (16.0 L)
Weight		
	flanged connections	209.4lb (95.0 kg)

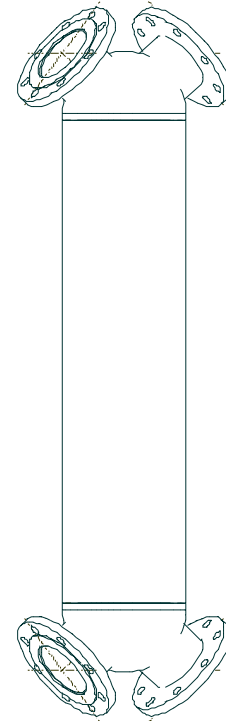
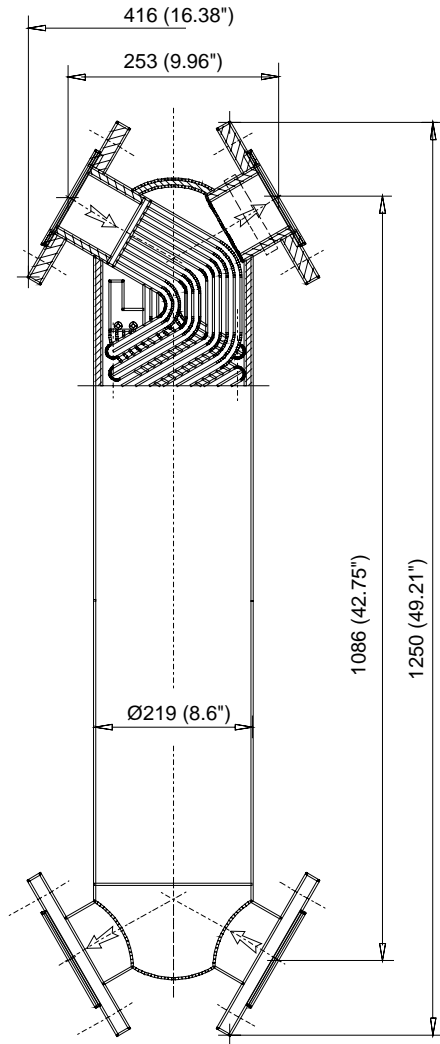
**C.73.41.50 HEAT EXCHANGER**



Type	C.73.41.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 12 mm
	size	73.38 ft <sup>2</sup> (6.82 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	9.24 gal (35.0 L)
	tube side	2.64 gal (10.0 L)
Weight		
	flanged connections	198.4lb (90.0 kg)

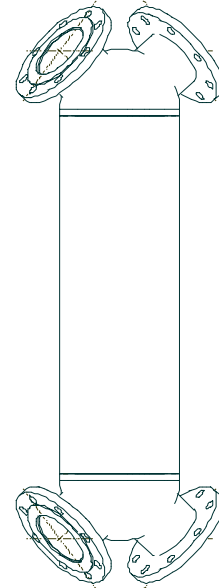
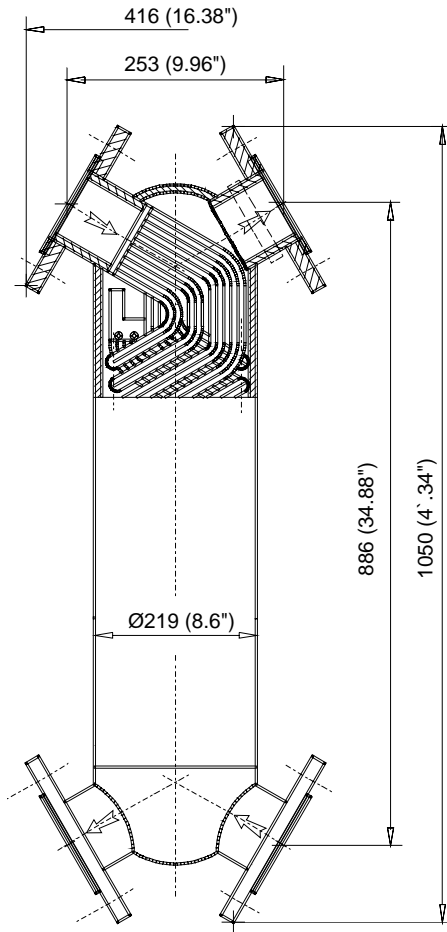


**C.59.20.50 HEAT EXCHANGER**



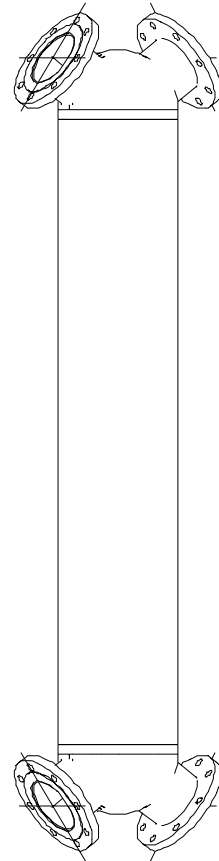
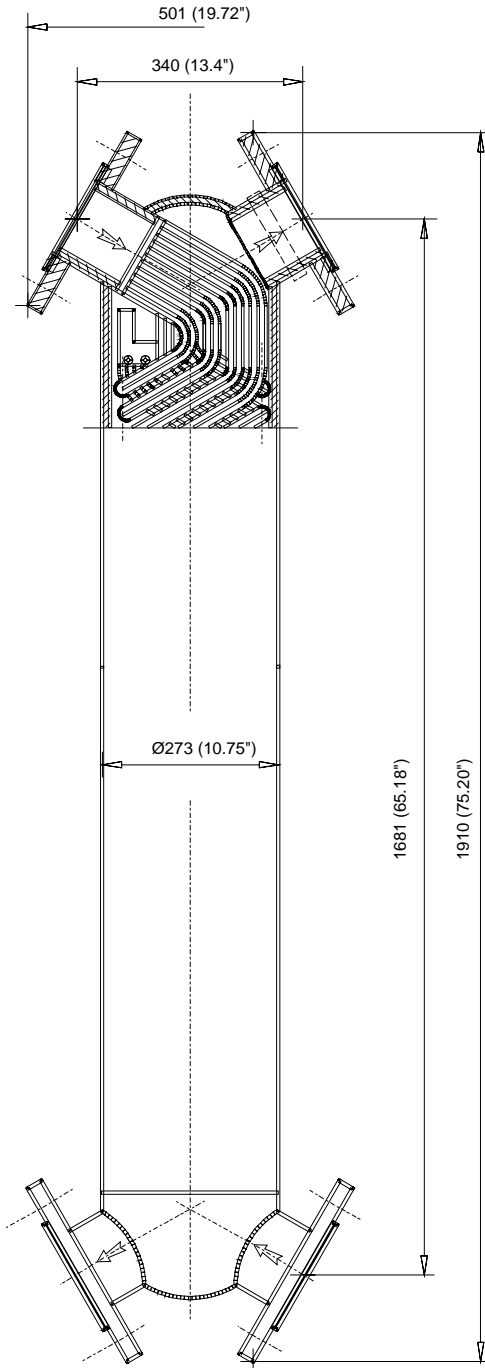
Type	C.59.20.50 counter flow heat exchanger
Working Pressure	250 psi @ 406 F
Working Temperature	min -4 F to max 406 F
Hydraulic Characteristics	logarithmic
Heat Transfer Surface	
type	corrugated tubes Ø 8 mm
size	59.18 ft <sup>2</sup> (5.5 m <sup>2</sup> )
Connections	
tube side	4" Die Formed Flanges (compatible to 4" CL 300)
shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L
Volume	
shell side	6.60 gal (25 L)
tube side	2.16 gal (8.2 L)
Weight	
flanged connections	127.42 lb (57.8 kg)

**C.44.13.50 HEAT EXCHANGER**



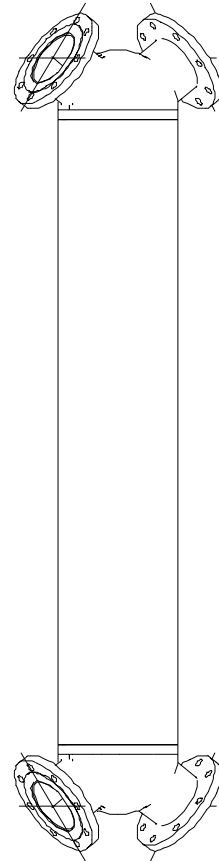
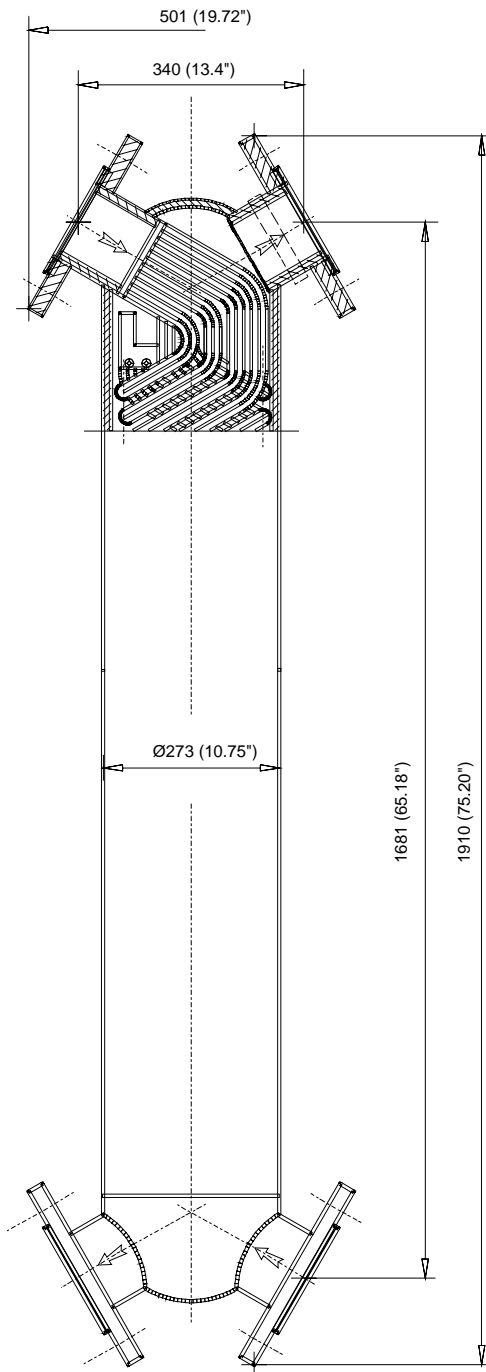
Type	C.44.13.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 8 mm
	size	44.12 ft <sup>2</sup> (4.1 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	5.49 gal (20.8 L)
	tube side	1.74 gal (6.6 L)
Weight		
	flanged connections	117.50 lb (53.3 kg)

**P.188.37.50 HEAT EXCHANGER**



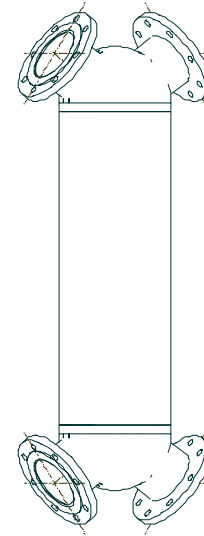
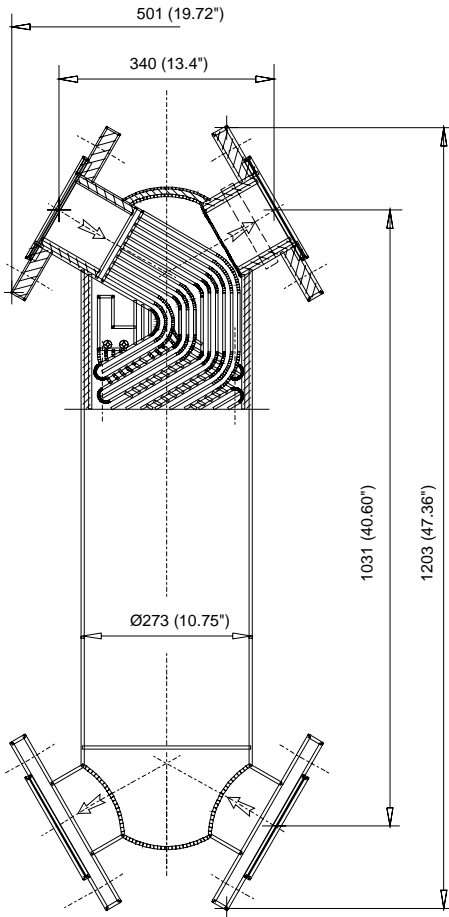
Type	P.188.37.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	smooth tubes $\varnothing$ 8 mm
	size	188.3 ft <sup>2</sup> (17.5 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	14.32gal (54.2 L)
	tube side	5.31gal (20.1 L)
Weight		
	flanged connections	330.7lb (150.0 kg)

## C.188.37.50 HEAT EXCHANGER



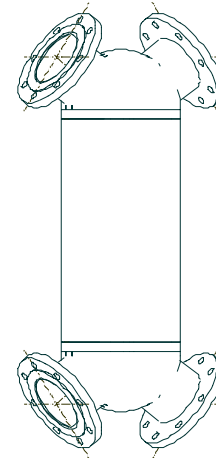
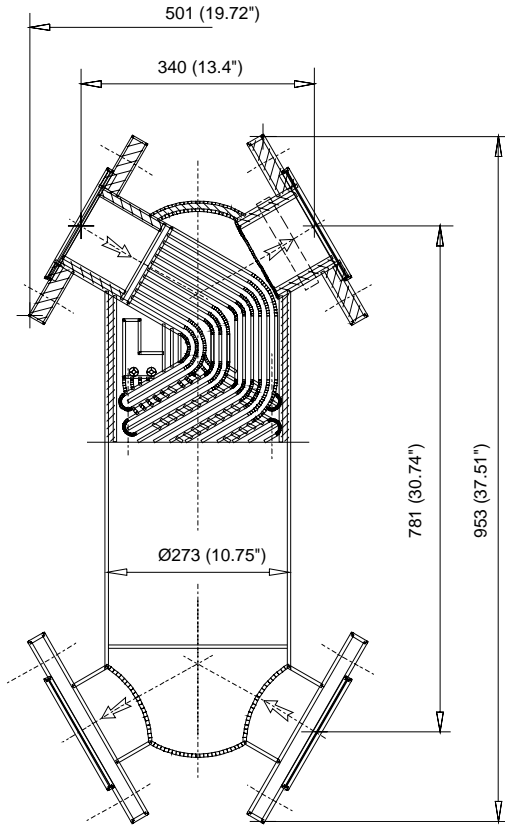
Type	C.188.37.50 counter flow heat exchanger
Working Pressure	250 psi @ 406 F
Working Temperature	min -4 F to max 406 F
Hydraulic Characteristics	logarithmic
Heat Transfer Surface	
type	corrugated tubes Ø 8 mm
size	188.3 ft <sup>2</sup> (17.5 m <sup>2</sup> )
Connections	
tube side	4" Die Formed Flanges (compatible to 4" CL 300)
shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L
Volume	
shell side	14.32gal (54.2 L)
tube side	5.31gal (20.1 L)
Weight	
flanged connections	330.7lb (150.0 kg)

**C.76.42.50 HEAT EXCHANGER**



Type	C.76.42.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 12 mm
	size	76.39 ft <sup>2</sup> (7.1 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	10.16 gal (38.5 L)
	tube side	2.64 gal (10 L)
Weight		
	flanged connections	170.85 lb (77.5 kg)

**C.59.74.50 HEAT EXCHANGER**



Type	C.59.74.50 counter flow heat exchanger	
Working Pressure	250 psi @ 406 F	
Working Temperature	min -4 F to max 406 F	
Hydraulic Characteristics	logarithmic	
Heat Transfer Surface		
	type	corrugated tubes Ø 12 mm
	size	59.72 ft <sup>2</sup> (5.55 m <sup>2</sup> )
Connections		
	tube side	4" Die Formed Flanges (compatible to 4" CL 300)
	shell side	4" Die Formed Flanges (compatible to 4" CL 300)
Material	stainless steel AISI 316L	
Volume		
	shell side	7.65 gal (29 L)
	tube side	2.11 gal (L)
Weight		
	flanged connections	146.38 lb (68.1kg)

## PL/PLT type Heat Exchangers

We are pleased to introduce our new revolutionary line of **PL (Stainless Steel)** and **PLT (Titanium)** heat exchangers.

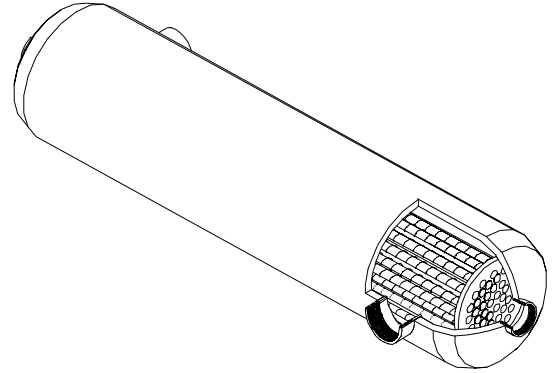
Thanks to the patented helically corrugated tube design, the **PL/PLT** heat exchangers can deliver excellent thermal performance even with fouled heating media.

### Typical Residential and Commercial Applications

- In-floor heating
- swimming pools, spas, hot tubs
- driveway snowmelts

### Typical Industrial Applications

- oil coolers
- transmission and engine coolers
- boiler sample coolers
- waste water heat recovery



### The Benefits To You

- Designed to perform at high fluid velocities with low pressure drops
- Made entirely of high quality, specially treated AISI 316L stainless steel (PL) or titanium (PLT) to ensure superior corrosion resistance and longer product life
- Induced self-cleansing feature - one less thing to worry about

**Availability:** All models are kept in stock for immediate delivery.

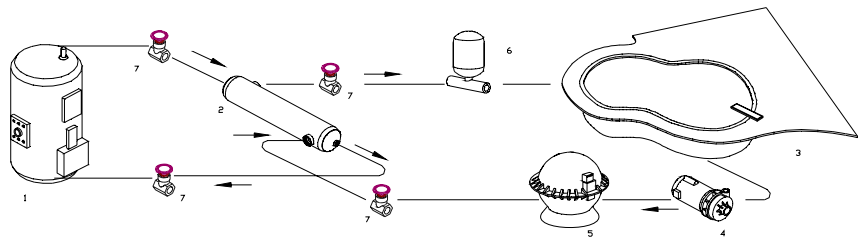
**Table 1**

Model	PL/PLT-45	PL/PLT-70	PL/PLT-130	PL/PLT-180	PL/PLT-250	PL/PLT-300	PL/PLT-500	PL/PLT-1000
Corrected Output (Btu/h)	46,954	65,124	106,019	134,631	149,869	157,699	199,555	426,200

$1C = (1F-32) \times 5/9, 1 \text{ USGPM} = 3.78 \text{ l/min}$

**Table 2 Quick Sizing Reference**

Model	Pool Capacity (USGAL)
PL/PLT-45	3,000
PL/PLT-70	6,000
PL/PLT-130	11,000
PL/PLT-180	16,000
PL/PLT-250	22,000
PL/PLT-300	27,000
PL/PLT-500	44,000
PL/PLT-1000	88,000



**Figure 2 Typical swimming pool installation**

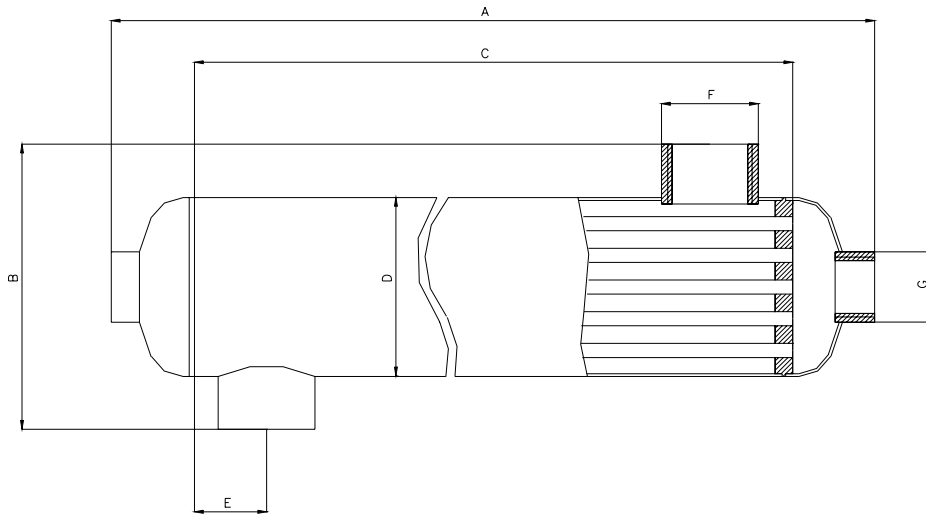
1. Boiler
2. Heat exchanger
3. Swimming Pool
4. Pump
5. Filter
6. Chlorine Feeder
7. Gate Valve

## ENGINEERING DATA PL/PLT HEAT EXCHANGERS

**Table 3 Heat Exchangers Performance**

Heat Exchanger Type	Nominal Capacity		Hot Water			Cold Water			Heat Transfer Surface	
			Flow	Pressure drop		Flow	Pressure drop		m <sup>2</sup>	ft <sup>2</sup>
	kW	Btu/hr	l/min	kPa	psig	l/min	kPa	psig		
PL/PLT 45	13	45,000	23	6.2	0.90	150	7.4	1.07	0.150	1.62
PL/PLT 70	20	70,000	25	7.5	1.09	170	9.2	1.33	0.246	2.64
PL/PLT 130	38	130,000	27	8.1	1.17	200	11.4	1.65	0.339	3.64
PL/PLT 180	53	180,000	30	2.7	0.40	210	7.5	1.1	0.440	4.70
PL/PLT 250	73	250,000	35	4.2	0.60	270	12.0	1.7	0.630	6.80
PL/PLT 300	88	300,000	40	6.4	0.90	300	17.0	2.5	0.840	9.00
PL/PLT 500	146	500,000	55	9.2	1.30	360	22.0	3.2	1.560	16.80
PL/PLT 1000	293	1,000,000	95	16.2	2.35	705	29.1	4.22	1.970	21.21

Nominal values are based on 60°C temperature between incoming heating and heated water.



**Table 4 Dimensions**

Type	A	B	C	D	E	F	G
	mm (in)						
PL/PLT-45	302 (11.89)	156 (6.14)	150 (5.91)	80 (3.15)	37.7 (1.48)	1" NPTF	¾"NPT
PL/PLT-70	402 (15.83)		250 (9.84)				
PL/PLT-130	502 (19.76)		350 (13.77)				
PL/PLT-180	386 (15.19)	143.6 (5.65)	280 (11.02)	101.6 (4)	43.5 (1.71)	1 ½" NPTF	1" NPTF
PL/PLT -250	512 (20.15)		406 (15.98)		41.5 (1.63)		
PL/PLT -300	646 (25.43)		540 (21.26)		44.5 (1.75)		
PL/PLT -500	1106 (43.54)		1000 (39.37)		58 (2.28)	2" NPTF	
PL/PLT - 1000	969 (38.15)		223.0 (8.78)		794 (31.26)	139.7 (5.50)	

Standard Materials : 316L Stainless Steel / Titanium

Maximum allowable Working Pressure: 250 psig (1.72 MPa)

Maximum Allowable Working Temperature: 406 F (208 C)



## Brazed Plate Series



### Brazed Plate Series

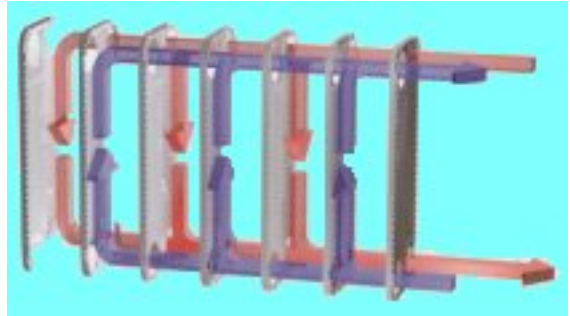
- exceptional value
- highly efficient
- full range of models
- OEM inquiries welcome

The highly efficient design and excellent value of SEC Brazed Plate Heat Exchangers makes them a wise choice for your heat transfer applications. Produced to the highest standards utilizing the latest production technology our products meet the demanding quality requirements of ASME, CRN, and ISO

9002. Our Brazed Plate Heat Exchangers are pressure rated for 450psi @ 460F. Brazed Plate heat exchangers have a 1 year warrantee.

They are available in threaded or solder connections.

SEC Brazed Plate Heat Exchangers consist of specially formed stainless steel plates, vacuum brazed together to form a highly efficient heat transfer device. The corrugated pattern stamped into each plate produces turbulent flows. This results in high heat transfer coefficients. The plate size, number of plates, and connection sizes are varied to match the customer's heat transfer requirements precisely. Individual units have capacities up to 4,000,000 btu or 50 tons for refrigeration.



Our quality Brazed Plate Heat Exchangers find applications in many fields:

SNOW MELT - AQUACULTURE - RADIANT HEATING – DOMESTIC HOT WATER - OIL COOLERS – INDUSTRIAL PROCESSES - MARINE - HVAC POOL AND SPA HEATING - FUEL OIL PREHEATING - BOILER BLOW DOWN HEAT RECOVERY - REFRIGERATION (evaporators, sub-coolers, condensers) – METAL FINISHING - AUTOMOTIVE PARTS PROCESSING – BEVERAGE PRODUCTION - COGENERATION.

#### Availability

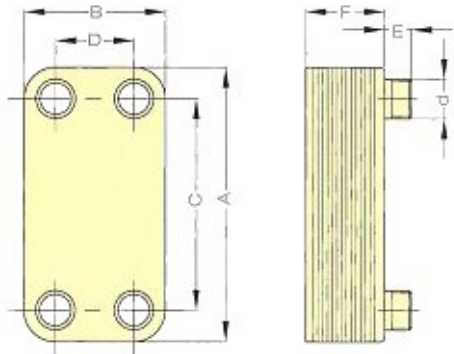
All models are kept in stock for immediate delivery.

For more information on the SEC Series Brazed Plate Models please visit:

<http://www.brazedplate.com/>

## SEC Braze Plate Engineering Data

Braze Plate Models	Dimensions (inches)					Plate Area (Sq.ft)	Channel Volume (USGAL)	Maximum Flow (GPM)	Maximum # of Plates (NP)	Weight (empty) (Lbs)
	A	B	C	D	F					
M14a	7.9	3.1	6.5	1.7	.36+.09np	0.15	0.006	18	50	1.5+0.1np
M31b	11.3	4.8	9.1	2.7	.36+.09np	0.33	0.012	50	100	3.1+0.3np
M110c	18.2	10.0	14.9	6.7	.39+.09np	1.18	0.043	89	200	11.2+.9np



Technical Parameters Diagram  
(for use with the above chart)



Standard Connection Types:  
Solder (sweat) - Threaded (NPT) - Flanged

**Material:**

Plates and Connections: AISI 316  
 Brazing: Copper, Nickel

**Design Parameters:**

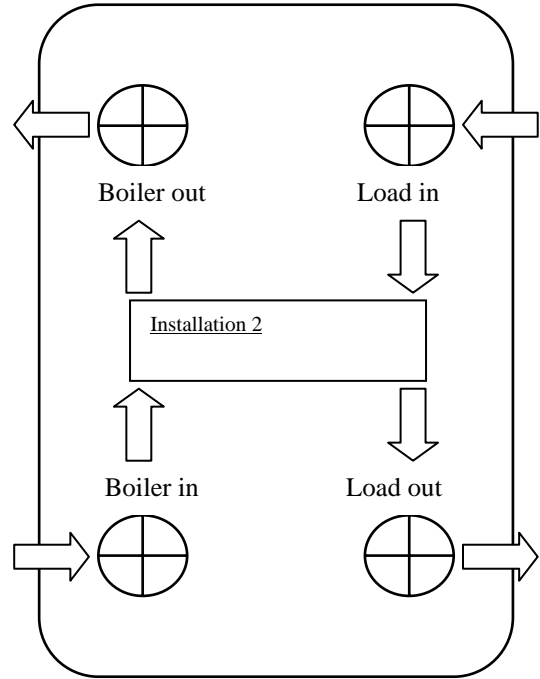
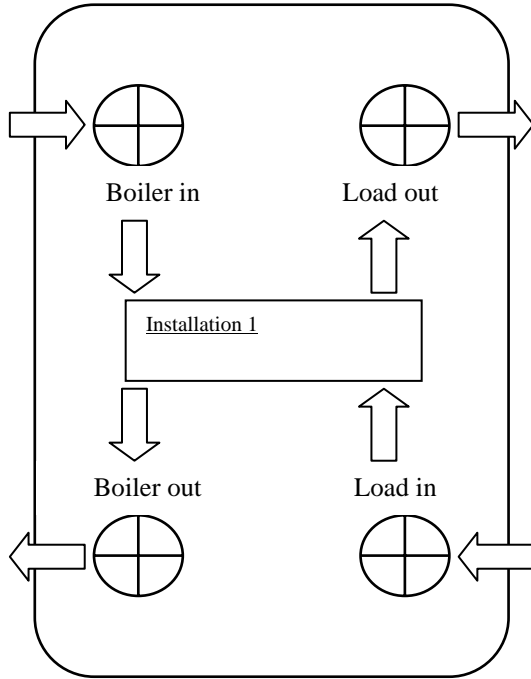
Maximum Working Pressure: 435 Psi (232 Psi\*)  
 Maximum Working Temperature: copper brazed 437°F (401°F\*), nickel brazed: 752°F  
 Minimum Working Temperature: copper brazed -319°F

\*(economic versions)

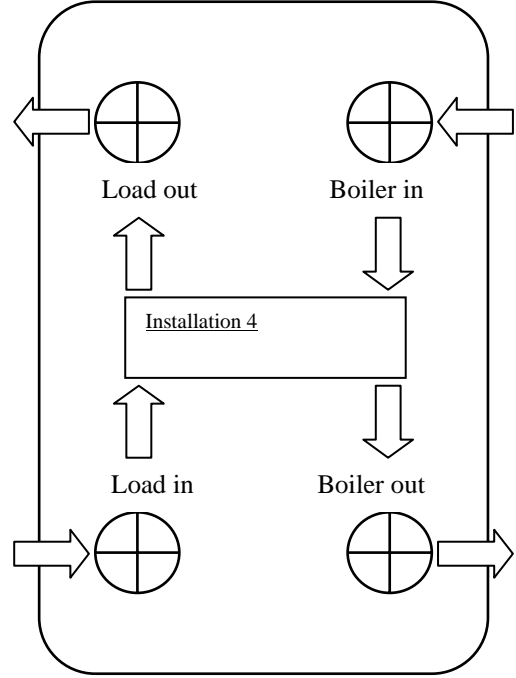
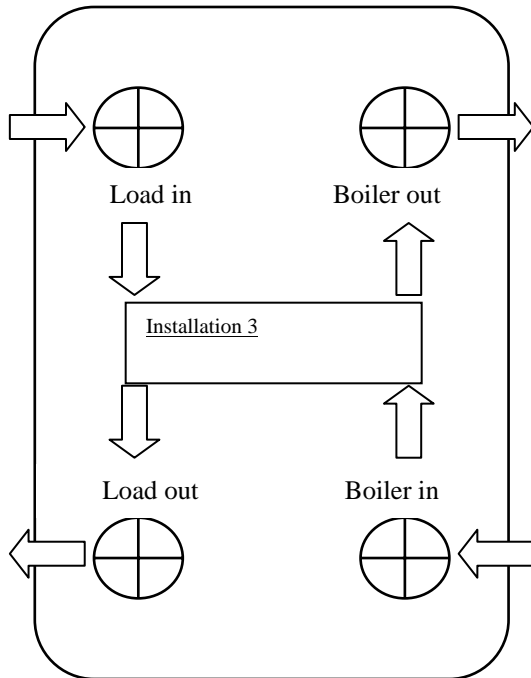
### Standard Connections

MODEL	Solder (sweat)		Threaded (NPT)		Flanges	
	d* (in)	E (in)	d (in)	E (in)	d (in)	E (in)
M14a	3/4"	3/4"	3/4" NPT (male)	7/8"	Flanged Connections Are available for the M-110c (custom order)	
M31b	1"	1 - 3/8	1" NPT (male)	1 - 1/8		
M110c	2"	1 - 1/4	2" NPT (male)	1 - 1/4"		

**Recommended Flow Directions for Brazen Plate Heat Exchangers**



**Choose the Installation Which Best Suits Your Piping Layout**



## Domestic Hot Water Performance Chart for SEC Brazed Plate Heat Exchangers

Water Flow GPM	Water Inlet Temp	Water Outlet Temp	Boiler Flow GPM	Boiler Inlet Temp	Boiler Outlet Temp	Btu/hr	Model M14	PSI Hot Side	PSI Cold Side	Model M31	PSI Hot Side	PSI Cold Side	Model M110	PSI Hot Side	PSI Cold Side
0.40	40F	140F	2.03	180F	160F	20,000	M14-6	1.91	0.09						
0.60	40F	140F	3.05	180F	160F	30,000	M14-6	4.17	0.20						
0.80	40F	140F	4.07	180F	160F	40,000	M14-10	2.73	0.13						
1.00	40F	140F	5.08	180F	160F	50,000	M14-10	4.21	0.20						
1.20	40F	140F	6.10	180F	160F	60,000	M14-20	1.63	0.07						
1.40	40F	140F	7.11	180F	160F	70,000	M14-20	2.19	0.10	M31-20	1.73	0.09			
1.60	40F	140F	8.13	180F	160F	80,000	M14-20	2.84	0.13	M31-20	2.23	0.11			
1.80	40F	140F	9.15	180F	160F	90,000	M14-20	3.56	0.17	M31-20	2.79	0.14			
2.00	40F	140F	10.17	180F	160F	100,000	M14-20	4.37	0.21	M31-20	3.41	0.17			
2.50	40F	140F	12.70	180F	160F	125,000	M14-30	3.26	0.15	M31-20	5.20	0.27			
2.80	40F	140F	14.23	180F	160F	140,000	M14-30	4.06	0.19	M31-30	3.02	0.15			
3.00	40F	140F	15.25	180F	160F	150,000	M14-30	4.65	0.22	M31-30	3.45	0.18	M110-20	1.53	0.09
3.50	40F	140F	17.79	180F	160F	175,000	M14-40	3.89	0.18	M31-30	4.62	0.23	M110-20	2.05	0.10
4.00	40F	140F	20.33	180F	160F	200,000	M14-40	5.04	0.23	M31-30	5.96	0.30	M110-20	2.65	0.13
6.01	40F	140F	30.50	180F	160F	300,000				M31-50	5.08	0.26	M110-20	5.72	0.29
8.00	40F	140F	40.67	180F	160F	400,000				M31-70	4.92	0.24	M110-30	4.63	0.24
10.01	40F	140F	50.84	180F	160F	500,000				M31-90	5.03	0.25	M110-40	4.16	0.21
12.01	40F	140F	61.00	180F	160F	600,000				M31-120	4.73	0.23	M110-50	3.93	0.20
14.01	40F	140F	71.17	180F	160F	750,000				M31-130	5.76	0.27	M110-50	5.27	0.27
18.02	40F	140F	91.50	180F	160F	900,000							M110-70	4.74	0.24
20.02	40F	140F	101.67	180F	160F	1.0m							M110-80	4.65	0.23
25.03	40F	140F	127.10	180F	160F	1.25m							M110-100	5.04	0.25
30.03	40F	140F	152.51	180F	160F	1.5m							M110-120	5.52	0.27
38.05	40F	140F	193.18	180F	160F	1.9m							M110-170	5.80	0.27

## Radiant (Floor) Heating Performance Chart for SEC Brazed Plate Heat Exchangers

Btu/hr	USGPM Boiler Flow	Inlet Temp Boiler	Outlet Temp Boiler	USGPM Water Flow	Inlet Temp Water	Outlet Temp Water	Model M14	PSI Hot Side	PSI Cold Side	Model M31	PSI Hot Side	PSI Cold Side	Model M110	PSI Hot Side	PSI Cold Side
24,000	2.40	180F	160F	2.40	100F	120F	M14-6	2.71	2.86						
32,000	3.20	180F	160F	3.20	100F	120F	M14-6	4.73	4.99						
48,000	4.95	180F	160F	4.85	100F	120F	M14-10	3.89	4.10						
64,000	6.60	180F	160F	6.46	100F	120F	M14-20	1.84	1.94						
80,000	8.20	180F	160F	8.01	100F	120F	M14-20	2.84	2.99						
96,000	9.80	180F	160F	9.70	100F	120F	M14-20	4.04	4.25	M31-20	3.15	3.37			
112,000	11.54	180F	160F	11.31	100F	120F	M14-20	5.44	5.73	M31-20	4.22	4.52			
128,000	13.19	180F	160F	12.93	100F	120F	M14-30	3.42	3.59	M31-20	5.44	5.83			
144,000	14.80	180F	160F	14.50	100F	120F	M14-30	4.29	4.51	M31-30	3.19	3.41			
160,000	16.50	180F	160F	16.10	100F	120F	M14-30	5.26	5.54	M31-30	3.90	4.17			
200,000	20.60	180F	160F	20.20	100F	120F	M14-40	5.04	5.29	M31-40	3.51	3.75			
240,000	24.73	180F	160F	24.23	100F	120F	M14-50	5.13	5.36	M31-40	4.94	3.51	M110-20	3.74	4.01
280,000	28.80	180F	160F	28.20	100F	120F		5.41	5.65	M31-50	4.46	4.76	M110-20	5.02	5.37
320,000	32.90	180F	160F	32.21	100F	120F				M31-60	4.17	4.45	M110-30	3.03	3.24
400,000	41.22	180F	160F	40.40	100F	120F				M31-70	4.92	5.24	M110-30	4.63	4.95
400,000	41.22	180F	160F	40.40	100F	120F				M31-70	4.92	5.24	M110-30	4.63	4.95
440,000	45.34	180F	160F	44.40	100F	120F				M31-80	4.74	5.04	M110-30	5.55	5.93
480,000	49.46	180F	160F	48.41	100F	120F				M31-80	5.60	5.96	M110-40	3.85	4.12
560,000	57.70	180F	160F	56.55	100F	120F				M31-100	5.34	5.66	M110-40	5.16	5.52
640,000	65.90	180F	160F	64.63	100F	120F				M31-120	5.35	5.65	M110-50	4.45	4.75
720,000	74.20	180F	160F	72.70	100F	120F				M31-150	5.14	5.40	M110-50	5.57	5.94
800,000	82.43	180F	160F	80.78	100F	120F							M110-60	4.93	5.26
960,000	98.92	180F	160F	96.94	100F	120F							M110-70	5.37	5.72
1,120,000	115.40	180F	160F	113.10	100F	120F							M110-90	4.79	5.09
1,280,000	131.90	180F	160F	129.30	100F	120F							M110-100	5.27	5.59
1,600,000	164.90	180F	160F	161.60	100F	120F							M110-130	5.63	5.94
1,926,000	198.50	180F	160F	194.50	100F	120F							M110-180	5.64	5.90

### Snow Melt Performance Chart for SEC Brazed Plate Heat Exchangers

Btu/hr	USGPM Boiler Flow	Inlet Temp Boiler	Outlet Temp Boiler	USGPM Water Flow	Inlet Temp Water	Outlet Temp Water	Model M14	PSI Hot Side	PSI Cold Side	Model M31	PSI Hot Side	PSI Cold Side	Model M110	PSI Hot Side	PSI Cold Side
20,000	1.37	180F	150F	1.52	100F	130F	M14-6	0.88	0.92						
30,000	2.06	180F	150F	2.28	100F	130F	M14-6	1.91	2.01						
40,000	2.75	180F	150F	3.03	100F	130F	M14-6	3.34	3.50						
50,000	3.44	180F	150F	3.79	100F	130F	M14-6	5.13	5.38						
60,000	4.12	180F	150F	4.55	100F	130F	M14-10	2.74	2.78						
70,000	4.81	180F	150F	5.31	100F	130F	M14-10	3.70	3.87						
80,000	5.50	180F	150F	6.07	100F	130F	M14-10	4.78	5.01						
90,000	6.19	180F	150F	6.83	100F	130F	M14-20	1.63	1.71	M31-10	4.80	5.10			
100,000	6.87	180F	150F	7.59	100F	130F	M14-20	2.00	2.10	M31-20	1.58	1.68			
125,000	8.59	180F	150F	9.48	100F	130F	M14-20	3.08	3.23	M31-20	2.42	2.57			
150,000	10.31	180F	150F	11.38	100F	130F	M14-20	4.39	4.59	M31-20	3.42	3.63			
175,000	12.03	180F	150F	13.27	100F	130F	M14-30	2.87	2.99	M31-20	4.59	4.87			
200,000	13.74	180F	150F	15.17	100F	130F	M14-30	3.71	3.88	M31-30	2.77	2.94			
225,000	15.46	180F	150F	17.07	100F	130F	M14-30	4.66	4.87	M31-30	3.47	3.67	M110-20	1.54	1.63
250,000	17.18	180F	150F	18.96	100F	130F	M14-30	5.72	5.98	M31-30	4.23	4.49	M110-20	1.88	1.99
275,000	18.90	180F	150F	20.86	100F	130F	M14-40	4.27	4.45	M31-30	5.08	5.38	M110-20	2.25	2.39
300,000	20.62	180F	150F	22.76	100F	130F	M14-40	5.06	5.27	M31-40	3.53	3.74	M110-20	2.66	2.82
350,000	24.05	180F	150F	26.55	100F	130F	M14-50	4.87	5.07	M31-40	4.73	5.01	M110-20	3.56	3.78
400,000	27.49	180F	150F	30.34	100F	130F		4.93	45.12	M31-50	4.08	4.32	M110-20	4.59	4.87
450,000	30.93	180F	150F	34.13	100F	130F					5.11	5.41	M110-30	2.69	2.87
500,000	34.36	180F	150F	37.93	100F	130F				M31-60	4.53	4.49	M110-30	3.29	3.48
600,000	41.23	180F	150F	45.51	100F	130F				M31-70	4.94	5.22	M110-30	4.65	4.93
700,000	48.11	180F	150F	53.10	100F	130F				M31-80	5.33	5.62	M110-40	3.67	3.88
800,000	54.98	180F	150F	60.68	100F	130F				M31-100	4.88	5.14	M110-40	4.73	5.01
900,000	61.85	180F	150F	68.27	100F	130F				M31-120	4.74	4.98	M110-50	3.95	4.18
1,000,000	68.72	180F	150F	75.85	100F	130F				M31-130	5.26	5.51	M110-50	4.83	5.11

## Plate and Frame Series

SEC is a Canadian Heat Exchanger Company providing our customers with courteous professional service, economical heat transfer solutions and equipment second to none in performance, quality and price.

In order, to meet the requirements of your industry, our experienced sales team will provide you with the solutions to meet your heat transfer applications. SEC Plate and Frame Heat Exchangers have been designed and development, to the highest quality, to satisfy the most demanding duties, even on our base price units.

### Working principle

All the individual plates put together form the SEC Plate and Frame Heat Exchangers "plate pack." These are always mounted with the gaskets towards the fixed frame plate. The fluids flow through these plates in alternate channels. The most common plate heat exchanger configuration is where the heated and the heating fluids pass through the heat exchanger once (in a counter flow manner). This is referred to as a single pass unit. All of the feed and discharge pipes are connected to the fixed plate. This is a particularly maintenance-friendly installation. Close temperature differences between the fluids may demand multi-pass heat exchangers. The connection pipes are then attached to the fixed and pressure plates.

### Performance:

SEC Heat Exchanger production is supported by a large engineering based manufacturer with the newest plate presses in the industry. Extensive R&D will continuing to ensure an ever larger range of units will be available to meet customer requirements.

SEC Heat Exchangers Thermal Calculations are based on advanced industry standards. SEC has extensive contacts and reference sites in North America and worldwide, which is testament to the long term quality and performance of SEC World Class Plate Heat Exchangers .

For more information on the SEC Plate and Frame Models please visit:

<http://www.secplateandframe.com/>





## Construction Features

### Construction Features of the Plate and Frame

#### Heat Exchanger Frame Material:

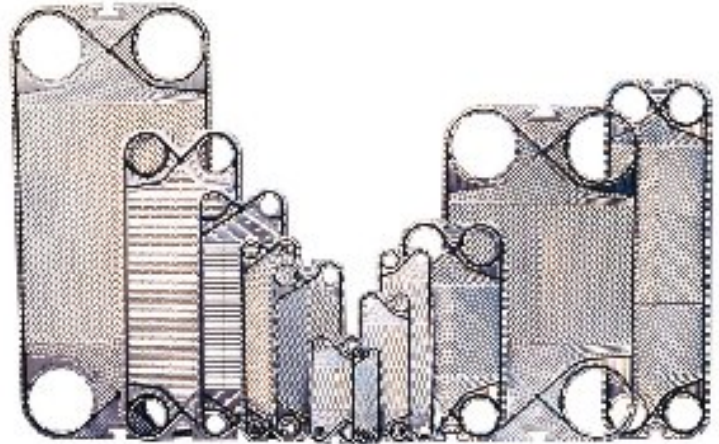
SEC Plate and Frame Heat Exchangers provides carbon or stainless steel frames for industrial, commercial, process, marine, aquaculture, HVAC applications, heat recovery, refrigeration, food and beverage processing, pharmaceutical and many other clean room applications.

All units have heavy duty frames for maximum pressure rating, depending on unit size. AISI 304 stainless, in solid or clad frames are available. SEC Plate and Frame units have certifications meeting your industry standards. (ASME, ISO, DNV)



#### Plate Selection:

AISI 316L plates is the minimum standard quality for robust performance. Additional grades include AISI 304 Stainless, Titanium and Hastalloy.



#### Gasket Material:

A wide range of Nitrile, EPDM, RCB and Viton materials are available for Industrial and Food applications. EPDM is supplied as the standard gasket material, with the final selection being made for each quoted Thermal duty.

#### Stock:

Gaskets and Plates are kept in stock for fast delivery.

#### Plate Reconditioning:

A Plate Reconditioning service is available as an additional service for most Plate Heat exchanges, not just SEC units.

#### Full Service Gaskets:

An extensive range of gaskets covers most manufacturers.

#### Retro Fit Units:

We can replace existing Plate Heat Exchanges without any pipe Rework, a tremendous saving in time and capital expenditure.

#### 24 Hour Service:

Many of our customers operate 24 hours a day, so does SEC.



## Titanium Series

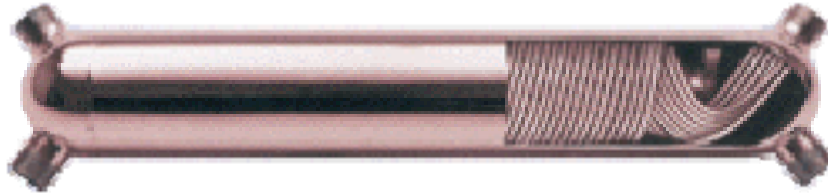


### Titanium Series

- superior corrosion resistance
- custom and standard designs
- industrial, marine, aquaculture

The use of titanium is gaining popularity in the heat transfer field. However, up to now the fabrication of titanium heat exchangers using traditional designs has made the resulting products expensive. The high cost of titanium makes it imperative that designs utilizing the latest heat transfer technology be considered. SEC has been successful in applying the highly efficient shell and coiled tube technology to the manufacture of titanium heat exchangers. The result is less material used to achieve the required heat transfer, thereby lowering the price significantly when compared to the outdated designs still being produced by other manufacturers.

Please send us your project requirements and we will gladly select the SEC coiled tube model best suited for your application.



### Technology and Design

The coiled tube bundle consists of circular layers of helically corrugated tubes placed inside each other. The fluid in each layer flows in the opposite direction to the layer surrounding it, resulting in an overall criss-cross pattern. The large number of tubes packed closely together give an extensive heat transfer surface within a light compact shell. The alternate layers provide rapid uniform heating of fluids increasing the overall heat transfer coefficient. Corrugated tubes produce a turbulent flow where the desired characteristic of fluctuating velocities is achieved. This random movement of fluid particles reduces deposit buildup by performing a "scoop and lift" action. The connection locations and angle of entry is specially selected to reduce the probability of debris buildup.

### Construction Features

The SEC coiled tube series of heat exchangers are fabricated as a single unit with no removable components. Coiled tube bundles are welded to a compact tube sheet located within the entry and exit connections. The cylindrical shell is terminated by hemi-spherical heads. In stock design variations include smooth or corrugated tubes, angled or 90° connections in flanged or NPT termination.

## Shell and Tube Series



### Shell and Tube

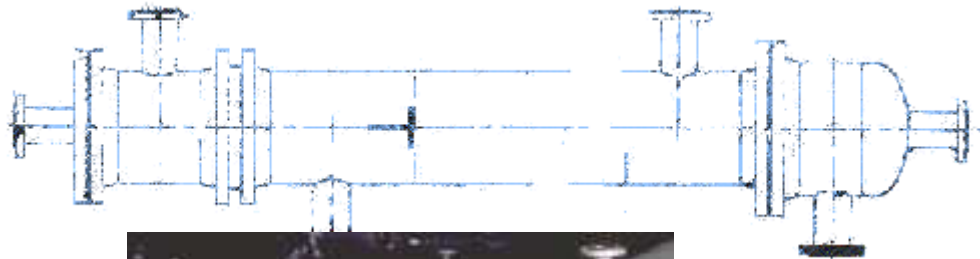
- u-tube, straight tube
- double wall
- single or multi-pass
- stainless, titanium or exotic metals

Fabricated from stainless steel or titanium, using the latest production techniques the extensive line of quality SEC shell and tube heat exchangers encompasses all modern designs and configurations.

These heat transfer devices are engineered to meet to a wide variety of applications. Every unit is designed, manufactured, and tested as per the quality requirements of the ASME code, Section VIII Division #1 and ISO 9002.

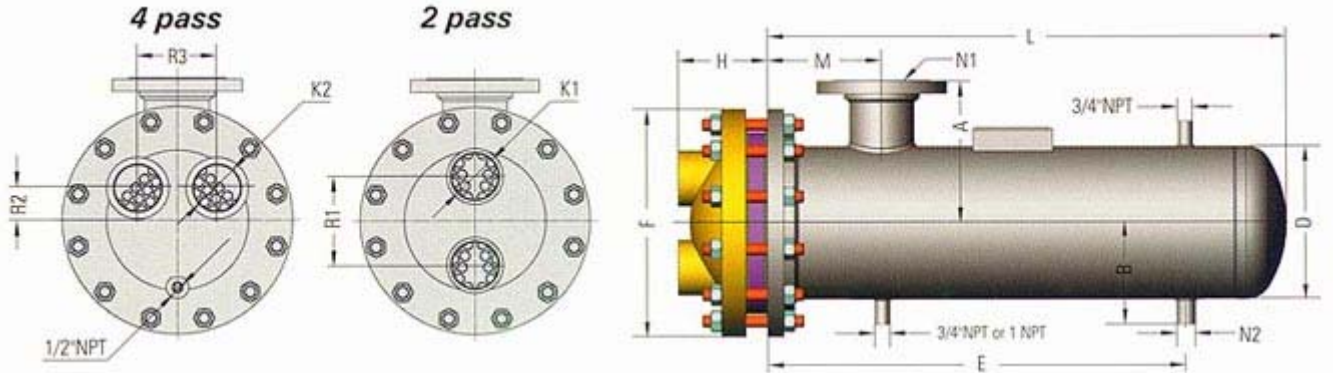
If your applications require straight or u-tube designs we provide fast, professional service. Please review our on-line [Model Sizing Charts](#) then complete our ["Quotation Form"](#). We will send; price, thermal data and delivery schedule to you within three (3) business days depending on project complexity.

**For more information please visit <http://www.secshellandtube.com/>**



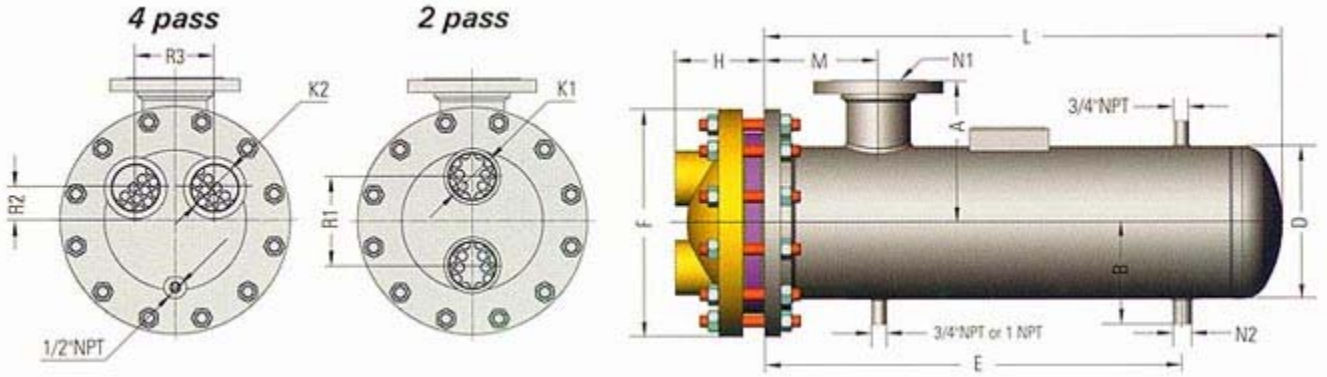
### 4" diameter Steam to Liquids

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
SA-4201	SA-4401	2 1/2	1 1/2"	2 3/8	1"	7/8	2 7/8	4 1/2	9	5	19 1/2	4	4	24 1/2	2" NPT	1" NPT	4.7
SA-4202	SA-4402	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	31 1/2	4	4	36 1/2	2" NPT	1" NPT	6.9
SA-4203	SA-4403	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	43 1/2	4	4	48 1/2	2" NPT	1" NPT	9.1
SA-4204	SA-4404	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	55 1/2	4	4	60 1/2	2" NPT	1" NPT	11.3
SA-4205	SA-4405	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	67 1/2	4	3 7/8	72 1/2	2" NPT	1" NPT	13.6
SA-4206	SA-4406	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	79 1/2	4	3 3/4	84 1/2	2" NPT	1" NPT	15.8
SA-4207	SA-4407	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	91 1/2	4	3 3/4	96 1/2	2" NPT	1" NPT	18
SA-4208	SA-4408	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	103 1/2	4	3 3/4	108 1/2	2" NPT	1" NPT	20.3
SA-4209	SA-4409	2 1/2	1 1/2"	2 3/8	1	7/8	2 7/8	4 1/2	9	5	115 1/2	4	3 3/4	120 1/2	2" NPT	1" NPT	22.5



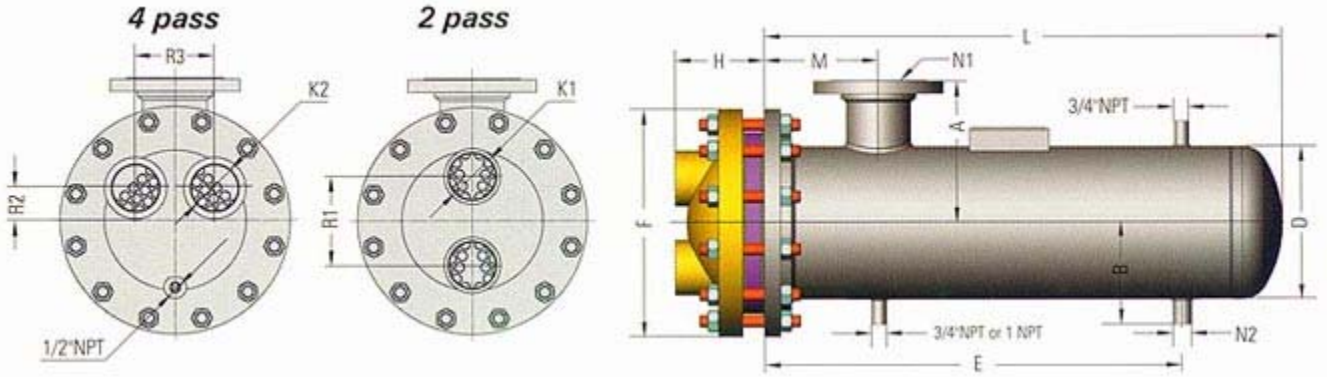
**6" diameter Steam/Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
SA-6201	SA-6401	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	18 1/2	4 7/8	4 7/8	25	3" NPT	1" NPT	10.7
SA-6202	SA-6402	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	30 1/2	4 7/8	4 7/8	37	3" NPT	1" NPT	15.9
SA-6203	SA-6403	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	42 1/2	4 7/8	5 3/4	49	3" NPT	1" NPT	21.1
SA-6204	SA-6404	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	54 1/2	4 7/8	5 3/4	61	3" NPT	1" NPT	26.3
SA-6205	SA-6405	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	66 1/2	4 7/8	5 9/16	73	3" NPT	1" NPT	31.5
SA-6206	SA-6406	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	78 1/2	4 7/8	5 9/16	85	3" NPT	1" NPT	36.7
SA-6207	SA-6407	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	90 1/2	4 7/8	5 9/16	97	3" NPT	1" NPT	41.9
SA-6208	SA-6408	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	102 1/2	4 7/8	5 9/16	109	3" NPT	1" NPT	47.1
SA-6209	SA-6409	4	2"	3 3/4	1 1/2"	1 1/4	3 7/16	6 5/8	11	5	114 1/2	4 7/8	5 9/16	121	3" NPT	1" NPT	52.3



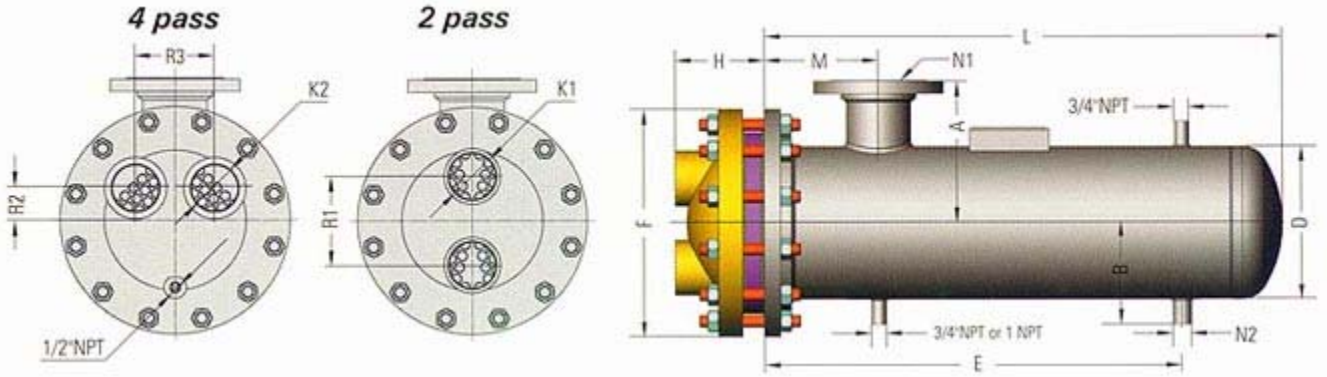
**8" diameter Steam/Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2		
SA-8201	SA-8401	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	18	6	6	24	3" NPT	1" NPT	14.7	
SA-8202	SA-8402	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	30	6	6 7/8	36	3" NPT	1" NPT	22.7	
SA-8203	SA-8403	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	42	6	6 13/16	48	3" NPT	1" NPT	30.7	
SA-8204	SA-8404	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	54	6	8 7/8	60	4" Flange	1" NPT	38.7	
SA-8205	SA-8405	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	66	6	8 7/8	72	4" Flange	1 1/4" NPT	46.6	
SA-8206	SA-8406	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	78	6	8 7/8	84	4" Flange	1 1/4" NPT	54.6	
SA-8207	SA-8407	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	90	6	8 7/8	96	6" Flange	1 1/4" NPT	62.6	
SA-8208	SA-8408	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	102	6	8 7/8	108	6" Flange	1 1/4" NPT	70.6	
SA-8209	SA-8409	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	114	6	8 7/8	120	6" Flange	1 1/4" NPT	78.6	



**10" diameter Steam to Liquids**

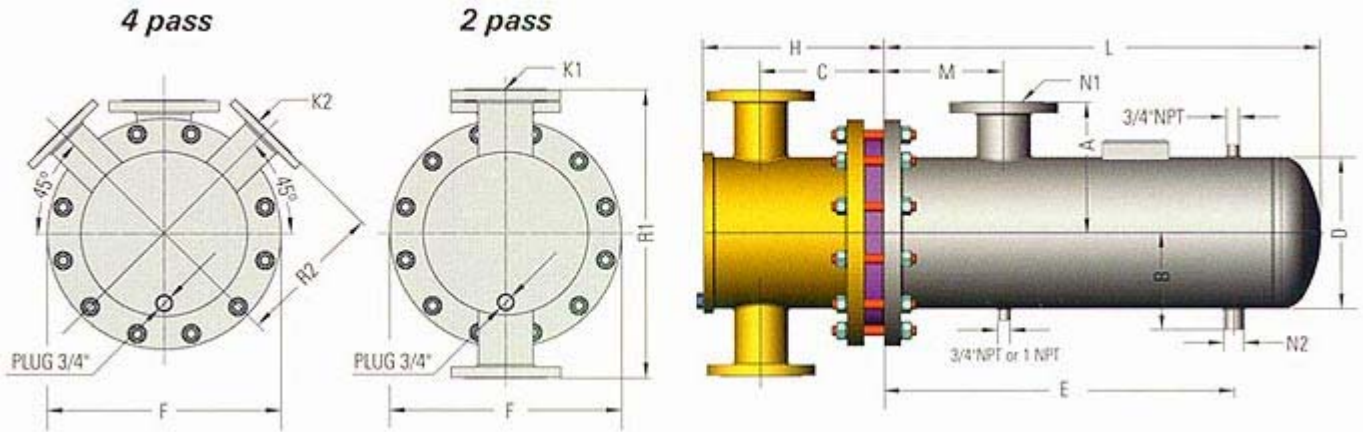
Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
SA-1021	SA-1041	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	17	7 1/8	7 15/16	24	4" Flg	1" NPT	23.7
SA-1022	SA-1042	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	29	7 1/8	10	36	4" Flg	1" NPT	37.7
SA-1023	SA-1043	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	41	7 1/8	10	48	4" Flg	1 1/4" NPT	51.5
SA-1024	SA-1044	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	53	7 1/8	10	60	6" Flg	1 1/4" NPT	65.5
SA-1025	SA-1045	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	65	7 1/8	10	72	6" Flg	1 1/2" NPT	79.4
SA-1026	SA-1046	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	77	7 1/8	10	84	6" Flg	1 1/2" NPT	93.3
SA-1027	SA-1047	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	88 1/2	7 1/8	10	96	6" Flg	2" NPT	107.2
SA-1028	SA-1048	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	100 1/2	7 1/8	10	108	6" Flg	2" NPT	121.1
SA-1029	SA-1049	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	112 1/2	7 1/8	10	120	6" Flg	2" NPT	135.1





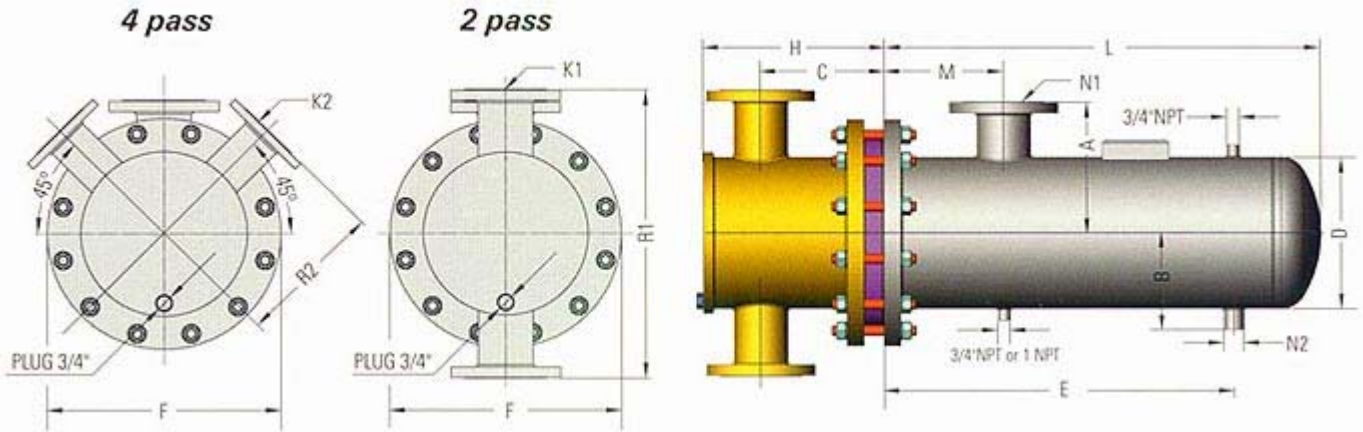
**12" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
SA-1221	SA-1241	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	29	8 1/8	11	36 1/4	4" Flg	1 1/4" NPT	58.6
SA-1222	SA-1242	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	41	8 1/8	11	48 1/4	6" Flg	1 1/4" NPT	79
SA-1223	SA-1243	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	53	8 1/8	11	60 1/4	6" Flg	1 1/2" NPT	99.5
SA-1224	SA-1244	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	65	8 1/8	11	72 1/4	6" Flg	2" NPT	119.9
SA-1225	SA-1245	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	77	8 1/8	11	84 1/4	8" Flg	2" NPT	140.3
SA-1226	SA-1246	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	88	9	11	96 1/4	8" Flg	2 1/2" NPT	160.8
SA-1227	SA-1247	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	100	9	11	108 1/4	8" Flg	2 1/2" NPT	181.2
SA-1228	SA-1248	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	112	9	11	120 1/4	8" Flg	2 1/2" NPT	201.6



**14" diameter Steam to Liquids**

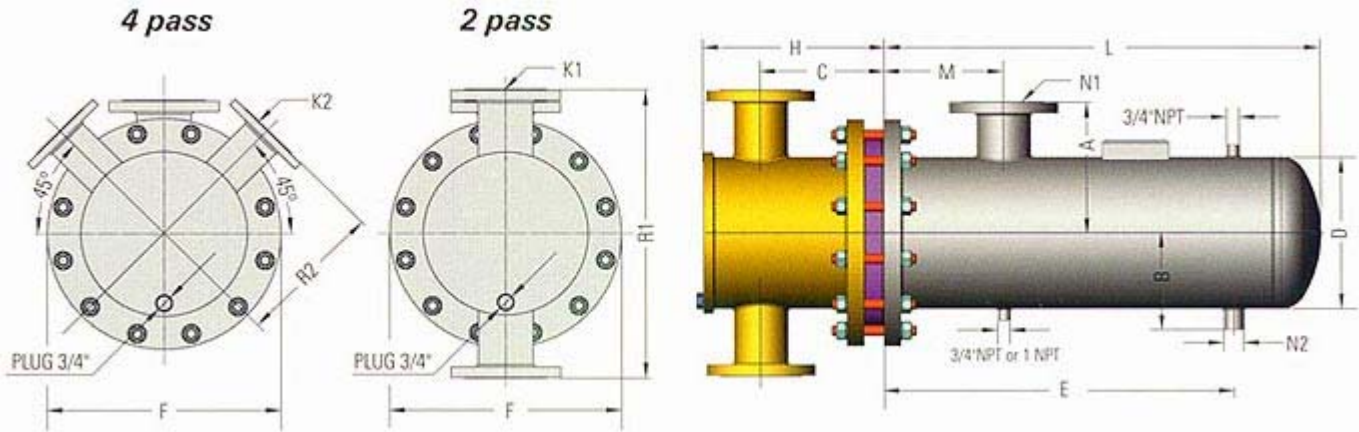
Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
SA-1421	SA-1441	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	29	8 3/4	12	37 1/4	6" Flg	1 1/4" NPT	75.7
SA-1422	SA-1442	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	40 1/2	8 3/4	12	49 1/4	6" Flg	2" NPT	102.4
SA-1423	SA-1443	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	52 1/2	8 3/4	12	61 1/4	6" Flg	2" NPT	129.1
SA-1424	SA-1444	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	64 1/2	8 3/4	12	73 1/4	8" Flg	2" NPT	155.8
SA-1425	SA-1445	26	6" Flg	13	4" Flg	11 5/8	15 5/8	14	21	10	76	9 5/8	12	85 1/4	8" Flg	2 1/2" NPT	182.5
SA-1426	SA-1446	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	88	9 5/8	12	97 1/4	8" Flg	2 1/2" NPT	209.2
SA-1427	SA-1447	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	100	9 5/8	12	109 1/4	10" Flg	2 1/2" NPT	236
SA-1428	SA-1448	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	112	9 5/8	12	121 1/4	10" Flg	3" NPT	262.7





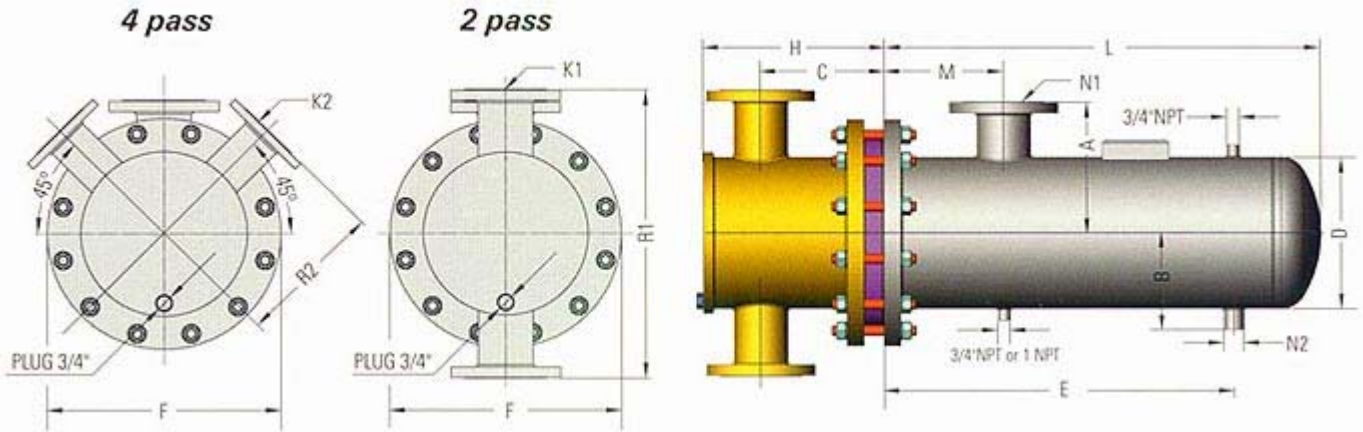
**16" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2		
SA-1621	SA-1641	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	28 1/2	9 3/4	13	37	6" Flg	1 1/2" NPT	104.5	
SA-1622	SA-1642	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	40	9 3/4	13	49	6" Flg	2" NPT	141.4	
SA-1623	SA-1643	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	52	10 5/8	13	61	8" Flg	2 1/2" NPT	178.4	
SA-1624	SA-1644	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	64	10 5/8	13	73	8" Flg	2 1/2" NPT	215.3	
SA-1625	SA-1645	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	76	10 5/8	13	85	10" Flg	2 1/2" NPT	252.2	
SA-1626	SA-1646	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	87 1/2	10 5/8	13	97	10" Flg	3" NPT	289.1	
SA-1627	SA-1647	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	99 1/2	10 5/8	13	109	10" Flg	3" NPT	326	
SA-1628	SA-1648	28.5	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	111 1/2	10 5/8	13	121	10" Flg	3" NPT	363	



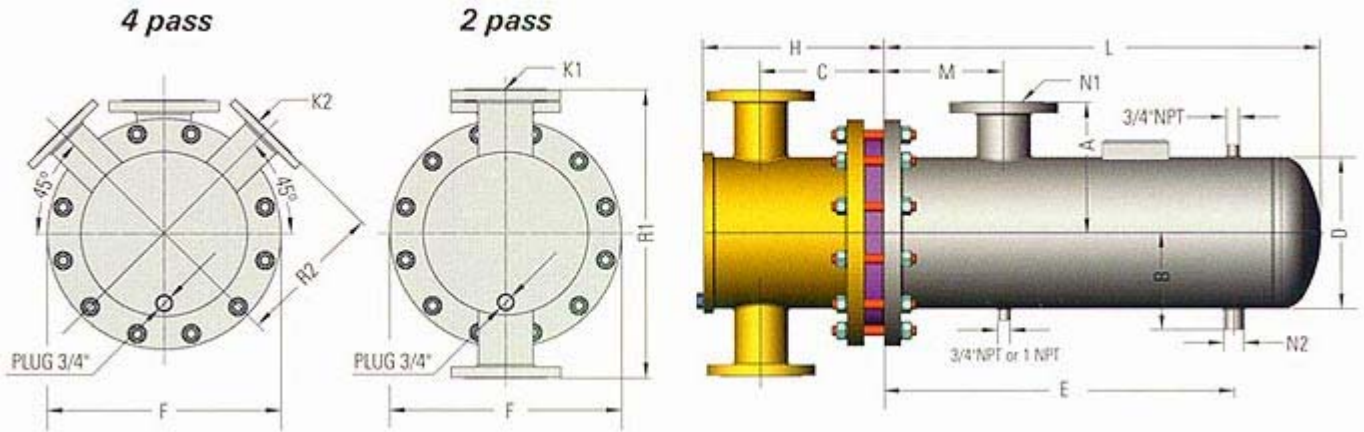
**18" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]				Dimensions [inches]										Htg. Surf. [sq.ft]	
2 Pass	4 Pass	2 Pass		4 Pass		2 and 4 Pass											
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1		N2
SA-1821	SA-1841	30	6" Flg	15	4" Flg	12 3/4	18	18	25	14	27 1/2	10 3/4	14	36 1/2	6" Flg	2" NPT	130.7
SA-1822	SA-1842	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	39 1/2	10 3/4	14	48 1/2	8" Flg	2" NPT	177
SA-1823	SA-1843	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	51	11 5/8	14	60 1/2	8" Flg	2 1/2" NPT	223.4
SA-1824	SA-1844	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	62 1/2	11 5/8	14	72 1/2	10" Flg	3" NPT	269.7
SA-1825	SA-1845	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	74 1/2	11 5/8	14	84 1/2	10" Flg	3" NPT	316.1
SA-1826	SA-1846	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	86 1/2	11 5/8	14	96 1/2	10" Flg	3" NPT	362.4
SA-1827	SA-1847	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	98 1/2	11 5/8	14	108 1/2	12" Flg	3" NPT	408.8
SA-1828	SA-1848	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	110 1/2	12	14	120 1/2	12" Flg	4" Flg	455.1



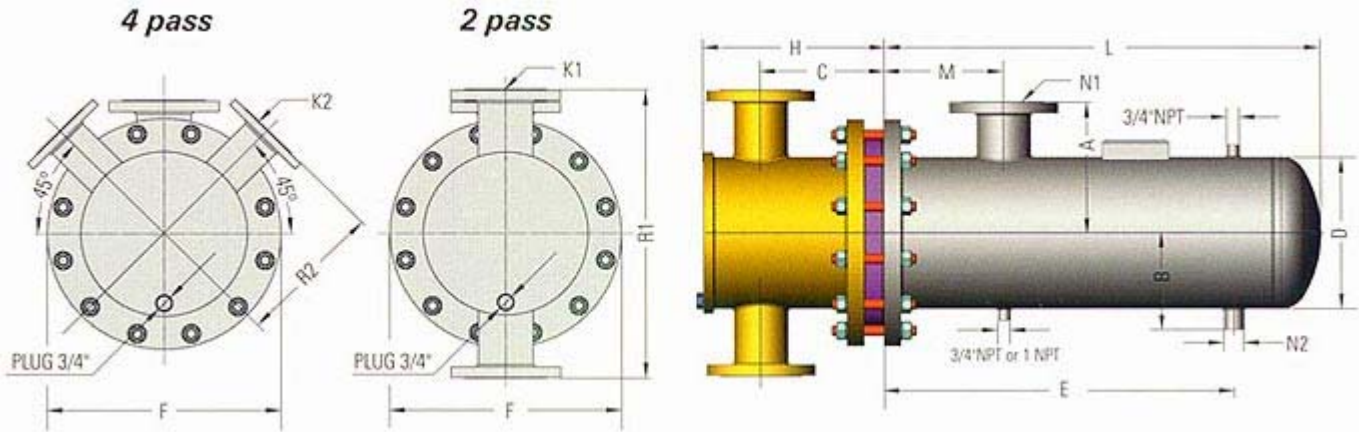
**20" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2		
SA-2021	SA-2041	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	27.5	11 3/4	15	36 3/4	8" Flg	2"NPT	163.9	
SA-2022	SA-2042	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	39	12 2/3	15	48 3/4	8" Flg	2.5"NPT	223.6	
SA-2023	SA-2043	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	50.5	12 2/3	15	60 3/4	10" Flg	3" NPT	283.3	
SA-2024	SA-2044	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	62.5	12 2/3	15	72 3/4	10" Flg	3" NPT	343	
SA-2025	SA-2045	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	74.5	12 2/3	15	84 3/4	12" Flg	3" NPT	402.7	
SA-2026	SA-2046	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	86.5	13	15	96 3/4	12" Flg	4" Flg	462.4	
SA-2027	SA-2047	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	98.6	13	15	108 3/4	12" Flg	4" Flg	522.2	
SA-2028	SA-2048	32.5	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	110.5	13	17	120 3/4	14" Flg	4" Flg	581.9	



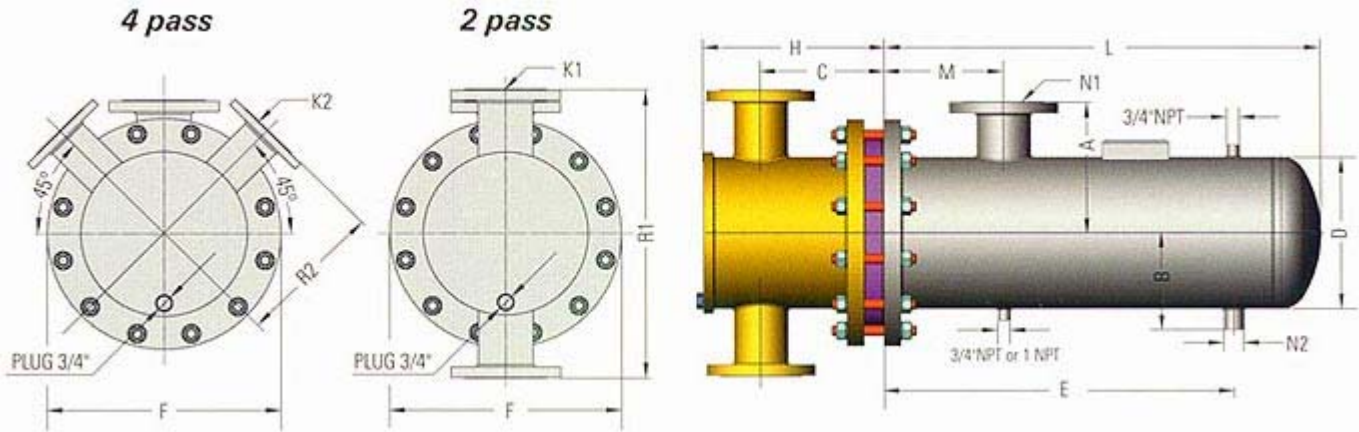
**22" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
SA-2221	SA-2241	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	25 3/8	16	17	38 3/8	12" Flg	4" Flg	193.5
SA-2222	SA-2242	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	37 3/8	16	17	50 3/8	12" Flg	4" Flg	265
SA-2223	SA-2243	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	49 3/8	16	17	62 3/8	12" Flg	4" Flg	336.5
SA-2224	SA-2244	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	61 3/8	16	17	74 3/8	12" Flg	4" Flg	408
SA-2225	SA-2245	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	73 3/8	16	17	86 3/8	12" Flg	4" Flg	479.5
SA-2226	SA-2246	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	85 3/8	16	17	98 3/8	12" Flg	4" Flg	551
SA-2227	SA-2247	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	15	97 3/8	16	18	110 3/8	14" Flg	4" Flg	622.5
SA-2228	SA-2248	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	15	109 3/8	16	18	122 3/8	14" Flg	4" Flg	694



**24" diameter Steam to Liquids**

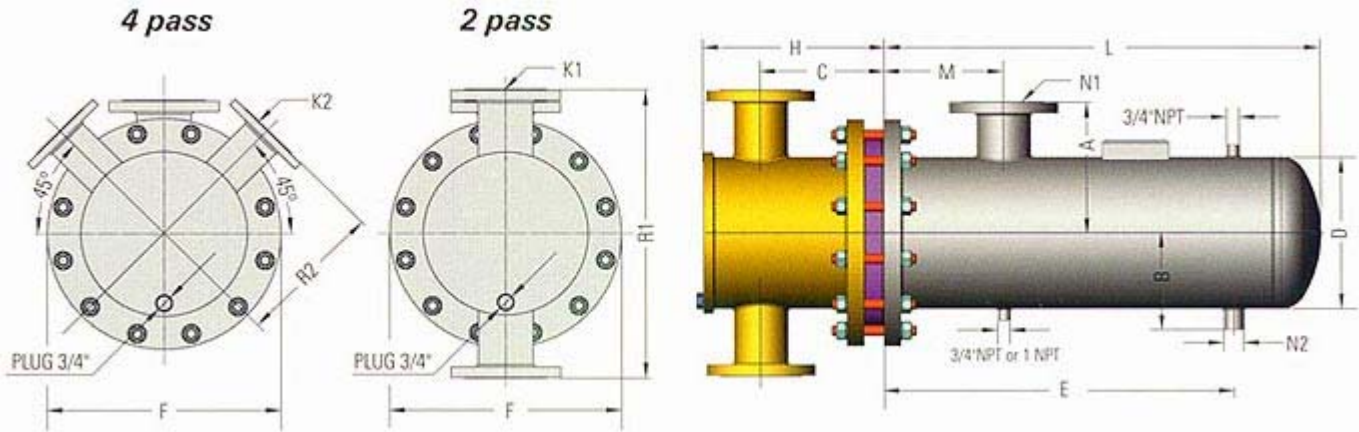
Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
SA-2421	SA-2441	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	25	17	18	38	12" Flg	4" Flg	236
SA-2422	SA-2442	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	37	17	18	50	12" Flg	4" Flg	324
SA-2423	SA-2443	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	49	17	18	62	12" Flg	4" Flg	412
SA-2424	SA-2444	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	61	17	18	74	12" Flg	4" Flg	500
SA-2425	SA-2445	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	73	17	18	86	12" Flg	4" Flg	588
SA-2426	SA-2446	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	85	17	18	98	12" Flg	4" Flg	676
SA-2427	SA-2447	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	15	97	17	19	110	14" Flg	5" Flg	764
SA-2428	SA-2448	37.5	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	15	109	17	19	122	14" Flg	5" Flg	852





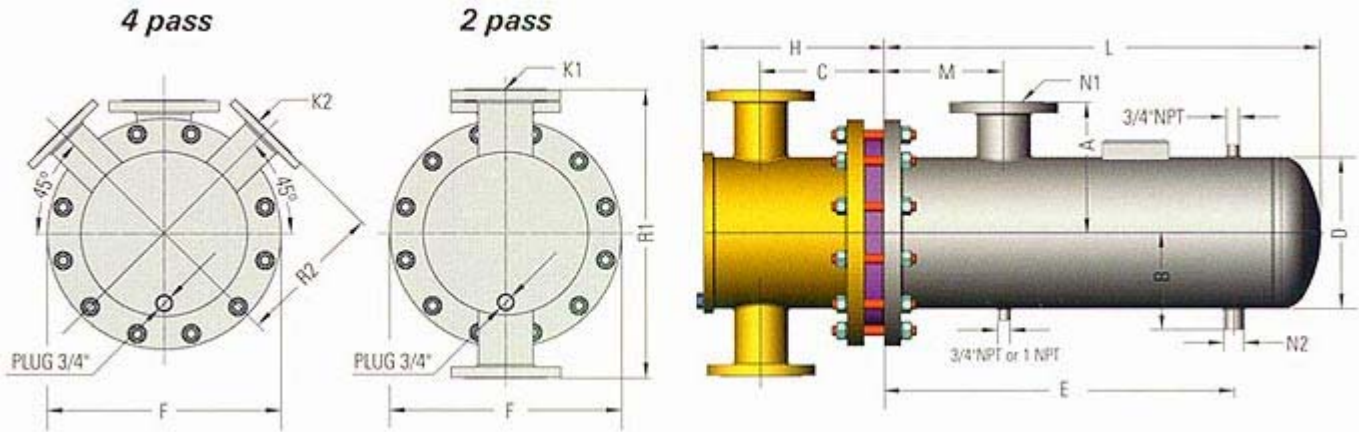
**26" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2		
SA-2621	SA-2641	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	23 3/4	18	20	36	14" Flg	5" Flg	288.6	
SA-2622	SA-2642	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	35 3/4	18	20	48	14" Flg	5" Flg	393.4	
SA-2623	SA-2643	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	47 3/4	18	20	60	14" Flg	5" Flg	500.2	
SA-2624	SA-2644	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	59 3/4	18	20	72	14" Flg	5" Flg	607	
SA-2625	SA-2645	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	71 3/4	18	20	84	14" Flg	5" Flg	713.8	
SA-2626	SA-2646	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	83 3/4	18	20	96	14" Flg	5" Flg	820.6	
SA-2627	SA-2647	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	16	95 3/4	18	21	108	16" Flg	6" Flg	927.4	
SA-2628	SA-2648	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	16	107 3/4	18	21	120	16" Flg	6" Flg	1034.4	



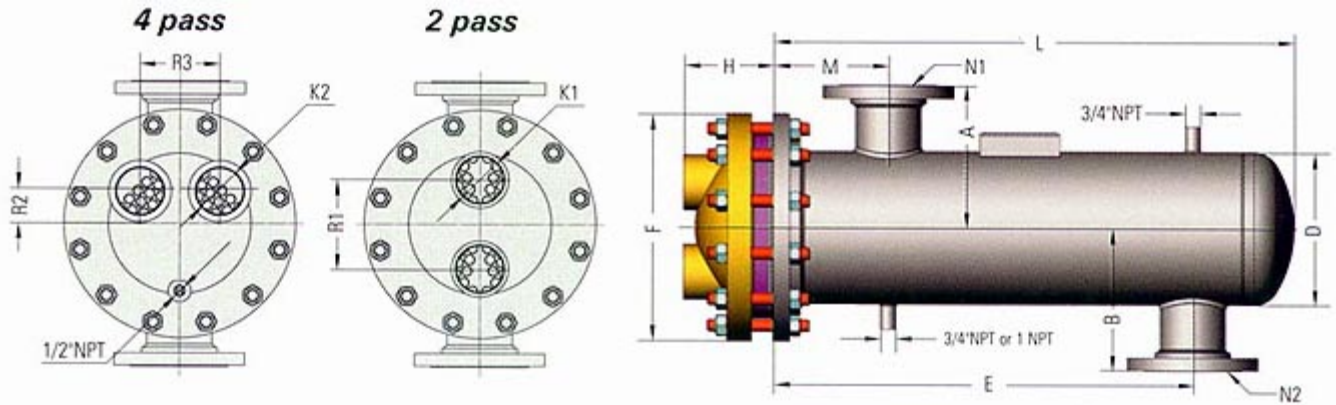
**30" diameter Steam to Liquids**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
SA-3021	SA-3041	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	23	20	22	38 1/2	16" Flg	6" Flg	377.6
SA-3022	SA-3042	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	35	20	22	50 1/2	16" Flg	6" Flg	520.5
SA-3023	SA-3043	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	47	20	22	62 1/2	16" Flg	6" Flg	663.4
SA-3024	SA-3044	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	59	20	22	74 1/2	16" Flg	6" Flg	806.3
SA-3025	SA-3045	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	71	20	22	86 1/2	16" Flg	6" Flg	949.2
SA-3026	SA-3046	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	83	20	22	98 1/2	16" Flg	6" Flg	1092
SA-3027	SA-3047	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	17	95	20	22	110 1/2	18" Flg	8" Flg	1235
SA-3028	SA-3048	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	17	107	20	22	122 1/2	18" Flg	8" Flg	1378



**4" diameter Liquid to Liquid Models**

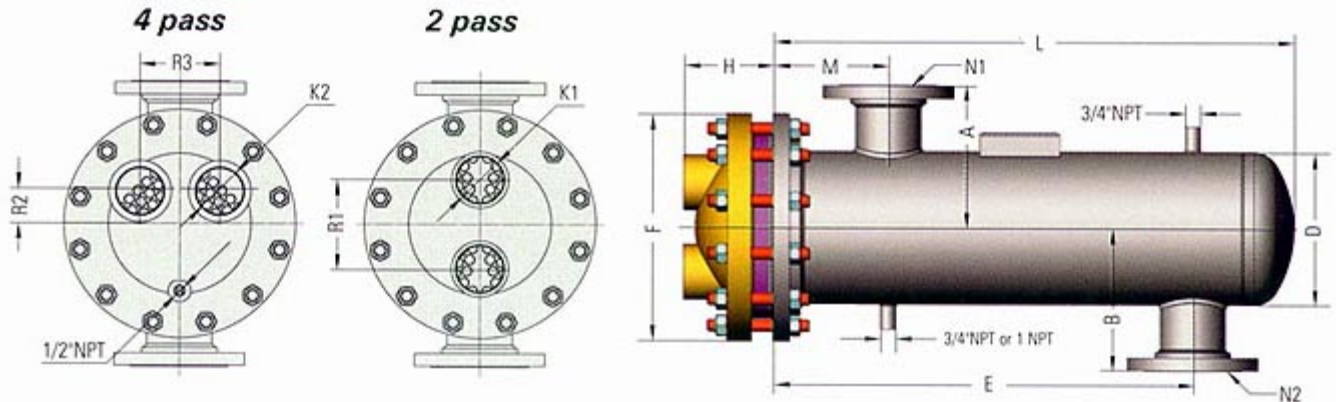
Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
WA-4201	WA-4401	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	19 1/2	3 3/4	3 3/4	24 1/2	1 1/2 NPT	1 1/2 NPT	4.7
WA-4202	WA-4402	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	31 1/2	3 3/4	3 3/4	36 1/2	1 1/2 NPT	1 1/2 NPT	6.9
WA-4203	WA-4403	2.5	1 1/2"	2 3/8	1"	7/8	2 7/8	4 1/2	9	5	43 1/2	3 3/4	3 3/4	48 1/2	1 1/2 NPT	1 1/2 NPT	9.1
WA-4204	WA-4404	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	55 1/2	3 3/4	3 3/4	60 1/2	1 1/2 NPT	1 1/2 NPT	11.3
WA-4205	WA-4405	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	67 1/2	3 3/4	3 3/4	72 1/2	1 1/2 NPT	1 1/2 NPT	13.6
WA-4206	WA-4406	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	79 1/2	3 3/4	3 3/4	84 1/2	1 1/2 NPT	1 1/2 NPT	15.8
WA-4207	WA-4407	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	91 1/2	3 3/4	3 3/4	96 1/2	1 1/2 NPT	1 1/2 NPT	18
WA-4208	WA-4408	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	103 1/2	3 3/4	3 3/4	108 1/2	1 1/2 NPT	1 1/2 NPT	20.3
WA-4209	WA-4409	2.5	1 1/2	2 3/8	1	7/8	2 7/8	4 1/2	9	5	115 1/2	3 3/4	3 3/4	120 1/2	1 1/2 NPT	1 1/2 NPT	22.5





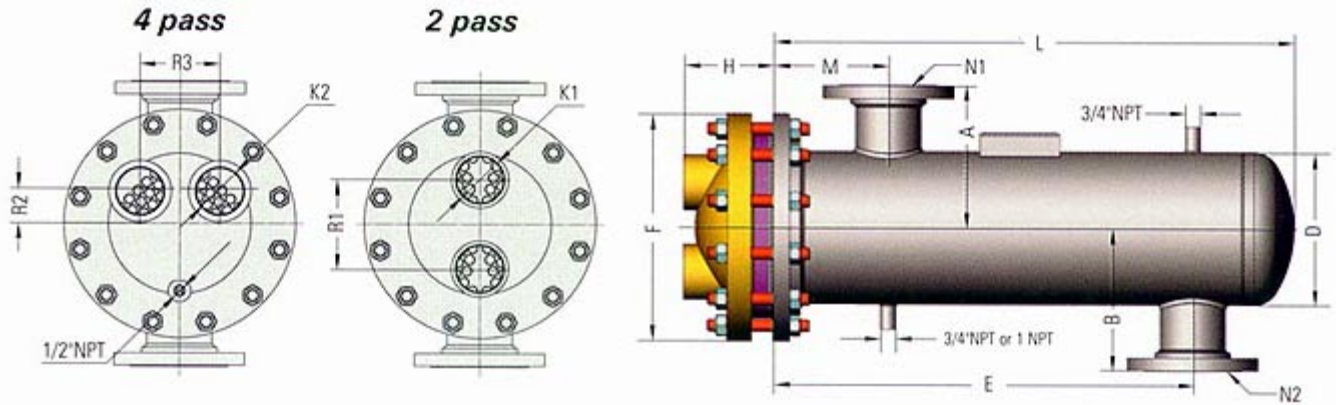
**6" diameter Liquid to Liquid**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
WA-6201	WA-6401	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	18 1/2	4 7/8	4 7/8	25	2 1/2 NPT	2 1/2 NPT	10.7
WA-6202	WA-6402	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	30 1/2	4 7/8	4 7/8	37	2 1/2 NPT	2 1/2 NPT	15.9
WA-6203	WA-6403	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	42 1/2	4 7/8	4 7/8	49	2 1/2 NPT	2 1/2 NPT	21.1
WA-6204	WA-6404	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	54 1/2	4 7/8	4 7/8	61	2 1/2 NPT	2 1/2 NPT	26.3
WA-6205	WA-6405	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	66 1/2	4 7/8	4 7/8	73	2 1/2 NPT	2 1/2 NPT	31.5
WA-6206	WA-6406	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	78 1/2	4 7/8	4 7/8	85	2 1/2 NPT	2 1/2 NPT	36.7
WA-6207	WA-6407	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	90 1/2	4 7/8	4 7/8	97	2 1/2 NPT	2 1/2 NPT	41.9
WA-6208	WA-6408	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	102 1/2	4 7/8	4 7/8	109	2 1/2 NPT	2 1/2 NPT	47.1
WA-6209	WA-6409	4	2	3 3/4	1 1/2	1 1/4	3 7/16	6 5/8	11	5	114 1/2	4 7/8	4 7/8	121	2 1/2 NPT	2 1/2 NPT	52.3



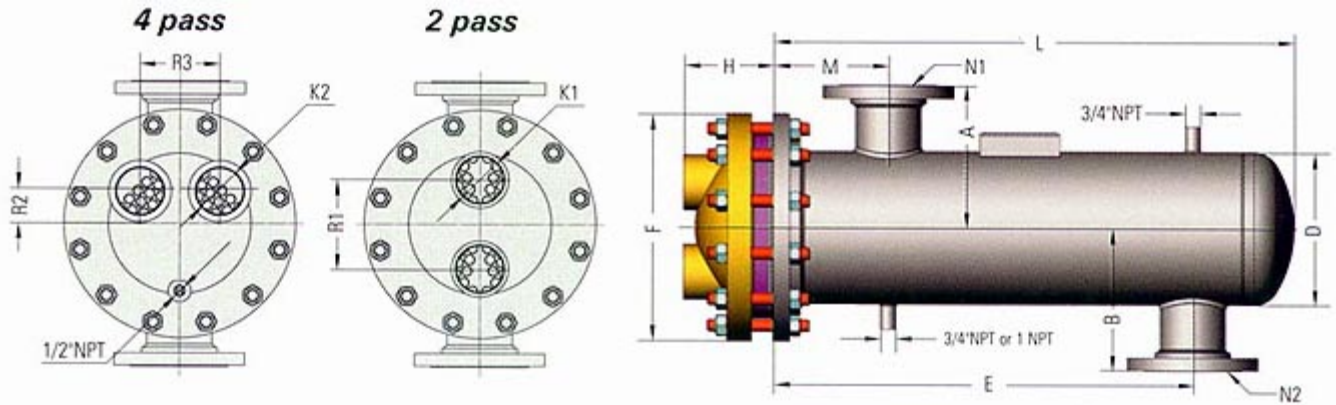
**8" diameter Liquid to Liquid models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass			4 Pass			2 and 4 Pass										
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2		
WA-8201	WA-8401	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	18	7 3/8	7 3/8	24	4" Flange	4" Flange	14.7	
WA-8202	WA-8402	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	30	7 3/8	7 3/8	36	4" Flange	4" Flange	22.7	
WA-8203	WA-8403	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	42	7 3/8	7 3/8	48	4" Flange	4" Flange	30.7	
WA-8204	WA-8404	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	54	7 3/8	7 3/8	60	4" Flange	4" Flange	38.7	
WA-8205	WA-8405	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	66	7 3/8	7 3/8	72	4" Flange	4" Flange	46.6	
WA-8206	WA-8406	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	78	7 3/8	7 3/8	84	4" Flange	4" Flange	54.6	
WA-8207	WA-8407	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	90	7 3/8	7 3/8	96	4" Flange	4" Flange	62.6	
WA-8208	WA-8408	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	102	7 3/8	7 3/8	108	4" Flange	4" Flange	70.6	
WA-8209	WA-8409	5	3	4	2	2	4 1/4	8 5/8	13 1/2	8	114	7 3/8	7 3/8	120	4" Flange	4" Flange	78.6	



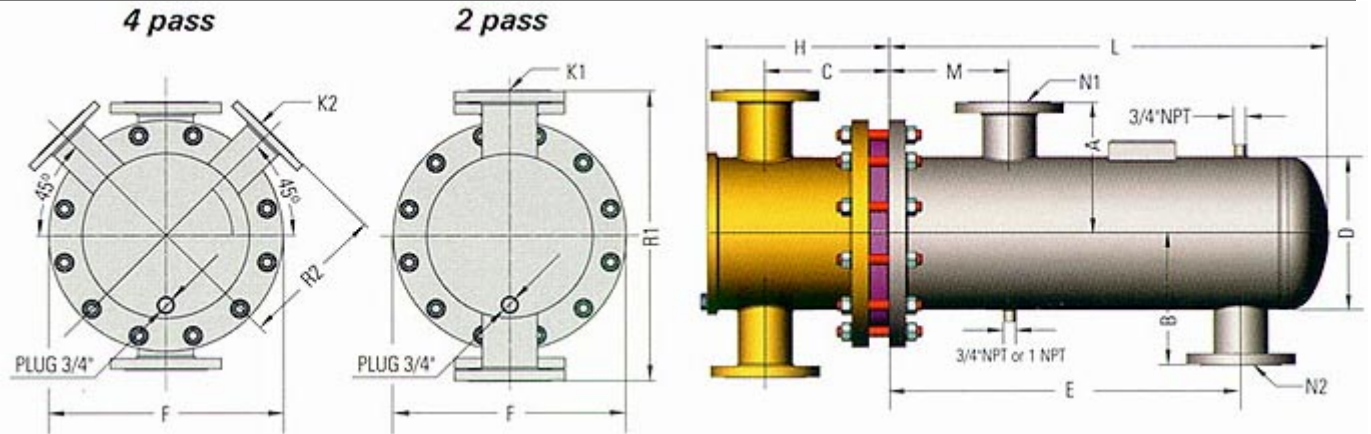
**10" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1 FNPT	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
WA-1021	WA-1041	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	17	8 1/2	8 1/2	24	4" Flg	4" Flg	23.7
WA-1022	WA-1042	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	29	8 1/2	8 1/2	36	4" Flg	4" Flg	37.7
WA-1023	WA-1043	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	41	8 1/2	8 1/2	48	4" Flg	4" Flg	51.5
WA-1024	WA-1044	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	53	8 1/2	8 1/2	60	4" Flg	4" Flg	65.5
WA-1025	WA-1045	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	65	8 1/2	8 1/2	72	4" Flg	4" Flg	79.4
WA-1026	WA-1046	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	77	8 1/2	8 1/2	84	4" Flg	4" Flg	93.3
WA-1027	WA-1047	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	88 1/2	8 1/2	8 1/2	96	4" Flg	4" Flg	107.2
WA-1028	WA-1048	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	100 1/2	8 1/2	8 1/2	108	4" Flg	4" Flg	121.1
WA-1029	WA-1049	6 1/4	3	5 1/2	3	2 1/4	4 7/8	10 3/4	16	8	112 1/2	8 1/2	8 1/2	120	4" Flg	4" Flg	135.1



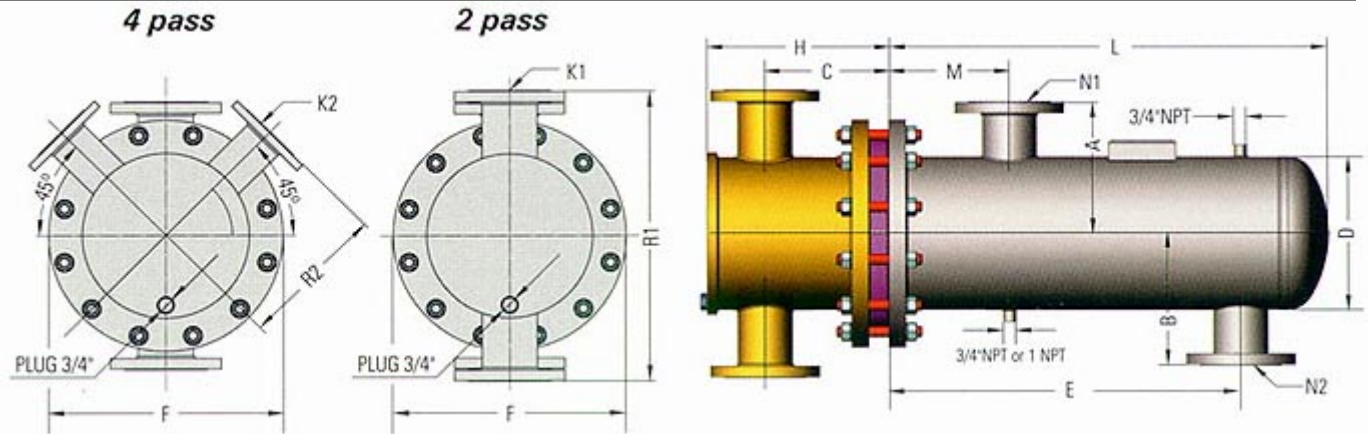
**12" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R3	K2	R2	H	D	F	M	E	B	A	L	N1	N2	
WA-1221	WA-1241	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	29	11	11	36 1/4	4" Flg	4" Flg	58.6
WA-1222	WA-1242	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	41	11	11	48 1/4	6" Flg	6" Flg	79.0
WA-1223	WA-1243	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	53	11	11	60 1/4	6" Flg	6" Flg	99.5
WA-1224	WA-1244	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	65	11	11	72 1/4	6" Flg	6" Flg	119.9
WA-1225	WA-1245	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	77	11	11	84 1/4	8" Flg	8" Flg	140.3
WA-1226	WA-1246	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	88	11	11	96 1/4	8" Flg	8" Flg	160.8
WA-1227	WA-1247	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	100	11	11	108 1/4	8" Flg	8" Flg	181.2
WA-1228	WA-1248	24	4" Flg	12	3" Flg	10 1/8	14 5/8	12 3/4	19	10	112	11	11	120 1/4	8" Flg	8" Flg	201.6



**14" diameter Liquid to Liquid Models**

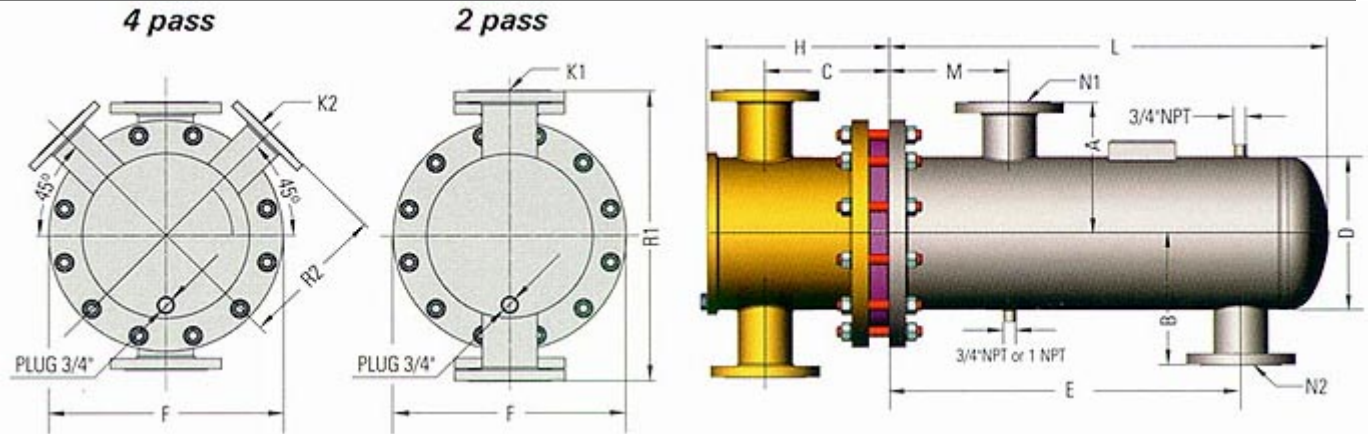
Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-1421	WA-1441	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	29	12	12	37 1/4	6" Flg	6" Flg	75.7
WA-1422	WA-1442	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	40 1/2	12	12	49 1/4	6" Flg	6" Flg	102.4
WA-1423	WA-1443	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	52 1/2	12	12	61 1/4	6" Flg	6" Flg	129.1
WA-1424	WA-1444	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	64 1/2	12	12	73 1/4	8" Flg	8" Flg	155.8
WA-1425	WA-1445	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	76	12	12	85 1/4	8" Flg	8" Flg	182.5
WA-1426	WA-1446	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	88	12	12	97 1/4	8" Flg	8" Flg	209.2
WA-1427	WA-1447	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	100	12	12	109 1/4	10" Flg	10" Flg	236.0
WA-1428	WA-1448	26	6" Flg	13	4" Flg	11 5/8	16 5/8	14	21	10	112	12	12	121 1/4	10" Flg	10" Flg	262.7





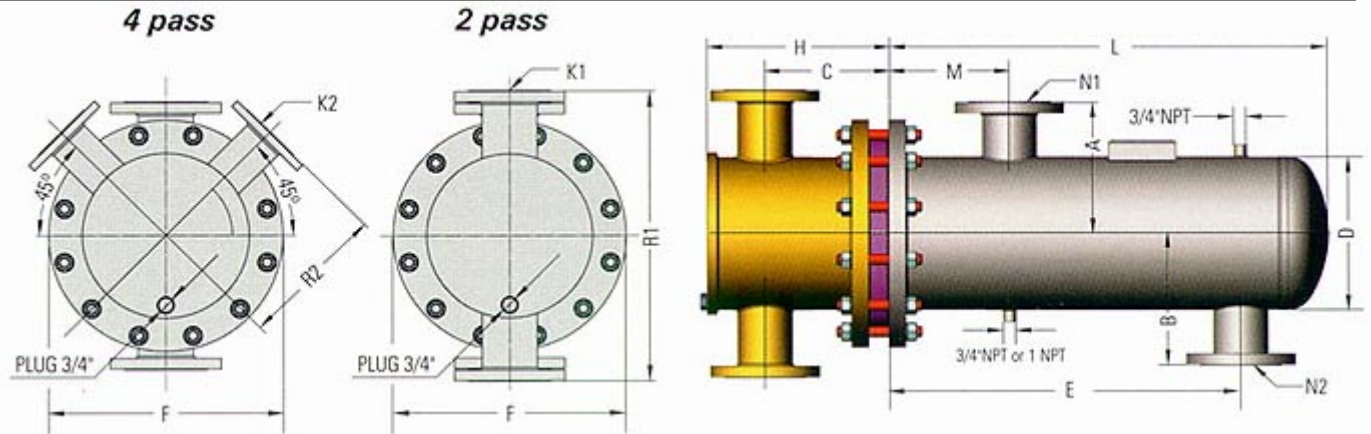
**16" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-1621	WA-1641	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	28 1/2	13	13	37	6" Flg	6" Flg	104.5
WA-1622	WA-1642	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	40	13	13	49	6" Flg	6" Flg	141.4
WA-1623	WA-1643	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	52	13	13	61	8" Flg	8" Flg	178.4
WA-1624	WA-1644	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	64	13	13	73	8" Flg	8" Flg	215.3
WA-1625	WA-1645	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	76	13	13	85	10" Flg	10" Flg	252.2
WA-1626	WA-1646	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	87 1/2	13	13	97	10" Flg	10" Flg	289.1
WA-1627	WA-1647	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	99 1/2	13	13	109	10" Flg	10" Flg	326.0
WA-1628	WA-1648	28 1/2	6" Flg	14 1/4	4" Flg	12 1/8	17 3/8	16	23 1/2	11	111 1/2	13	13	121	10" Flg	10" Flg	363.0



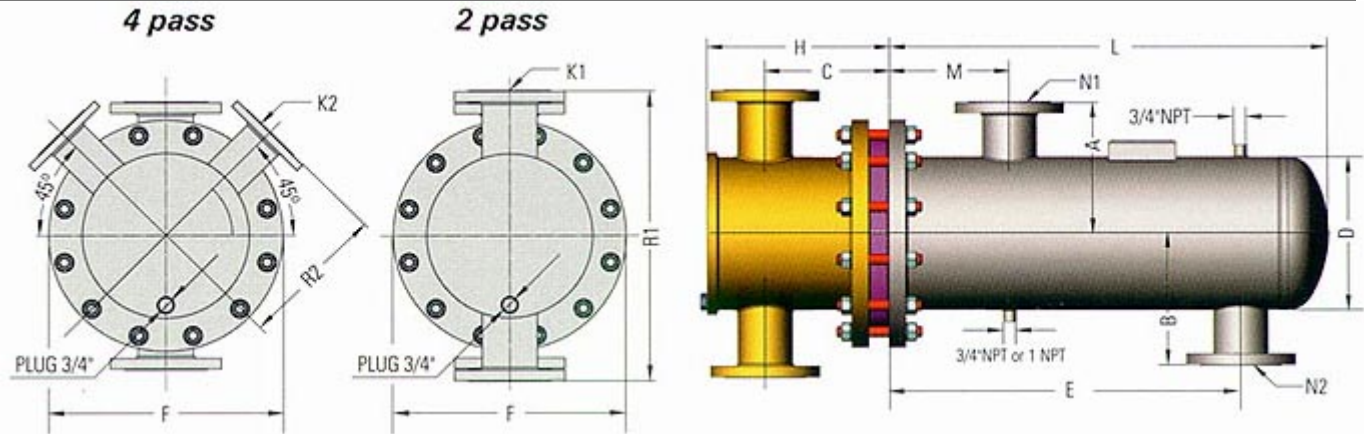
**18" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-1821	WA-1841	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	27 1/2	14	14	36 1/2	6" Flg	6" Flg	130.7
WA-1822	WA-1842	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	39 1/2	14	14	48 1/2	8" Flg	8" Flg	177.0
WA-1823	WA-1843	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	51	14	14	60 1/2	8" Flg	8" Flg	223.4
WA-1824	WA-1844	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	62 1/2	14	14	72 1/2	10" Flg	10" Flg	269.7
WA-1825	WA-1845	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	74 1/2	14	14	84 1/2	10" Flg	10" Flg	316.1
WA-1826	WA-1846	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	86 1/2	14	14	96 1/2	10" Flg	10" Flg	362.4
WA-1827	WA-1847	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	98 1/2	14	14	108 1/2	12" Flg	12" Flg	408.8
WA-1828	WA-1848	30	6" Flg	15	4" Flg	12 3/4	18	18	25	13	110 1/2	14	14	120 1/2	12" Flg	12" Flg	455.1



**20" diameter Liquid to Liquid Models**

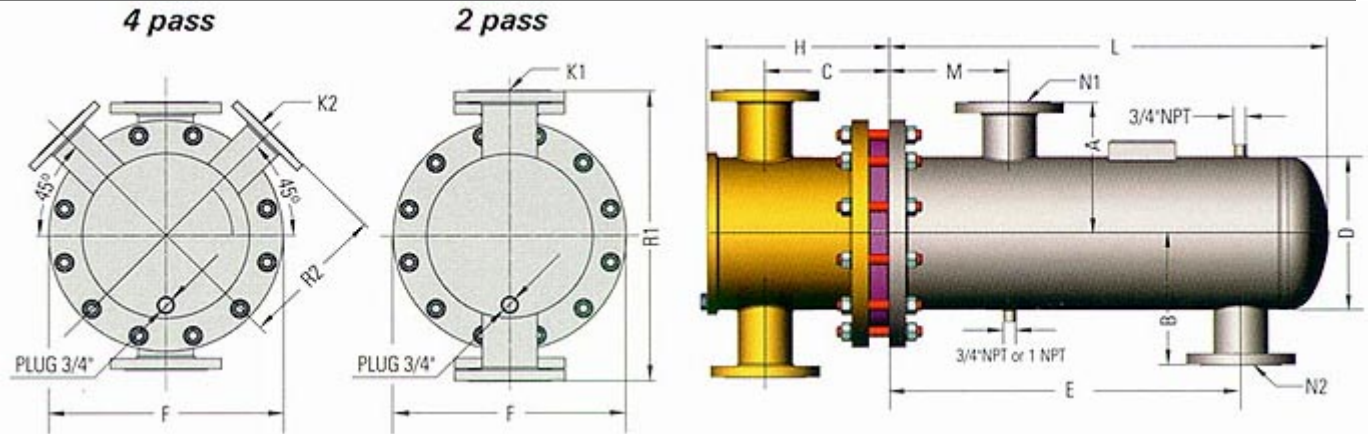
Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2		
WA-2021	WA-2041	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	27 1/2	15	15	36 3/4	8" Flg	8" Flg	163.9	
WA-2022	WA-2042	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	39	15	15	48 3/4	8" Flg	8" Flg	223.6	
WA-2023	WA-2043	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	50 1/2	15	15	60 3/4	10" Flg	10" Flg	283.3	
WA-2024	WA-2044	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	62 1/2	15	15	72 3/4	10" Flg	10" Flg	343.0	
WA-2025	WA-2045	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	74 1/2	15	15	84 3/4	12" Flg	12" Flg	402.7	
WA-2026	WA-2046	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	86 1/2	15	15	96 3/4	12" Flg	12" Flg	462.4	
WA-2027	WA-2047	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	98 1/2	15	15	108 3/4	12" Flg	12" Flg	522.2	
WA-2028	WA-2048	32 1/2	6" Flg	16 1/4	4" Flg	14 1/8	19 5/8	20	27 1/2	13	110 1/2	17	17	120 3/4	14" Flg	14" Flg	581.9	





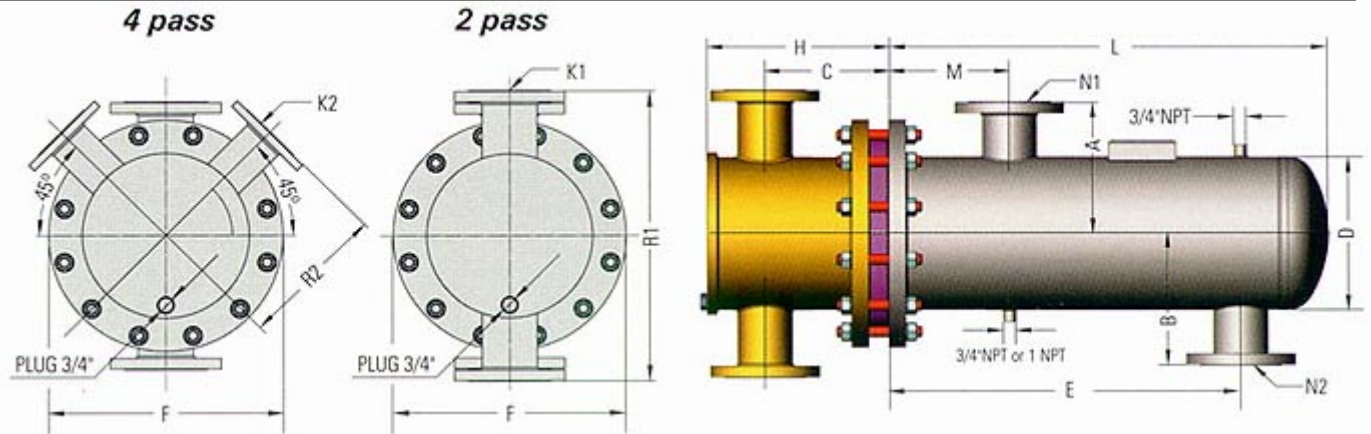
**22" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]										Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass										
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2		
WA-2221	WA-2241	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	25 3/8	17	17	38 3/8	12" Flg	12" Flg	193.5	
WA-2222	WA-2242	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	37 3/8	17	17	50 3/8	12" Flg	12" Flg	265.0	
WA-2223	WA-2243	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	49 3/8	17	17	62 3/8	12" Flg	12" Flg	336.5	
WA-2224	WA-2244	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	61 3/8	17	17	74 3/8	12" Flg	12" Flg	408.0	
WA-2225	WA-2245	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	73 3/8	17	17	86 3/8	12" Flg	12" Flg	479.5	
WA-2226	WA-2246	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	14	85 3/8	17	17	98 3/8	12" Flg	12" Flg	551.0	
WA-2227	WA-2247	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	15	97 3/8	18	18	110 3/8	14" Flg	14" Flg	622.5	
WA-2228	WA-2248	35	10" Flg	17 1/4	8" Flg	17	24 1/2	22	29 1/2	15	109 3/8	18	18	122 3/8	14" Flg	14" Flg	694.0	



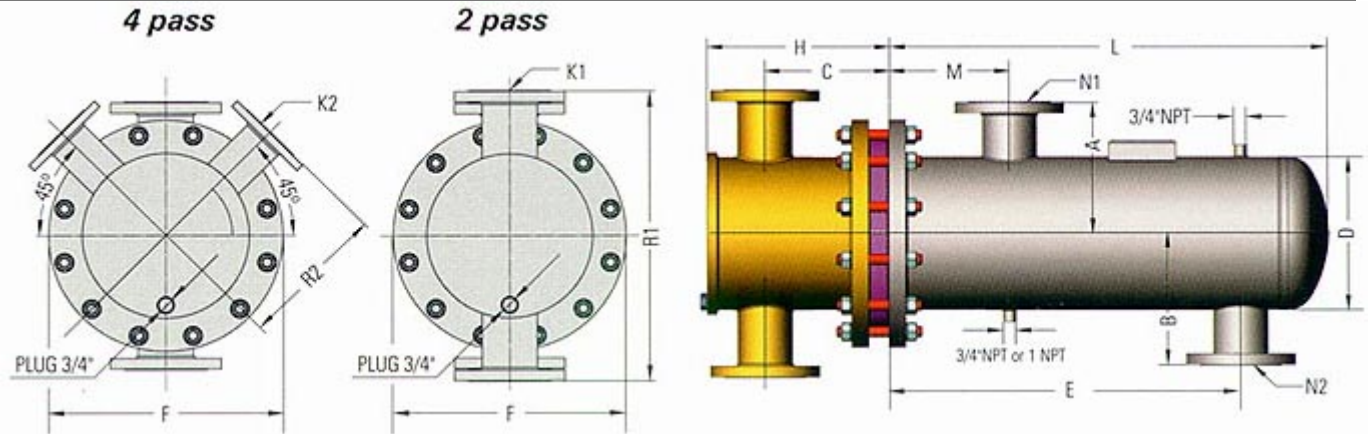
**24" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-2421	WA-2441	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	25	18	18	38	12" Flg	12" Flg	236.0
WA-2422	WA-2442	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	37	18	18	50	12" Flg	12" Flg	324.0
WA-2423	WA-2443	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	49	18	18	62	12" Flg	12" Flg	412.0
WA-2424	WA-2444	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	61	18	18	74	12" Flg	12" Flg	500.0
WA-2425	WA-2445	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	73	18	18	86	12" Flg	12" Flg	588.0
WA-2426	WA-2446	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	14	85	18	18	98	12" Flg	12" Flg	676.0
WA-2427	WA-2447	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	15	97	19	19	110	14" Flg	14" Flg	764.0
WA-2428	WA-2448	37 1/2	10" Flg	18 1/2	8" Flg	17 7/8	25 5/8	24	32	15	109	19	19	122	14" Flg	14" Flg	852.0



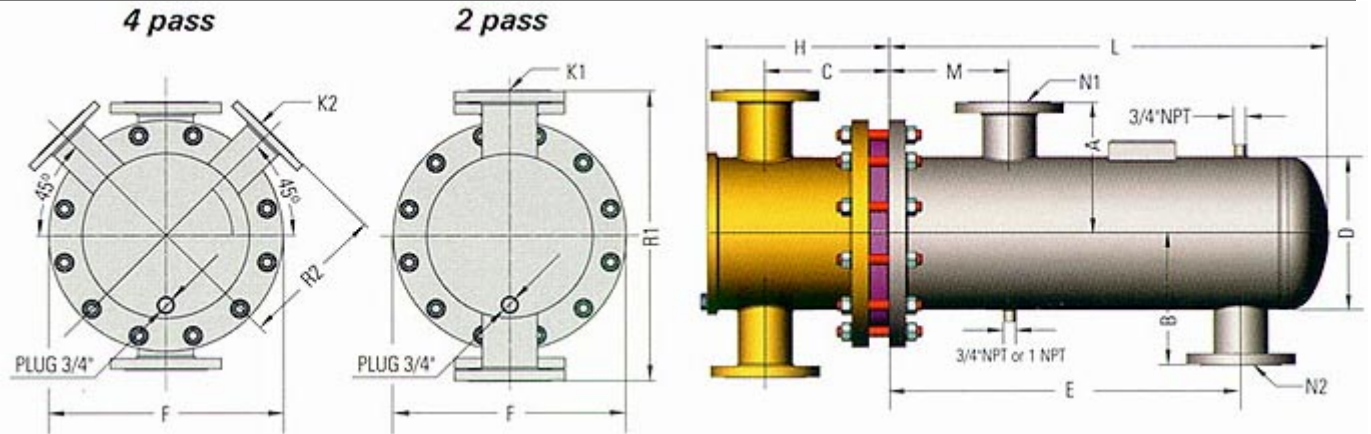
**26" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-2621	WA-2641	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	23 3/4	20	20	36	14" Flg	14" Flg	288.6
WA-2622	WA-2642	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	35 3/4	20	20	48	14" Flg	14" Flg	393.4
WA-2623	WA-2643	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	47 3/4	20	20	60	14" Flg	14" Flg	500.2
WA-2624	WA-2644	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	59 3/4	20	20	72	14" Flg	14" Flg	607.0
WA-2625	WA-2645	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	71 3/4	20	20	84	14" Flg	14" Flg	713.8
WA-2626	WA-2646	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	15	83 3/4	20	20	96	14" Flg	14" Flg	820.6
WA-2627	WA-2647	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	16	95 3/4	21	21	108	16" Flg	16" Flg	927.4
WA-2628	WA-2648	37	12" Flg	18 1/4	8" Flg	17	24 3/4	26	34 1/4	16	107 3/4	21	21	120	16" Flg	16" Flg	1034.4



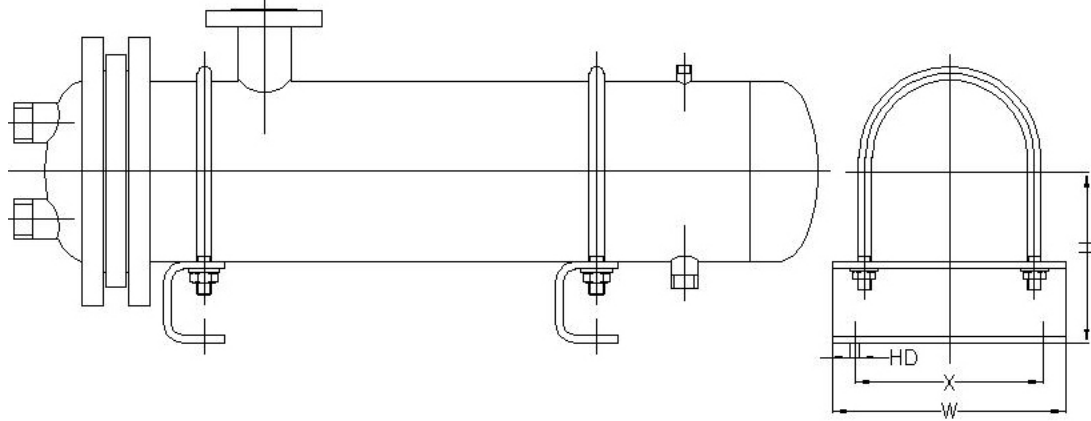
**30" diameter Liquid to Liquid Models**

Model Number		Cast Iron Heads [inches]						Dimensions [inches]									Htg. Surf. [sq.ft]
2 Pass	4 Pass	2 Pass		4 Pass				2 and 4 Pass									
		R1	K1	R2	K2	C	H	D	F	M	E	B	A	L	N1	N2	
WA-3021	WA-3041	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	23	22	22	38 1/2	16" Flg	16" Flg	377.6
WA-3022	WA-3042	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	35	22	22	50 1/2	16" Flg	16" Flg	520.5
WA-3023	WA-3043	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	47	22	22	62 1/2	16" Flg	16" Flg	663.4
WA-3024	WA-3044	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	59	22	22	74 1/2	16" Flg	16" Flg	806.3
WA-3025	WA-3045	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	71	22	22	86 1/2	16" Flg	16" Flg	949.2
WA-3026	WA-3046	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	16	83	22	22	98 1/2	16" Flg	16" Flg	1092.0
WA-3027	WA-3047	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	17	95	22	22	110 1/2	18" Flg	18" Flg	1235.0
WA-3028	WA-3048	42	14" Flg	20 3/4	10" Flg	19 5/8	28 7/8	30	38 3/4	17	107	22	22	122 1/2	18" Flg	18" Flg	1378.0



<b>TYPICAL SADDLE DIMENSIONS</b>				
<b>Unit Size</b>	<b>Dimensions are in Inches</b>			
	<b>H</b>	<b>W</b>	<b>X</b>	<b>HD</b>
<b>4</b>	5 1/4	6 15/16	5 1/2	1/2
<b>6</b>	6 5/16	9 1/4	7 1/2	5/8
<b>8</b>	7 5/16	11 1/4	9	5/8
<b>10</b>	8 3/8	13 5/8	10	3/4
<b>12</b>	9 3/8	15 5/8	11	3/4
<b>14</b>	18	17	12	3/4
<b>16</b>	12	19	13	3/4
<b>18</b>	13	21	14	3/4
<b>20</b>	14	23	14	3/4
<b>22</b>	17	25	18	7/8
<b>24</b>	18	27	19	7/8
<b>26</b>	19	30	20	7/8
<b>30</b>	21	33	22	7/8

**NOTE: Adjustable saddle shown in preferred locations.**



# Shell & Tube Steam to Fluid Comparison Chart #1

SEC - SA SERIES												TACO - S SERIES					
Shell Dia.	Model No.		Connection				Shell Length	Heating Surface	Model No.		Connection				Shell Length	Heating Surface	
	2 Pass	4 Pass	Tubeside		Shellside				2 Pass	4 Pass	Tubeside		Shellside				
			2 pass	4 pass	Inlet	Outlet	inch	sq.ft			2 pass	4 pass	Inlet	Outlet	inch	Sq.ft	
4"	SA-4201	SA-4401	1.5"	1"	2"	1"	24.5	4.7	G4204S	G4404S	1.5"	1"	1.25"	1"	24.5	4.6	
	SA-4202	SA-4402	1.5"	1"	2"	1"	36.5	6.9	G4206S	G4406S	1.5"	1"	1.25"	1"	36.5	7	
	SA-4203	SA-4403	1.5"	1"	2"	1"	48.5	9.1	G4208S	G4408S	1.5"	1"	1.25"	1"	48.5	9.3	
	SA-4204	SA-4404	1.5"	1"	2"	1"	60.5	11.3	G4210S	G4410S	1.5"	1"	1.25"	1"	60.5	11.7	
	SA-4205	SA-4405	1.5"	1"	2"	1"	72.5	13.6	G4212S	G4412S	1.5"	1"	1.5"	1"	72.5	14.1	
	SA-4206	SA-4406	1.5"	1"	2"	1"	84.5	15.8	G4214S	G4414S	1.5"	1"	1.5"	1"	84.5	16.4	
	SA-4207	SA-4407	1.5"	1"	2"	1"	96.5	18	G4216S	G4416S	1.5"	1"	1.5"	1"	96.5	18.8	
	SA-4208	SA-4408	1.5"	1"	2"	1"	108.5	20.3	G4218S	G4418S	1.5"	1"	1.5"	1"	108.5	21.1	
	SA-4209	SA-4409	1.5"	1"	2"	1"	120.5	22.5	G4220S	G4420S	1.5"	1"	1.5"	1"	120.5	23.5	
6"	SA-6201	SA-6401	2"	1.5"	3"	1"	25	10.7	G6204S	G6404S	2"	1.5"	1.5"	1"	25	9.1	
	SA-6202	SA-6402	2"	1.5"	3"	1"	37	15.9	G6206S	G6406S	2"	1.5"	2"	1"	37	13.8	
	SA-6203	SA-6403	2"	1.5"	3"	1"	49	21.1	G6208S	G6408S	2"	1.5"	2"	1"	49	18.5	
	SA-6204	SA-6404	2"	1.5"	3"	1"	61	26.3	G6210S	G6410S	2"	1.5"	2.5"	1"	61	23.2	
	SA-6205	SA-6405	2"	1.5"	3"	1"	73	31.5	G6212S	G6412S	2"	1.5"	2.5"	1"	73	27.9	
	SA-6206	SA-6406	2"	1.5"	3"	1"	85	36.7	G6214S	G6414S	2"	1.5"	3"	1"	85	32.6	
	SA-6207	SA-6407	2"	1.5"	3"	1"	97	41.9	G6216S	G6416S	2"	1.5"	3"	1"	97	37.3	
	SA-6208	SA-6408	2"	1.5"	3"	1"	109	47.1	G6218S	G6418S	2"	1.5"	3"	1"	109	42.1	
	SA-6209	SA-6409	2"	1.5"	3"	1"	121	52.3	G6220S	G6420S	2"	1.5"	3"	1"	121	46.8	
8"	SA-8201	SA-8401	3"	2"	3"	1"	24	14.7	G8204S	G8404S	3"	2"	2"	1"	24	16.5	
	SA-8202	SA-8402	3"	2"	3"	1"	36	22.7	G8206S	G8406S	3"	2"	2.5"	1"	36	25.1	
	SA-8203	SA-8403	3"	2"	3"	1"	48	30.7	G8208S	G8408S	3"	2"	3"	1"	48	33.7	
	SA-8204	SA-8404	3"	2"	4"F	1"	60	38.7	G8210S	G8410S	3"	2"	4"F	1"	60	42.4	
	SA-8205	SA-8405	3"	2"	4"F	1.25"	72	46.6	G8212S	G8412S	3"	2"	4"F	1.25"	72	51	
	SA-8206	SA-8406	3"	2"	4"F	1.25"	84	54.6	G8214S	G8414S	3"	2"	4"F	1.25"	84	59.7	
	SA-8207	SA-8407	3"	2"	6"F	1.25"	96	62.6	G8216S	G8416S	3"	2"	6"F	1.25"	96	68.3	
	SA-8208	SA-8408	3"	2"	6"F	1.25"	108	70.6	G8218S	G8418S	3"	2"	6"F	1.25"	108	76.9	
	SA-8209	SA-8409	3"	2"	6"F	1.25"	120	78.6	G8220S	G8420S	3"	2"	6"F	1.25"	120	85.6	
10"	SA-1021	SA-1041	3"	3"	4"F	1"	24	23.7	G10204S	G10404S	3"	3"	3"	1"	24	26.8	
	SA-1022	SA-1042	3"	3"	4"F	1"	36	37.7	G10206S	G10406S	3"	3"	4"F	1"	36	40.9	
	SA-1023	SA-1043	3"	3"	4"F	1.25"	48	51.5	G10208S	G10408S	3"	3"	4"F	1.25"	48	55	
	SA-1024	SA-1044	3"	3"	6"F	1.25"	60	65.5	G10210S	G10410S	3"	3"	6"F	1.25"	60	69.2	
	SA-1025	SA-1045	3"	3"	6"F	1.5"	72	79.4	G10212S	G10412S	3"	3"	6"F	1.5"	72	83.3	
	SA-1026	SA-1046	3"	3"	6"F	1.5"	84	93.3	G10214S	G10414S	3"	3"	6"F	1.5"	84	97.5	
	SA-1027	SA-1047	3"	3"	6"F	2"	96	107.2	G10216S	G10416S	3"	3"	6"F	2"	96	111.6	
	SA-1028	SA-1048	3"	3"	6"F	2"	108	121.1	G10218S	G10418S	3"	3"	6"F	2"	108	125.7	
	SA-1029	SA-1049	3"	3"	6"F	2"	120	135.1	G10220S	G10420S	3"	3"	6"F	2"	120	139.9	
12"	SA-1221	SA-1241	4"F	3"F	4"F	1.25"	36.2	23.7	G12206S	G12406S	4"F	3"F	4"F	1.25"	36	58.3	
	SA-1222	SA-1242	4"F	3"F	6"F	1.25"	48.2	37.7	G12208S	G12408S	4"F	3"F	6"F	1.25"	48	79.2	
	SA-1223	SA-1243	4"F	3"F	6"F	1.5"	60.2	51.5	G12210S	G12410S	4"F	3"F	6"F	1.5"	60.8	100	
	SA-1224	SA-1244	4"F	3"F	6"F	2"	72.2	65.5	G12212S	G12412S	4"F	3"F	6"F	2"	72	120.7	
	SA-1225	SA-1245	4"F	3"F	8"F	2"	84.272	79.4	G12214S	G12414S	4"F	3"F	8"F	2"	84	140.8	
	SA-1226	SA-1246	4"F	3"F	8"F	2.5"	96.2	93.3	G12216S	G12416S	4"F	3"F	8"F	2.5"	96	161.5	
	SA-1227	SA-1247	4"F	3"F	8"F	2.5"	108.2	107.2	G12218S	G12418S	4"F	3"F	8"F	2.5"	108	182.4	
	SA-1228	SA-1248	4"F	3"F	8"F	2.5"	120.2	121.1	G12220S	G12420S	4"F	3"F	8"F	2.5"	120	202.3	
14"	SA-1421	SA-1441	6"F	4"F	6"F	1.25"	37.2	75.7	G14206S	G14406S	6"F	4"F	6"F	1.25"	37	75.2	
	SA-1422	SA-1442	6"F	4"F	6"F	2"	49.2	102.4	G14208S	G14408S	6"F	4"F	6"F	2"	49	102	
	SA-1423	SA-1443	6"F	4"F	6"F	2"	61.2	129.1	G14210S	G14410S	6"F	4"F	6"F	2"	61	127.8	
	SA-1424	SA-1444	6"F	4"F	8"F	2"	73.2	155.8	G14212S	G14412S	6"F	4"F	8"F	2"	73	154.6	
	SA-1425	SA-1445	6"F	4"F	8"F	2.5"	85.2	182.5	G14214S	G14414S	6"F	4"F	8"F	2"	85	179.5	
	SA-1426	SA-1446	6"F	4"F	8"F	2.5"	97.2	209.2	G14216S	G14416S	6"F	4"F	8"F	2.5"	97	207.2	
	SA-1427	SA-1447	6"F	4"F	10"F	2.5"	109.2	236	G14218S	G14418S	6"F	4"F	10"F	2.5"	109	235	
	SA-1428	SA-1448	6"F	4"F	10"F	3"	121.2	262.7	G14220S S	G14420S	6"F	4"F	10"F	3"	121	261.7	

1. Armstrong model names may be presented differently in specifications e.g. WS-86-2 could be listed as WS-0806-200-1  
 2. Armstrong heating surface areas are estimated values.



## Shell & Tube Steam to Fluid Comparison Chart #2

ITT - SU SERIES										Armstrong - WS SERIES						
Shell Dia.	Model No.		Connection				Total	Heating	Model No.		Connection				Total	Heating
	2 Pass	4 Pass	Tubeside		Shellside		Length inch	Surface Sq.ft	2 Pass	4 Pass	Tubeside		Shellside		Length inch	Surface Sq.ft
			2 pass	4 pass	Inlet	Outlet					2 pass	4 pass	Inlet	Outlet		
4"	SU42-2	SU42-4	1.25"	1"	1.25"	1"	28.6	4.5	WS-42-2	WS-42-4	1.25"	1"	2"	1"	28	4.4
	SU43-2	SU43-4	1.25"	1"	1.25"	1"	40.6	6.8	WS-43-2	WS-43-4	1.25"	1"	2"	1"	40	6.7
	SU44-2	SU44-4	1.25"	1"	1.25"	1"	52.6	9.2	WS-44-2	WS-44-4	1.25"	1"	2"	1"	52	9.1
	SU45-2	SU45-4	1.25"	1"	1.25"	1"	64.6	11.5	WS-45-2	WS-45-4	1.25"	1"	2.5"	1.25"	64	11.4
	SU46-2	SU46-4	1.25"	1"	1.5"	1"	76.6	13.9	WS-46-2	WS-46-4	1.25"	1"	2.5"	1.25"	76	13.7
	SU47-2	SU47-4	1.25"	1"	2"	1"	88.6	16.3	WS-47-2	WS-47-4	1.25"	1"	2.5"	1.25"	88	16.1
6"	SU62-2	SU62-4	2"	1.5"	1.5"	1"	29	8	WS-62-2	WS-62-4	2"	1.5"	1.5"	1"	28.6	7.9
	SU63-2	SU63-4	2"	1.5"	2"	1"	41	12.7	WS-63-2	WS-63-4	2"	1.5"	2"	1"	40.6	12.4
	SU64-2	SU64-4	2"	1.5"	2.5"	1"	53	17.4	WS-64-2	WS-64-4	2"	1.5"	2.5"	1"	52.6	17.3
	SU65-2	SU65-4	2"	1.5"	2.5"	1"	65	22.1	WS-65-2	WS-65-4	2"	1.5"	2.5"	1"	64.6	22
	SU66-2	SU66-4	2"	1.5"	3"	1"	77	26.8	WS-66-2	WS-66-4	2"	1.5"	3"	1"	76.6	26.5
	SU67-2	SU67-4	2"	1.5"	3"	1"	89	31.5	WS-67-2	WS-67-4	2"	1.5"	3"	1"	88.6	31.1
8"	SU68-2	SU68-4	2"	1.5"	3"	1"	101	36.2	WS-68-2	WS-68-4	2"	1.5"	3"	1"	100.6	36
	SU82-2	SU82-4	3"	2"	2"	1"	29.4	15	WS-82-2	WS-82-4	3"	2"	2"	1"	29	15.1
	SU83-2	SU83-4	3"	2"	2.5"	1"	41.4	23	WS-83-2	WS-83-4	3"	2"	2.5"	1"	41	23.1
	SU84-2	SU84-4	3"	2"	3"	1"	53.4	32	WS-84-2	WS-84-4	3"	2"	3"	1"	53	32.1
	SU85-2	SU85-4	3"	2"	4"F	1"	65.4	41	WS-85-2	WS-85-4	3"	2"	4"F	1"	65	41.2
	SU86-2	SU86-4	3"	2"	4"F	1.25"	77.4	49	WS-86-2	WS-86-4	3"	2"	4"F	1.25"	77	49.2
10"	SU87-2	SU87-4	3"	2"	4"F	1.25"	89.4	58	WS-87-2	WS-87-4	3"	2"	4"F	1.25"	89	58.3
	SU88-2	SU88-4	3"	2"	6"F	1.25"	101.4	67	WS-88-2	WS-88-4	3"	2"	6"F	1.25"	101	67.2
	SU89-2	SU89-4	3"	2"	6"F	1.25"	113.4	75	WS-89-2	WS-89-4	3"	2"	6"F	1.25"	113	75.3
	SU102-2	SU102-4	4"	3"	3"	1"	29.5	27/25	WS-102-2	WS-102-4	4"	3"	4"F	1.5"	30.1	26
	SU103-2	SU103-4	4"	3"	4"F	1"	41.5	42/39	WS-103-2	WS-103-4	4"	3"	4"F	1.5"	42.1	41.5
	SU104-2	SU104-4	4"	3"	4"F	1.25"	53.5	56/53	WS-104-2	WS-104-4	4"	3"	6"F	2"	54.1	55
12"	SU105-2	SU105-4	4"	3"	6"F	1.25"	65.5	71/68	WS-105-2	WS-105-4	4"	3"	6"F	2"	66.1	70
	SU106-2	SU106-4	4"	3"	6"F	1.5"	77.5	86/82	WS-106-2	WS-106-4	4"	3"	6"F	2"	78.1	83
	SU107-2	SU107-4	4"	3"	6"F	1.5"	89.5	101/96	WS-107-2	WS-107-4	4"	3"	6"F	2"	90.1	98
	SU108-2	SU108-4	4"	3"	6"F	2"	101.5	116/110	WS-108-2	WS-108-4	4"	3"	6"F	2"	102.1	113
	SU109-2	SU109-4	4"	3"	6"F	2"	113.5	131/124	WS-109-2	WS-109-4	4"	3"	6"F	2"	114.1	128
	SU1010-2	SU1010-4	4"	3"	6"F	2"	125.5	146/138	WS-1010-2	WS-1010-4	4"	3"	6"F	2"	126.1	142
14"	SU123-2	SU123-4	4"	3"	6"F	1.25"	41.9	61/58	WS-123-2	WS-123-4	4"	4"	6"F	2"	42.71	59
	SU124-2	SU124-4	4"	3"	6"F	1.25"	53.9	83/78	WS-124-2	WS-124-4	4"	4"	6"F	2"	54.7	81
	SU125-2	SU125-4	4"	3"	6"F	2"	65.9	104/98	WS-125-2	WS-125-4	4"	4"	6"F	2"	66.7	101
	SU126-2	SU126-4	4"	3"	8"F	2"	77.9	126/119	WS-126-2	WS-126-4	4"	4"	6"F	2"	78.7	123
	SU127-2	SU127-4	4"	3"	8"F	2"	89.9	147/139	WS-127-2	WS-127-4	4"	4"	6"F	2.5"	90.7	142
	SU128-2	SU128-4	4"	3"	8"F	2"	101.9	169/160	WS-128-2	WS-128-4	4"	4"	8"F	2.5"	102.7	165
16"	SU129-2	SU129-4	4"	3"	8"F	2.5"	113.9	191/180	WS-129-2	WS-129-4	4"	4"	8"F	2.5"	114.7	186
	SU1210-2	SU1210-4	4"	3"	8"F	2.5"	125.9	212/200	WS-1210-2	WS-1210-4	4"	4"	8"F	2.5"	126.7	206
	SU143-2	SU143-4	6"	4"	6"F	1.25"	46.2	86/83	WS-143-2	WS-143-4	6"	4"	6"F	2"	43.7	84
	SU144-2	SU144-4	6"	4"	6"F	2"	58.2	116/111	WS-144-2	WS-144-4	6"	4"	6"F	2"	55.7	114
	SU145-2	SU145-4	6"	4"	6"F	2"	70.4	146/139	WS-145-2	WS-145-4	6"	4"	8"F	2.5"	67.7	142
	SU146-2	SU146-4	6"	4"	8"F	2"	82.5	175/167	WS-146-2	WS-146-4	6"	4"	8"F	2.5"	79.7	171
18"	SU147-2	SU147-4	6"	4"	8"F	2.5"	94.5	204/196	WS-147-2	WS-147-4	6"	4"	8"F	2.5"	91.7	200
	SU148-2	SU148-4	6"	4"	8"F	2.5"	106.5	234/224	WS-148-2	WS-148-4	6"	4"	8"F	2.5"	103.7	229
	SU149-2	SU149-4	6"	4"	106"F	2.5"	118.6	263/252	WS-149-2	WS-149-4	6"	4"	86"F	2.5"	115.7	258
	SU1410-2	SU1410-4	6"	4"	106"F	3"	130.6	292/280	WS-1410-2	WS-1410-4	6"	4"	8"F	2.5"	127.7	286

1. Armstrong model names may be presented differently in specifications e.g. WS-86-2 could be listed as WS-0806-200-1
2. Armstrong heating surface areas are estimated values.

## Shell & Tube Fluid to Fluid Comparison Chart 4"-14" Diameter Models

SEC - WA SERIES										TACO - L SERIES						
Shell Dia.	Model No.		Connection				Shell Length	Heating Surface	Model No.		Connection				Shell Length	Heating Surface
	2 Pass	4 Pass	Tubeside		Shellside				2 Pass	4 Pass	Tubeside		Shellside			
			2 pass	4 pass	Inlet	Outlet	inch	sq.ft			2 pass	4 pass	Inlet	Outlet	inch	Sq.ft
4"	WA-4201	WA-4401	1.5	1	1.5	1.5	24.5	4.7	G4204L	G4404L	1.5	1	1.5	1.5	24.5	4.6
	WA-4202	WA-4402	1.5	1	1.5	1.5	36.5	6.9	G4206L	G4406L	1.5	1	1.5	1.5	36.5	7
	WA-4203	WA-4403	1.5	1	1.5	1.5	48.5	9.1	G4208L	G4408L	1.5	1	1.5	1.5	48.5	9.3
	WA-4204	WA-4404	1.5	1	1.5	1.5	60.5	11.3	G4210L	G4410L	1.5	1	1.5	1.5	60.5	11.7
	WA-4205	WA-4405	1.5	1	1.5	1.5	72.5	13.6	G4212L	G4412L	1.5	1	1.5	1.5	72.5	14.1
	WA-4206	WA-4406	1.5	1	1.5	1.5	84.5	15.8	G4214L	G4414L	1.5	1	1.5	1.5	84.5	16.4
	WA-4207	WA-4407	1.5	1	1.5	1.5	96.5	18	G4216L	G4416L	1.5	1	1.5	1.5	96.5	18.8
	WA-4208	WA-4408	1.5	1	1.5	1.5	108.5	20.3	G4218L	G4418L	1.5	1	1.5	1.5	108.5	21.1
	WA-4209	WA-4409	1.5	1	1.5	1.5	120.5	22.5	G4220L	G4420L	1.5	1	1.5	1.5	120.5	23.5
6"	WA-6201	WA-6401	2	1.5	2.5	2.5	25	10.7	G6204L	G6404L	2	1.5	2.5	2.5	25	9.1
	WA-6202	WA-6402	2	1.5	2.5	2.5	37	15.9	G6206L	G6406L	2	1.5	2.5	2.5	37	13.8
	WA-6203	WA-6403	2	1.5	2.5	2.5	49	21.1	G6208L	G6408L	2	1.5	2.5	2.5	49	18.5
	WA-6204	WA-6404	2	1.5	2.5	2.5	61	26.3	G6210L	G6410L	2	1.5	2.5	2.5	61	23.2
	WA-6205	WA-6405	2	1.5	2.5	2.5	73	31.5	G6212L	G6412L	2	1.5	2.5	2.5	73	27.9
	WA-6206	WA-6406	2	1.5	2.5	2.5	85	36.7	G6214L	G6414L	2	1.5	2.5	2.5	85	32.6
	WA-6207	WA-6407	2	1.5	2.5	2.5	97	41.9	G6216L	G6416L	2	1.5	2.5	2.5	97	37.3
	WA-6208	WA-6408	2	1.5	2.5	2.5	109	47.1	G6218L	G6418L	2	1.5	2.5	2.5	109	42.1
	WA-6209	WA-6409	2	1.5	2.5	2.5	121	52.3	G6220L	G6420L	2	1.5	2.5	2.5	121	46.8
8"	WA-8201	WA-8401	3	2	4"F	4"F	24	14.7	G8204L	G8404L	3	2	4"F	4"F	24	16.5
	WA-8202	WA-8402	3	2	4"F	4"F	36	22.7	G8206L	G8406L	3	2	4"F	4"F	36	25.1
	WA-8203	WA-8403	3	2	4"F	4"F	48	30.7	G8208L	G8408L	3	2	4"F	4"F	48	33.7
	WA-8204	WA-8404	3	2	4"F	4"F	60	38.7	G8210L	G8406L	3	2	4"F	4"F	60	42.4
	WA-8205	WA-8405	3	2	4"F	4"F	72	46.6	G8212L	G8406L	3	2	4"F	4"F	72	51
	WA-8206	WA-8406	3	2	4"F	4"F	84	54.6	G8214L	G8406L	3	2	4"F	4"F	84	59.7
	WA-8207	WA-8407	3	2	4"F	4"F	96	62.6	G8216L	G8406L	3	2	4"F	4"F	96	68.3
	WA-8208	WA-8408	3	2	4"F	4"F	108	70.6	G8218L	G8406L	3	2	4"F	4"F	108	76.9
	WA-8209	WA-8409	3	2	4"F	4"F	120	78.6	G8220L	G8406L	3	2	4"F	4"F	120	85.6
10"	WA-1021	WA-1041	3	3	4"F	4"F	24	23.7	G10204L	G10404L	3	3	4"F	4"F	24	26.8
	WA-1022	WA-1042	3	3	4"F	4"F	36	37.7	G10206L	G10406L	3	3	4"F	4"F	36	40.9
	WA-1023	WA-1043	3	3	4"F	4"F	48	51.5	G10208L	G10408L	3	3	4"F	4"F	48	55
	WA-1024	WA-1044	3	3	4"F	4"F	60	65.5	G10210L	G10410L	3	3	4"F	4"F	60	69.2
	WA-1025	WA-1045	3	3	4"F	4"F	72	79.4	G10212L	G10412L	3	3	4"F	4"F	72	83.3
	WA-1026	WA-1046	3	3	4"F	4"F	84	93.3	G10214L	G10414L	3	3	4"F	4"F	84	97.5
	WA-1027	WA-1047	3	3	4"F	4"F	96	107.2	G10216L	G10416L	3	3	4"F	4"F	96	111.6
	WA-1028	WA-1048	3	3	4"F	4"F	108	121.1	G10218L	G10418L	3	3	4"F	4"F	108	125.7
	WA-1029	WA-1049	3	3	4"F	4"F	120	135.1	G10220L	G10420L	3	3	4"F	4"F	120	139.9
12"	WA-1221	WA-1241	4"F	3"F	4"F	4"F	36.2	23.7	G12206L	G12406L	4"F	3"F	5"F	5"F	36	58.3
	WA-1222	WA-1242	4"F	3"F	6"F	6"F	48.2	37.7	G12208L	G12408L	4"F	4"F	5"F	5"F	48	79.2
	WA-1223	WA-1243	4"F	3"F	6"F	6"F	60.2	51.5	G12210L	G12410L	4"F	4"F	5"F	5"F	60	100
	WA-1224	WA-1244	4"F	3"F	6"F	6"F	72.2	65.5	G12212L	G12412L	4"F	4"F	5"F	5"F	72	120.7
	WA-1225	WA-1245	4"F	3"F	8"F	8"F	84.2	79.4	G12214L	G12414L	4"F	4"F	5"F	5"F	84	140.8
	WA-1226	WA-1246	4"F	3"F	8"F	8"F	96.2	93.3	G12216L	G12416L	4"F	4"F	5"F	5"F	96	161.5
	WA-1227	WA-1247	4"F	3"F	8"F	8"F	108.2	107.2	G12218L	G12418L	4"F	4"F	5"F	5"F	108	182.4
	WA-1228	WA-1248	4"F	3"F	8"F	8"F	120.2	121.1	G12220L	G12420L	4"F	4"F	5"F	5"F	120	202.3
14"	WA-1421	WA-1441	6"F	4"F	6"F	6"F	37.2	75.7	G14206L	G14406L	6"F	4"F	6"F	6"F	37	75.2
	WA-1422	WA-1442	6"F	4"F	6"F	6"F	49.2	102.4	G14208L	G14408L	6"F	4"F	6"F	6"F	49	102
	WA-1423	WA-1443	6"F	4"F	6"F	6"F	61.2	129.1	G14210L	G14410L	6"F	4"F	6"F	6"F	61	127.8
	WA-1424	WA-1444	6"F	4"F	8"F	8"F	73.2	155.8	G14212L	G14412L	6"F	4"F	6"F	6"F	73	154.6
	WA-1425	WA-1445	6"F	4"F	8"F	8"F	85.2	182.5	G14214L	G14414L	6"F	4"F	6"F	6"F	85	179.5
	WA-1426	WA-1446	6"F	4"F	8"F	8"F	97.2	209.2	G14216L	G14416L	6"F	4"F	6"F	6"F	97	207.2
	WA-1427	WA-1447	6"F	4"F	10"F	10"F	109.2	236	G14218L	G14418L	6"F	4"F	6"F	6"F	109	235
	WA-1428	WA-1448	6"F	4"F	10"F	10"F	121.2	262.7	G14220L	G14420L	6"F	4"F	6"F	6"F	121	261.7

1. Armstrong model names may be presented differently in specifications e.g. W-86-24 could be listed as W-0806-204  
 2. Armstrong heating surface areas are estimated values.



## Shell & Tube Fluid to Fluid Comparison Chart 4"-14" Diameter Models

ITT - WU SERIES								Armstrong - W SERIES								
Shell Dia.	Model No.		Connection				Total	Heating	Model No.		Connection				Total	Heating
	2 Pass	4 Pass	Tubeside		Shellside		Length	Surface	2 Pass	4 Pass	Tubeside		Shellside		Length	Surface
			2 pass	4 pass	Inlet	Outlet	inch	Sq.ft			2 pass	4 pass	Inlet	Outlet	inch	Sq.ft
4"	WU43-24	WU43-44	1.25	1	2.5	2.5	40.875	4.1	W-42-22	W-42-42	1.25	1	1.5	1.5	28	2.4
	WU44-24	WU44-44	1.25	1	2.5	2.5	52.875	5.7	W-43-22	W-43-42	1.25	1	1.5	1.5	40	4
	WU45-24	WU45-44	1.25	1	2.5	2.5	64.875	7.2	W-44-22	W-44-42	1.25	1	1.5	1.5	52	5.6
	WU46-24	WU46-44	1.25	1	2.5	2.5	76.875	8.8	W-45-22	W-45-42	1.25	1	1.5	1.5	64	7.1
	WU47-24	WU47-44	1.25	1	2.5	2.5	88.875	10.4	W-46-22	W-46-42	1.25	1	1.5	1.5	76	8.6
6"	WU63-23	WU63-43	2	1.5	2.5	2.5	40.125	12.7	W-62-23	W-62-43	2	1.5	2	2	28.625	7.9
	WU64-23	WU64-43	2	1.5	2.5	2.5	52.125	17.4	W-63-23	W-63-43	2	1.5	2	2	40.625	12.4
	WU65-23	WU65-43	2	1.5	2.5	2.5	64.125	22.1	W-64-23	W-64-43	2	1.5	2	2	52.625	17.3
	WU66-23	WU66-43	2	1.5	2.5	2.5	76.125	26.8	W-65-23	W-65-43	2	1.5	2	2	64.625	22
	WU67-23	WU67-43	2	1.5	2.5	2.5	88.125	31.5	W-66-23	W-66-43	2	1.5	2	2	76.625	26.5
8"	WU82-24	WU82-44	3	2	4°F	4°F	53	32	W-82-24	W-82-44	3	2	3	3	29	15.1
	WU83-24	WU83-44	3	2	4°F	4°F	65	41	W-83-24	W-83-44	3	2	3	3	41	23.1
	WU84-24	WU84-44	3	2	4°F	4°F	77	49	W-84-24	W-84-44	3	2	3	3	53	32.1
	WU85-24	WU85-44	3	2	4°F	4°F	89	58	W-85-24	W-85-44	3	2	3	3	65	41.2
	WU86-24	WU86-44	3	2	4°F	4°F	101	67	W-86-24	W-86-44	3	2	3	3	77	49.2
10"	WU102-25	WU102-45	4	3	4°F	4°F	53	56/53	W-87-24	W-87-44	3	2	3	3	89	58.3
	WU103-25	WU103-45	4	3	4°F	4°F	65	71/68	W-88-24	W-88-44	3	2	3	3	101	67.2
	WU104-25	WU104-45	4	3	4°F	4°F	77	86/82	W-89-24	W-89-44	3	2	3	3	113	75.3
	WU105-25	WU105-45	4	3	4°F	4°F	89	101/96	W-102-25	W-102-45	4	3	3	3	30.1	26
	WU106-25	WU106-45	4	3	4°F	4°F	101	116/110	W-103-25	W-103-45	4	3	3	3	42.1	41.5
12"	WU124-26	WU124-46	4"	4"	5°F	5°F	56.5	56/53	W-104-25	W-104-45	4	3	3	3	54.1	55
	WU125-26	WU125-46	4"	4"	5°F	5°F	68.5	71/68	W-105-25	W-105-45	4	3	3	3	66.1	70
	WU126-26	WU126-46	4"	4"	5°F	5°F	80.5	86/82	W-106-25	W-106-45	4	3	3	3	78.1	83
	WU127-26	WU127-46	4"	4"	5°F	5°F	92.5	101/96	W-107-25	W-107-45	4	3	3	3	90.1	98
	WU128-26	WU128-46	4"	4"	5°F	5°F	104.5	116/110	W-108-25	W-108-45	4	3	3	3	102.1	113
14"	WU144-25	WU144-45	6"	4"	4°F	4°F	57.1	116/111	W-109-25	W-109-45	4	3	3	3	114.1	128
	WU145-25	WU145-45	6"	4"	4°F	4°F	69.1	146/139	W-1010-25	W-1010-45	4	3	3	3	126.1	142
	WU146-25	WU146-45	6"	4"	4°F	4°F	81.1	175/167	W-123-24	W-123-44	4"	4"	4°F	4°F	44.2	59
	WU147-25	WU147-45	6"	4"	4°F	4°F	93.1	204/196	W-124-24	W-124-44	4"	4"	4°F	4°F	56.2	81
	WU148-25	WU148-45	6"	4"	4°F	4°F	105.1	234/224	W-125-24	W-125-44	4"	4"	4°F	4°F	68.2	101
WU149-25	WU149-45	6"	4"	4°F	4°F	117.1	263/252	W-126-24	W-126-44	4"	4"	4°F	4°F	80.2	123	
								W-127-24	W-127-44	4"	4"	4°F	4°F	92.2	142	
								W-128-24	W-128-44	4"	4"	4°F	4°F	104.2	165	
								W-129-24	W-129-44	4"	4"	4°F	4°F	116.2	186	
								W-1410-22	W-1410-44	6"	4"	6°F	6°F	56.8	114	
										6"	4"	6°F	6°F	67.8	142	
										6"	4"	6°F	6°F	79.8	171	
										6"	4"	6°F	6°F	91.8	200	
										6"	4"	6°F	6°F	103.8	229	
										6"	4"	6°F	6°F	115.8	258	
										6"	4"	6°F	6°F	127.8	286	

1. Armstrong model names may be presented differently in specifications e.g. W-86-24 could be listed as W-0806-204
2. Armstrong heating surface areas are estimated values.

**Shell & Tube Steam to Fluid Cross Reference Chart 4"-14" Diameter Models**

2 - PASS				4 - PASS			
4" shell				4" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA-4201	SU42-2	WS-42-2	G4204S	SA-4401	SU42-4	WS-42-4	G4404S
SA-4202	SU43-2	WS-43-2	G4206S	SA-4402	SU43-4	WS-43-4	G4406S
SA-4203	SU44-2	WS-44-2	G4208S	SA-4403	SU44-4	WS-44-4	G4408S
SA-4204	SU45-2	WS-45-2	G4210S	SA-4404	SU45-4	WS-45-4	G4410S
SA-4205	SU46-2	WS-46-2	G4212S	SA-4405	SU46-4	WS-46-4	G4412S
SA-4206	SU47-2	WS-47-2	G4214S	SA-4406	SU47-4	WS-47-4	G4414S
SA-4207			G4216S	SA-4407			G4416S
SA-4208			G4218S	SA-4408			G4418S
SA-4209			G42120S	SA-4409			G4420S
6" shell				6" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA6201	SU62-2	WS-62-2	G6204S	SA-6401	SU62-4	WS-62-4	G6404S
SA-6202	SU63-2	WS-63-2	G6206S G6208S	SA-6402	SU63-4	WS-63-4	G6406S G6408S
	SU64-2	WS-64-2			SU64-4	WS-64-4	
SA-6203	SU65-2	WS-65-2	G6210S	SA-6403	SU65-4	WS-65-4	G6410S
SA-6204	SU66-2	WS-66-2	G6212S	SA-6404	SU66-4	WS-66-4	G6412S
SA-6205	SU67-2	WS-67-2	G6214S	SA-6405	SU67-4	WS-67-4	G6414S
SA-6206	SU68-2	WS-68-2	G6216S	SA-6406	SU68-4	WS-68-4	G6416S
SA-6207			G6218S	SA-6407			G6418S
SA-6208			G6220S	SA-6408			G6420S
8" shell				8" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA-8201	SU82-2	WS-82-2	G8204S	SA-8401	SU82-4	WS-82-4	G8404S
SA-8202	SU83-2	WS-83-2	G8206S	SA-8402	SU83-4	WS-83-4	G8406S
SA-8203	SU84-2	WS-84-2	G8208S	SA-8403	SU84-4	WS-84-4	G8408S
SA-8204	SU85-2	WS-85-2	G8210S	SA-8404	SU85-4	WS-85-4	G8410S
SA-8205	SU86-2	WS-86-2		G8212S	SA-8405	SU86-4	
SA-8206	SU87-2	WS-87-2	G8214S	SA-8406	SU87-4	WS-87-4	G8414S
SA-8207			G8216S	SA-8407			G8416S
SA-8208	SU88-2	WS-88-2	G8218S	SA-8408	SU88-4	WS-88-4	G8418S
SA-8209	SU89-2	WS-89-2	G8218S	SA-8409	SU89-4	WS-89-4	G8418S
10" shell				10" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA-1021	SU102-2	WS-102-2	G10204S	SA-1041	SU102-4	WS-102-4	G10404S
SA-1022	SU103-2	WS-103-2	G10206S	SA-1042	SU103-4	WS-103-4	G10406S
SA-1023	SU104-2	WS-104-2	G10208S	SA-1043	SU104-4	WS-104-4	G10408S
SA-1024	SU105-2	WS-105-2	G10210S	SA-1044	SU105-4	WS-105-4	G10410S
SA-1025	SU106-2	WS-106-2	G10212S	SA-1045	SU106-4	WS-106-4	G10412S
SA-1026	SU107-2	WS-107-2	G10214S	SA-1046	SU107-4	WS-107-4	G10414S
SA-1027	SU108-2	WS-108-2	G10216S	SA-1047	SU108-4	WS-108-4	G10416S
SA-1028	SU109-2	WS-109-2	G10218S	SA-1048	SU109-4	WS-109-4	G10418S
SA-1029	SU1010-2	WS-1010-2	G10220S	SA-1049	SU1010-4	WS-1010-4	G10420S
12" shell				12" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA-1221	SU123-2	WS-123-2	G12206S	SA-1241	SU123-4	WS-123-4	G12406S
SA-1222	SU124-2	WS-124-2	G12208S	SA-1242	SU124-4	WS-124-4	G12408S
SA-1223	SU125-2	WS-125-2	G12210S	SA-1243	SU125-4	WS-125-4	G12410S
SA-1224	SU126-2	WS-126-2	G12212S	SA-1244	SU126-4	WS-126-4	G12412S
SA-1225	SU127-2	WS-127-2	G12214S	SA-1245	SU127-4	WS-127-4	G12414S
SA-1226	SU128-2	WS-128-2	G12216S	SA-1246	SU128-4	WS-128-4	G12416S
SA-1227	SU129-2	WS-129-2	G12218S	SA-1247	SU129-4	WS-129-4	G12418S
SA-1228	SU1210-2	WS-1210-2	G12220S	SA-1248	SU1210-4	WS-1210-4	G12420S
14" shell				14" shell			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
SA-1421	SU143-2	WS-143-2	G14206S	SA-1441	SU143-4	WS-143-4	G14406S
SA-1422			G14208S	SA-1442			G14408S
SA-1423	SU144-2	WS-144-2	G14210S	SA-1443	SU144-4	WS-144-4	G14410S
SA-1424	SU145-2	WS-145-2	G14212S	SA-1444	SU145-4	WS-145-4	G14412S
SA-1425	SU146-2	WS-146-2	G14214S	SA-1445	SU146-4	WS-146-4	G14414S
SA-1426	SU147-2	WS-147-2	G14216S	SA-1446	SU147-4	WS-147-4	G14416S
SA-1427	SU148-2	WS-148-2	G14218S	SA-1447	SU148-4	WS-148-4	G14418S
SA-1428	SU149-2	WS-149-2	G14220S	SA-1448	SU149-4	WS-149-4	G14420S
	SU1410-2	WS-1410-2			SU1410-4	WS-1410-4	

\*Armstrong model names may be presented differently in specifications e.g. WS-86-2 could be listed as WS-0806-200-1  
 - This cross reference guide is intended as an aid for product selection only, and does not imply exact interchangeability, as minor differences do exist  
 - We apologize for any errors or omissions. To determine exact compatibility, please consult SEC's product specifications or contact the sales office.  
 - SEC is not responsible for the improper application of its products.

**Shell & Tube Fluid to Fluid Cross Reference Chart 4"-14" Diameter Models**

2 - PASS				4 - PASS			
<b>4" shell</b>				<b>4" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-4201		W-42-22	G4204L	WA-4401		W-42-42	G4404L
WA-4202	WU43-24	W-43-22	G4206L	WA-4402	WU43-44	W-43-42	G4406L
WA-4203	WU44-24	W-44-22	G4208L	WA-4403	WU44-44	W-44-42	G4408L
WA-4204	WU45-24	W-45-22	G4210L	WA-4404	WU45-44	W-45-42	G4410L
WA-4205	WU46-24	W-46-22	G4212L	WA-4405	WU46-44	W-46-42	G4412L
WA-4206	WU47-24	W-47-22	G4214L	WA-4406	WU47-44	W-47-42	G4414L
WA-4207			G4216L	WA-4407			G4416L
WA-4208			G4218L	WA-4408			G4418L
WA-4209			G4220L	WA-4409			G4420L
<b>6" shell</b>				<b>6" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-6201		W-62-23	G6204L	WA-6401		W-62-43	G6404L
WA-6202	WU63-23	W-63-23	G6206L	WA-6402	WU63-43	W-63-43	G6406L
	WU64-23	W-64-23			WU64-43	W-64-43	
WA-6203	WU65-23	W-65-23	G6208L	WA-6403	WU65-43	W-65-43	G6408L
WA-6204	WU66-23	W-66-23	G6210L	WA-6404	WU66-43	W-66-43	G6410L
WA-6205	WU67-23	W-67-23	G6212L	WA-6405	WU67-43	W-67-43	G6412L
WA-6206	WU68-23	W-68-23	G6214L	WA-6406	WU68-43	W-68-43	G6414L
WA-6207			G6216L	WA-6407			G6416L
WA-6208			G6218L	WA-6408			G6418L
WA-6209			G6220L	WA-6409			G6420L
<b>8" shell</b>				<b>8" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-8201		W-82-24	G8204L	WA-8401		W-82-44	G8404L
WA-8202		W-83-24	G8206L	WA-8402		W-83-44	G8406L
WA-8203	WU84-24	W-84-24	G8208L	WA-8403	WU84-44	W-84-44	G8408L
WA-8204	WU85-24	W-85-24	G8210L	WA-8404	WU85-44	W-85-44	G8410L
WA-8205	WU86-24	W-86-24		WA-8405	WU86-44	W-86-44	
WA-8206	WU87-24	W-87-24	G8212L	WA-8406	WU87-44	W-87-44	G8412L
WA-8207			G8214L	WA-8407			G8414L
WA-8208	WU88-24	W-88-24	G8216L	WA-8408	WU88-44	W-88-44	G8416L
WA-8209	WU89-24	W-89-24	G8218L	WA-8409	WU89-44	W-89-44	G8418L
			G8220L				G8420L
<b>10" shell</b>				<b>10" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-1021		W-102-25	G10204L	WA-1041		W-102-45	G10404L
WA-1022		W-103-25	G10206L	WA-1042		W-103-45	G10406L
WA-1023	WU104-25	W-104-25	G10208L	WA-1043	WU104-45	W-104-45	G10408L
WA-1024	WU105-25	W-105-25	G10210L	WA-1044	WU105-45	W-105-45	G10410L
WA-1025	WU106-25	W-106-25	G10212L	WA-1045	WU106-45	W-106-45	G10412L
WA-1026	WU107-25	W-107-25	G10214L	WA-1046	WU107-45	W-107-45	G10414L
WA-1027	WU108-25	W-108-25	G10216L	WA-1047	WU108-45	W-108-45	G10416L
WA-1028	WU109-25	W-109-25	G10218L	WA-1048	WU109-45	W-109-45	G10418L
WA-1029	WU1010-25	W-1010-25	G10220L	WA-1049	WU1010-45	W-1010-45	G10420L
<b>12" shell</b>				<b>12" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-1221		W-123-24	G12206L	WA-1241		W-123-44	G12406L
WA-1222	WU124-26	W-124-24	G12208L	WA-1242	WU124-46	W-124-44	G12408L
WA-1223	WU125-24	W-125-24	G12210L	WA-1243	WU125-46	W-125-44	G12410L
WA-1224	WU126-26	W-126-24	G12212L	WA-1244	WU126-46	W-126-44	G12412L
WA-1225	WU127-26	W-127-24	G12214L	WA-1245	WU127-46	W-127-44	G12414L
WA-1226	WU128-26	W-128-24	G12216L	WA-1246	WU128-46	W-128-44	G12416L
WA-1227	WU129-26	W-129-24	G12218L	WA-1247	WU129-46	W-129-44	G12418L
WA-1228		W-1210-24	G12220L	WA-1248		W-1210-44	G12420L
<b>14" shell</b>				<b>14" shell</b>			
SEC	ITT	Armstrong*	Taco	SEC	ITT	Armstrong*	Taco
WA-1421			G14206L	WA-1441			G14406L
WA-1422			G14208L	WA-1442			G14408L
WA-1423	WU144-24	W-144-2	G14210L	WA-1443	WU144-44	W-144-44	G14410L
WA-1424	WU145-24	W-145-2	G14212L	WA-1444	WU145-44	W-145-44	G14412L
WA-1425	WU146-24	W-146-2	G14214L	WA-1445	WU146-44	W-146-44	G14414L
WA-1426	WU147-24	W-147-2	G14216L	WA-1446	WU147-44	W-147-44	G14416L
WA-1427	WU148-24	W-148-2	G14218L	WA-1447	WU148-44	W-148-44	G14418L
WA-1428	WU149-24	W-149-2	G14220L	WA-1448	WU149-44	W-149-44	G14420L
		W-1410-2				W-1410-44	

\*Armstrong model names may be presented differently in specifications e.g. W-86-24 could be listed as W-0806-204

This cross reference guide is intended as an aid for product selection only, and does not imply exact interchangeability, as minor differences do exist between the To determine exact compatibility, please consult SEC's product specifications or contact the sales office.

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## Non-Metallic Series



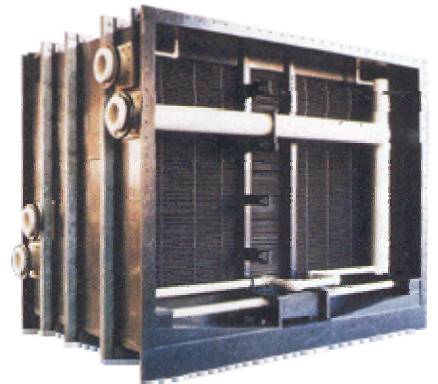
### Non-Metallic

- corrosive or high purity fluids
- immersion type
- tube and plate designs
- gas/liquid designs

There are applications where a non-metallic heat exchanger is required and for these SEC has the answer. The all-plastic construction is specifically designed for heating or cooling of highly corrosive media. Standard materials of manufacture are PVDF (polyvinylidene fluoride), polypropylene, and polyethylene.

### Gas/Liquid Heat Exchangers for Corrosive Gases

SEC Gas/Liquid Heat Exchangers are designed specifically for condensing and/or reheating highly corrosive gas streams. Manufactured from tough, impact-resistant PVDF, polyethylene, or PP, these exchangers are capable of handling gas stream temperatures up to 280°F. A patented process completely eliminates elastomers, seals, and mechanical joints which might produce weak areas subject to chemical attack, stress cracking, and leakage. Typical uses are condensation recovery of acidic components from gas streams generated in garbage and biological waste incineration, reheating of stack gases for plume reduction, and waste heat recovery.



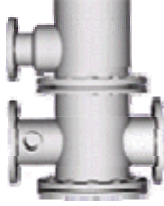
### Tube Plate Heat Exchangers

These heat exchangers find applications where heat transfer between corrosive fluids is required. They are very suitable for high purity DI water, other high purity fluids, and condensation of aggressive vapors. The SEC Tube Plate Heat Exchanger is an entirely new concept in heat exchanger design. It is designed to handle most corrosive heating and cooling application when an external type heat exchanger is required. The heat transfer surface consists of a number of tube plates which are heat fused one on top of the other. The stacked tube plates form a continuous parallel series of tubes across which the shell fluid flows. The tube fluid flows within the individual tubes.

### Immersion Style Heat Exchangers

The smooth surface of plastic reduces the possibility of contamination and incrustation, even in extreme applications. This enables the use of SEC Immersion Style Non-Metallic Heat Exchangers where metal exchangers would fail or require excessive maintenance. Produced by a patented process of continuous tube extrusion and manifold injection over-molding, SEC heat exchangers have tight connections between the exchanger tubes and the manifolds. There are no mechanical joints. The heat exchangers are constructed of modular elements which enable the heat exchanger to be adapted to suit a particular vessel geometry. In addition, large heat transfer surfaces are contained in a relatively small volume.

## Custom Series



### Custom Series

- custom fabricated
- pressures to 2500 psi
- from 1 to 30,000 sq. ft. designs
- OEM inquiries welcome

SEC Custom Heat Exchangers are available in a wide range of design variations, special materials and features to meet virtually any heat transfer requirement.

Utilizing leading edge fabrication processes, SEC offers heat transfer solutions for non-traditional applications. We have recently been involved in producing products for the fuel cell, district energy, and aquaculture industries, among others.

All heat transfer designs are produced to the ASME Code Section VIII Division 1, and ISO 9002.

Due to the complex nature of many custom designs, we suggest you contact us to discuss your project requirements.

## **SEC Oil Coolers**

SEC Oil Coolers are manufactured and marketed by SEC Heat Exchangers. SEC is a Canadian owned and operated company based in Prince Edward Island Canada. SEC is a supplier of oil coolers to the performance racing industry, Nascar and many other forms of motor sports. SEC is also a major O.E.M. supplier.

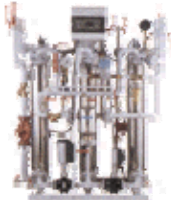
SEC oil coolers improve the life and performance of your engine. Put simply, the closer to optimum temperature an engine's oil runs, the longer the engine will run.

Your engine oil is designed to operate within a range of temperatures. Exceeding the desirable temperature for the oil and system reduces the performance the oil and its useable life.

SEC combines high quality materials and the latest manufacturing technology to provide you an efficient and reliable oil cooler. SEC Oil Coolers effectively reduce oil temperature to safe operating levels for maximum life from both oil and engine.

**For More Information Visit <http://www.sec-oilcoolers.com/>**

## Energy Transfer Stations



### Energy Transfer Stations

- custom arrays of heat transfer equipment, skid mounted
- simplifies on site installation

In response to the global demand for more sophisticated heat transfer systems, SEC custom designs quality Energy Transfer Stations.

SEC Energy Transfer Stations are an economical alternative to the high cost of on sight fabrication.

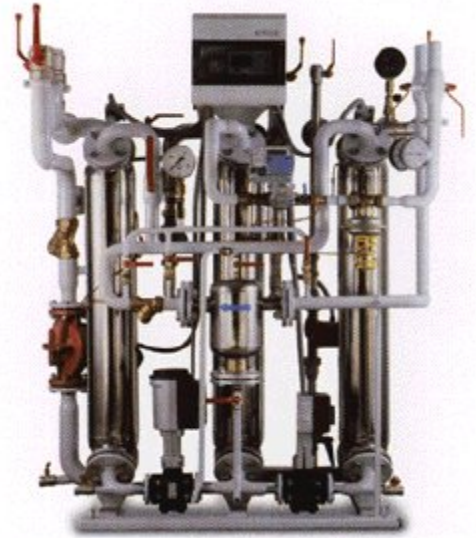
Working closely with our client we match a specific array of standard industry components with our high efficiency heat exchangers to provide the exact energy transfer capacity needed. These skid mounted assemblies are delivered to the job where a minimal amount of piping is required to get you up and running fast.

If you are involved in an industrial process application or simply working in the HVAC field let us do all the hard work for you. Send us your project data and we will select all the components, fabricate them into one easy to deal with package, and ship it directly to your plant.

Please request literature on this or on any of the SEC products for more information.

**For more information visit**

**<http://www.secenergy.com/>**



**Notes**



## SEC Heat Exchanger Quote Form



**To find out which type of our heat exchangers  
will best suit your requirements  
please complete this form and send it to us**

Name: \_\_\_\_\_ Company: \_\_\_\_\_  
 Address: \_\_\_\_\_ City: \_\_\_\_\_  
 State: \_\_\_\_\_ Country: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_  
 Project Reference: \_\_\_\_\_ Quantity: \_\_\_\_\_  
 Material of Construction: \_\_\_\_\_  
 Type Of Heat Exchanger: \_\_\_\_\_ Delivery Required by: \_\_\_\_\_ In Weeks

**SIDE 1**

**SIDE 2**

FLUID TYPE: _____	_____
FLOW RATE: _____	_____
INLET TEMPERATURE: _____ C° or F°	_____ C° or F°
OUTLET TEMPERATURE: _____ C° or F°	_____ C° or F°
ALLOWABLE PRESSURE DROP: _____	_____
DESIGN PRESSURE: _____	_____
Optional Data If Known: _____	_____
HEAT TRANSFERRED (CAPACITY): _____	_____
DENSITY @ TEMPERATURE: _____	_____
THERMAL CONDUCTIVITY: _____	_____
SPECIFIC HEAT: _____	_____
VISCOSITY: _____	_____
PHASE CHANGE: _____	_____

**Photocopy and Fax Form to 902-659-2800**



## **SEC** Heat Exchangers

2546 Iona Road  
Belfast, Prince Edward Island  
Canada C0A 1A0  
North America: 1.800.335.6650  
International: 1.902.659.2424  
Fax: 1.902.659.2800  
Email: [info@secheatexchangers.com](mailto:info@secheatexchangers.com)  
[www.heatexchangers.ca](http://www.heatexchangers.ca)  
[www.secplateandframe.com](http://www.secplateandframe.com)  
[www.secshellandtube.com](http://www.secshellandtube.com)  
<http://www.sec-oilcoolers.com>  
<http://www.secenergy.com>  
<http://www.poolexchangers.com>

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Installation Manuals or Other SEC Publications  
Please Visit our Web Site At:**

**[www.heatexchangers.ca](http://www.heatexchangers.ca)**