American Industrial Heat Transfer Inc.

Manufacturer of Quality Heat Exchangers

CS SERIES

SINGLE PASS

TWO PASS

FOUR PASS

Fixed Tube Bundle / Liquid Cooled

HEAT EXCHANGERS

- Computer generated data sheet available for any application
- Steel or stainless steel construction.
- Operating pressure for tubes 150 PSI
- Operating pressure for shell 300 PSI.
- Operating temperature 300 °F.
- Can be customized to fit any applications.
- Cools: Fluid power systems, rock crushers, presses, shears, lubrication equipment for paper machinery, gear drives, marine transmissions, etc.
- As an option, available in ASME code and certified

CS & STC Series *overview*

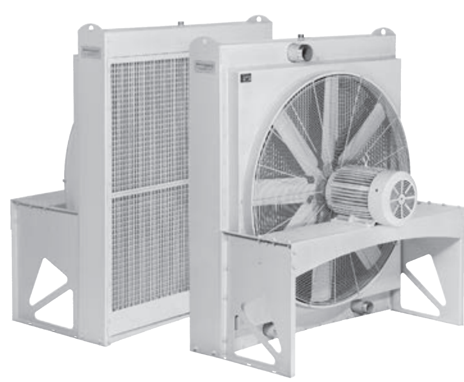
CS SERIES

Fixed tube construction heat exchangers with NPT connections. Made of steel with copper cooling tubes and cast iron end bonnets. Standard sizes from 3" through 8" diameters. Standard one, two, and four pass models are available. Options include 90/10 copper nickel and 316 stainless steel cooling tube, and zinc anodes. Can be customized to fit your requirements.

STC SERIES

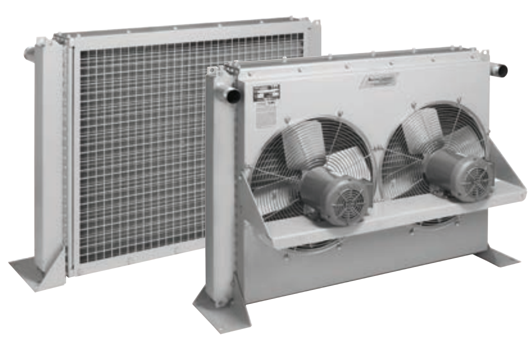
Similar in design to CS series with fixed tube construction and NPT connections made of 316 stainless steel. Standard sizes from 3" through 8" diameters. Standard one, two, and four pass models are available. Larger diameter units available upon request. Can be customized to fit your requirements.

AC-ACF-ACHM Series

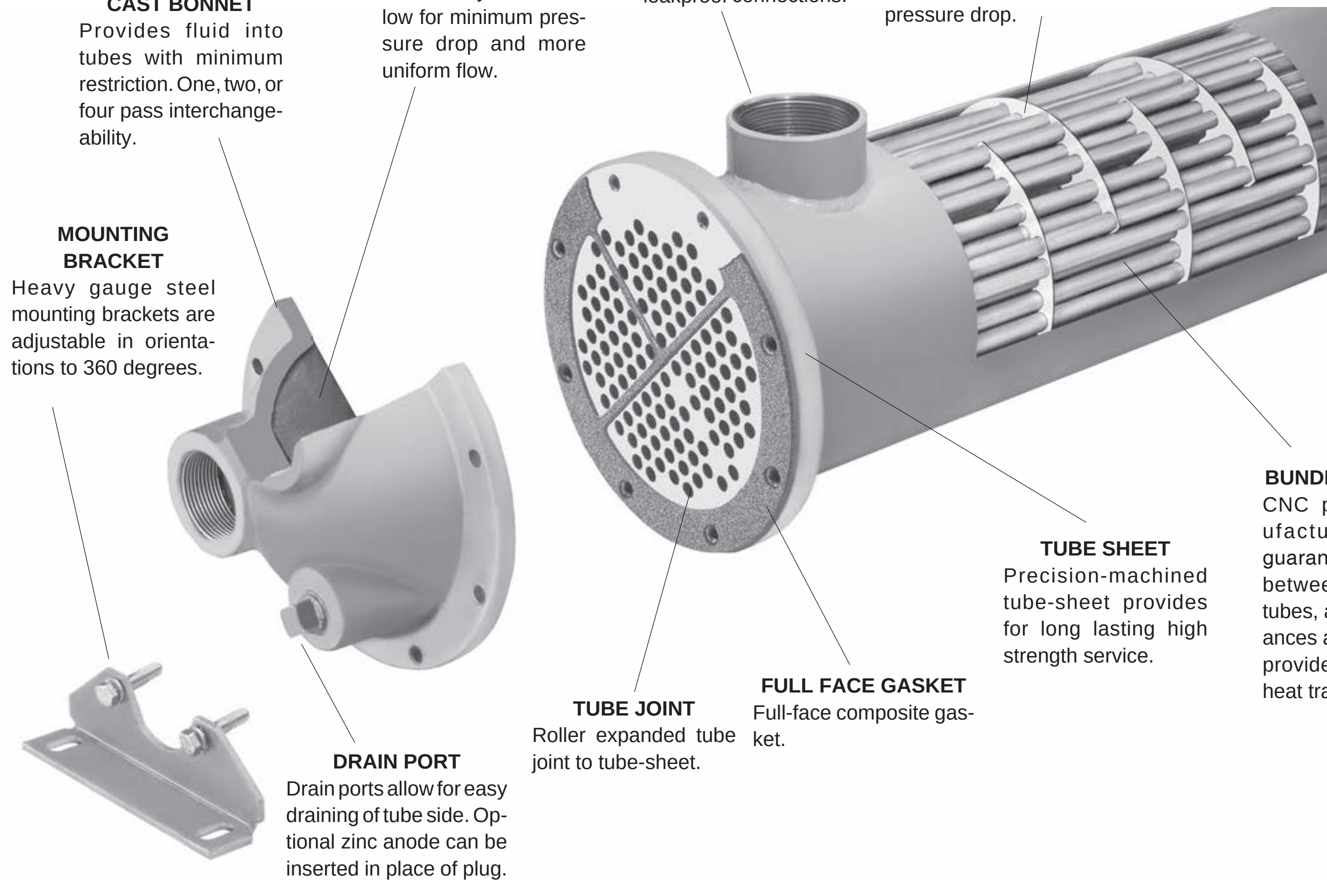


AOCS Series

ACL Series



EOC - EOCF Series



UNIT CODING

Example Model

Options

CS - 1224 - 4 - 6 - TP - CNT - B - Z

Model
- CS
- STC

Shell Diameter
- 600 = 3.25"
- 800 = 4.25"
- 1000 = 5.25"
- 1200 = 6.25"
- 1700 = 8.00"

Effective Tube Length (12" increments)

Baffle Spacing Code
- 1.5"
- 2.0"
- 3.0"
- 4.0"
- 6.0"
- 8.0"

Cooling Tube Diamenter
- 6 = 3/8"
- 10 = 5/8"

Tube Side Passes
- SP = 1 pass
- TP = 2 pass
- FP = 4 pass

Tubing
- Blank = Copper

Options
- CNT= 90/10 Cu Ni
- STS = Stainless Steel
- C = Carbon Steel

End Bonnets
- Blank = Cast Iron

Options
- B = Bronze

Zinc Anode
- Z = 1 Zinc Anode
- 2Z = 2 Zinc Anode etc.

Standard Model	CS Series	STC Series	Standard Unit Ratings
Shell	Steel	316 Stainless Steel	Operating Pressure Tubes
Tubes	Copper	316 Stainless Steel	150 psig
Baffle	Steel	316 Stainless Steel	Operating Pressure Shell
Tube Sheet	Steel	316 Stainless Steel	300 psig
End Bonnets	Cast Iron	316 Stainless Steel	Operating Temperature
Mounting Brackets	Steel	Steel	300 °F
Gasket	Hypalon Composite	Hypalon Composite	

CS & STC Series *selection*

STEP 1: Calculate the heat load

The heat load in BTU/HR or (Q) can be derived by using several methods. To simplify things, we will consider general specifications for hydraulic system oils and other fluids that are commonly used with shell & tube heat exchangers.

Terms

GPM	=	Gallons Per Minute
CN	=	Constant Number for a given fluid
$\triangle T$	=	Temperature differential across the potential
PSI	=	Pounds per Square Inch (pressure) of the operating side of the system
MHP	=	Horsepower of the electric motor driving the hydraulic pump
Kw	=	Kilowatt (watts x 1000)
T_{in}	=	Hot fluid entering temperature in °F
T_{out}	=	Hot fluid exiting temperature in °F
t_{in}	=	Cold fluid temperature entering in °F
t_{out}	=	Cold fluid temperature exiting in °F
Q	=	BTU / HR

For example purposes, a hydraulic system has a 125 HP (93Kw) electric motor installed coupled to a pump that produces a flow of 80 GPM @ 2500 PSIG. The temperature differential of the oil entering the pump *vs* exiting the system is about 5.3°F. Even though our return line pressure operates below 100 psi, we must calculate the system heat load potential (Q) based upon the prime movers (pump) capability. We can use one of the following equations to accomplish this:

To derive the required heat load (Q) to be removed by the heat exchanger, apply ONE of the following. Note: The calculated heat loads may differ slightly from one formula to the next. This is due to assumptions made when estimating heat removal requirements. The factor *(v)* represents the percentage of the overall input energy to be rejected by the heat exchanger. The *(v)* factor is generally about 30% for most hydraulic systems, however it can range from 20%-70% depending upon the installed system components and heat being generated (ie. servo valves, proportional valves, etc…will increase the percentage required).

FORMULA	EXAMPLE
A) Q = GPM x CN x actual $\triangle T$	A) Q =80 x 210 x 5.3°F = 89,040 BTU/HR
B) Q = [(PSI x GPM) / 1714] x (*v*) x 2545	B) Q =[(2500x80)/1714] x .30 x 2545 = 89,090 BTU/HR
C) Q = MHP x (*v*) x 2545	C) Q =125 x .30 x 2545 = 95,347 BTU/HR
D) Q = Kw to be removed x 3415	D) Q =28 x 3415 = 95,620 BTU/HR
E) Q = HP to be removed x 2545	

Constant for a given fluid (CN)

1) Oil .... CN = 210
2) Water......................... CN = 500
3) 50% E. Glycol........... CN = 450

STEP 2: Calculate the Mean Temperature Difference

When calculating the MTD you will be required to choose a liquid flow rate to derive the Cold Side $\triangle T$. If your water flow is unknown you may need to assume a number based on what is available. As a normal rule of thumb, for oil to water cooling a 2:1 oil to water ratio is used. For applications of water to water or 50 % Ethylene Glycol to water, a 1:1 ratio is common.

FORMULA

HOT FLUID $\triangle T$ Oil $= \dfrac{Q}{CN \times GPM}$

COLD FLUID $\triangle t$ Water $= \dfrac{BTU / hr}{CN \times GPM}$

EXAMPLE

$$\triangle T = \frac{89{,}090 \text{ BTU/hr (from step 1, item B)}}{210 \text{ CN} \times 80\text{GPM}} = 5.3°F \quad = \triangle T \text{ Rejected}$$

$$\triangle t = \frac{89{,}090 \text{ BTU/hr}}{500 \text{ CN} \times 40\text{GPM (for a 2:1 ratio)}} = 4.45°F = \triangle T \text{ Absorbed}$$

T_{in}	= Hot Fluid entering temperature in degrees F	T_{in}	= 125.3 °F
T_{out}	= Hot Fluid exiting temperature in degrees F	T_{out}	= 120.0 °F
t_{in}	= Cold Fluid entering temperature in degrees F	t_{in}	= 70.0 °F
t_{out}	= Cold Fluid exiting temperature in degrees F	t_{out}	= 74.5 °F

$$\frac{T_{out} - t_{in}}{T_{in} - t_{out}} = \frac{\textbf{S}\text{[smaller temperature difference]}}{\textbf{L}\text{ [larger temperature difference]}} = \left(\frac{S}{L}\right)$$

$$\frac{120.0°F - 70.0°F = 50.0°F}{125.3°F - 74.5°F = 50.8°F} = \frac{50.0°F}{50.8°F} = .984$$

STEP 3: Calculate Log Mean Temperature Difference (LMTD)

To calculate the LMTD please use the following method;

L = Larger temperature difference from step 2.
M = S/L number (LOCATED IN TABLE A).

$LMTD_i$ = L x M

$LMTD_i$ = 50.8 x .992 (FROM TABLE A) = 50.39

To correct the $LMTD_i$ for a multipass heat exchangers calculate **R** & **K** as follows:

FORMULA

$$\textbf{R} = \frac{T_{in} - T_{out}}{t_{out} - t_{in}} \qquad \textbf{K} = \frac{t_{out} - t_{in}}{T_{in} - t_{in}}$$

EXAMPLE

$$\textbf{R} = \frac{125.3°F - 120°F}{74.5°F - 70°F} = \frac{5.3°F}{4.5°F} = \textbf{\{1.17=R\}}$$

$$\textbf{K} = \frac{74.5°F - 70°F}{124.5°F - 70°F} = \frac{4.5°F}{55.4°F} = \textbf{\{0.081=K\}}$$

Locate the correction factor CF_B (FROM TABLE B)
$LMTD_c = LMTD_i \times CF_B$
$LMTD_c$ = 50.39 x 1 = **50.39**

STEP 4: Calculate the area required

Required Area sq.ft. = $\dfrac{\text{Q (BTU / HR)}}{\text{LMTD}_c \text{ x U (FROM TABLE C)}}$ $\dfrac{89{,}090}{50.39 \text{ x } 100}$ = **17.68 sq.ft.**

STEP 5: Selection

a) From TABLE E choose the correct series size, baffle spacing, and number of passes that best fits your flow rates for both shell and tube side. Note that the tables suggest minimum and maximum information. Try to stay within the 20-80 percent range of the indicated numbers.

Example

Oil Flow Rate = 80 GPM = Series Required from Table E = **1200 Series**
Baffle Spacing from Table E = **4**
Water Flow Rate = 40 GPM = Passes required in 1200 series = **4 (FP)**

b) From TABLE D choose the heat exchanger model size based upon the sq.ft. or surface area in the series size that will accommodate your flow rate.

Example

Required Area = 17.68sq.ft Closest model required based upon sq.ft. & series = **CS - 1224 - 4 - 6 - FP**

If you require a computer generated data sheet for the application, or if the information that you are trying to apply does not match the corresponding information, please contact our engineering services department for further assistance.

TABLE A- FACTOR M/LMTD = L x M

S/L	M	S/L	M	S/L	M	S/L	M
		.25	.541	.50	.721	.75	.870
.01	.215	.26	.549	.51	.728	.76	.874
.02	.251	.27	.558	.52	.734	.77	.879
.03	.277	.28	.566	.53	.740	.78	.886
.04	.298	.29	.574	.54	.746	.79	.890
.05	.317	.30	.582	.55	.753	.80	.896
.06	.334	.31	.589	.56	.759	.81	.902
.07	.350	.32	.597	.57	.765	.82	.907
.08	.364	.33	.604	.58	.771	.83	.913
.09	.378	.34	.612	.59	.777	.84	.918
.10	.391	.35	.619	.60	.783	.85	.923
.11	.403	.36	.626	.61	.789	.86	.928
.12	.415	.37	.634	.62	.795	.87	.934
.13	.427	.38	.641	.63	.801	.88	.939
.14	.438	.39	.648	.64	.806	.89	.944
.15	.448	.40	.655	.65	.813	.90	.949
.16	.458	.41	.662	.66	.818	.91	.955
.17	.469	.42	.669	.67	.823	.92	.959
.18	.478	.43	.675	.68	.829	.93	.964
.19	.488	.44	.682	.69	.836	.94	.970
.20	.497	.45	.689	.70	.840	.95	.975
.21	.506	.46	.695	.71	.848	.96	.979
.22	.515	.47	.702	.72	.852	.97	.986
.23	.524	.48	.709	.73	.858	.98	.991
.24	.533	.49	.715	.74	.864	.99	.995

TABLE D- Surface Area

Model Number	Surface Area in Sq.ft.			Model Number	Surface Area in Sq.ft.		
	1/4" O.D Tubing CODE 4	3/8" O.D Tubing CODE 6	5/8" O.D Tubing CODE 10		1/4" O.D Tubing CODE 6	3/8" O.D Tubing CODE 6	5/8" O.D Tubing CODE 10
CS-614	4.6	–	–	CS-1236	50.63	35.33	17.66
CS-624	7.9	–	–	CS-1248	67.51	47.10	23.55
CS-636	11.5	–	–	CS-1260	84.39	58.88	29.44
				CS-1272	101.27	70.65	35.33
CS-814	8.3	–	–	CS-1284	118.14	82.43	41.21
CS-824	14.1	–	–	CS-1296	135.02	94.20	47.10
CS-836	21.2	–	–				
CS-848	28.3	–	–	CS-1724	58.61	43.96	23.55
				CS-1736	87.92	65.94	35.33
CS-1014	13.74	9.16	4.58	CS-1748	117.23	87.92	47.10
CS-1024	23.55	15.70	7.85	CS-1760	146.53	109.90	58.88
CS-1036	35.33	23.55	11.78	CS-1772	175.84	131.88	70.65
CS-1048	47.10	31.40	15.70	CS-1784	205.15	153.86	82.43
CS-1060	58.88	39.25	19.63	CS-1796	234.45	175.84	94.20
				CS-17108	263.76	197.82	105.98
CS-1224	33.76	23.55	11.78	CS-17120	293.07	219.80	117.75

TABLE B- LMTD correction factor for Multipass Exchangers

R

	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.6	.7	.8	.9	1.0
.2	1	1	1	1	1	1	1	.999	.993	.984	.972	.942	.908	.845	.71
.4	1	1	1	1	1	1	.994	.983	.971	.959	.922	.855	.70		
.6	1	1	1	1	1	.992	.980	.965	.948	.923	.840				
.8	1	1	1	1	.995	.981	.965	.945	.916	.872					
1.0	1	1	1	1	.988	.970	.949	.918	.867	.770					
2.0	1	1	.977	.973	.940	.845	.740								
3.0	1	1	.997	.933	.835										
4.0	1	.993	.950	.850											
5.0	1	.982	.917												
6.0	1	.968	.885												
8.0	1	.930													
10.0	.996	.880													
12.0	.985	.720													
14.0	.972														
16.0	.958														
18.0	.940														
20.0	.915														

K

TABLE E- Flow Rate for Shell & Tube

Shell dia . Code	Max. Liquid Flow - Shell Side					Liquid Flow - Tube Side					
	Baffle Spacing					SP		TP		FP	
	1.5	2	3	4	6	Min.	Max.	Min.	Max.	Min.	Max.
600	15	20	25	30	–	3.5	20	3.5	24	2	12
800	20	34	45	60	–	7.5	48	4.5	38	3	21
1000	30	36	50	65	–	10	70	10	70	5	37
1200	45	50	70	100	125	20	120	15	112	7.5	56
1700	50	65	100	140	220	30	220	29	180	14	90
2000	60	80	100	160	240	57	300	45	320	25	160

TABLE C

U	TUBE FLUID	SHELL FLUID
400	Water	Water
350	Water	50% E. Glycol
100	Water	Oil
300	50% E. Glycol	50% E. Glycol
90	50% E. Glycol	Oil

CS & STC Series *performance*

The selection chart provided contains an array of popular sizes for quick sizing. It does not provide curves for all models available. Refer to page 44 & 45 for detailed calculation information.

Computer selection data sheets for standard or special models are available through the engineering department of American Industrial. To use the followings graphs correctly, refer to the instruction notes "1-5".

1) HP Curves are based upon a 40°F approach temperature; for example: oil leaving a cooler at 125°F, using 85°F cooling water (125°F – 85°F = 40°F).

2) The oil to water ratio of 1:1 or 2:1 means that for every 1 gallon of oil circulated, a minimum of 1 or 1/2 gallon (respectively) of 85°F water must be circulated to match the curve results.

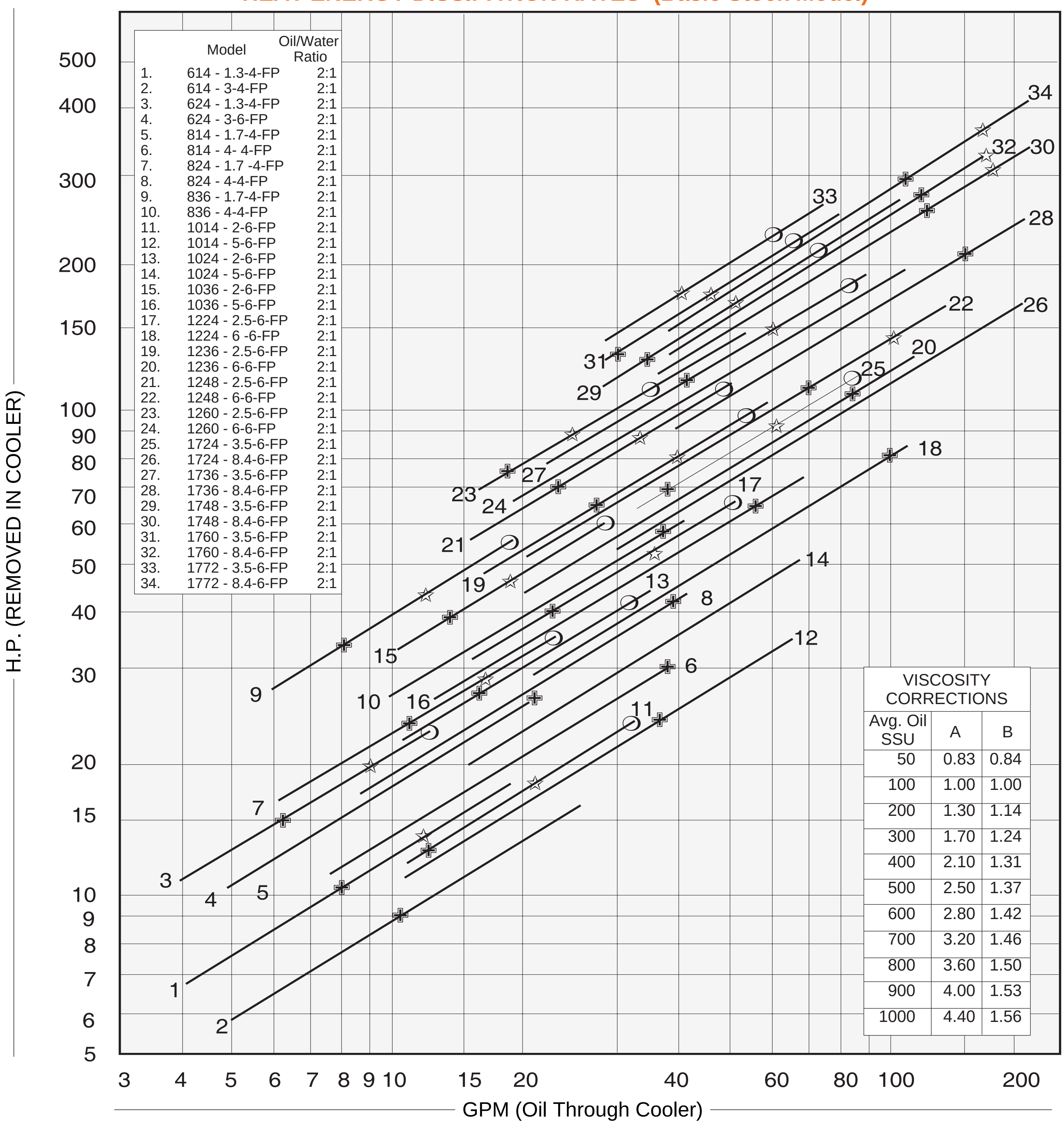
3) OIL PRESSURE DROP CODING: ✚ = 5 psi; ☆= 10 psi; ❍ = 20 psi; △= 50psi. Curves that have no pressure drop code symbols indicate that the oil pressure drop is less than 5 psi for the flow rate shown.

4) Pressure Drop is based upon oil with an average viscosity of 100 SSU. If the average oil viscosity is other than 100 SSU, then multiply the indicated Pressure Drop by the corresponding value from corrections table A.

5) Corrections for approach temperature and oil viscosity are as follows:

$$\text{H.P.}\left(\text{Removed In Cooler}\right) = \text{H.P.}\left(\text{Actual Heat Load}\right) \times \left(\frac{40}{\text{Actual Approach}}\right) \times \text{B.}$$

HEAT ENERGY DISSIPATION RATES (Basic Stock Model)

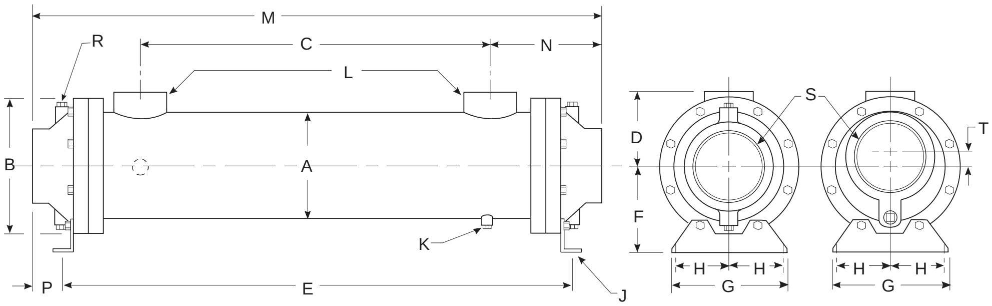


	Model	Oil/Water Ratio
1.	614 - 1.3-4-FP	2:1
2.	614 - 3-4-FP	2:1
3.	624 - 1.3-4-FP	2:1
4.	624 - 3-6-FP	2:1
5.	814 - 1.7-4-FP	2:1
6.	814 - 4- 4-FP	2:1
7.	824 - 1.7 -4-FP	2:1
8.	824 - 4-4-FP	2:1
9.	836 - 1.7-4-FP	2:1
10.	836 - 4-4-FP	2:1
11.	1014 - 2-6-FP	2:1
12.	1014 - 5-6-FP	2:1
13.	1024 - 2-6-FP	2:1
14.	1024 - 5-6-FP	2:1
15.	1036 - 2-6-FP	2:1
16.	1036 - 5-6-FP	2:1
17.	1224 - 2.5-6-FP	2:1
18.	1224 - 6 -6-FP	2:1
19.	1236 - 2.5-6-FP	2:1
20.	1236 - 6-6-FP	2:1
21.	1248 - 2.5-6-FP	2:1
22.	1248 - 6-6-FP	2:1
23.	1260 - 2.5-6-FP	2:1
24.	1260 - 6-6-FP	2:1
25.	1724 - 3.5-6-FP	2:1
26.	1724 - 8.4-6-FP	2:1
27.	1736 - 3.5-6-FP	2:1
28.	1736 - 8.4-6-FP	2:1
29.	1748 - 3.5-6-FP	2:1
30.	1748 - 8.4-6-FP	2:1
31.	1760 - 3.5-6-FP	2:1
32.	1760 - 8.4-6-FP	2:1
33.	1772 - 3.5-6-FP	2:1
34.	1772 - 8.4-6-FP	2:1

VISCOSITY CORRECTIONS

Avg. Oil SSU	A	B
50	0.83	0.84
100	1.00	1.00
200	1.30	1.14
300	1.70	1.24
400	2.10	1.31
500	2.50	1.37
600	2.80	1.42
700	3.20	1.46
800	3.60	1.50
900	4.00	1.53
1000	4.40	1.56

CS Series *dimensions*

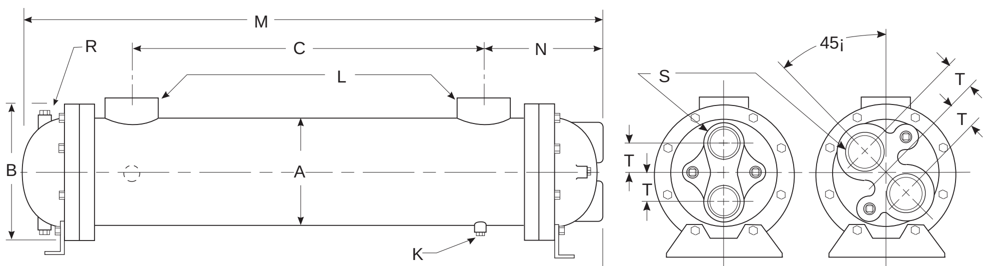


CS-1000, CS-1200, & CS-1700

CS-600 & CS-800

Single Pass (SP)

Model	M	N	P	R NPT	S NPT	T
CS-614 CS-624	17.18 27.18	3.70	.40	(2) .38	1.50	.38
CS-814 CS-824 CS-836	17.88 27.88 39.88	4.44	.63	(2) .38	2.00	.50
CS-1014 CS-1024 CS-1036	19.09 29.09 41.09	5.05	.92	(4) .38	2.00	-
CS-1224 CS-1236 CS-1248 CS-1260 CS-1272	30.00 42.00 54.00 66.00 78.00	5.88	1.43	(4) .50	3.00	-
CS-1724 CS-1736 CS-1748 CS-1760 CS-1772 CS-1784	31.47 43.47 55.47 67.47 79.47 91.47	7.23	1.99	(4) .50	4.00	-

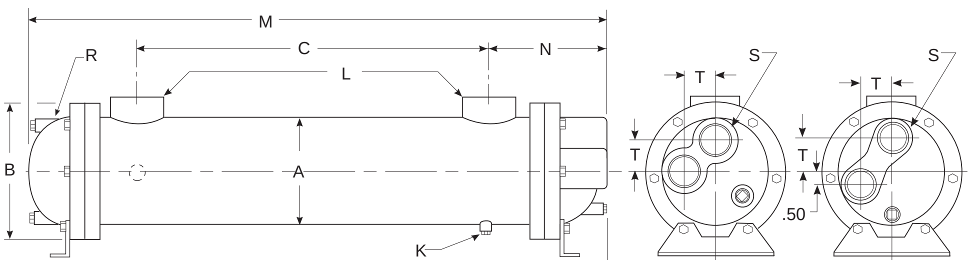


CS-600
CS-1000
CS-1700

CS-800
CS-1200

Two Pass (TP)

Model	M	N	P	R NPT	S NPT	T
CS-614 CS-624	17.12 27.12	3.70	.38	(2) .38	1.00	1.00
CS-814 CS-824 CS-836	17.88 27.88 39.88	4.44	.63	(2) .38	1.25	1.06
CS-1014 CS-1024 CS-1036	18.62 28.62 40.62	5.00	.94	(2) .38	1.50	1.19
CS-1224 CS-1236 CS-1248 CS-1260 CS-1272	29.03 41.03 53.03 65.03 77.03	5.44	1.00	(2) .50	2.00	1.44
CS-1724 CS-1736 CS-1748 CS-1760 CS-1772 CS-1784	30.62 42.62 54.62 66.62 78.62 90.62	7.06	1.81	(2) .50	2.50	1.88



CS-600, CS-800
CS-1000, CS-1200

CS-1700

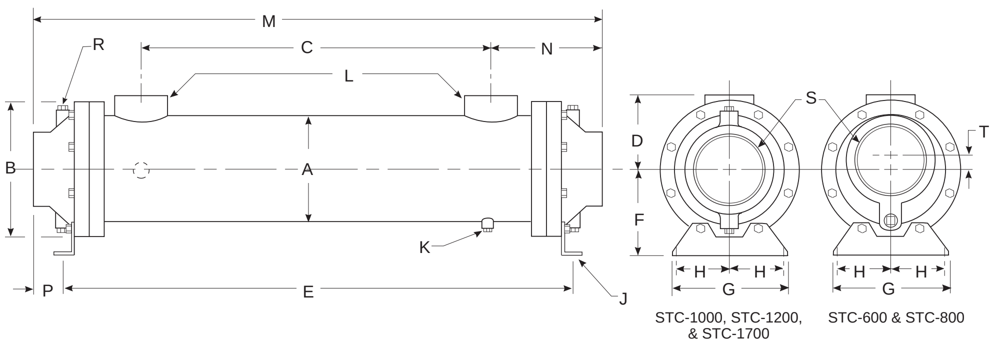
Four Pass (FP)

Model	M	N	P	R NPT	S NPT	T
CS-614 CS-624	17.12 27.12	3.70	.38	(2) .38	.75	1.00
CS-814 CS-824 CS-836	17.88 27.88 39.88	4.44	.63	(3) .38	.75	1.25
CS-1014 CS-1024 CS-1036	18.81 28.81 40.81	4.81	.75	(3) .38	1.00	1.69
CS-1224 CS-1236 CS-1248 CS-1260 CS-1272	29.13 41.13 53.13 65.13 77.13	5.44	1.00	(3) .50	1.50	2.00
CS-1724 CS-1736 CS-1748 CS-1760 CS-1772 CS-1784	29.86 41.86 53.86 65.86 77.86 89.86	7.06	1.81	(3) .50	2.00	2.50

COMMON DIMENSIONS & WEIGHTS

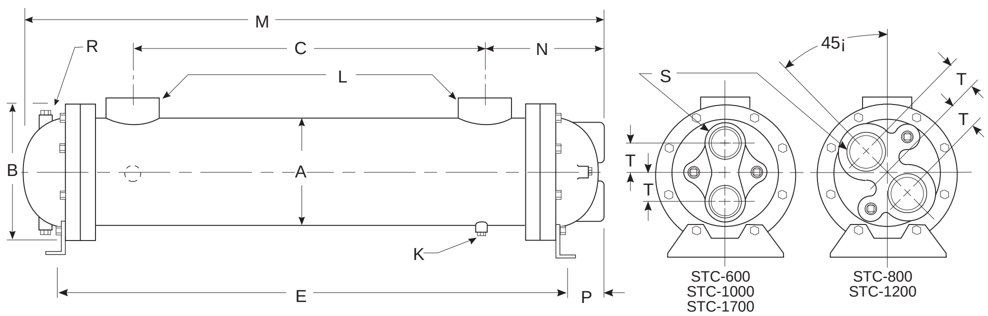
Model	A	B	C	D	E	F	G	H	J	K NPT	L NPT	Approx. Weight	Model
CS-614 CS-624	3.25	4.50	10.00 20.00	2.31	17.00 27.00	2.75	4.18	1.62	.38ϕx0.88	(2) .25	1.00	17 24	CS-614 CS-624
CS-814 CS-824 CS-836	4.25	6.00	9.00 19.00 31.00	3.12	16.62 26.62 38.62	3.50	4.25	1.75	.44ϕx1.00	(2) .25	1.50	32 41 53	CS-814 CS-824 CS-836
CS-1014 CS-1024 CS-1036	5.25	6.75	9.00 19.00 31.00	3.62	17.12 27.12 39.12	4.00	5.25	2.00	.44ϕx1.00	(2) .25	1.50	43 57 72	CS-1014 CS-1024 CS-1036
CS-1224 CS-1236 CS-1248 CS-1260 CS-1272	6.25	7.75	18.25 30.25 42.25 54.25 66.25	4.16	27.13 39.13 51.13 63.13 75.13	4.50	6.25	2.50	.44ϕx1.00	(2) .38	2.00	85 110 135 160 185	CS-1224 CS-1236 CS-1248 CS-1260 CS-1272
CS-1724 CS-1736 CS-1748 CS-1760 CS-1772 CS-1784	8.13	10.12	17.00 29.00 41.00 53.00 65.00 77.00	5.62	27.50 39.50 51.50 63.50 75.50 87.50	5.75	8.25	3.50	.44ϕx1.00	(2) .38	3.00	140 180 220 260 300 340	CS-1724 CS-1736 CS-1748 CS-1760 CS-1772 CS-1784

STC Series *dimensions*



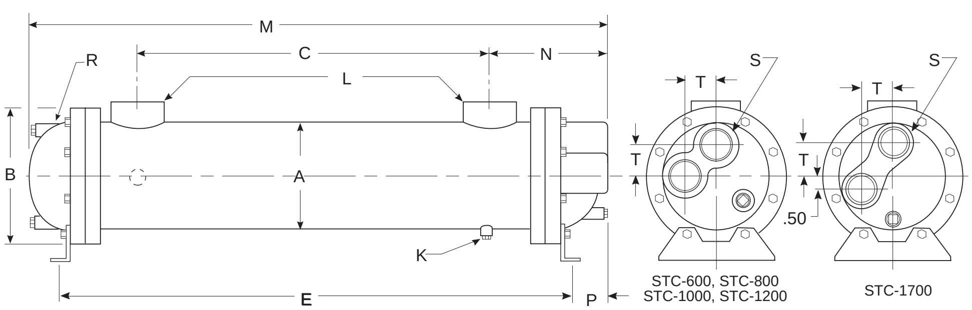
Single Pass (SP)

Model	M	N	P	R NPT	S NPT	T
STC-614	17.18	3.70	.40	(2) .38	1.50	.38
STC-624	27.18					
STC-814	17.88	4.44	.63	(2) .38	2.00	.50
STC-824	27.88					
STC-836	39.88					
STC-1014	19.09	5.05	.92	(4) .38	2.00	-
STC-1024	29.09					
STC-1036	41.09					
STC-1224	30.00	5.88	1.43	(4) .50	3.00	-
STC-1236	42.00					
STC-1248	54.00					
STC-1260	66.00					
STC-1272	78.00					
STC-1724	31.47	7.23	1.99	(4) .50	4.00	-
STC-1736	43.47					
STC-1748	55.47					
STC-1760	67.47					
STC-1772	79.47					
STC-1784	91.47					



Two Pass (TP)

Model	M	N	P	R NPT	S NPT	T
STC-614	17.12	3.70	.38	(2) .38	1.00	1.00
STC-624	27.12					
STC-814	17.88	4.44	.63	(2) .38	1.25	1.06
STC-824	27.88					
STC-836	39.88					
STC-1014	18.62	5.00	.94	(2) .38	1.50	1.19
STC-1024	28.62					
STC-1036	40.62					
STC-1224	29.03	5.44	1.00	(2) .50	2.00	1.44
STC-1236	41.03					
STC-1248	53.03					
STC-1260	65.03					
STC-1272	77.03					
STC-1724	30.62	7.06	1.81	(2) .50	2.50	1.88
STC-1736	42.62					
STC-1748	54.62					
STC-1760	66.62					
STC-1772	78.62					
STC-1784	90.62					



Four Pass (FP)

Model	M	N	P	R NPT	S NPT	T
STC-614	17.12	3.70	.38	(2) .38	.75	1.00
STC-624	27.12					
STC-814	17.88	4.44	.63	(3) .38	.75	1.25
STC-824	27.88					
STC-836	39.88					
STC-1014	18.81	4.81	.75	(3) .38	1.00	1.69
STC-1024	28.81					
STC-1036	40.81					
STC-1224	29.13	5.44	1.00	(3) .50	1.50	2.00
STC-1236	41.13					
STC-1248	53.13					
STC-1260	65.13					
STC-1272	77.13					
STC-1724	29.86	7.06	1.81	(3) .50	2.00	2.50
STC-1736	41.86					
STC-1748	53.86					
STC-1760	65.86					
STC-1772	77.86					
STC-1784	89.86					

COMMON DIMENSIONS & WEIGHTS

Model	A	B	C	D	E	F	G	H	J	K NPT	L NPT	Approx. Weight	Model
STC-614	3.13	4.50	10.00	2.31	17.00	2.75	4.18	1.62	.38ϕx0.88	(2) .25	1.00	17	STC-614
STC-624			20.00		27.00							24	STC-624
STC-814	4.25	6.00	9.00	3.12	16.62	3.50	4.25	1.75	.44ϕx1.00	(2) .25	1.50	32	STC-814
STC-824			19.00		26.62							41	STC-824
STC-836			31.00		38.62							53	STC-836
STC-1014	5.25	6.75	9.00	3.62	17.12	4.00	5.25	2.00	.44ϕx1.00	(2) .25	1.50	43	STC-1014
STC-1024			19.00		27.12							57	STC-1024
STC-1036			31.00		39.12							72	STC-1036
STC-1224	6.25	7.75	18.25	4.16	27.13	4.50	6.25	2.50	.44ϕx1.00	(2) .38	2.00	85	STC-1224
STC-1236			30.25		39.13							110	STC-1236
STC-1248			42.25		51.13							135	STC-1248
STC-1260			54.25		63.13							160	STC-1260
STC-1272			66.25		75.13							185	STC-1272
STC-1724	8.00	10.12	17.00	5.62	27.50	5.75	8.25	3.50	.44ϕx1.00	(2) .38	3.00	140	STC-1724
STC-1736			29.00		39.50							180	STC-1736
STC-1748			41.00		51.50							220	STC-1748
STC-1760			53.00		63.50							260	STC-1760
STC-1772			65.00		75.50							300	STC-1772
STC-1784			77.00		87.50							340	STC-1784