SPIREC

Spiral Plate Heat Exchangers

Type K & S

Technical and Physical Data
Installation Information

Description:

Material: 316L Stainless Steel sheet stock
A.I.S.I. Low Carbon Nickel Chromium with Molybdenum
(Type PS: ABS Black Plastic Shell)

Construction: All welded, no gasket

Heat Transfer Surface - Flow Paths

		Flow Path	
Type	**Sq. Ft.**	**Circ A**	**Circ B**
S	0.67 to 3.78	Axial	Spiral
K	3.78 to 15.07	Axial	Spiral
SCC & KCC	2.54 to 15.07	Spiral	Spiral

Sheet Thickness

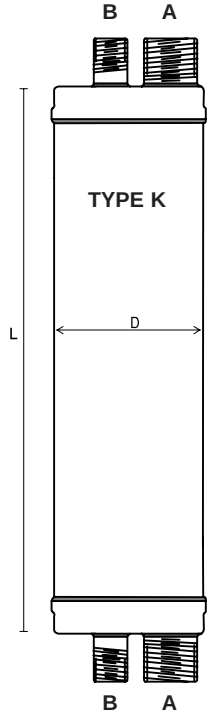
	Type	
	S	**K**
Heat Transfer Surface	0.020"	0.032"
Outer Jacket	0.032"	0.039"

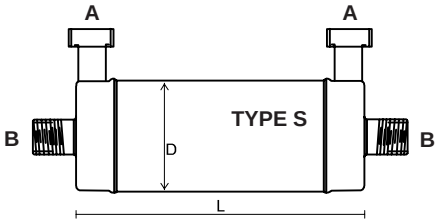
Design Temperature & Pressure - Baffle Material*

	Pressure PSI		Temperature		Baffle Material	
Model	**Circ A**	**Circ B**	**Min**	**Max**	**Circ A**	**Circ B**
PSN	50	200	10	175	None	Silicone
KN & SN	230	360	-50	480	None	Silicone
KFG & SFG	230	360	-50	300	None	Neoprene
KNCC & SNCC	230	360	-50	480	Silicone	Silicone

*Other Baffle Materials Available

Physical Data:

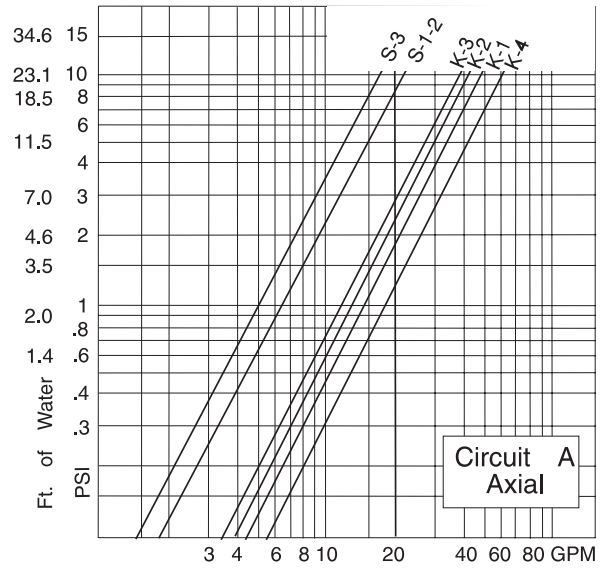


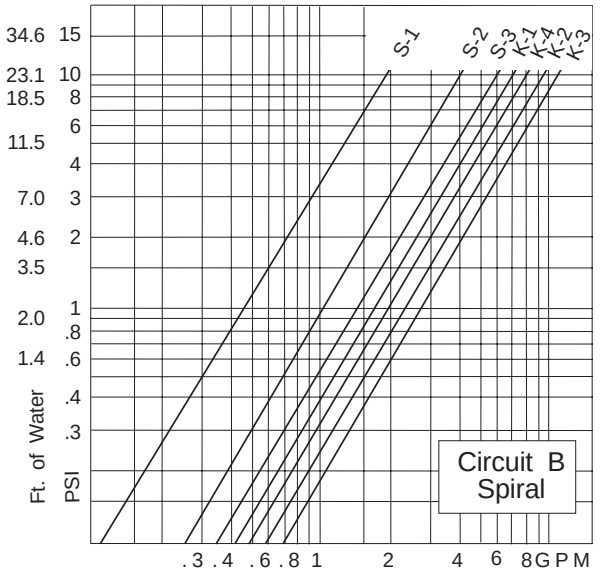


	OVERALL DIMENSIONS		CONNECTIONS **M**=MALE NPT **F**=FEMALE NPT **T**=TUBE		WEIGHT	
TYPE SIZE	**DIAMETER D INCHES**	**LENGTH L INCHES**	**CIRCUIT A INCHES**	**CIRCUIT B INCHES**	**DRY LBS.**	**WATER FILLED LBS.**
	TYPES S-SCC					
0	2-1/2	4-3/4	1/2-T	3/8-T	1.2	1.7
1	2-3/4	6-1/4	3/4-F	1/2-M	2.4	3.3
2	2-3/4	10-1/4	3/4-F	1/2-M	4.0	5.5
3	2-3/4	14-1/4	3/4-F	1/2-M	5.7	7.7
	TYPES K-KCC					
1	3-3/4	10-3/4	1-M	1/2-M	10.0	13.1
2	3-3/4	15-1/2	1-M	3/4-M	14.5	18.9
3	3-3/4	20-1/4	1-M	3/4-M	19.0	24.7
4	4-3/4	20-1/4	1-1/4-M	3/4-M	31.0	39.2
4CC	4-3/4	20-1/4	3/4-F	3/4-M	31.0	39.2

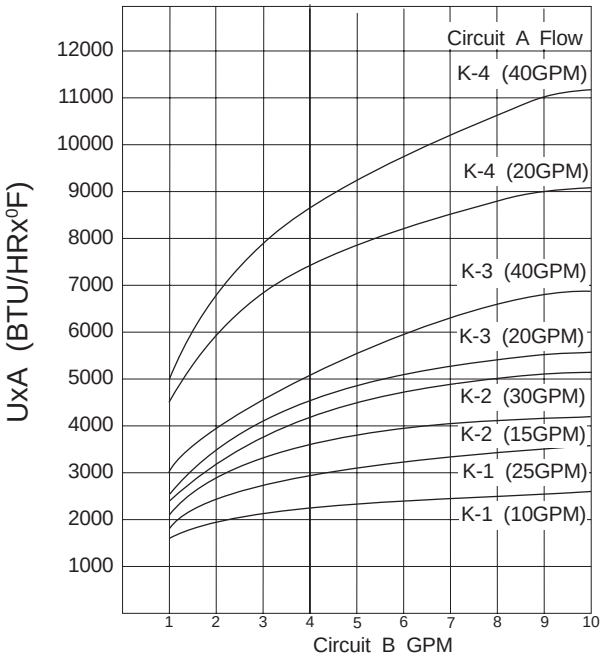
Pressure Drop, Heat Transfer Data and Circuit Data - Type K & S

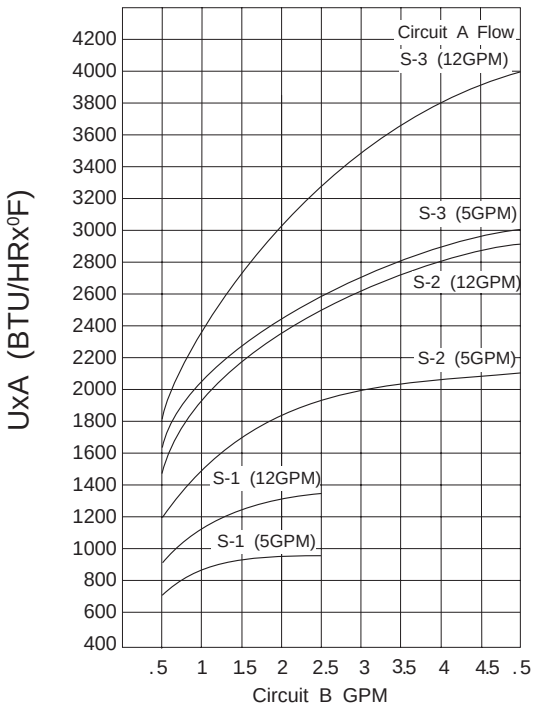
Pressure Drop Curves - Water 70º





Overall Heat Transfer Curves - Water to Water 70º



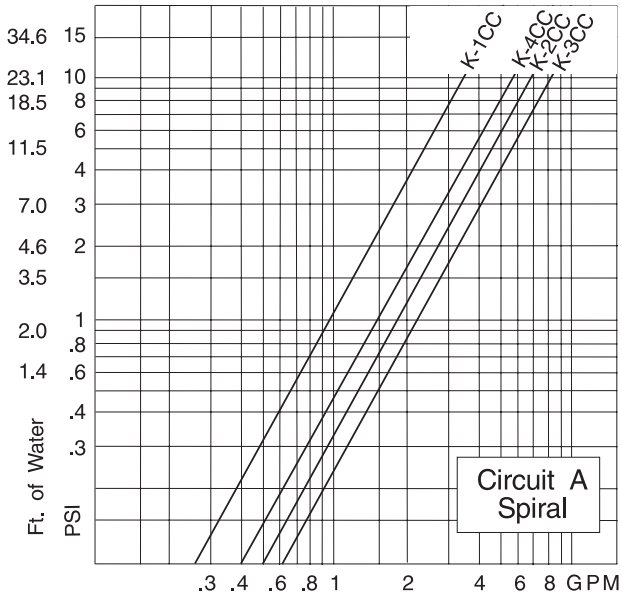


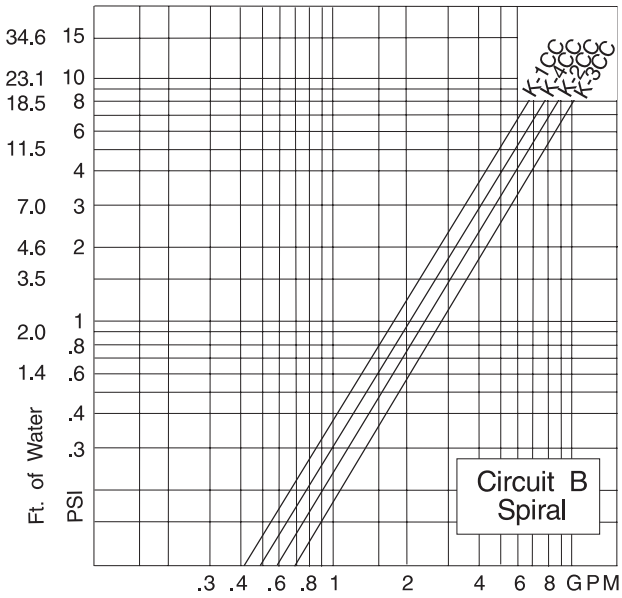
Circuit and Heat Transfer Surface Data

TYPE SIZES	HEAT TRANSFER SURFACE SQ. FT.	CIRCUIT AREA SQ. INCH		WATER FLOW GPM AT 1 FPS		EQUIVALENT TUBE SIZE INCH		FLUID VOLUME OUNCES	
		CIRC A	CIRC B	CIRC A	CIRC B	CIRC A	CIRC B	CIRC A	CIRC B
S-0	0.67	1.32	0.102	4.1	0.32	1-1/4	5/16	4.6	3.4
S-1	1.25	1.68	0.14	5.2	0.43	1-1/2	3/8	8.8	6.2
S-2	2.54	1.68	0.305	5.2	0.95	1-1/2	5/8	12.0	11.7
S-3	3.78	1.68	0.471	5.2	1.47	1-1/2	3/4	15.2	17.2
K-1	3.78	2.26	0.372	7.0	1.16	1-3/4	5/8	20.2	30.0
K-2	5.77	2.26	0.567	7.0	1.77	1-3/4	7/8	25.8	44.9
K-3	7.86	2.43	0.798	7.6	2.49	1-3/4	1	31.8	59.3
K-4	15.07	4.26	0.798	13.3	2.49	2-1/4	1	54.9	75.7

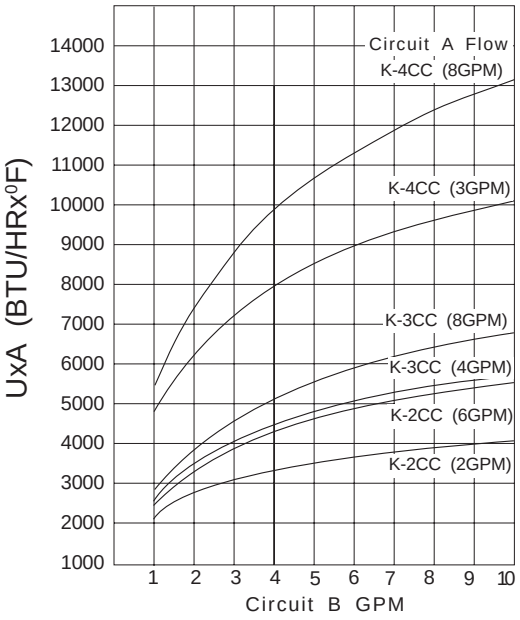
Pressure Drop, Heat Transfer Data and Circuit Data - Type KCC

Pressure Drop Curves - Water 70º





Overall Heat Transfer Curves - Water to Water 70º



Circuit and Heat Transfer Surface Data

		TYPE KCC			
		1	2	3	4
HEAT TRANSFER SURFACE SQ. FT.		3.78	5.77	7.86	13.56
CIRCUIT AREA SQ. INCH	CIRC A	0.265	0.381	0.546	0.752
	CIRC B	0.372	0.567	0.798	0.798
WATER FLOW GPM AT 1 FPS	CIRC A	0.8	1.2	1.7	2.3
	CIRC B	1.2	1.8	2.5	2.5
EQUIVALENT TUBE SIZE INCH	CIRC A	1/2	5/8	7/8	1
	CIRC B	5/8	7/8	1	1
FLUID VOLUME OZ.	CIRC A	17.7	23.3	29.3	52.4
	CIRC B	30.0	44.9	59.3	75.7

NOTES:

Heat Exchanger Selection

Q=(U)(A) LMTD

Where,

Q = Heat Transfer (BTU/hr)

U = Overal Heat Transfer Coefficient (BTU/hrft^{2}ºF)

A = Heating Surface(ft^2)

LMTD = Log Mean Temperature Difference (ºF)

Note:
(U)(A) is shown in the above UA curves.
Multiply the selected (U X A) by the calculated LMTD to determine the heat transfer.

MAXIMUM WATER VELOCITY TO MINIMIZE EROSION	
NORMAL OPERATION HR./YEAR	WATER VELOCITY FPS
2000	14
4000	12
6000	10
8000	8

Note:
To minimize scaling maintain water velocity at 2.3 FPS - 2.6 FPS.

Installation Information - Mounting & Piping Type K & S

Flow Path:

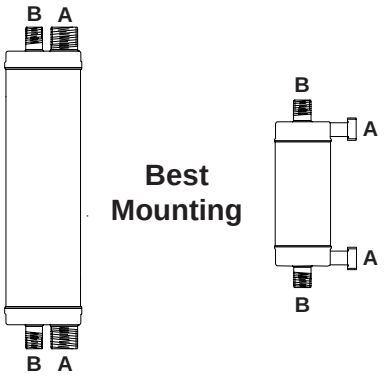
Axial: Circuit A: Type K & S
Large cross-section circuit for high flows and/or high viscous fluids.

Spiral: Circuit B: All Types
Circuit A: Type CC
Small cross-section circuit for low flows and/or lower viscous fluids.

Mounting:

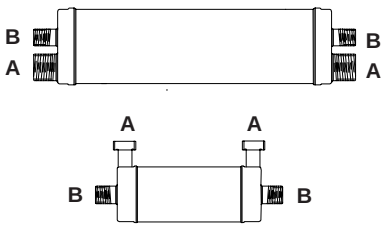
All Applications and Vapor Condensing in Circuit B

- Eliminates trapped air
- Both circuits will drain
- When used as an evaporator, pipe evaporating liquid in at the bottom
- When used to condense vapor in Circuit B, pipe vapor in at top



Liquid to Liquid Applications

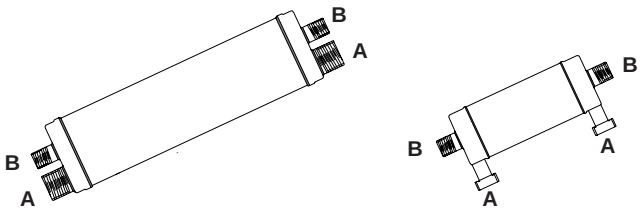
- Air is removed by pumping the liquid
- Both circuits will not drain
- Circuit A connection must be positioned at the top



Satisfactory Mounting

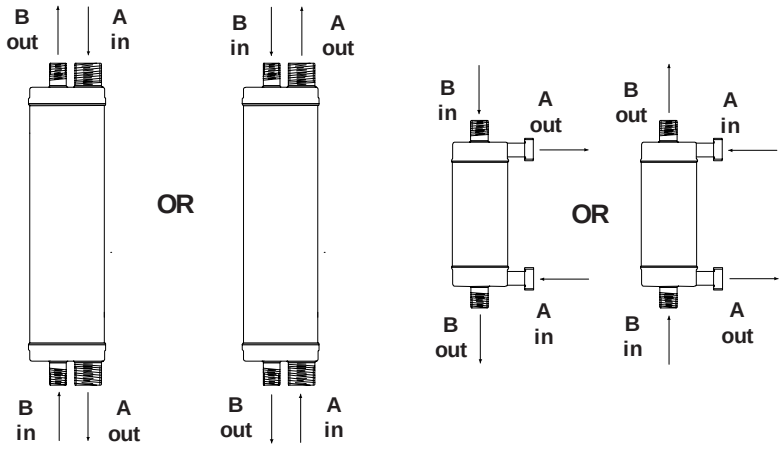
Vapor Condensing in Circuit A

- Except Type CC
- Air in Circuit B is removed by pumping the liquid
- Circuit B will not drain
- Can be mounted at any angle but Circuit A connection must be at the bottom



Satisfactory Mounting

Piping:

- All standard connections are tapered pipe thread. Refer to model data for connection size.

- Pipe the heat exchanger for counterflow fluid direction. This arrangement with the fluids flowing in opposite direction is recommended for most heat transfer applications.