

Tehran Mobaddel

SUT

Catalog



TEHRAN MOBADDEL TYPE "SUT" Heat Exchangers

GENERAL INFORMATION

The instantaneous type "SUT" Heat exchanger is designed to heat liquids with steam.

The "SUT" Type Heat exchanger can be used for Heating many kinds of liquids, however its widest application is for heating water. In this catalogue a rating list for most commonly required temperature rises through a wide range of steam pressures is to be followed. The ratings are based on steam in the shell side and the liquids to be heated on the tube side.

SELECTION PROCEDURE

For heating water with steam, the following conditions must be known.

- Water flow in tubes, G. P. M. — (Gals. per minute).
- Water temperature in and out, °F.

- Steam at the unit, P. S. I.

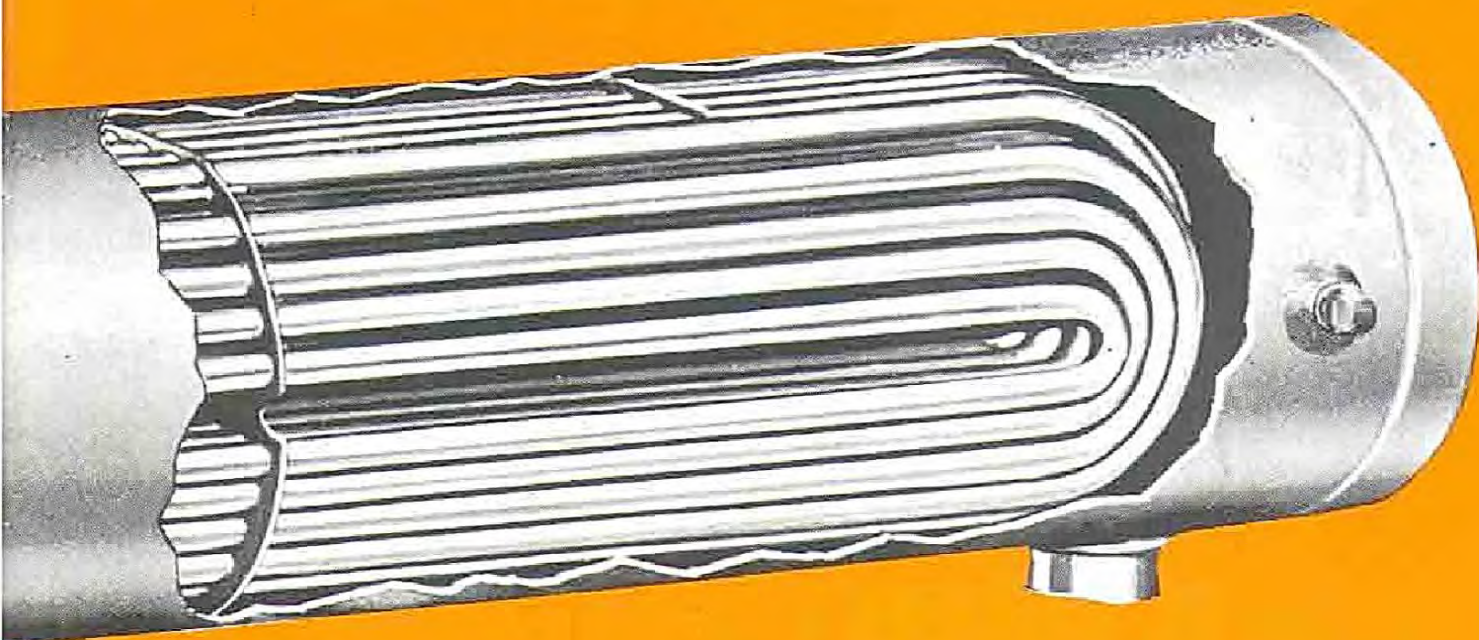
Step #1 — From Table A, determine the clean tube TEMPERATURE FACTOR using water temperature in out and steam pressure. Interpolate between columns when necessary.

Step #2 — Add appropriate fouling allowance to clean tube TEMPERATURE FACTOR from Chart 2 on page 7, recommended fouling allowances are shown. Chart 2 shows the percentage increase that is equivalent to each fouling factor. Note that the percent of fouling allowance is also determined by tube velocity. Selection tables show water velocity for the various flow rates.

Step #3 — In the "SUT" Capacity Tables, move down the required G. P. M. column and select the unit having a TEMPERATURE FACTOR equal to or greater than the required value from Step #2 above.

Example:

Select an Instantaneous Heater	Water Temp. out
	140°F.
Rqd. — 25 G. P. M.	Steam Pressure — 20
	P. S. I. G.
Water Temp. in — 40°F	Fouling — .0005



Temperature factor from table A, page 4 is 27.5. From 25 gpm. column in a 6" diameter four pass unit, tentatively select a SUT63-4. Since the tube velocity is 3.7 fps. and the required fouling is .0005, turn to Chart 2, page 7 and add 25% i.e., multiply

$27.5 \times 1.25 = 34.2$ which is the final temperature factor. Now choose a SUT64-4. Pressure drop is 2.9 ft.

An SUT64-6 or an SUT65-2 could also have been selected, with their respective pressure drops.

CONSTRUCTION FEATURES AND MATERIALS

DESIGN PRESSURES

MATERIAL SPECIFICATIONS—Cast Iron and Brass Units

SHELL DIAMETER	TUBESIDE (PSI)			TEST PRES. TUBES IN PSI	STANDARD UNIT		BRASS UNIT		SHELL	TUBES	TUBE SUPPORTS	NUTS & BOLTS
	2 PASS	4 PASS	6 PASS		HEAD	TUBE SHEET	HEAD	*** TUBE SHEET				
4"	150	150	N/A	300	CAST** IRON BONNET	STEEL	CAST BRASS BONNET	ROLLED NAVAL BRASS	STEEL	1/4" O.D. COPPER	STEEL	STEEL
6"	150	150	150	300								
8"	150	150	150	300								
10"	125*	150	150	250 (2P) 300 (4P)								
12"	125*	125*	150	250 (2&4P) 300 (6P)								
14"	125*	125*	150	250								
16"	125*	125*		250								
18"	125*	125*		250								
20"	125*	125*		250								
22"	150	150		300								
24"	150	150		300	FABRICATED STEEL BONNET		NOT AVAILABLE WITH BRASS HEAD					
26"	150	150		300								
28"	150	150		300								
30"	150	150		300								

*150 lb. cast iron heads available on special order.

**6-pass heads are fabricated steel, 14" through 20"

*** Temperature rating limited to 300° F. If higher rating required consult factory.

TYPE "SUT" HEAT EXCHANGER

TABLE A

CLEAN TUBE TEMPERATURE FACTORS

		SATURATED STEAM PRESSURE IN PSI GAUGE @ SEA LEVEL (SEE NOTE 1)											
Temp. in °F	Temp. out °F	0 p.s.i.	2 p.s.i.	5 p.s.i.	10 p.s.i.	15 p.s.i.	20 p.s.i.	30 p.s.i.	40 p.s.i.	50 p.s.i.	75 p.s.i.	100 p.s.i.	125 p.s.i.
40°	60	6.5	6.3	6.1	5.9	5.6	5.2	5.0	4.8	4.7	4.2	4.0	3.5
	80	13.4	12.5	12.2	11.0	10.5	10.0	9.0	8.8	8.1	7.9	7.5	6.9
	100	21.2	19.8	19.0	17.5	16.5	15.5	14.2	13.1	12.2	11.1	10.4	10.1
	120	29.4	27.0	26.2	24.5	22.5	21.5	19.5	18.5	17.5	15.7	14.5	14.0
	140	39.2	36.0	34.5	31.5	29.5	27.5	25.0	23.5	22.0	19.8	18.8	17.4
	160	51.9	48.0	44.5	40.0	37.0	35.0	31.0	29.0	27.2	24.0	22.7	21.0
	180	71.5	65.5	58.8	51.5	47.0	44.0	38.0	35.5	33.5	29.8	27.0	25.0
50°	70	6.6	6.4	6.2	6.0	6.7	5.3	5.1	4.9	4.7	4.3	4.1	3.5
	90	13.9	13.0	12.4	11.5	10.8	10.3	9.5	8.9	8.4	8.0	7.6	7.0
	110	21.6	20.6	19.3	17.8	16.8	15.7	14.5	13.6	12.9	11.4	10.7	10.2
	130	30.6	29.0	27.1	25.0	23.0	22.0	19.7	18.6	17.7	15.8	14.7	14.1
	150	41.8	39.3	36.2	32.4	30.1	28.3	25.6	24.0	22.5	20.1	18.9	17.6
	170	57.1	53.0	48.0	42.5	38.8	36.2	32.2	30.0	28.1	25.0	23.1	21.5
	190	84.0	74.5	65.2	55.5	50.0	46.0	40.0	38.0	35.0	32.0	28.0	26.0
60°	80	6.8	6.5	6.2	6.0	5.7	5.4	5.1	5.0	4.8	4.3	4.2	3.5
	100	14.3	13.2	12.6	12.0	11.3	10.6	10.0	9.0	8.7	8.0	7.7	7.0
	120	22.6	21.5	20.0	19.0	17.5	16.0	15.0	14.1	13.1	12.2	11.1	10.2
	140	32.4	30.0	28.3	26.0	24.0	22.5	20.0	18.8	18.0	15.8	15.0	14.1
	160	45.5	42.5	38.8	34.5	32.0	30.0	26.1	25.0	23.1	20.5	19.0	17.8
	180	65.0	58.5	52.8	45.0	42.0	39.5	33.5	31.7	29.5	25.8	23.8	22.0
	200	104.0	89.0	74.6	64.0	56.0	50.0	43.0	39.0	37.0	32.0	29.0	26.0
80°	100	7.5	7.0	6.7	6.4	6.0	5.7	5.2	5.1	4.9	4.4	4.3	3.6
	120	15.6	14.8	13.7	12.5	12.0	11.0	10.1	9.3	8.9	8.1	7.9	7.1
	140	25.7	23.5	22.4	20.0	18.5	17.0	15.5	14.5	13.6	12.4	11.3	10.5
	160	38.8	36.0	33.0	29.0	26.5	25.0	21.5	20.0	19.0	17.0	15.5	14.4
	180	58.0	52.5	46.7	40.0	36.5	34.0	29.5	27.0	25.2	22.0	20.0	18.8
	200	96.5	81.5	68.0	56.0	49.0	45.0	38.5	35.0	32.5	28.0	25.5	23.2
100°	120	8.5	8.0	7.5	7.0	6.2	5.9	5.3	5.2	5.0	4.5	4.4	3.6
	130	12.0	11.0	10.0	9.5	9.0	8.0	7.0	6.5	6.0	5.5	5.2	5.0
	140	18.5	17.5	15.9	14.0	13.0	12.2	10.6	9.7	9.2	8.2	8.1	7.3
	160	31.5	28.5	26.3	23.0	21.0	19.5	17.0	16.0	15.0	13.0	12.0	11.1
	180	50.3	46.0	40.0	34.5	31.0	28.5	24.5	22.5	21.0	18.2	16.5	15.2
	200	88.0	74.0	61.1	49.0	43.0	39.5	33.5	30.0	28.0	23.7	21.5	19.5
110°	120	4.0	3.8	3.5	3.3	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.5
	130	9.5	9.0	8.0	7.5	6.7	6.4	5.6	5.3	5.1	4.6	4.5	3.6
	140	14.8	13.0	12.2	11.0	10.0	9.0	8.5	7.5	7.0	6.5	6.0	5.4
	150	21.4	19.0	18.0	15.0	14.0	13.0	12.5	10.5	9.5	9.0	8.0	7.4
	160	28.0	26.0	23.0	20.0	18.0	17.0	15.0	13.0	12.5	11.7	9.8	9.0
	170	35.2	30.2	28.5	25.5	22.5	21.0	18.0	16.8	15.0	14.1	12.5	11.3
	180	47.5	43.0	38.0	32.0	28.0	25.5	23.0	21.0	19.5	16.8	15.0	13.7
	190	62.0	53.0	45.0	36.2	33.0	30.0	26.0	23.0	22.0	19.0	17.0	15.5
	200	85.0	71.0	57.5	46.0	41.0	36.5	31.0	27.5	25.5	21.5	20.0	18.8
120°	130	4.9	4.4	4.1	3.9	3.6	3.4	3.0	2.5	2.3	2.1	2.0	1.9
	140	10.1	9.2	8.5	7.8	7.0	6.7	6.0	5.4	5.1	4.6	4.5	3.7
	150	15.4	15.0	13.5	13.0	11.2	10.0	8.5	8.1	7.5	6.6	6.2	5.5
	160	23.0	21.0	18.9	16.2	14.0	13.5	12.0	11.0	10.5	9.1	8.5	7.5
	170	31.5	28.0	25.0	22.0	19.5	18.0	15.2	14.5	13.0	12.0	10.5	9.5
	180	41.7	37.0	32.5	27.5	24.5	22.5	19.0	17.5	16.1	13.8	12.9	11.7
	190	56.0	51.5	42.0	34.0	31.0	27.5	23.0	21.5	19.2	17.5	15.0	13.7
	200	78.8	66.0	53.3	42.5	37.0	33.0	28.0	25.0	23.0	19.5	17.5	16.2
130°	140	5.5	5.0	4.6	4.0	3.7	3.5	3.3	2.6	2.4	2.3	2.0	1.9
	150	10.9	10.6	9.4	8.4	7.5	6.9	6.1	5.7	5.1	4.6	4.5	3.7
	160	18.5	17.0	15.0	14.0	12.0	11.0	9.5	8.6	7.8	6.8	6.4	5.8
	170	27.0	24.0	21.0	18.5	16.0	15.0	13.0	11.5	10.8	9.3	8.6	7.8
	180	39.0	34.0	29.0	26.0	21.0	20.0	16.3	15.0	13.6	12.5	10.8	9.8
	190	53.0	45.0	38.0	32.0	27.5	25.0	21.0	19.0	17.0	14.8	13.2	12.2
	200	75.0	68.0	52.0	40.0	35.0	30.0	25.0	23.0	21.0	18.5	16.0	14.5
140°	150	6.2	5.5	5.1	4.2	3.8	3.6	3.5	2.8	2.6	2.4	2.1	2.0
	160	12.7	12.0	10.3	9.0	8.0	7.2	6.3	6.0	5.2	4.7	4.6	3.7
	170	21.0	19.0	16.5	14.5	12.5	11.5	10.0	9.0	8.0	7.0	6.5	6.0
	180	31.4	27.5	23.8	20.0	17.2	16.0	13.5	12.0	11.1	9.5	8.7	8.0
	190	46.0	39.0	32.5	30.0	23.0	21.0	17.5	15.5	14.2	13.0	11.0	10.0
	200	68.6	56.5	44.8	36.0	30.5	27.0	22.0	20.0	18.0	15.2	13.5	12.6
	210		86.0	62.0	47.0	39.2	32.5	28.0	24.0	22.5	19.5	16.5	15.0
	220			95.3	60.0	52.5	42.0	33.0	29.5	26.5	22.0	19.5	17.8
150°	160	7.0	6.5	5.8	5.0	4.0	3.8	3.5	3.2	3.0	2.6	2.4	2.0
	170	14.8	12.8	11.0	10.0	8.0	7.5	6.5	6.0	5.7	5.0	4.8	4.2
	180	25.0	22.5	19.0	15.5	13.8	11.8	10.8	9.2	8.8	7.0	6.7	6.2
	190	40.0	33.0	28.0	22.5	19.0	17.2	14.8	13.0	11.5	10.6	9.0	8.2
	200	52.0	51.0	39.0	30.0	26.5	23.0	18.5	17.0	15.8	13.0	11.8	10.5
	210		80.0	58.0	42.0	35.0	30.0	24.0	22.0	19.5	17.0	14.5	13.5
	220				58.0	42.5	39.0	31.0	27.0	23.5	21.0	17.5	16.0

TYPE "SUT" HEAT EXCHANGER

TABLE A CLEAN TUBE TEMPERATURE FACTORS (Continued)

		SATURATED STEAM PRESSURE IN PSI GAUGE (a SEA LEVEL (SEE NOTE 1))											
Temp. in °F	Temp. out °F	0 p.s.i.	2 p.s.i.	5 p.s.i.	10 p.s.i.	15 p.s.i.	20 p.s.i.	30 p.s.i.	40 p.s.i.	50 p.s.i.	75 p.s.i.	100 p.s.i.	125 p.s.i.
160°	170	8.3	7.2	6.3	5.8	4.5	4.2	3.9	3.2	3.1	2.7	2.5	2.1
	180	18.5	16.0	13.6	11.0	9.5	8.5	7.5	6.5	6.2	5.1	5.0	4.2
	190	32.4	27.5	22.5	19.7	15.3	13.7	11.3	10.1	9.3	7.9	6.9	6.5
	200	56.3	44.0	34.4	26.0	22.0	19.5	16.0	14.2	13.0	11.0	9.7	8.7
	210		73.0	51.0	37.5	31.0	26.5	22.0	19.0	17.5	14.5	12.5	11.5
	220			84.0	53.0	42.0	31.0	28.0	24.0	22.0	18.5	15.5	13.5
170°	180	10.0	9.0	8.0	6.0	5.5	5.0	4.2	3.5	3.2	3.0	2.8	2.2
	190	24.0	20.0	15.5	12.7	11.0	10.0	8.0	7.0	6.5	5.5	5.2	4.5
	200	47.0	36.5	28.0	21.0	17.7	15.2	12.8	11.0	10.5	8.6	8.0	7.0
	210		66.0	43.5	31.0	25.5	21.5	17.5	15.0	13.8	11.5	10.0	9.0
	220			77.0	46.5	38.0	31.0	25.0	21.5	18.5	16.0	13.5	12.0
180°	190	14.0	11.3	9.2	7.0	6.0	5.3	4.4	3.7	3.3	3.1	3.0	2.3
	200	36.6	27.8	20.6	15.0	12.5	11.0	9.0	8.0	7.0	6.0	5.5	4.7
	210	102.0	57.5	37.5	25.0	21.0	17.5	14.2	12.2	11.0	9.0	8.0	7.3
	220			70.0	41.5	32.0	27.5	21.0	18.0	15.5	13.0	11.0	9.5
190°	200	22.4	16.2	11.5	8.5	7.0	6.1	5.0	4.2	3.5	3.2	3.1	2.5
	210	87.5	45.5	28.2	18.5	15.0	12.5	9.7	8.6	7.8	6.3	5.8	5.0
	220			60.0	33.0	25.0	20.0	15.5	13.0	11.7	9.5	8.1	7.5
	230				61.0	34.0	31.0	23.0	19.0	16.5	13.5	11.5	10.5
200°	210	64.8	26.0	16.5	10.5	8.0	7.0	5.2	4.7	3.9	3.4	3.2	2.7
	220			48.5	24.8	18.0	15.0	11.0	9.1	8.2	6.6	6.0	5.1
	230				49.0	32.5	25.5	17.8	14.8	13.0	10.2	9.1	8.0
	240					62.0	42.0	26.0	23.0	21.0	15.5	12.5	11.0
210°	220			32.0	14.5	10.2	8.2	6.5	5.0	4.5	3.5	3.4	2.9
	230				39.0	24.5	18.5	13.0	10.5	9.2	7.2	6.2	5.3
	240					48.5	33.3	21.5	17.1	14.8	11.1	9.5	8.3
	250						63.0	45.0	26.0	22.0	17.5	13.0	11.5
220°	230				24.5	14.2	10.4	7.0	5.5	5.0	3.8	3.5	3.1
	240					38.0	25.0	15.2	12.4	10.4	8.0	6.5	5.7
	250						53.0	28.0	21.0	17.0	13.5	10.0	9.0
	260							47.0	32.0	25.0	19.5	14.5	12.5
230°	240					27.0	15.0	9.0	7.0	5.5	5.0	3.5	3.0
	250						43.0	22.0	15.5	12.5	9.5	7.0	6.0
	260							39.0	26.0	20.0	14.5	11.5	10.0
	270								42.5	32.5	23.0	16.0	13.0
240°	250						27.5	12.0	8.0	6.0	4.0	3.0	2.0
	260							30.0	19.0	14.0	9.5	7.5	6.5
	270								35.0	23.5	17.0	12.5	9.5
	280								67.0	39.0	25.0	17.0	14.2
250°	260							18.5	11.0	7.5	5.0	4.0	3.0
	270							61.0	27.5	18.5	12.5	8.5	7.0
	280								60.0	32.0	21.0	14.0	10.0
	290									60.0	32.0	20.0	17.0
	300									48.0	28.0	23.0	23.0

NOTE 1. For altitudes above sea level, subtract 1 PSI for each 2,000 feet altitude to obtain correct steam pressure and determine temperature factor. Example: At 4,000 feet altitude and 2 PSIG steam pressure the corrected steam pressure would be $\left[2 - \frac{4,000}{2,000} \times 1\right] = 0$ PSIG. For resultant steam pressures thus obtained, interpolate.

NOTE 2. When necessary, interpolate between columns for approximate temperature factor. Consult factory if necessary for other temperature factors, or see page 6 for temperature factor calculation.

Pressure Drop Correction

Capacity tables show values for pressure drop when water at 100°F. average temperature is circulated. To correct these values for other temperatures, multiply by appropriate Correction Factor in Table B.

Ethylene Glycol (Anti-Freeze) Correction Factors

"SUT" Capacity tables can also be used for heating 50% ethylene glycol and water solutions in the tubes with steam in the shell. Use the same selection procedure except multiply the corrected Temperature Factor from Step #2 by the appropriate Correction Factor from Table B. Also correct the pressure drop with the appropriate Correction Factor from Table B.

TABLE B CORRECTION FACTORS

Average Temperature in Tubes	Water	Anti-Freeze—50% Ethylene Glycol and Water		
	Pressure Drop Correction	Temperature Factor Correction	Pressure Drop Correction	Min. Tube Vel.
80° F.	1.06	1.38	1.6	6.0
100° F.	1.0	1.33	1.54	4.0
120° F.	.95	1.29	1.42	3.0
140° F.	.91	1.24	1.3	2.4
160° F.	.87	1.20	1.2	1.9
180° F.	.83	1.15	1.14	1.7
200° F.	.80	1.1	1.06	1.35
220° F.	.77	—	—	—
240° F.	.74	—	—	—
260° F.	.72	—	—	—
280° F.	.69	—	—	—
300° F.	.67	—	—	—

TEMPERATURE FACTOR CALCULATION PROCEDURE

Use Chart 1 to determine clean tube Temperature Factor when requirements are not shown in Table A on Pages 4 and 5 or where accurate interpolation is not possible.

$$A = \frac{\text{Steam Temperature minus Inlet Water Temperature}}{\text{Steam Temperature minus Outlet Water Temperature}}$$

Example Problem:

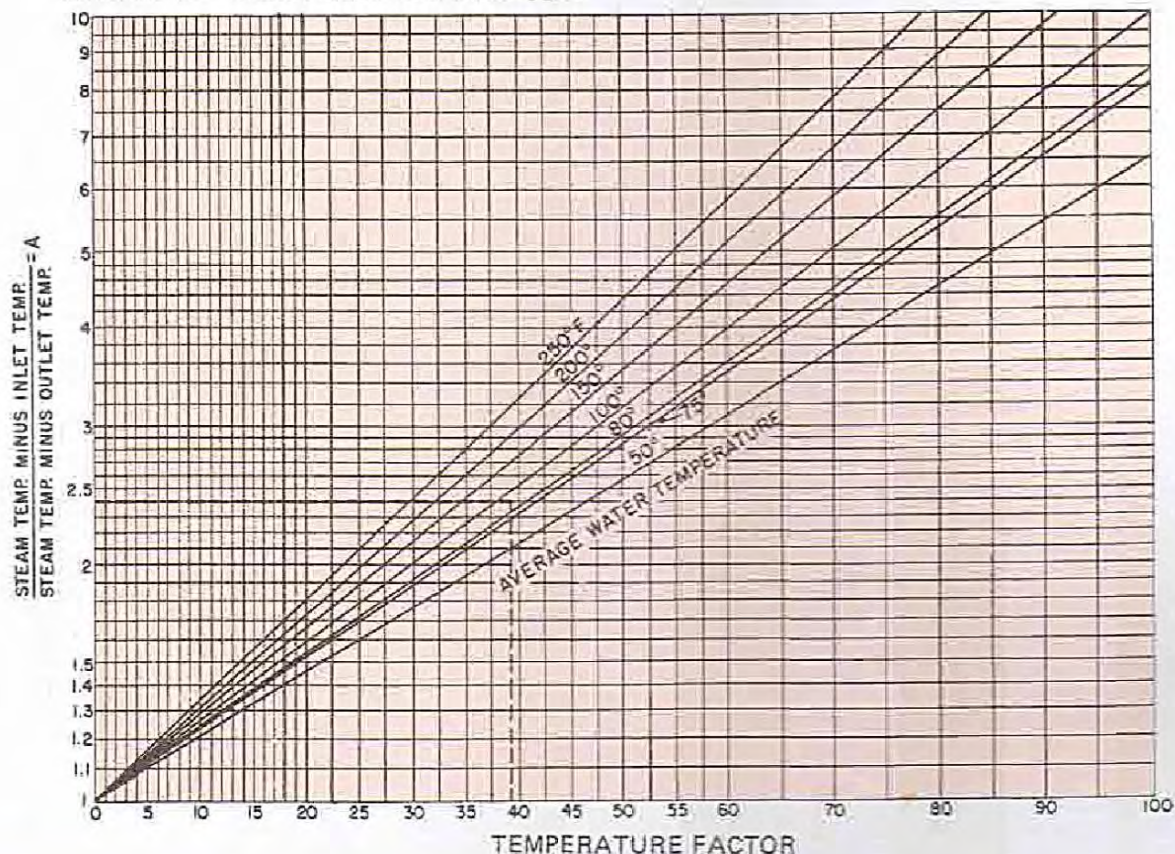
Find Temperature Factor for 40° in, 140° out, 0 PSIG Steam (See Table C)

$$A = \frac{212 - 40}{212 - 140} = \frac{172}{72} = 2.4$$

$$\text{Average water temperature in tubes} = \frac{40 + 140}{2} = 90^\circ$$

Therefore from Chart 1, clean tube Temperature Factor equals 39.2. (See dotted line)

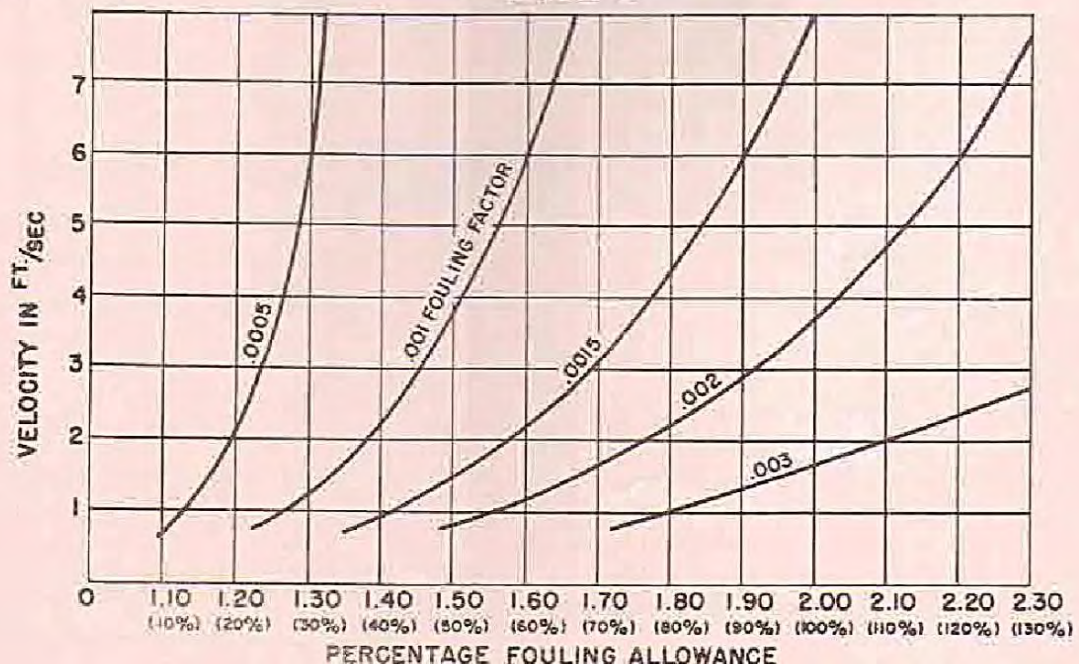
CHART 1—TEMPERATURE FACTORS



FOULING FACTOR CONVERSION TO PERCENTAGE OF FOULING

To include a Fouling Factor in an "SUT" selection, use Chart 2 (below) to find the equivalent percentage of fouling allowance to correct any clean tube temperature factor.

CHART 2



MISCELLANEOUS SELECTION HINTS

1. Water velocity in ft/sec. produced by flow through the tubes may be read at the bottom of each GPM column (Pages 8 through 16). A change in overall length of an "SUT" does not change water velocity through the tubes.
2. Fouling Factors as set forth by TEMA (Tubular Exchanger Mfrs. Association) may be added by conversion to an equivalent percentage increase. (See Chart 2 at bottom of this page).
3. Ratings are omitted when they produce a water velocity through the tube of more than 7.5 ft/sec. Higher velocities are not shown for the following reasons:
 - a. Water flow at velocities of 7.5 ft/sec. and above can become erosive. Rapid wear of the tubing is the result.
 - b. Any small accumulation of scale in a unit that has been rated at high velocity causes a very sharp drop-off in heating capacity.
 - c. The high pressure drop resulting from very high velocities can make pump selection difficult and costly.
4. When using an "SUT" as an instantaneous water heater where human contact with the heated water is possible, low pressure steam (15 psi or less) at the heat exchanger is always recommended.

FOULING ALLOWANCE

1. Water from different localities varies in mineral content. In the process of being heated, the minerals are precipitated in the form of lime, scale, etc. They then collect on the tube walls and the ability of the unit to transfer heat is reduced.
2. To offset a loss in heater capacity from fouling, the size of the heater should be increased so that after scale has collected, the unit will still operate at its rated capacity. This is accomplished by adding a fouling factor to the clean tube factors shown in Table A.

TYPICAL FOULING FACTORS*

Temp. of Heating Medium	Up to 240°F.		240°-400°F.**	
Temp. of Water	125°F. or less		Over 125°F.	
TYPE OF WATER	Water Vel. ft/sec.		Water vel. ft/sec.	
	Less 3 ft.	Over 3 ft.	Less 3 ft.	Over 3 ft.
Sea Water	.0005	.0005	.001	.001
Distilled	.0005	.0005	.0005	.0005
Treated Boiler Feedwater	.001	.0005	.001	.001
Engine Jacket	.001	.001	.001	.001
City or Well (Great Lakes)	.001	.001	.002	.002

*Reproduced with permission from TEMA Standards 7th Edition 1988.

**Ratings in columns 3 and 4 are based on a temperature of the heating medium of 240°-400°. If the heating medium temperature is over 400° and the cooling medium is known to scale, these ratings should be modified accordingly.

TABLE C

STEAM TABLE At Sea Level			
Steam Pressure	Temp. °F.	Steam Pressure	Temp. °F.
0 PSIG	212°	30 PSIG	276°
2 PSIG	218°	40 PSIG	288°
5 PSIG	227°	50 PSIG	298°
10 PSIG	240°	75 PSIG	321°
15 PSIG	250°	100 PSIG	338°
20 PSIG	259°	125 PSIG	353°
25 PSIG	267°	150 PSIG	366°

4" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES										
	2	4	6	8	10	15	17	20	25	30	34
SUT 42-4	34	28	21	18	15	11	10	12			
SUT 43-4	50	44	36	31	27	21	19	17			
SUT 44-4	70	60	51	44	40	29	27	24			
SUT 45-4	90	78	65	56	50	37	33	32			
SUT 46-4		92	77	67	60	45	40	35			
SUT 47-4			92	79	70	53	48	36			
Avg. Tube Vel. 4"-4-Pass	.9 ft./sec.	1.8	2.7	3.5	4.4	6.6	7.5				
SUT 42-2		16	13	12	11	9	8	6	5	4	3
SUT 43-2		26	22	20	18	15	13	11	10	9	8
SUT 44-2		34	31	28	25	21	19	17	15	13	11
SUT 45-2		45	40	37	33	28	25	21	19	17	15
SUT 46-2		55	49	45	40	34	31	26	24	20	17
SUT 47-2		65	58	53	48	40	37	31	28	24	21
Avg. Tube Vel. 4"-2-Pass	.9 ft./sec.	1.3	1.8	2.2	3.3	3.8	4.4	5.5	6.6	7.5	

6" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES														
	2	3	4	5	10	15	20	25	30	35	40	50	60	70	80
SUT 62-6		53	49	47	36	29	24	21	17						
SUT 63-6		84	77	73	53	44	36	31	25						
SUT 64-6				98	73	56	47	41	34						
SUT 65-6					92	72	60	51	42						
SUT 66-6						87	71	61	50						
SUT 67-6							84	72	59						
SUT 68-6							95	82	67						
Avg. Tube Vel. 6"-6-Pass	.5 ft./sec.	.8	1.1	1.3	2.7	4.0	5.4	6.7	8.0						
SUT 62-4				37	31	26	22	18	16	14	13	10			
SUT 63-4				58	47	39	33	27	24	21	19	15			
SUT 64-4				78	63	53	44	37	32	29	26	21			
SUT 65-4				98	79	65	55	47	40	35	32	27			
SUT 66-4					95	78	66	56	48	43	38	30			
SUT 67-4						78	65	56	49	44	36				
SUT 68-4						88	75	64	56	50	40				
Avg. Tube Vel. 6"-4-Pass				.8 ft./sec.	1.4	2.8	2.9	3.7	4.4	5.1	5.9	7.3		*	*
SUT 62-2					19	17	15	13	12	11	10	9	8	7	6
SUT 63-2					30	26	24	22	20	18	16	14	12	11	10
SUT 64-2					40	35	32	29	26	24	22	19	16	14	12
SUT 65-2					50	45	40	36	33	30	27	23	20	18	16
SUT 66-2						48	43	39	35	33	30	28	24	21	19
SUT 67-2								46	42	38	33	29	25	22	19
SUT 68-2									44	40	36	32	28	25	22
Avg. Tube Vel. 6"-2-Pass					.8 ft./sec.	1.1	1.4	1.8	2.2	2.6	2.9	3.7	4.4	5.1	5.9

8" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES														
	4	6	8	10	15	20	25	30	35	40	50	60	70	80	100
SUT 82-6		51	48	46	40	36	32	29	26	24	20	16			
SUT 83-6		78	74	70	61	54	48	43	39	35	30	25			
SUT 84-6			96	92	81	72	65	58	52	47	39	32			
SUT 85-6					93	83	72	65	61	49	41				
Avg. Tube Vel. 8"-6-Pass					2.4	3.4	4.3	5.7	6.9	10.1	13.2				

*Require fabricated steel heads—consult factory for dimensions.

(Continued Next Page)

8" DIAMETER "SUT" CAPACITY TABLE (Continued)

"SUT" Number	G.P.M. HEATED IN TUBES																		
	4	6	8	10	15	20	25	30	35	40	50	60	70	80	100	120	140	160	180
SUT 86-6							96 3.9	86 5.0	78 6.7	71 8.0	60 11.8	51 15.6							
SUT 87-6								100 5.7	91 7.6	83 9.2	69 13.6	59 17.9							
SUT 88-6										94 10.3	80 15.3	69 20.3							
SUT 89-6											89 17.1	76 22.6							
Avg. Tube Vel. 8"-6-Pass	.52 ft./ sec.	.78	1.04	1.3	2.0	2.7	3.4	4.0	4.7	5.4	6.7	8.0		*					
SUT 82-4				38	34	30	27	25	23	21 1.0	18 1.5	15 2.2	13 2.8	12 3.6					
SUT 83-4				58	50	45	40	37	34 1.1	31 1.5	26 2.1	23 2.9	20 3.7	18 5.0					
SUT 84-4				77	68	61	55 1.0	50 1.1	46 1.6	42 1.8	36 2.6	31 3.7	27 5.0	24 6.4					
SUT 85-4				100	88	78	71 1.1	64 1.4	58 1.6	53 2.1	44 3.7	38 4.9	34 5.9	31 7.8					
SUT 86-4						95	85 1.3	77 1.6	70 2.0	64 2.6	55 4.2	47 5.4	41 7.4	37 9.2					
SUT 87-4							100 1.7	91 2.6	82 3.0	75 4.4	64 6.5	55 8.1	48 10.6	43 12.0					
SUT 88-4								93 2.9	86 3.4	73 5.0	63 7.0	55 8.9	48 12.0	43 13.4					
SUT 89-4									98 3.6	83 5.5	71 7.8	62 10.5	54 13.4						
Avg. Tube Vel. 8"-4-Pass				.8 ft./ sec.	1.2	1.6	2.0	2.4	2.8	3.2	4.0	4.8	5.6	6.4					*
SUT 82-2						19	18	17	16	15	13	12	11	10	9	8	7 1.1	6 1.4	5 1.7
SUT 83-2						29	27	25	24	22	20	18	16	15	13	12 1.3	10 1.6	9 2.1	8 2.6
SUT 84-2						39	36	34	31	30	27	25	22	20	18 1.2	15 1.6	14 2.1	12 2.8	11 3.5
SUT 85-2						48	45	42	39	38	34	31	28	25	22 1.1	19 1.5	17 2.1	15 2.7	13 3.2
SUT 86-2									48	46	41	37	34 1.0	31 1.2	26 1.8	23 2.4	20 3.2	18 3.9	16 4.6
SUT 87-2												44	40 1.2	37 1.3	31 2.1	27 2.9	24 3.6	21 4.5	18 5.4
SUT 88-2														42 1.4	36 2.4	31 3.2	27 4.1	24 5.3	21 6.5
SUT 89-2														48 1.6	40 2.7	35 3.8	30 4.7	27 5.9	24 7.0
Avg. Tube Vel. 8"-2-Pass						.8 ft./ sec.	1.0	1.2	1.4	1.6	2.0	2.4	2.8	3.2	4.0	4.8	5.6	6.4	7.2

10" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																						
	10	15	20	25	30	35	40	50	60	70	80	90	100	120	140	160	180	200	225	250	275	300	
SUT 102-6	50	45	41	38	35	32	30	26	23	21	19												
SUT 103-6	75	70	64	60	56	52	48	43	37	35	31												
SUT 104-6	100	93	86	80	75	69	64	56	50	45	41												
SUT 105-6				96	90	84	79	70	63	58	52												
SUT 106-6				1.3	1.8	2.3	2.7	4.0	5.3	6.7	8.7												
SUT 107-6								85	75	68	63												
SUT 108-6								4.6	6.1	7.9	10.2												
SUT 109-6								97	88	79	73												
SUT 1010-6								5.2	7.0	9.0	11.7												
								100	90	82	82												
								7.9	10.1	12.2	14.7												
									100	92	92												
									11.3	14.7	15.7												
Avg. Tube Vel. 10"-6-Pass				2.2 ft./ sec.	2.7	3.1	3.5	4.4	5.3	6.2	7.0												
SUT 102-4				32	30	28	26	23	21	19	17	15	14	12	10								
SUT 103-4				51	48	45	42	38	34	31	28	26	24	20	17								
SUT 104-4				69	64	60	56	50	45	41	37	34	32	27	24								
SUT 105-4				88	81	75	71	63	57	51	47	43	40	34	30								
SUT 106-4				100	96	90	84	75	67	61	56	52	48	41	36								
SUT 107-4							100	89	79	72	65	60	56	48	42								
SUT 108-4							1.0	1.5	2.1	2.7	3.4	4.2	5.2	7.1	9.3								
SUT 109-4								100	92	84	76	70	64	53	47								
SUT 1010-4								1.6	2.3	3.0	3.9	4.9	5.9	8.1	10.5								
								93	85	77	71	61	53										
									3.3	4.3	5.5	6.5	9.0	11.7									
										95	87	80	67	58									
										4.8	6.0	7.1	10.0	12.8									
Avg. Tube Vel. 10"-4-Pass				1.5 ft./ sec.	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0									
SUT 102-2								17	16	15	14	13	12	11	10	9	8.5	8	7	6.5	6.2	6	
SUT 103-2								26	24	23	21	20	19	18	16	14	13	12	11	10	9.5	9	
SUT 104-2								35	33	31	29	27	26	24	22	20	18	16	15	13.5	12.5	11.5	
SUT 105-2								45	41	39	37	34	33	30	27	25	22	21	19	17.5	16	15	
SUT 106-2											45	42	40	36		32	30	27	25	23	21	19	
SUT 107-2													45	41		38	34	32	29	27	25	23	
SUT 108-2																43	39	37	34	31	28	26	
SUT 109-2																43	41	38	35	32	29	27	
SUT 1010-2																49	45	42	39	36	33	31	
																2.1	2.6	3.2	3.8	4.7	5.4	6.2	
Avg. Tube Vel. 10"-2-Pass								1.3 ft./ sec.	1.5	1.8	2.1	2.3	2.6	3.1	3.6	4.1	4.6	5.1	5.7	6.4	7.1	7.7	

*Require fabricated steel heads—consult factory for dimensions.

TYPE "SUT" HEAT EXCHANGER

12 DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																						
	25	30	40	50	60	70	80	90	100	110	120	130	140	150	160	180	200	225	250	300	350	400	450
SUT 123-6	80	76	65	56	50	45	41	37	34	31	28	26	24										
SUT 124-6		100	87	76	68	60	54	50	47	43	40	37	35										
SUT 125-6			1.0	1.8	2.5	3.1	3.8	4.4	5.6	6.5	7.5	8.5	9.7										
SUT 126-6				95	83	74	68	62	58	53	50	47	44										
SUT 127-6				2.1	2.9	3.7	4.6	5.3	6.8	7.8	9.0	9.2	11.8										
SUT 128-6					100	91	83	77	72	66	62	57	53										
SUT 129-6					3.4	4.3	5.4	6.2	7.9	9.2	10.6	12.0	13.8										
SUT 1210-6							6.1	7.1	9.0	10.5	12.2	13.8	15.9										
								100	94	87	81	76	72										
								8.1	10.2	11.8	13.7	15.5	18.0										
										96	90	84	80										
										12.2	15.3	17.3	20.8										
											98	92	87										
											16.8	19.1	22.1										
Avg. Tube Vel. 12"—6-Pass	1.3 ft./ sec.	1.6	2.1	2.6	3.2	3.7	4.2	4.7	5.3	5.8	6.3	6.9	7.4										
SUT 123-4	62	58	51	46	42	38	35	33	30	28	26	24	22	20	18	17							
SUT 124-4	86	80	69	62	57	52	48	45	42	39	36	34	32	28	25	23							
SUT 125-4	100	95	85	78	71	66	61	56	52	49	45	42	40	35	32	29							
SUT 126-4				95	87	80	75	69	64	60	56	52	49	43	39	35							
SUT 127-4					1.0	1.4	1.6	2.0	2.4	2.8	3.1	3.7	4.3	5.4	6.4	8.0							
SUT 128-4					100	92	86	80	74	69	64	60	57	50	45	41							
SUT 129-4						1.5	1.8	2.2	2.7	3.1	3.5	4.0	4.5	6.1	7.2	9.3							
SUT 1210-4							2.1	2.4	2.9	3.1	3.6	4.0	4.5	7.0	8.3	10.5							
										96	90	84	79	74	65	58							
										12.2	15.3	17.3	20.8	22.9	25.9	28.9							
										4.5	4.5	5.0	5.5	6.0	6.5	7.0							
Avg. Tube Vel. 12"—4-Pass	1 ft./ sec.	1.1	1.5	1.75	2.1	2.5	2.8	3.1	3.5	3.8	4.1	4.3	4.8	5.5	6.1	7.0					*	*	*
SUT 123-2				29	28	26	25	24	23	22	21	20	19	18	17	16	15	13	12	10	9	8	
SUT 124-2				39	37	35	33	31.5	30	29	28	27	26	24	22	21	19.5	18	16	14	12	11	
SUT 125-2				49	47	44	42	40	39	37	36	34	33	30	28	27	25	23	20	18	16	14	
SUT 126-2									47	45	43	41	40	37	35	32	30	28	24	21	19	17	
SUT 127-2														43	40	38	36	33	28	25	22	20	
SUT 128-2															47	44	41	38	33	29	26	23	
SUT 129-2																50	46	43	37	32	29	26	
SUT 1210-2																	1.4	1.6	2.2	3.0	4.1	5.1	
																			4.7	6.0	7.9	6.1	
																			2.4	3.2	4.8	5.6	
Avg. Tube Vel. 12"—2-Pass					1 ft./ sec.	1.2	1.3	1.5	1.7	1.8	1.9	2.1	2.3	2.6	3.0	3.3	3.7	4.2	5.0	5.8	6.7	7.5	

14 DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																			
	50	60	70	80	90	100	110	120	130	140	150	160	180	200	225	250	275	300	325	350
SUT 143-6	65	58	53	49	45	41	38	35	33	31	28	27	24							
SUT 144-6		78	71	65	60	55	51	48	46	43	40	38	35							
SUT 145-6		1.2	1.6	2.0	2.5	3.0	3.5	4.1	4.7	5.4	6.3	6.8	8.4							
SUT 146-6		97	89	80	74	68	64	60	56	53	50	48	43							
SUT 147-6		1.5	2.0	2.5	3.1	3.8	4.5	5.2	6.0	6.8	7.7	8.7	10.7							
SUT 148-6				3.1	3.8	4.6	5.4	6.3	7.3	8.3	9.3	10.5	12.9							
SUT 149-6						5.3	6.3	7.3	8.5	9.6	10.4	12.2	15.0							
SUT 1410-6								8.4	9.7	11.1	12.5	14.0	16.0							
										96	90	87	79							
										12.5	14.1	15.9	20.0							
											99	95	86							
											15.8	17.7	22.1							
Avg. Tube Vel. 14"-6-Pass	2.1	2.5	2.95	3.35	3.75	4.20	4.6	5.0	5.5	5.9	6.5	7.0	7.5							
SUT 143-4	50	47	44	41	39	37	35	33	31	30	28	27	25	23	20	18	17	15		
SUT 144-4		67	63	59	55	52	50	47	44	42	40	38	33	30	27	24	22	20		
SUT 145-4		86	80	76	71	67	63	60	56	54	51	48	46	41	38	34	30	27		
SUT 146-4		100	95	90	85	80	75	71	68	64	61	58	55	50	45	40	36	32		
SUT 147-4					1.0	1.4	1.6	1.8	2.0	2.3	2.5	2.9	3.1	3.7	4.0	4.5	5.5	6.3		
SUT 148-4					100	95	90	85	81	77	73	69	65	60	54	48	43	38		
SUT 149-4						1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.4	4.2	5.0	6.0	7.2	9.2		
SUT 1410-4						1.6	1.9	2.1	2.3	2.6	2.9	3.1	3.5	4.3	5.0	6.0	8.1	10.1		
										100	99	98	92	85	75	68	60	53		
											9.1	10.2	11.3	12.5	14.0	16.0	18.0	20.0		
Avg. Tube Vel. 14"-4-Pass	1.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.50	3.75	4.0	4.5	5.0	5.6	6.2	6.9	7.5		

*Require Fabricated Steel Heads Consult Factory for Dimensions.

14" DIAMETER "SUT" CAPACITY TABLE (Continued)

"SUT" Number	G.P.M. HEATED IN TUBES																			
	50	60	70	80	90	100	110	120	130	140	150	160	180	200	225	250	275	300	325	350
SUT 143-2						25	24.5	24	23.5	23	22.5	22	21	20	19	18	17	16	15	14
SUT 144-2						33	32	31.5	30.5	30	29	28	27	26	24.5	23	22	21	19.5	18.5
SUT 145-2						42	40.5	39.5	38	37	36	35	33	32	30	28	27	25	24	22.5
SUT 146-2						50	48	46	45	43.5	42	41	39	37	35	33	31.5	30	28.5	27
SUT 147-2													45	43	40	38	36.5	34	32.5	31
SUT 148-2														49	46	43	41	39	37	35
SUT 149-2																50	47	43.5	41.5	39
SUT 1410-2																52	49	46	43	39
Avg. Tube Vel. 14"-2-Pass						1.25	1.4	1.5	1.6	1.8	1.9	2.0	2.25	2.5	2.8	3.1	3.4	3.75	4.0	4.4

16" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																			
	50	70	80	90	100	110	120	130	140	150	160	180	200	225	250	275	300	325	350	375
SUT 163-6	76	62	58	54	51	47	44	42	39	37	35	32	28	25	23					
SUT 164-6	100	85	78	73	68	63	59	56	53	50	48	44	40	36	33					
SUT 165-6			97	91	84	78	73	69	66	62	60	55	50	46	42					
SUT 166-6				100	95	89	85	81	77	74	68	62	56	51						
SUT 167-6					99	94	89	86	81	77	72	65	59							
SUT 168-6						100	97	94	89	81	74	69								
SUT 169-6								99	90	83	77									
SUT 1610-6									99	90	84									
Avg. Tube Vel. 16"-6-Pass	1.6	2.2	2.5	2.8	3.2	3.5	3.8	4.0	4.5	4.7	5.0	5.7	6.3	7.0	7.9		*	*	*	*
SUT 163-4	54	49.5	48	46	44	42.5	41	39	38	36	35	32	30	27	24.5	22	20	18.5	17	15.5
SUT 164-4	72	69	67	64	59	57	55	53	51	49	47	44	40	36.5	33	30	27	25	22.5	21.5
SUT 165-4	92	85	81	78	75	72	69	66	63.5	61	58.5	54	50	45	41	37.5	34.5	31.5	29	27
SUT 166-4		96	92.5	90	86	83	80	77	74	71.5	69	64	59.5	54	49.5	44.5	40	36.5	32.5	30
SUT 167-4				100	96	93	89.5	86	83	80	74	69	62.5	57	52.5	48	44	41	37.5	35
SUT 168-4					100	97	94	91	86	78	71	65	60	55	50.5	46.5	43.5	40		
SUT 169-4						100	94	87	80	73.5	67.5	62	57.5	53	49.5	46				
SUT 1610-4							97.5	89.5	81.5	75	69.5	64.5	59	55	51					
Avg. Tube Vel. 16"-4-Pass	1 ft./sec.	1.4	1.6	1.8	1.9	2.1	2.3	2.5	2.7	2.8	3.0	3.4	3.8	4.3	4.8	5.3	5.7	6.2	6.7	7.1
SUT 163-2				26	25	24.5	24	23.5	23	22.5	21.5	20.5	19.5	18.5	17.5	17	16	15	14.5	14
SUT 164-2				36	35	34	33	32	31.5	30.5	29	28	26.5	25	24	23	21.5	20.5	19.5	19
SUT 165-2			46	44.5	43.5	42	41	40	39	37	35	33.5	31.5	30	29	28.5	26	25	24	22
SUT 166-2											42	39.5	37.5	35.5	34	32.5	31	29.5	28	26
SUT 167-2											51	47.5	45	42.5	40	38.5	36.5	35	33	30.5
SUT 168-2												46	43.5	41.5	39.5	37	35	32	30	27.5
SUT 169-2													43	39.5	36	33	31	29	26.5	24.5
Avg. Tube Vel. 16"-2-Pass				9 ft./sec.	1.0	1.1	1.2	1.3	1.4	1.5	1.7	1.8	2.0	2.3	2.5	2.7	3.0	3.2	3.5	3.7

*Require Fabricated Steel Heads Consult Factory for Dimensions.

TYPE "SUT" HEAT EXCHANGER

18" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																			
	100	110	120	130	140	150	160	180	200	225	250	275	300	325	350	375	400	450	500	550
SUT 183-6	59	56	53	51	49	46	44	40	37	33	30	27	25	23						
SUT 184-6	80	76	72	69	65	62	59	54	50	46	42	39	36	34						
SUT 185-6	100	94	89	84	80	76	72	67	62	57	52	49	45	42						
SUT 186-6				101	96	92	89	82	77	70	65	60	55	51						
SUT 187-6								96	89	82	76	70	64	60						
SUT 188-6									100	92	85	79	74	69						
SUT 189-6												94	88	82	77					
SUT 1810-6													96	90	84					
Avg. Tube Vel. 18"-6-Pass	2.4 ft./sec.	2.7	2.9	3.2	3.4	3.6	3.9	4.3	4.8	5.4	6.0	6.6	7.2	7.8	*	*	*	*	*	*
SUT 183-4	54	51	49	47.5	45.5	43.5	42	39	36	32.5	30.5	28.5	26	23	21	20	19	17	16	
SUT 184-4	67	63	61	58	56	54	52	48.5	46	41	39	37	34	30	28.5	27.5	25	23	21	
SUT 185-4	80	75	73	69.5	67	65	62	58	55	49.5	47	44	41	37	35	33.5	31	28.5	26	
SUT 186-4	95	90	88	85	82	80	77	72	67	61	57	53.5	50	45	43.5	41	38	35.5	33	
SUT 187-4				96	94	91	87	82	78	71.5	67	62.5	58	54.5	51	48	45	41	38	
SUT 188-4				1.0	1.1	1.3	1.4	1.7	2.2	2.6	3.1	3.6	4.3	5.0	5.4	5.4	5.4	5.4	5.4	
SUT 189-4								97	91	82	76	71	66	61	58	55	52	47.5	44	
SUT 1810-4										95	86	79	73.5	69	64.5	61	58	53.5	50	
Avg. Tube Vel. 18"-4-Pass	1.5 ft./sec.	1.7	1.8	2.0	2.1	2.2	2.4	2.8	3.0	3.3	3.7	4.2	4.5	5.0	5.3	5.7	6.0	6.7	7.5	*
SUT 183-2									25	23.5	23	22	21	20.5	19.5	18.5	18	16.5	15	14.5
SUT 184-2									32	30	28.5	27	26	25	23.5	23	22	20.5	19	18
SUT 185-2									39	37	35	33.5	32	30	29	28	27	25	24	22
SUT 186-2									46	43.5	41	39	37	35	33.5	32.5	31.5	29.5	27.5	25.5
SUT 187-2													42	40.5	39	37.5	36	33.5	31.5	29.5
SUT 188-2													48	46	44	42	41	38	36	33.5
SUT 189-2																	46	42.5	40	37.5
SUT 1810-2																			44	42
Avg. Tube Vel. 18"-2-Pass								1.5 ft./sec.	1.7	1.9	2.1	2.3	2.5	2.6	2.8	3.0	3.3	3.7	4.1	4.4

20" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																			
	100	120	130	140	150	160	180	200	225	250	275	300	325	350	375	400	450	500	550	600
SUT 203-6	70	63	60	58	55	53	50	46	42	39	36	33	31	28	27	25				
SUT 204-6	94	86	81	78	75	72	68	62	57	52	49	46	43	40	38	36				
SUT 205-6			100	98	94	89	82	76	70	65	60	57	53	50	48	45				
SUT 206-6						100	92	86	80	75	70	66	62	59	55					
SUT 207-6							100	93	87	82	77	72	69	64						
SUT 208-6								98	93	87	81	77	74							
SUT 209-6												96	90	86	82					
SUT 2010-6													99	94	90					
Avg. Tube Vel. 20"-6-Pass	1.8 ft./sec.	2.2	2.4	2.5	2.7	2.9	3.3	3.6	4.0	4.5	5.0	5.4	5.9	6.3	6.8	7.2				

*Require Fabricated Steel Heads. Consult Factory for Dimensions.

TYPE "SUT" HEAT EXCHANGER

20" DIAMETER "SUT" CAPACITY TABLE (Continued)

"SUT" Number	G.P.M. HEATED IN TUBES																																					
	100	120	130	140	150	160	180	200	225	250	275	300	325	350	375	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400		
SUT 203-4	49	46.5	45	44	43	42	40	38	35	33	31	29	27	25.5	24.5	22	20	17	15.5	13	11.5	10																
SUT 204-4	65	61	60	58	56.5	55.5	53	50	47	44	42	39	37	35	33	31	27.5	24	21.5	19	17.5	15																
SUT 205-4	83	77.5	76	74	72	70	66	63	59	56	53	50	46	44	42	39	35	31.5	28.5	26	23.5	21																
SUT 206-4		94	92	89	87	85	80	75	71	67	63	60	55.5	52.5	49.5	47	42	37.5	34	30	28	25.5																
SUT 207-4					97	95	91	87	82	78	74	70	65	62	59	55	49.5	44	40	36	32.5	29.5																
SUT 208-4							100	97	93	88	85	80	75	71.5	68	64.5	57.5	51.5	46.5	42	38	34																
SUT 209-4										98.5	95	90	85	81.5	78	74	66	60	53.5	48	43.5	39																
SUT 210-4												100	95	90	87	82	73	66	59	53	48	43																
													3.4	3.7	4.5	4.9	5.7	7.1	8.5	10.0	1.8	3.6	5.0															
Avg. Tube Vel. 20"-4-Pass	1.1 ft./ sec.	1.3	1.4	1.5	1.6	1.8	2.0	2.2	2.5	2.8	3.1	3.4	3.7	4.0	4.2	4.5	5.0	5.6	6.1	6.6	7.1	7.8												*	*	*	*	
SUT 203-2										25	24	23.5	22.5	22	21	20.5	20	19	18	17	16	15	14.5	14	13	12.5	11.5	11	10.5	10	9.5	9	8.5	8.2	8	7.5	7.2	7
SUT 204-2										33	31.5	30.5	30	29	28	27	26.5	26	24.5	23	21.5	20.5	19.5	18.5	18	17	16	15	14.5	14	13	12	11.5	11	10.5	10	9.5	9
SUT 205-2										44	42	40.5	39	37	36	35	33.5	32.0	30.5	29	27	26	24.5	23	22	21	19.5	18.5	17.7	17	16	15.5	14.5	14	13	12.5	12	11.5
SUT 206-2											47	45	44	42.5	41	39.5	38.5	36	34	32.5	31	29.5	28	26.5	25	24	23	22	21	20	19	18	17	16.5	15.5	15	14	
SUT 207-2												50	48	46	44.5	43	41	38	36.5	35	33	31.5	30	28.5	27.5	26	25	24	22.5	21.5	20.5	20	19	18	17	16		
SUT 208-2																	50	47	44	42	40	37.5	36	34	32.5	31	29.5	28	27	25.5	24.5	23.5	22	21	20	19	18	
SUT 209-2																			50	47.5	45	42.5	40.5	38.5	36.5	34.5	33	31.5	30	28.5	27	26	24.5	23.5	22.5	21	20	
SUT 210-2																					50	48	45.5	43	41	38.5	37	35	33	31.5	30	28.5	27	26	24.5	23.5	22	
																						4.5	4.7	5.0	5.3	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7	8.0	8.3	8.6		
Avg. Tube Vel. 20"-2-Pass								1.1 ft./ sec.	1.2	1.4	1.6	1.7	1.8	1.9	2.1	2.2	2.4	2.7	3.0	3.3	3.6	3.8	4.1	4.4	4.6	4.9	5.2	5.5	5.7	5.9	6.2	6.5	6.7	7.0	7.3	7.6		

22" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																																				
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800		
SUT 224—6		86	72	62	54	48	44	39	36																												
SUT 225—6			91	76	67	60	54	49	45																												
SUT 226—6				92	82	73	67	60	54																												
SUT 227—6					95	86	78	70	63																												
SUT 228—6						97	87	79	73																												
SUT 229—6							97	88	81																												
SUT 2210—6								96	88																												
Avg. Tube Vel. 22"—6-Pass		2.2 ft./ sec.	2.9	3.7	4.4	5.1	5.9	6.6	7.3																												
SUT 224—4		72	65	55	50	44	40	37	34	31	29	27	25	24	22																						
SUT 225—4			80	68	62	55	51	46	43	39	36	34	31	30	28																						
SUT 226—4				94	81	75	66	61	55	51	46	43	40	38	37	34																					
SUT 227—4					96	87	78	72	65	60	55	51	48	45	43	40																					
SUT 228—4						100	88	81	74	69	62	57	54	51	49	45																					
SUT 229—4							99	91	83	78	70	65	61	58	55	52																					
SUT 2210—4								100	92	86	78	72	68	64	61	57																					
Avg. Tube Vel. 22"—4-Pass		1.4 ft./ sec.	1.8	2.3	2.7	3.2	3.6	4.1	4.5	5.0	5.5	5.9	6.4	6.8	7.3																						

*Require Fabricated Steel Heads, Consult Factory for Dimensions.

22" UNITS CONTINUED NEXT PAGE

TYPE-SUT HEAT EXCHANGER

22" DIAMETER "SUT" CAPACITY TABLE (Continued)

"SUT" Number	G.P.M. HEATED IN TUBES																			
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
SUT 224-2					32	31	29	27	25	23	22	21.5	21	19.5	18.5	18	17		16	15
SUT 225-2					40	38	36	35	33	32	29	28	27	26	25	24	23	22	20	19
SUT 226-2					48	45	44	42	41	38	35	34	33	32	30	29	28	27	25	23
SUT 227-2					56	52	50	48	46	44	40	39	38	37	35	33	32	31	29	27
SUT 228-2					64	60	57	54	52	50	46	45	43	42	39	38	36	35	33	30
SUT 229-2					72	68	65	62	59	56	52	50	48	47	44	42	41	39	37	34
SUT 2210-2					81	75	71	68	65	62	58	56	54	52	49	47	45	44	41	38
Avg. Tube Vel. 22"-2-Pass					1.6 ft./ sec.	1.8	2.0	2.2	2.4	2.6	2.9	3.1	3.3	3.5	3.7	4.0	4.2	4.4	4.6	4.8

24" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																			
	200	225	250	275	300	325	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
SUT 244-6	59	55	52	49	46	44	41	37	33	30	27	25								
SUT 245-6	80	75	70	66	62	58	55	50	46	42	39	36								
SUT 246-6	100	94	88	81	76	72	69	62	57	53	49	45								
SUT 247-6				98	92	88	84	77	71	65	60	55								
SUT 248-6								98	89	83	76	70	65							
SUT 249-6																				
SUT 2410-6																				
Avg. Tube Vel. 24"-6-Pass	2.4 ft./ sec.	2.7	3.0	3.3	3.6	3.9	4.1	4.8	5.4	6.0	6.5	7.1								
SUT 244-4	53	51	49	46	44	41	40	36	34	30	26	25	24.5	23	22	21	20	19	18	17
SUT 245-4	68	66	63	60	57	54	52	47	44	40	37	34	32	30	29	27	26	24	23	22
SUT 246-4	86	81	77	74	70	67	63	58	54	50	46	43	41	38	36	34	32	30	29	27
SUT 247-4	100	96	92	87	83	79	76	70	64	59	55	51	48	45	43	40	39	37	35	33
SUT 248-4								98	94	90	82	76	70	65	60	57	53	51	48	46
SUT 249-4																				
SUT 2410-4																				
Avg. Tube Vel. 24"-4-Pass	1.7 ft./ sec.	1.8	1.9	2.1	2.2	2.4	2.5	3.0	3.3	3.7	4.1	4.5	4.8	5.2	5.6	5.9	6.3	6.8	7.1	7.6
SUT 244-2								27	26	25	24	23	22	21	19	18.5	18	17	16.5	16
SUT 245-2								33	32	31	29	27	26	25	24	23	22	21.5	21	20
SUT 246-2								42	40	38	36	35	33	32	31	29	28	27	26	25
SUT 247-2								50	48	45	44	42	41	38	37	35	34	33	32	31
SUT 248-2								58	55	52	50	48	46	44	42	40	39	38	37	35
SUT 249-2								67	63	60	57	54	52	50	48	46	45	43	42	40
SUT 2410-2								75	71	68	65	62	59	56	54	52	50	48	47	45
Avg. Tube Vel. 24"-2-Pass								1.5 ft./ sec.	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.3	3.5	3.7

TYPE "SUT" HEAT EXCHANGER

26" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	G.P.M. HEATED IN TUBES																																					
	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500		
SUT 264-6	57 1.7	52 2.2	47 2.7	42 3.4	38 4.1	35 4.8	32 5.6	29 6.5	27 7.4	25 8.4																												
SUT 265-6	78 2.1	70 2.7	63 3.5	56 4.3	51 5.2	48 6.1	50 7.1	41 8.2	39 9.4	36 10.6																												
SUT 266-6	97 2.5	87 3.3	77 4.2	70 5.2	64 6.3	60 7.4	55 8.6	52 10.0	49 11.4	46 12.8																												
SUT 267-6		94 3.9	85 5.0	79 6.1	74 7.4	69 8.7	64 10.2	60 11.7	56 13.3	52 15.1																												
SUT 268-6			100 5.7	92 7.0	86 8.4	80 10.0	75 11.7	70 13.4	65 15.3	60 17.3																												
SUT 269-6					97 5.5	90 11.3	84 13.2	79 15.2	75 17.3	70 19.6																												
SUT 2610-6						100 12.6	93 14.7	88 16.9	83 19.3	78 21.8																												
Avg. Tube Vel. 26"-6-Pass	2.6 ft./ sec.	3.0	3.6	4.1	4.6	5.1	5.6	6.1	6.6	7.1	7.6																											
SUT 264-4	55 1.0	50 1.2	46 1.5	42 1.8	38 2.2	36 2.5	33 2.9	31 3.3	29 3.7	27 4.2	25 4.7	23 5.1	22 5.6	21 6.1	20 6.6	19 7.1		18 7.6		17 8.1																		
SUT 265-4	70 1.0	62 1.2	57 1.5	52 1.8	48 2.2	44 2.5	41 2.9	39 3.3	36 3.7	34 4.2	33 4.7	30 5.1	24 5.6	28 6.1	26 6.6	25 7.1		23 7.6		22 8.1																		
SUT 266-4	87 1.0	77 1.2	70 1.5	65 1.8	59 2.2	55 2.5	52 2.9	49 3.3	46 3.7	43 4.2	41 4.7	38 5.1	36 5.6	35 6.1	33 6.6	32 7.1		29 7.6		27 8.1																		
SUT 267-4	100 1.1	90 1.4	83 1.8	78 2.1	71 2.5	66 3.0	62 3.4	58 3.9	55 4.4	52 4.9	49 5.5	46 6.1	44 6.7	41 7.3	40 7.9	38 8.5		35 9.1		33 10.1																		
SUT 268-4		98 1.3	91 1.7	84 2.0	77 2.5	73 2.9	69 3.4	65 3.9	62 4.3	58 5.0	54 5.6	52 6.3	50 7.0	48 7.7	46 8.4		42 9.1		39 10.1																			
SUT 269-4			96 1.3	88 1.7	83 2.0	78 2.5	74 2.9	69 3.4	66 3.9	61 4.3	58 5.0	56 5.6	53 6.3	51 7.0	47 7.7		44 8.4		41 9.1																			
SUT 2610-4				99 1.3	93 1.7	88 2.0	83 2.5	78 2.9	74 3.4	69 3.9	66 4.3	63 5.0	60 5.6	58 6.3	55 7.0		53 7.7		50 8.4																			
Avg. Tube Vel. 26"-4-Pass	1.6 ft./ sec.	1.9	2.3	2.6	2.9	3.2	3.6	3.9	4.2	4.5	4.9	5.2	5.5	5.8	6.1	6.5	6.8	7.1	7.5	7.6																		
SUT 264-2					27 1.0	26 1.2	25 1.5	24 1.8	23 2.1	22.5 2.5	21 2.8	20 3.1	19 3.4	18.5 3.7	18 4.0		17 4.3		16 4.6		15 4.9		14 5.2		13 5.5	12 5.8	11 6.1	10.5 6.4	10 6.7	9.5 7.0	9 7.3	8.5 7.6	8 7.9	7.5 8.2	7 8.5	6.5 8.8		
SUT 265-2					32 1.0	31 1.2	29 1.5	28 1.8	27 2.1	26.5 2.5	26 2.8	25 3.1	24 3.4	23 3.7	22 4.0		21 4.3		20 4.6		19 4.9		18 5.2		17 5.5	16 5.8	15 6.1	14 6.4	13 6.7	12.5 7.0	12 7.3	11.5 7.6	11 7.9	10.5 8.2	10 8.5	9.5 8.8		
SUT 266-2					40 1.0	39 1.2	37 1.5	36 1.8	35 2.1	34 2.5	33 2.8	32 3.1	30 3.4	29 3.7	28 4.0		26 4.3		25 4.6		24 4.9		22 5.2		21 5.5	20 5.8	19 6.1	18 6.4	17 6.7	16 7.0	15.5 7.3	15 7.6	14.5 7.9	14 8.2	13.5 8.5	13 8.8		
SUT 267-2					48 1.0	47 1.2	45 1.5	44 1.8	42 2.1	40 2.5	39 2.8	38 3.1	36 3.4	35 3.7	34 4.0		32 4.3		31 4.6		29 4.9		27 5.2		26 5.5	24 5.8	23 6.1	22 6.4	21 6.7	20 7.0	19 7.3	18 7.6	17.5 7.9	17 8.2	16.5 8.5	16 8.8		
SUT 268-2					56 1.0	54 1.2	51 1.5	50 1.8	48 2.1	46 2.5	45 2.8	44 3.1	42 3.4	40 3.7	39 4.0		37 4.3		35 4.6		33 4.9		31 5.2		30 5.5	28 5.8	27 6.1	26 6.4	24 6.7	23 7.0	22 7.3	21 7.6	20.5 7.9	20 8.2	19.5 8.5	19 8.8		
SUT 269-2					64 1.0	62 1.2	58 1.5	57 1.8	54 2.1	53 2.5	51 2.8	50 3.1	47 3.4	46 3.7	45 4.0		42 4.3		40 4.6		38 4.9		36 5.2		34 5.5	32 5.8	30 6.1	29 6.4	28 6.7	26 7.0	25 7.3	24 7.6	23 7.9	22 8.2	21.5 8.5	21 8.8		
SUT 2610-2					72 1.0	70 1.2	66 1.5	65 1.8	62 2.1	60 2.5	57 2.8	56 3.1	53 3.4	51 3.7	50 4.0		47 4.3		45 4.6		42 4.9		40 5.2		38 5.5	36 5.8	34 6.1	33 6.4	31 6.7	30 7.0	28 7.3	27 7.6	26 7.9	25 8.2	24.5 8.5	24 8.8		
Avg. Tube Vel. 26"-2-Pass		1.0 ft./ sec.	1.1	1.3	1.4	1.6	1.7	1.9	2.0	2.2	2.4	2.5	2.7	2.8	3.0	3.1	3.3	3.5	3.6	3.8	3.9	4.1	4.3	4.4	4.6	4.7	5.0	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.6			

28" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

"SUT" Number	GPM HEATED IN TUBES																																						
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	2800	3000			
SUT 284-6					50 1.2	47 1.6	43 2.0	39 2.5	36 3.0	33 3.5	31 4.1	28 4.8	26 5.4	24 6.1	23 6.9	22 7.6																							
SUT 285-6					61 1.5	65 2.0	69 2.5	55 3.1	50 3.8	47 4.5	44 5.2	41 6.0	38 6.9	36 7.8	35 8.7	33 9.7																							
SUT 286-6					92 1.9	83 2.4	74 3.1	68 3.8	64 4.6	59 5.4	55 6.3	51 7.3	48 8.3	46 9.4	44 10.5	42 11.7																							
SUT 287-6								90 3.6	84 4.5	79 5.4	74 6.4	69 7.4	65 8.6	61 9.8	57 11.0	55 12.4	52 13.8																						
SUT 288-6									93 6.2	86 7.3	81 8.5	78 9.8	72 11.2	68 12.7	65 14.2	61 15.8																							
SUT 289-6												92 9.6	86 11.1	81 12.7	76 14.3	74 16.1	71 17.9																						
SUT 2810-6													96 12.4	91 14.1	86 16.0	82 17.9	79 19.9																						
Ave. Tube Vel. 28"-6-Pass					2.6 ft./ sec.	3.0	3.4	3.9	4.3	4.7	5.1	5.6	6.0	6.4	6.8	7.2																							

28" UNITS CONTINUED NEXT PAGE

28" DIAMETER "SUT" CAPACITY TABLE (Continued)

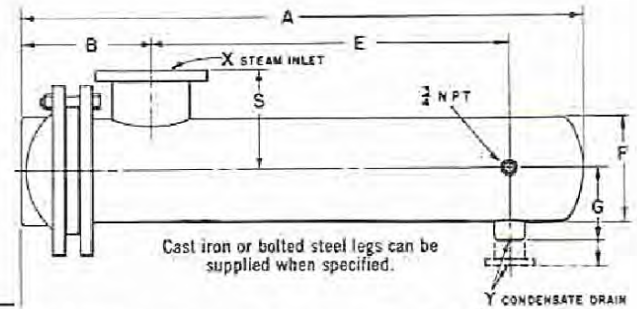
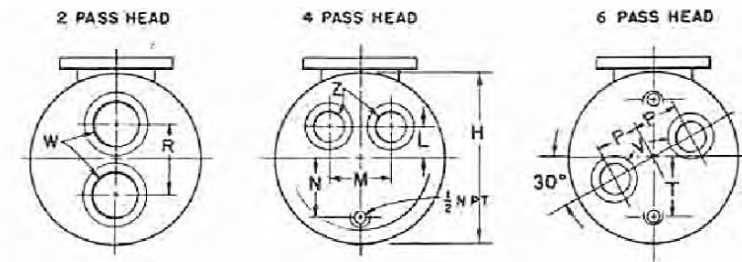
"SUT" Number	G.P.M. HEATED IN TUBES																																				
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	2800		
SUT 284-4					51	46	43	40	36	34	32	33	29	27	25	24	22	21	19		17		15	14	13												
SUT 285-4					66	58	55	50	46	44	40	39	37	34	33	31	29	28	27		24		22	20	19												
SUT 286-4					82	73	70	62	58	55	51	50	47	44	42	40	37	36	34		31		28	27	25												
SUT 287-4					96	86	83	76	71	67	62	61	57	53	51	48	45	43	41		38		35	33	31												
SUT 288-4						96	89	83	80	73	72	67	64	61	57	54	52	49		46		42	39	37													
SUT 289-4							96	92	84	82	77	72	69	66	62	59	56		52		48	45	42														
SUT 2810-4																																					
Avg. Tube Vel. 28"-4-Pass				1.0 ft./ sec.	1.4	1.6	1.9	2.2	2.4	2.7	3.0	3.2	3.5	3.8	4.0	4.3	4.6	4.9	5.1	5.4	5.7	5.9	6.2	6.5	7.0	7.5											
SUT 284-2												26	24	23	22	21	20.5	20	19	18		17		16	15	14	13	12	11.5	11	10	9.5	8.5	7.5	6.5	6	
SUT 285-2												31	29	28	27	26	25	24.5	24	23		21		20	19	18	17	16	15	14.5	14	13	12				
SUT 286-2												40	37	36	35	34	33	32	31	30		27		26	24	23	22	21	20	19	18	17	16	14	13	12	
SUT 287-2												47	44	43	42	40	39	37	36	35		33		32	30	29	27	25	24	23	22	20	18	16.5	15		
SUT 288-2												55	51	49	48	46	45	43	42	41		38		37	35	34	32	30	29	27	26	25	23	21	19.5	18	
SUT 289-2												63	59	57	55	52	51	50	48	47		44		43	40	39	36	34	33	32	30	29	27	24	22	20	
SUT 2810-2												72	67	65	63	60	59	57	54	53		50		48	45	43	41	39	37	36	35	33	30	27	25	23	
Avg. Tube Vel. 28"-2-Pass				1.0 ft./ sec.	1.1	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.3	2.5	2.6	2.7	2.9	3.0	3.1	3.4	3.6	3.9	4.1	4.4	4.7	5.0	5.3	5.8	6.3	6.8	7.4				

30" DIAMETER "SUT" CAPACITY TABLE

Select "SUT" by moving down G.P.M. column until temperature factor is reached. Pressure drop in feet is shown in red. P.D. omitted below 1 ft.

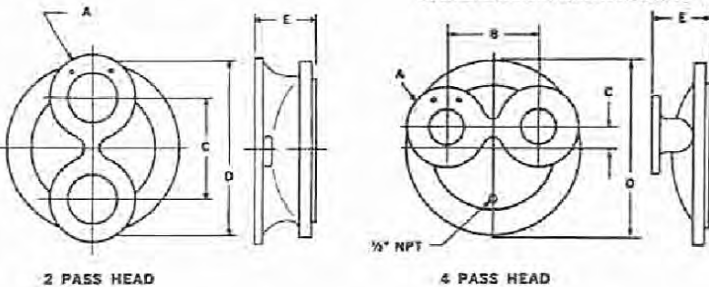
"SUT" Number	G.P.M. HEATED IN TUBES																																				
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	2800	3000	3100		
SUT 304-6					58	54	48	44	41	38	34	32	31	29	27	25	24	22	21																		
SUT 305-6					80	72	66	61	56	52	48	46	44	42	39	37	35	33	32																		
SUT 306-6					91	84	76	70	65	61	57	55	52	51	47	45	43	41																			
SUT 307-6					93	87	81	76	72	69	65	63	59	56	53	50																					
SUT 308-6					95	89	84	81	77	73	69	66	62	59																							
SUT 309-6					96	93	87	82	78	75	72	69																									
SUT 3010-6					97	92	87	84	80	77																											
					2.3																																
Avg. Tube Vel 30"-6-Pass				ft./ sec.	2.6	3.0	3.4	3.7	4.1	4.5	4.9	5.2	5.6	6.0	6.3	6.7	7.1	7.5																			
SUT 304-4					56	52	47	44	42	38	36	34	33	31	30	27	26	25	23	21	19	17	16	15	14												
SUT 305-4					73	67	59	56	52	48	46	43	41	39	38	35	34	32	31	28	26	24	22	21	20												
SUT 306-4					87	83	74	71	65	60	58	55	52	50	48	45	43	41	39	36	33	31	29	27	26												
SUT 307-4					97	87	84	78	73	70	67	63	60	58	54	52	50	47	43	40	37	35	33	32													
SUT 308-4					97	93	87	82	79	74	71	68	65	62	60	56	51	48	45	42	40	37															
SUT 309-4					96	91	85	81	78	73	70	67	64	58	55	51	48	45	42																		
SUT 3010-4					95	91	88	83	80	76	72	66	62	58	54	51	49																				
					1.0																																
Avg. Tube Vel. 30"-4-Pass			ft./ sec.	1.2	1.4	1.6	1.9	2.1	2.4	2.6	2.8	3.0	3.3	3.5	3.7	4.0	4.2	4.4	4.7	5.2	5.6	6.1	6.5	7.0	7.5												
SUT 304-2											26	25.5	25	24	23	22	21.5	21	20	18	17.5	17	16	15	14	13.5	13										
SUT 305-2											32	31	30	29	28	27	26.5	26	25	23	22	21	20	19	18	17	16.5										
SUT 306-2											41	39	38	37	35	34.5	34	33	31	29	28	27	25	24	23	22	21	19	17.5	16	14.5	13.5	13				
SUT 307-2											48	46	45	43	42	41	40	38	37	35	34	33	31	30	28	27	26	23	21.5	20	18	17	16.5				
SUT 308-2											56	54	52	50	48	47	46	44	42	41	39	38	35	34	33	32	30	27	25	23	21.5	20	19	18			
SUT 309-2											65	62	60	58	55	53	52	51	48	46	45	43	41	39	37	36	34	31	28.5	26	24.5	23	22				
SUT 3010-2											73	70	68	66	63	61	60	58	55	52	50	48	46	44	42	40	38	35	32	30	28	26	25	24			
					1.0																																
Avg. Tube Vel. 30"-2-Pass			ft./ sec.	1.1	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3	2.5	2.7	3.0	3.2	3.4	3.7	3.9	4.1	4.4	4.6	5.0	5.5	6.0	6.4	6.9	7.1							

TYPE "SUT" HEAT EXCHANGERS ("U" Tube Design)



Room for removal of tube bundle, equal to or greater than "A", should be provided.

150 PSI DESIGN PRESSURE HEADS Available only on the following units.



2-PASS					4-PASS				
SHELL DIA.	FLG A	C	D	E	SHELL DIA.	FLG A	B	C	D
10"	4	9 1/4	14 1/4	5 1/2	10"		NOT AVAILABLE		
12"	4	9 1/4	16 1/4	5	12"		NOT AVAILABLE		
14"	5	10 1/4	17 1/4	6 1/2	14"	4	9 1/4	2 1/4	17 1/4
16"	6	11 1/4	19 1/4	6 1/2	16"	4	9 1/4	2 1/4	19 1/4
18"	6	11 1/4	22	7 1/4	18"	4	9 1/4	4 1/4	22
20"	8	13 1/4	24	8	20"	6	11 1/4	3 1/4	24

Flange connections for field piping drilled and faced per 150# ANSI standards.

DIMENSIONS

"SUT" type U tube
Shell diameter in inches
Tube length in feet
Number of tube passes

Complete sales number consists of example: SUT-86-6

UNIT NUMBER			HEAD DIMENSIONS IN INCHES									DIMENSIONS IN INCHES									HEATING SURFACE SQ. FT.			Approx. Shpg. Wt.
			2 Pass		4 Pass				6 Pass			2, 4 & 6 Pass												
2 Pass	4 Pass	6 Pass	W	R	L	M	N	Z	P	T	Y	A	B	E	F	G	H	S	X	Y	2 Pass	4 Pass	6 Pass	(lbs.)
SUT 42-2	SUT 42-4		1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	29	7	16¼	4½	3¼	7¼	3¼	1¼ NPT	1 NPT	4.5	4.5	—	56
SUT 43-2	SUT 43-4		1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	41	7	28¼	4½	3¼	7¼	3¼	1¼ NPT	1 NPT	6.8	6.8	—	70
SUT 44-2	SUT 44-4	Not	1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	53	7	40¼	4½	3¼	7¼	3¼	1¼ NPT	1 NPT	9.2	9.2	—	84
SUT 45-2	SUT 45-4	Available	1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	65	7	52¼	4½	3¼	7¼	3¼	1¼ NPT	1 NPT	11.5	11.5	—	98
SUT 46-2	SUT 46-4		1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	77	7	64¼	4½	3¼	7¼	3¼	1½ NPT	1 NPT	13.9	13.9	—	112
SUT 47-2	SUT 47-4		1½ NPT	2½	1	2¼	1¾	1 NPT	—	—	—	89	7	76¼	4½	3¼	7¼	3¼	2 NPT	1 NPT	16.9	16.9	—	126
SUT 62-2	SUT 62-4	SUT 62-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	28¼	7¼	15½	6¼	4¼	10½	4¼	1½ NPT	1 NPT	8.0	8.0	6.0	68
SUT 63-2	SUT 63-4	SUT 63-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	40¼	7¼	27½	6¼	4¼	10½	4¼	2 NPT	1 NPT	12.7	12.7	9.6	93
SUT 64-2	SUT 64-4	SUT 64-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	52¼	7¼	39½	6¼	4¼	10½	4¼	2½ NPT	1 NPT	17.4	17.4	13.1	118
SUT 65-2	SUT 65-4	SUT 65-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	64¼	7¼	51½	6¼	4¼	10½	4¼	2½ NPT	1 NPT	22.1	22.1	16.7	143
SUT 66-2	SUT 66-4	SUT 66-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	76¼	7¼	63½	6¼	4¼	10½	4¼	3 NPT	1 NPT	26.8	26.8	20.2	168
SUT 67-2	SUT 67-4	SUT 67-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	88¼	7¼	75½	6¼	4¼	10½	4¼	3 NPT	1 NPT	31.5	31.5	23.8	193
SUT 68-2	SUT 68-4	SUT 68-6	2 NPT	3¼	1½	3¼	2¼	1½ NPT	2½	2¼	1¼ NPT	100¼	7¼	87½	6¼	4¼	10½	4¼	3 NPT	1 NPT	36.2	36.2	27.3	218
SUT 82-2	SUT 82-4	SUT 82-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	29	9¼	13	8¼	5¼	12¼	5¼	2 NPT	1 NPT	15	15	12	112
SUT 83-2	SUT 83-4	SUT 83-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	41	9¼	25	8¼	5¼	12¼	5¼	2½ NPT	1 NPT	23	23	19	148
SUT 84-2	SUT 84-4	SUT 84-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	53	9¼	37	8¼	5¼	12¼	5¼	3 NPT	1 NPT	32	32	26	184
SUT 85-2	SUT 85-4	SUT 85-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	65	9¼	49	8¼	5¼	12¼	8¼	4 FLG	1 NPT	41	41	33	220
SUT 86-2	SUT 86-4	SUT 86-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	77	9¼	61	8¼	5¼	12¼	8¼	4 FLG	1½ NPT	49	49	41	256
SUT 87-2	SUT 87-4	SUT 87-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	89	9¼	73	8¼	5¼	12¼	8¼	4 FLG	1½ NPT	58	58	48	292
SUT 88-2	SUT 88-4	SUT 88-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	101	9¼	85	8¼	5¼	12¼	8¼	6 FLG	1½ NPT	67	67	55	328
SUT 89-2	SUT 89-4	SUT 89-6	3 NPT	5	2	4	3½	2 NPT	3	3¼	2 NPT	113	9¼	97	8¼	5¼	12¼	8¼	6 FLG	1½ NPT	75	75	62	364

Dimensions are subject to change. If exact dimension are needed for layout, write for certified prints.

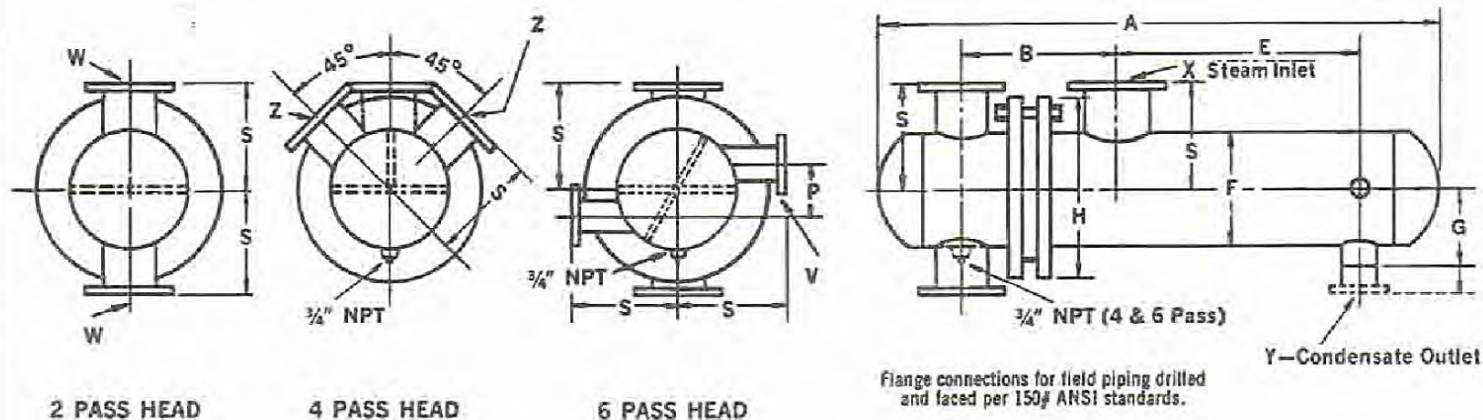
(continued next page)

TYPE "SUT" HEAT EXCHANGERS ("U" Tube Design) DIMENSIONS (continued)

Complete sales number consists of example: "SUT-86-6"
 "SUT" type U tube
 Shell diameter in inches
 Tube length in feet
 Number of tube passes

UNIT NUMBER			HEAD DIMENSIONS IN INCHES									DIMENSIONS IN INCHES										HEATING SURFACE SQ. FT.			Approx. Shpg. Wt.
			2 Pass		4 Pass			6 Pass				2 4" - 6 Pass, 4" thru 12" only													
2 Pass	4 Pass	6 Pass	W	R	L	M	N	Z	P	T	V	A	B	E	F	G	H	S	X	Y	2 Pass	4 Pass	6 Pass	(lbs.)	
SUT102-2	SUT102-4	SUT102-6	4 NPT	5 1/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	29 1/2	10	11 3/8	10 3/4	6	14 5/8	7 3/8	3 NPT	1 NPT	27	25	21	184	
SUT103-2	SUT103-4	SUT103-6	4 NPT	5 7/8	2 7/8	4 3/4	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	41 1/2	10	23 1/4	10 3/4	6	14 5/8	5 1/8	4 FLG	1 NPT	42	39	33	230	
SUT104-2	SUT104-4	SUT104-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	53 1/2	10	35 3/4	10 3/4	6 1/2	14 5/8	3 1/8	4 FLG	1 1/4 NPT	56	53	45	276	
SUT105-2	SUT105-4	SUT105-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	65 1/2	10	47 3/4	10 3/4	6 1/2	14 5/8	3 1/8	5 FLG	1 1/4 NPT	71	68	56	322	
SUT106-2	SUT106-4	SUT106-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	77 1/2	10	59 3/4	10 3/4	6 5/8	14 5/8	3 1/8	5 FLG	1 1/2 NPT	86	82	68	368	
SUT107-2	SUT107-4	SUT107-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	89 1/2	10	71 3/4	10 3/4	6 5/8	14 5/8	3 1/8	5 FLG	1 1/2 NPT	101	96	80	414	
SUT108-2	SUT108-4	SUT108-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	101 1/2	10	83 3/4	10 3/4	6 5/8	14 5/8	3 1/8	5 FLG	2 NPT	116	110	92	460	
SUT109-2	SUT109-4	SUT109-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	113 1/2	10	95 3/4	10 3/4	6 5/8	14 5/8	3 1/8	5 FLG	2 NPT	131	124	104	506	
SUT1010-2	SUT1010-4	SUT1010-6	4 NPT	5 7/8	2 3/8	4 3/8	4 7/8	3 NPT	3 1/2	4 1/8	2 1/2 NPT	125 1/2	10	107 3/4	10 3/4	6 5/8	14 5/8	3 1/8	5 FLG	2 NPT	146	138	116	552	
SUT123-2	SUT123-4	SUT123-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	41 7/8	12	31 1/2	12 3/4	7 3/8	15 3/8	10 3/8	4 FLG	1 1/4 NPT	61	58	50	294	
SUT124-2	SUT124-4	SUT124-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	53 7/8	12	33 1/2	12 3/4	7 3/8	15 3/8	10 3/8	5 FLG	1 1/4 NPT	83	78	68	363	
SUT125-2	SUT125-4	SUT125-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	65 7/8	12	45 1/2	12 3/4	7 3/8	15 3/8	10 3/8	5 FLG	1 1/2 NPT	104	98	85	432	
SUT126-2	SUT126-4	SUT126-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	77 7/8	12	57 1/2	12 3/4	7 3/8	15 3/8	10 3/8	5 FLG	2 NPT	126	119	103	501	
SUT127-2	SUT127-4	SUT127-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	89 7/8	12	69 1/2	12 3/4	7 3/8	15 3/8	10 3/8	5 FLG	2 NPT	147	139	121	570	
SUT128-2	SUT128-4	SUT128-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	101 7/8	12	81 1/2	12 3/4	7 3/8	15 3/8	10 3/8	5 FLG	2 NPT	169	160	139	639	
SUT129-2	SUT129-4	SUT129-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	113 7/8	12	93 1/2	12 3/4	8 1/8	15 3/8	10 3/8	5 FLG	2 1/2 NPT	191	180	156	708	
SUT1210-2	SUT1210-4	SUT1210-6	4 NPT	7 3/8	2 5/8	5 3/8	5 7/8	4 NPT	4 1/2	5 1/2	3 NPT	125 7/8	12	105 1/2	12 3/4	8 1/8	15 3/8	10 3/8	5 FLG	2 1/2 NPT	212	200	174	777	
SUT143-2	SUT143-4	SUT143-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	46 1/4	15 1/8	21 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	1 1/4 NPT	86	83	72	449	
SUT144-2	SUT144-4	SUT144-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	58 1/4	15 1/8	33 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	2 NPT	116	111	97	534	
SUT145-2	SUT145-4	SUT145-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	70 1/4	15 1/8	45 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	2 NPT	146	139	122	619	
SUT146-2	SUT146-4	SUT146-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	82 1/4	15 1/8	57 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	2 NPT	176	167	147	704	
SUT147-2	SUT147-4	SUT147-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	94 1/4	15 1/8	69 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	2 1/2 NPT	204	196	171	789	
SUT148-2	SUT148-4	SUT148-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	106 1/4	15 1/8	81 3/4	14	8 3/8	17 1/8	11 1/8	5 FLG	2 1/2 NPT	234	224	196	874	
SUT149-2	SUT149-4	SUT149-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	118 1/4	15 1/8	93 3/4	14	8 3/8	17 1/8	11 1/8	10 FLG	2 1/2 NPT	263	252	221	959	
SUT1410-2	SUT1410-4	SUT1410-6	6 NPT	8	3 1/8	5 7/8	6 1/8	4 NPT	—	—	3 FLG	130 1/4	15 1/8	105 3/4	14	8 3/8	17 1/8	11 1/8	10 FLG	3 NPT	292	280	246	1044	
SUT153-2	SUT153-4	SUT153-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	47 1/8	16 3/8	21	16	9 1/8	19 1/8	12 3/8	5 FLG	1 1/2 NPT	112	106	96	570	
SUT154-2	SUT154-4	SUT154-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	59 1/8	16 3/8	33	16	9 1/8	19 1/8	12 3/8	5 FLG	2 NPT	150	143	129	675	
SUT155-2	SUT155-4	SUT155-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	71 1/8	16 3/8	45	16	9 1/8	19 1/8	12 3/8	5 FLG	2 1/2 NPT	188	180	162	780	
SUT156-2	SUT156-4	SUT156-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	83 1/8	16 3/8	57	16	9 1/8	19 1/8	12 3/8	5 FLG	2 1/2 NPT	227	217	195	885	
SUT157-2	SUT157-4	SUT157-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	95 1/8	16 3/8	69	16	9 1/8	19 1/8	12 3/8	10 FLG	2 1/2 NPT	265	254	228	990	
SUT158-2	SUT158-4	SUT158-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	107 1/8	16 3/8	81	16	9 1/8	19 1/8	12 3/8	10 FLG	3 NPT	304	291	261	1095	
SUT159-2	SUT159-4	SUT159-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	119 1/8	16 3/8	93	16	9 1/8	19 1/8	12 3/8	10 FLG	3 NPT	342	327	294	1200	
SUT1610-2	SUT1610-4	SUT1610-6	6 NPT	9 1/8	4	8	7 1/8	4 NPT	—	—	4 FLG	131 1/8	16 3/8	105	16	9 1/8	19 1/8	12 3/8	10 FLG	3 NPT	380	363	327	1305	
SUT183-2	SUT183-4	SUT183-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	49 1/8	17 3/8	21 1/8	18	10 1/8	22	13 1/8	6 FLG	2 NPT	148	148	136	712	
SUT184-2	SUT184-4	SUT184-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	61 1/8	17 3/8	33 1/8	18	10 1/8	22	13 1/8	8 FLG	2 NPT	195	195	179	836	
SUT185-2	SUT185-4	SUT185-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	73 1/8	17 3/8	45 1/8	18	10 1/8	22	13 1/8	8 FLG	2 1/2 NPT	242	242	223	960	
SUT186-2	SUT186-4	SUT186-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	85 1/8	17 3/8	57 1/8	18	10 1/8	22	13 1/8	10 FLG	3 NPT	290	290	266	1084	
SUT187-2	SUT187-4	SUT187-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	97 1/8	17 3/8	69 1/8	18	10 1/8	22	13 1/8	10 FLG	3 NPT	339	339	309	1208	
SUT188-2	SUT188-4	SUT188-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	109 1/8	17 3/8	81 1/8	18	10 1/8	22	13 1/8	10 FLG	3 NPT	387	387	352	1332	
SUT189-2	SUT189-4	SUT189-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	121 1/8	17 3/8	93 1/8	18	10 1/8	22	13 1/8	12 FLG	3 NPT	435	435	398	1456	
SUT1810-2	SUT1810-4	SUT1810-6	6 NPT	11	4 5/8	9 1/4	8 3/8	4 NPT	—	—	4 FLG	133 1/8	17 3/8	105 1/8	18	10 1/8	22	13 1/8	12 FLG	4 FLG	483	483	439	1580	
SUT203-2	SUT203-4	SUT203-6	8 NPT	10 3/8	4 3/8	8 3/4	9 1/2	6 NPT	—	—	5 FLG	51 1/8	21 3/8	19	20	11 1/8	24	14 1/8	8 FLG	2 NPT	194	188	182	1001	
SUT204-2	SUT204-4	SUT204-6	8 NPT	10 3/8	4 3/																				

TYPE "SUT" HEAT EXCHANGERS ("U" Tube Design) DIMENSIONS (continued)



UNIT NUMBER			DIMENSION IN INCHES																	HEATING SURFACE			Approx. Shpg. Wt. (lbs.)
			2 Pass			4 Pass			6 Pass			2, 4 & 6 Pass								SQ. FT.			
			A	B	W FLG	A	B	2 FLG	A	B	P	V FLG	E	F	G	H	S	X FLG	Y	2 Pass	4 Pass	6 Pass	
SUT 223-2	SUT 223-4	SUT 223-6	69%	19%	10	63 ¹ / ₂ %	17%	6	62%	16%	11	5	23%	22	13	26%	15%	8	2 ¹ / ₂ NPT	255	249	228	1316
SUT 224-2	SUT 224-4	SUT 224-6	81%	21%	10	75 ¹ / ₂ %	18%	6	76%	18%	11	5	36%	22	13	26%	15%	10	3 NPT	333	325	288	1509
SUT 225-2	SUT 225-4	SUT 225-6	93%	21%	10	87 ¹ / ₂ %	18%	6	86%	18%	11	5	46%	22	13	26%	15%	10	3 NPT	411	401	369	1675
SUT 226-2	SUT 226-4	SUT 226-6	105%	22%	10	99 ¹ / ₂ %	20%	6	98%	19%	11	5	56%	22	15%	26%	15%	12	4 FLG	489	477	438	1905
SUT 227-2	SUT 227-4	SUT 227-6	117%	22%	10	111 ¹ / ₂ %	20%	6	110%	19%	11	5	68%	22	15%	26%	15%	12	4 FLG	568	554	508	2072
SUT 228-2	SUT 228-4	SUT 228-6	129%	23%	10	123 ¹ / ₂ %	21%	6	122%	20%	11	5	79%	22	15%	26%	15%	14	4 FLG	645	630	578	2292
SUT 229-2	SUT 229-4	SUT 229-6	141%	23%	10	135 ¹ / ₂ %	21%	6	136%	20%	11	5	91%	22	15%	26%	15%	14	4 FLG	724	706	647	2458
SUT 2210-2	SUT 2210-4	SUT 2210-6	153%	24%	10	147 ¹ / ₂ %	22%	6	146%	21%	11	5	101 ¹ / ₂ %	22	15%	26%	15%	16	6 FLG	803	782	718	2675
SUT 244-2	SUT 244-4	SUT 244-6	82%	21%	10	79 ¹ / ₂ %	20%	8	77 ¹ / ₂ %	19%	12	6	33%	24	14	28%	16%	10	3 NPT	394	385	370	1753
SUT 245-2	SUT 245-4	SUT 245-6	96%	23%	10	91 ¹ / ₂ %	22%	8	89%	20%	12	6	43%	24	16%	28%	16%	12	4 FLG	480	479	457	2012
SUT 246-2	SUT 246-4	SUT 246-6	106%	23%	10	103 ¹ / ₂ %	22%	8	101 ¹ / ₂ %	20%	12	6	55%	24	16%	28%	16%	12	4 FLG	586	572	545	2207
SUT 247-2	SUT 247-4	SUT 247-6	118%	24%	10	115 ¹ / ₂ %	23%	8	113 ¹ / ₂ %	21%	12	6	66%	24	16%	28%	16%	14	4 FLG	681	666	632	2456
SUT 248-2	SUT 248-4	SUT 248-6	130%	25%	10	127 ¹ / ₂ %	24%	8	125 ¹ / ₂ %	23%	12	6	75 ¹ / ₂ %	24	16%	28%	16%	16	6 FLG	777	759	719	2696
SUT 249-2	SUT 249-4	SUT 249-6	142%	25%	10	139 ¹ / ₂ %	24%	8	137 ¹ / ₂ %	23%	12	6	87 ¹ / ₂ %	24	16%	28%	16%	16	6 FLG	873	853	806	2897
SUT 2410-2	SUT 2410-4	SUT 2410-6	154%	25%	10	151 ¹ / ₂ %	24%	8	149 ¹ / ₂ %	23%	12	6	99 ¹ / ₂ %	24	16%	28%	16%	16	6 FLG	969	946	893	3092
SUT 264-2	SUT 264-4	SUT 264-6	88%	25 ¹ / ₂ %	12	82 ¹ / ₂ %	22%	8	79 ¹ / ₂ %	21 ¹ / ₂ %	12	6	32%	26	15	30%	17%	12	3 NPT	488	475	447	2365
SUT 265-2	SUT 265-4	SUT 265-6	100%	25 ¹ / ₂ %	12	94 ¹ / ₂ %	22%	8	91 ¹ / ₂ %	21 ¹ / ₂ %	12	6	44%	26	17%	30%	17%	12	4 FLG	600	585	549	2603
SUT 266-2	SUT 266-4	SUT 266-6	112%	26%	12	106 ¹ / ₂ %	23%	8	103 ¹ / ₂ %	22%	12	6	55%	26	17%	30%	17%	14	4 FLG	712	694	651	2880
SUT 267-2	SUT 267-4	SUT 267-6	124%	27%	12	118 ¹ / ₂ %	25	8	115 ¹ / ₂ %	23%	12	6	64 ¹ / ₂ %	26	17%	30%	17%	16	6 FLG	823	803	754	3152
SUT 268-2	SUT 268-4	SUT 268-6	136%	27%	12	130 ¹ / ₂ %	25	8	127 ¹ / ₂ %	23%	12	6	76 ¹ / ₂ %	26	17%	30%	17%	16	6 FLG	935	912	856	3375
SUT 269-2	SUT 269-4	SUT 269-6	148%	28%	12	142 ¹ / ₂ %	25%	8	139 ¹ / ₂ %	24 ¹ / ₂ %	12	6	87 ¹ / ₂ %	26	17%	30%	17%	18	6 FLG	1047	1021	959	3645
SUT 2610-2	SUT 2610-4	SUT 2610-6	160%	28 ¹ / ₂ %	12	154 ¹ / ₂ %	25%	8	151 ¹ / ₂ %	24 ¹ / ₂ %	12	6	99 ¹ / ₂ %	26	17%	30%	17%	18	6 FLG	1159	1130	1061	3868
SUT 284-2	SUT 284-4	SUT 284-6	78%	25%	12	75%	24 ¹ / ₂ %	10	70 ¹ / ₂ %	21%	12	6	20%	28	18%	32%	18%	12	4 FLG	456	447	420	2430
SUT 285-2	SUT 285-4	SUT 285-6	90%	26%	12	87%	25%	10	82 ¹ / ₂ %	22%	12	6	31%	28	18%	32%	18%	14	4 FLG	587	575	540	2742
SUT 286-2	SUT 286-4	SUT 286-6	102%	27%	12	99%	26%	10	94 ¹ / ₂ %	23%	12	6	41 ¹ / ₂ %	28	18%	32%	18%	16	6 FLG	717	703	661	3050
SUT 287-2	SUT 287-4	SUT 287-6	114%	27%	12	111 ¹ / ₂ %	26%	10	106 ¹ / ₂ %	23%	12	6	53 ¹ / ₂ %	28	18%	32%	18%	16	6 FLG	848	831	781	3308
SUT 288-2	SUT 288-4	SUT 288-6	126%	28%	12	123%	27%	10	118 ¹ / ₂ %	24%	12	6	64%	28	18%	32%	18%	18	6 FLG	978	959	901	3813
SUT 289-2	SUT 289-4	SUT 289-6	138%	28%	12	135%	27 ¹ / ₂ %	10	130 ¹ / ₂ %	24%	12	6	76%	28	18%	32%	18%	18	6 FLG	1110	1088	1022	3872
SUT 2810-2	SUT 2810-4	SUT 2810-6	150%	29%	12	147%	28%	10	142 ¹ / ₂ %	25%	12	6	87 ¹ / ₂ %	28	18%	32%	18%	20	6 FLG	1240	1216	1142	4183
SUT 304-2	SUT 304-4	SUT 304-6	82%	26%	14	77%	24%	10	74 ¹ / ₂ %	23%	14 ¹ / ₂ %	8	21 ¹ / ₂ %	30	19%	34%	19%	12	4 FLG	539	529	499	2980
SUT 305-2	SUT 305-4	SUT 305-6	94%	29%	14	89%	26%	10	86 ¹ / ₂ %	25%	14 ¹ / ₂ %	8	31%	30	19%	34%	19%	16	4 FLG	690	676	639	3329
SUT 306-2	SUT 306-4	SUT 306-6	106%	29%	14	101%	26%	10	98 ¹ / ₂ %	25%	14 ¹ / ₂ %	8	41 ¹ / ₂ %	30	19%	34%	19%	16	6 FLG	840	822	778	3627
SUT 307-2	SUT 307-4	SUT 307-6	118%	29%	14	113%	27%	10	110 ¹ / ₂ %	26%	14 ¹ / ₂ %	8	53 ¹ / ₂ %	30	19%	34%	19%	18	6 FLG	991	970	917	3962
SUT 308-2	SUT 308-4	SUT 308-6	130%	29%	14	125%	27%	10	122 ¹ / ₂ %	26%	14 ¹ / ₂ %	8	65 ¹ / ₂ %	30	19%	34%	19%	18	6 FLG	1139	1116	1056	4249
SUT 309-2	SUT 309-4	SUT 309-6	142%	31%	14	137%	28%	10	134 ¹ / ₂ %	27%	14 ¹ / ₂ %	8	75 ¹ / ₂ %	30	19%	34%	19%	20	6 FLG	1289	1264	1195	4591
SUT 3010-2	SUT 3010-4	SUT 3010-6	154%	31%	14	149%	28%	10	146 ¹ / ₂ %	27%	14 ¹ / ₂ %	8	87 ¹ / ₂ %	30	19%	34%	19%	20	6 FLG	1439	1410	1333	4879

Dimensions are subject to change. If exact dimensions are needed for layout, write for certified prints.

TYPE "SUT" WATER HEATERS

TYPICAL APPLICATIONS

As a Converter

1. The "SUT" Convertors are widely used for comfort heating of Apartment Buildings, Hotels Hospitals, Schools, Industrial and Process Plants and Office Buildings.
2. High Rise Buildings utilize the "SUT" to withstand high static pressures so that low pressure steam boilers can be used instead of costly high pressure boilers.
3. An "SUT" heater can be controlled to produce the relatively low temperatures required for radiant panel heating systems. In industrial plants where steam boilers are used for process work, this affords an opportunity to provide the most comfortable type of heating for the building.
4. Snow melting panels are widely used to eliminate labor and dangerous conditions. Sidewalks and driveways are easily kept clear of snow and ice by means of anti-freeze solutions circulated through pipe coils imbedded in concrete.

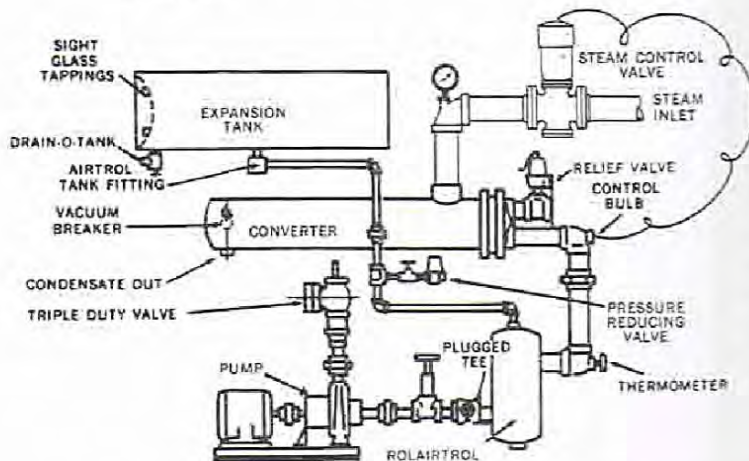


Figure 1—Typical installation of "SUT" Heat Exchanger when used as a Converter.

As an Instantaneous Water Heater

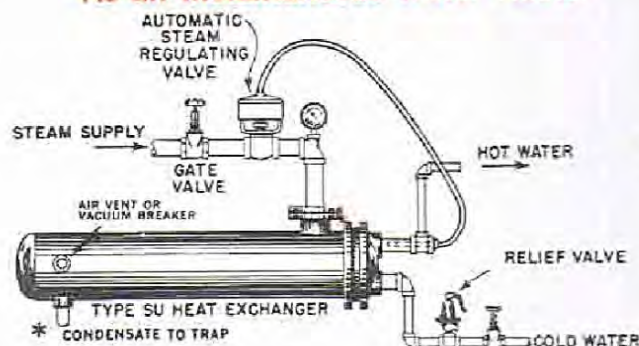


Figure 2—Typical installation of "SUT" Heat Exchanger when used as an Instantaneous Heater.

As an Instantaneous Water Heater

1. The "SUT" Heater provides an efficient, low cost method of heating faucet water for Apartment Buildings, Hotels, Hospitals, Schools and industrial plants. Comparatively small units produce large volumes of hot water, when a proper steam control valve is used.
2. When sufficient steam is not available to instantaneously heat water, or when large capacities are required for short intervals, the "SUT" may be used in conjunction with a storage tank.
3. The "SUT" also may be used as a swimming pool heater. Normally, the smallest unit that can handle the flow rate of the filter pump will adequately heat pool water.

* CAUTION!

Steam hammer can cause serious damage to the tubes of any Heat Exchanger. A careful consideration of the following points before an installation is made can prevent costly repairs which may be caused by steam hammer.

1. A vacuum breaker and/or vent, should be used in accordance with the type of steam system installed.
2. The proper trap for the steam system installed should be used.
3. The trap and the condensate return line to the trap should be properly sized for the total capacity of the converter.
4. The trap should be sized for the differential pressure across the trap, not the inlet pressure to the steam controller.
5. A properly sized relief valve must be installed on the heated water side to protect heat exchangers from possible damage due to volumetric expansion.

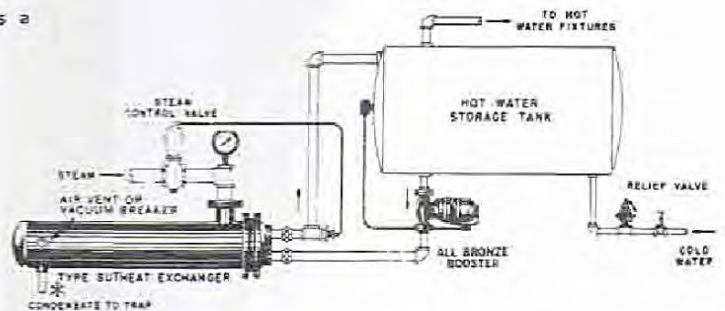
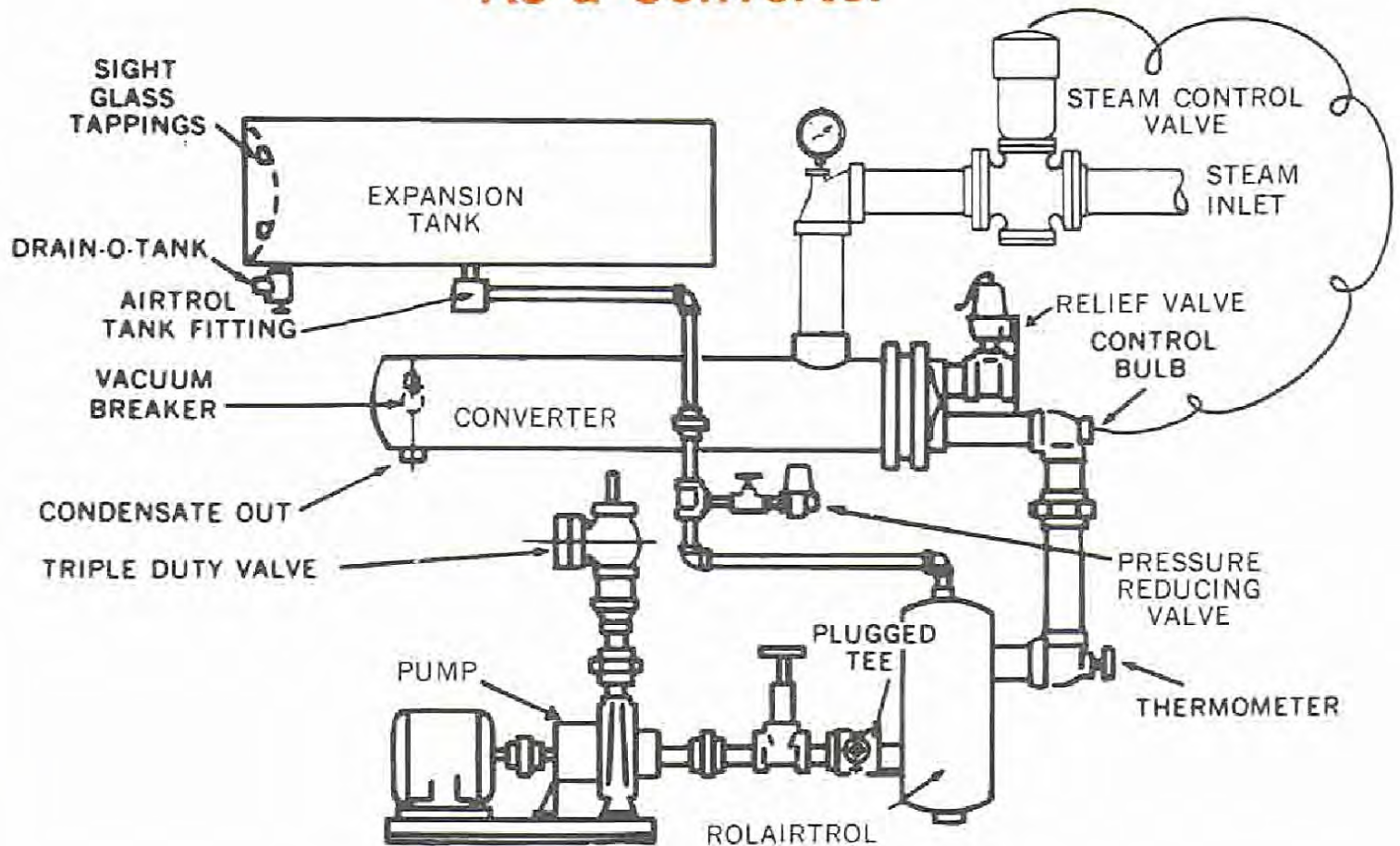


Figure 3—Typical installation of "SUT" Heat Exchanger when used with storage tank.

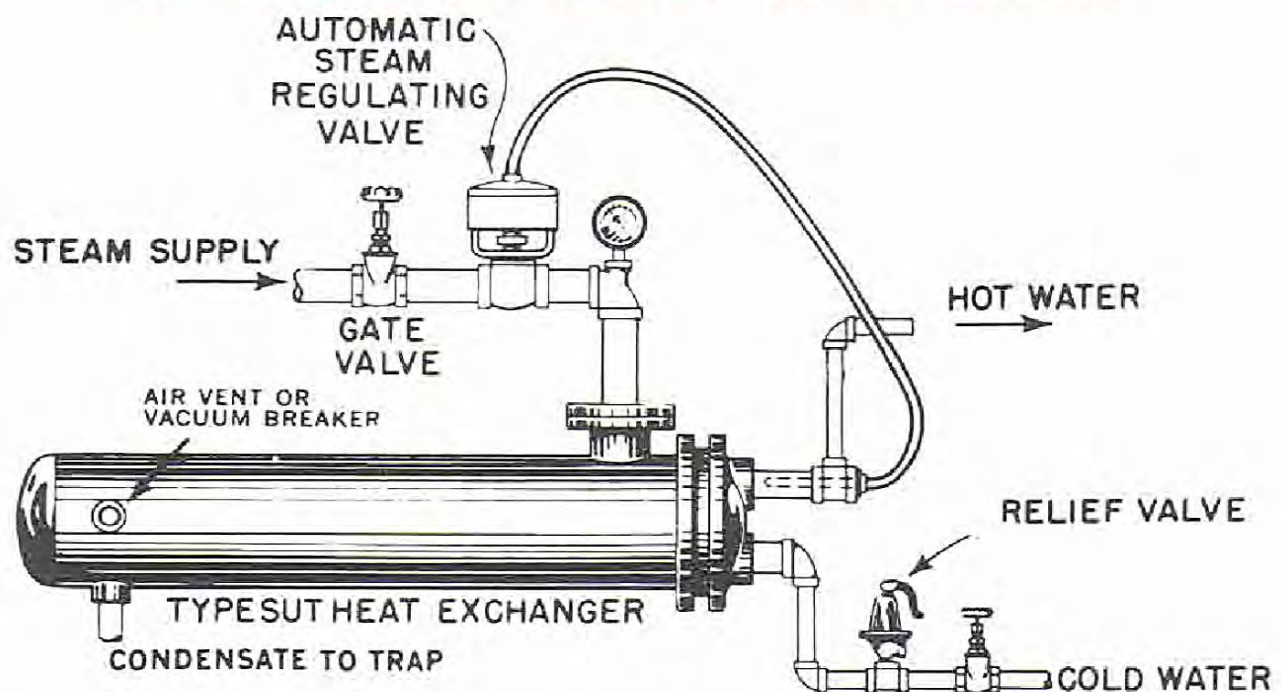
1 Swimming Pool water may be corrosive to copper. 90/10 Cupro-Nickel is available on special order.

As a Convertor



Typical installation of "SUT" Heat Exchanger when used as a Convertor.

As an Instantaneous Water Heater



Typical installation of "SUT" Heat Exchanger when used as an Instantaneous Heater.

TYPICAL SPECIFICATIONS

Furnish and install approximately where shown on plans and with manufacturer's recommendations. Heat exchangers according to the following specifications:

1. CAPACITY

- a. To heat _____ GPM from _____ F. to _____ °F. with _____ PSIG steam.
- b. Maximum tube velocity of 7.5' per second.
- c. Maximum water pressure drop _____ feet.
- d. Minimum scale factor _____
- e. Minimum shell diameter _____ inches.
- f. Maximum length _____ feet.
- g. Minimum tube surface _____ sq. ft.

2. TYPE

Shell and tube, U-bend removable tube bundle, steam in shell, water in tubes. Equipped with mounting legs.

3. MATERIALS

- a. Shell—steel.
- b. Tubes— $\frac{3}{4}$ " or $\frac{7}{8}$ " OD copper.
- c. Heads—cast iron or steel.
- d. Tube sheets—steel.
- e. Tube supports—steel.

4. CONSTRUCTION

Manufacturer's standard data report based on TEMA specification sheet for pressure vessels. Is to be furnished to the engineer for the owner upon request. This form must be signed by an authorized inspector certifying the data conforms to the latest standard code such as the ASME code for the pressure vessels.

Shell side _____ PSIG design pressure at _____ F.
Tube side _____ PSIG design pressure at _____ F.

5. INSTALLATION

- a. The steam supply line shall be adequately sized and equipped with a _____ inch steam control valve.

The steam control valve shall be actuated by a thermal control element in the hot water line from the Exchanger adjusted and set to maintain a temperature of _____ °F. in the water leaving the Exchanger.

Exchanger shall have adequate condensate return line equipped with proper trap for steam system.

- c. Exchanger shall be equipped with proper vacuum breaker and/or vent as required.

6. MANUFACTURER

The standard of the equipment required shall be given by the buyer.

- a. Exchangers are manufactured by TEHRAN MOBADDEL.
- b. Any other standard shall be manufactured upon the request of the buyer.

HEAD AND PRESSURE EQUIVALENTS

FEET HEAD OF WATER AND EQUIVALENT PRESSURES

PRESSURES AND EQUIVALENT FEET HEAD OF WATER

Feet Head	Pounds per Sq. In.	Feet Head	Pounds per Sq. In.	Feet Head	Pounds per Sq. In.	Feet Head	Pounds per Sq. In.	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head	Lbs. per Sq. In.	Feet Head
1	.43	30	12.99	140	60.63	300	129.93	1	2.31	20	46.18	120	277.07	225	519.51
2	.87	40	17.32	150	64.96	325	140.75	2	4.62	25	57.72	125	288.62	250	577.24
3	1.30	50	21.65	160	69.29	350	151.58	3	6.93	30	69.27	130	300.16	275	643.03
4	1.73	60	25.99	170	73.63	400	173.24	4	9.24	40	92.36	140	323.25	300	692.69
5	2.17	70	30.32	180	77.96	500	216.55	5	11.54	50	115.45	150	346.34	325	750.41
6	2.60	80	34.65	190	82.29	600	259.85	6	13.85	60	138.54	160	369.43	350	808.13
7	3.03	90	38.98	200	86.62	700	303.16	7	16.16	70	161.63	170	392.52	375	865.89
8	3.46	100	43.31	225	97.45	800	346.47	8	18.47	80	184.72	180	415.61	400	922.58
9	3.90	110	47.64	250	108.27	900	389.78	9	20.78	90	207.81	190	438.90	500	1154.48
10	4.33	120	51.97	275	119.10	1000	433.09	10	23.09	100	230.90	200	461.78	1000	2309.00
20	8.66	130	56.30					15	34.63	110	253.98				

CONVERSION FACTORS

TO CONVERT FROM	TO	MULTIPLY BY
Pressure		
Atmospheres.....	ft. of water.....	33.9
Atmospheres.....	mm. of mercury.....	760.0
Atmospheres.....	pounds/sq. in.....	14.696
Feet of water (40°F).....	pounds/sq. in.....	0.4335
Inches of mercury (32°F).....	feet of water (40°F).....	1.133
Inches of mercury (32°F).....	pounds/sq. in.....	0.49116
Inches of water (40°F).....	pounds/sq. in.....	0.03614
mm. of mercury (32°F).....	pounds/sq. in.....	0.01934
Pounds, sq. in.....	feet of water (40°F).....	2.3066
Pounds/sq. in.....	inches of mercury (32°F).....	2.036
Volume		
Barrels (oil).....	gallons.....	42.0
Barrels (breweries).....	gallons.....	31.0
Cubic cm.....	cubic inches.....	0.061025
Cubic ft.....	cubic inches.....	1728.0
Cubic ft.....	cubic meters.....	0.02832
Cubic ft.....	gallons.....	7.481
Cubic meters.....	gallons.....	264.17
Gallons.....	cubic ft.....	0.1337
Gallons.....	cubic inches.....	231.0
Gallons.....	gallons (British).....	0.83268
Gallons.....	liters.....	3.7853
Liters.....	gallons.....	0.2642
Liters.....	quarts.....	1.0567
Heat		
Boiler horsepower (BHP).....	BTU/hr.....	33479.0
BTU.....	calories (gram).....	252.0
BTU.....	calories (kg.).....	0.252
Calories (gram) per gram.....	BTU/pound/°F.....	1.0
Calories (gram) per gram.....	BTU/pound.....	1.8
Horsepower.....	BTU/hr.....	2545.0
K. W. hours.....	BTU.....	3413.0

TO CONVERT FROM	TO	MULTIPLY BY
Temperature		
Centigrade degrees.....	Fahrenheit degrees.....	1.8 and add 32°
Fahrenheit degrees.....	Centigrade degrees.....	Subtract 32° and multiply by
Measure		
Centimeters.....	inches.....	0.3937
Feet.....	meters.....	0.3048
Inches.....	centimeters.....	2.54
Kilometers.....	miles.....	0.6214
Meters.....	feet.....	3.2808
Microns.....	millimeters.....	0.001
Sq. meters.....	sq. feet.....	10.764
Weight		
Cubic ft. of water (60°F).....	pounds.....	62.37
Gallons.....	pounds of water (60°F).....	8.34
Grains.....	pounds.....	1/7000
Grains/gal.....	parts per million.....	17.12
Grams.....	grains.....	15.43
Kilograms.....	pounds.....	2.2046
Pounds.....	grams.....	453.59
Pounds.....	kilograms.....	0.4536
Tons (long).....	tons (short).....	1.12
Volumetric Rate		
Cubic ft./sec.....	gallons/min.....	448.83
Gallons/min.....	cu. ft./sec.....	0.00223
Power		
Horsepower.....	ft. lbs./sec.....	550.0
Horsepower.....	K.W.....	0.745
Viscosity		
Centipoises.....	lbs./sec. ft.....	0.000672
Poises.....	centipoises.....	0.01
Velocity		
Ft. sec.....	meters/sec.....	0.3048
Meters/sec.....	ft./sec.....	3.2808