



Bulletin C-130.1D

# Bell & Gossett



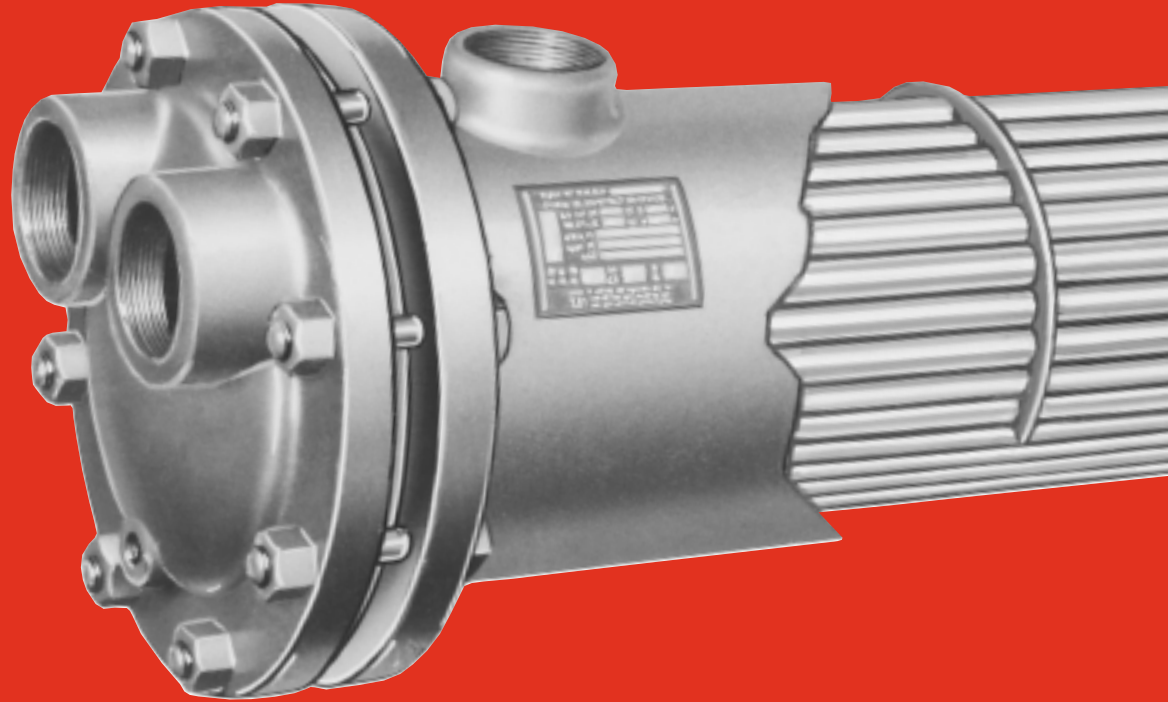
## Type "WU" Heat Exchangers

- Liquid to Liquid Heat Transfer
- "U" tube design



Bell & Gossett





## B&G TYPE "WU" HEAT EXCHANGERS

### GENERAL INFORMATION

The "WU" Heat Exchanger is an instantaneous type, designed to heat liquids. Water to water, being the most common application, is covered in the following selection procedures.

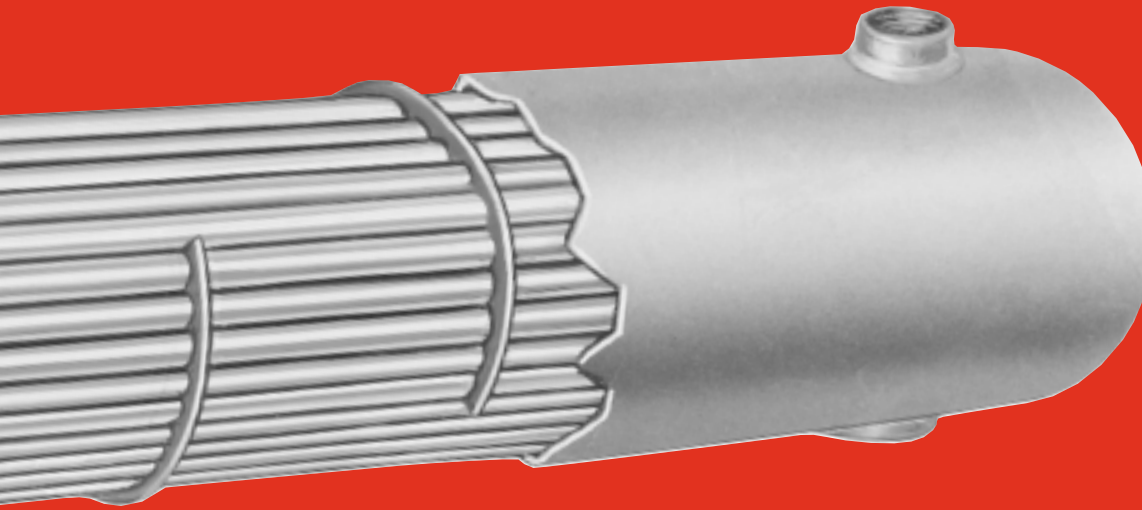
This catalog lists ratings for most commonly required system temperature rises for a wide range of heating water temperatures. *All ratings are based on the heating water in the shell and the water to be heated in the tubes.* (See Page 7 for reverse condition.)

"WU" Heat Exchangers can be used for many other heating and cooling applications. The selection methods for these applications become extensive and beyond the scope of the manual. For application other than water to water, contact your nearest B&G representative.

Type "WU" Heat Exchangers are suitable for use with any type of boiler or system when installed in accordance with the manufacturer's recommendations. Boiler rating should be checked to assure sufficient capacity to handle the load imposed by the "WU".

"WU" Heat Exchangers in 2 or 4-Pass construction can be *selected* from this Bulletin, in lengths to 10 feet and shell diameters to 30 inches. Consult the factory for 6-Pass\* construction, lengths in excess of 10 feet, and/or materials of construction other than listed herein.

*\*Due to the limited nature of their use, all 6 pass units must be selected by the factory. However dimensions are shown on pages 50, 51 and 52.*



## CONSTRUCTION FEATURES AND MATERIALS

### DESIGN PRESSURES AT 375°F

### MATERIAL SPECIFICATIONS – Cast Iron and Brass Units

SHELL DIAMETER	TUBESIDE (PSI)			TEST PRES. TUBES IN PSI	STANDARD UNIT		BRASS UNIT		** SHELL	TUBES	BAFFLES	NUTS & BOLTS	
	2 PASS	4 PASS	6 PASS		HEAD	TUBE SHEET	HEAD	*** TUBE SHEET					
4"	150	150	CONSULT FACTORY	300	CAST IRON BONNET	STEEL	CAST BRASS BONNET	ROLLED NAVAL BRASS	STEEL	3/4" O.D COPPER	STEEL	STEEL	
6"	150	150		300									
8"	150	150		300									
10"	125*	150		250 (2P) 300 (4P)									
12"	125*	125*		250 (2&4P) 300 (6P)									
14"	125*	125*		250									
16"	125*	125*		250									
18"	125*	125*		250									
20"	125*	125*		250									
22"	150	150		300									
24"	150	150		300									
26"	150	150		300									
28"	150	150		300									
30"	150	150		300									
						FABRICATED STEEL BONNET		NA					

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

\*\*All units 4" thru 30" diameter have a shell side design pressure of 150 psi and a test pressure of 300 psi.

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

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## 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 24 through 49). A change in overall length of an "WU" 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 1 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.

### 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
River Water:				
Mississippi	.003	.002	.004	.002
Delaware, Schuylkill	.003	.002	.004	.003
New York Bay	.003	.002	.004	.003

\* Reproduced with permission from TEMA Standards 5th Edition 1968.  
 \*\* 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.

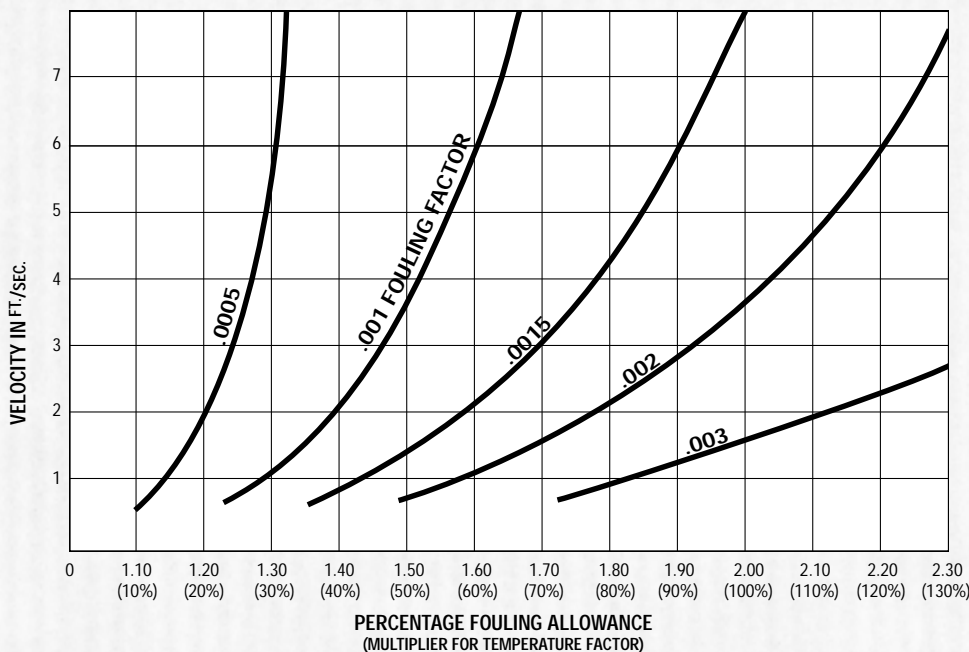
### FOULING ALLOWANCE

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.

### FOULING FACTORS CONVERSION TO PERCENTAGE OF FOULING

To include a Fouling Factor in an "WU" selection, use Chart 1 (below) to find the equivalent percentage of fouling allowance to correct any clean tube temperature factor. Chart 1 is applicable whether fouling exists on either the tube or shell side or both.

### CHART 1



### TUBE AND SHELL SIDE CORRECTION FACTORS

Average Temp. °F	Water Pressure Drop. Corr.
0°	-
40°	1.2
60°	1.12
80°	1.06
100°	1.0
120°	.95
140°	.91
160°	.87
180°	.83
200°	.80
220°	.77
240°	.75
260°	.73
280°	.71
300°	.70
350°	.69
400°	.68

### PRESSURE DROP CORRECTION

Capacity tables pages 24 thru 49 show values for pressure drop when water in the tubes is at 100°F. average, and in the shell at 100°F. average. To correct these values for other average temperatures, multiply by appropriate Correction Factor.

## TEMPERATURE FACTORS

Temperature Factors in Table A, pages 12 thru 23 are dimensionless numbers and express a heat transfer and heating surface ratio that a "WU" Heat Exchanger must produce at a specified flow rate. See "WU" rating table on pages 24 thru 49. Temperature Factors are based on heat transfer *from water in the shell to water inside the tubes* of a multi-pass WU Heat Exchanger. Values are based on transfer thru clean copper tubes; thus the addition of a fouling allowance as shown on page 5 may be added.

## "A" & "B" SELECTION METHOD

The "A" & "B" Method of "WU" selections now enables the user to *vary the Baffle Spacing* and select the optimum or stock† unit for any given flow. The temperature factors corresponding to the "A" unit selections are based on a greater heat transfer coefficient i.e., greater shell velocity, than the "B" units. Therefore "A" units will be smaller, however, their corresponding shell side pressure drops will be higher.

"A" SELECTIONS give optimum units (always try an "A" selection first)

"B" SELECTIONS give larger units with less shell side pressure drop

STOCK UNITS†, depending on shell flow, can be either "A" or "B" units

†See page 50 for complete listing of stock units

## SELECTION PROCEDURE

The WU Heat Exchanger is designed for efficient heat transfer between two circulating liquids. Water to water heat transfer, being the most common application, is covered in the following Selection Procedures. Ratings are based on *heating water inside clean copper tubes* with circulating *hot water outside the tubes* or in the shell. Before any selection can be made, all the following conditions of operation must be known for each application.

Water Temperatures:

Tubes in \_\_\_\_\_ °F. Out \_\_\_\_\_ °F.

Shell in \_\_\_\_\_ °F. Out \_\_\_\_\_ °F.

Water Flow:

Tubes \_\_\_\_\_ GPM Shell \_\_\_\_\_ GPM

If one or more of these conditions are not given, use the following equation and table:

**"Q" BTU/hr. = GPM x Temperature change (°F.) x Factor**

## WU FLOW RANGE TABLE (GPM)

Shell Dia.	Tube Flow	Shell Flow	Max. Shell Flow** With Stock Units
4"	2 – 30	6 – 51	51
6"	5 – 100	15 – 80	60
8"	15 – 180	20 – 160	110
10"	25 – 325	26 – 276	156
12"	25 – 450	45 – 365	245
14"	50 – 600	42 – 415	NOT STOCKED
16"	50 – 800	65 – 525	NOT STOCKED
18"	100 – 1000	75 – 750	NOT STOCKED
20"	100 – 1400	85 – 900	NOT STOCKED
22"	150 – 1700	115 – 1070	NOT STOCKED
24"	150 – 2000	130 – 1315	NOT STOCKED
26"	200 – 2300	170 – 1500	NOT STOCKED
28"	250 – 2800	183 – 1790	NOT STOCKED
30"	250 – 3200	200 – 1930	NOT STOCKED

Consult the factory for WU selections outside these minimum and maximum flow rates.

\*\*Std. stock units 4" thru 12" have fixed baffle spacing and shell connections. When shell flows are in excess of these ratings the baffle spacing and connections must be adjusted and the units must built to order.

Average Water Temperature °F.	Factor
100°F. (approx.)	500
150°F.	491
200°F.	482
250°F.	472
300°F.	460
350°F.	446
400°F.	431

## EXAMPLE #1:

**PROBLEM:** Heat 200 GPM water in the tubes 170 to 185°F with heating water at 230°F, 30° drop, .0005 fouling allowance tube side.

**SOLUTION:** STEP 1 – Establish all temperatures and flow rates. From the equation "Q" BTU/hr = GPM x (Optimum Unit) Temperature Change x Factor, Q = 200 x 15 x 485 = 1,455,000 BTU/hr and GPM heating water required = 1,455,00 ÷ (479\* x 30) = 100 GPM shell side.

STEP 2 – From "WU Flow Range Table" (above) try the 10" diameter series as an initial selection.

STEP 3 – From "Table A" page 17, for 230°F heating water, at the intersection point of 170 to 185°F heated water and 30° drop, obtain a clean tube temperature factor of 13.86.

STEP 4 – From the 10" dia. "WU Capacity Table" page 28, select 3" baffle spacing and an "A" classification for 100 GPM shell flow. From the 200 GPM tube Flow "A" column; the first unit with a temperature factor equal to or greater than 13.86 is a WU-105-23 with a factor of 16.8.

STEP 5 – To correct for fouling, note tube velocity at bottom of GPM column page 29 for trial unit, i.e., 5.1 ft./sec. at 200 GPM. From chart 1, page 5 the multiplier for .0005 fouling is 1.29 (29% added capacity). Verify the adequacy of the trial unit by multiplying the factor from step 3 by the fouling correction. 13.86 x 1.29 = 17.85 since this exceeds 16.8, select next largest unit, WU-106-23, with a factor of 20.4 tube side pressure drop is 2.0 ft., shown in red below unit factor.

STEP 6 – From 10" velocity chart, page 29, obtain shell velocity at 100 GPM of 3.80 ft./sec. at 3" baffle spacing. From 10" Pressure Drop Chart, page 28, obtain shell side pressure drop of 13.0 x 1.0 = 13.0 ft.

STEP 7 – If pressure drop obtained in step 6 is excessive, or stock unit is required repeat from step 4 using "B" unit with standard 5" baffle spacing. Selection would give a stock WU-107-25 with a shell side pressure drop of 6.0 ft., tube side pressure drop of 2.0 ft.

STEP 8 – From table on page 5 obtain pressure drop correction factors shell Δ Pc = 6 x 0.78 = 4.7 ft.; Tube Δ Pc = 2 x 0.85 = 1.7 ft.

## I. SELECTION PROCEDURE FOR HTWU AND WU\* UNITS WITH HEATED WATER IN SHELL

1. Heated water in shell.
2. Find CTF from Table A, pages 20 thru 23 in WU catalog.
3. Calculate Temperature Drop ÷ Temperature Rise (TD/TR).
4. Use appropriate capacity table – pages 24 thru 49 in WU catalog and note tube and shellside velocity.
5. Find Multiplier F from Chart A relative to unit velocities.
6. Calculate Adjusted Clean Tube Factor – ACTF = CTF x (TD/TR) x F x (Fouling % if required).
7. Select appropriate unit.
8. Check Mechanical Design Limits – Section II.

\*This procedure may be used for WU units with a TD/TR greater than one but tends to produce conservative designs. If job is competitive, consult factory for proper selection.

NOTE: For high temperature water units with heated water in tubes, consult factory for the proper selection.

### CHART A – MULTIPLIER , F

Tube Velocity Ft./Sec.	SHELL VELOCITY Ft./Sec.			
	1	2	3	4
1	1.10	1.12	1.14	1.16
2	1.08	1.09	1.10	1.11
3	1.04	1.05	1.05	1.06
4	1.05	1.06	1.08	1.09
5	1.05	1.06	1.08	1.09
6	1.05	1.06	1.07	1.08
7	1.05	1.05	1.06	1.07

## II. MECHANICAL DESIGN LIMITATIONS

1. Baffle spacing must *not* be greater than 80% of shell diameter.
2. Baffle spacing and tube bundle length should not result in fewer than five baffles. The following equation can be used to calculate the number of baffles in a unit.
3. If unit results in less than five baffles, add required length or consult factory.

$$\text{Number of Baffles} = \frac{\text{Nom. Bundle Length (Ft.)} - x}{\text{Baffle Space in Feet}}$$

Shell Dia.	X
Up to 18"	2
20" – 24"	2.5
26" – 30"	3

## TYPICAL SPECIFICATION

Furnish and install approximately where shown on plans and with manufacturer's recommendations, "WU" Liquid to Liquid Instantaneous Water Heater(s), according to the following specifications:

### 1. TYPE:

Shell and Tube, U-Bend removable tube bundle.

### 2. MATERIALS:

- a. Shell – Steel
- b. Tubes – 3/4" O.D. Copper
- c. Heads – Cast Iron or Steel
- d. Tube Sheets – Steel
- e. Baffles, Tie-Rods, Spacers – Steel

### 3. CONSTRUCTION:

A manufacturer's data report for pressure vessels, U form as required by the provisions of the ASME Code Rules, is to be furnished to the engineer for the owner upon request. This form certifies that construction conforms to the latest ASME Code for pressure vessels for:

Shell side \_\_\_\_\_ PSIG design pressure at \_\_\_\_\_ °F.

Tube side \_\_\_\_\_ PSIG design pressure at \_\_\_\_\_ °F.

as detailed in the U form data report. The ASME "U" symbol should be stamped on the heat exchanger. In addition, each unit is registered as required with the National Board of Boiler and Pressure Vessel Inspectors.

### 4. CAPACITY:

- a. The heater shall have ample capacity to (heat) (cool) \_\_\_GPM when circulated through the (tubes) (shell) from \_\_\_\_\_ °F to \_\_\_\_\_ °F when supplied with GPM at \_\_\_\_\_ °F.
- b. Maximum tube velocity \_\_\_\_\_ ft. 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.

### 5. MANUFACTURER:

The heater shall be ITT Bell & Gossett Model No. \_\_\_\_\_.

**CAUTION:** A properly sized relief valve must be installed on the heated water side to protect heat exchangers from possible damage due to volumetric expansion.



# RATINGS...USED AS INSTANTANEOUS WATER HEATER

1. Capacities are in gallons per hour (GPH).
2. Ratings include a fouling factor of .001, equivalent to city or well water (Great Lakes region).
3. Ratings are also based on boiler water being circulated at indicated flow rates. The B&G Booster pump specified will produce this flow rate if the "WU" is mounted next to the boiler and pressure drop through boiler and piping does not exceed 3 to 4 feet.
4. Pressure drop in feet shown in red (omitted below 1 ft.)

Heater Number	Boiler	GPH of Water Heated Inside Copper Tubes From –						
		40° – 140°	40° – 180°	140° – 180°				
		Pump Size			With Boiler Water At –			
		180°	200°	210°	200°	210°	200°	210°
WU43-44	1 1/2" B&G Booster @ 33 GPM	78	138	198	35	54	162	252
WU44-44		144	240	306	54	90	264	378
WU45-44		216	336	402	90	138	360	498
WU46-44		288	426	474	132	180	450	612
WU47-44		318	522	588	168	228	528	732
WU63-43	2" B&G Booster @ 55 GPM	132	228	270	60	90	252	360
WU64-43		234	360	432	96	141	366	528
WU65-43		336	492	582	144	204	474	696
WU66-43		432	624	732	198	270	588	864
WU67-43		528	744	876	246	333	690	1008
WU68-43		618	864	1020	291	390	798	1140
WU84-44	3" LD B&G Booster @ 80 GPM	480	744	888	192	252	720	1140
WU85-44		690	1020	1212	300	402	960	1550
WU86-44		864	1272	1464	390	528	1200	1860
WU87-44		1044	1500	1740	480	624	1440	2220
WU88-44		1212	1728	2016	564	708	1680	2640
WU89-44		1380	1956	2256	648	750	1920	3000
WU104-45	P-35 B&G Booster @ 110 GPM	816	1284	1548	324	462	1200	1980
WU105-45		1164	1754	2074	480	678	1560	2580
WU106-45		1458	2100	2490	636	888	1920	3120
WU107-45		1740	2460	2880	768	1092	2280	3600
WU108-45		2040	2850	3300	918	1296	2760	4020
WU109-45		2310	3180	3690	1056	1464	3300	4380
WU124-46	PD-37 B&G Booster @ 125 GPM	1110	1770	2160	456	630	1440	2580
WU125-46		1620	2430	2850	648	936	2040	3300
WU126-46		2070	3000	3510	840	1200	2640	4020
WU127-46		2430	3510	4080	1020	1464	3240	4740
WU128-46		2790	3960	4620	1200	1716	3720	5400
WU129-46		3090	4380	5100	1380	1944	4140	6000

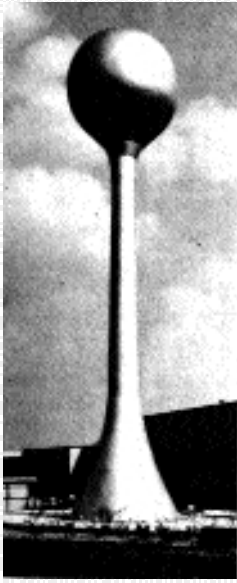
# RATINGS...USED AS A RADIATION HEATER

1. Capacities are in gallons per minute (GPM).
2. Ratings include a small fouling factor of .0005.
3. Ratings are also based on boiler water being circulated at indicated flow rates. The B&G Booster pump specified will produce the indicated flow if the "WU" is mounted next to the boiler and the pressure drop through boiler and piping does not exceed 3 to 4 feet.
4. Pressure drop in feet shown in red (omitted below 1 ft.)
5. Ratings in **bold type** are for 4 pass units – ratings in light face type are for 2 pass units.

Heater Number	Boiler Pump Size	WATER HEATED IN COPPER TUBES – Capacities in Gallons Per Minute (GPM)																
		180° – 200°		170° – 190°		160° – 180°		140° – 180°		130° – 150°		120° – 140°		110° – 130°				
		With Boiler Water at –																
		210°	210°	200°	210°	180°	200°	210°	180°	200°	210°	180°	200°	210°	180°	200°	210°	
WU43-( )4	1 1/2" B&G Booster @ 33 GPM	3.8	7.6	7.5	11.7	7	15	19	11	20	18	14	9	18	22	18	21	25
WU44-( )4		5.6	10.8	10.6	16	10	17	22	15	21	26	20	13	25	31	20	29	34
WU45-( )4		7.5	14	13.8	20	13.3	22	28	19	28	34	21	16	33	34	26	34	—
WU46-( )4		9.2	17	16.7	21	16.2	27	34	19.5	33	—	26	20	—	—	32	—	—
WU47-( )4		10.8	20	19.5	24	19	31	—	23	—	—	30	21	—	—	—	—	—
WU63-( )3	2" B&G Booster @ 55 GPM	5	10	9	15	10	20	27	14	26	31*	20	16	31	31*	27	31*	35
WU64-( )3		7.7	14	13	21	13	27	31*	20	31	36	27	24	37	42	31	41	48
WU65-( )3		10	18	17	27	17	31*	37	26	37	45	31*	31*	45	52	35	52	54
WU66-( )3		12.7	22	21	31*	21	36	45	31	45	54	35	31	52	62	42	62	62
WU67-( )3		15	27	25	32	25	42	52	32	52	62	40	36	60	—	50	—	—
WU68-( )3		17	31	29	37	29	48	62	37	60	—	47	44	62*	—	57	—	—
WU84-( )4	3" LD B&G Booster @ 55 GPM	16	32	30	47	30	60	62*	44	62	76	57	50	74	89	58	87	104
WU85-( )4		21	41	39	55	39	62*	82	54	80	98	62	52	96	115	75	115	125*
WU86-( )4		26	48	47	62	45	76	98	60	96	118	73	62	116	125*	92	125*	—
WU87-( )4		30	54	55	68	50	89	112	64	112	125*	86	77	125*	—	107	—	—
WU88-( )4		35	62	62	77	56	101	122	73	125	—	97	88	—	—	122	—	—
WU89-( )4		39	—	—	87	62	110	125*	82	—	—	104	97	—	—	125*	—	—
WU104-( )5	PD-35 B&G Booster @ 110 GPM	28	55	52	79	50	100	128	74	112	137	98	95	132	160	112	159	185
WU105-( )5		38	68	67	95	63	112	148	92	140	172	112*	112	168	201	132	198	225
WU106-( )5		46	80	79	110	76	130	168	108	165	205	126	115	200	230	156	240	240*
WU107-( )5		52	90	90	116	86	150	188	112*	187	230	146	131	220	240*	179	—	—
WU108-( )5		57	97	96	128	96	166	208	121	208	240*	162	150	240	—	218	—	—
WU109-( )5		61	107	105	140	106	181	220	132	225	—	175	163	—	—	230	—	—
WU124-( )6	PD-37 B&G Booster @ 125 GPM	38	77	75	110	69	155	162*	102	162*	192	135	126	179	219	132	213	257
WU125-( )6		50	89	86	133	85	162*	194	125	190	234	162	135	225	269	168	262	315
WU126-( )6		60	104	103	150	99	176	223	142	219	270	168	162	265	310	200	305	345
WU127-( )6		68	117	116	162	111	199	248	158	244	300	192	174	297	345	231	345	—
WU128-( )6		74	128	125	165	121	217	272	162*	266	330	210	192	320	—	258	—	—
WU129-( )6		79	136	133	178	130	229	300	169	288	345*	230	204	345	—	279	—	—
			2.1	5.7	5.7	1.2	5.4	1.8	3.0	2.8	4.0	2.8	1.6	4.0	4.0	2.6	—	—

†When ordering or specifying from table above, fill in 2 or 4 pass in space between parentheses.  
 \*The ratings on units indicated by an asterisk are the ratings obtained without exceeding 7.5 ft./sec. velocity. Ratings are omitted when velocity would be excessive. Consult factory for recommendations for higher velocities through unit.

# TYPE "WU" ...MISCELLANEOUS APPLICATIONS



Storage tower water heated with a "WU"

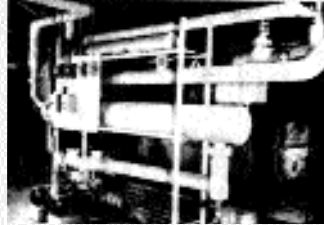
## SWIMMING POOL AND STORAGE TOWER HEATING

Where swimming pool or storage tower water is to be heated by the same hot water boiler used for space heating, a "WU" Heat Exchanger offers a practical, economical solution! Even when the boiler is to be used solely for heating swimming pool water, a "WU" should be installed to protect the more expensive and harder-to-clean boiler against liming.

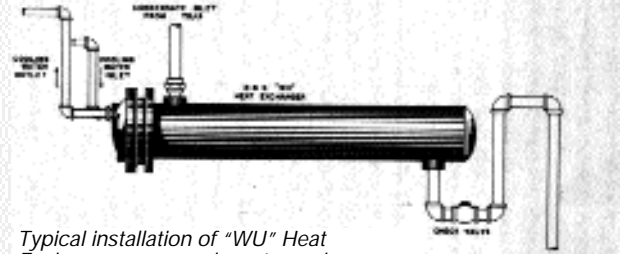
When using a "WU" Heat Exchanger as a storage tower heater, the local office of the Fire Underwriters' Board should be consulted for specific approval of the installation.

## CONDENSATE COOLING

When used to transfer heat from hot condensate, the "WU" utilizes heat which would otherwise be wasted. Water thus heated can be used for space heating, washrooms or process work. In some communities, local ordinances state that water above a certain temperature, 100° or 125°, cannot be discharged into the sewers. A "WU" can be used to reduce the condensate temperature.



"WU" an efficient swimming pool heater.



Typical installation of "WU" Heat Exchanger as a condensate cooler

# RATINGS

## CONDENSATE COOLING

Capacities are in lbs. per hour of condensate cooled in shell. Ratings include a fouling factor of .001 for city or well water (Great Lakes region). Pressure drop in feet is shown in red (omitted below ft.). Pressure drop of Condensate through baffled shells at ratings shown does not exceed 1 lb.

## SWIMMING POOLS AND STORAGE TOWERS (forced circulation only)

Ratings are in gallons per hour (GPH) in tubes and include .001 fouling factor. Ratings are based on boiler water being circulated at the indicated flow rates. The B&G Booster pump specified will produce this flow rate if the "WU" is mounted next to the boiler and pressure drop through the boiler and piping does not exceed 3 to 4 feet. For gravity circulation of pool or tower water consult factory for selection.

## FOR CONDENSATE COOLING

Heater No.	Cooling Water -40° to 90° F				Cooling Water -70° to 120° F			
	Condens. 200°-100° F		Condens. 225°-125° F		Condens. 200°-120° F		Condens. 225°-125° F	
	Lb./Hr. Conds.	GPM of Cooling Water	Lb./Hr. Conds.	GPM of Cooling Water	Lb./Hr. Conds.	GPM of Cooling Water	Lb./Hr. Conds.	GPM of Cooling Water
WU43-44	585	2.4	820	3.3	613	2	550	2.2
WU44-44	780	3.2	1,258	5.0	820	2.6	740	3.0
WU45-44	976	4.0	2,014	8.0	1,020	3.3	920	3.7
WU46-44	1,382	5.5	3,022	12.0	1,230	4	1,375	5.5
WU47-44	1,936	7.7	4,031	16.0	1,623	5.2	1,875	7.5
		1.0		4.5				1.0
WU63-43	1,440	5.8	2,010	8.1	1,500	4.8	1,360	5.5
WU64-43	1,920	7.7	2,700	10.8	2,020	6.5	1,820	7.3
WU65-43	2,420	9.7	3,380	13.5	2,540	8.1	2,280	9.1
WU66-43	2,900	11.6	4,060	16.3	3,040	9.7	2,740	11.0
			1.6					
WU67-43	3,390	13.6	4,750	19.0	3,560	11.4	3,200	12.8
		1.4		3.0				1.6
WU68-43	3,880	15.5	5,440	21.7	4,060	13	3,670	14.7
		2.5		4.0		1.7		2.5
WU84-44	3,800	15	5,320	21	4,000	13	3,600	14
WU85-44	4,780	19	6,700	26	5,000	16	4,500	18
WU86-44	5,760	23	8,070	32	6,000	19	5,400	21
WU87-44	6,740	27	9,420	37	7,000	22	6,350	25
		1.7		2.6				1.5
WU88-44	7,730	31	10,800	43	8,000	25	7,300	29
		2.1		3.6		1.8		1.9
WU89-44	8,700	35	12,200	49	9,000	29	8,200	33
		3.3		5.4		2.2		2.9
WU104-45	7,200	29	10,100	40	7,600	24	6,800	27
WU105-45	9,060	36	12,700	50	9,500	30	8,600	34
WU106-45	10,900	44	15,300	61	11,500	37	10,300	41
				1.8				
WU107-45	12,800	52	18,000	72	13,400	43	12,100	49
		1.5		2.7				1.5
WU108-45	14,600	59	20,600	82	15,400	49	13,800	55
		2.3		3.9		1.6		2.1
WU109-45	16,500	66	23,200	92	17,300	55	15,600	63
		2.9		5.5		2.4		3.0
WU124-46	10,300	42	14,400	57	10,800	35	9,800	40
WU125-46	13,000	52	18,200	73	13,600	44	12,300	50
WU126-46	15,700	63	22,000	88	16,500	53	14,800	60
		1.0		2.0				1.0
WU127-46	18,400	74	25,800	103	19,300	62	17,400	70
		1.7		2.7		1.1		1.5
WU128-46	21,200	85	29,600	118	22,100	71	20,000	80
		2.2		3.8		1.7		2.1
WU129-46	23,800	96	33,400	133	25,000	80	22,500	90
		3.0		5.4		2.4		2.7

## FOR SWIMMING POOLS\* AND STORAGE TOWERS

180° Pumped Boiled Water		
Heater No.	Boiler Pump Size	GPH in Tubes 40° to 80° F
WU63-23	2" Booster @ 55 GPM	720
WU64-23		1,140
WU65-23		1,500
WU66-23		1,860
WU67-23		2,280
WU68-23		2,640
		2.0
WU84-24	3" LD Booster @ 80 GPM	2,280
WU85-24		3,120
WU86-24		3,960
WU87-24		4,680
WU88-24		5,450
WU89-24		6,120
		3.0
WU104-25	PD-35 Booster @ 125 GPM	4,380
WU105-25		5,750
WU106-25		7,150
WU107-25		8,400
WU108-25		9,600
WU109-25		10,600
		2.4

\*Swimming pool water may be corrosive to Copper. 90/10 Cupro-Nickel is available on special order.

NOTE: All units above are factory stocked.

**TYPE "WU" HEAT EXCHANGERS - TABLE A**

**CAUTION:** When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		120° HEATING WATER										130° HEATING WATER									
		TEMPERATURE DROP										TEMPERATURE DROP									
IN	OUT	5°	10°	15°	20°	25°	30°	35°	40°	45°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	
40	45	3.2	3.3	3.5	3.6	3.8	4.0	4.3	4.6	4.9	2.7	2.8	2.9	3.1	3.2	3.4	3.5	3.7	3.9	4.2	
	50	6.6	6.9	7.2	7.5	7.9	8.4	8.9	9.5	10.2	5.6	5.8	6.1	6.3	6.6	6.9	7.3	7.7	8.2	8.7	
	55	10.2	10.6	11.1	11.7	12.3	13.1	14.0	15.0	16.2	8.7	9.0	9.4	9.8	10.3	10.8	11.4	12.0	12.8	13.7	
	60	14.0	14.7	15.4	16.3	17.2	18.3	19.6	21.1	23.0	11.9	12.4	12.9	13.5	14.2	14.9	15.8	16.7	17.9	19.2	
	70	22.7	23.9	25.2	26.7	28.5	30.6	33.2	36.4	40.6	19.0	19.8	20.8	21.8	23.0	24.3	25.9	27.8	30.0	32.8	
	80	33.2	35.2	37.4	40.1	43.3	47.3	52.4	59.5		27.3	28.6	30.1	31.8	33.8	36.1	38.9	42.2	46.6	52.4	
45	50	3.4	3.5	3.7	3.9	4.1	4.3	4.6	5.0	5.4	2.9	3.0	3.1	3.2	3.4	3.6	3.8	4.0	4.2	4.5	
	55	7.0	7.3	7.6	8.1	8.5	9.1	9.7	10.4	11.4	5.9	6.1	6.4	6.7	7.0	7.4	7.8	8.3	8.9	9.5	
	60	11.0	11.3	11.9	12.6	13.4	14.2	15.3	16.6	18.2	9.1	9.5	9.9	10.4	10.9	11.5	12.2	13.0	13.9	15.1	
	70	19.5	20.5	21.7	23.0	24.6	26.6	28.9	31.9	35.9	16.2	17.0	17.8	18.7	19.8	21.0	22.4	24.0	26.1	28.7	
50	80	30.0	31.8	33.9	36.4	39.4	43.3	48.2	55.3		24.6	25.8	27.2	28.7	30.6	32.7	35.3	38.5	42.7	48.6	
	55	3.6	3.8	3.9	4.2	4.4	4.7	5.1	5.5	6.0	3.0	3.1	3.3	3.5	3.6	3.8	4.0	4.3	4.6	5.0	
	60	7.4	7.8	8.2	8.7	9.2	9.9	10.7	11.6	12.8	6.2	6.5	6.8	7.2	7.5	8.0	8.4	9.0	9.7	10.5	
	70	16.1	17.0	18.0	19.2	20.5	22.2	24.3	27.0	30.7	13.3	14.0	14.7	15.4	16.3	17.4	18.6	20.0	21.9	24.2	
	80	26.6	28.3	30.2	32.5	35.3	38.9	43.7	50.7		21.7	22.8	24.0	25.5	27.1	29.1	31.6	34.6	38.6	44.4	
55	90	40.2	43.2	46.8	51.4	57.4	66.0			31.8	33.6	35.8	38.3	41.3	45.1	49.9	56.7				
	100	59.8	65.7	73.6	85.0					44.9	48.0	51.7	56.4	62.4	70.6						
	60	3.8	4.0	4.3	4.5	4.8	5.2	5.6	6.1	6.9	3.2	3.4	3.5	3.7	3.9	4.1	4.4	4.7	5.1	5.6	
	65	8.0	8.4	8.9	9.5	10.1	10.9	11.9	13.2	14.9	6.6	6.9	7.3	7.7	8.1	8.6	9.2	9.9	10.8	11.9	
	70	12.5	13.2	14.0	15.0	16.1	17.5	19.2	21.6	24.9	10.3	10.8	11.4	12.0	12.7	13.5	14.5	15.8	17.3	19.3	
60	80	23.0	24.5	26.2	28.3	30.9	34.2	38.8	45.7	58.9	18.6	19.6	20.7	22.0	23.5	25.3	27.5	30.3	34.1	40.9	
	90	36.5	39.4	42.8	47.2	53.0	61.5			28.7	30.4	32.4	34.8	37.6	41.2	46.0	52.7				
	100	56.1	61.8	69.6	80.9					41.8	44.8	48.4	52.9	58.7	66.9						
	65	4.1	4.4	4.6	4.9	5.3	5.8	6.3	7.1	8.1	3.4	3.6	3.8	4.0	4.2	4.5	4.8	5.2	5.7	6.3	
	70	8.7	9.2	9.8	10.4	11.3	12.3	13.6	15.5	18.2	7.1	7.4	7.8	8.3	8.8	9.4	10.1	11.0	12.2	13.8	
65	80	19.1	20.4	21.9	23.8	26.1	29.1	33.3	40.1		15.4	16.2	17.2	18.3	19.6	21.2	23.1	25.7	29.2	34.8	
	90	32.7	35.3	38.5	42.6	48.2	56.7			25.4	27.0	28.9	31.1	33.7	37.1	41.7	48.3				
	100	52.1	57.7	65.2	76.5					38.5	41.3	44.8	49.1	54.8	63.0						
	75	4.5	4.8	5.1	5.5	6.0	6.6	7.3	8.4	10.2	3.7	3.9	4.1	4.3	4.6	4.9	5.3	5.8	6.5	7.5	
	80	9.5	10.1	10.8	11.7	12.8	14.2	16.1	19.0	24.7	7.6	8.0	8.5	9.0	9.7	10.4	11.4	12.6	14.2	18.7	
	90	15.0	16.0	17.3	18.8	20.8	23.4	27.2	33.7		11.9	12.6	13.4	14.3	15.4	16.7	18.3	20.5	23.7	29.1	
70	100	28.5	30.8	33.8	37.7	43.0	51.4			22.0	23.4	25.1	27.0	29.5	32.7	37.0	43.6				
	110	47.9	53.2	60.5	71.8					35.0	37.7	41.0	45.1	50.7	58.8						
	75	5.0	5.3	5.7	6.2	6.8	7.6	8.8	10.7	15.4	4.0	4.2	4.4	4.7	5.1	5.5	6.0	6.7	7.7	9.4	
	80	10.5	11.2	12.2	13.3	14.8	16.9	20.0	26.1		8.3	8.8	9.3	10.0	10.8	11.8	13.0	14.7	17.4	22.4	
	85	16.7	18.0	19.7	21.8	24.6	28.7	35.8			13.0	13.8	14.8	15.9	17.3	19.0	21.3	24.7	30.5		
	90	23.9	26.0	28.7	32.2	37.2	45.4				18.3	19.5	21.0	22.7	24.9	27.8	31.8	38.3			
75	100	43.3	48.4	55.4	66.6					31.3	33.8	36.8	40.8	46.2	54.2						
	110	79.4	97.8							50.0	55.3	62.5	73.3								
	80	5.5	5.9	6.5	7.1	8.0	9.3	11.3	16.5		4.3	4.6	4.9	5.2	5.7	6.2	7.0	8.0	9.8	13.9	
	85	11.8	12.7	14.0	15.6	17.8	21.2	27.9			9.0	9.6	10.3	11.2	12.2	13.5	15.4	18.2	23.6		
	90	19.0	20.7	23.0	26.0	30.5	38.5				14.3	15.3	16.5	18.0	19.8	22.3	26.0	32.2			
80	100	38.3	43.0	49.8	60.8					27.3	29.6	32.4	36.1	41.2	49.1						
	110	74.3	92.5							45.9	51.0	58.1	68.8								
	85	6.2	6.8	7.5	8.4	9.8	12.1	17.7			4.7	5.1	5.4	5.9	6.5	7.3	8.4	10.2	14.8		
	90	13.4	14.8	16.5	18.9	22.7	30.2				10.0	10.8	11.6	12.7	14.2	16.1	19.1	25.0			
	95	22.0	24.5	27.8	32.9	41.9					16.0	17.3	18.8	20.8	23.5	27.4	34.3				
90	100	32.7	37.0	43.4	54.2					23.0	25.0	27.5	30.8	35.6	43.4						
	110	68.7	86.7							41.6	46.4	53.2	63.8								
	95	8.6	9.7	11.4	14.2	21.4					6.0	6.5	7.2	8.1	9.4	11.6	17.0				
	100	19.2	22.3	27.1	37.0						12.9	14.2	15.8	18.1	21.7	28.9					
100	105	33.4	40.2							21.2	23.5	26.7	31.5	40.2							
	110	55.0	72.6							31.4	35.6	41.6	52.0								
	115	14.2	18.1	28.7						8.2	9.3	10.9	13.6	20.6							
110	110	35.8	52.0							18.5	21.4	26.0	35.6								
	120									32.2	38.6	51.0									
	115									13.7	17.4	27.5									
	120									34.4	50.1										

# FOR LOW TEMPERATURE RANGE

HEATED WATER		140° HEATING WATER										150° HEATING WATER									
		TEMPERATURE DROP										TEMPERATURE DROP									
IN	OUT	5°	10°	15°	20°	25°	30°	40°	50°	60°	5°	10°	15°	20°	25°	30°	40°	50°	60°	70°	
40	45	2.4	2.5	2.6	2.7	2.8	2.9	3.1	3.5	3.9	2.1	2.2	2.2	2.3	2.4	2.5	2.7	2.9	3.2	3.6	
	50	4.9	5.1	5.2	5.4	5.7	5.9	6.4	7.2	8.1	4.3	4.4	4.6	4.8	4.9	5.1	5.6	6.0	6.7	7.5	
	55	7.5	7.8	8.1	8.4	8.7	9.1	10.0	11.1	12.6	6.6	6.8	7.0	7.3	7.6	7.8	8.5	9.3	10.4	11.8	
	60	10.3	10.6	11.0	11.5	12.0	12.5	13.8	15.4	17.7	9.0	9.3	9.6	10.0	10.3	10.7	11.7	12.8	14.3	16.4	
	70	16.3	10.9	17.6	18.3	19.2	20.1	22.4	25.4	29.9	14.2	14.6	15.2	15.8	16.4	17.1	18.7	20.8	23.5	27.5	
	80	23.1	24.1	25.1	26.3	27.7	29.2	32.9	38.3	47.0	19.9	20.7	21.5	22.3	23.3	24.4	26.9	30.3	35.1	42.7	
45	50	2.5	2.6	2.7	2.8	2.9	3.0	3.3	3.7	4.2	2.2	2.3	2.3	2.4	2.5	2.6	2.8	3.1	3.4	3.9	
	55	5.1	5.3	5.5	5.7	6.0	6.2	6.9	7.7	8.8	4.5	4.6	4.8	5.0	5.2	5.4	5.8	6.4	7.1	8.1	
	60	7.9	8.2	8.5	8.8	9.2	9.6	10.6	12.0	13.8	6.9	7.1	7.4	7.6	7.9	8.2	9.0	9.9	11.1	12.8	
	70	13.9	14.4	15.0	15.7	16.4	17.2	19.2	22.0	26.1	12.0	12.5	12.9	13.4	14.0	14.6	16.0	17.8	20.3	24.0	
50	80	20.7	21.6	22.6	23.6	24.9	26.3	29.8	34.9	43.4	17.8	18.5	19.2	20.0	20.9	21.9	24.2	27.4	31.9	39.4	
	55	2.6	2.7	2.8	2.9	3.1	3.2	3.5	4.0	4.6	2.3	2.4	2.4	2.5	2.6	2.7	3.0	3.3	3.7	4.2	
	60	5.4	5.6	5.8	6.0	6.3	6.6	7.3	8.3	9.7	4.7	4.8	5.0	5.2	5.4	5.6	6.2	6.8	7.7	8.9	
	70	11.4	11.8	12.3	12.9	13.5	14.2	15.9	18.3	22.0	9.8	10.2	10.6	11.0	11.4	12.0	13.2	14.7	16.9	20.1	
	80	18.2	19.0	19.8	20.8	22.0	23.2	26.5	31.2	39.6	15.6	16.2	16.8	17.6	18.4	19.2	21.4	24.3	28.5	35.8	
	90	26.2	27.4	28.8	30.5	32.3	34.5	40.3	50.0		22.2	23.1	24.1	25.2	26.5	27.9	31.5	36.6	44.9		
55	100	36.0	37.9	40.2	42.8	45.9	49.8	61.1		29.9	31.2	32.8	34.5	36.5	38.8	44.7	54.2				
	110	48.6	51.8	55.6	60.2	66.1	74.1			39.3	41.4	43.7	46.4	49.6	53.4	64.5					
	60	2.8	2.9	3.0	3.1	3.2	3.4	3.8	4.3	5.1	2.4	2.5	2.6	2.7	2.8	2.9	3.2	3.5	4.0	4.7	
	65	5.6	5.9	6.1	6.4	6.7	7.1	7.9	9.1	10.8	4.9	5.1	5.3	5.5	5.7	6.0	6.5	7.3	8.4	9.9	
60	70	8.7	9.1	9.5	9.9	10.4	11.0	12.4	14.3	17.4	7.5	7.8	8.1	8.4	8.8	9.2	10.2	11.4	13.2	16.0	
	80	15.5	16.2	17.0	17.9	18.9	20.0	22.9	27.3	35.4	13.3	13.8	14.4	15.1	15.7	16.5	18.4	21.0	24.9	32.0	
	90	23.5	24.7	26.0	27.5	29.2	31.3	36.8	46.3		19.8	20.7	21.6	22.7	23.8	25.2	28.5	33.3	41.5		
	100	33.3	35.1	37.3	39.8	42.8	46.5	57.8			27.6	28.8	30.3	31.9	33.8	36.0	41.8	51.1			
65	65	2.9	3.0	3.1	3.3	3.5	3.6	4.1	4.7	5.8	2.5	2.6	2.7	2.8	2.9	3.1	3.4	3.8	4.4	5.3	
	70	6.0	6.2	6.5	6.8	7.2	7.6	8.6	10.0	12.4	5.1	5.3	5.6	5.8	6.0	6.3	7.0	7.9	9.2	11.3	
	80	12.8	13.4	14.0	14.8	15.6	16.6	19.1	23.1	30.9	10.9	11.3	11.8	12.3	12.9	13.6	15.2	17.5	21.0	27.8	
	90	20.8	21.8	23.0	24.4	26.0	27.8	33.0	42.4		17.4	18.2	19.0	20.0	21.0	22.2	25.3	29.8	37.8		
	100	30.5	32.2	34.3	36.7	39.5	43.1	54.2			25.1	26.3	27.7	29.2	31.0	33.1	38.6	47.9			
	110	43.1	46.0	49.6	54.1	59.8	67.6				34.6	36.4	38.6	41.1	44.1	47.8	58.6				
70	70	3.1	3.2	3.4	3.5	3.7	3.9	4.5	5.3	6.7	2.6	2.7	2.8	3.0	3.1	3.3	3.6	4.1	4.8	6.1	
	80	9.9	10.3	10.9	11.5	12.1	12.9	15.0	18.4	25.7	8.4	8.7	9.1	9.5	10.0	10.5	11.8	13.7	16.7	23.0	
	90	17.8	18.8	19.8	21.0	22.5	24.2	29.0	38.0		14.9	15.6	16.3	17.2	18.1	19.2	21.9	26.1	33.9		
	100	27.5	29.2	31.1	33.3	36.1	39.5	50.4			22.6	23.7	25.0	26.4	28.0	30.0	35.3	44.4			
	110	40.1	43.0	46.4	50.7	56.3	64.2				32.0	33.8	35.8	38.2	41.1	44.7	55.4				
	120	58.3	63.8	71.2	81.7						44.2	47.1	50.7	55.0	60.6	68.2					
75	75	3.3	3.4	3.6	3.8	4.0	4.3	5.0	6.0	8.3	2.8	2.9	3.0	3.2	3.3	3.5	3.9	4.5	5.5	7.5	
	80	6.8	7.1	7.5	7.9	8.4	9.0	10.5	13.1	19.6	5.7	6.0	6.2	6.6	6.9	7.3	8.2	9.6	11.9	17.5	
	90	14.7	15.6	16.5	17.5	18.8	20.3	24.6	33.3		12.3	12.8	13.5	14.2	15.0	15.9	18.3	22.1	29.5		
	100	24.4	25.9	27.7	29.8	32.3	35.6	46.3			20.0	21.0	22.1	23.4	25.0	26.7	31.7	40.6			
	110	37.0	39.7	43.0	47.1	52.6	60.4				29.3	31.0	33.0	35.2	38.0	41.4	52.0				
80	120	55.1	60.5	67.8	78.2						41.5	44.3	47.8	52.0	57.5	65.0					
	80	3.5	3.7	3.9	4.1	4.4	4.7	5.6	7.1	12.1	3.0	3.1	3.2	3.4	3.6	3.8	4.3	5.1	6.4	10.7	
	85	7.3	7.7	8.1	8.7	9.3	10.0	12.0	16.0		6.1	6.4	6.7	7.0	7.4	7.9	9.1	10.8	14.3		
	90	11.5	12.1	12.8	13.7	14.7	16.0	19.6	27.8		9.5	9.9	10.4	11.0	11.7	12.4	14.4	17.6	24.6		
	100	21.1	22.5	24.0	25.9	28.3	31.3	41.7			17.2	18.1	19.1	20.2	21.6	23.2	27.8	36.5			
85	110	33.6	36.2	39.3	43.3	48.6	56.4				26.5	28.1	29.9	32.0	34.7	37.9	48.4				
	120	51.7	57.0	64.1	74.5						38.6	41.4	44.7	48.8	54.2	61.7					
	90	7.9	8.4	8.9	9.6	10.3	11.3	14.1	21.4		6.5	6.9	7.2	7.6	8.1	8.6	10.1	12.6	18.8		
	100	17.6	18.8	20.1	21.8	23.9	26.6	36.7			14.2	15.0	15.8	16.8	18.0	19.5	23.6	31.9			
90	110	30.1	32.5	35.4	39.2	44.3	52.0				23.5	25.0	26.6	28.6	31.1	34.2	44.4				
	120	48.1	53.2	60.1	70.5						35.6	38.2	41.4	45.4	50.6	58.1					
	100	9.6	10.3	11.2	12.2	13.6	15.4	24.0			7.6	8.1	8.6	9.2	9.9	10.8	13.6	20.6			
100	110	22.1	24.0	26.4	29.6	34.2	41.7				17.0	18.1	19.4	21.0	23.0	25.6	35.2				
	120	40.0	44.7	51.2	61.4						29.0	31.3	34.1	37.8	42.7	50.1					
	130	63.7	80.4								38.7	43.1	49.4	59.2							
110	120	17.8	20.6	25.1	34.3						12.0	13.2	14.7	16.8	20.2	26.8					
	130	51.1	67.4								29.3	33.1	38.7	48.4							
120	130	33.2	48.4								17.2	19.9	24.2	33.1							

**TYPE "WU" HEAT EXCHANGERS - TABLE A**

**CAUTION:** When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		160° HEATING WATER										170° HEATING WATER									
		TEMPERATURE DROP										TEMPERATURE DROP									
IN	OUT	5°	10°	15°	20°	30°	40°	50°	60°	70°	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	
40	45	1.9	1.9	2.0	2.1	2.2	2.4	2.5	2.8	3.0	1.7	1.8	1.8	1.8	2.0	2.1	2.2	2.4	2.6	2.9	
	50	3.8	4.0	4.1	4.2	4.5	4.8	5.2	5.7	6.2	3.5	3.6	3.6	3.8	3.9	4.2	4.6	4.9	5.3	5.9	
	55	5.9	6.0	6.2	6.4	6.9	7.4	8.0	8.7	9.7	5.3	5.4	5.6	5.7	6.1	6.5	7.0	7.5	8.2	9.1	
	60	8.0	8.2	8.5	8.8	9.4	10.1	11.0	12.0	13.4	7.2	7.4	7.6	7.8	8.3	8.8	9.5	10.3	11.3	12.6	
	70	12.5	12.9	13.3	13.8	14.8	16.0	17.5	19.4	21.8	11.1	11.5	11.8	12.2	13.0	13.9	15.0	16.4	18.1	20.4	
45	80	17.5	18.0	18.7	19.3	20.9	22.7	25.0	28.1	32.4	15.5	16.0	16.4	17.0	18.2	19.6	21.3	23.4	26.2	30.1	
	50	2.0	2.0	2.1	2.1	2.3	2.5	2.7	2.9	3.2	1.8	1.8	1.8	1.9	2.0	2.2	2.3	2.5	2.7	3.0	
	55	4.0	4.1	4.2	4.4	4.7	5.0	5.5	6.0	6.7	3.6	3.7	3.8	3.9	4.1	4.4	4.7	5.1	5.6	6.3	
	60	6.1	6.3	6.5	6.7	7.2	7.7	8.4	9.3	10.4	5.4	5.6	5.8	5.9	6.3	6.8	7.3	7.9	8.7	9.7	
	70	10.6	10.9	11.3	11.7	12.6	13.6	14.9	16.6	18.8	9.4	9.7	10.0	10.3	11.0	11.8	12.8	14.0	15.5	17.6	
50	80	15.6	16.1	16.6	17.3	18.7	20.4	22.5	25.3	29.4	13.8	14.2	14.6	15.1	16.2	17.5	19.1	21.0	23.6	27.3	
	55	2.0	2.1	2.2	2.2	2.4	2.6	2.8	3.1	3.4	1.8	1.9	1.9	2.0	2.1	2.2	2.4	2.6	2.9	3.2	
	60	4.1	4.3	4.4	4.6	4.9	5.3	5.8	6.4	7.2	3.7	3.8	3.9	4.0	4.3	4.6	5.0	5.4	6.0	6.7	
	70	8.6	8.9	9.2	9.5	10.3	11.2	12.3	13.7	15.6	7.7	7.9	8.1	8.4	9.0	9.7	10.5	11.5	12.8	14.6	
	80	13.6	14.1	14.6	15.1	16.4	17.9	19.8	22.4	26.2	12.0	12.4	12.8	13.2	14.2	15.3	16.7	18.5	20.9	24.3	
55	90	19.2	19.8	20.6	21.4	23.4	25.8	29.0	33.5	40.8	16.8	17.4	17.9	18.6	20.0	21.8	24.0	26.9	31.0	37.4	
	100	25.5	26.5	27.6	28.8	31.7	35.5	40.7	48.9		22.2	23.0	23.8	24.8	26.8	29.4	32.8	37.5	44.6		
	110	33.0	34.4	36.0	37.8	42.2	48.2	57.5			28.3	29.4	30.6	31.9	34.9	38.8	44.1	52.0			
	60	2.1	2.2	2.2	2.3	2.5	2.7	3.0	3.3	3.7	1.9	1.9	2.0	2.1	2.2	2.4	2.5	2.8	3.1	3.5	
	65	4.3	4.4	4.6	4.8	5.1	5.6	6.1	6.8	7.8	3.8	3.9	4.1	4.2	4.5	4.8	5.2	5.7	6.4	7.2	
60	70	6.6	6.8	7.1	7.3	7.9	8.6	9.5	10.6	12.2	5.9	6.0	6.2	6.4	6.9	7.4	8.1	8.9	9.9	11.4	
	80	11.6	12.0	12.4	12.9	14.0	15.3	17.0	19.4	22.9	10.2	10.5	10.9	11.2	12.1	13.1	14.3	15.9	18.0	21.2	
	90	17.1	17.7	18.4	19.2	21.0	23.2	26.2	30.5	37.6	15.0	15.5	16.0	16.6	17.9	19.6	21.6	24.3	28.1	34.5	
	100	23.4	24.4	25.4	26.6	29.3	32.9	38.0	46.0		20.3	21.1	21.8	22.7	24.7	27.2	30.4	34.9	41.9		
	65	2.2	2.3	2.3	2.4	2.6	2.9	3.2	3.5	4.0	2.0	2.0	2.1	2.1	2.3	2.5	2.7	3.0	3.3	3.8	
70	70	4.5	4.6	4.8	5.0	5.4	5.9	6.5	7.3	8.5	4.0	4.1	4.2	4.4	4.7	5.1	5.5	6.1	6.8	7.9	
	80	9.4	9.8	10.1	10.5	11.5	12.6	14.1	16.1	19.2	8.3	8.6	8.9	9.2	9.9	10.7	11.8	13.1	15.0	17.8	
	90	15.0	15.6	16.2	16.9	18.5	20.5	23.3	27.3	34.3	13.1	13.5	14.0	14.5	15.7	17.2	19.0	21.5	25.1	31.3	
	100	21.3	22.2	23.2	24.2	26.8	30.2	35.1	43.0		18.4	19.1	19.8	20.6	22.5	24.8	27.9	32.2	39.1		
	110	28.8	30.1	31.5	33.2	37.3	43.0	52.0			24.6	25.6	26.6	27.8	30.6	34.2	39.2	47.0			
80	120	37.9	39.9	42.1	44.7	51.4	62.0			31.8	33.2	34.7	36.5	40.7	46.4	55.3					
	80	4.9	5.1	5.3	5.6	6.1	6.7	7.6	8.8	10.8	4.3	4.5	4.6	4.8	5.2	5.7	6.2	7.0	8.2	10.0	
	90	10.5	10.9	11.4	11.9	13.1	14.6	16.8	20.1	26.6	9.1	9.4	9.8	10.2	11.0	12.1	13.5	15.5	18.4	24.2	
	100	16.8	17.5	18.3	19.2	21.4	24.3	28.6	36.3		14.4	15.0	15.6	16.2	17.8	19.7	22.4	26.2	32.9		
	110	24.2	25.4	26.7	28.1	31.8	37.1	46.0			20.6	21.4	22.2	23.4	25.8	29.1	33.7	41.3			
90	120	33.3	35.1	37.2	39.6	46.0	56.4			27.8	29.0	30.4	32.0	35.9	41.4	50.1					
	130	45.1	48.1	51.6	55.8	68.6					36.6	38.5	40.6	43.1	49.6	59.8					
	140	62.2	67.7	74.8	84.6						48.1	51.1	54.6	58.9	71.3						
	90	5.5	5.8	6.0	6.3	7.0	7.9	9.2	11.4	16.8	4.8	5.0	5.1	5.4	5.8	6.5	7.3	8.5	10.4	15.2	
	100	11.8	12.4	13.0	13.6	15.3	17.6	21.2	28.3		10.1	10.5	11.0	11.4	12.6	14.1	16.1	19.3	25.5		
100	110	19.2	20.2	21.3	22.6	25.7	30.5	39.0		16.2	16.9	17.7	18.5	20.6	23.4	27.6	34.9				
	120	28.3	29.9	31.8	34.0	39.9	50.1			23.4	24.5	25.8	27.1	30.7	35.8	44.3					
	130	40.1	42.8	46.1	50.2	62.7				32.2	33.9	35.9	38.2	44.4	54.4						
	140	57.1	62.3	69.2	79.0					43.6	46.5	49.8	54.0	66.2							
	100	6.3	6.6	6.9	7.3	8.3	9.7	12.1	18.1		5.3	5.6	5.8	6.1	6.7	7.6	8.9	11.0	16.1		
110	110	13.7	14.4	15.3	16.2	18.8	22.7	30.7		11.4	12.0	12.5	13.2	14.8	17.0	20.4	27.3				
	120	22.7	24.1	25.7	27.6	33.0	42.8			18.6	19.5	20.6	21.8	24.8	29.4	37.6					
	130	34.4	36.9	40.0	43.8	56.1				27.4	28.9	30.7	32.8	38.6	48.4						
	140	51.4	56.4	63.1	72.8					38.8	41.4	44.6	48.5	60.6							
	150	83.1	99.2							55.3	60.4	67.0	76.4								
120	110	7.4	7.8	8.3	8.9	10.4	13.1	19.8		6.1	6.4	6.7	7.1	8.0	9.4	11.7	17.4				
	120	16.4	17.5	18.7	20.3	24.7	34.0			13.2	14.0	14.8	15.7	18.1	21.9	29.6					
	130	28.1	30.3	33.0	36.5	48.4				22.0	23.3	24.9	26.7	31.9	41.3						
	140	44.9	49.6	56.1	65.7					33.3	35.8	38.7	42.4	54.2							
	150	76.5	92.4							50.0	54.6	61.1	70.4								
130	120	9.0	9.6	10.4	11.4	14.4	22.2			7.2	7.6	8.0	8.6	10.1	12.6	19.1					
	130	20.6	22.4	24.6	27.6	38.8				15.9	16.9	18.1	19.6	23.9	32.8						
	140	37.4	41.7	47.8	57.3					27.2	29.3	31.9	35.3	46.8							
	150	68.8	84.6							43.5	48.1	54.3	63.3								
	130	11.6	12.8	14.2	16.3	25.9					8.7	9.3	10.1	11.0	13.9	21.5					
140	140	28.4	32.1	37.5	46.8					20.0	21.7	23.9	26.8	37.6							
	150	59.6	75.2							36.3	40.5	46.3	55.5								
	140	16.7	19.3	23.4	32.1					11.3	12.4	13.8	15.8	25.1							
	150	47.9	63.1							27.5	31.1	36.3	45.4								
	140	31.2	45.4							16.2	18.7	22.7	31.1								



**TYPE "WU" HEAT EXCHANGERS - TABLE A**

**CAUTION:** When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		200° HEATING WATER										210° HEATING WATER														
		TEMPERATURE DROP										TEMPERATURE DROP														
IN	OUT	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	
40	60	5.38	5.50	5.63	5.76	6.04	6.36	6.72	7.12	7.59	8.14	8.79	9.60	4.95	5.06	5.17	5.28	5.52	5.79	6.09	6.43	6.81	7.25	7.77	8.38	
	80	11.42	11.68	11.97	12.27	12.92	13.65	14.49	15.46	16.60	17.96	19.66	21.84	10.45	10.68	10.93	11.18	11.73	12.34	13.03	13.82	14.73	15.80	17.08	18.67	
	100	18.37	18.84	19.34	19.86	21.02	22.35	23.90	25.74	27.97	30.77	34.48	39.78	16.71	17.11	17.53	17.97	18.93	20.01	21.26	22.70	24.41	26.49	29.09	32.51	
	120	26.73	27.49	28.30	29.16	31.11	33.39	36.14	39.56	43.97	50.09			24.09	24.71	25.38	26.08	27.64	29.44	31.56	34.09	37.22	41.25	46.77		
	140	37.38	38.62	39.96	41.41	44.77	48.92	54.27	61.62					33.21	34.18	35.23	36.36	38.92	41.96	45.71	50.48	56.95				
	160	52.44	54.64	57.10	59.88	66.73	76.41							45.37	46.98	48.75	50.70	55.28	61.18							
180	79.13	84.62	91.44	100.39									64.12	67.30	70.96	75.26	86.80									
50	70	5.68	5.81	5.95	6.10	6.42	6.78	7.19	7.66	8.21	8.88	9.69	10.73	5.20	5.32	5.44	5.56	5.83	6.13	6.47	6.86	7.30	7.82	8.45	9.21	
	90	12.12	12.42	12.74	13.08	13.83	14.68	15.67	16.83	18.23	19.96	22.21	25.31	11.04	11.30	11.57	11.86	12.48	13.18	13.98	14.90	15.99	17.30	18.91	21.00	
	110	19.68	20.22	20.80	21.41	22.78	24.37	26.26	28.57	31.48	35.35	40.94		17.79	18.24	18.72	19.22	20.33	21.60	23.09	24.84	26.98	29.67	33.22	38.30	
	130	29.00	29.90	30.88	31.93	34.32	37.20	40.81	45.50	52.09				25.91	26.64	27.42	28.25	30.11	32.31	34.95	38.23	42.48	48.35	57.52		
	150	41.40	42.96	44.66	46.55	51.04	56.91	65.14						36.27	37.46	38.75	40.15	43.38	47.38	52.54	59.63					
	170	60.48	63.63	67.28	71.58	83.32								50.92	53.05	55.43	58.11	64.73	74.08							
190	105.83	120.90											76.91	82.22	88.84	97.51										
60	80	6.02	6.17	6.33	6.50	6.86	7.28	7.76	8.32	9.00	9.83	10.89	12.34	5.49	5.62	5.75	5.89	6.20	6.54	6.93	7.38	7.91	8.55	9.32	10.32	
	100	12.96	13.30	13.67	14.07	14.94	15.95	17.14	18.58	20.27	22.63	25.92	30.98	11.74	12.03	12.33	12.66	13.37	14.19	15.13	16.25	17.59	19.25	21.40	24.37	
	120	21.27	21.91	22.59	23.32	24.97	26.94	29.35	32.40	36.48	42.43			19.08	19.60	20.15	20.74	22.05	23.58	25.40	27.61	30.41	34.13	39.50		
	140	31.86	32.96	34.17	35.48	38.55	42.39	47.46	54.68					28.14	29.01	29.94	30.95	33.25	36.04	39.50	44.03	50.37	60.51			
	160	46.78	48.84	51.16	53.79	60.38	69.82							40.21	41.71	43.35	45.18	49.51	55.18	63.13						
	180	73.18	78.50	85.17	94.00									58.78	61.83	65.36	69.53	80.89								
200													102.94	117.58												
80	100	6.92	7.12	7.33	7.56	8.06	8.66	9.37	10.26	11.39	12.95	15.30	19.79	6.23	6.40	6.57	6.76	7.16	7.64	8.19	8.85	9.67	10.73	12.16	14.33	
	120	15.21	15.69	16.21	16.77	18.06	19.61	21.56	24.11	27.68	33.39			13.55	13.94	14.36	14.81	15.81	17.00	18.43	20.22	22.55	25.80	30.95		
	140	25.73	26.68	27.72	28.87	31.56	35.02	39.73	46.78					22.57	23.30	24.10	24.97	26.96	29.41	32.52	36.72	42.92				
	160	40.53	42.43	44.58	47.04	53.30	62.65							34.55	35.91	37.42	39.10	43.13	48.51	56.33						
	180	66.67	71.80	78.30	87.04									52.96	55.86	59.24	63.26	74.45								
	200													96.63	111.08											
100	120	8.26	8.55	8.86	9.19	9.97	10.94	12.19	13.91	16.55	21.67			7.30	7.53	7.77	8.04	8.63	9.35	10.23	11.38	12.95	15.34	19.94		
	140	18.74	19.49	20.31	21.23	23.43	26.34	30.49	37.30					16.28	16.85	17.48	18.16	19.74	21.73	24.34	28.04	34.02	47.71			
	160	33.44	35.13	37.07	39.30	45.13	54.30							28.19	29.38	30.71	32.20	35.85	40.86	48.53						
	180	59.33	64.24	70.55	79.21									46.45	49.17	52.37	56.22	67.24								
	200													89.68	103.94											
110	115	2.11	2.18	2.27	2.35	2.56	2.81	3.14	3.61	4.34	5.85			1.86	1.92	1.98	2.05	2.21	2.39	2.63	2.93	3.36	4.02	5.38		
	120	4.34	4.49	4.66	4.85	5.29	5.84	6.58	7.62	9.36	13.62			3.81	3.94	4.07	4.21	4.54	4.94	5.45	6.12	7.07	8.64	12.45		
	125	6.70	6.95	7.22	7.52	8.23	9.13	10.36	12.17	15.37				5.87	6.06	6.27	6.50	7.03	7.67	8.50	9.61	11.25	14.13			
	130	9.21	9.56	9.96	10.39	11.41	12.74	14.58	17.42	22.99				8.03	8.31	8.61	8.93	9.68	10.62	11.82	13.49	16.04	20.99			
	150	21.38	22.37	23.49	24.76	27.93	32.51	40.17						18.23	18.95	19.75	20.64	22.77	25.59	29.61	36.20					
	170	39.97	42.53	45.57	49.31	60.43								32.55	34.19	36.07	38.24	43.89	52.78							
190	83.87	98.34											57.79	62.57	68.70	77.11										
120	125	2.36	2.45	2.55	2.67	2.94	3.29	3.79	4.57	6.21				2.05	2.12	2.20	2.29	2.48	2.73	3.05	3.50	4.20	5.67			
	130	4.87	5.07	5.29	5.63	6.12	6.90	8.03	9.90	14.56				4.22	4.37	4.53	4.72	5.14	5.67	6.38	7.40	9.07	13.19			
	135	7.55	7.87	8.23	8.63	9.60	10.91	12.87	16.37					6.51	6.75	7.02	7.31	7.99	8.87	10.05	11.80	14.91				
	140	10.45	10.91	11.43	12.01	13.44	15.43	18.53	24.69					8.96	9.30	9.68	10.10	11.09	12.38	14.16	16.91					
	160	25.07	26.47	28.09	30.01	35.18	44.06							20.81	21.77	22.85	24.09	27.17	31.61	39.04						
	180	50.74	55.36	61.42	70.01									38.93	41.42	44.38	48.00	58.81								
130	135	2.68	2.81	2.94	3.10	3.48	4.01	4.87	6.66					2.29	2.38	2.48	2.59	2.86	3.20	3.68	4.44	6.02				
	140	5.57	5.84	6.13	6.47	7.32	8.55	10.60	15.78					4.74	4.93	5.14	5.38	5.95	6.71	7.80	9.62	14.13				
	145	8.71	9.14	9.63	10.19	11.62	13.77	17.65	26.94					7.35	7.66	8.01	8.39	9.33	10.61	12.50	15.89					
	150	12.13	12.77	13.49	14.33	16.53	19.96							10.17	10.62	11.12	11.68	13.07	15.00	18.00	23.99					
	170	30.61	32.80	35.48	38.84	49.63								24.42	25.78	27.36	29.21	34.24	42.86							
	190	74.11	88.39											49.46	53.95	59.85	68.20									
140	145	3.13	3.30	3.49	3.72	4.31	5.25	7.26						2.61	2.73	2.86	3.01	3								



# FOR LOW TEMPERATURE RANGE

HEATED WATER		220° HEATING WATER											230° HEATING WATER													
		TEMPERATURE DROP											TEMPERATURE DROP													
IN	OUT	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	
40	60	4.58	4.67	4.76	4.86	5.07	5.30	5.56	5.84	6.16	6.52	6.94	7.43	4.25	4.33	4.41	4.50	4.68	4.88	5.10	5.34	5.61	5.92	6.26	6.65	
	80	9.62	9.82	10.03	10.25	10.72	11.24	11.82	12.47	13.21	14.07	15.08	16.28	8.90	9.07	9.26	9.45	9.85	10.30	10.79	11.34	11.96	12.66	13.47	14.42	
	100	15.30	15.64	16.00	16.37	17.18	18.08	19.10	20.27	21.63	23.23	25.16	27.59	14.09	14.38	14.69	15.00	15.69	16.46	17.31	18.27	19.38	20.65	22.16	23.97	
	120	21.89	22.41	22.96	23.55	24.83	26.29	27.97	29.93	32.28	35.17	38.87	43.89	20.02	20.47	20.94	21.43	22.50	23.70	25.07	26.64	28.48	30.67	33.35	36.77	
	140	29.83	30.62	31.47	32.38	34.39	36.74	39.53	42.94	47.26	53.03			27.04	27.70	28.40	29.14	30.78	32.65	34.83	37.40	40.54	44.47	49.69		
	160	39.99	41.24	42.59	44.05	47.39	51.48	56.66	63.61					35.74	36.74	37.80	38.95	41.52	44.56	48.24	52.88	58.99				
	180	54.39	56.56	58.97	61.68	68.31	77.50							47.39	48.99	50.74	52.66	57.14	62.84	70.51						
50	70	4.79	4.89	4.99	5.10	5.33	5.59	5.88	6.20	6.56	6.98	7.47	8.06	4.43	4.52	4.61	4.70	4.90	5.12	5.37	5.64	5.94	6.29	6.69	7.15	
	90	10.12	10.34	10.57	10.82	11.34	11.93	12.59	13.34	14.21	15.23	16.46	17.97	9.33	9.52	9.72	9.93	10.38	10.87	11.43	12.05	12.76	13.58	14.55	15.70	
	110	16.20	16.58	16.98	17.40	18.32	19.36	20.56	21.94	23.58	25.57	28.06	31.34	14.85	15.17	15.51	15.87	16.64	17.51	18.49	19.61	20.91	22.45	24.31	26.63	
	130	23.37	23.97	24.61	25.29	26.79	28.52	30.55	32.99	36.00	39.87	45.17		21.26	21.76	22.29	22.85	24.09	25.49	27.10	28.99	31.25	34.03	37.59	42.42	
	150	32.25	33.19	34.20	35.29	37.75	40.69	44.29	48.90	55.13				28.99	29.76	30.58	31.45	33.39	35.66	38.35	41.64	45.80	51.37			
	170	44.09	45.65	47.36	49.24	53.67	59.37	67.18						38.90	40.11	41.41	42.85	46.05	50.00	55.01	61.73					
	190	62.37	65.45	69.00	73.16	84.35								52.95	55.05	57.38	60.01	66.43	75.33							
60	80	5.04	5.15	5.26	5.38	5.64	5.93	6.25	6.62	7.05	7.54	8.14	8.87	4.65	4.74	4.84	4.94	5.16	5.41	5.68	5.99	6.34	6.74	7.21	7.77	
	100	10.70	10.95	11.21	11.48	12.08	12.75	13.52	14.40	15.44	16.70	18.25	20.25	9.82	10.03	10.25	10.49	10.99	11.55	12.19	12.91	13.74	14.72	15.90	17.35	
	120	17.26	17.69	18.15	18.64	19.70	20.93	22.35	24.04	26.09	28.67	32.09	36.97	15.73	16.10	16.48	16.89	17.77	18.78	19.92	21.25	22.83	24.74	27.14	30.29	
	140	25.16	25.86	26.61	27.41	29.21	31.33	33.87	37.03	41.12	46.78			22.72	23.30	23.91	24.56	26.01	27.68	29.64	31.98	34.88	38.62	43.73		
	160	35.25	36.40	37.65	39.01	42.12	45.98	50.96	57.81	68.37				31.36	32.28	33.25	34.31	36.68	39.52	43.00	47.45	53.48				
	180	49.53	51.59	53.89	56.49	62.90	71.96							42.92	44.43	46.09	47.91	52.20	57.72	65.28						
	200	74.86	80.02	86.45	94.86									60.75	63.74	67.19	71.23	82.09								
80	100	5.66	5.79	5.94	6.09	6.43	6.81	7.25	7.77	8.39	9.16	10.14	11.47	5.17	5.29	5.41	5.54	5.82	6.14	6.50	6.91	7.40	7.98	8.70	9.61	
	120	12.20	12.52	12.86	13.22	14.03	14.96	16.07	17.40	19.05	21.20	24.18	28.86	11.07	11.34	11.62	11.92	12.58	13.34	14.21	15.24	16.48	18.02	20.01	22.76	
	140	20.06	20.65	21.28	21.96	23.50	25.32	27.56	30.40	34.19	39.72			18.02	18.50	19.02	19.56	20.78	22.21	23.90	25.96	28.56	32.02	37.02		
	160	30.09	31.12	32.24	33.47	36.33	39.92	44.66	51.40					26.62	27.43	28.31	29.25	31.40	34.00	37.24	41.46	47.40				
	180	44.26	46.19	48.36	50.83	57.01	65.94							38.09	39.50	41.05	42.76	46.82	52.14	59.60						
	200	69.34	74.35	80.64	88.97									55.77	58.65	61.97	65.90	76.62								
	100	120	6.53	6.71	6.91	7.12	7.59	8.14	8.80	9.62	10.68	12.12	14.31	18.48	5.89	6.04	6.20	6.37	6.75	7.19	7.71	8.32	9.08	10.06	11.40	13.41
140		14.36	14.81	15.30	15.82	17.02	18.47	20.29	22.66	26.00	31.33			12.82	13.18	13.57	13.99	14.93	16.03	17.37	19.04	21.22	24.26	29.06		
160		24.34	25.23	26.20	27.28	29.80	33.04	37.45	44.06					21.38	22.07	22.82	23.63	25.50	27.79	30.71	34.64	40.46				
180		38.40	40.19	42.21	44.52	50.40	59.20							32.78	34.06	35.48	37.06	40.85	45.91	53.28						
200		63.26	68.10	74.25	82.50									50.31	53.05	56.25	60.04	70.62								
110		115	1.66	1.71	1.76	1.81	1.94	2.08	2.25	2.47	2.75	3.14	3.74	4.99	1.50	1.53	1.58	1.62	1.72	1.83	1.97	2.13	2.33	2.59	2.95	3.51
		125	3.39	3.49	3.60	3.71	3.97	4.27	4.64	5.11	5.72	6.60	8.03	11.48	3.05	3.13	3.22	3.31	3.52	3.75	4.04	4.38	4.81	5.38	6.19	7.50
	135	5.20	5.36	5.53	5.71	6.11	6.60	7.20	7.95	8.97	10.47	13.08		4.67	4.79	4.93	5.07	5.40	5.78	6.23	6.78	7.48	8.42	9.79	12.18	
	145	7.10	7.32	7.56	7.81	8.39	9.08	9.94	11.04	12.56	14.87			6.35	6.53	6.72	6.92	7.38	7.91	8.55	9.35	10.37	11.76	13.88	17.92	
	155	15.85	16.40	17.00	17.66	19.20	21.12	23.66	27.24	33.03				13.99	14.43	14.90	15.41	16.56	17.97	19.73	22.03	25.26	30.43			
	170	27.46	28.62	29.91	31.35	34.89	39.75	47.19						23.73	24.59	25.53	26.57	29.03	32.17	36.44	42.86					
	190	45.28	47.92	51.03	54.77	65.48								37.46	39.19	41.16	43.41	49.12	57.68							
120	125	1.81	1.87	1.93	1.99	2.14	2.33	2.55	2.85	3.26	3.90	5.22		1.62	1.66	1.71	1.76	1.88	2.02	2.19	2.40	2.67	3.05	3.63	4.84	
	130	3.71	3.83	3.96	4.10	4.42	4.80	5.29	5.94	6.86	8.38	12.07		3.30	3.40	3.50	3.61	3.86	4.16	4.51	4.97	5.56	6.41	7.79	11.14	
	135	5.71	5.90	6.10	6.32	6.83	7.46	8.26	9.33	10.92	13.70			5.07	5.22	5.38	5.56	5.95	6.42	7.00	7.73	8.72	10.16	12.69		
	140	7.82	8.08	8.37	8.69	9.42	10.32	11.49	13.10	15.57	20.37			6.92	7.13	7.36	7.60	8.16	8.83	9.66	10.73	12.20	14.45	18.76		
	160	17.75	18.46	19.23	20.10	22.16	24.89	28.79	35.19					15.45	15.99	16.57	17.21	18.70	20.57	23.02	26.50	32.12				
	180	31.73	33.32	35.15	37.25	42.74	51.39							26.79	27.91	29.16	30.57	34.00	38.73	45.96						
	130	135	2.00	2.07	2.14	2.22	2.42	2.65	2.97	3.40	4.08	5.50			1.76	1.82	1.88	1.94	2.09	2.26	2.48	2.77	3.16	3.79	5.07	
140		4.11	4.25	4.41	4.59	5.00	5.52	6.20	7.19	8.81	12.81			3.61	3.73	3.85	3.99	4.30	4.67	5.15	5.78	6.67	8.14	11.73		
145		6.34	6.58	6.83	7.12	7.78	8.63	9.78	11.47	14.48				5.56	5.75	5.94	6.16	6.65	7.26	8.03	9.08	10.61	13.32			
150		8.73	9.06	9.43	9.83	10.79	12.04	13.77	16.44	21.67				7.62	7.88	8.16	8.46	9.17	10.05	11.18	12.75	15.14	19.80			
170		20.29	21.22	22.27	23.47	26.46	30.77	37.99						17.32	18.00	18.75	19.59	21.60	24.25	28.04	34.26					
190		37.98	40.39	43.27	46.80	57.32								30.97	32.52	34.29	36.34	41.68	50.10							
140		145	2.24	2.32	2.42	2.53	2.78	3.11	3.58	4.31	5.85				1.95	2.01	2.09	2.17	2.35	2.58	2.89	3.31	3.97	5.35		
	150	4.62	4.80	5.01	5.24	5.79	6.53	7.59	9.35	13.74				4.00	4.15	4.30	4.47	4.87	5.37	6.04	6.99	8.57	12.46			
	155	7.16	7.47	7.80	8.18	9.09	10.33	12.17	15.46					6.19	6.41	6.66	6.94	7.58	8.40	9.52	11.17	14.09				
	160	9.91	10.35	10.83	11.38	12.73	14.61	17.52	23.34					8.51	8.83	9.19	9.58	10.52	11.73	13.41	16.00	21.09				
	180	2																								

**TYPE "WU" HEAT EXCHANGERS - TABLE A**

CAUTION: When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		240° HEATING WATER										250° HEATING WATER													
		TEMPERATURE DROP										TEMPERATURE DROP													
IN	OUT	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°	5°	10°	15°	20°	30°	40°	50°	60°	70°	80°	90°	100°
40	60	3.96	4.03	4.10	4.18	4.34	4.51	4.70	4.91	5.14	5.40	5.69	6.02	3.70	3.76	3.83	3.90	4.04	4.19	4.36	4.54	4.74	4.96	5.21	5.48
	80	8.27	8.42	8.58	8.74	9.10	9.48	9.91	10.38	10.90	11.49	12.15	12.92	7.71	7.84	7.98	8.13	8.44	8.78	9.14	9.55	9.99	10.49	11.05	11.68
	100	13.03	13.29	13.55	13.83	14.42	15.07	15.80	16.61	17.52	18.56	19.77	21.18	12.11	12.33	12.56	12.80	13.32	13.89	14.51	15.19	15.96	16.83	17.81	18.95
	120	18.42	18.81	19.21	19.63	20.54	21.55	22.68	23.97	25.45	27.17	29.22	31.72	17.04	17.37	17.72	18.08	18.86	19.72	20.68	21.75	22.97	24.36	25.98	27.91
	140	24.69	25.25	25.84	26.46	27.82	29.35	31.09	33.12	35.51	38.41	42.03	46.78	22.69	23.17	23.67	24.20	25.34	26.62	28.05	29.69	31.59	33.83	36.52	39.87
	160	32.28	33.10	33.97	34.89	36.94	39.30	42.09	45.46	49.64	55.11			29.40	30.09	30.81	31.57	33.25	35.15	37.35	39.92	43.02	46.84	51.78	
	180	42.02	43.27	44.61	46.06	49.36	53.36	58.37	64.98					37.75	38.75	39.82	40.97	45.53	50.14	54.62	60.43				
50	70	4.12	4.20	4.28	4.36	4.53	4.72	4.93	5.16	5.42	5.71	6.04	6.42	3.84	3.91	3.98	4.05	4.21	4.37	4.55	4.75	4.98	5.22	5.50	5.81
	90	8.64	8.80	8.98	9.16	9.55	9.97	10.44	10.97	11.56	12.24	13.01	13.92	8.03	8.18	8.33	8.49	8.82	9.19	9.60	10.05	10.55	11.11	11.75	12.49
	110	13.68	13.96	14.25	14.56	15.22	15.96	16.78	17.70	18.76	19.98	21.43	23.17	12.67	12.91	13.17	13.43	14.00	14.63	15.32	16.10	16.98	17.98	19.13	20.50
	130	19.46	19.89	20.34	20.81	21.85	23.00	24.32	25.83	27.60	29.71	32.29	35.58	17.92	18.29	18.68	19.08	19.96	20.93	22.02	23.26	24.69	26.34	28.32	30.73
	150	26.30	26.94	27.61	28.33	29.91	31.71	33.81	36.30	39.32	43.12	48.15		24.04	24.58	25.14	25.74	27.05	28.53	30.21	32.17	34.48	37.28	40.77	45.36
	170	34.79	35.75	36.79	37.89	40.37	43.31	46.88	51.36	57.27				31.45	32.24	33.08	33.97	35.95	38.24	40.94	44.19	48.24	53.52		
	190	46.16	47.71	49.41	51.27	55.61	61.14	68.57						40.96	42.17	43.47	44.88	48.08	51.95	56.81	63.21				
60	80	4.30	4.39	4.47	4.56	4.75	4.96	5.20	5.46	5.75	6.08	6.46	6.90	4.00	4.07	4.15	4.23	4.40	4.58	4.78	5.00	5.25	5.55	5.84	6.20
	100	9.06	9.24	9.43	9.63	10.07	10.54	11.08	11.67	12.36	13.14	14.07	15.17	8.39	8.55	8.72	8.90	9.27	9.68	10.13	10.64	11.21	11.83	12.60	13.47
	120	14.43	14.74	15.07	15.41	16.16	16.99	17.94	19.02	20.27	21.74	23.53	25.77	13.31	13.58	13.86	14.16	14.79	15.50	16.29	17.18	18.20	19.37	20.76	22.44
	140	20.67	21.16	21.67	22.22	23.41	24.76	26.31	28.14	30.32	33.00	36.43	41.09	18.94	19.36	19.79	20.25	21.25	22.36	23.63	25.09	26.80	28.83	31.32	34.50
	160	28.22	28.96	29.75	30.60	32.47	34.66	37.26	40.44	44.47	49.85			25.62	26.26	26.89	27.58	29.11	30.85	32.88	35.29	38.21	41.88		
	180	37.89	39.06	40.32	41.69	44.82	48.64	53.50	60.01					33.91	34.85	35.84	36.92	39.32	42.17	45.63	49.96	55.70			
	200	51.61	53.65	55.92	58.46	64.70	73.34							45.02	46.53	48.17	49.98	54.20	59.56	66.78					
80	100	4.75	4.85	4.96	5.07	5.31	5.57	5.87	6.21	6.60	7.06	7.61	8.28	4.39	4.47	4.57	4.66	4.87	5.09	5.35	5.63	5.95	6.32	6.76	7.27
	120	10.11	10.34	10.58	10.83	11.39	12.01	12.72	13.54	14.50	15.66	17.10	18.95	9.29	9.49	9.69	9.91	10.38	10.90	11.49	12.16	12.93	13.84	14.93	16.27
	140	16.33	16.73	17.16	17.61	18.60	19.74	21.07	22.64	24.55	26.95	30.13	34.69	14.91	15.25	15.61	15.98	16.81	17.74	18.81	20.03	21.52	23.30	25.53	28.47
	160	23.84	24.49	25.19	25.95	27.63	29.60	31.98	34.93	38.76	44.06			21.55	22.10	22.67	23.28	24.63	26.19	28.05	30.22	32.94	36.43	41.22	
	180	33.45	34.53	35.69	36.97	39.90	43.52	48.20	54.63					29.80	30.66	31.57	32.56	34.79	37.46	40.73	44.91	50.57			
	200	47.06	49.00	51.17	53.62	59.66	68.20							40.83	42.26	43.81	45.53	49.58	54.78	61.92					
	220	62.10	65.48	69.14	73.18	81.14	91.44							55.10	57.51	60.11	62.91	68.04	74.52	82.44	91.94	103.40			
100	120	5.35	5.48	5.62	5.76	6.07	6.43	6.84	7.32	7.90	8.61	9.52	10.76	4.90	5.01	5.12	5.24	5.50	5.80	6.13	6.52	6.97	7.52	8.18	9.04
	140	11.56	11.86	12.18	12.52	13.27	14.14	15.17	16.41	17.96	19.96	22.75	27.13	10.50	10.75	11.02	11.30	11.92	12.62	13.44	14.40	15.56	17.00	18.86	21.44
	160	19.03	19.58	20.18	20.82	22.25	23.97	26.06	28.72	32.28	37.47			17.12	17.57	18.06	18.57	19.71	21.05	22.63	24.57	27.01	30.25	34.95	
	180	28.59	29.56	30.62	31.77	34.46	37.84	42.30	48.65					25.33	26.09	26.91	27.80	29.82	32.27	35.32	39.30	44.89			
	200	42.10	43.93	45.98	48.31	54.14	62.58							36.28	37.61	39.07	40.69	44.53	49.55	55.61					
	220	58.10	61.48	65.14	69.18	79.14	91.44							50.10	52.51	55.11	57.91	63.04	69.52	77.44	86.94	98.40			
	240	75.10	79.48	84.14	89.18	101.44	116.44							66.10	69.51	73.11	76.91	83.04	90.52	99.44	110.94	124.40			
110	115	1.36	1.39	1.43	1.46	1.54	1.64	1.74	1.87	2.02	2.21	2.45	2.78	1.24	1.27	1.30	1.33	1.40	1.47	1.56	1.66	1.78	1.92	2.10	2.32
	125	2.76	2.83	2.90	2.98	3.15	3.34	3.56	3.83	4.15	4.55	5.08	5.83	2.52	2.58	2.64	2.70	2.84	3.00	3.18	3.39	3.64	3.94	4.32	4.81
	135	4.22	4.33	4.44	4.56	4.82	5.12	5.48	5.90	6.41	7.07	7.94	9.21	3.85	3.94	4.03	4.13	4.35	4.60	4.88	5.21	5.61	6.09	6.70	7.51
	145	5.74	5.88	6.04	6.20	6.57	7.00	7.49	8.09	8.83	9.77	11.06	13.02	5.22	5.34	5.47	5.61	5.91	6.26	6.66	7.12	7.68	8.37	9.25	10.45
	155	7.30	7.47	7.65	7.84	8.34	8.94	9.67	10.54	11.56	12.77	14.28	16.14	6.84	7.03	7.23	7.44	7.86	8.34	8.92	9.54	10.32	11.28	12.44	13.91
	165	8.94	9.24	9.56	9.90	10.62	11.48	12.49	13.66	14.99	16.58	18.44	20.58	8.54	8.84	9.16	9.50	10.00	10.58	11.26	12.06	13.00	14.10	15.38	16.95
	175	10.66	11.08	11.54	12.04	12.98	14.07	15.32	16.74	18.34	20.14	22.16	24.52	10.34	10.74	11.18	11.64	12.34	13.16	14.12	15.24	16.52	17.98	19.64	21.51
120	120	1.46	1.50	1.54	1.58	1.67	1.78	1.91	2.07	2.26	2.52	2.86	3.40	1.32	1.36	1.39	1.42	1.50	1.59	1.70	1.82	1.96	2.14	2.38	2.70
	130	2.97	3.05	3.13	3.22	3.42	3.65	3.93	4.26	4.68	5.23	6.01	7.28	2.69	2.76	2.83	2.90	3.07	3.25	3.47	3.73	4.04	4.43	4.94	5.66
	135	4.55	4.67	4.80	4.94	5.26	5.62	6.06	6.59	7.27	8.18	9.51	11.83	4.12	4.22	4.33	4.44	4.70	4.99	5.33	5.74	6.24	6.87	7.72	8.95
	140	6.19	6.37	6.55	6.75	7.19	7.70	8.32	9.09	10.08	11.43	13.49	17.41	5.59	5.74	5.89	6.05	6.40	6.82						

# FOR MEDIUM TEMPERATURE RANGE

HEATED WATER		260° HEATING WATER					280° HEATING WATER				
		TEMPERATURE DROP					TEMPERATURE DROP				
IN	OUT	20°	40°	60°	80°	100°	20°	40°	60°	80°	100°
40	60	3.65	3.91	4.21	4.58	5.02	3.22	3.43	3.67	3.95	4.29
	80	7.58	8.15	8.83	9.64	10.65	6.66	7.12	7.64	8.26	9.00
	100	11.91	12.85	13.98	15.37	17.13	10.40	11.14	12.01	13.04	14.30
	120	16.74	18.16	19.88	22.05	24.90	14.52	15.61	16.90	18.47	20.43
	140	22.27	24.32	26.88	30.21	34.82	19.14	20.67	22.53	24.83	27.80
	160	28.80	31.77	35.60	40.86	48.88	24.44	26.57	29.21	32.60	37.19
	180	36.89	41.30	47.36	56.60		30.71	33.72	37.56	42.74	50.43
50	70	3.78	4.06	4.40	4.80	5.30	3.32	3.55	3.81	4.12	4.48
	90	7.90	8.52	9.26	10.16	11.31	6.91	7.39	7.96	8.64	9.47
	110	12.45	13.49	14.75	16.32	18.36	10.82	11.62	12.57	13.71	15.14
	130	17.59	19.17	21.13	23.64	27.06	15.16	16.35	17.79	19.56	21.82
	150	23.56	25.89	28.87	32.85	38.69	20.08	21.79	23.88	26.53	30.06
	170	30.76	34.22	38.84	45.53		25.81	28.23	31.28	35.30	41.04
	190	39.94	45.33	53.18			32.73	36.22	40.83	47.36	
60	80	3.94	4.24	4.61	5.06	5.62	3.44	3.69	3.97	4.30	4.7
	100	8.25	8.93	9.75	10.77	12.10	7.18	7.71	8.33	9.08	10.01
	120	13.07	14.22	15.64	17.45	19.87	11.28	12.16	13.21	14.50	16.13
	140	18.58	20.36	22.61	25.59	29.82	15.89	17.21	18.82	20.84	23.49
	160	25.08	27.77	31.30	36.24	44.06	21.16	23.09	25.48	28.59	32.90
	180	33.12	37.25	43.02	52.07		27.41	30.19	33.79	38.73	46.26
	200	43.78	50.65	61.59			35.14	39.30	45.01	53.72	
80	100	4.31	4.68	5.14	5.71	6.48	3.73	4.02	4.36	4.77	5.29
	120	9.12	9.96	11.01	12.38	14.26	7.83	8.46	9.23	10.18	11.41
	140	14.61	16.08	17.97	20.51	24.27	12.42	13.50	14.82	16.51	18.78
	160	21.09	23.47	26.63	31.18	38.77	17.68	19.35	21.46	24.25	28.22
	180	29.08	32.90	38.33	47.18		23.90	26.43	29.75	34.39	41.76
	200	39.67	46.23	56.96			31.59	35.49	40.94	49.49	
	100	120	4.80	5.27	5.87	6.66	7.80	4.10	4.44	4.87	5.41
140		10.28	11.38	12.81	14.80	17.88	8.68	9.47	10.45	11.73	13.50
160		16.74	18.74	21.46	25.51	32.78	13.92	15.31	17.08	19.47	23.00
180		24.69	28.13	33.16	41.76		20.11	22.36	25.34	29.63	36.80
200		35.22	41.41	51.92			27.77	31.38	36.52	44.89	
110	115	1.22	1.34	1.49	1.70	2.00	1.04	1.13	1.23	1.37	1.56
	120	2.47	2.72	3.04	3.48	4.11	2.10	2.28	2.51	2.80	3.18
	125	3.77	4.16	4.66	5.34	6.37	3.19	3.48	3.83	4.28	4.89
	130	5.11	5.65	6.35	7.31	8.78	4.32	4.71	5.19	5.82	6.68
	150	11.02	12.31	14.03	16.55	20.86	9.20	10.10	11.24	12.77	14.98
	170	18.13	20.53	23.95	29.48		14.86	16.47	18.58	21.54	26.27
	190	27.15	31.50	38.34			21.69	24.36	28.05	33.75	
120	125	1.30	1.44	1.62	1.87	2.26	1.09	1.19	1.32	1.48	1.70
	130	2.64	2.93	3.31	3.84	4.68	2.22	2.43	2.68	3.02	3.50
	135	4.03	4.48	5.08	5.93	7.30	3.38	3.70	4.10	4.63	5.39
	140	5.47	6.10	6.94	8.15	10.17	4.58	5.02	5.58	6.32	7.39
	160	11.91	13.44	15.58	18.92	25.68	9.81	10.84	12.19	14.07	16.97
	180	19.83	22.81	27.30	35.57		15.98	17.87	20.44	24.27	31.15
	130	135	1.39	1.55	1.77	2.09	2.63	1.16	1.27	1.42	1.61
140		2.83	3.17	3.63	4.31	5.51	2.36	2.59	2.89	3.30	3.90
145		4.34	4.87	5.60	6.69	8.71	3.59	3.96	4.43	5.08	6.04
150		5.90	6.65	7.68	9.26	12.32	4.87	5.38	6.04	6.95	8.34
170		12.99	14.86	17.61	22.38		10.53	11.74	13.37	15.75	19.32
190		21.98	25.79	32.09			17.33	19.61	22.85	28.08	
140		145	1.50	1.70	1.96	2.39	3.22	1.24	1.37	1.54	1.78
	150	3.07	3.47	4.05	4.96	6.90	2.52	2.79	3.15	3.65	4.45
	155	4.71	5.35	6.27	7.77	11.21	3.85	4.27	4.84	5.64	6.94
	160	6.43	7.33	8.64	10.85	16.50	5.23	5.82	6.61	7.75	9.66
	180	14.33	16.68	20.41	28.13		11.38	12.83	14.86	18.03	24.44
	200	24.75	29.91	39.79			18.98	21.80	26.07	33.93	
	150	155	1.64	1.87	2.22	2.81	4.46	1.33	1.48	1.69	1.99
160		3.36	3.85	4.60	5.92	10.26	2.71	3.03	3.46	4.11	5.24
165		5.16	5.96	7.16	9.39		4.14	4.65	5.34	6.38	8.29
170		7.07	8.20	9.95	13.36		5.64	6.35	7.33	8.83	11.72
190		16.03	19.12	24.60			12.43	14.20	16.81	21.35	
210		28.52	36.07				21.05	24.68	30.68		
160		165	1.81	2.10	2.57	3.50		1.44	1.62	1.87	2.27
	170	3.71	4.34	5.36	7.54		2.94	3.32	3.86	4.73	6.57
	175	5.73	6.75	8.42	12.33		4.50	5.11	5.98	7.40	10.68
	180	7.89	9.34	11.83	18.35		6.15	7.01	8.25	10.35	15.72
	200	18.28	22.59	31.86			13.72	15.96	19.51	26.87	
	220	33.96	46.75				23.73	28.65	38.07		
	170	175	2.02	2.40	3.07	4.96		1.57	1.79	2.12	2.68
180		4.17	5.00	6.50	11.55		3.21	3.69	4.39	5.65	9.78
185		6.47	7.83	10.38			4.94	5.70	6.84	8.97	
190		8.94	10.93	14.88			6.77	7.84	9.51	12.76	
210		21.39	27.99				15.37	18.32	23.54		
230		42.75					27.36	34.58			
180		185	2.30	2.83	3.91			1.73	2.01	2.45	3.34
	190	4.77	5.93	8.48			3.56	4.16	5.12	7.20	
	195	7.45	9.39	14.02			5.50	6.46	8.06	11.79	
	200	10.38	13.29	21.18			7.56	8.95	11.32	17.54	
	220	26.02	38.07				17.54	21.66	30.51		
	240	60.91					32.61	44.85			
	190	195	2.68	3.46	5.72			1.94	2.30	2.94	4.74
200		5.60	7.37	13.56			4.00	4.79	6.22	11.05	
205		8.83	11.89				6.21	7.50	9.94		
210		12.43	17.25				8.58	10.48	14.25		
230		33.79					20.54	26.86			
250							41.09				
200		205	3.22	4.54				2.21	2.71	3.74	
	210	6.83	9.97				4.58	5.69	8.12		
	215	10.91	16.77				7.15	9.00	13.44		
	220	15.63	26.02				9.96	12.75	20.30		
	240	50.99					25.00	36.56			
210	215	4.08	6.99				2.57	3.32	5.48		
	220	8.81	17.08				5.38	7.08	13.01		
	225	14.45					8.48	11.41			
	230	21.44					11.94	16.56			
	250						32.50				
220	225	5.65					3.10	4.36			
	230	12.69					6.56	9.57			
	235	22.10					10.49	16.11			
	240	36.56					15.04	25.00			
230	235	9.60					6.72				
	240	25.13					16.42				
240	245						5.44				
	250						12.21				

**TYPE "WU" HEAT EXCHANGERS - TABLE A**

**CAUTION:** When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		300° HEATING WATER					320° HEATING WATER					
		TEMPERATURE DROP					TEMPERATURE DROP					
IN	OUT	20°	40°	60°	80°	100°	20°	40°	60°	80°	100°	120°
40	60	2.87	3.04	3.24	3.46	3.72	2.58	2.72	2.88	3.06	3.27	3.52
	80	5.92	6.29	6.71	7.19	7.76	5.31	5.61	5.95	6.34	6.79	7.32
	100	9.20	9.79	10.48	11.27	12.22	8.22	8.70	9.25	9.89	10.62	11.50
	120	12.77	13.63	14.63	15.82	17.25	11.36	12.05	12.85	13.78	14.87	16.19
	140	16.71	17.90	19.31	21.00	23.08	14.78	15.73	16.83	18.12	19.67	21.58
	160	21.14	22.76	24.69	27.07	30.10	18.56	19.83	21.31	23.08	25.24	27.98
180	26.24	28.43	31.11	34.51	39.04	22.83	24.50	26.49	28.91	31.96	35.99	
50	70	2.95	3.14	3.35	3.59	3.87	2.65	2.80	2.97	3.16	3.39	3.65
	90	6.11	6.50	6.95	7.48	8.10	5.46	5.78	6.15	6.56	7.05	7.63
	110	9.53	10.16	10.90	11.77	12.82	8.48	8.99	9.58	10.27	11.07	12.04
	130	13.26	14.20	15.29	16.60	18.21	11.75	12.49	13.36	14.37	15.57	17.05
	150	17.42	18.73	20.28	22.18	24.57	15.33	16.36	17.56	18.99	20.72	22.89
	170	22.15	23.95	26.12	28.85	32.42	19.34	20.72	22.36	24.33	26.80	30.00
190	27.67	30.14	33.23	37.25	42.85	23.89	25.74	27.97	30.74	34.31	39.22	
60	80	3.05	3.24	3.47	3.73	4.04	2.73	2.89	3.07	3.27	3.52	3.80
	100	6.33	6.75	7.23	7.81	8.49	5.63	5.98	6.37	6.82	7.35	7.98
	120	9.89	10.58	11.38	12.34	13.52	8.77	9.32	9.96	10.70	11.58	12.66
	140	13.82	14.84	16.04	17.51	19.34	12.18	12.99	13.93	15.03	16.38	18.05
	160	18.23	19.67	21.41	23.57	26.35	15.96	17.08	18.40	19.98	21.94	24.45
	180	23.31	25.32	27.80	30.98	35.30	20.21	21.73	23.55	25.79	28.64	32.48
200	29.33	32.16	35.78	40.67	47.93	25.10	27.17	29.71	32.91	37.20	43.43	
80	100	3.27	3.50	3.76	4.07	4.45	2.91	3.09	3.30	3.54	3.83	4.18
	120	6.83	7.32	7.90	8.60	9.47	6.03	6.43	6.88	7.42	8.06	8.86
	140	10.75	11.57	12.56	13.76	15.29	9.44	10.09	10.84	11.75	12.85	14.24
	160	15.15	16.40	17.91	19.81	22.30	13.21	14.17	15.30	16.68	18.40	20.65
	180	20.21	22.02	24.28	27.21	31.27	17.45	18.81	20.45	22.48	25.10	28.71
	200	26.20	28.83	32.23	36.90	44.02	22.32	24.23	26.57	29.58	33.67	39.79
100	120	3.55	3.82	4.14	4.53	5.02	3.13	3.34	3.58	3.88	4.23	4.68
	140	7.47	8.06	8.78	9.68	10.83	6.53	6.99	7.54	8.20	9.01	10.06
	160	11.86	12.88	14.12	15.71	17.85	10.29	11.06	11.99	13.12	14.57	16.49
	180	16.90	18.48	20.47	23.11	26.86	14.51	15.69	17.12	18.91	21.27	24.60
200	22.87	25.26	28.40	32.81	39.79	19.37	21.09	23.23	26.01	29.86	35.85	
110	115	0.90	0.97	1.05	1.15	1.37	0.79	0.84	0.91	0.98	1.07	1.19
	120	1.82	1.96	2.12	2.33	2.59	1.59	1.70	1.83	1.99	2.17	2.41
	125	2.76	2.97	3.23	3.55	3.96	2.42	2.58	2.78	3.02	3.31	3.68
	130	3.72	4.02	4.37	4.81	5.38	3.26	3.49	3.76	4.08	4.48	5.00
	150	7.85	8.52	9.33	10.36	11.73	6.82	7.33	7.94	8.68	9.61	10.86
	170	12.54	13.68	15.12	16.99	19.62	10.79	11.65	12.69	13.99	15.68	18.03
190	17.99	19.80	22.15	25.37	30.26	15.30	16.62	18.26	20.35	23.21	27.48	
120	125	0.94	1.02	1.11	1.22	1.37	0.82	0.88	0.95	1.03	1.14	1.27
	130	1.90	2.06	2.25	2.48	2.79	1.66	1.78	1.92	2.10	2.31	2.59
	135	2.89	3.13	3.42	3.79	4.27	2.52	2.71	2.92	3.19	3.52	3.96
	140	3.91	4.24	4.64	5.15	5.82	3.40	3.65	3.95	4.32	4.78	5.39
	160	8.29	9.04	9.97	11.18	12.85	7.15	7.72	8.40	9.24	10.33	11.83
	180	13.32	14.63	16.31	18.57	21.91	11.37	12.33	13.51	15.02	17.04	20.00
130	135	0.99	1.07	1.18	1.31	1.48	0.86	0.92	1.00	1.09	1.21	1.37
	140	2.01	2.18	2.39	2.66	3.03	1.74	1.87	2.03	2.22	2.47	2.80
	145	3.05	3.32	3.65	4.07	4.65	2.64	2.84	3.09	3.39	3.77	4.29
	150	4.13	4.50	4.95	5.55	6.36	3.56	3.84	4.18	4.59	5.13	5.86
	170	8.80	9.65	10.73	12.18	14.27	7.53	8.16	8.93	9.90	11.20	13.07
	190	14.24	15.76	17.76	20.57	25.06	12.03	13.12	14.48	16.26	18.75	22.67
140	145	1.05	1.14	1.26	1.41	1.62	0.90	0.97	1.06	1.17	1.30	1.50
	150	2.12	2.32	2.56	2.88	3.33	1.83	1.97	2.15	2.37	2.66	3.06
	155	3.23	3.54	3.92	4.42	5.13	2.77	3.00	3.28	3.62	4.08	4.72
	160	4.38	4.80	5.33	6.03	7.04	3.75	4.06	4.44	4.92	5.55	6.46
	180	9.39	10.38	11.66	13.43	16.19	7.96	8.67	9.55	10.70	12.28	14.71
	200	15.32	17.12	19.56	23.20	29.75	12.79	14.04	15.63	17.79	20.97	26.57
150	155	1.11	1.22	1.35	1.54	1.80	0.95	1.03	1.13	1.25	1.41	1.65
	160	2.26	2.48	2.76	3.15	3.72	1.92	2.09	2.29	2.55	2.89	3.40
	165	3.44	3.79	4.24	4.85	5.76	2.93	3.18	3.50	3.90	4.44	5.26
	170	4.67	5.15	5.78	6.64	7.95	3.96	4.31	4.75	5.31	6.08	7.25
	190	10.09	11.24	12.79	15.05	18.93	8.45	9.26	10.29	11.66	13.66	17.04
	210	16.62	18.80	21.88	26.87	35.13	13.68	15.13	17.04	19.72	24.00	
160	165	1.18	1.31	1.47	1.70	2.05	1.00	1.09	1.20	1.35	1.55	1.86
	170	2.41	2.67	3.01	3.49	4.24	2.04	2.22	2.45	2.78	3.18	3.85
	175	3.69	4.09	4.63	5.39	6.62	3.10	3.39	3.75	4.23	4.91	6.00
	180	5.01	5.57	6.33	7.41	9.23	4.20	4.60	5.11	5.78	6.74	8.34
	200	10.92	12.30	14.23	17.25	23.36	9.03	9.96	11.18	12.88	15.50	20.73
	220	18.22	20.92	24.99	32.49	44.13	14.73	16.45	18.78	22.26	28.52	
170	175	1.27	1.42	1.61	1.90	2.39	1.07	1.17	1.30	1.47	1.73	2.16
	180	2.60	2.90	3.31	3.93	5.01	2.17	2.38	2.65	3.02	3.56	4.51
	185	3.98	4.45	5.11	6.10	7.92	3.31	3.64	4.06	4.64	5.52	7.10
	190	5.42	6.09	7.02	8.45	11.20	4.49	4.95	5.54	6.36	7.62	10.01
	210	11.93	13.63	16.12	20.45	28.13	9.70	10.81	12.28	14.44	18.14	
	230	20.23	23.70	29.44	38.13	50.13	16.00	18.08	21.03	25.80	33.67	
180	185	1.38	1.55	1.80	2.18	2.93	1.14	1.26	1.41	1.63	1.96	2.62
	190	2.82	3.18	3.70	4.53	6.28	2.32	2.57	2.89	3.34	4.07	5.58
	195	4.32	4.90	5.73	7.09	10.21	3.54	3.93	4.44	5.17	6.35	9.03
	200	5.91	6.72	7.91	9.91	15.04	4.82	5.36	6.07	7.11	8.84	13.21
	220	13.19	15.33	18.72	25.75	35.13	10.51	11.83	13.68	16.56	22.41	
	240	22.82	27.53	36.56	49.13	65.13	17.55	20.13	24.03	31.23	41.13	
190	195	1.51	1.72	2.03	2.57	4.06	1.22	1.36	1.55	1.82	2.29	3.57
	200	3.09	3.54	4.21	5.41	9.37	2.50	2.79	3.18	3.77	4.80	8.15
	205	4.75	5.47	6.56	8.59	14.23	3.83	4.28	4.91	5.86	7.60	
	210	6.51	7.53	9.12	12.23	19.13	5.21	5.85	6.74	8.11	10.75	
	230	14.78	17.60	22.60	30.10	40.13	11.49	13.11	15.50	19.65	26.13	
	250	26.34	33.26	44.13	59.13	79.13	19.50	22.83	28.33	37.13	49.13	
200	205	1.66	1.93	2.35	3.21	5.13	1.33	1.49	1.73	2.09	2.82	
	210	3.42	3.99	4.92	6.90	10.23	2.71	3.06	3.56	4.35	6.03	
	215	5.28	6.21	7.73	11.31	17.13	4.16	4.72	5.51	6.81	9.80	
	220	7.27	8.60	10.87	16.83	25.13	5.69	6.47	7.61	9.53	14.44	
	240	16.88	20.83	29.32	40.13	54.13	12.71	14.76	18.02	24.77	34.13	
	260	30.13	38.13	51.13	69.13	93.13	22.13	25.13	31.13	41.13	55.13	
210	215	1.86	2.21	2.81	4.55	7.13	1.45	1.66	1.95	2.47	3.90	
	220	3.85	4.61	5.98	10.61	16.13	2.97	3.41	4.05	5.20	9.00	
	225	5.97	7.21	9.55	14.13	21.13	4.58	5.27	6.32	8.26	13.13	
	230	8.26	10.08	13.70	19.13	28.13	6.27	7.26	8.78	11.76	19.13	
	250	19.79	25.85	35.13	47.13	63.13	14.26	16.97	21.77	29.13	41.13	
	270	35.13	45.13	59.13	79.13	105.13	25.13	29.13	37.13	49.13	65.13	
220	225	2.12	2.61	3.60	5.13	7.63	1.60	1.86	2.27	3.09	4.80	
	230	4.41	5.47	7.81	11.13	16.13	3.30	3.85	4.73	6.64	10.13	
	235	6.89	8.67	12.92	18.13	26.13	5.10	5.98	7.45	10.88	16.	

# FOR HIGH TEMPERATURE RANGE

HEATED WATER		340° HEATING WATER								360° HEATING WATER							
		TEMPERATURE DROP								TEMPERATURE DROP							
IN	OUT	20°	40°	60°	80°	100°	120°	140°	20°	40°	60°	80°	100°	120°	140°	160°	
40	60	2.34	2.46	2.59	2.74	2.91	3.10	3.33	2.13	2.23	2.34	2.47	2.61	2.77	2.95	3.17	
	80	4.80	5.05	5.33	5.65	6.01	6.43	6.93	4.36	4.58	4.81	5.08	5.38	5.72	6.11	6.57	
	100	7.40	7.81	8.26	8.77	9.36	10.05	10.86	6.72	7.06	7.43	7.86	8.34	8.89	9.53	10.26	
	120	10.19	10.77	11.42	12.16	13.02	14.03	15.25	9.22	9.70	10.24	10.84	11.54	12.34	13.28	14.42	
	140	13.20	13.98	14.86	15.88	17.08	18.51	20.26	11.90	12.54	13.27	14.09	15.04	16.15	17.48	19.10	
	160	16.50	17.52	18.69	20.05	21.68	23.66	26.16	14.81	15.64	16.59	17.68	18.94	20.44	22.27	24.57	
	180	20.15	21.47	23.00	24.82	27.03	29.79	33.41	17.98	19.05	20.27	21.69	23.37	25.39	27.91	31.20	
50	70	2.39	2.52	2.66	2.82	3.00	3.21	3.45	2.18	2.28	2.40	2.54	2.68	2.85	3.05	3.28	
	90	4.92	5.19	5.49	5.83	6.22	6.67	7.21	4.47	4.69	4.94	5.22	5.54	5.91	6.33	6.83	
	110	7.61	8.04	8.52	9.07	9.71	10.46	11.35	6.89	7.25	7.65	8.10	8.61	9.21	9.90	10.74	
	130	10.51	11.12	11.81	12.61	13.55	14.66	16.03	9.48	9.99	10.56	11.21	11.95	12.82	13.86	15.12	
	150	13.65	14.48	15.43	16.54	17.85	19.45	21.44	12.26	12.95	13.72	14.61	15.64	16.85	18.33	20.16	
	170	17.10	18.20	19.48	20.98	22.79	25.04	27.94	15.29	16.19	17.21	18.39	19.77	21.44	23.50	26.16	
	190	20.97	22.41	24.10	26.13	28.63	31.84	36.21	18.63	19.78	21.11	22.67	24.53	26.81	29.72	33.16	
60	80	2.46	2.59	2.74	2.91	3.10	3.33	3.59	2.23	2.34	2.47	2.61	2.77	2.95	3.16	3.41	
	100	5.06	5.34	5.66	6.03	6.45	6.94	7.53	4.58	4.82	5.08	5.38	5.72	6.11	6.57	7.12	
	120	7.85	8.30	8.82	9.41	10.10	10.92	11.92	7.08	7.46	7.89	8.37	8.92	9.56	10.32	11.25	
	140	10.85	11.51	12.26	13.13	14.15	15.39	16.93	9.76	10.30	10.91	11.61	12.42	13.37	14.52	15.94	
	160	14.14	15.04	16.07	17.29	18.74	20.53	22.83	12.66	13.39	14.22	15.18	16.31	17.65	19.31	21.41	
	180	17.78	18.98	20.37	22.04	24.08	26.66	30.11	15.83	16.79	17.90	19.19	20.72	22.59	24.95	28.08	
	200	21.89	23.47	25.35	27.64	30.52	34.33	39.79	19.35	20.60	22.05	23.77	25.86	28.48	31.91	36.76	
80	100	2.60	2.75	2.92	3.12	3.34	3.61	3.93	2.35	2.48	2.62	2.77	2.96	3.17	3.42	3.72	
	120	5.39	5.71	6.07	6.49	6.99	7.59	8.32	4.85	5.11	5.41	5.75	6.15	6.61	7.16	7.85	
	140	8.39	8.91	9.51	10.21	11.04	12.05	13.33	7.52	7.95	8.44	8.99	9.64	10.41	11.35	12.54	
	160	11.67	12.43	13.31	14.36	15.62	17.20	19.25	10.41	11.03	11.74	12.56	13.53	14.69	16.14	18.03	
	180	15.30	16.36	17.60	19.10	20.95	23.33	26.57	13.58	14.43	15.41	16.55	17.93	19.63	21.80	24.76	
	200	19.39	20.83	22.56	24.68	27.38	31.02	36.38	17.09	18.22	19.55	21.13	23.06	25.51	28.78	33.55	
	100	120	2.78	2.95	3.15	3.38	3.65	3.98	4.39	2.50	2.64	2.80	2.98	3.19	3.44	3.75	4.13
140		5.78	6.15	6.58	7.08	7.69	8.44	9.40	5.17	5.47	5.81	6.21	6.68	7.24	7.94	8.83	
160		9.05	9.66	10.38	11.23	12.27	13.58	15.34	8.05	8.55	9.11	9.77	10.56	11.52	12.73	14.34	
180		12.67	13.58	14.66	15.96	17.59	19.72	22.71	11.21	11.93	12.77	13.76	14.96	16.45	18.40	21.11	
200		16.75	18.04	19.60	21.53	24.02	27.45	32.69	14.71	15.72	16.90	18.32	20.08	22.34	25.42	30.09	
110		115	0.70	0.74	0.79	0.85	0.92	1.01	1.11	0.63	0.66	0.70	0.75	0.81	0.87	0.95	1.05
		120	1.41	1.50	1.60	1.72	1.87	2.04	2.26	1.27	1.34	1.42	1.52	1.63	1.76	1.92	2.13
	125	2.14	2.28	2.43	2.62	2.84	3.10	3.45	1.92	2.03	2.15	2.30	2.47	2.67	2.92	3.24	
	130	2.88	3.07	3.28	3.53	3.83	4.20	4.68	2.58	2.73	2.90	3.10	3.33	3.61	3.95	4.39	
	150	6.01	6.41	6.88	7.44	8.12	8.98	10.11	5.35	5.68	6.05	6.48	7.00	7.63	8.42	9.46	
	170	9.44	10.11	10.90	11.85	13.03	14.57	16.69	8.36	8.90	9.51	10.24	11.12	12.21	13.61	15.55	
	190	13.27	14.27	15.48	16.96	18.85	21.41	25.21	11.68	12.46	13.39	14.49	15.84	17.57	19.89	23.31	
120	125	0.73	0.77	0.83	0.89	0.97	1.06	1.19	0.65	0.69	0.73	0.78	0.84	0.91	1.00	1.11	
	130	1.47	1.56	1.67	1.81	1.96	2.16	2.42	1.31	1.39	1.48	1.58	1.70	1.85	2.03	2.27	
	135	2.22	2.37	2.54	2.74	2.99	3.29	3.69	1.98	2.10	2.24	2.40	2.58	2.81	3.09	3.46	
	140	3.00	3.20	3.43	3.71	4.04	4.46	5.02	2.67	2.83	3.02	3.23	3.49	3.80	4.19	4.70	
	160	6.26	6.70	7.22	7.84	8.62	9.61	10.97	5.55	5.91	6.31	6.79	7.37	8.08	8.99	10.24	
	180	9.88	10.61	11.49	12.57	13.94	15.76	18.42	8.71	9.29	9.96	10.77	11.76	13.01	14.67	17.08	
	130	135	0.76	0.81	0.87	0.94	1.02	1.13	1.28	0.67	0.71	0.76	0.82	0.88	0.96	1.06	1.20
140		1.53	1.63	1.75	1.90	2.08	2.30	2.61	1.36	1.44	1.54	1.65	1.79	1.95	2.16	2.44	
145		2.32	2.48	2.66	2.89	3.16	3.52	3.99	2.06	2.19	2.33	2.51	2.71	2.97	3.29	3.73	
150		3.12	3.34	3.60	3.91	4.29	4.78	5.44	2.77	2.95	3.15	3.38	3.67	4.02	4.47	5.08	
170		6.55	7.03	7.61	8.31	9.20	10.38	12.07	5.78	6.16	6.61	7.14	7.78	8.60	9.67	11.21	
190		10.37	11.19	12.18	13.41	15.02	17.25	20.73	9.09	9.72	10.47	11.38	12.51	13.97	15.99	19.12	
140		145	0.79	0.84	0.91	0.99	1.09	1.21	1.39	0.70	0.74	0.79	0.86	0.93	1.02	1.13	1.29
	150	1.60	1.71	1.84	2.01	2.21	2.47	2.84	1.41	1.50	1.61	1.73	1.88	2.07	2.31	2.65	
	155	2.42	2.60	2.80	3.05	3.37	3.78	4.36	2.14	2.28	2.44	2.63	2.86	3.15	3.53	4.06	
	160	3.27	3.50	3.79	4.14	4.57	5.15	5.97	2.88	3.07	3.29	3.56	3.87	4.28	4.80	5.55	
	180	6.87	7.41	8.06	8.86	9.89	11.32	13.50	6.03	6.45	6.94	7.53	8.27	9.21	10.51	12.48	
	200	10.93	11.85	12.98	14.41	16.34	19.16	24.06	9.52	10.22	11.05	12.08	13.38	15.12	17.66	22.01	
	150	155	0.83	0.89	0.96	1.05	1.16	1.31	1.53	0.73	0.78	0.83	0.90	0.98	1.08	1.22	1.42
160		1.67	1.80	1.95	2.13	2.36	2.68	3.14	1.47	1.57	1.68	1.82	1.99	2.21	2.49	2.91	
165		2.54	2.73	2.96	3.25	3.61	4.11	4.84	2.23	2.38	2.56	2.77	3.04	3.37	3.82	4.49	
170		3.43	3.69	4.01	4.40	4.91	5.61	6.66	3.01	3.21	3.46	3.75	4.11	4.58	5.21	6.17	
190		7.24	7.84	8.57	9.50	10.74	12.52	15.51	6.31	6.77	7.32	7.99	8.83	9.96	11.57	14.25	
210		11.58	12.62	13.92	15.61	17.99	21.73	27.00	10.00	10.78	11.72	12.90	14.43	16.56	19.89		
160		165	0.87	0.93	1.02	1.12	1.25	1.43	1.71	0.76	0.81	0.87	0.95	1.04	1.16	1.33	1.58
	170	1.75	1.89	2.06	2.27	2.55	2.93	3.53	1.54	1.64	1.77	1.93	2.12	2.37	2.72	3.27	
	175	2.67	2.88	3.14	3.47	3.91	4.52	5.49	2.33	2.50	2.70	2.94	3.24	3.63	4.18	5.07	
	180	3.61	3.90	4.26	4.72	5.32	6.19	7.61	3.15	3.37	3.64	3.98	4.39	4.94	5.72	7.01	
	200	7.66	8.34	9.18	10.27	11.78	14.11	18.66	6.63	7.14	7.75	8.52	9.51	10.87	12.96	16.99	
	220	12.32	13.51	15.04	17.09	20.13	25.50	33.55	10.55	11.42	12.50	13.87	15.71	18.41	23.11		
	170	175	0.91	0.99	1.08	1.20	1.36	1.58	1.97	0.79	0.85	0.92	1.01	1.12	1.26	1.46	1.81
180		1.85	2.01	2.20	2.45	2.78	3.26	4.10	1.61	1.73	1.87	2.05	2.27	2.57	3.01	3.77	
185		2.82	3.06	3.36	3.74	4.26	5.04	6.45	2.44	2.63	2.85	3.12	3.47	3.94	4.65	5.91	
190		3.81	4.15	4.56	5.10	5.83	6.95	9.06	3.30	3.55	3.86	4.24	4.72	5.39	6.39	8.28	
210		8.14	8.91	9.90	11.21	13.12	16.35	21.35	6.98	7.56	8.26	9.14	10.33	12.03	14.90		
230		13.19	14.57	16.40	18.97	23.06	29.00	37.50	11.17	12.17	13.41	15.04	17.32	20.90			
180		185	0.97	1.05	1.16	1.30	1.49	1.78	2.37	0.83	0.90	0.98	1.08	1.20	1.37	1.64	2.16
	190	1.96	2.14	2.36	2.65	3.06	3.70	5.03	1.69	1.83	1.99	2.19	2.45	2.82	3.39	4.58	
	195	2.99	3.26	3.61	4.07	4.71	5.76	8.11	2.57	2.78	3.03	3.34	3.76	4.34			

**TYPE "WU" HEAT EXCHANGERS - TABLE A**

**CAUTION:** When working pressures and/or temperatures exceed standard "WU" limits (150/125 psig & 375° F), consult factory, or use "HTWU" units.

**CLEAN TUBE TEMPERATURE FACTORS**

HEATED WATER		380° HEATING WATER										400° HEATING WATER									
		TEMPERATURE DROP										TEMPERATURE DROP									
IN	OUT	20°	40°	60°	80°	100°	120°	140°	160°	180°	20°	40°	60°	80°	100°	120°	140°	160°	180°	200°	
40	60	1.95	2.04	2.14	2.24	2.36	2.49	2.64	2.82	3.01	1.80	1.87	1.96	2.05	2.15	2.26	2.39	2.53	2.69	2.88	
	80	3.99	4.17	4.38	4.60	4.85	5.13	5.45	5.82	6.25	3.67	3.83	4.00	4.19	4.40	4.64	4.91	5.21	5.56	5.96	
	100	6.13	6.42	6.74	7.09	7.49	7.95	8.46	9.06	9.78	5.63	5.88	6.15	6.45	6.79	7.16	7.59	8.08	8.64	9.31	
	120	8.39	8.80	9.25	9.76	10.33	10.98	11.73	12.61	13.67	7.69	8.04	8.42	8.85	9.32	9.86	10.47	11.18	12.01	13.00	
	140	10.81	11.35	11.95	12.63	13.40	14.29	15.32	16.56	18.07	9.87	10.33	10.84	11.41	12.05	12.78	13.61	14.58	15.73	17.14	
	160	13.39	14.09	14.87	15.76	16.77	17.95	19.35	21.04	23.16	12.20	12.79	13.45	14.18	15.01	15.96	17.06	18.37	19.94	21.91	
	180	16.20	17.08	18.08	19.21	20.53	22.08	23.95	26.27	29.28	14.71	15.44	16.27	17.20	18.26	19.49	20.93	22.67	24.82	27.59	
50	70	1.99	2.08	2.19	2.30	2.42	2.56	2.72	2.90	3.12	1.83	1.91	2.00	2.09	2.20	2.32	2.45	2.60	2.77	2.97	
	90	4.08	4.27	4.48	4.72	4.98	5.28	5.62	6.02	6.49	3.75	3.91	4.09	4.29	4.51	4.76	5.05	5.37	5.74	6.18	
	110	6.28	6.58	6.92	7.29	7.72	8.20	8.75	9.41	10.19	5.75	6.01	6.30	6.62	6.97	7.37	7.82	8.35	8.96	9.69	
	130	8.61	9.04	9.52	10.05	10.66	11.36	12.17	13.14	14.32	7.87	8.24	8.64	9.09	9.59	10.17	10.82	11.59	12.49	13.59	
	150	11.10	11.68	12.32	13.04	13.87	14.83	15.96	17.33	19.03	10.12	10.61	11.15	11.75	12.43	13.21	14.11	15.17	16.44	18.03	
	170	13.79	14.53	15.37	16.32	17.42	18.71	20.25	22.16	24.60	12.53	13.15	13.85	14.63	15.52	16.55	17.75	19.19	20.96	23.22	
	190	16.72	17.66	18.73	19.97	21.41	23.12	25.22	27.89	31.47	15.13	15.92	16.80	17.80	18.95	20.29	21.88	23.82	26.28	29.55	
60	80	2.04	2.13	2.24	2.36	2.49	2.64	2.81	3.00	3.24	1.87	1.95	2.04	2.14	2.25	2.38	2.52	2.68	2.87	3.08	
	100	4.18	4.38	4.60	4.85	5.13	5.45	5.82	6.25	6.76	3.83	4.00	4.19	4.40	4.64	4.90	5.20	5.55	5.95	6.43	
	120	6.44	6.76	7.11	7.51	7.96	8.48	9.08	9.79	10.66	5.89	6.16	6.46	6.80	7.17	7.59	8.08	8.65	9.31	10.12	
	140	8.85	9.30	9.80	10.38	11.03	11.78	12.67	13.74	15.06	8.07	8.45	8.88	9.35	9.89	10.51	11.21	12.04	13.04	14.27	
	160	11.43	12.04	12.72	13.50	14.39	15.44	16.69	18.22	20.17	10.39	10.90	11.48	12.12	12.85	13.68	14.66	15.83	17.25	19.06	
	180	14.23	15.02	15.92	16.94	18.14	19.56	21.29	23.46	26.32	12.89	13.55	14.29	15.13	16.09	17.21	18.53	20.13	22.14	24.78	
	200	17.30	18.31	19.47	20.81	22.40	24.32	26.71	29.83	34.20	15.60	16.44	17.39	18.46	19.71	21.19	22.96	25.16	28.02	31.99	
80	100	2.14	2.24	2.36	2.49	2.64	2.81	3.01	3.24	3.52	1.96	2.05	2.15	2.26	2.38	2.52	2.68	2.87	3.08	3.35	
	120	4.40	4.62	4.87	5.15	5.47	5.84	6.27	6.79	7.42	4.01	4.20	4.41	4.65	4.91	5.21	5.56	5.96	6.45	7.04	
	140	6.80	7.16	7.56	8.01	8.53	9.14	9.86	10.73	11.83	6.19	6.49	6.83	7.21	7.63	8.12	8.69	9.36	10.18	11.20	
	160	9.38	9.89	10.47	11.13	11.89	12.79	13.88	15.22	16.96	8.51	8.94	9.42	9.96	10.58	11.30	12.14	13.15	14.40	16.01	
	180	12.17	12.87	13.66	14.57	15.63	16.91	18.47	20.47	23.16	11.01	11.58	12.23	12.97	13.82	14.81	16.00	17.45	19.30	21.78	
	200	15.24	16.15	17.20	18.43	19.88	21.66	23.90	26.87	31.16	13.71	14.47	15.32	16.30	17.43	18.78	20.43	22.49	25.21	29.11	
	100	120	2.26	2.38	2.51	2.66	2.83	3.03	3.26	3.55	3.90	2.06	2.16	2.27	2.39	2.53	2.69	2.88	3.10	3.36	3.70
140		4.66	4.91	5.19	5.52	5.89	6.33	6.85	7.49	8.32	4.23	4.44	4.68	4.95	5.25	5.60	6.01	6.49	7.10	7.86	
160		7.24	7.64	8.10	8.63	9.24	9.97	10.86	11.98	13.46	6.55	6.89	7.27	7.70	8.19	8.77	9.45	10.28	11.32	12.69	
180		10.02	10.61	11.28	12.06	12.98	14.09	15.46	17.25	19.73	9.04	9.53	10.08	10.70	11.43	12.28	13.31	14.59	16.24	18.52	
200		13.08	13.89	14.82	15.91	17.22	18.83	20.90	23.70	27.90	11.74	12.40	13.15	14.02	15.04	16.25	17.74	19.64	22.20	26.02	
110		115	0.57	0.60	0.63	0.67	0.71	0.76	0.82	0.90	0.99	0.52	0.54	0.57	0.60	0.64	0.68	0.73	0.78	0.85	0.94
		120	1.15	1.21	1.27	1.35	1.44	1.54	1.67	1.82	2.01	1.04	1.09	1.15	1.21	1.29	1.37	1.47	1.58	1.72	1.90
	125	1.73	1.82	1.93	2.05	2.18	2.34	2.53	2.76	3.06	1.57	1.65	1.74	1.84	1.95	2.07	2.22	2.40	2.62	2.89	
	130	2.33	2.45	2.59	2.75	2.94	3.15	3.41	3.73	4.14	2.11	2.22	2.34	2.47	2.62	2.79	3.00	3.24	3.54	3.92	
	150	4.81	5.08	5.38	5.73	6.13	6.62	7.20	7.93	8.89	4.36	4.58	4.83	5.12	5.44	5.82	6.27	6.82	7.50	8.39	
	170	7.48	7.92	8.42	8.99	9.66	10.48	11.48	12.78	14.56	6.76	7.12	7.52	7.99	8.52	9.15	9.91	10.84	12.04	13.69	
	190	10.40	11.03	11.76	12.61	13.63	14.88	16.46	18.58	21.69	9.34	9.86	10.46	11.14	11.93	12.87	14.03	15.49	17.44	20.29	
120	125	0.59	0.62	0.65	0.69	0.74	0.80	0.86	0.94	1.05	0.53	0.56	0.59	0.62	0.66	0.70	0.76	0.82	0.89	0.99	
	130	1.18	1.25	1.32	1.40	1.50	1.61	1.75	1.92	2.13	1.07	1.13	1.19	1.25	1.33	1.42	1.53	1.66	1.81	2.02	
	135	1.79	1.88	1.99	2.12	2.27	2.44	2.65	2.92	3.26	1.62	1.70	1.79	1.90	2.02	2.16	2.32	2.51	2.76	3.08	
	140	2.40	2.53	2.68	2.86	3.06	3.30	3.59	3.95	4.42	2.18	2.29	2.41	2.55	2.72	2.90	3.13	3.40	3.73	4.17	
	160	4.97	5.26	5.59	5.97	6.41	6.94	7.60	8.45	9.59	4.49	4.73	5.00	5.31	5.66	6.07	6.57	7.18	7.97	9.03	
	180	7.76	8.23	8.77	9.39	10.14	11.05	12.20	13.73	15.93	6.98	7.36	7.80	8.30	8.89	9.59	10.43	11.50	12.91	14.93	
	130	135	0.60	0.64	0.68	0.72	0.77	0.83	0.91	1.00	1.12	0.55	0.58	0.61	0.64	0.68	0.73	0.79	0.86	0.95	1.06
140		1.22	1.29	1.37	1.46	1.56	1.69	1.84	2.03	2.29	1.10	1.16	1.23	1.30	1.38	1.48	1.60	1.74	1.92	2.16	
145		1.85	1.95	2.07	2.21	2.37	2.56	2.80	3.10	3.50	1.67	1.76	1.85	1.97	2.10	2.25	2.43	2.65	2.93	3.30	
150		2.48	2.62	2.79	2.98	3.20	3.46	3.79	4.20	4.77	2.24	2.36	2.49	2.65	2.82	3.03	3.28	3.58	3.96	4.49	
170		5.15	5.46	5.82	6.23	6.72	7.32	8.07	9.06	10.47	4.64	4.89	5.18	5.51	5.90	6.36	6.91	7.61	8.53	9.83	
190		8.06	8.57	9.16	9.85	10.69	11.72	13.06	14.90	17.74	7.22	7.64	8.11	8.66	9.30	10.08	11.03	12.27	13.97	16.56	
140		145	0.63	0.66	0.70	0.75	0.81	0.88	0.96	1.07	1.21	0.56	0.59	0.63	0.67	0.71	0.76	0.83	0.91	1.01	1.14
	150	1.26	1.34	1.42	1.52	1.63	1.77	1.95	2.17	2.48	1.14	1.20	1.27	1.35	1.44	1.55	1.68	1.84	2.05	2.33	
	155	1.91	2.02	2.15	2.30	2.48	2.70	2.96	3.31	3.80	1.72	1.82	1.92	2.04	2.18	2.35	2.55	2.80	3.12	3.57	
	160	2.57	2.73	2.90	3.11	3.35	3.65	4.02	4.50	5.19	2.32	2.44	2.59	2.75	2.94	3.17	3.44	3.79	4.24	4.88	
	180	5.35	5.69	6.08	6.53	7.08	7.75	8.62	9.81	11.61	4.80	5.07	5.39	5.75	6.17	6.68	7.31	8.11	9.21	10.86	
	200	8.40	8.95	9.60	10.37	11.31	12.50	14.09	16.39	20.30	7.49	7.94	8.45	9.05	9.77	10.64	11.74	13.20	15.30	18.85	
	150	155	0.65	0.69	0.73	0.78	0.85	0.92	1.02	1.14	1.33	0.58	0.62	0.65	0.69	0.74	0.80	0.87	0.96	1.08	1.24
160		1.31	1.39	1.48	1.59	1.72	1.87	2.07	2.33	2.72	1.18	1.24	1.32	1.40	1.50	1.62	1.77	1.95	2.20	2.55	
165		1.98	2.11	2.25	2.41	2.61	2.85	3.16	3.58	4.19	1.78	1.88	1.99	2.13	2.28	2.46	2.69	2.97	3.36	3.92	
170		2.67	2.84	3.03	3.25	3.53	3.86	4.29	4.87	5.75	2.40	2.53	2.69	2.87	3.08	3.33	3.64	4.03	4.57	5.38	
190		5.57	5.94	6.36	6.87	7.49	8.26	9.29	10.76	13.19	4.98	5.27	5.61	6.01	6.48	7.05	7.76	8.71	10.06		

# FOR HIGH TEMPERATURE RANGE

		420° HEATING WATER											
HEATED WATER		TEMPERATURE DROP											
IN	OUT	20°	40°	60°	80°	100°	120°	140°	160°	180°	200°	220°	
40	60	1.66	1.73	1.80	1.88	1.97	2.06	2.17	2.29	2.42	2.57	2.75	
	80	3.39	3.53	3.68	3.84	4.02	4.22	4.45	4.70	4.98	5.31	5.70	
	100	5.19	5.41	5.64	5.90	6.19	6.50	6.86	7.26	7.72	8.26	8.89	
	120	7.08	7.38	7.71	8.07	8.48	8.93	9.43	10.01	10.68	11.46	12.39	
	140	9.07	9.47	9.90	10.38	10.92	11.52	12.21	12.99	13.90	14.99	16.31	
	160	11.18	11.68	12.24	12.86	13.55	14.33	15.23	16.26	17.48	18.96	20.79	
	180	13.44	14.06	14.76	15.54	16.41	17.41	18.56	19.91	21.53	23.52	26.09	
50	70	1.69	1.76	1.84	1.92	2.01	2.11	2.22	2.35	2.49	2.65	2.84	
	90	3.46	3.60	3.76	3.93	4.12	4.33	4.56	4.83	5.13	5.49	5.90	
	110	5.30	5.52	5.77	6.04	6.34	6.67	7.05	7.48	7.97	8.55	9.24	
	130	7.23	7.55	7.89	8.28	8.70	9.18	9.72	10.34	11.05	11.90	12.94	
	150	9.28	9.70	10.15	10.66	11.23	11.87	12.60	13.45	14.44	15.64	17.12	
	170	11.46	11.99	12.58	13.23	13.97	14.80	15.77	16.89	18.24	19.89	21.99	
	190	13.79	14.46	15.19	16.02	16.96	18.03	19.29	20.77	22.58	24.85	27.87	
60	80	1.73	1.80	1.88	1.96	2.06	2.16	2.28	2.41	2.56	2.74	2.94	
	100	3.53	3.68	3.84	4.02	4.22	4.44	4.69	4.97	5.30	5.68	6.13	
	120	5.41	5.65	5.91	6.19	6.51	6.86	7.26	7.72	8.25	8.88	9.64	
	140	7.40	7.73	8.09	8.50	8.95	9.45	10.03	10.70	11.48	12.41	13.57	
	160	9.51	9.95	10.43	10.97	11.57	12.26	13.04	13.96	15.05	16.39	18.07	
	180	11.76	12.32	12.94	13.64	14.43	15.33	16.37	17.61	19.10	20.97	23.41	
	200	14.18	14.89	15.67	16.56	17.56	18.73	20.10	21.75	23.79	26.43	30.06	
80	100	1.80	1.88	1.96	2.06	2.16	2.28	2.41	2.56	2.74	2.94	3.19	
	120	3.68	3.85	4.03	4.23	4.45	4.70	4.98	5.31	5.69	6.14	6.70	
	140	5.67	5.93	6.21	6.53	6.89	7.29	7.75	8.28	8.91	9.68	10.64	
	160	7.78	8.14	8.55	9.00	9.51	10.09	10.76	11.55	12.49	13.66	15.16	
	180	10.02	10.51	11.05	11.66	12.36	13.15	14.08	15.19	16.54	18.26	20.55	
	200	12.44	13.07	13.78	14.57	15.49	16.55	17.81	19.33	21.24	23.75	27.33	
	100	120	1.88	1.97	2.06	2.17	2.29	2.42	2.57	2.74	2.95	3.20	3.51
140		3.87	4.05	4.25	4.47	4.72	5.01	5.33	5.72	6.18	6.74	7.46	
160		5.97	6.26	6.58	6.94	7.34	7.80	8.34	8.98	9.76	10.73	12.01	
180		8.22	8.63	9.08	9.60	10.18	10.86	11.66	12.62	13.81	15.35	17.46	
200		10.63	11.18	11.80	12.50	13.31	14.26	15.39	16.77	18.53	20.89	24.39	
110		115	0.47	0.50	0.52	0.55	0.58	0.61	0.65	0.69	0.74	0.81	0.89
		120	0.95	1.00	1.05	1.10	1.16	1.23	1.31	1.40	1.51	1.64	1.80
	125	1.44	1.51	1.58	1.66	1.75	1.86	1.98	2.12	2.28	2.49	2.74	
	130	1.93	2.02	2.12	2.23	2.36	2.50	2.66	2.85	3.08	3.36	3.71	
	150	3.97	4.16	4.37	4.61	4.88	5.19	5.54	5.96	6.47	7.11	7.94	
	170	6.14	6.45	6.79	7.17	7.60	8.11	8.69	9.40	10.27	11.39	12.92	
	190	8.47	8.90	9.39	9.94	10.58	11.32	12.20	13.28	14.64	16.44	19.06	
120	125	0.49	0.51	0.53	0.56	0.59	0.63	0.67	0.72	0.78	0.85	0.94	
	130	0.98	1.02	1.08	1.13	1.20	1.27	1.36	1.45	1.57	1.72	1.91	
	135	1.48	1.55	1.63	1.71	1.81	1.92	2.05	2.21	2.39	2.62	2.91	
	140	1.98	2.08	2.18	2.30	2.43	2.59	2.76	2.97	3.23	3.54	3.95	
	160	4.09	4.29	4.51	4.76	5.05	5.38	5.77	6.24	6.81	7.54	8.53	
	180	6.33	6.65	7.01	7.42	7.89	8.44	9.09	9.88	10.87	12.18	14.05	
	130	135	0.50	0.52	0.55	0.58	0.61	0.65	0.70	0.75	0.82	0.90	1.00
140		1.01	1.05	1.11	1.17	1.24	1.32	1.41	1.52	1.65	1.82	2.04	
145		1.52	1.59	1.68	1.77	1.87	1.99	2.14	2.30	2.51	2.77	3.12	
150		2.04	2.14	2.25	2.38	2.52	2.69	2.88	3.11	3.39	3.75	4.24	
170		4.21	4.42	4.66	4.93	5.24	5.60	6.03	6.55	7.20	8.05	9.26	
190		6.53	6.87	7.26	7.70	8.22	8.82	9.54	10.43	11.57	13.14	15.53	
140		145	0.51	0.54	0.57	0.60	0.64	0.68	0.73	0.79	0.86	0.95	1.08
	150	1.03	1.09	1.14	1.21	1.28	1.37	1.47	1.59	1.74	1.93	2.20	
	155	1.56	1.64	1.73	1.83	1.94	2.07	2.23	2.42	2.65	2.95	3.37	
	160	2.10	2.21	2.33	2.46	2.62	2.80	3.01	3.26	3.58	4.01	4.60	
	180	4.34	4.57	4.82	5.12	5.45	5.85	6.32	6.91	7.66	8.67	10.20	
	200	6.75	7.12	7.53	8.01	8.57	9.24	10.05	11.07	12.41	14.35	17.59	
	150	155	0.53	0.56	0.59	0.62	0.66	0.71	0.76	0.83	0.91	1.02	1.17
160		1.07	1.12	1.18	1.25	1.33	1.43	1.54	1.67	1.84	2.07	2.40	
165		1.61	1.70	1.79	1.90	2.02	2.16	2.33	2.54	2.81	3.17	3.69	
170		2.17	2.28	2.41	2.55	2.72	2.92	3.15	3.44	3.81	4.31	5.05	
190		4.49	4.73	5.01	5.32	5.69	6.13	6.66	7.32	8.20	9.44	11.49	
210		6.99	7.38	7.84	8.36	8.98	9.72	10.64	11.82	13.44	15.93		
175		165	0.55	0.57	0.61	0.64	0.69	0.74	0.80	0.87	0.97	1.10	1.29
	170	1.10	1.16	1.23	1.30	1.39	1.49	1.61	1.77	1.97	2.24	2.66	
	160	1.66	1.75	1.86	1.97	2.10	2.26	2.45	2.69	3.00	3.43	4.12	
	180	2.24	2.36	2.50	2.65	2.84	3.05	3.32	3.65	4.08	4.69	5.68	
	200	4.64	4.91	5.20	5.55	5.96	6.44	7.04	7.81	8.86	10.44	13.44	
	220	7.25	7.68	8.17	8.75	9.43	10.27	11.32	12.72	14.74	18.14		
	170	175	0.56	0.59	0.63	0.67	0.72	0.77	0.84	0.92	1.04	1.20	1.46
180		1.14	1.20	1.27	1.35	1.45	1.56	1.70	1.88	2.11	2.45	3.03	
185		1.72	1.82	1.93	2.05	2.20	2.38	2.59	2.86	3.23	3.77	4.73	
190		2.32	2.45	2.60	2.77	2.97	3.21	3.51	3.89	4.40	5.17	6.60	
210		4.82	5.10	5.43	5.80	6.25	6.80	7.49	8.39	9.69	11.82		
230		7.54	8.01	8.55	9.19	9.95	10.90	12.13	13.83	16.44	21.64		
180		185	0.58	0.62	0.66	0.70	0.75	0.81	0.89	0.99	1.12	1.32	1.72
	190	1.18	1.25	1.32	1.41	1.52	1.65	1.80	2.01	2.29	2.73	3.62	
	195	1.79	1.89	2.01	2.14	2.31	2.50	2.75	3.07	3.52	4.23	5.78	
	200	2.40	2.54	2.71	2.89	3.12	3.39	3.73	4.17	4.80	5.83	8.29	
	220	5.01	5.32	5.67	6.09	6.59	7.21	8.01	9.10	10.76	13.91		
	240	7.87	8.38	8.97	9.68	10.55	11.64	13.11	15.22	18.83			
	190	195	0.61	0.64	0.68	0.73	0.79	0.86	0.95	1.06	1.23	1.50	2.23
200		1.22	1.30	1.38	1.48	1.60	1.74	1.92	2.16	2.52	3.12	4.98	
205		1.86	1.97	2.10	2.25	2.43	2.65	2.93	3.32	3.88	4.88		
210		2.50	2.65	2.83	3.04	3.28	3.59	3.98	4.52	5.32	6.82		
230		5.22	5.56	5.95	6.41	6.98	7.69	8.64	9.99	12.24			
250		8.22	8.79	9.45	10.24	11.24	12.53	14.31	17.07				
200		205	0.63	0.67	0.71	0.77	0.83	0.91	1.01	1.15	1.36	1.78	
	210	1.27	1.35	1.45	1.56	1.69	1.85	2.06	2.36	2.81	3.75		
	215	1.93	2.05	2.20	2.36	2.57	2.82	3.15	3.62	4.36	6.00		
	220	2.60	2.77	2.96	3.20	3.48	3.83	4.29	4.95	6.03	8.63		
	240	5.46	5.83	6.26	6.78	7.43	8.26	9.41	11.15	14.50			
	210	215	0.66	0.70	0.75	0.81	0.88	0.97	1.09	1.27	1.56	2.32	
		220	1.33	1.42	1.52	1.64	1.79	1.98	2.23	2.60	3.23	5.21	
225		2.02	2.15	2.31	2.50	2.73	3.02	3.42	4.01	5.07			
230		2.72	2.90	3.12	3.38	3.70	4.11	4.67	5.51	7.09			
250		5.72	6.13	6.61	7.21	7.95	8.95	10.37	12.76				
220		225	0.69	0.73	0.79	0.86	0.94	1.04	1.19	1.41	1.85		
		230	1.39	1.49	1.60	1.74	1.91	2.13	2.44	2.92	3.91		
	235	2.11	2.26	2.43	2.65	2.91	3.26	3.75	4.53	6.27			
	240	2.85	3.05	3.29	3.59	3.95	4.44	5.13	6.28	9.05			
	230	235	0.72	0.77	0.83	0.91	1.00	1.13	1.31	1.62	2.44		
		240	1.46	1.57	1.69	1.85	2.05	2.31	2.70	3.38	5.49		
		240	245	0.76	0.82	0.89	0.97	1.08	1.24	1.48	1.94		
250			1.54	1.66	1.80	1.98	2.21	2.54	3.05	4.11			

## 4" WU HEAT EXCHANGERS

<b>2 &amp; 4 PASS</b>	BAFFLE SPACE		2"	2½"	3"	4" STD	
	SHELL FLOW		A	19-25	24-32	28-38	38-51
	IN GPM		B	10-18	12-23	14-27	19-37

"WU" NUMBER	TUBE FLOW IN GPM																	
	2		4		6		8		10		15		20		25		30	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU42-4( )	33.3	30.1	24.8	21.3	20.3	16.9	17.3	14.1	15.1	12.1	11.6	9.1	10.4	7.8				
WU43-4( )	50.4	45.5	37.6	32.2	30.6	25.5	26.2	21.4	22.8	18.4	17.6	13.7	15.6	12.0				
WU44-4( )	68.0	61.4	50.6	43.7	41.3	34.5	35.2	28.7	30.8	24.8	23.7	18.5	22.1	16.3				
WU45-4( )	85.2	76.9	63.4	54.6	51.7	43.2	44.1	36.0	38.6	31.0	29.7	23.2	27.7	21.9				
WU46-4( )	103.0	93.0	76.7	66.0	62.6	52.3	53.3	43.5	46.7	37.4	35.9	28.0	34.2	26.3				
WU47-4( )	125.3	113.1	93.3	80.3	79.2	63.6	64.8	53.0	56.7	45.6	43.7	34.1	42.0	32.9				
AVG. VEL. 4"-4" PASS	.6 ft./sec.		1.2		1.8		2.4		2.9		4.4		5.6					
WU42-2( )			16.6	15.1	14.2	12.5	12.4	10.7	11.2	9.4	9.0	7.4	7.5	6.1	6.5	5.2	5.8	4.5
WU43-2( )			25.2	22.8	21.4	18.8	18.7	16.2	16.8	14.3	13.6	11.1	11.4	9.1	10.0	7.8	8.7	6.8
WU44-2( )			34.0	30.7	28.8	25.4	25.4	21.7	22.7	19.2	18.3	15.0	15.4	12.3	13.4	10.6	11.9	9.2
WU45-2( )			42.6	38.5	36.1	31.7	31.7	27.4	28.4	24.1	22.9	18.8	19.3	15.5	16.7	13.3	14.9	11.5
WU46-2( )			51.5	46.5	43.6	38.4	38.4	33.0	34.3	29.1	27.6	22.7	23.3	18.7	20.3	16.0	17.9	14.0
WU47-2( )			62.6	56.5	53.1	46.6	46.6	40.2	41.8	35.4	33.6	27.6	28.4	22.8	24.7	19.5	21.8	17.0
AVG. VEL. 4"-2" PASS			.6 ft./sec.		.9		1.2		1.5		2.2		2.9		3.7		4.4	

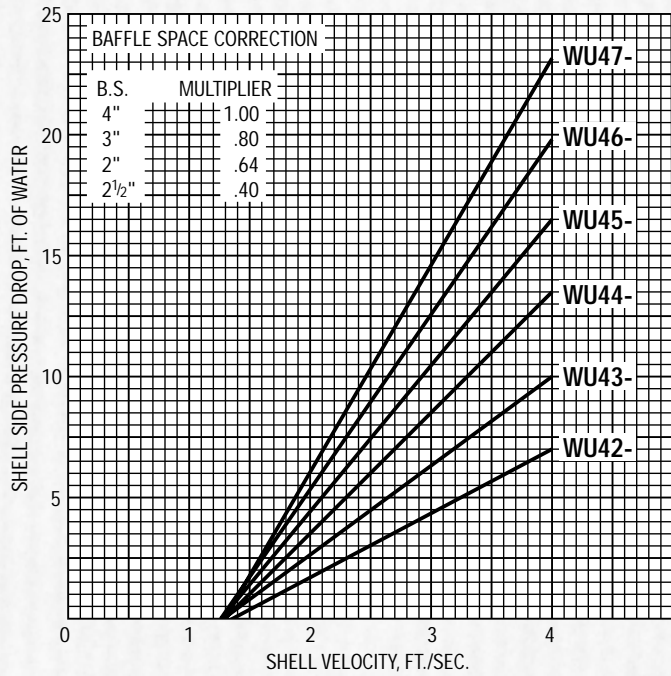
## 6" WU HEAT EXCHANGERS

<b>2 &amp; 4 PASS</b>	BAFFLE SPACE		2"	2½"	3" STD	4"	
	SHELL FLOW		A	30-39	40-50	45-60	61-80
	GPM		B	15-29	30-39	22-44	45-60

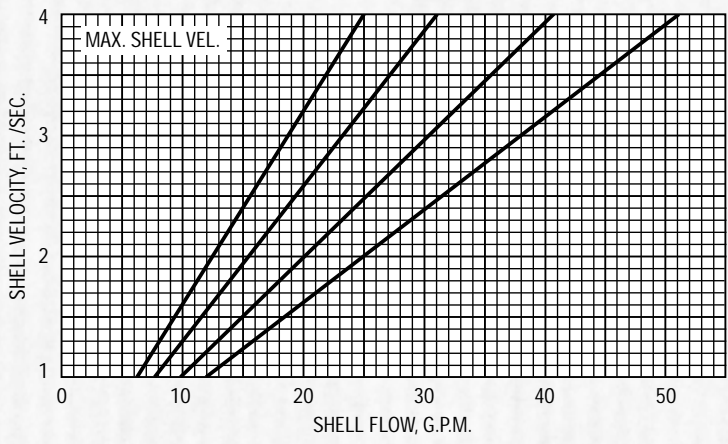
"WU" NUMBER	TUBE FLOW IN GPM																											
	5		10		15		20		25		30		35		40		50		60		70		80		90		100	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU62-4( )	29.3	26.7	22.1	19.3	18.2	15.5	15.7	13.0	13.8	11.2	12.4	9.9	11.2	8.9	10.3	8.1	8.9	6.9										
WU63-4( )	46.4	42.4	35.1	30.6	29.0	24.5	24.9	20.6	21.9	17.9	19.7	15.8	17.9	14.2	16.4	12.9	14.1	10.9										
WU64-4( )	63.6	58.0	48.1	42.0	39.7	33.6	34.1	28.2	30.0	24.5	26.9	21.6	24.5	19.4	22.4	17.6	19.3	14.9										
WU65-4( )	80.8	73.7	61.1	53.3	50.4	42.7	43.3	35.9	38.2	31.1	34.2	27.5	31.1	24.7	28.5	22.4	24.5	18.9										
WU66-4( )	98.0	89.4	74.1	64.7	61.1	51.8	52.5	43.5	46.3	37.7	41.5	33.3	37.7	29.9	34.5	27.1	29.7	23.0										
WU67-4( )	115.2	105.0	87.1	76.0	71.9	60.8	61.7	51.1	54.4	44.3	48.8	39.2	44.3	35.1	40.6	31.9	34.9	27.0										
WU68-4( )	132.0	120.7	100.0	87.4	82.6	69.9	71.0	58.8	62.5	50.9	56.0	45.0	50.9	40.4	46.7	36.7	40.1	31.0										
AVG. VEL. 6"-4" PASS	.8 ft./sec.		1.4		2.2		2.9		3.7		4.4		5.1		5.9		7.3		-		-		*		*		*	
WU62-2( )					12.5	11.1	11.1	9.7	10.0	8.6	9.1	7.7	8.4	7.1	7.8	6.5	6.9	5.6	6.2	5.0	5.6	4.5	5.2	4.1	4.8	3.7	4.4	3.4
WU63-2( )					19.9	17.7	17.6	15.3	15.8	13.6	14.5	12.3	13.4	11.2	12.4	10.3	11.0	8.9	9.8	7.9	8.9	7.1	8.2	6.4	7.6	5.9	7.0	5.4
WU64-2( )					27.2	24.2	24.1	21.0	21.7	18.6	19.8	16.8	18.3	15.3	17.1	14.1	15.0	12.2	13.5	10.8	12.2	9.7	11.2	8.8	10.4	8.1	9.6	7.5
WU65-2( )					34.6	30.7	30.6	26.7	27.6	23.7	25.2	21.3	23.3	19.5	21.7	17.9	19.1	15.5	17.1	13.7	15.5	12.3	14.2	11.2	13.2	10.3	12.2	9.5
WU66-2( )					41.9	37.3	37.1	32.2	33.4	28.7	30.6	25.9	28.2	23.6	26.3	21.8	23.1	18.8	20.7	16.7	18.8	14.9	17.3	13.6	16.0	12.4	14.8	11.5
WU67-2( )					49.3	43.8	43.6	38.0	39.3	33.7	35.9	30.4	33.2	27.8	30.9	25.6	27.2	22.1	24.4	19.6	22.1	17.6	20.3	16.0	18.8	14.6	17.5	13.5
WU68-2( )					56.6	50.4	50.1	43.7	45.2	38.8	41.3	35.0	38.1	31.9	35.5	29.4	31.3	25.4	28.0	22.5	25.4	20.2	23.3	18.3	21.6	16.8	20.1	15.5
AVG. VEL. 6"-2" PASS	-		-		1.1 ft./sec.		1.4		1.8		2.2		2.6		2.9		3.7		4.4		5.1		5.9		6.6		7.3	

\*Require Fabricated Steel heads. Consult Factory for Dimensions.  
NOTE: Check Mechanical Design Limitations, Page 7.

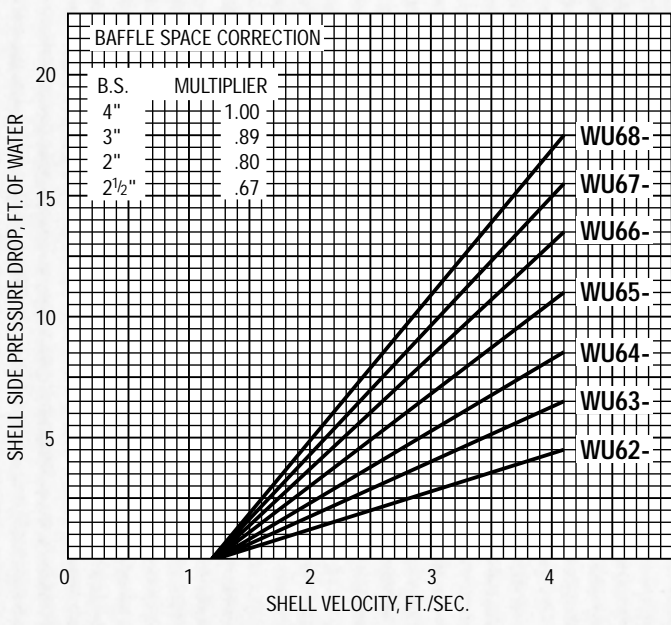




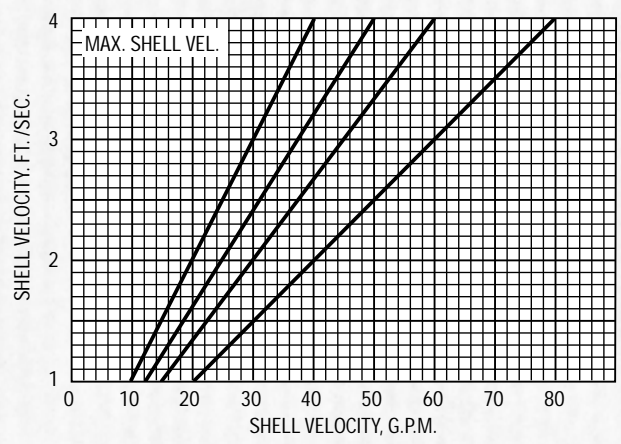
WU4"-2 & 4 PASS B.S. → 2" 2½" 3" 4"



**NOTE:**  
 SEE PAGE 5 FOR PRESSURE  
 DROP CORRECTION FACTORS  
 ADJUSTING FOR AVERAGE  
 WATER TEMPERATURE.



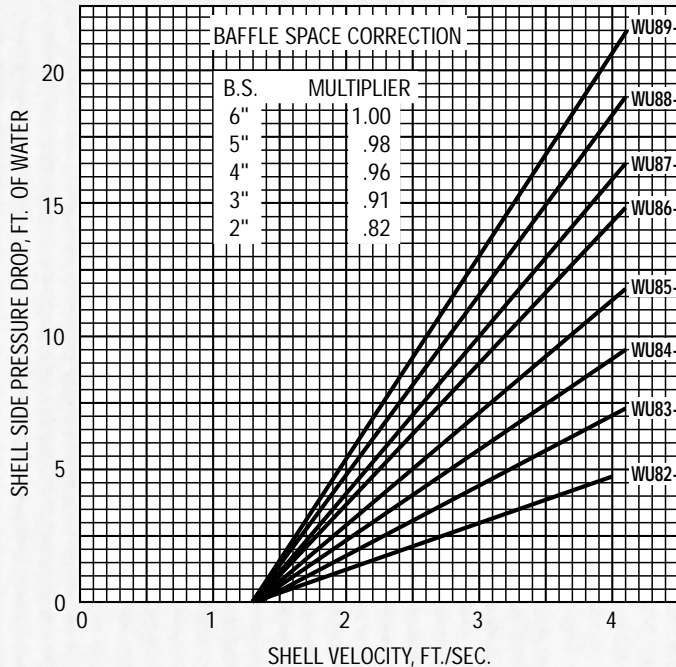
WU6"-2 & 4 PASS B.S. → 2" 2½" 3" 4"



# 8" WU HEAT EXCHANGERS

<b>2 &amp; 4 PASS</b>	BAFFLE SPACE		2"	3"	4" (STD.)	5"	6"	
	SHELL FLOW		A	40-50	51-80	81-110	111-130	131-160
	IN GPM		B	20-39	40-50	40-80	81-110	111-130

4 PASS	GPM HEATED IN TUBES															
	15		20		25		30		35		40		50		60	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
WU82-4( )	24.7	21.8	21.8	18.9	19.6	16.7	17.8	15.0	16.4	13.7	15.3	12.6	13.4	10.9	12.0	9.6
WU83-4( )	37.9	33.5	33.4	28.9	30.0	25.6	27.4	23.0	25.2	21.0	23.4	19.3	20.6	16.6	18.4	14.7
WU84-4( )	52.7	46.6	46.4	40.2	41.7	35.6	38.1	32.0	35.1	29.2	32.6	26.8	28.6	23.2	25.6	20.4
WU85-4( )	67.5	59.7	59.5	51.6	53.5	45.6	48.8	41.0	45.0	37.4	41.8	34.4	36.7	29.7	32.8	26.2
WU86-4( )	80.6	71.3	71.1	61.6	63.9	54.5	58.3	49.1	53.7	44.7	49.9	41.1	43.8	35.5	39.2	31.3
WU87-4( )	95.5	84.4	84.1	72.9	75.7	64.5	69.0	58.1	63.6	52.9	59.1	48.6	51.9	42.0	46.4	37.0
WU88-4( )	110.0	97.5	97.2	84.3	87.4	74.6	79.7	67.1	73.5	61.1	68.2	56.1	59.9	48.5	53.6	42.8
WU89-4( )	123.0	109.0	109.0	94.3	97.8	83.5	89.2	75.1	82.2	68.4	76.4	62.9	67.1	54.3	60.0	47.9
4-P T.V.	1.2 ft./sec.		1.6		2.0		2.4		2.8		3.2		4.0		4.8	
<b>2 PASS</b>																
WU82-2( )					13.3	11.9	12.3	10.9	11.6	10.1	10.9	9.4	9.8	8.3	8.9	7.5
WU83-2( )					20.4	18.3	18.9	16.7	17.7	15.5	16.7	14.5	15.0	12.8	13.7	11.5
WU84-2( )					28.4	25.4	26.3	23.3	24.6	21.6	23.2	20.1	20.9	17.8	19.0	16.0
WU85-2( )					36.3	32.5	33.7	29.8	31.6	27.6	29.7	25.8	26.7	22.8	24.4	20.5
WU86-2( )					43.4	38.9	40.3	35.7	37.7	33.0	35.5	30.8	32.0	27.3	29.2	24.5
WU87-2( )					51.4	46.0	47.7	42.2	44.7	39.1	42.1	36.5	37.8	32.3	34.5	29.0
WU88-2( )					59.4	53.2	55.1	48.8	51.6	45.2	48.6	42.1	43.7	37.3	39.9	33.5
WU89-2( )					66.5	59.5	61.7	54.6	57.8	50.6	54.4	47.2	48.9	41.7	44.6	37.5
2-P T.V.					1.0 ft./sec.		1.2		1.4		1.6		2.0		2.4	

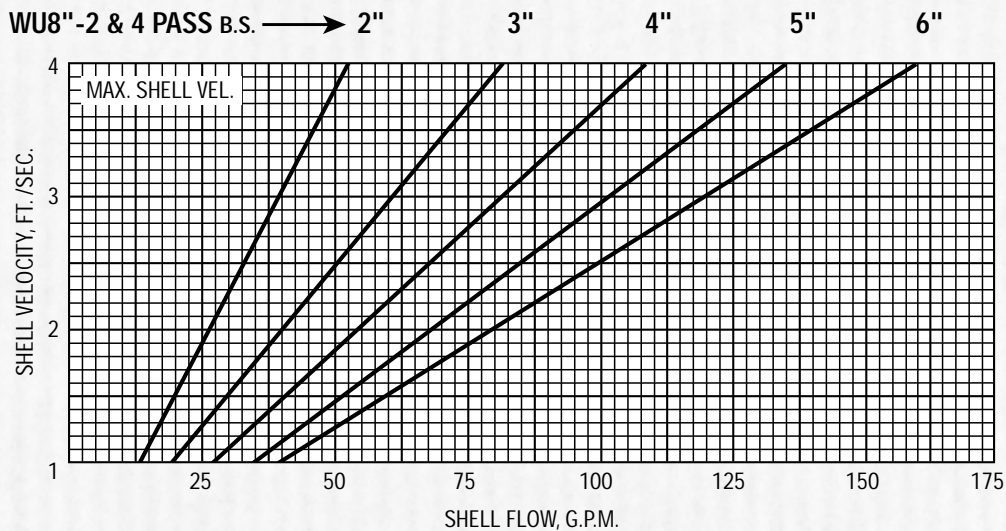


**NOTE:**  
SEE PAGE 5 FOR PRESSURE DROP CORRECTION FACTORS ADJUSTING FOR AVERAGE WATER TEMPERATURE.

GPM HEATED IN TUBES															
70		80		90		100		120		140		160		180	
A	B	A*	B*	A*	B*	A	B	A	B	A	B	A	B	A	B
10.9	8.6	10.0	7.8	9.2	7.1										
1.5	1.5	1.9	1.9	2.4	2.4										
16.7	13.1	15.3	11.9	14.1	10.9										
2.3	2.3	2.9	2.9	3.6	3.6										
23.2	18.3	21.2	16.6	19.6	15.2										
3.2	3.2	4.1	4.1	5.0	5.0										
29.7	23.4	27.2	21.2	25.1	19.4										
4.1	4.1	5.2	5.2	6.5	6.5										
35.5	28.0	32.5	25.4	30.0	23.2										
4.9	4.9	6.3	6.3	7.7	7.7										
42.0	33.1	28.5	30.0	35.5	27.5										
5.9	5.9	7.4	7.4	9.1	9.1										
48.6	38.3	44.4	34.7	41.0	31.8										
6.8	6.8	8.6	8.6	10.6	10.6										
54.4	42.9	49.8	38.9	45.9	35.6										
7.6	7.6	9.6	9.6	11.8	11.8										
5.6		6.4		7.2											
8.2	6.8	7.6	6.3	7.1	5.8	6.7	5.4	6.0	4.8	5.4	4.3	5.0	3.9	4.6	3.6
												1.0	1.0	1.2	1.2
12.6	10.5	11.7	9.6	10.9	8.9	10.3	8.3	9.2	7.3	8.3	6.6	7.6	6.0	7.0	5.5
												1.5	1.5	1.8	1.8
17.5	14.6	16.3	13.4	15.2	12.4	14.3	11.6	12.8	10.2	11.6	9.1	10.6	8.3	9.8	7.6
												1.6	1.6	2.0	2.5
22.5	18.7	20.9	17.2	19.5	15.9	18.3	14.8	16.4	13.1	14.9	11.7	13.6	10.6	12.5	9.7
												2.1	2.1	2.6	3.2
28.9	22.3	25.0	20.5	23.3	19.0	21.9	17.7	19.6	15.6	17.8	14.0	16.3	12.7	15.0	11.6
												2.5	2.5	3.1	3.9
31.8	26.4	29.5	24.3	27.6	22.5	25.9	21.0	23.2	18.5	21.0	16.6	19.2	15.0	17.8	13.7
												2.9	2.9	3.7	4.6
36.7	30.5	34.1	28.1	31.9	26.0	30.0	24.2	26.8	21.4	24.3	19.1	22.2	17.4	20.5	15.9
												3.4	3.4	4.3	5.3
41.1	34.2	38.2	31.4	35.7	29.1	33.6	27.1	30.0	23.9	27.2	21.4	24.9	19.4	23.0	17.8
												3.8	3.8	4.8	5.9
1.1	1.1	1.4	1.4	1.7	1.7	2.1	2.1	2.9	2.9	3.8	3.8	4.8	4.8	5.9	5.9
2.8		3.2		3.6		4.0		4.8		5.6		6.4		7.2	

\*Require Fabricated Steel heads. Consult Factory for Dimensions.

NOTE: Check Mechanical Design Limitations, Page 7.



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